

ELROD MANUAL  
OF INSTRUCTIONS

MODELS "E" and "F"

WITH PRICE LIST OF PARTS

NUMBER 4

# INSTRUCTIONS FOR OPERATING ELROD SLUG AND RULE CASTER

MODELS "E" and "F"

WITH PRICE LIST OF PARTS

Number 4

LUDLOW TYPOGRAPH COMPANY

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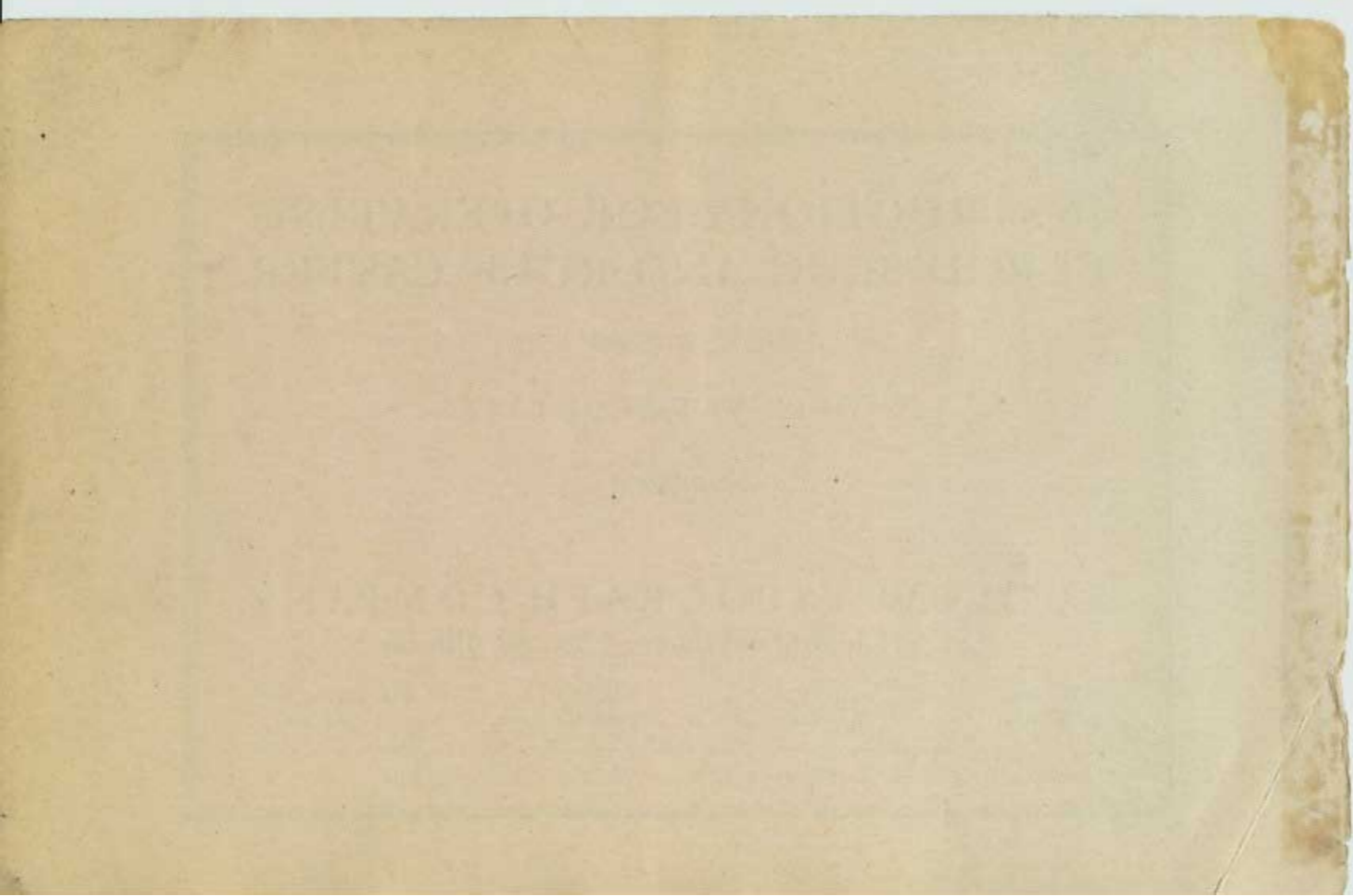
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*IMPORTANT INFORMATION: Keep This Book in the Composing Room.*



## How to Order Parts

1. Each part of the Elrod Slug and Rule Caster is listed under a part number and these part numbers are given in numerical order wherever possible.
2. Practically every part is illustrated. These illustrations will be found on Plates 1 to 18, inclusive.
3. Bolts, screws, nuts, dowels, and washers are given a style number. An illustration showing these style numbers will be found on Plate 15 and will help you to identify these parts.
4. When ordering parts, always give part number and name. The code words may be used when ordering by telegram or cable.
5. Always give the serial number of the machine for which the parts are wanted. This number is stamped on the brass plate on the front of the machine.
6. When ordering electrical parts, always give the voltage and whether the current is alternating or direct. For alternating current it is also necessary to give the cycles. This information will be found on the brass plate attached to the left hand end of the crucible.
7. Please specify whether shipments are to be forwarded by first class mail, air mail, parcel post, express, or freight.
8. All parts are shipped f.o.b. Chicago.

## TABLE OF CONTENTS

### Connections for Installation

Location .....	9
Electrical Connections.....	9
Water and Drain Connections.....	9

### Assembling and Erecting

Motor .....	10
Motor Pulley .....	10
Metal Drip Cup.....	10
Mold Cover .....	10
Molds .....	10
Starting Strips .....	11
Testing .....	11
Heating Crucible .....	11

### The Pressure Oiler

Explanation .....	13
How to Remove the Air.....	14
Operation .....	15
To Replace the Piston Packing.....	15
To Keep Diffusion Tubes from Drying Out.....	16
To Clean the Diffusion Tube.....	16
Use Only Special Elrod Oil.....	16

### Starting and Production of Material

Preparing Starting Strips.....	17
Model E Machine.....	18
Model F Machine.....	18
Setting Puller Mechanism.....	18
Setting the Stroke Adjusting Mechanism.....	19
Setting the Cutting Head Stripper Plate.....	19
Setting Material Guide Plate.....	19
Inserting Mold .....	19
Sealing Mold .....	20
Starting Production .....	21
Table Showing Operating Conditions.....	21
The Intermittent Stroke Mechanism.....	22
The Plunger Gag.....	22
Do Not Become Impatient.....	22

### General Instructions

Unsealing the Mold.....	24
Care of Molds.....	24
Mold Lubrication .....	25
Bearing Lubrication .....	26
Stopping Position of Machine.....	26
Metal Guard Sleeve.....	27
Bowed Material .....	28
Cleaning Plunger and Well.....	28
If Shearing Pin Breaks.....	29

Correct Setting of Plunger Spring.....	29
Mold Cooling Chamber.....	29
The Quick Removable Plunger Clevis Pin.....	30
Plunger Height Adjustment.....	30
If Puller Wedge Slips.....	31
Breaks in Hairlines.....	31
Metal Temperature.....	31
Metal Level in Crucible.....	31
Positive Pull-Back and Safety Mechanism.....	32
Adjustment of Stationary Knife.....	32
Adjustment of Cut-Off Eccentric Stud.....	33
Adjustment of Clamp Mechanism.....	33
Cutter Head Tension Lever.....	33
Material Stacker.....	33
Material Guide Plate.....	34
If Material Buckles.....	34
To Remove the Puller Slide.....	34

## Instructions for Producing 1-Point Material on Models E and F Gas and Electric Elrods Having Pressure Oiler

Preparation.....	36
Sealing the Mold.....	36
Producing Material.....	37
Cutting and Stacking.....	37

## The Gas Elrod

General Instructions.....	38
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## Electrically Heated Crucible

Switch and Fuse Panel Circuit.....	39
The Crucible Heater and Thermostat Circuits.....	39
100 to 150 Volt Equipment.....	40
200 to 250 Volt Equipment.....	40
Heater and Motor Fuses.....	40
Test Lamp.....	40
How to Use the Test Lamp.....	40
Machine Must Be Grounded.....	41

## To Locate Electrical Trouble

Crucible and Thermostat Circuit.....	42
To Test the Motor Circuit.....	44
To Test Bottom Throat, Side Throat, and Sealing Heaters; 100 to 150 Volt Crucible.....	45
To Test the Throat and Sealing Heater Circuit; 200 to 250 Volt Equipment.....	47
How to Adjust the Thermostat.....	50
Care of Thermostat.....	50

## Illustrations

The Pressure Oiler.....	13
The Pulling Mechanism.....	35

The Test Lamp.....	40
Thermostat .....	43
Plate 1—Showing How Type Metal Is Melted, Lubricated, and Cast.....	52
Plate 2—Front View of Electric Machine (Model E).....	53
Plate 3—Stroke-Adjusting, Pulling, and Cutting Mechanism (Model E) ( <i>with Puller Wedge removed—View one</i> ).....	54
Plate 4—Stroke-Adjusting, Pulling, and Cutting Mechanism (Model E) ( <i>with Puller Wedge removed—View two</i> ).....	55
Plate 5—Rear View (Model E) ( <i>with Terminal Cover removed</i> ) .....	56
Plate 6—Cutting, Stacking, and Gage Mech- anism (Model E).....	57
Plate 7—End View, Showing Plunger Actu- ating Mechanism and Control Panel with Cover Removed (Model E).....	58
Plate 8—Gas Crucible with Cooling and Con- trol Parts (Model E).....	59
Plate 9—Gas Crucible Parts.....	60
Plate 10—Photographic Reproduction of 220 Volt Electric Equipment .....	61
Plate 11—110 Volt Electric Equipment.....	62
Plate 12—Showing Thermostat and Parts ( <i>with cover removed</i> ) .....	63

Plate 13—Control Panel Parts.....	64
Plate 14—Heaters, Resistors, and Switches.....	65
Plate 15—Screws, Nuts, Pins, and Washers.....	66
Plate 16—Pressure Oiler Parts.....	67
Plate 17—Model F Machine.....	68
Plate 18—Intermittent Stroke Mechanism Parts (Model F).....	69

## Price List of Parts

Frame Parts .....	70
Electric Crucible and Parts.....	71
Thermostat and Parts.....	76
Control Panel, Switch, and Resistor Parts.....	77
Mold Oiler and Parts.....	81
Pressure Oiler Parts.....	84
Driving Mechanism .....	87
Main Shaft and Cams.....	90
Cooling System Parts.....	92
Pulling Mechanism .....	94
Clamping Mechanism.....	101
Material Cutting-Off Mechanism.....	103
Stacking Mechanism .....	109
Gas Crucible and Parts.....	112
Plunger Mechanism .....	116
Miscellaneous Parts and Supplies.....	118
Screws, Nuts, Washers, Pins, Fittings, Etc.....	120

# CONNECTIONS FOR INSTALLATION

## Location

It is desirable to leave a space of about 18 inches between the back of the machine and any obstruction. This is necessary to provide room for cleaning and oiling. A space of at least 2 feet should be allowed at the left end in order to provide room for opening the electric panel box, also a space of 1 foot at the right end. The operator works at the front of the machine and requires a minimum of  $2\frac{1}{2}$  feet of space. If it is possible, however, more room in which to work is desirable.

## Electrical Connections

Power for operating both the heating elements and the motor is supplied to the machine at the panel box (see Plate 7) located on the left end of the machine. No. 10 wire is required and connections are made at L1 and L2 on the hand switch

in the panel box (See instructions for grounding the machine page 41.)

## Water and Drain Connections

Connections for both the inlet and drain are made at the rear of the machine, (see Plate 5). A shut-off should be provided in the main water supply pipe line and the water drain should be of sufficient capacity to handle the full stream of water. Actually, very little water is required.

The usual connections are  $\frac{1}{2}$  inch diameter pipe reduced to  $\frac{1}{8}$  inch diameter pipe at the machine for the water supply and  $\frac{1}{2}$  inch diameter pipe for the drain.

The water enters the mold housing at the bottom of the water jacket, circulates around the mold chamber and leaves at the outlet on the top, overflowing into the drain cup where the stream is clearly visible.



# ASSEMBLING AND ERECTING

## Motor

Except in the case of some foreign shipments, the motor is mounted in place and the motor lead wires connected. With the addition of the driving pulley, it is ready to run. The driving pulley should be placed on the motor shaft with the smaller diameter of the pulley toward the motor. The set screw in the pulley should bear against the flat surface of the motor shaft and be firmly tightened.

The motor armature must rotate in a clock-wise direction as indicated by an arrow on the driven pulley.

In those cases where the motor is shipped separately, the motor should be fastened to the motor table (using the four screws provided) with the pulley side of the motor away from the crucible end of the machine. The screw connections should be taped with rubber and friction tape.

## Motor Pulley

When the belt is run from the small pulley on the motor to the large pulley on the counter shaft, a

speed of approximately 50 strokes per minute will be obtained. When the belt runs from the large pulley on the motor to the small pulley on the counter shaft, a speed of approximately 80 strokes per minute will be obtained. For operating speeds see the table on page 21.

## Metal Drip Cup

The metal drip cup should be placed on the main table under the mouth of the mold to catch metal drippings.

## Mold Cover

The mold cover drops over the outer end of the mold chamber and should always be in place when material is being produced as a protection in the event that the strip breaks.

## Molds

Molds are the separate iron units with openings at each end. Each mold bears a serial number and a

style number. The position of the mold, when placed in the mold chamber, should always be with the metal intake toward the bottom or floor of the chamber, except in the case of one-point molds, which have the metal intake at the top. The metal intake end of the mold has a short slot or round hole—the opposite end has a long beveled slot and is the mouth of the mold. The mold protrudes about one inch when placed in position in the mold chamber.

When casting below 24 pt. on a Model F, the mold is first placed in the Mold Adapter EC1310 $\frac{1}{2}$ , Plate 18.

## Starting Strips

Starting strips are sent with each machine. These lengths of material are not samples—they will be imperatively needed in starting operations.

## Testing

After the machine is set up and all electrical and water connections are made, remove the Plunger Pin, EC1318B, Plate 5. Turn the machine over by

hand a few times and if everything seems to be functioning properly, turn on the motor switch and allow the machine to run for a few minutes.

Observe the action of the machine and the function of each part. See that all bearings and moving parts are thoroughly lubricated. For bearing lubrication use a good grade of medium machine oil. NEVER USE MOLD OIL FOR BEARING LUBRICATION.

If the machine seems to be running smoothly and without effort, turn off the motor switch and replace the plunger pin.

## Heating Crucible

Make sure that the machine is in the regular stationary position with the plunger at the bottom of its travel and the "zeros" on the front of the puller slide and the puller housing together.

As the machine is shipped, there is sufficient metal in the crucible to just cover the crucible heater. Enough metal should be added so that it will bring the metal level (when melted) up to within three quarters of an inch of the top of the crucible. The sealing valve is also in the "closed" position. This

is necessary in order to prevent the metal flowing out through the mold housing after the metal becomes molten.

Turn on the crucible heater at the panel box and the bottom throat switch at the front of the machine. Melt out the crucible. This should take about one hour. The thermostat is adjusted when it leaves the factory and should automatically main-

tain the temperature of the metal in the crucible between 535 and 550 degrees Fahrenheit. If the thermostat should accidentally get out of adjustment it may be readjusted by turning the adjusting screw. (See Page 50.)

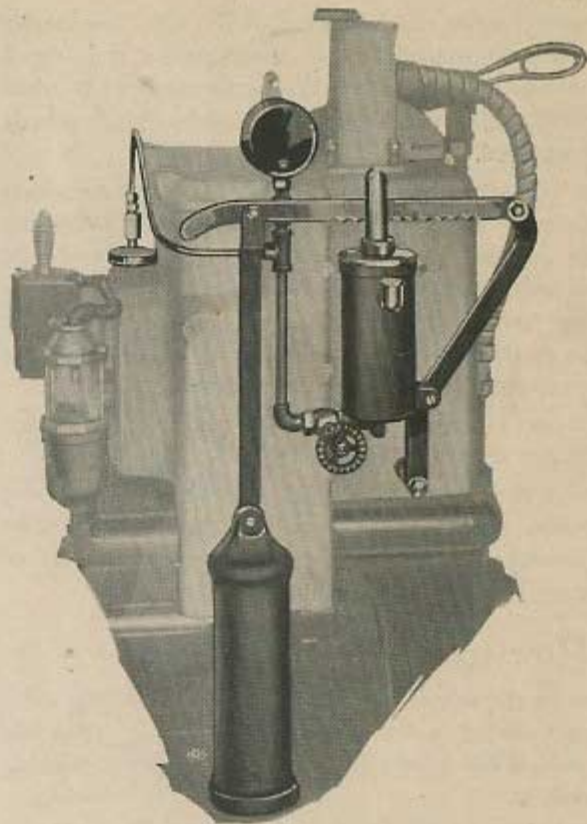
After the metal in the crucible has attained the proper temperature, turn off the bottom throat switch until ready to begin actual production.

## THE PRESSURE OILER

The principle and design of the pressure oiler is such that it eliminates the uncertainty of operation which necessarily accompanies the use of ball-check valves which are submerged in molten metal. Due to the presence of dirt, dross and other foreign material in the molten metal, these valves frequently fail to close and allow metal to force its way up past the valves and clog the oil tube.

The pressure oiler is a device which forces oil into the oil diffusion tube at a uniform rate, depending upon the amount of pressure used. From the diffusion tube, the oil emerges in a gaseous state and is taken up by, and intimately mixed with, the molten metal flowing around the end of the diffusion tube and is thus carried into the mold. Upon reaching that part of the mold which is below the flash temperature of the oil, this gas is condensed and again assumes the form of oil, thoroughly lubricating the inner walls and cores of the mold and the surface of the material.

With the constant flow of oil, in very minute quantities, which is possible with the pressure oiler, the outcoming material may be thoroughly lubricated and yet avoid any excess of oil which would ordi-



(See Plate 16 for detailed parts)

narily tend to cause "breaks" in the face. The ideally lubricated material is one that shows a gray sheen over its entire surface. When the material is lubricated in this manner, the life of the molds is greatly prolonged.

The quantity of oil required, which changes with the point size and face, may be varied by increasing or decreasing the pressure upon the oil and this, in turn, is attained by moving the Pressure Adjusting Lever, EC1277, Plate 16, to the left (as one faces the front of the machine) to decrease the pressure, and to the right to increase it.

Any change of pressure is immediately indicated by the Pressure Gauge, EC1279.

A little experience with this type of oiler will enable the operator to tell at a glance just what pressure is required for the particular kinds of material which he produces.

## How to Remove the Air

In the initial filling of the oiler, it is necessary that all air in the pressure cylinder, oil feed line and oil diffusion tube be removed. This is done as follows:

With the Shut-Off Valve, EC1259, closed, remove the piston from the oiler body by first remov-

ing the Pressure Oiler Adjusting Lever Fulcrum Screw, EC1276 $\frac{1}{2}$ , thus allowing the pressure lever to be pulled through the slot in the piston. Then loosen the three screws which fasten the cover to the oiler body, after which the piston may be pulled out of the cylinder. Fill both the outer and inner sections of the oiler body with Special Elrod Oil and reassemble.

Next, insert a wire into the hole at the top of the Oil Diffusion Tube, AEC1281, and keep filling this hole with oil while slowly removing the wire until this tube is entirely full. Now grasp the end of the pressure adjusting lever and lift upward until the stop prohibits any further movement. Then release the adjusting lever. The raising of the piston to the highest point of its travel has allowed a charge of oil to be drawn in through a port in the cylinder wall below the piston.

Loosen the union at the top of the oil diffusion tube two or three turns and open the shut-off valve slowly. You will note that oil and bubbles of air will be forced out of the end of the oil feed line. As soon as the air stops coming out, shut off the valve and tighten the union.

Then open the shut-off valve two or three turns and you will note that the pressure indicated on the

gauge will change as the pressure adjusting lever is moved inward or outward, and if you will observe closely, you will see that a very small quantity of oil is being forced out of the bottom of the oil diffusion tube. If the machine is hot, this will most likely be visible in the form of smoke emerging from the mold chamber. You will also note that the greater the pressure, the greater the amount of oil which is forced out. Then close the shut-off valve. The oiler is now ready to operate.

## Operation

Proceed to seal the mold and start the machine in the regular way. After the machine has taken a few strokes, open up the Shut-Off Valve, EC1259, and set the pressure adjusting lever so that the hand of the pressure gauge assumes the proper position for the material which is being produced. After the machine has run for a few minutes, observe the out-coming material and adjust the pressure to give more or less oil, as indicated by the condition of the material. About five minutes will be required for the effect of any pressure change to become noticeable on the strip. At the end of the run, close the shut-off valve before stopping machine. This will avoid an excess of oil accumulating behind the mold while the machine is idle.

As the oil under pressure is used, the pressure adjusting lever will be pulled downward by the weight until it reaches the bottom of its travel. Just before this takes place, the operator should close the shut-off valve and raise the lever to the top of its travel, and again open the shut-off valve. This re-charges the oiler with enough oil to last for three or four hours, depending upon the amount of oil being consumed.

Keep the oil reservoir in the outer section of the oiler full. If the level of the oil is allowed to fall below the port in the pressure cylinder, air will be drawn into the cylinder when the piston is raised for re-charging. When this happens, the air must be removed from both the oiler and the oil feed line as in the preceding instructions. An air bubble will very materially interfere with the proper functioning of the oiler. It is well to form the habit of filling the oiler through the oil cup twice daily.

## To Replace the Piston Packing

After the oiler has been in service for some months, it may be necessary to replace the leather at the bottom of the piston. This may be done as follows: Remove the piston from the cylinder (as outlined in a preceding paragraph) and remove the

screw and retaining washer from the lower end of the piston. This will allow the leather packing to be replaced by a new one. Reassemble the packing, packing retainer, and the packing retainer screw and tighten the screw very lightly. Then insert the piston in the well and move it up and down a few times. This will centralize the packing in relation to the piston. Again remove the piston and tighten the screw firmly, being careful not to move the leather packing.

## To Keep Diffusion Tubes from Drying Out

If the Elrod is kept heated and not used for several days at a time, it causes the diffusion tube to dry out and it will sometimes be a matter of several hours before the oiler will start working properly when production is again resumed. If the machine is to be idle for more than a day at a time, the diffusion tube should be removed and kept immersed in Special Electric Elrod Oil. Always keep reserve tubes immersed in this oil.

## To Clean The Diffusion Tube

After a diffusion tube has been in service for some time, there will be a deposit of dirt, etc.,

around the lower end of the tube which may, in some cases, interfere with the proper flow of oil. If this happens, remove the diffusion tube, scrape off the deposit from the outside of the tube, remove the screw in the bottom of the tube and clean out the threads in the screw as well as the threads in the lower end of the tube. Replace the screw and tighten firmly. Do not disturb the asbestos packing in the tube nor try to repack it.

After the oiler has been in service for some time (usually a matter of several months) it may develop that the oil does not feed quite fast enough. When this happens return the oil diffusion tube to the Ludlow Typograph Company of Chicago, Illinois, for repacking.

## Use Only Special Elrod Oil

Never use any other than the Special Elrod Oil sold by the Ludlow Typograph Company. For the convenience of our customers this oil is packed in both one and five gallon cans. Keep the can closed at all times to avoid dirt and other impurities from getting into the oil. These impurities are frequently carried over into the diffusion tube interfering with its proper functioning and often clogging it entirely, this making it necessary for the tube to be returned to us for repacking.

# STARTING AND PRODUCTION OF MATERIAL

## Preparing Starting Strips

ALL STARTING STRIPS MUST BE SHAVED UNDERSIZE so that they will enter the mold easily, thereby avoiding any possibility of damaging the inner surface of the mold.

The shaving operation should be performed on the sides as well as the top and bottom of the end of the strip which is to be inserted in the mold. It is usually done by scraping the strip with the end of a one inch flat file which has been ground smooth and square.

The strip of material is laid on a flat surface and the scraper pushed over the material three or four times, removing a slight amount on the two sides, top and bottom for a distance of about 8 inches from the end.

For a two point mold use a two point lead shaved on the end to one and one-half points. For a twin mold use two strips as above. For three point material use a three point lead shaved to two and one-half points. For four point material use

one full sized two point lead and one that has been shaved to one and one-half points. For six point material use a six point slug which has been shaved to five and one-half points.

For twelve point solid material use one full sized six point slug and one that has been shaved to five and one-half points.

The procedure for starting the 12 point hollow slug is slightly different from starting the solid strip material. This is due to the cores in the molds.

For the 12 point hollow slug use a 6 point slug and one 2 point lead for the center part of the starting strip. Then scrape off the ends of two more 2 point leads and place these on the outside, one on each side of the center portion, and let them extend 3 inches to the left of the center portion after you have inserted the strips in the machine. Shove the two outside strips into the mold as far as they will go easily and the center portion (consisting of the slug and one lead) should also be pushed into the mold until it strikes the core which extends nearly to the mouth of the mold. After the



mold is heated, keep shoving the two outside strips into the mold as you open the valve in the well, meanwhile being sure that the center portion is kept firmly pressed against the core in the mold.

The preparation of strips for starting the 18, 24 and 36 point cored molds is as follows:

Reamers marked to indicate the size are furnished. Using the proper reamer, ream the core holes for a distance of at least two inches and scrape off all four sides of the material for a distance of about eight inches from the reamed end. Material about one point in thickness should be removed from all four sides. When properly prepared, the starting strip should, without difficulty, slide into the mold for at least two inches.

If this is not the case, it shows that the starting strip has not been properly prepared. NEVER FORCE THE STARTING STRIP INTO THE MOLD. This is true of all molds, but particularly true of cored molds as it is very easy to damage the cores and ruin the mold if force is applied.

## Model E Machine

The Model E machine is capable of producing material from one to 18 point, inclusive, without changing parts.

## Model F Machine

Model F machine will produce from one to 18 point, inclusive, without changing parts but if it is desired to produce 24 point, the release plate, the clamp bracket, the stationary knife and the material holding lever must be replaced with similar parts marked "for 24 point." (The puller wedge plate may be used for all sizes from one point to 30 point, inclusive.)

If it is desired to produce 36 point, the above parts, including the puller wedge plate, must be removed and replaced with similar parts marked "for 36 point."

With the exception of the stationary knife, no close adjustments are necessary in changing these parts. (Detailed instruction for setting stationary knife will be found on Page 32.)

## Setting Puller Mechanism

The puller mechanism must be set to accommodate the various sizes of material to be produced. This is done by placing the numbered gauge blocks on the puller mechanism so that the number to correspond with the size desired is just at the left of the puller wedge hinge (all other blocks are placed to the right of the hinge).

For instance, if it is desired to run 12 point material, all of the blocks up to and including the 12 point block would be placed at the left side of the hinge and the others at the right side when the machine is in running position.

## Setting the Stroke Adjusting Mechanism

The scale on the fixed part of the stroke adjusting mechanism indicates the stock thickness in points and the scale on the movable part indicates the stroke in picas. This mechanism should be so set that on starting, no stroke will be taken. In other words, if it is desired to produce 12 point material, the Adjusting Screw, EC1478, Plate 3, should be turned so that the "1" on the Movable Plate, EC-1475A, will be just a little to the right of the "12" on the fixed scale. Note: This setting is for starting only; later the stroke should be adjusted to approximately correspond with the table on Page 21.

## Setting the Cutting Head Stripper Plate

The cutter head stripper plate must be adjusted to correspond with the particular size which is to be

run. This is done by raising the operating knob on the top of the cutter head. This allows the numbered dial to be turned to the proper position.

## Setting Material Guide Plate

Material Guide Plate, EC1604B, Plate 6, should be adjusted for the size stock which is to be run. The proper position of the guide plate is indicated by point size markings on the table.

## Inserting Mold

About ten minutes before it is desired to start the machine, select the mold which you wish to use, wipe off the excess oil and stand it on end on the lid of the crucible with the large open end of the mold downward. This will warm the mold and allow any oil remaining on the inside of the mold to drain out.

Place the mold in the mold chamber with the screw heads facing you and with the small opening toward the left. Push the mold back until it stops against the oil diffusion tube. The mold should slide in freely and if it does not, this is an indication that some metal or foreign substance still remains on the walls of the mold chamber and should be removed.

When running sizes below 24 pt. on the Model F machine, it will first be necessary to insert the mold into the Mold Adapter, EC1310 $\frac{1}{2}$ , Plate 18. Otherwise the above rules apply.

## Sealing Mold

Check over machine to ascertain if the following have been properly adjusted: Puller mechanism, stroke adjusting mechanism, cutter head stripper plate, material guide plate and drive belt.

If these settings are correct and the starting strip has been properly prepared, the next step is to seal the mold.

This is done as follows: Turn on the bottom throat switch and the "high" side throat switch and the sealing switch. Place the starting strip in position by running it through the cut-off, the clamping and the pulling mechanism.

It may be necessary to open the puller slide wedge housing by swinging it back on the hinge rod in order to insert the starting strip. This is done by releasing the hand clamp nut and pushing the slide to the right. At this point there is an enlarged opening in the tee slot which provides clearance for the clamp bolt head and permits the slide to be swung upward.

After the starting strip has been run through the pulling mechanism, it should be pushed gently into the mold. NEVER FORCE THE STARTING STRIP INTO THE MOLD AS THIS WILL INVARIABLY DAMAGE IT.

Some operators find it advisable to lay a strip of 2 pt. on the material table and let the right-hand end of the starting strip rest upon the 2 pt. piece while sealing the mold. This tends to keep the mold parallel to the bottom of the mold chamber and is especially practicable when sealing the larger sizes such as from 18 pt. up.

Two or three minutes' wait will be necessary while the mold reaches the temperature at which the starting strip will begin to melt. At this time the metal in the indicator (the indicator is the cup-like receptacle just behind and above the mold chamber) should be almost entirely melted.

When the mold is hot enough so that the starting strip will slide in freely, place the Sealing Plate, AEC1070, Plate 18, over the mold and against the front of the mold chamber. Then, while constantly pressing the strip into the mold, open the sealing valve. After a few seconds wait, the molten metal will start to flow out around the sides of the mold.

Close the water drain valve and open the water valve. This will allow a stream of water to flow

around the mold chamber and will stop the flow of metal by "freezing" it.

## Starting Production

Close the sealing valve and adjust the water, bottom and side throat switches as indicated on the accompanying chart. Observe the metal in the indicator. After it has become solid for about one eighth of its length (larger sizes such as 12, 18, 24 and 36 pt. will require more of the indicator solid before starting) turn on the motor switch.

After the machine has made a few revolutions, gradually increase the length of stroke until it cor-

responds with the stroke length shown in the accompanying table. While doing this, open the oil valve and set the pressure adjusting lever so that the proper amount of oil appears on the strip.

Although conditions vary somewhat in different localities, due to fluctuations of electric voltage and temperature of cooling water, the accompanying table will provide operator with data which will assist him in formulating an operating chart which is particularly adapted to his conditions and needs.

After the operator has had a little practice in starting various sizes of material, he will find that, generally speaking, the smaller sizes may be started

TABLE SHOWING OPERATING CONDITIONS

Material	Speed	Stroke in Ems	Bottom Throat Switch	Side Throat Switch	Diameter of Water Stream	Portion of Indicator Which is Melted
1 pt. Lead (Twin)	High	3	On	High	$\frac{1}{8}$ in.	$\frac{1}{2}$ in.
2 pt. Lead (Single)	High	6	On	High	$\frac{1}{8}$ in.	$\frac{1}{2}$ in.
2 pt. Lead (Twin)	High	5	On	High	$\frac{1}{8}$ in.	$\frac{1}{2}$ in.
2 pt. Rule	High	5	On	High	Steam only	$\frac{3}{8}$ in.
3 pt. Lead	High	7	Off	Med.	Full	$\frac{1}{4}$ in.
4 pt. Rule	High	5	On	Off	Full	$\frac{3}{8}$ in.
6 pt. Slug	High	6	Off	Med.	Full	$\frac{1}{4}$ in.
6 pt. Rule	Low	5	Off	High	$\frac{1}{8}$ in.	$\frac{1}{4}$ in.
12 pt. (Cored)	Low	6	Off	Low	$\frac{3}{8}$ in.	$\frac{3}{8}$ in.
18 pt. (Cored)	Low	5	Off	Low	$\frac{3}{8}$ in.	$\frac{1}{2}$ in.
24 pt. (Cored)	High	6	On	Low	Full	$\frac{1}{4}$ in.
36 pt. (Cored)	Low	6	On	Low	Full	$\frac{1}{8}$ in.

NOTE: The 24 and 36 pt. sizes are run with intermittent stroke.

faster, i.e., the pulling of the material can take place sooner after the sealing operation, than is possible with the larger sizes.

## The Intermittent Stroke Mechanism

As shown on the accompanying chart, 24 pt. and larger sizes are run with the intermittent stroke mechanism "On" and all sizes below 24 pt. with this mechanism "Off."

When in the "On" position, the pulling mechanism is idle for two strokes, then pulls one stroke, then idles again, etc. This is necessary to allow the larger sizes of material sufficient time to cool before being pulled from the mold.

## The Plunger Gag

The plunger gag is designed to assist the operator in starting the larger sizes of strip material, such as 12 pt. solid rule and 18, 24 and 36 pt. rules and slugs. This device is standard equipment on the Model F machines but may be, if desired, applied to Model E machines.

If the operator attempts to start these thicker materials while too large a part of the metal in

the indicator is molten, trouble may result. In other words, if the machine is started while the congealing point of the strip is too near the front of the mold, when the machine is started, there is a possibility that the down stroke of the plunger will force the strip out of the mold.

By using the plunger gag this possibility is eliminated. With the plunger out of action, naturally there is no pressure to force the strip out of the mold. Consequently, the machine can be started just as soon as the seal is made.

The operation of the plunger gag is simple. As soon as the mold is sealed in the mold chamber, press down on the plunger lever with the left hand and turn the plunger gag into position with the right. This holds the plunger in an upward position. The machine may then be started and after a few strips of material have been run and the heat, cooling and stroke properly adjusted, the plunger gag may be turned back to its original position, thus allowing the plunger to become operative. This may be done while the machine is running.

## Do Not Become Impatient

It will usually be from ten to fifteen minutes after starting on any material before the machine

will commence to produce its best material. Adjustments of oil, heat, water and stroke do not show immediate effects. All of these adjustments should be made a little at a time. You should wait several minutes for the effect to become apparent before

making another adjustment. This is particularly true of electric machines. As soon as you have had a little experience with the machine, you will know almost instinctively just where these adjustments should be set to get the best results.

## GENERAL INSTRUCTIONS

### Unsealing the Mold

Before removing the mold, see that a supply of corresponding material in 30 inch lengths has been laid by for use as starting strips when the mold is next used.

Unseal the mold only when the machine is in its regular stationary position, with "zeros" together.

With the mold cover off, shut off the water, open the water jacket drain cock and turn on the sealing heater, side and bottom throat heater switches. This will melt the metal which seals the mold in the chamber.

If the mold does not come out readily, do not try to force it but wait a minute or so until it is hotter and the metal around the sides of the mold starts to run out into the drip cup. The mold can then be pulled out. Immerse it in the metal pot with the large opening downward and hold it there for a moment or so. Pour some of the special Elrod oil into the small opening, then remove the mold and tap it gently (large opening downward) on a block of wood.

As soon as the mold is removed from the mold chamber, be sure to turn off the side, bottom throat and sealing heater switches.

Holding it up to the light, look through the small end of the mold and see if there is any metal or foreign substance adhering to the inner surfaces of the mold. If there is, repeat the process until the inside of the mold is absolutely clean.

Wipe off the outer surface of the mold with a clean rag and immerse the mold, while hot, in the mold receptacle provided for the purpose, AEC 1020, Plate 2, (this should be kept full at all times with the special Elrod oil).

### Care of Molds

The sides of Elrod molds are made of cast iron. They require a thin oil film on the inner surface of the mold to permit the material to pass through the mold smoothly. This film will not stand up indefinitely, but will dry out if exposed to the air any length of time, or if the mold is subjected to excessive heat in sealing or unsealing operations.

We lay special stress on the following: Practically all mold trouble is caused by forcing starting strips into the mold, thereby damaging the inner surfaces, or over-heating the mold when same is being removed from the machine. Mold should never be left in the mold chamber more than a very short time after inside reaches a metal-melting temperature. When water is turned off, and any throat or sealing heaters are turned on, the operator should not leave the machine for even a minute.

It is of utmost importance that the molds be cared for properly. Molds may easily be damaged by careless handling, resulting in production of imperfect strip material or, in extreme cases, the inability to produce any material at all from the damaged mold.

If the mold will not operate satisfactorily, it is not advisable to open it because of the difficulty in reassembling it properly without the necessary tools and jigs. If sent to the factory at Chicago it will be re-treated and tested before being returned.

## Mold Lubrication

Supplementing the information under the section headed, "The Pressure Oiler": Proper lubrication of both outcoming material and mold is probably one

of the most important phases of Elrod operation.

Too little oil or the absence of any oil on the material is indicated by an excessively bright, dry appearance, and this condition is very injurious to the mold. The machine should not be run for even one minute without the proper amount of oil on the strip.

Excessive oil supply will appear on the outcoming material as a heavy, greasy film and the printing surface of the material will probably have a ragged and irregular edge or may be marked at intervals with a "break" or "pit" in the face.

As before mentioned, the ideally lubricated material is one that shows a uniform gray sheen over its entire surface and has a smooth unbroken printing face. When such a condition is present, the life of the molds is greatly prolonged.

After a little practice on the part of the operator he will be able to gauge quickly and correctly the proper setting of the oiler to obtain the desired results.

It is exceedingly important that only the right kind of oil be used. The requirement is for a medium heavy oil that will vaporize only at a very high temperature. The use of any other oil than "Special Elrod Oil" will result in poor material,



damaged molds and unsatisfactory results. THE NECESSITY OF USING THIS PARTICULAR OIL CANNOT BE STRESSED TOO MUCH. To insure the proper grade, the Ludlow Typograph Company carries a supply of it for the convenience of their customers. The oil is packed in one and five gallon cans.

## Bearing Lubrication

Regular lubrication with light machine oil is imperative if the machine is to give good results for any length of time.

There are three main cam shaft bearings which should be oiled with a good grade of machine oil through the tubes extending from the bearings up through the table top. Two of these oil cups are located at the rear of the table and one at the left end near the hand wheel. The counter-shaft bearing is lubricated by a grease cup, in which a good grade of cup grease should be used.

The puller slide may be lubricated by putting oil directly on the gibs and by putting oil in the five small oilers located on the four corners and in the center of the slide. Oil should be put in the center oiler only when the machine is in neutral position;

with the "zeros" on the slide and slide housing together.

The gear housing under the table should be packed with grease once every six months. This can be done by removing the six screws which fasten the gear housing cover and filling the cover with Special Elrod Gear Housing Grease, AEC1042, up to within one quarter of an inch from the overflow. Before filling, flush out the cover to remove any metal chips or dirt that may have accumulated.

Other moving surfaces and cam faces can be lubricated directly or by means of the oil holes provided in these parts.

NEVER USE ELROD MOLD OIL FOR BEARING LUBRICATION as it is absolutely unfitted for this type of service.

## Stopping Position of Machine

Always be sure to stop the machine with the two "zeros" on the front of the puller mechanism together and the "zero" on the hand wheel opposite the "zero" on the frame. Stopped in this position, the plunger is on the downward stroke and there is metal under pressure between the mold and the bottom of the plunger. To relieve this, open up the seal-

ing valve and push upward on the handle at the left end of the plunger connection lever. This will force the plunger to the bottom of its travel and will relieve the pressure below it. If this were not done, a considerable quantity of metal would run out of the mold chamber when the mold was removed.

## Metal Guard Sleeve

It should never be necessary to remove the Metal Guard Sleeve, EC1332½B, Plate 5, from the crucible. However, if the oil diffusion tube is not removed every two or three months and the accumulated carbon scraped from its outer surface, this accumulation will "build up" until it will be impossible to remove the oil diffusion tube. It will then be necessary to remove the metal guard sleeve.

To remove the guard sleeve, stop the machine in the regular stationary position; viz., when the "zeros" on the puller slide and the puller slide housing are together. Remove the mold, shut off the oiler valve and disconnect the oil feed line.

Scratch a mark on the guard sleeve and on the crucible so that the guard sleeve may be returned to its original position. Turn on the bottom throat, side throat and sealing heater switches. When the metal

in the indicator is entirely melted, unscrew the two larger screws in the upper surface of the guard sleeve three or four turns. These two screws hold the guard sleeve in place. Loosen the two small screws which, extending through the guard sleeve, hold the ring in place, then unscrew the guard sleeve. The throat and sealing heater switches may then be shut off.

Before replacing the guard sleeve, make sure that the threads in the crucible and on the guard sleeve are thoroughly clean. Also clean the ring and the surface of the crucible where the ring rests—THIS IS IMPORTANT. Apply a little graphite and oil on the guard sleeve threads and allow the guard sleeve to rest on the crucible until it has attained approximately the same temperature as the crucible, after which it may be screwed into place, being careful to register with the scratch on the crucible.

If, after careful consideration, it appears that the guard sleeve does not fit snugly when so registered, it may be given exactly another half turn. If it is evident that considerable force will be necessary to complete the full half turn, *do not attempt it*. This is a matter requiring careful judgment as damage to both guard sleeve and crucible may result if too much force is used.

Screw down the two larger screws, making certain that they enter the two holes in the crucible. Then clamp the ring firmly with the two small screws. It is of utmost importance that this ring be forced tightly against the surface of the crucible as the proper fitting of this ring is a protection against molten metal working down into the wiring and causing serious trouble.

## Bowed Material

If the operator is careful to clean off the underside of the mold and the bottom of the mold chamber before inserting the mold, and holds the mold firmly on the bottom of the chamber and parallel to the sides of the chamber while the sealing is taking place, no trouble will be experienced with "bowed" material. That is, provided the mold is in proper condition and the material is lubricated evenly over its entire surface. If either the top or the bottom of the strip is lubricated while the opposite edge is dry, this will cause a stretching of the material along the dry edge and will cause the strip to "bow."

Some operators find it advisable to lay a strip of 2 pt. on the material table and let the right-hand end

of the starting strip rest upon the 2 pt. piece while sealing the mold. This tends to keep the mold parallel to the bottom of the mold chamber and is especially practicable when sealing the larger sizes such as from 18 pt. up.

## Cleaning Plunger and Well

At least twice weekly the well and plunger must be cleaned. To do this you proceed as follows: After finishing a run of material, shut the machine off, turn off the bottom and side throat heaters and leave the sealing switch in the "off" position. Let the water run. The reason for the foregoing is that the mold must be in the mold chamber when the plunger is pulled out of the well, otherwise all of the metal in the pot would run out through the mold chamber.

Remove the cotter key holding in the plunger pin, pull out the plunger pin and raise up the hinged portion of the pot cover. Open the sealing valve. Pull straight up on the plunger lever until the plunger is nearly out of the well, then pull the plunger lever slightly to the right so that it will clear the plunger connection lever. This will allow the plunger and the attached lever to be removed

from the machine. While it is still hot, wipe or brush it off. If all the metal and foreign substance adhering to it does not come off readily, stick the plunger in the molten metal and repeat the process.

Scrape the well thoroughly, using the special El-rod well scraper which may be secured from the Ludlow Typograph Company. The blades of the scraper should be kept sharp at all times and should be so adjusted that they bear tightly against the inner surface of the well. Full instructions covering these points are found on the tag which is attached to the well scraper.

Replace the plunger in the well. Move it up and down a few times by hand to see that it works freely. If it binds, this is an indication that either the well or the plunger, or both, is not thoroughly cleaned. The cleaning process should be repeated until the plunger works perfectly free in the well. Replace the plunger pin and its cotter key. Then close the sealing valve.

## If Shearing Pin Breaks

The shearing pin, EC1318B, Plate 5, which connects the plunger lever and the plunger connecting rod is made of soft steel and is so designed that should the machine be turned on while the metal

in the crucible is frozen, this pin will shear, thereby preventing damage to the machine.

If this pin shears while the metal in the crucible is molten, it indicates that there is an accumulation of foreign material on the plunger or in the well, or both, that is causing the plunger to bind.

## Correct Setting of Plunger Spring

The plunger spring, EC1323, Plate 7, may be adjusted by screwing the adjustment nut, 269, Plate 7, either up or down. For ordinary operations the distance between the adjusting nut and the lock nut at the top of the rod should be  $1\frac{3}{4}$  inches. It may be found necessary, when running face rule in the smaller point sizes, to use more pressure in order to have the rule face filled perfectly. This may be obtained by screwing the adjusting nut in a clockwise direction, thereby, shortening the spring and increasing its tension. On the larger sizes the spring adjustment should be returned to normal. It is seldom necessary to change this adjustment.

## Mold Cooling Chamber

In some sections of the country the water is highly alkaline. If no steps were taken to prevent

it, the cooling chamber would, in time, become completely clogged. Where this condition is present, the following instructions apply: In almost any power house or factory having steam boiler installations you will be able to procure "boiler compound." Raise the water outlet pipe and pour a few teaspoonsful of this compound into the water jacket after having closed the drain valve. If this is done on Saturday noon and left there until the following Monday, it will effectually remove the week's deposit of lime and will not damage the metal in any way.

## The Quick Removable Plunger Clevis Pin

It sometimes happens that, while casting, the machine stops in such a position that it is impossible to turn the machine over to the "zero" point. This means that the plunger is in a raised position and that all the metal in the crucible will drain out through the mold chamber when the mold is removed.

The Quick Removable Plunger Clevis Pin, AEC1319A, Plate 2, has been designed to permit the

plunger to be lowered, regardless of the position of the machine. It is only necessary to grip the knurled head of the clevis pin and pull the pin out. This will allow the handle end of the plunger lever to be raised, thereby forcing the plunger down into the well, closing the port. If the sealing valve is also closed, no metal can escape through the mold chamber.

## Plunger Height Adjustment

The correct setting of the plunger is with the bottom of the plunger one-sixteenth of an inch above the bottom of the port in the well when the plunger is at the highest point of the stroke.

To obtain this adjustment take a piece of one-sixteenth inch rod and bend a right angle on one end of it about five-eighths inch long. Push the rod down between the heating element and the rear wall of the well. Turn the rod so that it enters the port and then push the plunger down upon it.

Adjustments may be made as follows: Loosen the check nut, Part 269, Plate 7, and screw the plunger rod clevis, EC1316, Plate 7, up or down as desired.

## If Puller Wedge Slips

It sometimes happens that, on starting, the first few strokes will carry too much oil. Frequently this causes the puller wedge to slip. Some operators keep an oil can filled with gasoline or carbon tetrachloride available. A few drops of either one of these liquids applied to the outer surface of the material just before it enters the puller mechanism will overcome this slipping.

## Breaks in Hairlines

Occasional breaks may be noticed in the face of rules and borders. The cause of this may usually be determined by visual examination to see whether the breaks are sharp or round in character. If the edges are rounded, it indicates that too much oil is being used or that the oil is not properly distributed over the entire surface of the strip. This may be corrected by shutting off a part of the oil supply or by adjustment of heat and water.

If the breaks are sharp, the trouble probably lies in a lack of oil or too long a stroke. Other causes may be from a damaged mold, or from improper heat and cooling conditions.

## Metal Temperature

The thermostat, AEC1340EA, Plate 7, when properly adjusted, should maintain the crucible temperature at between 535 and 550 degrees Fahrenheit. If for any reason there is a deviation from this temperature, the thermostat may be adjusted as follows: Lift up the aluminum cover and turn the adjusting screw, Part EC4006E, Plate 12, in a counter-clockwise direction to increase the temperature, or in a clockwise direction to lower the temperature. (For instructions covering complete adjustments see Page 50.)

If the crucible temperature is too low, it is usually indicated by brittle material, and sometimes the material breaks off, the break taking place near the rear of the mold. If the temperature is too high, there will be openings in the material, or the material may break near the outside end of the mold.

## Metal Level in the Crucible

The crucible will hold eighty pounds of molten metal, when filled to within three-quarters of an inch from the top. The operator should try to maintain the metal level at this point at all times. If the

metal level is allowed to become too low and several pigs are put in at one time, in order to restore the proper level, it will cause a temporary drop in the crucible temperature, which will in turn give an imperfect printing face.

If the metal level is allowed to drop below the top of the crucible heater, this heater is likely to become damaged by its exposure to the air. We recommend the use of a Margach metal feeder, which not only maintains the proper level, but is the means of saving considerable time in charging the crucible.

## Positive Pull-Back and Safety Mechanism

A bracket, EC1755, Plate 4, is attached to the right-hand end of the puller slide and part EC1759A, Plate 3, is attached to it in such a way that the cutter head will be automatically returned to normal position after it has moved to the right during the cut-off operation.

When properly adjusted, the knurled screw, EC1756, Plate 3, should leave a gap of about one thirty-second of an inch between the screw and

the bracket, when the puller slide has moved to the end of its travel nearest the crucible. This adjustment may be obtained by loosening the set screw, EC1682½, Plate 3, and turning EC1756 in or out as desired.

A safety device is provided so that the gage rod, AEC1628B, Plate 6, will open up at the closed joint if for any reason the outcoming material jams at the gage. This telescoping rod is held together by spring EC1633½A, Plate 6.

## Adjustment of Stationary Knife

To adjust stationary knife, loosen the two screws EC1219, Plate 6, then push forward on the movable knife until the end of the movable knife passes the end of the stationary knife. Now bring the stationary knife, EC1619½A, Plate 3, up against the movable knife, so that they barely touch. In this position bring the stationary knife adjusting screw, EC1618½, Plate 3, to just bear against the angular side of the stationary knife. Then tighten the two screws EC1219. Push the movable knife forward a few times to make sure that it does not strike the stationary knife, yet will just shear a piece of cigarette paper held between the two knives.

## Adjustment of Cut-Off Eccentric Stud

EC1510, Plate 3, may be turned after loosening set screw EC1115, and this controls the travel of the movable knife. Proper adjustment is one that will allow the bottom of the movable knife to just pass the stationary knife at the farthest forward point of its travel.

## Adjustment of Clamp Mechanism

The amount of travel given the material clamp is controlled by the eccentric stud, Part EC1510, Plate 5. This may be turned after loosening the set screw Part EC1115. The proper adjustment is one that enables the clamp to just grip a piece of the thinnest material which is to be produced.

## Cutter Head Tension Lever

This adjustable lever, Part EC1770, Plate 6, is located at the front of the machine below the material table and is used primarily to enable the cut-off mechanism to function properly when cutting

short lengths. For the smaller point sizes very little tension is necessary—or when machine is being run at low speed. However, when running the larger sizes or when the machine is being run at high speed, it may be necessary to increase the tension on the cutter head by pulling the lever to the right. Use only as much tension as is necessary to insure proper operation of the cutting and stacking device.

## Material Stacker

The material stacker, AEC1743A, Plates 2 and 6, is used for stacking the different lengths of material as they are cut off. It consists of a guide sliding on the material table, which is attached to two chains which keep the stacker parallel to the outcoming material. A slight tension is exerted upon the stacker, which tends to keep it always against the material. This tension may be varied by screwing or unscrewing the spring adjusting knob, located on the sprocket shaft at the rear of the table. Very little pressure is required for the thicker sizes, more pressure being used to prevent buckling when cutting off long strips of thin material.

The sliding guide plate, attached to the stacker, may be pushed to the right when long strips are



being cut, and is held in place by EC1747A, Plate 6. When short strips are being cut, the sliding plate remains in its normal position.

## Material Guide Plate

The Material Guide Plate, EC1604B, Plate 6, is adjusted by means of the two hand screws located at each end. When the guide plate is properly adjusted, the point size of the material being produced corresponds to the markings on the table just in front of the guide plate.

## If Material Buckles

If, when producing the thinner point sizes, such as 2 point, one or both of the strips buckle between the mold and the pulling mechanism, it indicates that the pulling mechanism is not releasing properly after the material has been pulled to the right. This may be due to metal or foreign material adhering to the puller wedge, AEC1460A, Plate 5, or to the sliding release plate, EC1491, Plate 4.

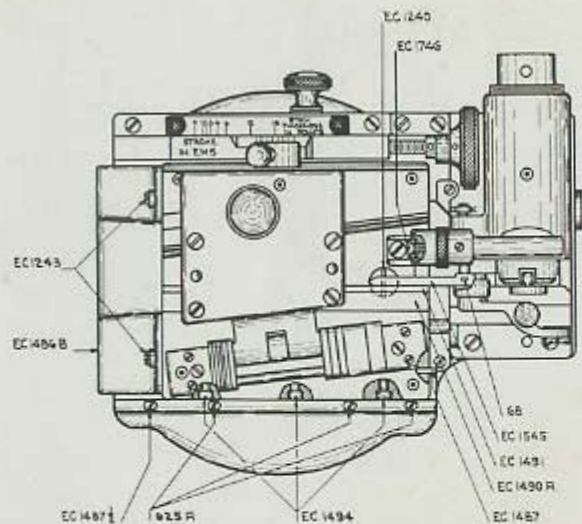
These parts should be removed and thoroughly cleaned, making certain that the release plate slides freely back and forth.

If the trouble still continues after this is done, it may be that one or more of the puller slide gib screws, 625A and EC1487 $\frac{1}{2}$ , Plate 2, are out of adjustment. Tighten first one and then the other of these screws until they bear lightly against the gib. Then back them up about one-sixteenth of a turn. Great care should be exercised in making this adjustment, since if the gib screws are too tight, undue wear of the moving parts will result. After making this adjustment, turn the machine over by hand a few times (first disconnecting the plunger lever) to make sure that the machine turns freely.

Buckling of one or both strips being produced from a twin mold may be caused by a damaged mold. If one side of a twin mold is damaged, it will cause the strip on that side to pull harder than the other strip, and will in turn cause buckling.

## To Remove the Puller Slide

If it is desired to remove the puller slide, to replace the puller slide spring, EC1481A, Plate 4, or for any other reason, it may be done as follows. (The part numbers referred to are indicated on the illustration opposite) :



Remove the cotter pin, Part 68, after which part EC1545 may be removed, after pulling back on the material clamp lever. Then remove the flat-head screw, EC1746. This will disconnect the positive pulling-back mechanism from the bracket. Next remove the two screws EC1243 and remove EC-1486B. Then remove the three screws on the front of the puller mechanism, EC1494. This will allow parts EC1490A and EC1491 to be lifted up and

out. Unscrew the three gib screws, 625A, two or three turns, and the end gib screw, EC1487 $\frac{1}{2}$ , several turns, or until the gib EC1487 may be pulled out from the right end of the puller slide. Now unscrew and remove cam roll stud, EC1240. The puller slide may then be moved slightly to the left, by lifting upward. When it reaches the proper position in its leftward travel, it may be pulled straight up and out of the puller slide housing.

When reassembling, be sure that all parts are thoroughly cleaned and well oiled. Then insert the gib, EC1487, and tighten the gib screws a little at a time until they bear lightly against the gib. After tightening each screw, slide the puller slide back and forth on its bearings by hand, to make sure that there is proper freedom of movement. Be sure that all four gib screws are properly adjusted before replacing any of the other parts. Failure to adjust the gib screws properly will result in undue wear and damaged parts. The rest of the parts which have been removed may now be replaced, taking care that they resume their original positions. After the puller slide mechanism is completely assembled, turn the machine over a few times by hand (after first disconnecting the plunger lever), to make sure that the machine turns freely.

# Instructions for Producing 1-Point Material on Models E and F Gas and Electric Elrods Having Pressure Oiler

The special 1-point parts which consist of

One Puller Wedge Shim

One Material Clamp Bracket Plate

One Puller Slide Release Plate

may be applied to any Model E or F machine (if a Model E machine, it must be equipped with a Pressure Oiler in order to achieve satisfactory results).

## Preparation

Remove the puller wedge shim, material clamp bracket plate and puller slide release plate and replace them with corresponding parts listed above. (These parts are marked "for 1-point.")

Set the motor belt to run at "high" speed and make all other adjustments (except material table adjustable plate) as though the machine were going to produce 18-point.

Prepare the starting strips in the regular way, shaving off about  $\frac{1}{4}$ -point of the material on each strip for a distance of about six inches from the end and taper the ends slightly.

Put a few drops of Special Elrod Oil into the mold and insert it into the mold chamber. (If a Model F machine, mold must first be placed in the mold adapter.) Insert the starting strips into the mold. Set the stroke adjusting mechanism so that no stroke will be taken when the motor is started.

## Sealing the Mold

Since the 1-point strips are rather fragile, do not try to force them into the mold as this will cause them to buckle and will probably mean the preparation of new starting strips. Wait until the mold has become sufficiently heated so that the strips may be slid into the mold easily with the fingers.

Seal the mold in the regular way and *as soon as the metal has stopped running out from around the sides of the mold*, close the sealing valve, drop the pulling mechanism in place and start the motor.

Open the oil valve and after the machine has made a few revolutions, change the stroke adjust-

ing mechanism so that a short stroke is being taken and gradually increase to a maximum of not over 3 picas.

## Producing Material

Considerable oil will be necessary to properly lubricate the twin 1-point mold and it is likely that the pressure oiler adjusting lever will need to be set to give nearly the maximum pressure.

With an electric machine, it is probable that the side throat heaters should be set "High" and bottom throat heater "On." Under ordinary conditions, a stream of cooling water, about 1/16 of an inch in diameter, will be required.

If a gas machine, it is probable that the throat burner will need to be turned nearly full "on" and perhaps in some rare cases, where the gas pressure is low or where the gas itself is of poor quality, it may be necessary to keep the mold housing burner turned about one-quarter "on." When this is necessary, a slightly larger stream of cooling water must be used.

In any case, the machine, either gas or electric, should run with the indicator melted for about one-quarter of its length. If it does not run satisfactorily at this position, check up on the crucible

temperature and see that it is maintained between 535 and 550 degrees Fahrenheit.

## Cutting and Stacking

Set the material table adjustable plate (rear) and the cutter head stripper plate as though 2-point were being produced. Take a piece of 12-point or larger material and saw it off to the length which you wish to cut. Place this piece between the stacker rail and the outcoming material. This will serve to support it and keep it from buckling between the cutter head and cut-off gauge.

Use only as much tension on the stacker as is required to keep the material from buckling. Set the cutter head return adjustable lever to the minimum tension and see that the cutter head and gauge rod slide freely in their bearings.

If the material shows a tendency to buckle either between the mold and the pulling mechanism or between the pulling mechanism and the cut-off mechanism, see that the puller wedge plate and the puller slide release plate are free from accumulations of metal and that the puller release plate slides freely back and forth. Also, make sure that there are no accumulations of metal or burrs on the movable clamp plate.

## THE GAS ELROD

Models E and F Gas and Electric Elrods are identical in all respects save the crucibles. The gas crucible, which is shown on Plate 8, has a crucible burner, a throat burner and a mold housing burner. The crucible burner is automatically controlled by a thermostat which maintains the temperature at between 535 and 550 degrees Fahrenheit.

The thermostat is adjustable to two positions; viz., one position when from 2 to 6 pt. material is being produced and the other position for larger than 6 pt. material. The reason for this is that when the larger sizes are being produced more cold metal is being fed into the crucible and consequently more heat is required. This change of setting is accomplished by turning Part EC1816, one quarter of a turn as occasion demands.

The throat burner serves to maintain, and in some cases raises the temperature of the metal in its passage from the crucible through the throat into the mold. The throat burner valve may be

adjusted manually to give more or less heat, depending upon the requirements of the different materials and has an indicator which facilitates proper adjustment.

The mold housing burner is used for sealing and unsealing the mold and should not be used when material is being produced. To avoid overheating the mold and consequently damaging it the operator should never leave the machine during the sealing or unsealing operation.

A pilot light is located within the crucible casing. The crucible burner may be lit by opening its valve and depressing the Pilot Light Valve EC1870.

Aside from the fact that perhaps a little closer attention must be given to the proper regulation of heat and cooling conditions, which the very nature of gas fuel makes necessary, the operation of the gas and electric machines is very similar and in the main, the instructions for the operation of the electric machine will also apply to the gas-heated machine.

# ELECTRICALLY HEATED CRUCIBLE

The Elrod Electric Crucible is so constructed and wired that the terminals, switches, fuses, etc., are readily accessible. By consulting the photographically reproduced wiring diagrams on Plates 10 and 11, and by carefully following these instructions, anyone with a little electrical knowledge and mechanical inclination will be able to locate and repair any electrical trouble.

All terminals and wires are plainly marked and correspond to the markings as shown in the diagrams on Plates 10 and 11.

The main feed wires enter the bottom of the control panel and are connected to the terminals at the bottom of the main hand switch as shown in Plate 10. From this switch the wiring is divided into three circuits as follows: The Crucible Heater Circuit, the Thermostat Circuit and the Switch and Fuse Panel Circuit.

## Switch and Fuse Panel Circuit

From the two upper terminals of the main hand switch two wires lead to the fuses of the switch

and fuse panel and from there the circuit includes the five tumbler switches (throat and sealing heater switches), the four resistors, which are located in a housing just below the switch panel; the two side throat heaters, the bottom throat heater and the two sealing heaters.

The two upper fuses are the motor fuses through which the current flows to the push button switch (motor switch) and then to the motor.

## The Crucible Heater and Thermostat Circuits

The temperature of the molten metal in the crucible is automatically controlled by the thermostat which is located on the top of the crucible. This thermostat is designed to hold the temperature of the metal at between 535° and 550° F.

From the two upper terminals of the main hand switch, the current passes through the crucible heater fuses, the magnet switch and then to the crucible heater.

The opening and closing of the magnet switch is controlled by action of the thermostat to which it is connected by three wires.

## 100 to 150 Volt Equipment

In the 100 to 150 volt equipment the resistors, side throat and sealing heaters are connected in parallel as shown in Plate 11, otherwise the wiring is the same as in the 200 to 250 volt equipment.

## 200 to 250 Volt Equipment

In the 200 to 250 volt equipment the resistors, side throat and sealing heaters are connected in series as shown in Plate 10, otherwise the wiring is identical with that of the 100 to 150 volt equipment.

## Heater and Motor Fuses

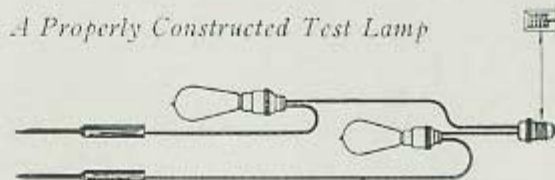
In the 100 to 150 volt equipment the fuses should be as follows: crucible heater fuses, 30 Amp.; throat and sealing fuses, 20 Amp.; motor fuses, 15 Amp. In the 200 to 250 volt equipment the fuses should be as follows: crucible heater fuses, 15

Amp.; throat and sealing fuses, 10 Amp.; motor fuses, 10 Amp. *Never use stronger fuses than those specified.*

## The Lamp

A test lamp, shown in the illustration below, should be used for locating any electrical trouble. This test lamp consists of two ordinary lamp sockets, a short circuiting receptacle, an attachment plug, a few feet of flexible lamp cord, two brass points with insulated handles and two sixty watt lamps. For the convenience of our customers we carry these test lamps in stock.

*A Properly Constructed Test Lamp*



## How to Use the Test Lamp

The test lamp may be used to locate a "ground," an "open circuit," a "short circuit" or a "dead heater." An explanation of these terms follows:

Ground: the bare part of any electrical circuit accidentally touching the pot or frame of the machine. Short Circuit: is anything which allows the current to take a shorter path than intended. Open Circuit: is an interruption in an electrical circuit, due to a break in the conductor, such as a broken wire or loose connection. Dead Heater: is one having a broken or open circuit.

When the lamps are connected to a 110 volt lighting circuit and the test points are brought together, both lights will show half bright. This is because the lamps are connected in series, each lamp receiving half of the full voltage. The purpose of having a lamp on each test cord is to avoid burning out a fuse when the test points come in contact with the machine or anything that is grounded.

To locate the "live" test point, proceed as follows: Touch the bare iron of the machine with each test point. The one which lights the lamp is the live point.

## Machine Must be Grounded

All of the following tests for electrical trouble are based on the supposition that the machine is grounded. In most cases the machine is grounded by the line wire conduit. In case an adequate ground is not established it is necessary to connect a No. 10 wire between the frame of the machine and a water pipe or some other safe means of transmission to the ground. In order to make the following tests *it is absolutely imperative that the machine be grounded.*



## TO LOCATE ELECTRICAL TROUBLE

### Crucible and Thermostat Circuit

If the crucible heater fuses in the control panel burn out, it indicates that the trouble is in the crucible heater or thermostat circuit.

To test the crucible heater circuit for a ground, open circuit or short circuit, proceed as follows: Turn off the main hand switch. Remove the control panel cover. Remove all fuses in the fuse box at the front of the machine. Disconnect the crucible lead wires B1 and B2 and the thermostat lead wires C, L and H from their terminals in the control panel, making certain that they do not touch each other or any part of the control panel.

With the attachment plug of the test lamp screwed into the short circuiting receptacle, place the test points on the two lower terminals of the main hand switch. If the lights do not light, it indicates that the current does not reach the machine.

Remove the short circuiting receptacle from the test lamp and screw the attachment plug into the light socket. Remove the two crucible heater fuses and laying them on a piece of dry wood or paper,

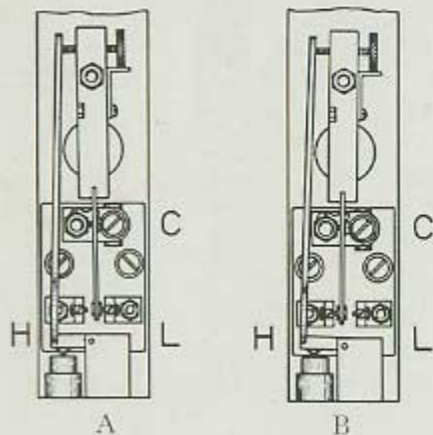
place one test point on each end of the fuse. If the test shows a light, the fuse is not burned out. If the fuses are not burned out, replace them in the control panel, making sure that the fuse clips grip them tightly.

With the live test point touch wires B1 and B2. If a light shows, it indicates a ground. Remove the asbestos tape around the terminals of the crucible heater (this is shown on Plate 5). Disconnect the wires and touch the live test point to each of the crucible heater terminals. If a light shows, it indicates that the heater is grounded and must be replaced. If a light does not show, it indicates that the ground is in wires B1 or B2. This may be caused by a break in the insulation allowing the wire to touch the conduit or the frame of the machine.

Now touch the live test point to wires C, L, and H. If a light shows, remove these wires from the corresponding terminals in the thermostat and test the thermostat terminals for a ground. There is little chance that a ground will occur in the thermostat and the trouble will undoubtedly be found

in the wires C, L or H. After the trouble is located, reconnect the wires to the thermostat terminals.

Stick the test points through the loops of the wires B1 and B2. If the lights show variation of intensity when the points are brought together, it indicates that the heater is in good condition.



Place one test point on wire C and the other on wire L. If the circuit is in good condition, the test lamp will light when the contact lever is moved so as to assume the position as shown in "A," above. No light indicates a broken circuit or loose connection. Now move the contact lever so

that it does not touch either contact. In this position, the lamps should not light and if the lamps do light, it indicates a short circuit.

Test the C and H wires in the same manner while holding the contact lever in position as shown in "B." Now move the contact lever so that it does not touch either contact. In this position the lamps should not light.

Take a piece of insulated wire about ten inches long and remove the insulation for about half an inch on each end. Turn on the panel hand switch. Place the ends of the wire on terminals C and L of the magnet switch. The magnet switch should close automatically.

If it does not close, proceed with the following tests: Turn off the panel hand switch and place a test point of the test lamp on the terminals at each end of the resistor, B1 and H. If the resistor is not defective the test lamps will light or a spark will show at the ends of the test points, depending on the rated voltage of the equipment being tested.

If the lights do not light or spark does not show, it indicates that the resistor is burned out and must be replaced. Test the magnet coil in the same manner placing a test point on each of the coil ter-

minals, C and H. If the magnet coil is in good condition, a spark will be noted when the test point touches the terminals. If a spark does not show, it indicates that the magnet coil is defective and must be replaced.

If no defects are evident, replace all wires which have been disconnected, making sure that the wires are connected to the proper terminals.

## To Test the Motor Circuit

If the two upper fuses in the switch and fuse panel burn out, trouble is caused by one of the following: Belt too tight, insufficient oiling of bearings, starting the machine under a load, or trouble of an electrical nature.

If the trouble is of an electrical nature, proceed as follows: *Remove the motor belt.* Turn off the main hand switch and the motor switch. Remove the two upper fuses in the fuse box.

Touch the live test point to each of the two upper left hand fuse clips. No light should appear. If a light does appear, it indicates that there is a ground either in the motor switch or in the wires leading from it to the fuse clips. Now turn the motor switch on and repeat the test. If a light appears, disconnect (at the motor) the wires leading

from the switch to the short motor lead wires. Repeat the test. If the light does not show the trouble will be found in the motor. If the light still shows, the ground is in the switch or the wires leading from the switch to the motor.

To test for open circuit, place a test point on each of the two upper left hand fuse clips. A light should show when the motor switch is turned on if the motor is again connected to the lead wires. If the light does not show, disconnect the motor lead wires at the motor and bring the ends of the motor lead wires together. If the light shows when the motor switch is turned on it proves that the trouble is in the motor. If the light does not show, it indicates that there is a break or loose connection in the wires leading from the switch to the motor.

To test for short circuit, disconnect the wires at the motor and turn on the motor switch. With the ends of these wires separated no light should be shown when both test points are touched to the two upper left hand fuse clips. If a light does show, it indicates that there is a short circuit in the motor lead wires or the motor switch. After reconnecting the motor lead wires, if the fuses continue to burn out, it shows that the short circuit is in the motor.

## To Test Bottom Throat, Side Throat, and Sealing Heaters 100 to 150 Volt Crucible

Turn off the main hand switch and remove the terminal housing located at the back of the crucible, thus exposing the wiring as shown in Plate 5. Remove the two ST1 wires, the two ST2 wires, the one BT1 wire, the one BT2 wire, the two S1 wires and the two S2 wires. After removing wires make certain that they are so arranged that they do not touch each other or any part of the terminal block or crucible casing. With the test lamp connected to the lighting circuit, touch each one of the wires with the live test point. No light should show. If a light does show, it indicates that that wire or the heater to which it is connected is grounded.

If such is the case, it will then be necessary to remove the crucible throat covers (right and left hand) in order to locate the trouble. It may be that a wire is grounded by reason of broken insulation or by type metal which may have leaked into the crucible casing and around the wires. (For further information on this subject see page

27.) If any one of the heaters is grounded, it must be removed and replaced. To do this the water piping must also be removed to allow access to the heaters.

To test the side throat heater which is nearest the front of the machine, proceed as follows: With the test lamp connected to the lighting circuit stick the test points through the loops in the ends of the two wires ST1. If the circuit is in good condition, the light of the test lamps will appear slightly dimmed. Bring the test points directly together while still touching the wires and note the difference in the light. Now separate the test points and if there is no dimming of the light, it shows that there is a short circuit in the wires leading to this heater. No light will indicate an open circuit such as a broken wire or loose connection or dead heater.

Test the side throat heater which is located toward the rear of the machine in the same manner using wires ST2.

The bottom throat heater is tested by using the wires BT1 and BT2.

The sealing heater nearest the front of the machine may be tested by using the two S1 wires. The sealing heater toward the rear of the ma-

chine may be tested by using the two S2 wires.

If the trouble has not been found, proceed with the following tests before replacing those wires which have been disconnected.

With the main hand switch and all throat and sealing switches off and the test lamp attached to the lighting circuit, remove the two lower fuses from the fuse panel. If either one of the two lower fuses has been burned out, proceed with the following test, before replacing the fuses.

With the live test point touch Bar A. No light should show. If a light does show, the trouble will be found on the wire leading from Bar A to the fuse block. This may be due to broken insulation, allowing the wire to touch the conduit or frame of the machine.

With the live test point touch both of the two upper right hand terminals of the terminal block. No light should show. If a light does show, it indicates that the trouble will be found in the wire leading from these terminals to the resistors or in any wire leading from the resistors to the side throat switches or in the switches.

Now touch the center terminal on the right hand side. If a light shows, it indicates that the trouble is located in the wire leading from the

center terminal to the bottom throat switch or in the bottom throat switch.

Now touch the two lower terminals on the right hand side of the terminal block. If a light shows, it indicates that the trouble will be found in the sealing switch or in the wire leading to it.

Reconnect all wires which have been removed from the terminal block, making sure that the wires are replaced on the proper terminals and tighten the nuts firmly.

With all switches off, place the live test point on the lower left hand fuse clip in the fuse box. No light should show. If light shows, disconnect the two wires attached to it and test them separately. The one showing the light is grounded. This may be due to defective insulation or because of the switch terminal screw or screws touching the cover. The switches and the wires leading to them may be exposed by removing the switch cover.

Replace the wires. Turn on the bottom throat switch and turn off all other switches. Put a test point on each of the two lower left hand fuse clips. No light indicates a loose connection or broken wire between the fuse clips and the terminal block or a defective switch.

Turn on the sealing switch and turn off the bottom throat switch. Make a test in the same manner as in above paragraph. No light indicates a loose connection or broken wire between the fuse clips and the terminal block or a defective switch.

Turn on the side throat heater switch "high" and turn off the sealing switch. Make the test as in the preceding paragraph. No light will indicate that there is a broken wire or loose connection between the switch and the resistors or between the resistors and the terminal block or a defective switch.

Turn off "high" side throat heater switch and turn on the "medium" switch. Repeat the test. No light will indicate one or both of the 4 ohm resistors defective or that there is a loose connection or a break in the wire which leads from the switch to the resistors or a defective switch.

Turn on the "low" switch and turn off the "medium" switch. No light will indicate one or both of the 6 ohm resistors defective or that there is a loose connection or a break in the wire which leads from the switch to the resistors or a defective switch.

In case the tests in the two preceding paragraphs indicate one or more of the resistors defective,

proceed as follows: Remove the screws located in the resistor cover (just below the switch box). Remove all wires from the terminals at the right hand end of the resistors (noting carefully how the wires are connected so that they may be properly replaced). Place the test points on the opposite ends of each resistor in turn.

No light will show that resistor to be defective and it must be replaced. Carefully replace all wires and be sure that the nuts holding them are firmly tightened.

When replacing the fuses, refer to the paragraph on "Fuses," Page 40.

## To Test the Throat and Sealing Heater Circuit 200 to 250 Volt Equipment

Remove the terminal cover located at the rear of the machine thus exposing the wires as shown in Plate 5. Remove the following wires: ST1, ST2, BT1, BT2, S1 and S2, making certain that they do not touch each other or any part of the crucible.

With the test lamp connected to the lighting circuit and the main hand switch off, touch each one of the wires with the live test point. If a light shows when touching one of the wires, it indicates that that wire or heater with which it is connected is grounded. This may be caused by defective insulation or because of metal having leaked into the crucible casing (see Page 27 for further information on this subject) or a ground in the heater or heaters.

Insert one test point through the loop in the end of wire ST1 and the other in the end of wire ST2. Now bring the test points together while still touching the two wires. Note the difference in the light. If the circuit is in good condition, there will be a dimming of the light when the test points are again separated. If there is no dimming of the light, it indicates a short circuit in the wires leading to the side throat heaters. No light indicates an open circuit or dead heater.

Now test wires BT1 and BT2 in the same manner. No dimming of the light will indicate a short circuit in the wire leading to the bottom throat heater. No light will indicate an open circuit or dead heater.

Test wires S1 and S2 in the same manner. No

dimming of the light will show a short circuit in the wires leading to the sealing heaters. No light will indicate an open circuit or dead heater.

Since in the 200 to 250 volt equipment, the sealing heaters and side throat heaters are connected in series, if there is any evidence of a ground or dead heater, it will be necessary to remove the crucible throat covers (right and left hand), unwrap the asbestos wrapped terminal connections and test these heaters directly on their terminals to ascertain which heater is dead or grounded. It will be necessary to remove the water piping to remove any one of the heaters.

Before connecting the wires which have been removed from the terminal block, proceed with the following tests: With the main hand switch and all throat and sealing switches off and with the two lower fuses in the fuse panel removed, touch the live test point to Bar A. No light should show. If a light does show, the trouble will be found in the wire leading from Bar A to the fuse block. This may be due to broken insulation allowing the wire to touch the conduit or frame of the machine.

Now touch the live test point to the upper right hand terminal. If a light shows, the trouble will be found in the wire leading from this terminal to

the resistors or in any wire leading from the resistors to the side throat switches or in the switches.

Now touch the center terminal. If a light shows, it indicates that the trouble is located in the wire leading from the center terminal to the bottom throat switch or in the bottom throat switch.

Touch the lower terminal. If a light shows, it indicates that the trouble will be found in the sealing switch or the wire leading to it.

Reconnect all wires which have been removed from the terminal block, making sure that the wires are replaced on the proper terminals and tighten the nuts firmly.

With all switches off, place the live test point on the lower left hand fuse clip in the fuse box. No light should show. If light shows, disconnect the two wires attached to it and test them separately. The one showing the light is grounded. This may be due to defective insulation or from the switch terminal screws touching the cover.

Turn the bottom throat switch on and all other switches off. Now place a test point on each of the two lower left hand fuse clips. No light indicates a loose connection or a broken wire between the fuse clips and the terminal block or a defective switch.

Turn on the sealing switch and turn off the bottom throat switch and make the test in the same manner as above. No light indicates a loose connection or broken wire between the fuse clips and the terminal block or a defective switch.

Turn on the side throat heater switch "high" and turn off the sealing switch. Make the test as in the preceding paragraph. No light will indicate that there is a broken wire or loose connection between the switch and the resistors or between the resistors and the terminal block or a defective switch.

Turn off "high" side throat heater switch and turn on the "medium" switch. Repeat the test. No light will indicate one or both of the 4 ohm resistors defective or that there is a loose connection or break in the wire which leads from the switch to the resistors or a defective switch.

Turn on the "low" switch and turn off the "medium" switch. No light will indicate one or both of the 6 ohm resistors defective or that there is a loose connection or a break in the wire which leads from the switch to the resistors or a defective switch.

In case the tests in the two preceding paragraphs indicate that one or more of the resistors is defec-



tive, proceed as follows: Remove the screws located in the resistor cover (just below the switch box). Remove all wires from the terminals at the right hand end of the resistors (noting carefully how the wires are connected so that they may be properly replaced). Place the test points on the opposite ends of each resistor in turn.

No light will show that resistor to be defective and it must be replaced. Carefully replace all wires and be sure that the nuts holding them are firmly tightened.

## How to Adjust the Thermostat

Turn off the main hand switch and insert a thermometer in the metal. Loosen the two screws EC4029E, Plate 12, and back out the two contact screws EC4028E until the two contacts project only the thickness of a two point lead from the inner surface of the two contact screw posts.

When the temperature of the metal falls below 535° F. turn on the main hand switch and when the temperature rises to 542° F. adjust the knurled screw EC4006E so that the screw will hold the contact lever EC4005E half way between the contact screws EC4028E.

When the rising temperature reaches 550° F. turn off the main hand switch and adjust the contact screw EC4028E (right hand screw when facing the thermostat) to just touch the contact lever. Now adjust the other contact screw (left hand) so that there will be a space of one point between that screw and the contact lever.

Now tighten the two contact screw set screws EC4029E so that they bear not too firmly against the contact screws (there is danger of breaking the screws or stripping the threads if too much pressure is applied).

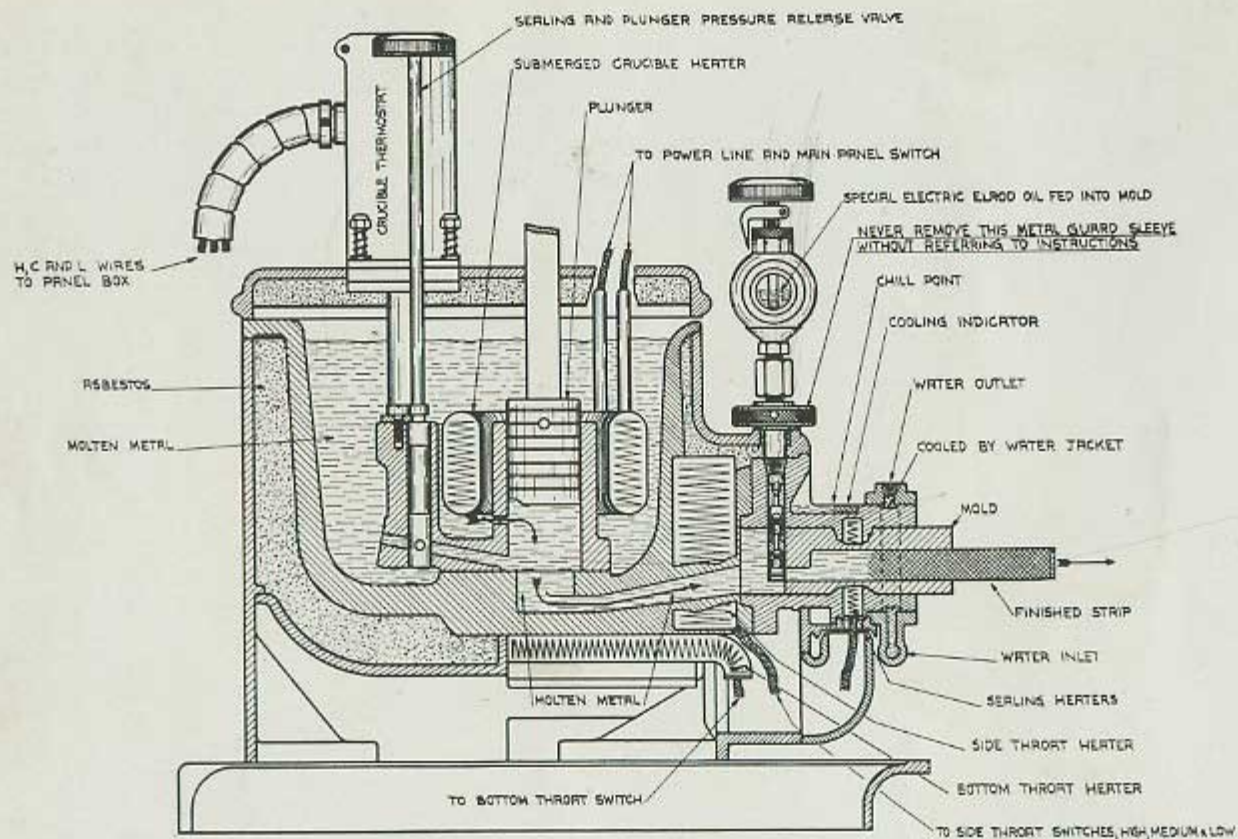
Leaving the thermometer in the same position, observe the action of the thermostat. It may be necessary to make some further slight adjustments by turning the knurled screw EC4006E. To lower the crucible temperature, turn the screw in a clockwise direction. To increase the temperature turn the screw in a counter-clockwise direction.

## Care of Thermostat

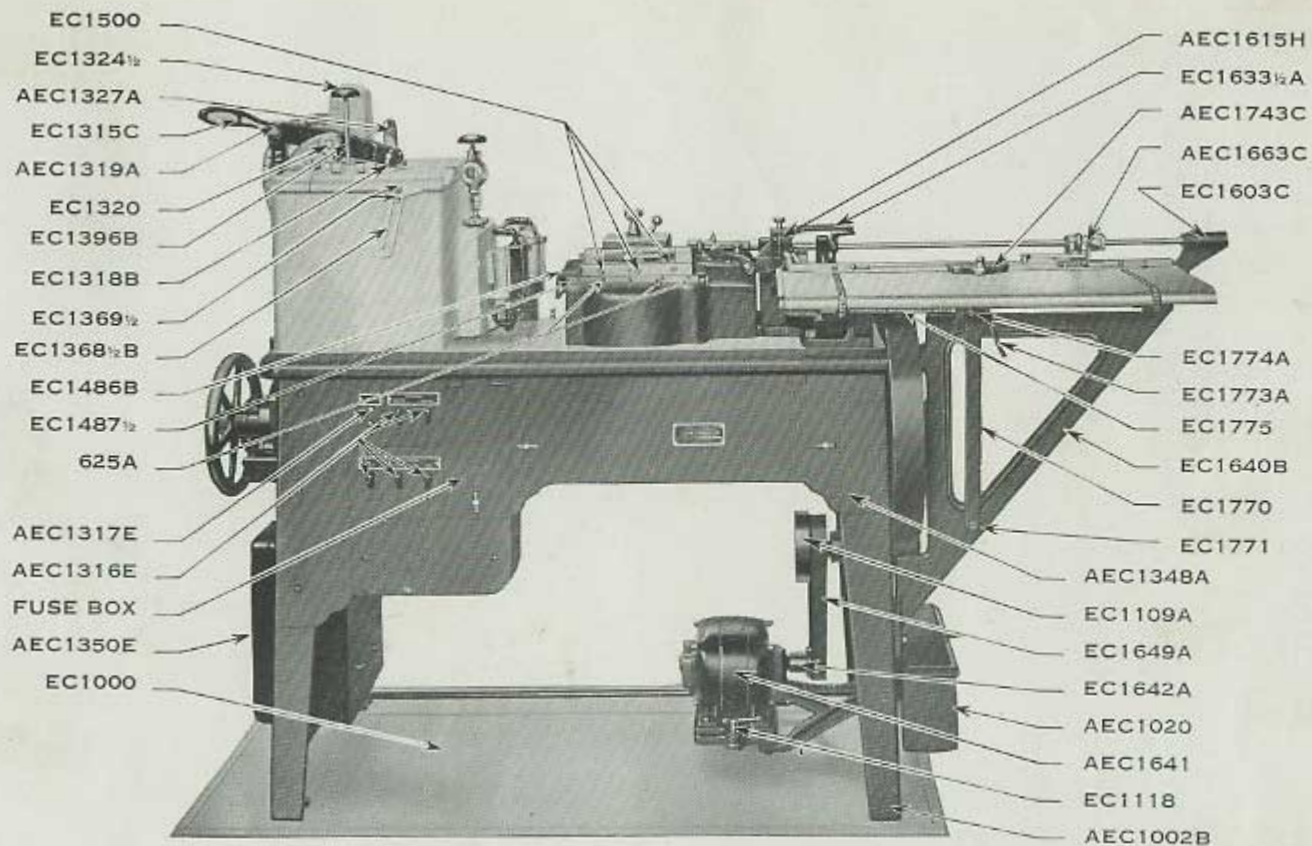
Always keep the hinged thermostat cover in the closed position when the machine is in operation. This will prevent dirt or metal from interfering with the action of the thermostat. After it has

been in use for some time it may be necessary to clean the contacts. This may be done as follows: Turn off the main hand switch and insert a strip of fine sandpaper between the contact lever and the contact screw. Move the sandpaper back and

forth a few times and then turn it over and repeat the operation. This will clean one side of the contact lever and one contact screw. The other side of the contact lever and the other contact screw may be cleaned in the same manner.

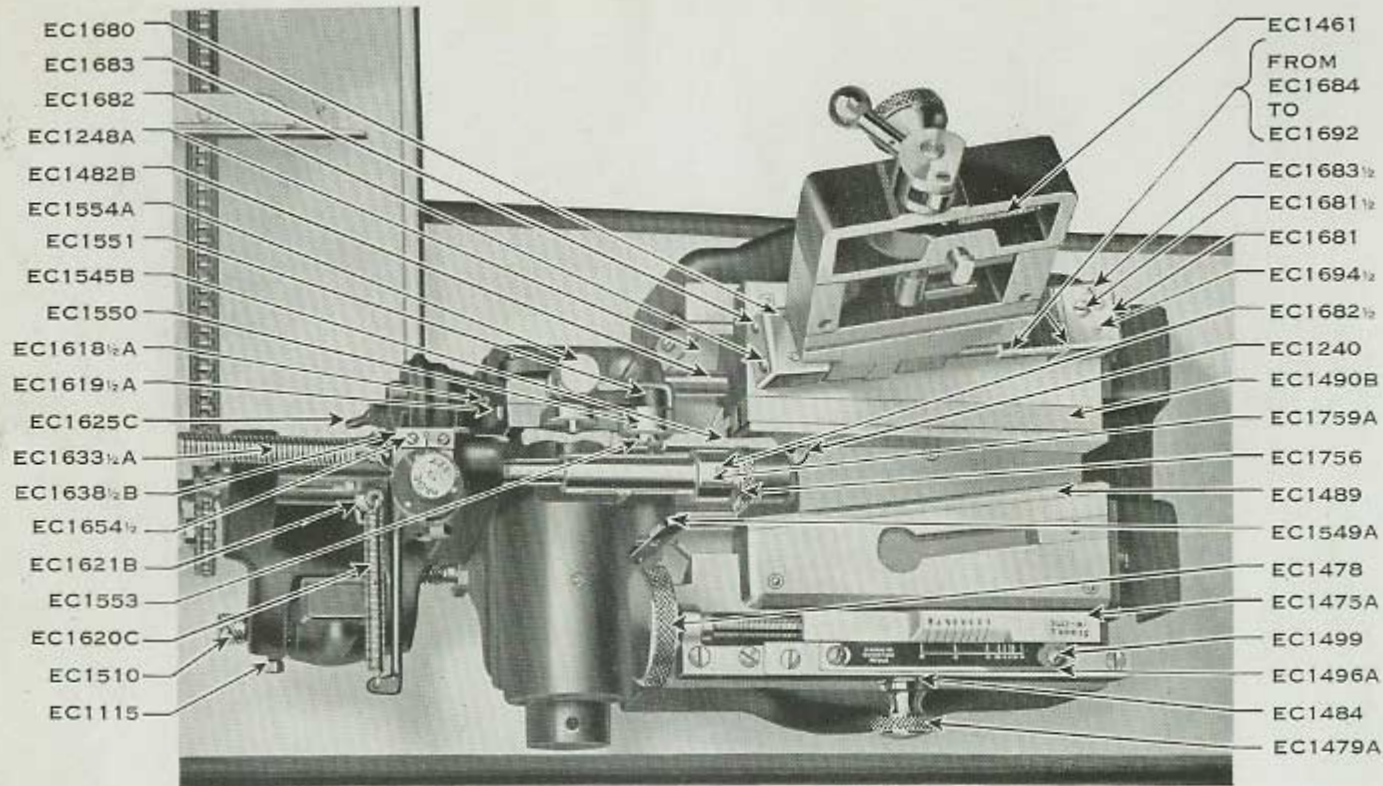


Showing How the Type Metal is Melted, Lubricated, and Cast  
 (Pressure Oiler shown on Plate 16)

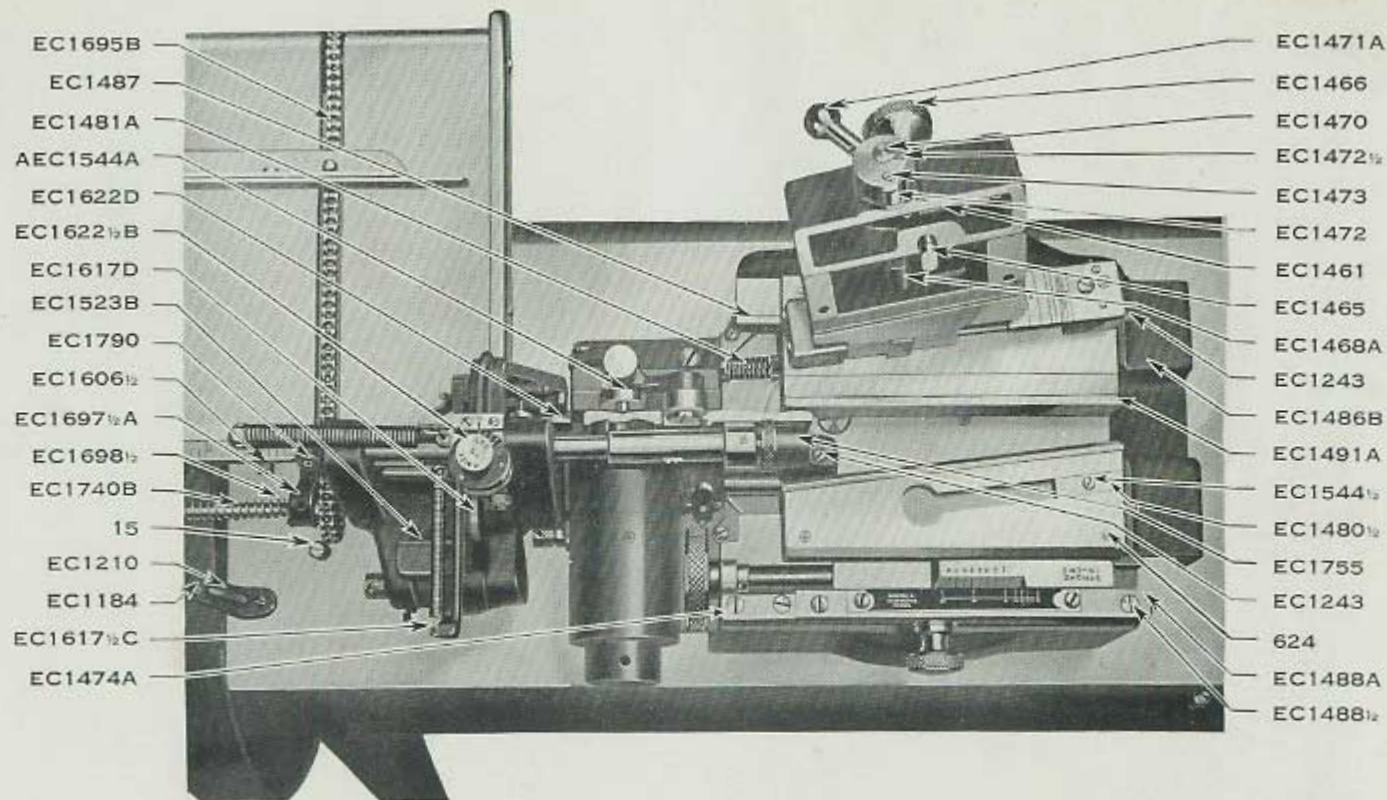


Front View of Electric Machine (*Model E*)

PLATE 3

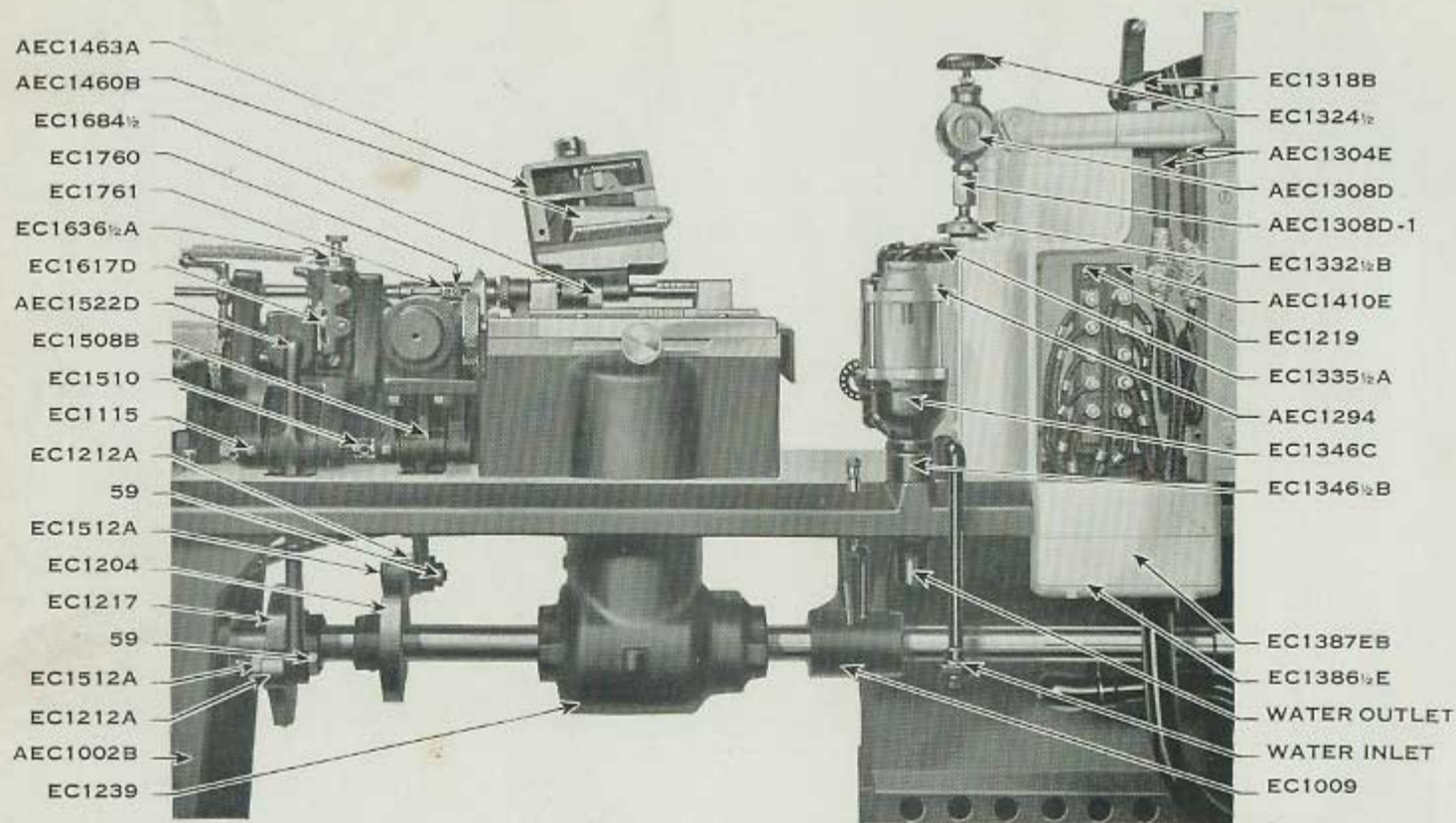


Stroke-Adjusting, Pulling, and Cutting Mechanism (*Model E*)  
 (with Puller Wedge removed—View one)



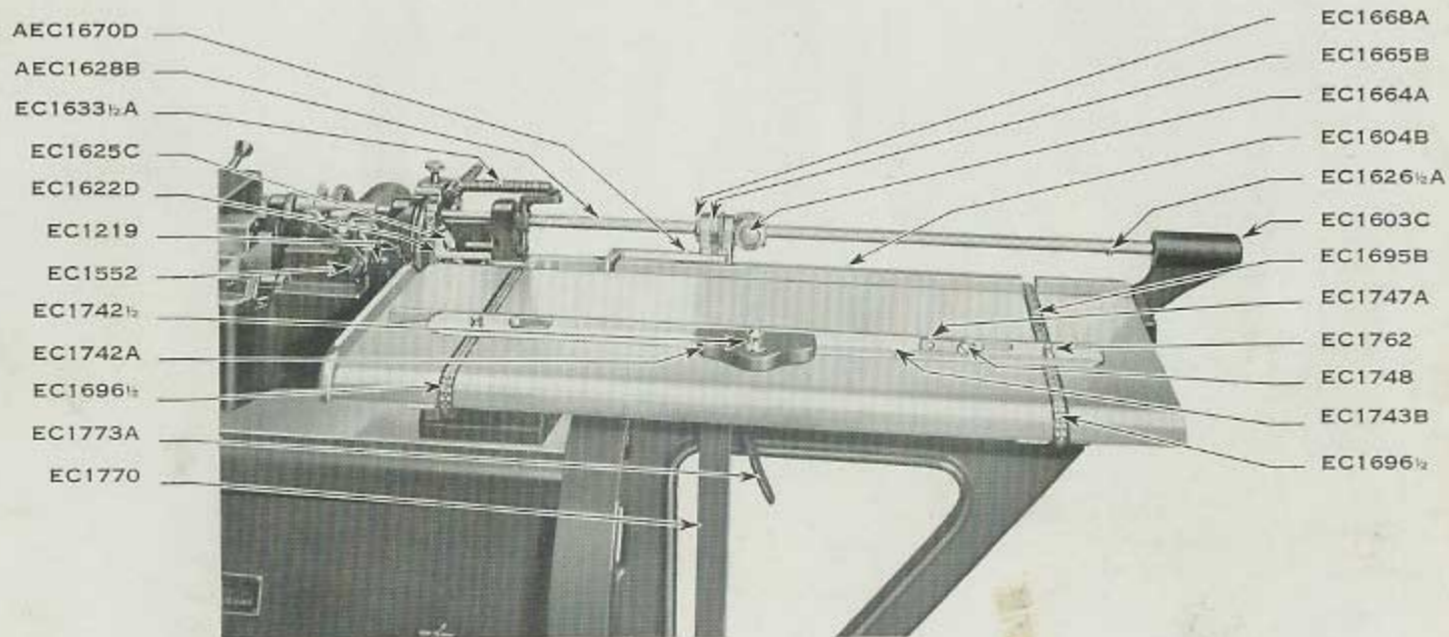
Stroke-Adjusting, Pulling, and Cutting Mechanism (*Model E*)  
 (with Puller Wedge removed—View two)

PLATE 5



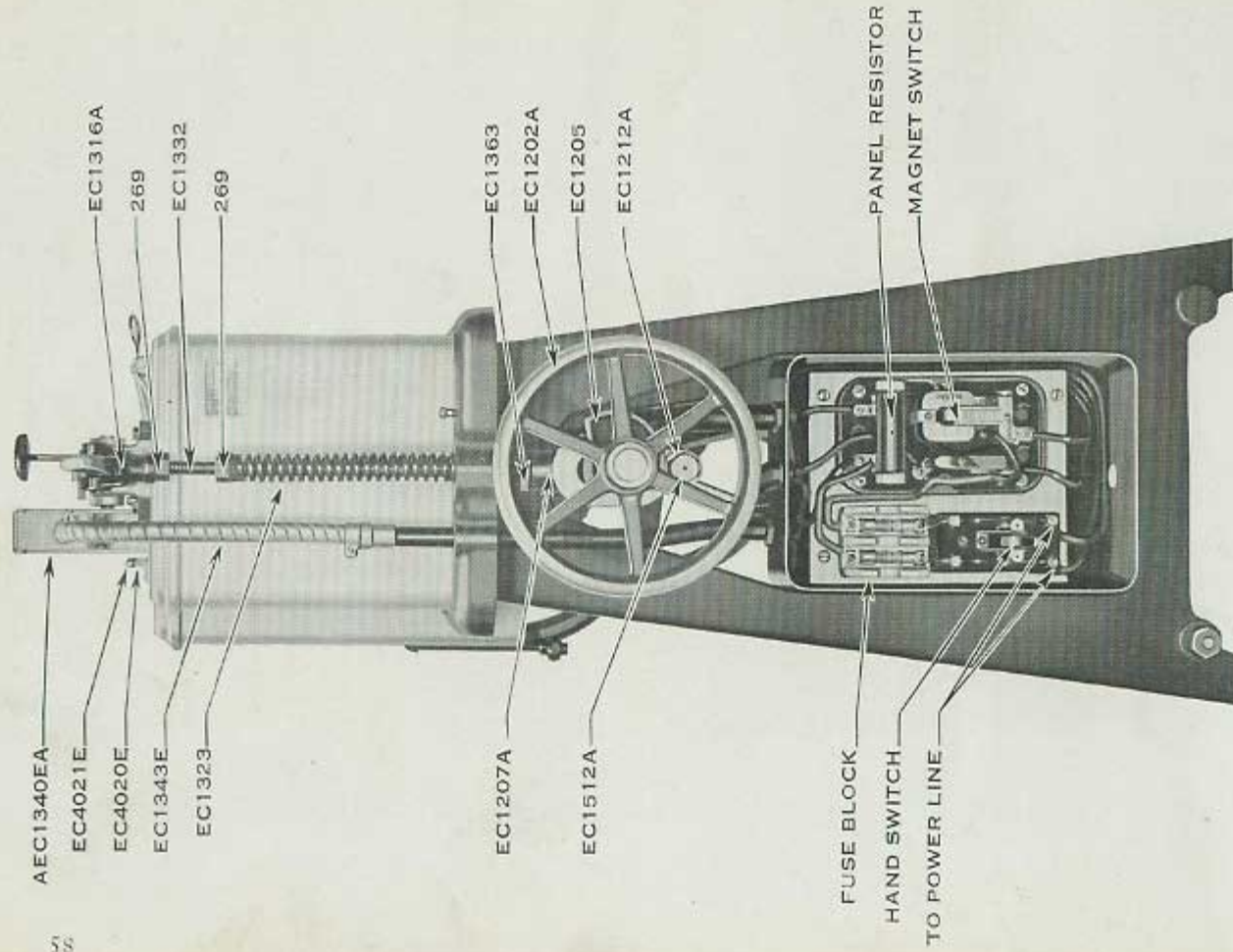
Rear View (with Terminal Cover removed) (Model E)

(Pressure Oiler shown on Plate 16)



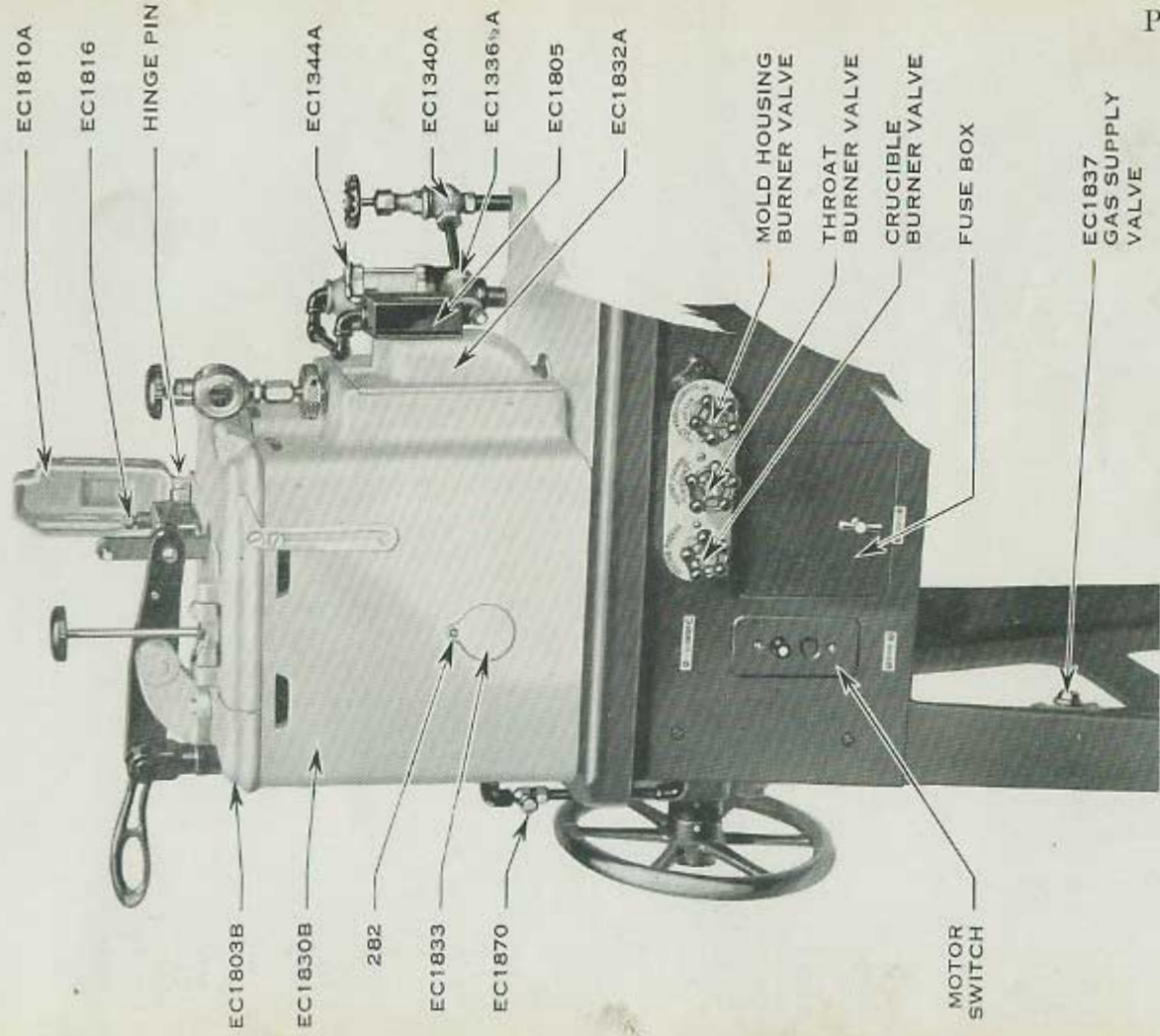
Cutting, Stacking, and Gage Mechanism (*Model E*)





End View, showing Plunger Actuating Mechanism  
 and Control Panel with Cover Removed

(Model E)



Gas Crucible with Cooling and Control Parts  
(Model E)

*In ordering gas parts always give complete serial number of machine and full gas specifications.*

**GAS MANIFOLD**  
(CAST IRON)  
EC1835A



EC1837



EC1345



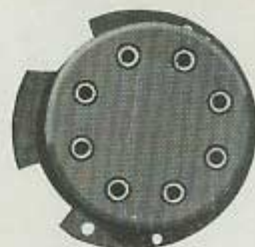
397



EC1806A



EC1820



EC1801



AEC1806B



300



EC1821



399



EC1823



AEC1820B



AEC1822



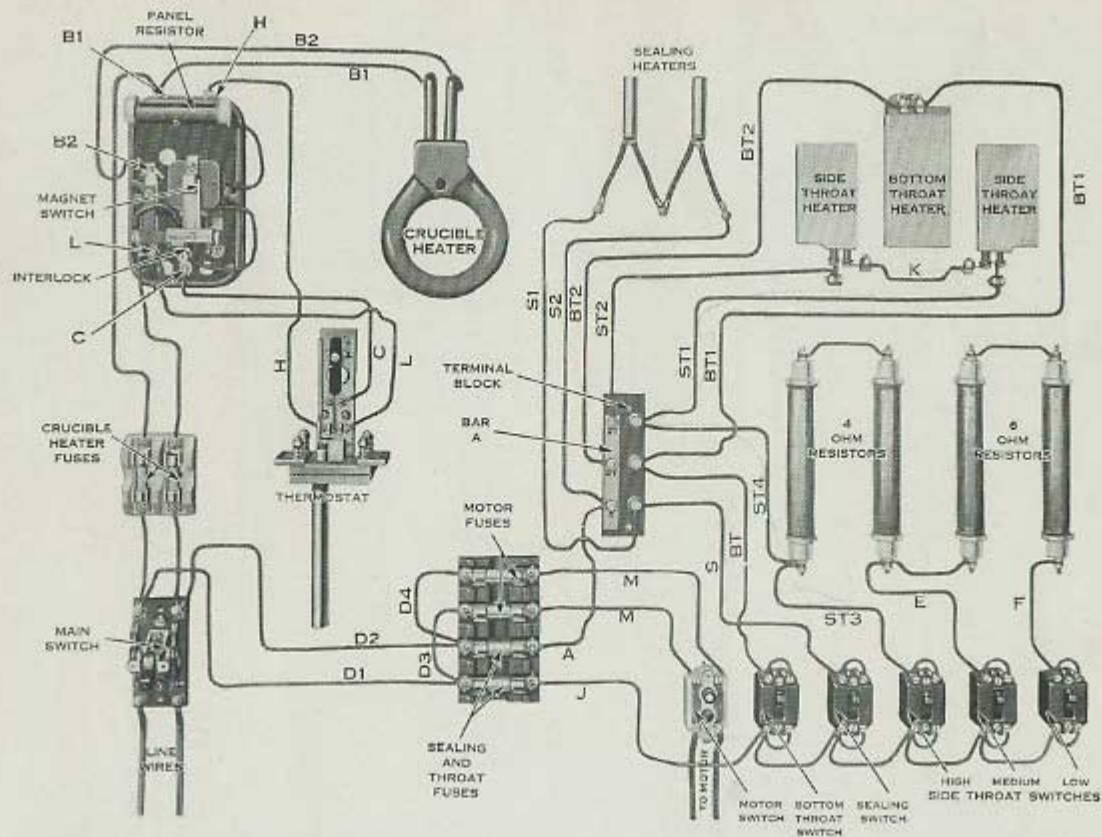
AEC1823A



AEC1825

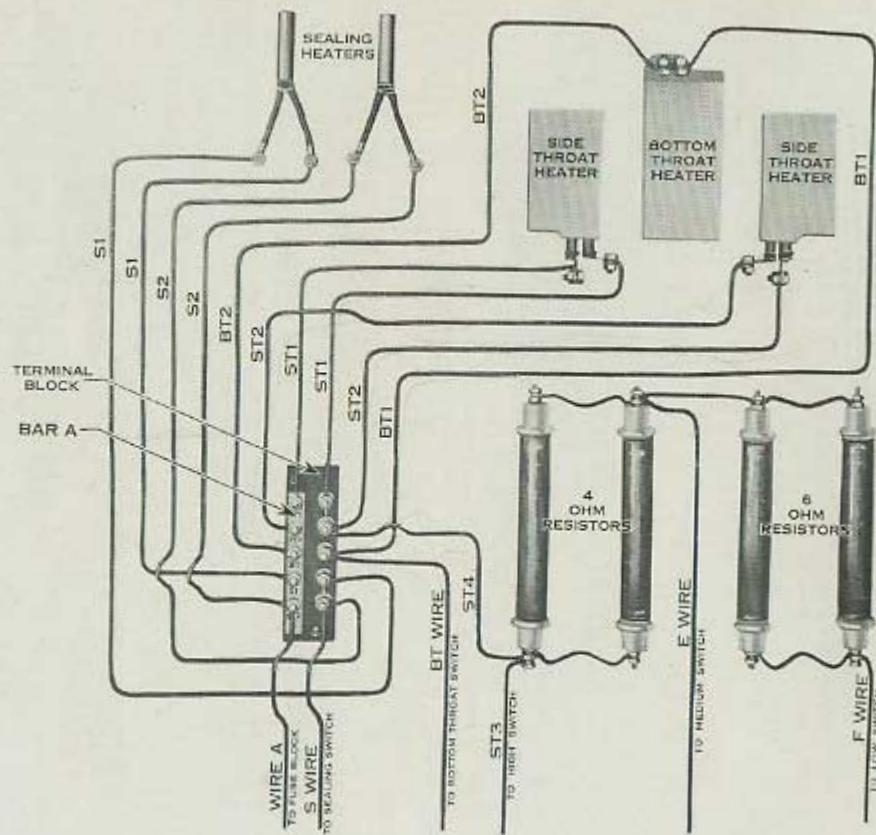
Gas Crucible Parts

*In ordering gas parts always give complete serial number of machine and full gas specifications.*



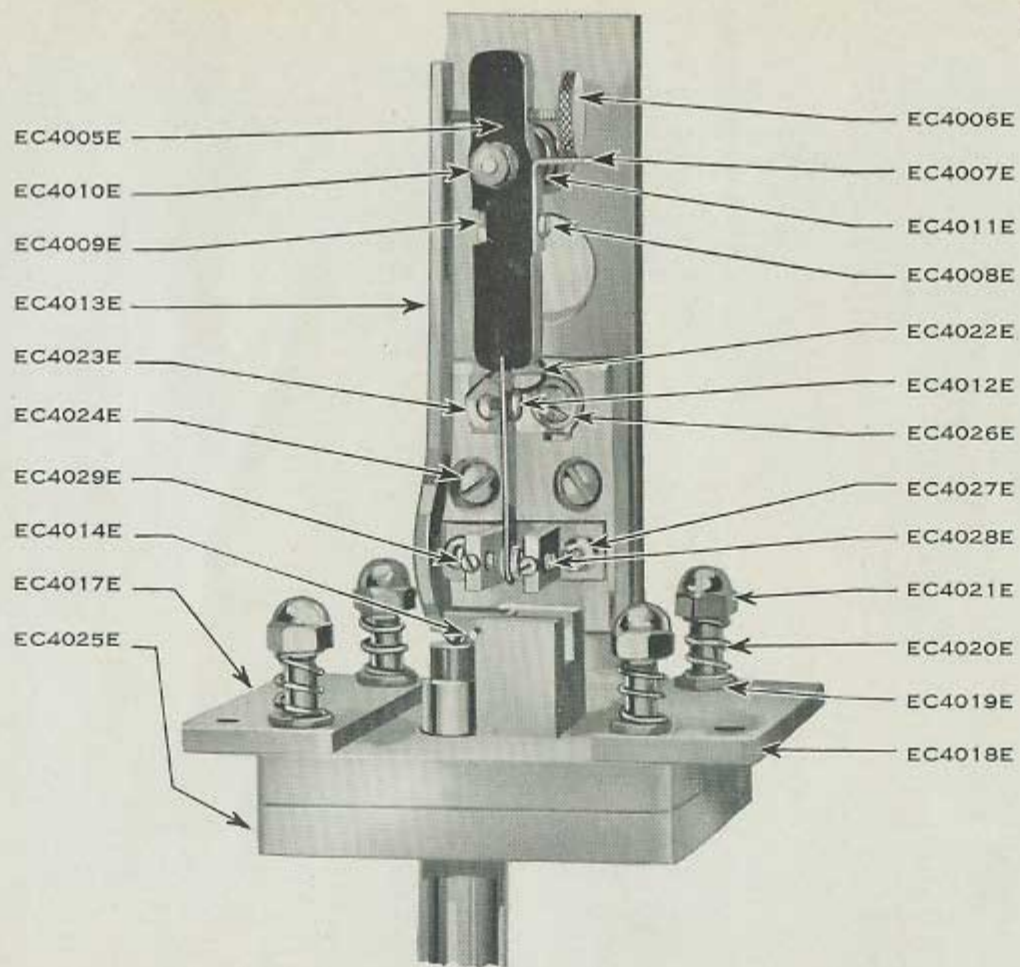
Photographic Reproduction of 220 Volt Electric Equipment

*When ordering electrical parts, always give the voltage and whether the current is alternating or direct. For alternating current also give cycles.*



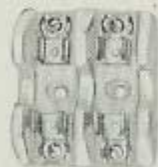
110 Volt Electric Equipment

*(All other wiring identical with that shown in Plate 10)*



Showing Thermostat and Parts (*with cover removed*)

PLATE 13



FOR A. C. OR D. C.  
EC4030E



FOR A. C. OR D. C.  
EC4031E



FOR A. C. OR D. C.  
EC4032E



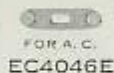
FOR D. C.  
AEC4034E



FOR D. C.  
EC4035E



FOR A. C.  
EC4045E



FOR A. C.  
EC4046E



FOR A. C. OR D. C.  
EC4033E



FOR D. C.  
EC4036E



FOR D. C.  
EC4037E



FOR A. C.  
EC4050E



FOR A. C.  
EC4051E



FOR D. C.  
AEC4038E



FOR D. C.  
EC4039E



FOR D. C.  
EC4040E



FOR A. C.  
EC4047E



FOR A. C.  
EC4048E



FOR A. C.  
EC4049E



FOR D. C.  
EC4041E



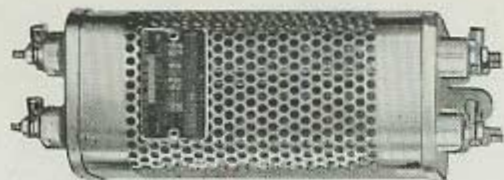
FOR D. C.  
EC4042E



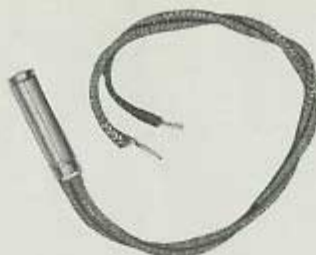
FOR D. C.  
EC4043E

Control Panel Parts

*When ordering electrical parts, always give the voltage and whether the current is alternating or direct. For alternating current also give cycles.*



AEC1301E



AEC1300E



AEC1316E



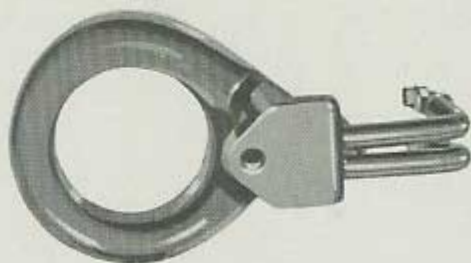
AEC4000E



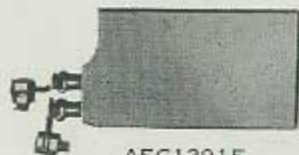
AEC1317E



AEC4001E



AEC1304E



AEC1391E



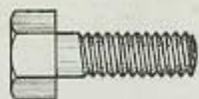
AEC1392E

Heaters, Resistors, and Switches

*When ordering electrical parts, always give the voltage and whether the current is alternating or direct. For alternating current also give cycles.*



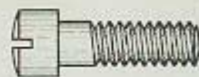
PLATE 15



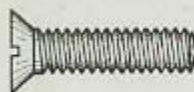
STYLE 3



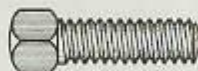
STYLE 7



STYLE 2



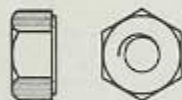
STYLE 8



STYLE 5



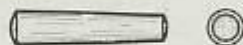
STYLE 4



STYLE 101



STYLE 102



STYLE 55



STYLE 56



STYLE 201



STYLE 57



STYLE 202

Screws, Nuts, Pins, and Washers



EC1262



AEC1279 1/2



AEC1260-1



AEC1268



EC1272



EC1267



EC1271



EC1265



EC1262 1/2



EC1280



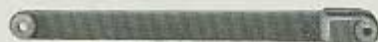
EC1269



EC1270



EC1243



EC1276



EC1275



511

EC1282

EC1282 1/2 A



AEC1281



EC1279



EC1278



EC1274



EC1276 1/2



EC1258



EC1264



EC1382



EC1259



230



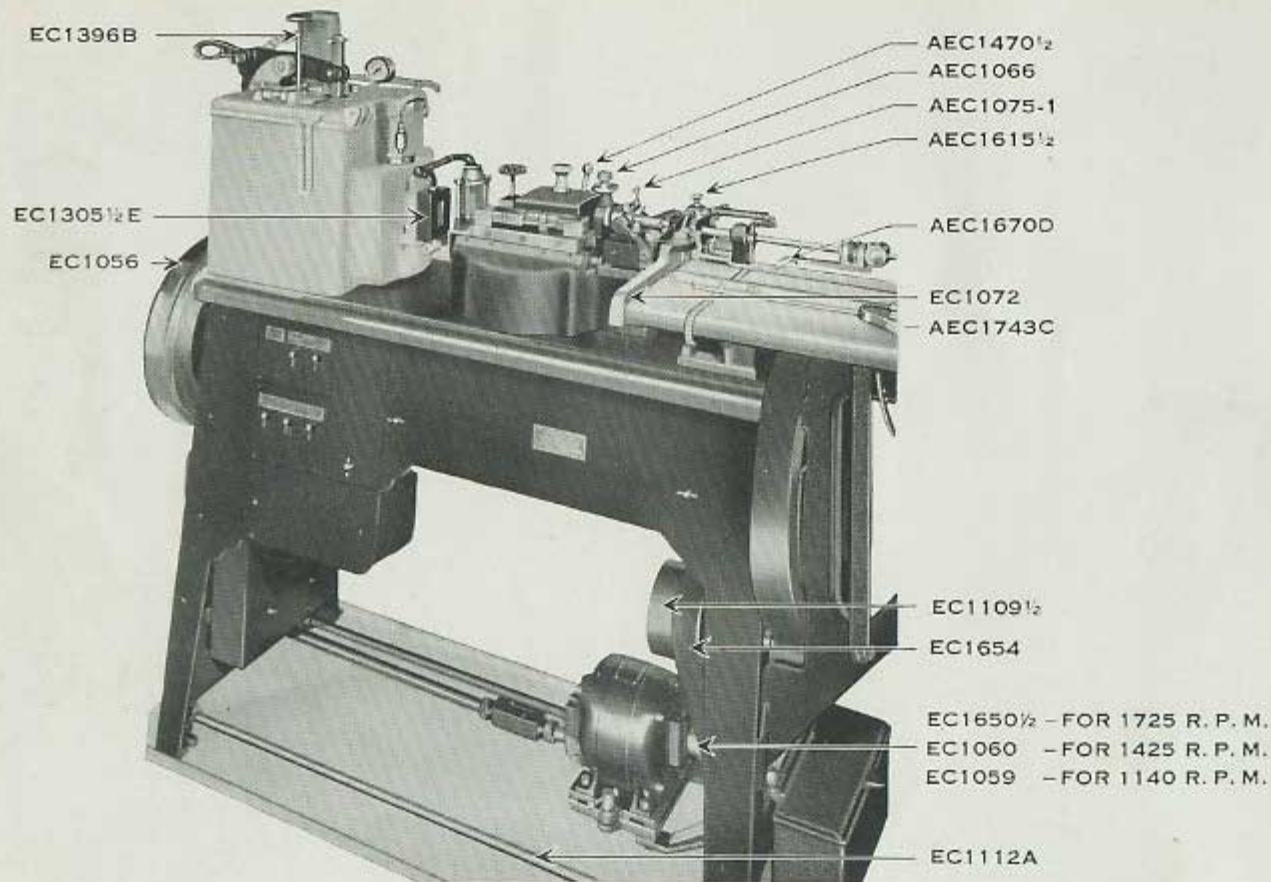
741



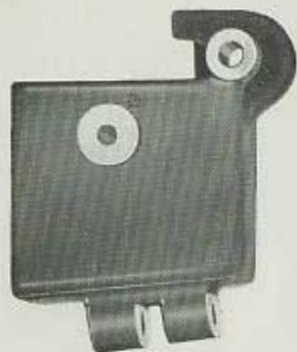
EC1277

Pressure Oiler Parts

PLATE 17



Model F Machine



AEC1463 $\frac{1}{2}$ -1



AEC1470 $\frac{1}{2}$



AEC1066



EC1074



230



AEC1075-1



EC1067



EC1068



659 $\frac{1}{2}$



EC1076



EC1472



EC1473



295 $\frac{1}{2}$



AEC1084



EC1310 $\frac{1}{2}$  A



AEC1069 - FOR  $\frac{3}{4}$  INCH MOLD  
AEC1019 - FOR  $\frac{5}{8}$  INCH MOLD



EC1081



EC1073



EC1080



EC1082



EC1085



AEC1497—FOR 18 PT.  
AND UNDER  
AEC1495A—FOR 24 PT.  
AEC1491A—FOR 30 AND 36 PT.



AEC1455—FOR 30 PT.  
AND UNDER  
AEC1448B—FOR 36 PT.



EC1619 $\frac{1}{2}$ A—FOR 18 PT.  
AND UNDER  
EC1607A—FOR 24 PT.  
EC1616A—FOR 30 AND 36 PT.



AEC1544A—FOR 18 PT.  
AND UNDER  
EC1538—FOR 24 PT.  
EC1539—FOR 30 AND 36 PT.

Intermittent Stroke Mechanism Parts (*Model F*)  
(also conversion parts for 24 and 36 point)

## Frame Parts

Part No.	PART NAME	Plate No.	Price	Code Word
EC1001D	Main Frame (table)		120.00	Lolls
AEC1002B	Leg (right hand) Complete With Drive Shaft Bearing	2-5	11.00	Lones
	Leg Mounting Screw—Use EC1116			
EC1003A	Leg (left hand) (for Gas Machine)		10.00	Rabbi
EC1003EA	Leg (left hand) (for Electric Machine)		10.00	Longs
	Leg Mounting Screw—Use EC1116			
EC1112A	Leg Brace		2.00	Tampa
	Leg Brace Nut (inside)—Use 269			
EC1112½	Leg Brace Nut (outside)		.10	Tarns
	Leg Brace Nut Pin—Use 738			
AEC1293	Drip Pan Assembly (Complete)	2	12.00	Tepic
AEC1348A	Table Apron	2	6.00	Thews
	Table Apron Mounting Screw—Use EC1133			

## Electric Crucible and Parts

Part No.	PART NAME	Plate No.	Price	Code Word
292E	Terminal Block (110 Volt)	11	1.50	Loire
343E	20 Amp. Cartridge Fuse (box of ten)		1.25	Shred
348E	30 Amp. Cartridge Fuse (box of ten)		1.25	Taena
349E	15 Amp. Cartridge Fuse (box of ten)		1.25	Tacts
EC1052	Sealing Heater Clamp Screw		.15	Rabid
EC1284E	Side Throat Heater Pad (asbestos)		.10	Tempo
EC1285E	Bottom Throat Heater Pad (asbestos)		.10	Tempe
AEC1300E	Cartridge Sealing Heater	10-11-14	4.50	Terza
AEC1302EB	Crucible and Casing Assembly (complete) (for Model E)		350.00	Testa
AEC1302 <sup>1</sup> EB	Crucible and Casing Assembly (complete) (for Model F)		***	Radas
	Crucible and Casing Assembly Screw—Use 556			
	Crucible and Casing Assembly Dowel—Use 607			
AEC1303D	Crucible Well		10.00	Tetra
AEC1304E	Crucible Heater	5-10-14	28.00	Thack
	Crucible Heater Mounting Screw—Use 42			
EC1305EB	Mold Housing (for Model E)		20.00	Thaes
EC1305 <sup>1</sup> / <sub>2</sub> E	Mold Housing (for Model F)		***	Radio
	Mold Housing Mounting Screw—Use 915			
	Mold Housing Dowel—Use 261			
EC1306A	Water Jacket Cover (top)		2.00	Thans
	Water Jacket Cover Screw—Use 570			
EC1307E	Bottom Throat Heater Clamp Adjusting Screw		.45	Thane
EC1307 <sup>1</sup> / <sub>2</sub>	Water Jacket Cover (bottom)		3.50	Tharm
	Water Jacket Cover Screw—Use 570			
	***Price on Application.			

*When ordering parts, always give serial number of the machine.*

## Electric Crucible and Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1312E	Bottom Throat Heater Clamp Support		1.00	Theor
	Bottom Throat Heater Clamp Support Screw—Use M210			
EC1313EA	Bottom Throat Heater Clamp		.25	Thera
	Bottom Throat Heater Clamp Screw—Use EC1307E			
	Bottom Throat Heater Clamp Screw Nut—Use 288			
EC1324½	Sealing Valve Handle	2-5	1.00	Thole
	Sealing Valve Handle Screw—Use EC1133			
EC1330EC	Crucible Casing		30.00	Thowe
	Crucible Dowel—Use 261			
	Crucible Mounting Screw (1¼ long)—Use 42			
	Crucible Mounting Screw (2¼ long)—Use EC1331½			
EC1332½B	Guard Sleeve for Oil Check Valve	1-5	1.50	Thraw
	Guard Sleeve Lock Screw—Use M207			
	Guard Sleeve and Adapter Ring Clamp Screw—Use EC1669			
EC1333½	Guard Sleeve Adapter Ring		.15	Thret
EC1346E	Crucible Cover (hinged half) Packing Retainer (small section)		.20	Thuri
	Crucible Cover (hinged half) Packing Retainer Screw— Use EC1133			
EC1365EA	Crucible Cover (fixed half) Packing Retainer		2.00	Tipsy
	Crucible Cover (fixed half) Packing Retainer Screw— Use EC1133			
EC1365½	Crucible Cover (hinged half) Packing Retainer (large section)		2.00	Tites

## Electric Crucible and Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
	Crucible Cover (hinged half) Packing Retainer Screw— Use EC1133			
EC1367EA	Crucible Cover (fixed half)		6.00	Titis
	Crucible Cover (fixed half) Mounting Screw—Use EC1341			
EC1367½	Crucible Cover (hinged half)		6.00	Title
	Crucible Cover (hinged half) Hinge Pin—Use EC1380			
EC1368A	Crucible Charging Door		.60	Toads
EC1368½B	Crucible Cover Lock Stay	2	.50	Toady
EC1369	Crucible Charging Door Hinge Pin		.10	Tobit
	Crucible Charging Door Handle—Use EC1358A			
EC1369½	Crucible Cover Lock Stay Screw	2	.15	Tobol
EC1370EB	Crucible Casing Bottom (right hand)		1.00	Tobys
	Crucible Casing Bottom Mounting Screw—Use EC1648			
EC1371EB	Crucible Casing Bottom (left hand)		1.00	Todos
	Crucible Casing Bottom (left hand) Mounting Screw— Use EC1648			
EC1373A	Crucible Terminal Housing		2.00	Toils
	Crucible Terminal Housing Screw—Use EC1374			
EC1379A	Crucible Cover Hinge		.40	Tokay
	Crucible Cover Hinge Screw—Use 698			
EC1383E	Side Throat Heater Clamp		.40	Toles
	Side Throat Heater Clamp Set Screw—Use 290E			
EC1384EB	Sealing Heater Clamp		1.00	Tolyl
	Sealing Heater Clamp Screw—Use EC1052			



## Electric Crucible and Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1385EB	Crucible Throat Cover (right hand).....	.....	2.00	Toman
	Crucible Throat Cover (right hand) Screw—Use EC1382.....	.....		
EC1386EB	Crucible Throat Cover (left hand).....	.....	2.00	Tombs
	Crucible Throat Cover (left hand) Screw—Use EC1382.....	.....		
EC1386½E	Crucible Condulet Terminal Box Cover.....	5	.60	Tomes
EC1387EB	Crucible Condulet Terminal Box.....	5	2.25	Tomsk
	Crucible Condulet Screw—Use EC1379½.....	.....		
	Crucible Condulet and Cover Screw (long)—Use EC1374.....	.....		
	Crucible Condulet and Cover Screw (short)—Use EC1388.....	.....		
AEC1391E	Side Throat Heater.....	14	13.00	Tonga
AEC1392E	Bottom Throat Heater.....	14	12.00	Tonic
EC1396B	Sealing Valve Stem.....	2	3.00	Toons
	Sealing Valve Handle—Use EC1324½.....	.....		
EC1397A	Sealing Valve Guide and Stop Plate.....	.....	.50	Toots
	Sealing Valve Guide Plate Screw—Use EC1184.....	.....		
EC1398B	Sealing Valve Retainer.....	.....	.30	Tooth
	Sealing Valve Retainer Screw—Use EC1184.....	.....		
AEC1399E	Heater Terminal Lead Wire Group for 200 to 250 Volt Crucible.....	.....	***	Topes
AEC1405E	Heater Terminal Lead Wire Group for 100 to 150 Volt Crucible.....	.....	***	Toque
AEC1410E	Terminal Block Assembly (110 Volt).....	5	3.00	Torah
	Terminal Block Mounting Screw—Use EC1219.....	5		
	***Price on Application.			

## Electric Crucible and Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
AEC1411E	Terminal Block Assembly (220 volt).....	10	2.00	Torch
EC1412E	Terminal Block (220 volt).....		.70	Tores
EC1413E	Terminal Block Plate (220 volt).....		.50	Toric
EC1414E	Terminal Block Plate (110 volt).....		.90	Torii

## Thermostat and Parts

Part No.	PART NAME	Plate No.	Price	Code Word
AEC1340EA	Thermostat (complete)	7	33.40	Label
	Thermostat Mounting Screws—Use EC1648.			
EC4005E	Contact Lever	12	1.00	Laces
EC4006E	Contact Lever Adjusting Screw	12	.25	Lacks
EC4007E	Contact Lever Adjusting Screw Clamp	12	.15	Lades
EC4008E	Contact Lever Adjusting Screw Clamp Screw	12	.15	Laden
EC4009E	Contact Lever Adjusting Screw Clamp Screw Nut	12	.15	Ladle
EC4010E	Contact Lever Mounting Nut	12	.15	Lagan
EC4011E	Contact Lever Spring	12	.25	Lagos
EC4012E	Contact Lever Copper Cable Binding Screw	12	.30	Laigh
EC4013E	Expansion Lever Arm	12	3.00	Lains
EC4014E	Expansion Lever Arm Fulcrum Pin	12	.25	Lairs
EC4017E	Mounting Plate (front)	12	.75	Laist
EC4018E	Mounting Plate (rear)	12	.75	Laity
EC4019E	Mounting Stud Washer	12	.15	Laive
EC4020E	Mounting Stud Spring	7-12	.25	Lakes
EC4021E	Mounting Stud Cap Nut	7-12	.25	Laker
EC4022E	Braided Copper Cable	12	.15	Lakin
EC4023E	Copper Cable Terminal Nut	12	.15	Lamas
EC4024E	Insulating Block Mounting Screw	12	.15	Lamar
EC4025E	Complete Lower Base	12	***	Lames
EC4026E	"C" Terminal Screw	12	.10	Lamps
EC4027E	"H" and "L" Terminal Nut	12	.30	Lanch
EC4028E	Contact Screw	12	.35	Lands
EC4029E	Contact Screw Set Screw	12	.15	Lande

\*\*\*Price on Application.

## Control Panel, Switch, and Resistor Parts

Part No.	PART NAME	Plate No.	Price	Code Word
AEC1301E	Cage Type Resistor (complete).....	14	6.00	Tests
	Cage Type Resistor Mounting Screw—Use M185.....			
AEC1316E	Mold Sealing or Throat Switch.....	14	1.50	Thier
	Mold Sealing or Throat Switch Mounting Screw (flat head)—Use EC1317½.....			
	Mold Sealing or Throat Switch Mounting Screw (round head)—Use EC1436.....			
AEC1317E	Motor Switch.....	14	1.20	Thigs
	Motor Switch Mounting Screw (flat head)—Use EC1317½.....			
	Motor Switch Mounting Screw (round head)—Use EC1436.....			
EC1339EA	Thermostat to Control Panel Conduit.....		1.00	Thuds
	Thermostat to Control Panel Conduit Lock Nut—Use 324E.....			
	Thermostat to Control Panel Conduit Coupling—Use EC1400EA.....			
	Thermostat to Control Panel Conduit Connector—Use EC1401EA.....			
	Thermostat to Control Panel Flexible Conduit—Use EC1343E.....			
EC1343E	Thermostat Flexible Conduit.....	7	.50	Thumb
AEC1350E	Panel Box Assembly.....	2	40.00	Tibet
	Panel Box Mounting Screw—Use 241.....			
	Panel Box Mounting Screw Washer—Use 584.....			
	Panel Box Mounting Screw Lock Washer—158.....			
	Panel Box Mounting Nut—Use EC1351E.....			

## Control Panel, Switch, and Resistor Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1352½E	Panel Box Guard.....		.60	Ticks
EC1353EA	Panel Box Bracket (top).....		2.00	Tides
	Panel Box Bracket Screw—Use 734.....			
EC1354EA	Panel Box Bracket (bottom).....		2.00	Tiffs
	Panel Box Bracket Screw—Use 734.....			
EC1355E	Panel to Switch Box Conduit.....		1.00	Tikes
	Panel to Switch Box Conduit Lock Nut—Use EC1357E.....			
	Panel to Switch Box Conduit Connector—Use EC1349EA.....			
AEC1358E	Fuse and Switch Box Assembly.....	2	35.00	Timon
	Fuse and Switch Box Mounting Screw (round head)— Use M185.....			
	Fuse and Switch Box Mounting Screw (hexagon head)— Use 76½.....			
EC1359EA	Fuse and Switch Box Bracket.....		.25	Tinct
	Fuse and Switch Box Bracket Mounting Screw—Use 76½.....			
EC1361E	Side Throat Heater Switch Name Plate.....		.40	Tings
	Side Throat Heater Switch Name Plate Screw—Use EC1679.....			
EC1363EA	Bottom Throat and Sealing Switch Name Plate.....		.40	Tints
	Bottom Throat and Sealing Switch Name Plate Screw— Use EC1679.....			
EC1366E	Motor Switch Name Plate.....		.60	Titer
	Motor Switch Name Plate Screw—Use EC1364.....			

## Control Panel, Switch, and Resistor Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1389EA	Switch Box to Throat and Sealing Heaters Conduit.....	.....	1.25	Tones
	Switch Box to Throat and Sealing Heaters Conduit Lock Nut—Use EC1357E.....	.....		
EC1390EA	Crucible Heater to Control Panel Conduit.....	.....	1.25	Tongs
	Crucible Heater to Control Panel Conduit Connector— Use EC1349EA.....	.....		
AEC1403E	Control Panel Lead Wire Group.....	.....	3.00	Topee
AEC1404E	Switch Box Wire Group.....	.....	4.75	Topic
AEC4000E	6 Ohm Resistor.....	14	2.00	Locus
AEC4001E	4 Ohm Resistor.....	14	2.00	Lodge
FOR A. C. OR D. C. CONTROL PANELS				
EC4030E	Fuse Base.....	13	.75	Lanes
EC4031E	Panel Resistor.....	13	1.50	Langs
EC4032E	Panel Switch.....	13	4.50	Laons
EC4033E	Terminal Screw.....	13	.10	Lapel
FOR D. C. CONTROL PANELS				
AEC4034E	Blow Out Coil Assembly.....	13	5.00	Lapid
EC4035E	Magnet Coil (round).....	13	7.50	Lapis
EC4036E	Stationary Contact Tip.....	13	1.25	Lapse
EC4037E	Arc Chute.....	13	.60	Larch

## Control Panel, Switch, and Resistor Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
AEC4038E	Movable Contact Tip Assembly.....	13	.40	Lards
EC4039E	Interlock Contact Tip With Spring.....	13	.30	Largo
EC4040E	Insulation Block.....	13	.15	Larks
EC4041E	Compression Spring for Movable Contact Tip and for Armature.....	13	.15	Larum
EC4042E	Spring Retainer (for above).....	13	.10	Larva
EC4043E	Interlock Stationary Contact Block.....	13	.30	Lashes
FOR A. C. CONTROL PANELS				
EC4045E	Magnet Coil (square).....	13	6.50	Lasso
EC4046E	Contact Plate with Tips.....	13	.60	Lasts
EC4047E	Armature Shaft.....	13	5.50	Lates
EC4048E	Stationary Contact Tip.....	13	.20	Lated
EC4049E	Contact Plate Compression Spring.....	13	.15	Latex
EC4050E	Movable Interlock Contact Tip.....	13	.40	Laths
EC4051E	Movable Interlock Contact Tip Spring.....	13	.10	Lathe

## Mold Oiler and Parts

Part No.	PART NAME	Plate No.	Price	Code Word
EC1286	Oil Cup Sight Glass Gasket (outside).....	.....	.15	Tempt
EC1287	Oil Cup Sight Glass.....	.....	.25	Tench
EC1288	Oil Cup Sight Glass Retainer Nut.....	.....	.25	Tends
EC1289	Oil Cup Sight Glass Gasket (inside).....	.....	.15	Tenet
EC1290	Oil Cup Sight Glass Retainer.....	.....	.25	Tenon
EC1291	Oil Cup Sight Glass Retainer Gasket.....	.....	.15	Tenor
AEC1308D	Oiler Assembly (complete) consisting of : 1—M40 Oil Cup Indicator Screw 1—AEC1308D—1 Oil Check Valve Sub-Assembly 1—EC1309B Oil Check Needle Valve 1—EC1324½ Oiler Valve Handle 1—AEC1350 Oil Cup 1—EC1350½ Oil Cup Plug 1—EC1353½A Oil Cup Graduated Sleeve 1—EC1354½ Oil Cup Graduated Sleeve Set Screw 1—EC1355½ Oil Cup Indicator 1—EC1133 Oiler Valve Handle Screw	5	9.00	Theca
AEC1308D-1	Oil Check Valve Sub-Assembly, consisting of : 1—AEC1308½A Oil Check Valve Sub-Assembly (bottom section) 1—EC1308D Oil Check Valve (top) 1—EC1312 Oil Check Valve Float 1—EC1338 Oil Check Valve Ball	5	4.00	Theft



## Mold Oiler and Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
AEC1308½A	Oil Check Valve Sub-Assembly (bottom section) consisting of: 1—EC1308½A Oil Check Valve (bottom) 1—EC1312 Oil Check Valve Float 1—EC1338 Oil Check Valve Ball 1—EC1339A Oil Check Valve Retainer Pin		1.00	Thegn
EC1308D	Oil Check Valve (top) Oil Check Valve Float—Use EC1312 Oil Check Valve Ball—Use EC1338		2.00	Thein
EC1308½A	Oil Check Valve (bottom) Oil Check Valve Float—Use EC1312 Oil Check Valve Ball—Use EC1338 Oil Check Valve Retainer Pin—Use EC1339A		.60	Themis
EC1309B	Oil Check Valve Stem		1.25	Theme
EC1312	Oil Check Valve Float		.10	Theos
AEC1350	Oil Cup Assembly, consisting of: 2—EC1286 Oil Cup Sight Glass Gasket (outside) 2—EC1287 Oil Cup Sight Glass 2—EC1288 Oil Cup Sight Glass Retainer Nut 2—EC1289 Oil Cup Sight Glass Gasket (inside) 2—EC1290 Oil Cup Sight Glass Retainer 2—EC1291 Oil Cup Sight Glass Retainer Gasket 1—EC1350 Oil Cup		3.00	Tiara

## Mold Oiler and Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1350½	Oil Cup Valve Stem Nut.....		.75	Tical
EC1353½A	Oil Cup Graduated Sleeve.....		1.00	Tidys
	Oil Cup Graduated Sleeve Set Screw—Use EC1354½.....			
EC1355½	Oil Cup Indicator.....		1.00	Tilde
	Oil Cup Indicator Screw—Use M40.....			

## Pressure Oiler Parts

Part No.	PART NAME	Plate No.	Price	Code Word
EC1258	Pressure Oiler Oil Cup.....		.50	Macao
EC1259	Pressure Oiler Shut-Off Valve.....	16	2.00	Maces
AEC1260	Pressure Oiler Body Assembly (complete).....	16	38.95	Maced
	Pressure Oiler Body Assembly Mounting Screw— Use EC1262½.....	16		
	Pressure Oiler Body Lock Washer—Use 741.....			
	Pressure Oiler Body Mounting Bushing—Use EC1265.....	16		
AEC1260-1	Pressure Oiler Body Sub-Assembly.....	16	17.00	Makim
EC1261	Pressure Oiler Piston Sleeve.....	16	2.50	Macle
EC1262	Pressure Oiler Bracket.....	16	6.00	Macro
	Pressure Oiler Bracket Mounting Screw—Use 511.....			
	Pressure Oiler Bracket Lock Washer—Use EC1260½.....			
EC1263	Pressure Oiler Piston Sleeve Plug.....		.50	Madon
EC1264	Pressure Oiler Cover.....	16	2.00	Mafia
	Pressure Oiler Cover Screw—Use EC1382.....			
EC1265	Pressure Oiler Mounting Bushing (when Margach Feeder is not used).....	16	.50	Mages-
		16	50 4.50	Magma <i>MAGES</i>
EC1266	Pressure Oiler Piston Stop.....	16	1.50	<i>MAGMA</i>
EC1267	Pressure Oiler Piston Stop Stud.....	16	1.00	Magog
	Pressure Oiler Piston Stop Taper Pin—Use 738.....			
EC1268	Pressure Oiler Piston.....		4.00	Magus
	Pressure Oiler Piston Screw—Use EC1269.....			
EC1269	Shoulder Screw (for Pressure Oiler Piston).....		.50	Mahan
EC1270	Pressure Oiler Piston Packing.....	16	.35	Mahat

## Pressure Oiler Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1271	Pressure Oiler Piston Packing Retainer..... Pressure Oiler Piston Packing Retainer Screw— Use EC1243.....	16	.15	Mahdi
EC1272	Pressure Oiler Piston Roller..... Pressure Oiler Piston Roller Screw—Use EC1269.....	16	.50	Mahon
EC1274	Pressure Oiler Adjusting Lever Link..... Pressure Oiler Adjusting Lever Link Fulcrum— Use EC1275..... Pressure Oiler Adjusting Lever Link Fulcrum Nut— Use 230.....	16	3.00	Maids
EC1275	Shoulder Screw (for above and for Weight Link).....	16	1.00	Maiks
EC1276	Pressure Oiler Weight Link..... Pressure Oiler Weight Link Screw—Use EC1276½..... Pressure Oiler Weight Link Screw Nut—Use 230.....	16	3.00	Mains
EC1276½	Shoulder Screw (for both ends of Pressure Oiler Adjusting Lever).....	16	1.00	Mainz
EC1277	Pressure Oiler Adjusting Lever..... Pressure Oiler Adjusting Lever Fulcrum—Use EC1276½.....	16	4.00	Maist
EC1278	Pressure Oiler Weight..... Pressure Oiler Weight Screw—Use EC1275..... Pressure Oiler Weight Screw Nut—Use 230.....	16	4.00	Malar

## Pressure Oiler Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1279	Pressure Oiler Feed Line Pressure Gauge.....	16	2.00	Males
	Pressure Oiler Feed Line Close Nipple—Use 327.....			
	Pressure Oiler Feed Line Tee—Use 336.....			
	Pressure Oiler Feed Line Elbow—Use 337.....			
	Pressure Oiler Feed Line Shut-Off Valve—Use EC1259.....			
	Pressure Oiler Feed Line Pipe—Use EC1280½.....			
	Pressure Oiler Feed Line Street Elbow—Use EC1334½.....			
ΔEC1279½	Pressure Oiler Feed Line Tube Assembly (complete).....	16	<del>2.00</del> 1.00	Malis
EC1279½	Pressure Oiler Feed Line Tubing.....		<del>4.50</del> 4.00	Malls
EC1280	Pressure Oiler Feed Line Tubing Union.....	16	1.00	Malms
EC1280½	Pressure Oiler Feed Line Nipple (6½ inches long).....	16	.20	Malmo
ΔEC1281	Pressure Oiler Diffusion Tube Assembly (complete).....		<del>4.50</del> 6.45	Malts
EC1281	Pressure Oiler Diffusion Tube.....	16	3.50	Malta
EC1281½	Pressure Oiler Diffusion Tube Packing (asbestos).....			
EC1282	Pressure Oiler Diffusion Tube Packing Retainer.....	16	.30	Malty
EC1282½	Pressure Oiler Diffusion Tube Packing Retainer Screw (bottom).....	16	.35	Mamey
EC1283	Pressure Oiler Diffusion Tube Packing Retainer Extension.....	16	.50	Manet
EC1283½	Pressure Oiler Diffusion Tube Packing Retainer Extension Screw.....	16	.35	Manis

## Driving Mechanism

Part No.	PART NAME	Plate No.	Price	Code Word
EC1010A	Drive Shaft Bushing.....	.....	2.00	Taine
EC1011	Drive Shaft Bushing Collar.....	.....	1.00	Taint
	Drive Shaft Bushing Collar Set Screw—Use EC1012.....	.....		
EC1027	Motor Conduit (18¼ inches long) (for Electric machine).....	.....	.50	Radom
EC1028	Rectangular No Thread Unilet.....	.....	.90	Rafle
EC1029	Motor Unilet Nipple.....	.....	.40	Rains
EC1031	Three-Way Rectangular No Thread Unilet (for Gas machine).....	.....	1.00	Rakes
EC1032	Motor Conduit (18 inches long) (for Gas machine).....	.....	.50	Rakee
EC1033	Motor Conduit (10 inches long) (for Gas machine).....	.....	.45	Ralph
EC1034	Motor Conduit (4 inches long) (for Gas machine).....	.....	.45	Ranee
EC1035	90° No Thread Elbow (for Gas machine).....	.....	.75	Ramie
EC1036	45° No Thread Elbow (for Gas machine).....	.....	.50	Ramon
EC1059	Motor Pulley (for 1140 R. P. M. Motors) (for Model F).....	.....	5.00	Ramps
EC1060	Motor Pulley (for 1425 R. P. M. Motors) (for Model F).....	.....	5.00	Ramse
EC1108A	Motor Table.....	.....	5.00	Tamal
	Motor Table Screw—Use 915.....	.....		
EC1109A	Drive Shaft Pulley (for Model F).....	2	4.00	Tames
EC1109½	Drive Shaft Pulley (for Model E).....	.....	5.00	Ramus
	Drive Shaft Pulley Set Screw—Use EC1138.....	.....		
EC1110	Drive Pinion.....	.....	3.00	Tammy
	Drive Pinion Dowel—Use EC1612.....	.....		
EC1111	Drive Shaft.....	.....	1.50	Tamps
	Drive Shaft Screw—Use 451.....	.....		

## Driving Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1114A	Motor Table Bracket.....		3.00	Tamra
	Motor Table Bracket Screw—Use 38.....			
	Motor Table Washer—Use 257.....			
EC1114½	Motor Table Ball Socket Washer.....		.25	Tana
EC1117	Motor Table Front Screw.....		.40	Ranas
EC1118	Motor Table Front Nut.....	2	.30	Tangs
	Motor Table Front Nut Lock Washer—Use 741.....			
	Motor Table Front Nut Pin—Use 279.....			
	Motor Table Front Nut Handle Ball—Use M186.....			
EC1119	Motor Table Rear Screw.....		.45	Tango
	Motor Table Rear Nut—Use EC1416.....			
EC1126A	Motor Table.....		3.00	Tanks
EC1129	Drive Shaft Grease Cup.....		.25	Tansy
EC1136	Drive Pinion Key.....		.15	Taper
EC1142	Drive Pinion Flange (right hand).....		1.00	Tardo
EC1143	Drive Pinion Flange (left hand).....		1.00	Tardy
EC1208C	Drive Gear.....		12.00	Tates
	Drive Gear Screw—Use EC1012.....			
EC1209	Gear Guard.....		4.00	Tatie
	Gear Guard Screw—Use EC1008.....			
EC1210	Gear Guard Bracket.....	4	1.00	Tatou
	Gear Guard Bracket Screw—Use EC1184.....			
EC1216	Drive Gear Key.....		.15	Tauld

## Driving Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
AEC1641	Motor.....	2	25.00	Labor
	Motor Screw—Use 76½.....			
	Motor Screw Washer—Use 74L.....			
EC1642A	Motor Pulley (for 1725 R. P. M. Motors) (for Model E).....	2	3.00	Lauch
	Motor Pulley Set Screw—Use EC1615½.....			
EC1643½	Motor Pulley (for 1425 R. P. M. Motor) (for Model E).....		4.25	Lavas
	Motor Pulley Set Screw—Use 138A.....			
EC1644½	Motor Pulley (for 1140 R. P. M. Motor) (for Model E).....		5.00	Laves
	Motor Pulley Set Screw—Use 290E.....			
EC1649A	Motor Belt (for Model E).....	2	2.00	Lazar
EC1650½	Motor Pulley (for 1725 R. P. M. Motor) (for Model F).....		4.50	Rance
EC1654	Motor Belt (for Model F).....		2.00	Ranch



## Main Shaft and Cams

Part No.	PART NAME	Plate No.	Price	Code Word
EC1006C	Main Shaft Bearing Bracket (left).....	.....	8.00	Taids
	Main Shaft Bearing Bracket Screw—Use 42.....	.....		
	Main Shaft Bearing Oil Tube—Use EC1050A.....	.....		
	Main Shaft Bearing Bracket Dowel—Use EC1005.....	.....		
EC1009	Main Shaft Bearing Bracket (center and right).....	..... 5	8.00	Tails
	Main Shaft Bearing Bracket Screw—Use 42.....	.....		
	Main Shaft Bearing Bracket Dowel (right hand)—Use EC1005.....	.....		
	Main Shaft Bearing Oil Tube (center)—Use EC1049.....	.....		
	Main Shaft Bearing Oil Tube (right hand)—Use EC1050A.....	.....		
EC1049	Main Shaft Bearing Oil Tube (center).....	.....	.25	Longe
	Oiler (for above)—Use 15.....	..... 4		
EC1050A	Main Shaft Bearing Oil Tube (right or left hand).....	.....	.25	Taler
	Oiler (for above)—Use 15.....	..... 4		
EC1056	Main Shaft Hand Wheel (for Model F).....	.....	25.00	Rands
AEC1201C	Main Shaft Assembly (for Model E).....	.....	***	Targe
AEC1201½	Main Shaft Assembly (for Model F).....	.....	* * *	Randy
EC1202A	Main Shaft Hand Wheel (for Model E).....	..... 7	4.00	Tarif
	Main Shaft Hand Wheel Pin—Use EC1211.....	.....		
EC1203	Main Shaft Collar.....	.....	.75	Tarto
	Main Shaft Collar Pin—Use EC1211.....	.....		
EC1204	Material Clamp Cam.....	..... 5	4.00	Tarry
	Material Clamp Cam Pin—Use EC1211.....	.....		

\*\*\*Price on Application.

## Main Shaft and Cams (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1205	Plunger Cam.....	7	2.50	Tarts
	Plunger Cam Pin—Use EC1211.....			
EC1217	Cut-Off Cam (for Model E).....	5	3.00	Taunt
EC1217½	Cut-Off Cam (for Model F).....		3.00	Rangs
	Cut-Off Cam Pin—Use EC1211.....			
EC1237½	Main Shaft Spiral Mitre Gear.....		6.00	Teals
	Main Shaft Spiral Mitre Gear Key—Use EC1231.....			
	Main Shaft Spiral Mitre Gear Set Screw—Use EC1245.....			

## Cooling System Parts

Part No.	PART NAME	Plate No.	Price	Code Word
AEC1294	Water Drain Sight Glass Assembly.....	5	6.00	Tepid
EC1294	Water Drain Sight Glass.....		1.00	Turfa
EC1295	Water Drain Sight Glass Flange (top).....		1.50	Terms
EC1296A	Water Drain Sight Glass Flange (bottom).....		1.50	Terns
EC1297	Water Drain Sight Glass Gasket.....		.15	Terra
EC1298	Water Drain Sight Glass Clamp Screw.....		.35	Terse
EC1335½	Water Outlet Spout.....	5	.50	Thrid
	Water Outlet Spout Street Elbow—Use EC1331½.....			
EC1336A	Water Outlet Pipe.....		.15	Rants
EC1336½A	“Y” Bend (bronze casting).....		.85	Raphie
EC1338½B	Water Inlet Mounting Bracket.....		.85	Rares
	Water Inlet Mounting Bracket Screw—Use EC1243.....			
	Water Inlet Mounting Bracket Set Screw—Use EC1790.....			
EC1339½	Water Inlet Tube (copper).....	8	.15	Rapts
EC1340A	Water Inlet Globe Valve.....	8	3.50	Rases
	Water Inlet Pipe Mounting Bracket—Use EC1338½B.....			
	Water Inlet Pipe Railroad Union—Use 310.....			
	Water Inlet Pipe—Use 338.....			
	Water Inlet Tube—Use EC1339½.....			
	Water Inlet Tube Connectors—Use 384.....			
AEC1344A	Water Drain Cock.....	8	5.00	Rashs

## Cooling System Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
AEC1346C	Water Drain Cup Assembly.....	5	1.50	Rasps
	Water Drain Cup Outlet Nipple—Use EC1347.....			
	Water Drain Cup Outlet Nipple Clamp Screw—Use 681½.....			
	Water Drain Cup Outlet Railroad Union—Use EC1345.....			
	Water Drain Cup Nipple—Use 327.....			
	Water Drain Spout—Use EC1342.....			
	Water Drain Spout Elbow—Use 337.....			
EC1346½B	Drain Cup Support.....	5	.35	Thuss

## Pulling Mechanism

Part No.	PART NAME	Plate No.	Price	Code Word
EC1064	Wedge Release (for Model F)		3.00	Ratch
	Wedge Release Dowel—Use S129			
EC1065	Wedge Release Shaft (for Model F)		.75	Rater
EC1066	Wedge Release Ratchet Wheel (for Model F)	17	3.50	Raths
	Wedge Release Ratchet Wheel Dowel—Use S129			
EC1067	Wedge Release Stop Ball (for Model F)	17	.10	Raton
EC1068	Wedge Release Stop Ball Spring (for Model F)	17	.20	Raten
	Wedge Crank Shaft Dowel—Use EC1473½			
EC1074	Stroke Adjusting Screw Bearing Bracket (for Model F)	17	4.50	Ratin
	Stroke Adjusting Screw Bearing Bracket Screw— Use EC1488½			
AEC1075	Ratchet Pawl Assembly (for Model F)	17	20.00	Ratun
EC1075	Ratchet Pawl (for Model F)	17	4.50	Raves
	Ratchet Pawl Stop Screw—Use 243			
EC1076	Ratchet Pawl Fulcrum Screw (for Model F)	17	.25	Rayon
EC1077	Ratchet Pawl Handle (for Model F)		.60	Razes
EC1078	Ratchet Pawl Handle Knob (for Model F)		.40	Razee
EC1079	Ratchet Pawl Handle Sleeve (for Model F)		.60	React
EC1080	Ratchet Pawl Bracket (for Model F)	17	6.25	Reads
	Ratchet Pawl Bracket Adjusting Screw—Use 659½			
	Ratchet Pawl Bracket Adjusting Screw Nut—Use 230			
EC1081	Ratchet Pawl Bracket Fulcrum Screw (for Model F)	17	.25	Reams
EC1082	Ratchet Pawl Plunger (for Model F)	17	.20	Reaps
	Ratchet Pawl Plunger Spring—Use 295½			

## Pulling Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
AEC1084	Ratchet Pawl Guard Assembly (for Model F).....	17	4.50	Reame
EC1084	Ratchet Pawl Guard (for Model F).....		4.00	Rears
EC1085	Ratchet Pawl Guard Screw (for Model F).....	17	.20	Reast
EC1230	Puller Slide Cam.....		6.00	Tauto
	Puller Slide Cam Set Screw—Use EC1244.....			
	Puller Slide Cam Key—Use EC1231.....			
EC1232	Puller Slide Cam Roll.....		1.00	Tawny
	Puller Slide Cam Roll Stud—Use EC1240.....			
EC1233	Puller Slide Cam Shaft.....		2.75	Taxis
EC1234A	Puller Slide Cam Shaft Bearing (cast iron).....		5.00	Tazza
	Puller Slide Cam Shaft Bearing Screw—Use 40.....			
	Puller Slide Cam Shaft Bearing Pin—Use EC1321.....			
EC1235	Puller Slide Cam Thrust Bearing (bronze).....		3.00	Teach
EC1237	Puller Slide Cam Shaft Spiral Mitre Gear.....		6.00	Teaks
	Puller Slide Cam Shaft Spiral Mitre Gear Key—Use EC1231.....			
	Puller Slide Cam Shaft Spiral Mitre Gear Set Screw— Use EC1245.....			
EC1238	Puller Slide Cam Shaft and Spiral Mitre Gear Housing.....		5.00	Teams
	Puller Slide Cam Shaft and Spiral Mitre Gear Housing Set Screw—Use 446.....			
	Puller Slide Cam Shaft and Spiral Mitre Gear Housing Mounting Screw—Use 40.....			
EC1239	Mitre Gear Housing Cover.....	5	3.00	Tears
	Mitre Gear Housing Cover Screw—Use EC1243.....			

## Pulling Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1240	Puller Slide Cam Roll Stud.....	3	1.00	Tease
EC1242	Mitre Gear Housing Felt Packing.....		.10	Tebet
EC1247	Puller Slide Cam Roll Stud Washer.....		.50	Teils
EC1248A	Puller Slide Cam Guard.....	3	1.00	Teing
	Puller Slide Cam Guard Mounting Screw—Use EC1161.....			
AEC1448B	Puller Wedge Shim (for Model F—36 point).....		2.50	Nacre
AEC1450½	Puller Wedge Shim (for Model E).....	17	2.50	Nagan
AEC1455	Puller Wedge Shim (for Model F—24 point).....	17	2.50	Nagas
EC1459A	Puller Wedge Block.....		.30	Touls
EC1460B	Puller Wedge.....		6.00	Touse
	Puller Wedge Ball—Use EC1441.....			
	Puller Wedge Ball Stud Pin—Use S129.....			
	Puller Wedge Ball Stop Pin—Use 452.....			
AEC1460B	Puller Wedge Assembly (for Model E).....	5	9.00	Towsy
AEC1460½	Puller Wedge Assembly (for Model F).....		9.00	Naker
EC1461	Wedge Crank Spring.....	3-4	.30	Touzl
EC1462B	Wedge Housing (front).....		4.50	Tower
EC1462½	Wedge Guide Key.....		.75	Towns
	Wedge Guide Key Dowel Pin—Use EC1461½.....			
AEC1463A	Wedge Housing Assembly (complete) (for Model E).....	5	xxx	Toxic
EC1463A	Wedge Housing (rear).....		4.50	Toyon
	Wedge Housing Oiler—Use 624.....			
	Wedge Housing Screw—Use EC1243.....			
	Wedge Housing Dowel—Use 581.....			

xxx Price on application.

## Pulling Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1464A	Wedge Crank Spring Stud (short)		.10	Trace
EC1464½	Wedge Crank Spring Stud (long)		.20	Track
EC1465	Wedge Housing Lock Bolt	4	.60	Tract
EC1466	Wedge Housing Lock Bolt Knob	4	1.25	Trags
EC1467A	Wedge Crank Stop Plate		.45	Traik
	Wedge Crank Stop Plate Screw—Use EC1382			
EC1467½	Wedge Crank (inside)		.45	Rebec
EC1468A	Wedge Operating Roller (inside)	4	.35	Trail
EC1468½	Puller Wedge Ball Race Guard		.60	Rebel
EC1469A	Wedge Operating Roller Stud (inside)		.30	Train
AEC1470	Wedge Crank Assembly (for Model E)		4.50	Trait
AEC1470½	Wedge Crank Assembly (for Model F)		4.00	Recal
EC1471A	Wedge Crank Shaft Handle	4	.25	Trama
EC1471½	Wedge Crank Shaft Handle Ball		.35	Tramp
EC1472	Wedge Crank Shaft Operating Roller (outside)	4	.75	Trans
EC1472½	Wedge Crank (outside) (for Model E)	4	1.35	Traps
	Wedge Crank Pin—Use EC1473½			
EC1473	Wedge Crank Shaft Operating Roller Stud	4	.15	Trash
EC1474A	Stroke Adjusting Screw Bearing Bracket	4	1.25	Treks
	Stroke Adjusting Screw Bearing Bracket Screw— Use EC1488½			
EC1475A	Stroke Adjusting Slide	3	7.00	Trets
EC1476	Stroke Adjusting Slide Screw Collar		.15	Trews
	Stroke Adjusting Slide Screw Collar Pin—Use EC1612			
AEC1477	Stroke Adjusting Slide Screw (complete)		2.50	Tripo

*When ordering parts, always give serial number of the machine.*



## Pulling Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1478	Stroke Adjusting Slide Screw Knob	3	1.50	Tribe
	Stroke Adjusting Slide Screw Knob Pin—Use EC1653			
EC1479A	Stroke Adjusting Slide Lock Screw	3	1.50	Trice
	Stroke Adjusting Slide Lock Screw Washer—Use EC1484	3		
EC1480C	Puller Slide		18.00	Trick
	Puller Slide Oiler—Use 624			
EC1480½	Puller Slide Filler Piece	4	.30	Tried
	Puller Slide Filler Piece Screw—Use EC1544½	4		
EC1481A	Puller Slide Spring	4	.15	Trier
EC1482B	Puller Slide Plunger	3	.75	Trigs
EC1485	Puller Slide Cam Housing		35.00	Trinc
	Puller Slide Cam Housing Mounting Screw (long)— Use EC1331½			
	Puller Slide Cam Housing Mounting Pin—Use 182			
	Puller Slide Cam Housing Mounting Screw (short)— Use EC1116			
EC1486B	Puller Slide Guard	2-4	1.25	Loins
	Puller Slide Guard Screw—Use EC1243	4		
EC1487	Puller Slide Gib	4	1.25	Tripe
	Puller Slide Gib Screw (three right hand screws)— Use 625A	2		
EC1487½	Puller Slide Gib Screw (left hand)	2	.20	Trist
EC1488A	Stroke Adjusting Index Plate	4	.90	Trite
	Stroke Adjusting Index Plate Screw—Use EC1488½	4		

## Pulling Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1489	Puller Slide Wedge Bearing Plate	3	3.50	Trods
	Puller Slide Wedge Bearing Plate Screws—Use EC1466½			
EC1490B	Puller Slide Release Plate Adapter	3	2.00	Trogs
	Puller Slide Release Plate Adapter Screws—Use EC1500			
AEC1491A	Puller Slide Material Release Plate Assembly (For 36 pt.)	4	5.25	Troke
AEC1495A	Puller Slide Material Release Plate Assembly (For 24 pt.)		4.25	Reced
EC1496A	Stroke Adjusting Index Name Plate	3	.50	Trone
AEC1497	Puller Slide Material Release Plate Assembly (For 2 to 18 pt. incl.)		3.25	Reces
EC1680	Wedge Housing Hinge Block (Right Hand)	3	2.50	Lenin
	Wedge Housing Hinge Block Mounting Screw— Use EC1681½			
	Wedge Housing Hinge Block Dowel Pin—Use 557			
EC1681	Wedge Housing Hinge Block (Left Hand)	3	2.50	Lents
	Wedge Housing Hinge Block Mounting Screw— Use EC1681½			
	Wedge Housing Hinge Block Dowel Pin—Use 557			
EC1682	Wedge Housing Hinge Shaft	3	.25	Leons
	Wedge Housing Hinge Shaft Set Screw—Use EC1694½			
EC1683	Material Point Gage Hinge Shaft	3	.20	Lenox
	Material Point Gage Hinge Shaft Screw—Use EC1683½			
EC1684	Point Size Gage Block (1½ point)		1.50	Lests
EC1684½	Wedge Housing Rest		.45	Letch
EC1685	Point Size Gage Block (2 point)		1.50	Lethe

## Pulling Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1686	Point Size Gage Block (3 point)	3	1.50	Letts
EC1687	Point Size Gage Block (4 point)	3	1.50	Leuch
EC1687½	Point Size Gage Block (18, 24 and 36 point) (for Model F)		1.50	Recit
EC1688	Point Size Gage Block (6 point)	3	1.50	Levee
EC1688½	Point Size Gage Block (8 point)	3	1.50	Level
EC1689	Point Size Gage Block (10 point)	3	1.50	Leven
EC1689½	Point Size Gage Block (12 point)	3	1.50	Levis
EC1690A	Point Size Gage Block (18 point) (for Model E)	3	1.50	Levin
EC1690½	Point Size Gage Block (14 point)		1.50	Recki
EC1691	Point Size Gage Block Spacer	3	1.50	Levys
EC1691½	Point Size Gage Block (16 point)		1.50	Recke
EC1692	Point Size Gage Block (1 point)	3	1.50	Lewis

## Clamping Mechanism

Part No.	PART NAME	Plate No.	Price	Code Word
EC1504	Material Clamp Spring.....		.45	Trops
EC1508B	Material Clamp Lever.....	5	3.00	Trope
	Material Clamp Lever Cam Roll—Use EC1212A.....	5		
	Material Clamp Lever Cam Roll Stud—Use EC1512A.....	5		
	Material Clamp Lever Stud Nut—Use 59.....	5		
	Material Clamp Lever Fulcrum Pin—Use EC1510.....	5		
EC1510	Material Clamp Lever Fulcrum Pin.....	5	1.00	Trots
	Material Clamp Lever Fulcrum Pin Set Screw— Use EC1115.....	5		
EC1512A	Cam Roll Stud.....	5	1.00	Troth
EC1536A	Twin Lead Separator.....		.75	Trows
EC1538	Material Clamp Bracket Plate (For 24 pt.).....		1.50	Recko
	Material Clamp Bracket Plate Screw—Use EC1537.....			
EC1539	Material Clamp Bracket Plate (For 36 pt.).....		2.00	Reeku
	Material Clamp Bracket Plate Screw—Use EC1537.....			
EC1540B	Material Clamp Plunger.....		3.00	Trowl
	Material Clamp Plunger Pin—Use EC1543.....			
EC1541A	Material Clamp Bracket.....		6.00	Truce
EC1542	Material Clamp Spring Nut.....		1.00	Truck
EC1543	Material Clamp Plunger Pin.....		.15	Truly
AEC1544A	Material Clamp Bracket Plate (For 2 to 18 pt.).....		3.00	Trump

## Clamping Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1545A	Material Clamp Plate (Movable).....	3	2.00	Truss
EC1546A	Material Clamp Plate Plunger.....		.60	Trust
	Material Clamp Plate Plunger Cotter Pin—Use 68.....			
EC1547	Material Clamp Plate Plunger Spring.....		.15	Truth
EC1548	Material Clamp Plate Plunger Spring Adjusting Nut.....		.25	Tryon
EC1549A	Material Clamp Plate Plunger Handle.....	3	.75	Tryst
	Material Clamp Plate Plunger Handle Cotter Pin—Use 68.....			
EC1550	Material Guide Roller.....	3	.30	Tubas
EC1551	Material Guide Roller Bracket.....	3	1.50	Tubby
EC1552	Material Guide Roller Bracket Fulcrum Stud.....	6	.35	Tubes
EC1553	Material Guide Roller Stud.....	3	.25	Looks
EC1554A	Material Guide Roller Bracket Adjusting Screw.....	3	1.25	Tucks
EC1556	Material Guide Roller Bracket Spring.....		.20	Tudor
EC1559	Material Clamp Plate Plunger Handle Guide.....		.20	Tulas

## Material Cutting-Off Mechanism

Part No.	PART NAME	Plate No.	Price	Code Word
EC1442	Cutter Head Return Tension Lever Handle Stud.....		.50	Torso
AEC1443	Cutter Head Return Tension Lever Handle.....		.50	Torys
AEC1522F	Cut-Off Lever Assembly.....	5	2.75	Trubs
	Cut-Off Lever Roll Stud—Use EC1512A.....		3.50	Recka
	Cut-Off Lever Roll Stud Nut—Use 59.....			
	Cut-Off Lever Cam Roll—Use EC1212A.....			
	Cut-Off Lever Fulcrum Pin—Use EC1510.....		2.75	TRUBS
EC1522D	Cut-Off Lever.....		3.50	Recka
EC1524	Cut-Off Lever Shoe Spring Guide Holder.....		.75	Recol
EC1525	Cut-Off Lever Shoe Slide Stud.....		.30	Recob
EC1526	Cut-Off Lever Shoe Spring Guide.....		.25	Recod
EC1527	Cut-Off Lever Shoe Slide.....		3.00	Recof
EC1523B	Cut-Off Lever Shoe.....	4	1.25	Trojs
	Cut-Off Lever Shoe Screw—Use 570.....			
EC1529	Cut-Off Lever Spring.....		.25	Trout
	Cut-Off Lever Spring Anchor Screw—Use 40.....			
EC1599	Material Holding Catch Plunger.....		.25	Tulle
	Material Holding Catch Plunger Spring—Use EC1673.....			
	Material Holding Catch Plunger Spring Tension Screw— Use EC1674.....			
EC1607A	Stationary Knife (for Model F—24 point).....	17	2.50	Recog
EC1613½A	Movable Knife Operating Lever.....		1.50	Turin
AEC1615G	Cutter Head Complete Assembly (for Model E).....	2	50.00	Turks
EC1615G	Cutter Head Casting (for Model E).....		20.00	Turki

## Material Cutting-Off Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
AEC1615½	Cutter Head Complete Assembly (for Model F)		50.00	Recom
EC1616A	Stationary Knife (for Model F—36 point)	17	2.50	Recon
	Cutter Head Set Screw—Use EC1598			
EC1617C	Movable Knife (for Model E)	4-5	2.50	Tutor
EC1617½C	Cutter Head Cover (for Model E)	4	4.00	Tutti
	Cutter Head Cover Screw—Use EC1382			
EC1618½	Stationary Knife Adjusting Screw	3	.15	Recov
EC1619B	Movable Knife Operating Lever Bushing		1.00	Twals
EC1619½A	Stationary Knife (18 point)	3	2.50	Tweai
	Stationary Knife Mounting Screw—Use EC1648	6		
	Stationary Knife Guide Pin—Use 754			
	Stationary Knife Adjusting Screw—Use EC1618½A	3		
EC1620C	Movable Knife Spring	3	.15	Tweed
EC1620½	Movable Knife (for Model F)		2.50	Recow
EC1621B	Movable Knife Operating Screw	3	.40	Twang
EC1622D	Cutter Head Guide Plate	4-6	1.50	Tweet
	Cutter Head Guide Plate Guide Pin—Use EC1789			
EC1622½B	Cutter Head Guide Plate Pinion Knob	4	.50	Twier
	Cutter Head Guide Plate Pinion Knob Pin—Use 676½			
EC1623D	Cutter Head Guide Plate Rack		1.25	Twigs
EC1623½B	Movable Knife Operating Lever Bushing Lock Screw		.20	Twill
EC1624C	Material Holding Catch (for Model F—24 and 36 point)		1.50	Recoz
EC1625C	Material Holding Catch (18 point)	3-6	.60	Twins

## Material Cutting-Off Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1625½A	Cutter Head Guide Plate Pinion.....	.....	2.00	Twine
	Cutter Head Guide Plate Pinion Retaining Screw— Use EC1669.....	.....		
EC1626C	Material Holding Catch Fulcrum Screw.....	.....	.25	Twire
EC1626½A	Material Cut-Off Operating Rod Stop Screw.....	6	.15	Twirl
EC1627	Cutter Head Guide Rod.....	.....	.25	Twist
	Cutter Head Guide Rod Set Screw—Use EC1220.....	.....		
AEC1628B	Material Cut-Off Operating Rod Assembly.....	6	8.00	Twits
EC1628B	Material Cut-Off Operating Rod.....	.....	3.00	Twixt
AEC1628½	Material Cut-Off Safety Rod Assembly.....	.....	.75	Tyche
EC1629½	Material Cut-Off Connecting Pin.....	.....	.25	Tying
EC1631½B	Material Cut-Off Safety Spring Post.....	.....	2.50	Tyler
	Material Cut-Off Safety Spring Post Screw—Use EC1790.....	4		
	Material Cut-Off Safety Spring Post Dowel Pin—Use S129.....	.....		
EC1633½A	Material Cut-Off Safety Spring.....	2-3-6	.25	Tymp8
EC1635½A	Cutter Head Guide Plate Point-Size Plate (for Model F).....	.....	.25	Recta
EC1636½A	Cutter Head Guide Plate Ratchet Base.....	5	1.50	Typal
	Cutter Head Guide Plate Ratchet Base Screw— Use EC1637½.....	.....		
	Cutter Head Guide Plate Ratchet Base Dowel Pin— Use 676½.....	.....		
EC1638½A	Cutter Head Guide Plate Point-Size Indicator.....	3	.75	Turos
	Cutter Head Guide Plate Point-Size Indicator Screw— Use EC1639½.....	3		



## Material Cutting-Off Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1640B	Material Table Brace	2	3.50	Lager
	Material Table Brace Screw (long)—Use 915			
	Material Table Brace Screw (short)—Use 76½			
	Material Table Brace Dowel Pin—Use EC1005			
	Material Table Brace Tension Lever Pawl Stop Pin— Use EC1300			
	Material Table Brace Tension Lever Stop Pin—Use EC1005			
EC1640½A	Cutter Head Guide Plate Point-Size Plate (for Model E)		.30	Laban
	Cutter Head Guide Plate Point-Size Plate Escutcheon Pin—Use EC1641½			
EC1642½A	Cutter Head Guide Plate Ratchet		1.25	Laura
	Cutter Head Guide Plate Ratchet Pin—Use 676½			
EC1645½	Cutter Head Guide Plate Pinion Spring		.15	Laver
EC1648½	Safety Spring Post Pin		.15	Layte
EC1649½	Safety Spring Post Guide		.25	Lazes
	Safety Spring Post Guide Dowel Pin—Use 517			
EC1662A	Material Cut-Off Gage Plunger Housing		4.00	Lears
	Material Cut-Off Gage Plunger Housing Guide Pin— Use 592			
EC1662½	Material Cut-Off Gage Plunger Housing Guide Screw		20	Lerns
AEC1663C	Material Cut-Off Gage	2	26.00	Least
EC1664A	Material Cut-Off Gage Plunger	6	1.00	Leave
	Material Cut-Off Plunger Stop Screw—Use EC1667½			

## Material Cutting-Off Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1665B	Material Cut-Off Gage Micrometer Adjustment Screw.....	6	.75	Leavy
EC1665½	Material Cut-Off Gage Micrometer Adjustment Graduated Sleeve.....		.75	Leddy
EC1666A	Material Cut-Off Gage Locating Pin.....		.20	Ledge
EC1667	Material Cut-Off Gage Plunger Spring.....		.15	Leech
EC1668A	Material Cut-Off Gage Indicator.....	6	1.00	Leeks
	Material Cut-Off Gage Indicator Pin—Use EC1339A.....			
	Material Cut-Off Gage Indicator Screw—Use EC1679.....			
EC1670D	Material Cut-Off Gage Stop.....	6	3.00	Leger
EC1670½A	Material Cut-Off Gage Stop Locating Pin.....		.10	Leggy
EC1671B	Material Cut-Off Gage Stop Clamp Screw.....		.35	Leith
EC1671½	Material Cut-Off Gage Stop Clamp Screw Retaining Screw.....		.20	Leman
EC1672½	Material Cut-Off Gage Micrometer Adjustment Tension Button.....		.15	Lemon
EC1673	Material Cut-Off Gage Micrometer Adjustment Tension Button Spring.....		.15	Lenas
EC1674	Material Cut-Off Gage Micrometer Adjustment Tension Button Spring Screw.....		.20	Lemur
EC1674½A	Material Cut-Off Gage Arm Name Plate.....		.50	Lends
	Material Cut-Off Gage Arm Name Plate Screw— Use EC1679.....			
EC1755	Positive Return Bracket.....	4	2.50	Lints
	Positive Return Bracket Screw—Use EC1243.....	4		

## Material Cutting-Off Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1756	Positive Return Bracket Adjusting Screw.....	3	1.25	Lions
	Positive Return Bracket Adjusting Screw Lock Screw— Use EC1682½.....	3		
EC1757	Positive Return Bracket Adjusting Screw Spring.....		.15	Lippe
EC1758	Positive Return Bracket Adjusting Screw Spring Retainer.....		.25	Lisle
	Positive Return Bracket Adjusting Screw Spring Retainer Screw—Use EC1746.....			
EC1759A	Positive Return Guide Sleeve.....	3	2.00	Lisps
EC1760	Positive Return Guide Sleeve Key.....	5	.50	Lists
	Positive Return Guide Sleeve Key Screw—Use EC1761.....	5		
EC1770	Cutter Head Return Tension Lever.....	2-6	1.50	Livre
	Cutter Head Return Tension Lever Handle— Use AEC1443.....			
	Cutter Head Return Tension Lever Handle Stud—Use EC1442.....			
EC1771	Cutter Head Return Tension Lever Fulcrum Screw.....	2	.25	Llano
EC1773A	Cutter Head Return Tension Lever Pawl.....	2-6	2.50	Lloyd
EC1774A	Cutter Head Return Tension Lever Pawl Fulcrum Screw.....	2	.20	Loads
EC1775	Cutter Head Return Tension Spring.....	2	.20	Loans
EC1776	Cutter Head Return Intermediate Lever.....		2.50	Loams
	Cutter Head Return Intermediate Lever Fulcrum Screw— Use EC1606½.....			
EC1777	Cutter Head Return Intermediate Lever Guard.....		1.45	Lobby

## Stacking Mechanism

Part No.	PART NAME	Plate No.	Price	Code Word
EC1072	Material Table End Piece (for Model F).....		6.00	Recte
	Material Table End Screw—Use EC1302½.....			
	Material Table End Dowel—Use EC1558.....			
EC1601D	Material Table and Cutter Head Bracket.....		12.00	Tumid
	Material Table and Cutter Head Bracket Screw—Use 42.....			
	Material Table and Cutter Head Bracket Pin—Use EC1185.....			
EC1602F	Material Table.....		35.00	Tumor
	Material Table Screw—Use 42.....			
	Material Table Pin (large)—Use EC1186.....			
	Material Table Pin (small)—Use S129.....			
EC1603C	Gage Rod Bearing Bracket.....	2-6	2.50	Tumps
	Gage Rod Bearing Bracket Screw—Use EC1256.....			
	Gage Rod Bearing Bracket Pin—Use 581.....			
EC1604C	Material Guide Plate (rear adjustable).....	6	5.00	Tunas
EC1604½	Material Guide Plate (rear adjustable) Extension.....		.60	Tunes
	Material Guide Plate (rear adjustable) Extension Screw— Use EC1746.....			
EC1605B	Material Guide Plate (rear adjustable) Screw Knob.....		.50	Tunic
EC1605½	Material Guide Plate (rear adjustable) Adjusting Screw.....		.25	Tunis
EC1606½	Material Guide Plate (rear adjustable) Stop Screw (for Model E).....	4	.20	Tuque
EC1630B	Material Guide Plate (rear adjustable) Stop Screw (for Model F).....		.25	Recti

## Stacking Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1672B	Material Table End Piece (for Model E).....		2.50	Lemma
	Material Table End Piece Screw—Use EC1243.....			
EC1694A	Material Stacker Sprocket (rear).....		1.00	Lhasa
	Material Stacker Sprocket (rear) Pin—Use S142.....			
EC1695B	Material Stacker Sprocket Chain.....	4-6	1.25	Liars
EC1695½	Material Stacker Sprocket Chain Link Rivet.....		.10	Libau
EC1696	Material Stacker Sprocket Bracket (front).....		.60	Libel
	Material Stacker Sprocket Bracket (front) Screw— Use EC1544½.....			
EC1696½	Material Stacker Sprocket (front).....	6	1.00	Liber
EC1697A	Material Stacker Sprocket Bracket (rear right hand).....		.75	Libra
	Material Stacker Sprocket Bracket (rear right hand) Screw—Use 76½.....			
EC1697½A	Material Stacker Sprocket bracket (rear left hand).....	4	.60	Licht
	Material Stacker Sprocket Bracket (rear left hand) Screw—Use 76½.....			
EC1698A	Material Stacker Sprocket Stud.....		.25	Licks
EC1698½	Material Stacker Tension Spring.....	4	.50	Lieds
	Material Stacker Tension Spring for Retainer Screw— Use EC1436.....			
EC1740A	Material Stacker Sprocket Shaft.....	4	.35	Liens
EC1742A	Material Stacker Safety Guide Spring Housing.....	6	2.50	Lieve
EC1742½	Material Stacker Safety Guide Spring Housing Knob.....	6	.30	Ligan

## Stacking Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1743A	Material Stacker.....	6	4.00	Light
	Material Stacker Screw—Use EC1746.....			
EC1744B	Material Stacker Safety Guide.....		.60	Ligny
EC1745A	Material Stacker Safety Guide Stud.....		.20	Likin
EC1747A	Material Stacker Safety Guide Lock.....	6	.50	Lilts
EC1748	Material Stacker Safety Guide Lock Stud.....	6	.20	Limas
EC1749	Material Stacker Safety Guide Spring.....		.20	Limbs
EC1750A	Material Stacker Safety Guide Spring Stud.....		.45	Limes
EC1751A	Material Stacker Safety Guide Spring Stop.....		.45	Limit
EC1752A	Material Stacker Chain Stud.....		.35	Limps
	Material Stacker Chain Stud Nut—Use EC1762.....	6		
	Material Stacker Chain Stud Nut Lock Washer—Use EC1763.....			
EC1752½	Material Stacker Tension Spring Clutch Collar.....		.75	Linen
EC1753	Material Stacker Tension Spring Clutch.....		.50	Lings
	Material Stacker Tension Spring Clutch Set Screw— Use EC1683½.....			
EC1753½	Material Stacker Sprocket Shaft Collar.....		.30	Lingo
	Material Stacker Sprocket Shaft Collar Set Screw— Use EC1683½.....			
EC1762	Material Stacker Chain Stud Nut.....	6	.15	Lives

## Gas Crucible and Parts

Part No.	PART NAME	Plate No.	Price	Code Word
EC1801	Crucible Gas Burner (artificial gas)	9	16.00	Looms
EC1801½	Crucible Gas Burner (natural gas)		20.00	Loony
	Crucible Gas Burner Mounting Screw—Use 76½			
EC1802	Crucible		35.00	Loons
	Crucible Mounting Screw—Use 556			
	Crucible Mounting Pin—Use 607			
EC1803B	Crucible Cover (fixed half)	8	5.50	Loots
	Crucible Cover (fixed half) Mounting Screw—Use EC1341			
EC1804	Crucible Cover (fixed half) Packing Retainer		2.25	Lopez
	Crucible Cover (fixed half) Packing Retainer Mounting Screw—Use 1133			
EC1805	Mold Housing (for Model E)	8	20.00	Lopes
EC1805½	Mold Housing (for Model F)		***	Rectu
	Mold Housing Mounting Screw—Use 915			
	Mold Housing Mounting Pin—Use 261			
EC1806	Crucible Burner Gas Mixer	9	6.00	Lords
EC1807A	Crucible Burner Gas Valve	9	1.25	Lores
EC1808A	Crucible Burner Valve Shaft	9	1.00	Loris
EC1809	Governor Gas Line Union		.50	Lorry
EC1810A	Gas Governor Cover	8	3.00	Loses
	Gas Governor Cover Mounting Screw—Use EC1379½			
EC1811	Gas Governor Expansion Tube		.30	Losel
EC1812	Gas Governor Carbon		.45	Loshs
EC1814	Gas Governor Frame		5.00	Lotah
	Gas Governor Frame Mounting Screw—Use EC1646½			

\*\*\*Price on Application.

## Gas Crucible and Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1815	Gas Governor Frame Cover	.....	2.00	Lotto
	Gas Governor Frame Cover Mounting Screw—Use 366	.....		
EC1816	Gas Governor Adjusting Screw	8	1.50	Lotze
EC1817	Crucible Gas Line Tube	.....	.40	Lough
	Crucible Gas Line Tube Union—Use EC1809	.....		
EC1818	Governor Gas Line Tube	.....	.40	Louse
EC1819	Crucible Gas Mixer Connecting Elbow Union	.....	.60	Louts
EC1820	Throat and Mold Burner	9	.20	Loves
EC1821	Throat and Mold Burner Pipe	9	.20	Lover
EC1822A	Throat Burner Valve Shaft	9	1.00	Lowly
EC1823	Throat and Mold Heater Mixer (artificial gas)	9	2.00	Lowns
EC1823½	Throat and Mold Heater Mixer (natural gas)	.....	2.00	Lowpe
EC1824	Governor Gas Line Elbow Union	.....	.50	Loyal
EC1826	Crucible Throat and Mold Housing Burner Valve Shaft	.....		
	Handwheel	.....	.35	Lucan
EC1827	Crucible Throat and Mold Housing Burner Valve and Shaft	.....		
	Connecting Pin	.....	.10	Lucas
EC1829	Gas Governor Adjustment Stop Screw	.....	.25	Lucca
EC1830A	Crucible Casing	8	30.00	Luces
EC1830½	Crucible Casing Mounting Screw	.....	.10	Lucid
EC1831	Sealing Burner and Case Cover (right hand)	.....	2.00	Lucky
	Sealing Burner and Case Cover (right hand) Mounting	.....		
	Screw—Use EC1382	.....		



## Gas Crucible and Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1832	Sealing Burner and Case Cover (left hand)	8	2.00	Lucre
EC1833	Sight Hole Cover	8	.60	Lumen
	Sight Hole Cover Mounting Screw—Use 282	8		
	Sight Hole Cover Stop Pin—Use 676½			
EC1834	Crucible Reducing Bushing		.15	Lumps
EC1835A	Gas Manifold	9	9.00	Lunch
	Gas Manifold Mounting Screw—Use EC1116			
EC1836	Governor Gas Line Nipple (long)		.15	Lungs
EC1837	Main Gas Inlet Cock	8-9	1.25	Lunts
EC1838	Gas Valve Adjusting Bushing Clamp Screw		.50	Lupin
EC1839	Gas Valve Adjusting Bushing		.25	Lurch
EC1840	Gas Inlet Pipe Mounting Bracket		.25	Lures
	Gas Inlet Pipe Mounting Bracket Screw—Use 210			
	Gas Inlet Pipe Mounting Bracket Nut—Use 230			
	Gas Inlet Pipe Mounting Bracket Washer—Use 758			
EC1841	Gas Inlet Shoulder Nipple (upper)		.30	Lurid
EC1842	Crucible Gas Burner Elbow Connecting Nipple		.15	Lurks
EC1843	Main Gas Inlet Pipe		.20	Lusty
EC1844	Main Gas Inlet Pipe Strap		.10	Lutes
EC1845	Main Gas Inlet Street Elbow		.25	Luxor
EC1846	Manifold Adjusting Bushing		.25	Luzon
EC1847	Manifold Adjusting Bushing Clamp Screw		.75	Lying
EC1848	Crucible Burner Adjusting Bushing		.65	Recty
EC1849	Crucible Burner Adjusting Bushing Clamp Screw		1.50	Recur

## Gas Crucible and Parts (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1854	Crucible Throat and Mold Housing Burner Valve Indicator..... Crucible Throat and Mold Housing Burner Valve Indicator Set Screw—Use EC1354½	.....	.45	Lyric
EC1855	Crucible Throat and Mold Housing Burner Valve Stem Bracket..... Crucible Throat and Mold Housing Burner Valve Stem Bracket Mounting Screw—Use EC1648	.....	1.50	Lysol
AEC1858	Fuse and Switch Box..... Fuse and Switch Box Mounting Screw—Use M185	.....	15.00	Lyssa
EC1859	Motor Switch Flush Plate.....	.....	.50	Lytta
EC1861	Crucible Throat and Mold Housing Burner Name Plate..... Crucible Throat and Mold Housing Burner Name Plate Mounting Screw—Use EC1679	.....	1.00	Udder
EC1862	Fuse Box Name Plate..... Fuse Box Name Plate Mounting Screw—Use EC1679	.....	.60	Ukase
EC1863	Motor Name Plate..... Motor Name Plate Mounting Screw—Use EC1679	.....	.60	Ulcer
EC1868	Gas Lighter Elbow Connecting Nipple (2¼" long).....	.....	.15	Ulloa
EC1869	Gas Lighter Elbow Connecting Nipple (3" long).....	.....	.15	Umber
EC1870	Gas Lighter.....	8-9	3.00	Umbo8
EC1871	Gas Lighter Orifice.....	9	.25	Uncos
EC1872	Gas Lighter Name Plate..... Gas Lighter Name Plate Mounting Screw—Use EC1679	.....	.60	Uncut
EC1873	Gas Lighter Orifice Nipple.....	.....	.45	Undes

## Plunger Mechanism

Part No.	PART NAME	Plate No.	Price	Code Word
EC1207A	Plunger Lever Rod Yoke.....	7	2.00	Tatar
	Plunger Lever Rod Yoke Cam Roll Stud Nut—Use 59.....			
	Plunger Lever Rod Yoke Cam Roll—Use EC1212A.....			
	Plunger Lever Rod Yoke Cam Roll Stud—Use EC1512A.....			
EC1314A	Plunger Lever Bracket.....		2.00	Therm
	Plunger Lever Bracket Screw—Use 40.....			
	Plunger Lever Bracket Screw (center)—Use EC1329½.....			
EC1315B	Plunger Lever.....	2	4.00	Theta
	Plunger Lever Bracket Pin—Use EC1320.....			
	Plunger Lever Bracket Pin Set Screw—Use EC1615½.....			
EC1316A	Plunger Rod Clevis.....	7	1.50	Thief
EC1318B	Plunger Connecting Rod Pin.....	2-5		Thill
	Plunger Connecting Rod Pin Cotter—Use 68.....			
AEC1319A	Plunger Rod Clevis Pin.....	2	1.50	Thins
EC1320	Plunger Lever Bracket Pin.....	2	.25	Thine
	Plunger Lever Bracket Pin Set Screw—Use EC1615½.....			
EC1321½A	Plunger Connecting Rod.....		.75	Think
	Plunger Connecting Rod Lift Pin—Use EC1380.....			
EC1323	Plunger Spring.....	7	.50	Thirs
EC1324	Plunger Spring Washer.....		.40	Thirl

## Plunger Mechanism (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
AEC1327A	Plunger Assembly, consisting of: 1—EC1327A Plunger 1—EC1321A Plunger Connecting Rod 1—EC1328½ Plunger Pin 1—EC1380 Plunger Lift Pin	2	4.00	Thoom
EC1327A	Plunger..... Plunger Pin—Use EC1328½.....	.....	2.75	Thors
EC1332	Plunger Lever Rod..... Plunger Lever Rod Nut—Use 269..... Plunger Lever Rod Check Nut—Use EC1363.....	7 7 7	.50	Thrap

## Miscellaneous Parts and Supplies

Part No.	PART NAME	Plate No.	Price	Code Word
EC1000	Elrod Base Tray.....	2	3.50	Taens
AEC1042	Special Elrod Gear Housing Grease.....		.50	Fakes <i>Recor</i>
AEC1020	Mold Container Complete.....	2	7.50	Recov <i>Takes</i>
EC1021	Mold Container Cover.....		2.75	Taker
	Mold Container Cover Hinge Pin—Use 96.....			
	Mold Container Screw—Use 291½.....			
AEC1022	Mold Basket (small handle).....		1.00	Tals
AEC1023	Mold Basket (large handle).....		1.00	Talds
EC1025	Slug Clipper.....		10.00	Reciv
AEC1069	Mold Sealing Plate (for Model F, ¾ inch mold).....	17	1.50	Reden
AEC1070	Mold Sealing Plate (for Model F, ⅝ inch mold).....		3.00	Redin
AEC1019	Mold Sealing Plate (for Model E).....	17	1.50	Redon
AEC1250-1	Special Elrod Oil (1 gallon).....		<del>3.00</del>	Telas
AEC1250-5	Special Elrod Oil (5 gallon).....		<del>14.00</del>	Telic
EC1255	Oiler Wrench.....		.50	Tells
EC1310½A	Mold Adapter Plate (for Model F).....	17	4.75	Redun
AEC1325	Crucible Well Scraper.....		3.50	Thons
AEC1328A	Mold Cover Assembly, consisting of:		4.00	Thorn
	1—EC1328A Mold Cover Casting			
	1—EC1358A Mold Cover Handle			
	1—EC1361 Mold Cover Slide			
	1—EC1153 Mold Cover Slide Screw			
	1—512 Mold Cover Slide Dowel Pin*			

## Miscellaneous Parts and Supplies (Continued)

Part No.	PART NAME	Plate No.	Price	Code Word
EC1328A	Mold Cover (casting).....	.....	2.50	Thoro
	Mold Cover Handle—Use EC1358A.....	.....		
AEC1337A	Metal Drip Cup Assembly, consisting of : 1—EC1337A Metal Drip Cup Casting 1—EC1357A Metal Drip Cup Handle	.....	1.50	Thril
EC1337A	Metal Drip Cup (casting).....	.....	.75	Thrip
EC1357A	Metal Drip Cup Handle.....	.....	.75	Tilly
EC1358A	Mold Cover Handle.....	.....	.20	Tilth
EC1361	Mold Cover Slide.....	.....	.40	Tines
	Mold Cover Slide Dowel Pin—Use 512.....	.....		
	Mold Cover Slide Screw—Use EC1133.....	.....		
EC1536A	Twin Strip Separator.....	.....	.75	Trows
EC1616 1/2	5/16 Bristo Set Screw Wrench.....	.....	.15	Tusks
AEC1655	Mold Remover.....	.....	3.00	Redyn
EC1660	Mold Remover Wrench.....	.....	.40	Redat

## Screws, Nuts, Washers, Pins, Fittings, Etc.

Part No.	PART NAME	Specifications	Style No.	Plate No.	Price	Code Word
15	Oil Cup.....				.25	Maims
38	Hexagon Head Cap Screw.....	$\frac{1}{2}$ -13x1 $\frac{1}{2}$ long.....	3	15	.20	Nadir
40	Hexagon Head Cap Screw.....	$\frac{5}{16}$ -18x1 long.....	3	15	.15	Marks
M40	Filister Head Screw.....	No. 5-44x $\frac{1}{4}$ long.....			.10	Tabes
42	Hexagon Head Cap Screw.....	$\frac{1}{2}$ -13x1 long.....	3	15	.20	Corns
51	Headless Cup Point Set Screw.....	$\frac{1}{4}$ -20x $\frac{3}{16}$ long.....	4	15	.15	Crags
59	Hexagon Nut.....	$\frac{1}{2}$ x13.....	101	15	.20	Matin
68	Cotter Pin.....	$\frac{3}{8}$ x $\frac{3}{4}$ long.....	57	15	.10	Loess
76 $\frac{1}{2}$	Hexagon Head Screw.....	$\frac{1}{4}$ -20x $\frac{3}{4}$ long.....	3	15	.20	Turco
96	Dowel Pin.....	$\frac{1}{4}$ x1 $\frac{1}{2}$ long.....	56	15	.15	Moody
121A	Conduit Adapter.....				.50	Trave
122	Headless Cup Point Set Screw.....	$\frac{5}{16}$ -18x $\frac{3}{8}$ long.....	4	15	.10	Mural
128	Standard Box Connector.....				.15	Tabet
S129	Dowel Pin.....	$\frac{1}{8}$ x $\frac{3}{4}$ long.....	56	15	.10	Tacet
130	Terminal Bushing.....				.50	Music
138A	Headless Cup Point Set Screw.....	$\frac{5}{16}$ -18x $\frac{5}{8}$ long.....	4	15	.10	Naive
S142	Dowel Pin.....	$\frac{3}{8}$ x $\frac{2}{3}$ long.....	56	15	.15	Trawl
158	Lock Washer.....	$\frac{5}{16}$ x $\frac{1}{16}$ thick.....	202	15	.10	Newsy
182	Dowel Pin.....	$\frac{5}{16}$ x $\frac{1}{4}$ long.....	56	15	.15	Noisy
M185	Round Head Screw.....	$\frac{1}{4}$ -20x $\frac{3}{8}$ long.....	7	15	.10	Tachy
M186	Brass Ball.....	$\frac{1}{16}$ inch.....			.20	Spoon
M207	Headless Cup Point Set Screw.....	$\frac{1}{4}$ -20x $\frac{5}{8}$ long.....	4	15	.15	Radet
M208	Headless Set Screw.....	$\frac{3}{8}$ -16x $\frac{1}{2}$ long.....	4	15	.10	Stoat
M210	Hexagon Head Cap Screw.....	$\frac{5}{16}$ -18x $\frac{3}{4}$ long.....	3	15	.20	St...

## Screws, Nuts, Washers, Pins, Fittings, Etc. (Continued)

Part No.	PART NAME	Specifications	Style No.	Plate No.	Price	Code Word
230	Hexagon Nut.....	$\frac{1}{4}$ -20x $\frac{1}{8}$ thick.....	102	15	.10	Trays
257	Washer.....	$\frac{7}{8}$ x $\frac{3}{4}$ x $\frac{3}{32}$ thick.....	201	15	.10	Jells
261	Dowel Pin.....	$\frac{1}{4}$ x $\frac{7}{8}$ long.....	56	15	.15	Oorie
269	Hexagon Nut.....	$\frac{5}{8}$ -11x $\frac{5}{8}$ thick.....	101	15	.25	Stern
279	Dowel Pin.....	$\frac{1}{4}$ x2 $\frac{1}{8}$ long.....	56	15	.15	Organ
288	Hexagon Nut.....	$\frac{3}{8}$ -16x $\frac{5}{16}$ thick.....	101	15	.25	Otter
290E	Headless Cup Point Set Screw.....	$\frac{5}{16}$ -18x1 long.....	4	15	.15	Shard
291 $\frac{1}{2}$	Headless Oval Point Set Screw.....	$\frac{3}{8}$ -16x $\frac{5}{8}$ long.....	4	15	.10	Skate
293E	Round Head Screw.....	$\frac{1}{4}$ -20x $\frac{7}{8}$ long.....	7	15	.15	Lofts
295E	Hexagon Nut (brass).....	$\frac{1}{4}$ -20x $\frac{5}{32}$ thick.....			.25	Lofty
304E	Round Head Screw.....	No. 8-32x $\frac{1}{4}$ long.....	7	15	.15	Redit
305E	Hexagon Nut.....	No. 8-32x $\frac{3}{8}$ thick.....	102	15	.15	Redot
310	Railroad Union.....				.20	Tacks
311E	Asbestos Listing.....	45 inches.....			.15	Logan
316E	Wire Marker (brass).....				.15	Logic
324E	Conduit Lock Nut.....	$\frac{1}{2}$ inch.....			.10	Shock
327	Close Nipple.....	$\frac{1}{8}$ inch.....			.10	Eupon
337	Elbow.....	$\frac{1}{8}$ inch.....			.15	Exile
338	Nipple.....	$\frac{1}{8}$ x6 inches long.....			.20	Paddy
363	Drain Cock.....	$\frac{1}{8}$ inch.....			.50	Taeds
384	Solderless Pipe Connector.....	$\frac{3}{8}$ .....			.25	Redut
446	Headless Cup Point Set Screw.....	$\frac{1}{2}$ -13x $\frac{5}{8}$ long.....	4	15	.15	Avert
451	Flat Head Screw.....	$\frac{1}{4}$ -20x $\frac{1}{2}$ long.....	8	15	.15	Peach
452	Dowel Pin.....	$\frac{3}{16}$ x $\frac{9}{16}$ long.....	56	15	.15	Redyt



## Screws, Nuts, Washers, Pins, Fittings, Etc. (Continued)

Part No.	PART NAME	Specifications	Style No.	Plate No.	Price	Code Word
512	Dowel Pin.....	$\frac{5}{16} \times \frac{3}{8}$ long	56	15	.15	Umbra
517	Dowel Pin.....	$\frac{1}{8} \times \frac{9}{16}$ long	56	15	.15	Tread
556	Filister Head Screw.....	$\frac{5}{16}$ -18x $\frac{3}{4}$ long	.....	.....	.15	Perky
557	Dowel Pin.....	$\frac{3}{16} \times \frac{3}{4}$ long	56	15	.15	Freak
570	Filister Head Screw.....	No. 8-36x $\frac{3}{8}$ long	.....	.....	.20	Pikes
581	Dowel Pin.....	$\frac{1}{4} \times \frac{7}{8}$ long	56	15	.10	Pixie
584	Washer.....	$\frac{11}{16} \times \frac{5}{16} \times \frac{1}{16}$ thick	201	15	.10	Enoch
592	Dowel Pin.....	$\frac{3}{32} \times \frac{7}{16}$ long	56	15	.15	Treat
607	Dowel Pin.....	$\frac{5}{16} \times \frac{13}{32}$ long	56	15	.15	Poilu
624	Oiler (flush type).....	.....	.....	.....	.25	Porch
625A	Headless Screw (special).....	.....	.....	.....	.15	Pores
676 $\frac{1}{2}$	Dowel Pin.....	$\frac{1}{8} \times \frac{3}{8}$ long	56	15	.10	Purse
681 $\frac{1}{2}$	Cup Point Set Screw.....	$\frac{1}{4}$ -20x $\frac{3}{8}$ long	4	15	.15	Relat
698	Filister Head Screw.....	$\frac{1}{4}$ -20x $\frac{1}{2}$ long	.....	.....	.15	Rails
734	Round Head Screw.....	$\frac{1}{4}$ -20x $\frac{1}{2}$ long	7	15	.10	Relet
738	Taper Pin.....	No. 2x1 $\frac{1}{8}$ long	55	15	.15	Sinew
741	Lock Washer.....	$\frac{5}{16} \times \frac{1}{8} \times \frac{1}{16}$ thick	202	15	.10	Reach
754	Dowel Pin.....	$\frac{3}{16} \times \frac{7}{16}$ long	56	15	.10	Rebut
762	Headless Cup Point Set Screw.....	$\frac{5}{16}$ -18x1 $\frac{1}{4}$ long	4	15	.20	Redia
815	Dowel Pin.....	$\frac{5}{32} \times \frac{3}{4}$ long	56	15	.10	Relit
915	Hexagon Head Cap Screw.....	$\frac{3}{8}$ -16x1 long	3	15	.15	Relys
EC1005	Dowel Pin.....	$\frac{1}{4} \times \frac{3}{4}$ long	56	15	.10	Tagus
EC1008	Round Head Screw.....	No.10-32x1 long	7	15	.10	Taiga
EC1012	Dog Point Headless Set Screw.....	$\frac{5}{16}$ -18x $\frac{3}{4}$ long	4	15	.10	Taits

## Screws, Nuts, Washers, Pins, Fittings, Etc. (Continued)

Part No.	PART NAME	Specifications	Style No.	Plate No.	Price	Code Word
EC1115	Square Head Set Screw	$\frac{5}{16}$ -18x $\frac{3}{8}$ long	5	15	.10	Tanes
EC1116	Hexagon Head Cap Screw	$\frac{1}{2}$ -13x1 $\frac{1}{4}$ long	3	15	.15	Taney
EC1133	Round Head Screw	No. 8-32x $\frac{3}{8}$ long	7	15	.10	Tapes
EC1138	Square Head Set Screw	$\frac{3}{8}$ -16x $\frac{5}{8}$ long	5	15	.10	Tapet
EC1161	Round Head Screw	No. 10-32x $\frac{3}{8}$ long	7	15	.10	Tares
EC1184	Round Head Screw	No. 8-32x $\frac{5}{8}$ long	7	15	.10	Trees
EC1185	Dowel Pin	$\frac{3}{8}$ x1 $\frac{1}{4}$	56	15	.10	Relot
EC1186	Dowel Pin	$\frac{3}{8}$ x1	56	15	.10	Relut
EC1211	Taper Pin	No. 5x2 long	55	15	.10	Tatty
EC1212A	Cam Roll				.75	Taube
EC1219	Round Head Screw	No. 10-32x $\frac{5}{8}$ long	7	15	.10	Tauro
EC1220	Cup Point Headless Set Screw	$\frac{1}{4}$ -20x $\frac{3}{4}$ long	4	15	.15	Tauts
EC1231	Woodruff Key	No. 23			.15	Tawie
EC1243	Filister Head Cap Screw	$\frac{1}{4}$ -20x1 $\frac{1}{2}$ long	2	15	.10	Techy
EC1244	Cup Point Set Screw	$\frac{5}{16}$ -18x1 $\frac{3}{4}$ long	4	15	.15	Teens
EC1245	Cup Point Set Screw	$\frac{5}{16}$ -18x $\frac{5}{8}$ long	4	15	.15	Teeth
EC1246	Cup Point Set Screw	$\frac{1}{4}$ -20x $\frac{3}{4}$ long	4	15	.15	Tehee
EC1256	Filister Head Screw	$\frac{5}{16}$ -18x1 $\frac{1}{2}$ long	2	15	.10	Temps
EC1292	Headless Set Screw	No. 8-32x1 $\frac{1}{2}$ long	4	15	.10	Tense
EC1300	Dowel Pin	$\frac{1}{4}$ x1 $\frac{9}{16}$ long	56	15	.10	Terry
EC1311	Hexagon Head Cap Screw	$\frac{1}{2}$ -20x1 $\frac{1}{4}$ long	3	15	.10	Thens
EC1317 $\frac{1}{2}$	Flat Head Screw	No. 6-32x $\frac{1}{4}$ long	8	15	.10	Thigh
EC1321	Dowel Pin	$\frac{5}{16}$ x1 $\frac{3}{16}$ long	56	15	.10	Thing
EC1326 $\frac{1}{2}$	Cup Point Set Screw	$\frac{5}{16}$ -18x $\frac{5}{16}$ long	4	15	.15	Thong

## Screws, Nuts, Washers, Pins, Fittings, Etc. (Continued)

Part No.	PART NAME	Specifications	Style No.	Plate No.	Price	Code Word
EC1328½	Pin	¼x1 <sup>11</sup> / <sub>16</sub> long			.10	Thorp
EC1329½	Filister Head Cap Screw	<sup>5</sup> / <sub>16</sub> -18x2 long	2	15	.10	Thoth
EC1331½	Hexagon Head Cap Screw	½-13x2¼ long	3	15	.10	Thram
EC1333	Headless Set Screw	¼-20x½ long	4	15	.10	Thred
EC1334½	Street Elbow	⅛ inch			.15	Threw
EC1337½	Nipple	¼x3¾ long			.10	Throb
EC1338	Ball Bearing	<sup>3</sup> / <sub>16</sub> inch			.05	Thore
EC1339A	Dowel Pin	<sup>1</sup> / <sub>16</sub> x <sup>9</sup> / <sub>32</sub> long	56	15	.10	Thrum
EC1340	Brass Angle Valve	⅛ inch			1.25	Thugs
EC1341	Filister Head Cap Screw	<sup>5</sup> / <sub>16</sub> -18x1¼ long	2	15	.10	Thule
EC1342	Nipple	⅛x1½ long			.10	Refin
EC1345	Railroad Union	½ inch			.35	Thump
EC1347	Nipple	½x3½ long			.15	Thuya
EC1349EA	Connector	¾ inch			.75	Thyme
EC1351E	Hexagon Nut	¼-20			.10	Ticht
EC1354	Nipple	⅛x1¼ long			.10	Tiend
EC1354½	Cup Point Headless Set Screw	No. 6-32x½ long	4	15	.10	Tiger
EC1356	Coupling	½ inch			.15	Tiles
EC1356E	Reducing Bushing	½x¾			.10	Tills
EC1357E	Conduit Lock Nut	¾ inch			.10	Tilts
EC1359	Headless Set Screw	¼x20x¼ long	4	15	.10	Timor
EC1362	Jiffy Clip	½ inch			.10	Tinks
EC1363	Hexagon Nut	⅝-11x¾ thick	101	15	.15	Ti
EC1374	Filister Head Screw	No. 10-32x1¾ long	2	15	.10	Te

## Screws, Nuts, Washers, Pins, Fittings, Etc. (Continued)

Part No.	PART NAME	Specifications	Style No	Plate No.	Price	Code Word
EC1379½	Filister Head Screw.....	No. 10-32x½ long.....	2	15	.10	Token
EC1380	Pin.....	$\frac{5}{16} \times 2 \frac{3}{16}$ long.....			.10	Tolas
EC1382	Filister Head Screw.....	No. 10-32x¾ long.....	2	15	.10	Tolds
EC1383½	Headless Set Screw.....	¼-20x1 long.....	4	15	.10	Tolus
EC1388	Filister Head Screw.....	No. 10-32x2 long.....	2	15	.10	Tonal
EC1400EA	Conduit Coupling (no thread).....	½ inch.....			.15	Toper
EC1401EA	Conduit Connector (no thread).....	½ inch.....			.20	Topek
EC1416	Hexagon Head Nut.....	$\frac{5}{16}$ -18x $\frac{5}{16}$ thick.....	101	15	.10	Torns
EC1436	Round Head Screw.....	No. 6-32x $\frac{5}{16}$ long.....	7	15	.10	Torus
EC1441	Ball Bearing.....	$\frac{5}{16}$ inch.....			.10	Torts
EC1459½	Filister Head Screw.....	¼-20x $\frac{5}{8}$ .....	2	15	.10	Tours
EC1461½	Dowel Pin.....	$\frac{3}{8} \times 1$ long.....	56	15	.10	Towel
EC1465½	Filister Head Screw.....	¼-20x¾ long.....	2	15	.10	Toyte
EC1466½	Washer.....	$1 \frac{1}{8} \times 1 \frac{1}{8}$ thick.....	201	15	.20	Trade
EC1473½	Dowel Pin.....	$\frac{3}{8} \times 1 \frac{1}{4}$ long.....	56	15	.10	Trass
EC1484	Washer.....	$\frac{7}{8} \times \frac{3}{4}$ thick.....	201	15	.20	Togos
EC1488½	Filister Head Screw.....	¼-20x1 long.....	2	15	.10	Troch
EC1493	Filister Head Screw.....	No. 8-32x¾ long.....	2	15	.10	Trone
EC1499	Stove Head Screw.....	No. 10-32x¾ long.....	7	15	.10	Troop
EC1500	Filister Head Screw.....	$\frac{3}{16}$ -18x2¾ long.....	2	15	.15	Refid
EC1512A	Cam Roll Stud.....				1.00	Troth
EC1537	Filister Head Screw.....	No. 10-32x $\frac{5}{8}$ long.....	2	15	.10	Refim
EC1544½	Filister Head Screw.....	No. 10-32x¾ long.....	2	15	.10	Truro
EC1557	Filister Head Screw.....	¾-16x $\frac{5}{8}$ long.....	2	15	.10	Tugas

## Screws, Nuts, Washers, Pins, Fittings, Etc. (Continued)

Part No.	PART NAME	Specifications	Style No.	Plate No.	Price	Code Word
EC1558	Dowel Pin	$\frac{5}{16} \times 1\frac{3}{16}$ long	56	15	.10	Tuffs
EC1560	Dowel Pin	$\frac{5}{16} \times \frac{1}{2}$ long	56	15	.10	Tules
EC1598	Headless Dog Point Set Screw	$\frac{5}{16} \cdot 18 \times \frac{1}{4}$ long	4	15	.20	Tulip
EC1606	Round Head Screw	No. 8-32 $\times \frac{3}{4}$ long	7	15	.10	Tunny
EC1612	Dowel Pin	$\frac{1}{8} \times \frac{3}{8}$ long	56	15	.10	Turfs
E.C.1614 $\frac{1}{2}$	Cup Point Set Screw	$\frac{5}{16} \cdot 18 \times \frac{1}{2}$ long	4	15	.20	Tushs
EC1637 $\frac{1}{2}$	Flat Head Screw	No. 6-32 $\times \frac{5}{16}$ long	8	15	.10	Tyros
EC1639 $\frac{1}{2}$	Filister Head Screw	No. 6-32 $\times \frac{1}{2}$ long	2	15	.10	Tzars
EC1648	Round Head Screw	No. 10-32 $\times \frac{1}{2}$ long	7	15	.10	Layer
EC1650	Hexagon Head Cap Screw	$\frac{1}{4} \cdot 20 \times 1$ long	3	15	.15	Leals
EC1653	Dowel Pin	$\frac{1}{8} \times \frac{7}{8}$ long	56	15	.10	Leaps
EC1667 $\frac{1}{2}$	Round Head Screw	No. 8-32 $\times \frac{5}{16}$ long	7	15	.10	Leeds
EC1669	Headless Set Screw	No. 8-32 $\times \frac{3}{8}$ long	4	15	.10	Legal
EC1679	Round Head Screw	No. 4-40 $\times \frac{1}{4}$ long	7	15	.15	Refiv
EC1681 $\frac{1}{2}$	Filister Head Screw	$\frac{1}{4} \cdot 20 \times 1\frac{1}{4}$ long	2	15	.10	Lento
EC1682 $\frac{1}{2}$	Headless Set Screw	No. 8-32 $\times \frac{3}{16}$ long	4	15	.10	Leper
EC1683 $\frac{1}{2}$	Headless Set Screw	No. 10-32 $\times \frac{3}{8}$ long	4	15	.10	Lerin
EC1694 $\frac{1}{2}$	Headless Set Screw	No. 10-32 $\times \frac{3}{16}$ long	4	15	.10	Liane
EC1746	Flat Head Screw	No. 8-32 $\times \frac{3}{8}$ long	8	15	.10	Lilac
EC1761	Filister Head Screw	No. 3-56 $\times \frac{1}{2}$ long	2	15	.10	Lithy
EC1763	Lock Washer	No. 6 $\times \frac{3}{4} \times \frac{1}{2}$ thick	202	15	.10	Liver
EC1789	Dowel Pin	$\frac{3}{16} \times 1\frac{3}{2}$ long	56	15	.10	Lobes
EC1790	Headless Set Screw	$\frac{1}{4} \cdot 20 \times \frac{1}{4}$ long	4	15	.15	Local