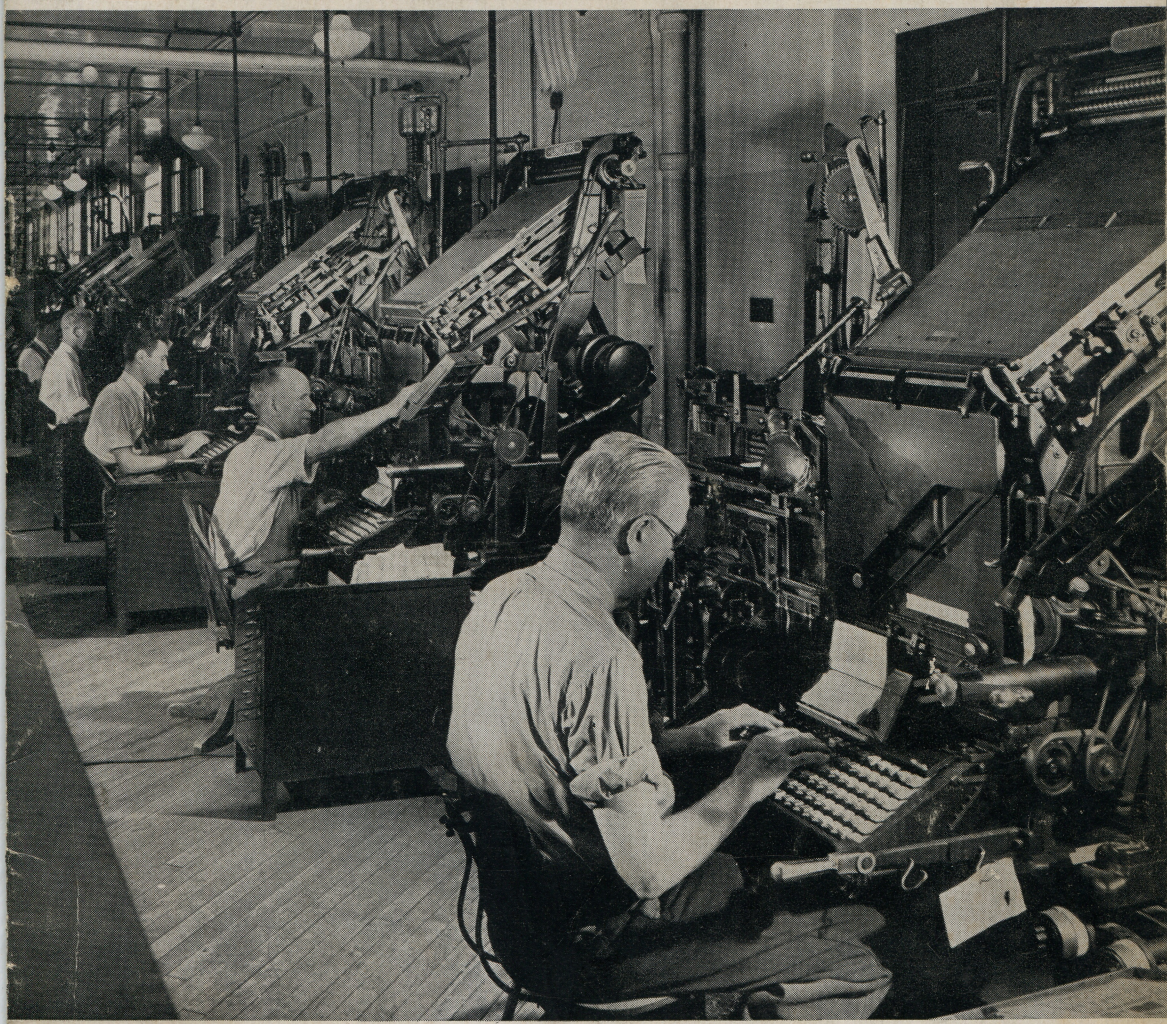


LINOTYPE LIFE EXTENSION



TRADE **LINOTYPE** MARK

GENERAL MAINTENANCE

(PART I)

*Routine Checkups, Cleaning
and Lubrication*

Cleanliness and Production

There are those who may question the need for emphasis being placed upon *Cleanliness* in the maintenance and operation of the Linotype. To such it should be said that a cleanly kept Linotype is a better operating machine for it. Dirt never helps any machine. In a machine which is designed and built to deliver a product whose measurements must be as uniformly accurate as Linotype slugs all dust and dirt should be regularly removed.

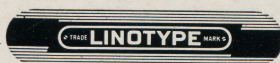
Cleanliness is a necessity, if uninterrupted production is expected. A clean, well-maintained Linotype and a clean proof are the measure of craftsmanship.

*"Carelessness does more harm
than a want of knowledge."*

—BENJAMIN FRANKLIN

GENERAL MAINTENANCE

PART I



Routine Checkups, Cleaning and Lubrication

For more than half a century LINOTYPE has maintained a policy of sharing the technical experience of engineers, plant machinists, and operators with Linotype users everywhere. The *Linotype Life Extension* series of booklets, of which this is one, has been compiled and distributed in the interest of maximum production with minimum waste and delay through continuous, uninterrupted operation.

Routine Checkups

The productive life of mechanical equipment is dependent upon the treatment it is accorded more than upon all other factors combined.

Invariably, serious mechanical troubles are the result of minor items, most of which could have been corrected before they became major difficulties. Linotype servicemen know that most of the causes of mechanical breakdowns could have been averted if the user had maintained a regular schedule of checkups, reasonable cleanliness and proper lubrication.

Hence, this series of Linotype booklets, devoted to conservation of machines and equipment—*Linotype Life Extension*, emphasizes the value of a

"Linotype Life Extension"

careful program of maintenance. Routine checkups should be as much a part of Linotype operation as seeing that metal is in the metal pot and copy on the copy holder.

A routine program adaptable for small and medium plants is here suggested which should assure satisfactory operating conditions and well-kept equipment.

DAILY SCHEDULE

1. Brush metal chips from machine.
2. Clean plunger, well and well holes.
3. Wipe off pot mouthpiece.
4. Wipe off molds and vise jaws.
5. Clean spacebands.
6. Cast slug and check type high and body.

WEEKLY SCHEDULE

1. Clean and polish molds and liners.
2. Clean out mouthpiece holes and vents.
3. Clean drippings under pot throat.
4. Check lockup.
5. Oil mold disk slide and grease support screw.
6. Check position of mold wipers; apply graphite on felts if needed.
7. Clean and oil vise assembly; check knife wiper.
8. Brush dirt from keyboard.
9. Graphite assembler and delivery slides.
10. Clean driving pulley and clutch leathers.
11. Clean dust from motor.
12. Wipe off cams and tighten screws.
13. Clean and oil distributor box.

14. Clean distributor screws and oil bearings.

MONTHLY SCHEDULE

1. Clean the lugs of one or two fonts of matrices (determined by number and use of fonts).
2. Clean these magazines.
3. Brush escapements thoroughly.
4. Examine assembler star.
5. Examine assembling elevator buffers.
6. Examine assembler slide brakes.
7. Examine keyboard rubber rolls.
8. Examine galley and slug adjuster buffers.
9. Examine ejector blades.
10. Examine distributor box rails, bar point and matrix lift.
11. Clean and oil keyboard.
12. Check vise automatic.
13. Check matrix transfer for proper adjustment.
14. Oil mold turning cam shoe and vise jaw wedge felts.
15. Oil all rollers.
16. Oil all shafts.
17. Fill all grease cups.
18. Clean gas burners.

NOTE: For location of lubricating points and recommended lubricants, consult the instructions and illustrations in the second section of this booklet. For machine adjustments and mechanical descriptions of functions, see the official Linotype manual, "LINO TYPE MACHINE PRINCIPLES." This is a 487-page completely indexed book which can be procured at any Linotype agency. Price \$3.50 postpaid to any part of the United States (X-1752).

Routine Checkups, Cleaning and Lubrication

Schedule for Large Battery of Linotypes

Large batteries of Linotypes, in plants where several machinists are employed, usually receive systematic checkups in addition to normal operating supervision. Quite naturally, there are various methods employed to accomplish these ends and it would be impossible to say that any one system would be best for all plants.

Nevertheless, one of the most effective schedules noted was developed by Alexander Gordon, late Linotype head-machinist of the *Evening Star*, Washington, D. C. This schedule of work which has been published and widely distributed, has been adapted by many large plants to their individual requirements and is printed here for that purpose. It will be noted that the night machinists are responsible for routine repair and maintenance. In addition to this regular schedule any special work which is required to be done on specific machines is indicated in writing, in spaces provided on the blank that is left for the machinists each night. Any comments they may make are written on the reverse of the blank, which thus becomes a report to keep the head machinist informed.

Machinists' Work Schedule

NOTE: An afternoon paper; between 40 and 50 Linotypes, with full day crew and varying night force

EVERY DAY

Before 8 A. M.

Turn on water.
Brush metal from machines.
Clean and oil vises and adjust knife wiper flags.
Examine gas burners, electric pot rheostats and wipe off pot mouths.
Put spacebands in machines.
Clean driving pulleys and distributor shifter buffers.

Between 8 A. M. and 3 P. M.

Examine verge springs and rods, keyboard cam rods and channel entrances of magazines.
Clean all spacebands.

Clean plungers, wells and well holes.
Skim dross off metal.
Measure line from each machine for type-high.
Check and oil Mohr Lino-Saws
Set temperature of metal.

After 3 P. M.

Turn off motors and water.
Brush metal from machines.
Clean and oil vises and adjust knife wiper flags.
Clean out and oil mold disk locking stud blocks.
Collect and wrap up spacebands.
Turn off fume pipe exhaust motors.
Tighten mold cap clamping screws.

The above are *EVERY DAY* "MUSTS"

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MONDAY

Clean plungers, wells and well holes.
Clean spacebands.
Oil driving pulleys.
Oil all parts of machines except rollers, distributors, keyboards, assemblers.
Oil proof presses.
Oil all other floor motors.
Dust off and polish magazines.
Clean assembler entrance covers and glasses.
Pick up mats from under machines.
Clean and oil lower bearing Lino-Saw shafts—gasoline ejector plate rod and outer waste rod (half plant).

TUESDAY

Clean plungers, wells and well holes.
Clean spacebands.
Wipe off drive wheels and clutches.
Clean distributor screws, frictions and bearings.
Graphite line delivery, transfer and distributor slide grooves.
Wipe off all machines.
Wipe off cams.
Blow dust from motors.
Scrape metal off underside of electric pot throat.
Clean and oil first and second elevators, parts adjacent and knife wipers.
Sharpen saw blades.

WEDNESDAY

Clean plungers, wells and well holes.
Clean spacebands.
Tighten screw in mold-turning bevel pinions.
Tighten screws in intermediate shaft bevel gears and pulleys and vise jaw wedge brackets.
Tighten ejector cam screw.

Tighten screws on assembler and intermediate clutches.
Oil distributors, keyboard rollers, assembler boxes and pulleys (half plant). Oil assembler slide rollers.
Examine machines for adjustments, loose screws, bolts, nuts.
Oil assembler bearings; clean off matrix delivery belt supporting plates.

THURSDAY

Clean plungers, wells and well holes.
Clean spacebands.
Oil driving shafts and motors.
Oil mold disk and slide.
Clean bases (half plant).
Clean assembler entrance covers and glasses.
Clean and oil saw stands.
Clean assembler pulleys and front parts of machine.
Pick up mats from under machines.
Clean and oil fume pipe motors.
Measure line from each machine for type-high.

FRIDAY

Clean plungers, wells and well holes.
Clean spacebands.
Wipe off cams.
Oil turnbuckle, second elevator starting spring rod, ejector lever connecting link.
Graphite assembler slides.
Clean bases (half plant).
Oil gas thermostat bearings and arms.
Oil proof presses and lathe.
Oil metal feeders (half plant).
Repair pot mouth wipers.
Clean and oil spaceband cams.
Sharpen saw blades.

SATURDAY

Clean plungers, wells and well holes.
Clean spacebands.

Routine Checkups, Cleaning and Lubrication

Clean soot from around mouth and pot gas burners.

Dust off machines.

Clean and oil all bright parts.

Clean all commutators.

Clean out inside of metal pots.

Clean and oil mold disk locking stud blocks.

Blow dust from all motors.

Clean delivery slide rods.

Gasoline auxiliary line safety attachment.

Afternoon Shift

Clean and oil vises, clean spacebands, clean plungers.

New tympan on proof press.

SATURDAY NIGHT

Oil assembler elev. gate roller and pin.

Oil assembler elevator lever shaft (keyboard).

Repair and refurbish wipers and scrapers.

Oil bearings, short line parts, first elevator lever link, wedge bracket and pot lever roller (half plant).

SUNDAY

Clean plungers, wells and well holes.

Clean spacebands.

Clean and repair thermostat contact points and magnet switches in panel boxes of electric pots.

Put on new star wheels where needed, set measures (half plant).

Put on assembling elevator buffers where needed.

FIRST WEEK OF EACH MONTH

Clean and oil vise-locking screws and studs.

Oil universal knife block sections.

Oil spaceband lever pawl hinge pin.

Oil elevator transfer slide link, hinge pins and screw.

Oil delivery slide releasing pawl.

Grease intermediate shaft bevel gears and keyboard roller gears.

Oil delivery slide lever link bearings.

Clean upper keyboard rod guides.

Oil magazine lifting shafts and slides.

Clean bail box and keyboard rods with gasoline.

Grease Lino-Saw transmissions.

Oil belt clamps.

Oil inside del. air cushion cylinders.

Oil all rollers.

Set temperature on recasting pots.

One Machine Each Day

Clean and repair pot and mouth gas burner.

Face off mouthpiece with carborundum stone.

Ream holes in mouthpiece.

Clean out vents on mouthpiece.

Scrape crucible under mouthpiece.

Clean and oil keyboard cams.

Clean out motor, clean and dress commutator and repair brushes.

Sharpen and set back knife.

Repair knife wiper.

Clean assembler entrance plate and guides.

Clean, oil and repair distributor box.

Repair one set spacebands.

Clean one set mats and magazine.

Examine lower case mats in one machine, take out worn and bad mats and put in good ones.

Clean and polish molds and liners.

Clean driving clutch and leathers.

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Schedule of Night Work

MONDAY

Turn on water for machines.
Clean plungers, wells and well holes.
Skim dross off metal.
Clean all spacebands.
Repair two sets of spacebands.
Clean and oil lower Lino-Saw ball bearings, clean saw shaft; gasoline ejector, plate rod and outer waste rod (half plant).

Skim dross off metal.
Clean all spacebands.
Repair two sets of spacebands.

FRIDAY

Turn on water for machines.
Clean plungers, wells and well holes.
Skim dross off metal.
Clean all spacebands.
Repair two sets of spacebands.

TUESDAY

Turn on water for machines.
Clean plungers, wells and well holes.
Skim dross off metal.
Clean all spacebands.
Clean and oil first and second elevators, and knife wipers.
Repair two sets of spacebands.

SATURDAY

Turn on water for machines.
Clean plungers, wells and well holes.
Skim dross off metal.
Clean all spacebands.
Repair two sets of spacebands.

WEDNESDAY

Turn on water for machines.
Clean plungers, wells and well holes.
Skim dross off metal.
Clean all spacebands.
Repair two sets of spacebands.
Clean and oil Lino-Saw wipers.

SUNDAY

Turn on water for machines.
Clean plungers, wells and well holes.
Skim dross off metal.
Clean all spacebands.
Clean thermostat contact points and magnet switches in panel boxes of electric pots.
New star wheels and buffers (for half of the plant).

THURSDAY

Turn on water for machines.
Clean plungers, wells and well holes.

Linotype Lubrication

NOTE: The illustrations appearing on the following pages indicate the oiling points of Models 29, 30, 31 and 32 and the Self-Quadder. However, they will be found helpful in lubricating other models.

To insure a long life of efficient and trouble-free operation, a systematic plan of machine maintenance should be followed. In this plan, proper lubrication is the most important single factor. So that this may be accomplished in a thorough and systematic manner, there are indicated in the following photographs all of the various oiling points on the machine. In some cases two or more oil holes are shown in one location, and are indicated as (2).

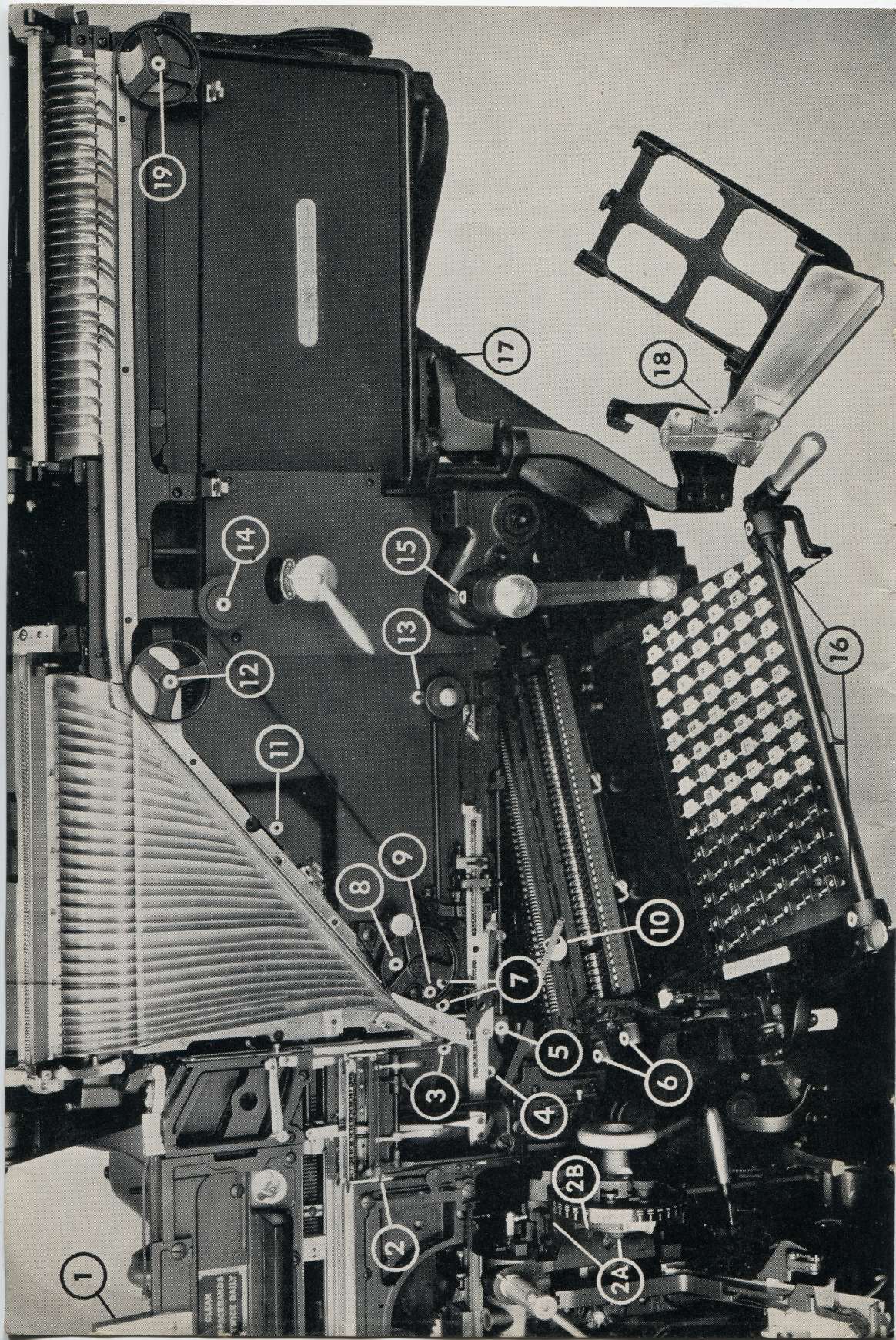
The oil holes are placed in the most convenient and accessible positions practicable. It should be remembered that a few drops of oil applied frequently is more economical and much more efficient than flooding the parts with oil occasionally. In addition to wasting oil, flooding only helps to collect dirt, and in all probability does more harm than good. A piece of waste or cloth should be used to remove all surplus oil from around holes after oiling. Extreme care should be used to prevent any oil from coming in contact with the matrices as it will eventually hinder smooth assembling action.

It is not possible to indicate the desirable frequency of oiling individual points on the Linotype, as is practicable in the case of an automobile. The widely varying conditions under which Linotypes are operated, with respect to running time, cleanliness and climate, combine to make it a problem best solved locally, through the exercise of simple mechanical judgment. It should be sufficient to point out that the constantly moving parts call for more frequent attention than those which only contact when the machine makes its periodic cycles.

Particularly important to proper lubrication is the quality of the lubricant. Cheap vegetable oils are a false economy. Always use high-grade machine oils that will not gum. We recommend Linotype oil and grease as it has been thoroughly tested and found efficient. As a guide, with regard to quality and viscosity, we have indicated throughout, by symbol, the proper lubricant for each oiling point. As will be noted, the proper grade oil in the majority of places is our X-24, a medium-weight motor oil (standard S.A.E.20).

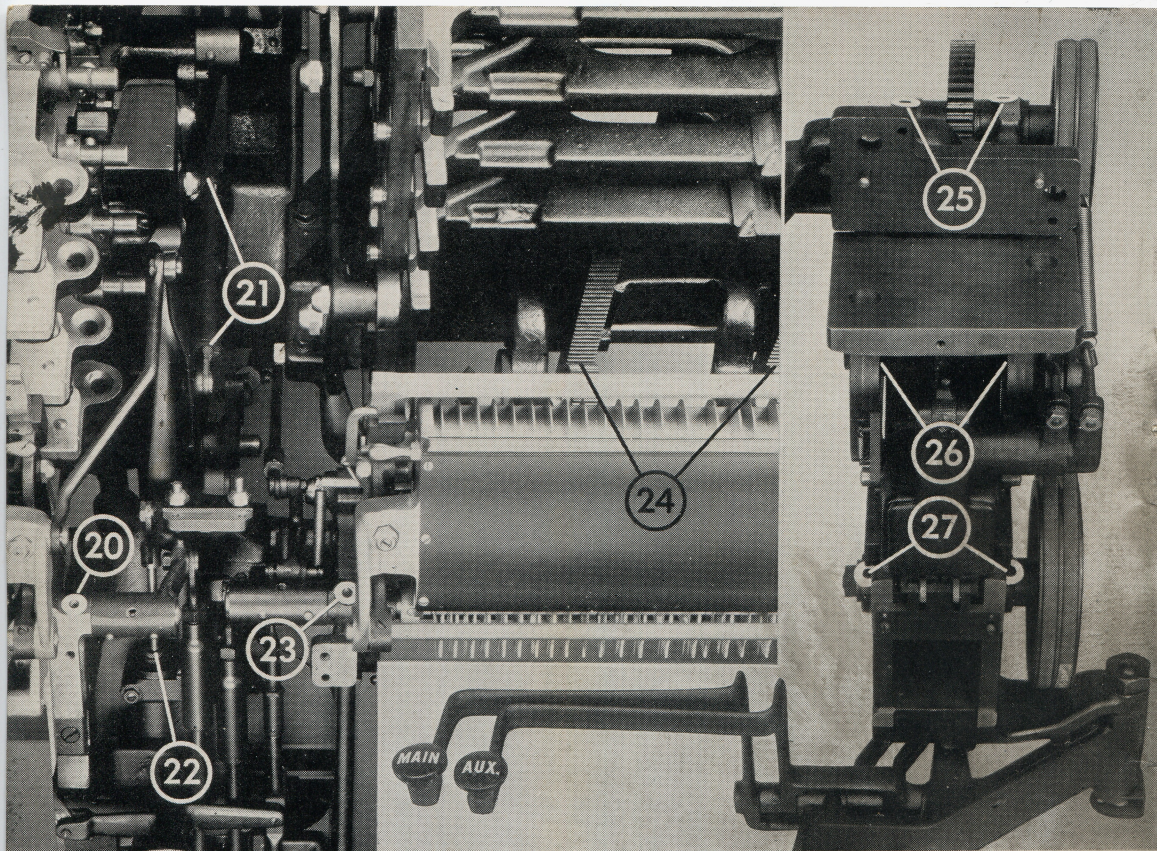
Linotype Approved Lubricants

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| * Linotype Oil
Part No. X-24 (½ gallon can) | ‡ Keyboard Cam Oil
Part No. X-101 (2 oz. bottle) |
| † Keyboard and Distributor Oil
Part No. X-1012 (2 oz. bottle) | § Linotype Grease
Part No. X-1204 (5 lb. can) |



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| <p>1 Second Elevator Guide (Lower) (Apply oil sparingly with finger) †</p> <p>Also oil hinge pins in Second Elevator sparingly †</p> <p>2 Assembling Elevator Gate Spring Roll †</p> <p>2a Knife Block Slide Oil Holes (2) *</p> <p>2b Knife (R.H.) Slide Pusher Cam (Oil bearing surfaces) *</p> <p>3 Assembler Star Shaft Oil Hole *</p> <p>4 Assembler Slide Roll Oil Hole *</p> <p>5 Keyboard Rod Shift Key Link Lever Shaft Oil Holes (2) (Except 72-90 machines) *</p> <p>6 Keyboard Cam Rubber Roll Shaft Oil Holes (4) *</p> <p>7 Assembler Star Idler Pinion Oil Holes (2) *</p> <p>8 Matrix Delivery Belt Driving Pulley Shaft Oil Hole *</p> <p>9 Assembler Star (Inter.) Gear Oil Hole *</p> | <p>10 Keyboard Cams should be removed and cleaned occasionally and a small drop of oil applied to the pin with a toothpick †</p> <p>11 Keyboard Rod Shifter Guide Oil Holes (3) (Except 72-90 machines) (Cover must be removed to oil) *</p> <p>12 Matrix Delivery Belt Idler Pulley Oil Hole *</p> <p>13 Assembler Slide Return Spring Stud Bearing Oil Hole *</p> <p>14 Matrix Delivery Belt Idler Pulley (Aux.) (Small) Oil Hole (Models 30 and 32) *</p> <p>15 Magazine Elevating Shaft Crank Shaft Oil Hole *</p> <p>16 Assembling Elevator Lever Shaft Oil Holes (2) *</p> <p>17 Pi Stacker Support Oil Hole *</p> <p>18 Pi Star Shaft Oil Hole *</p> <p>19 Matrix Delivery Belt Idler Pulley (Aux.) Oil Hole (Models 30 and 32) *</p> |
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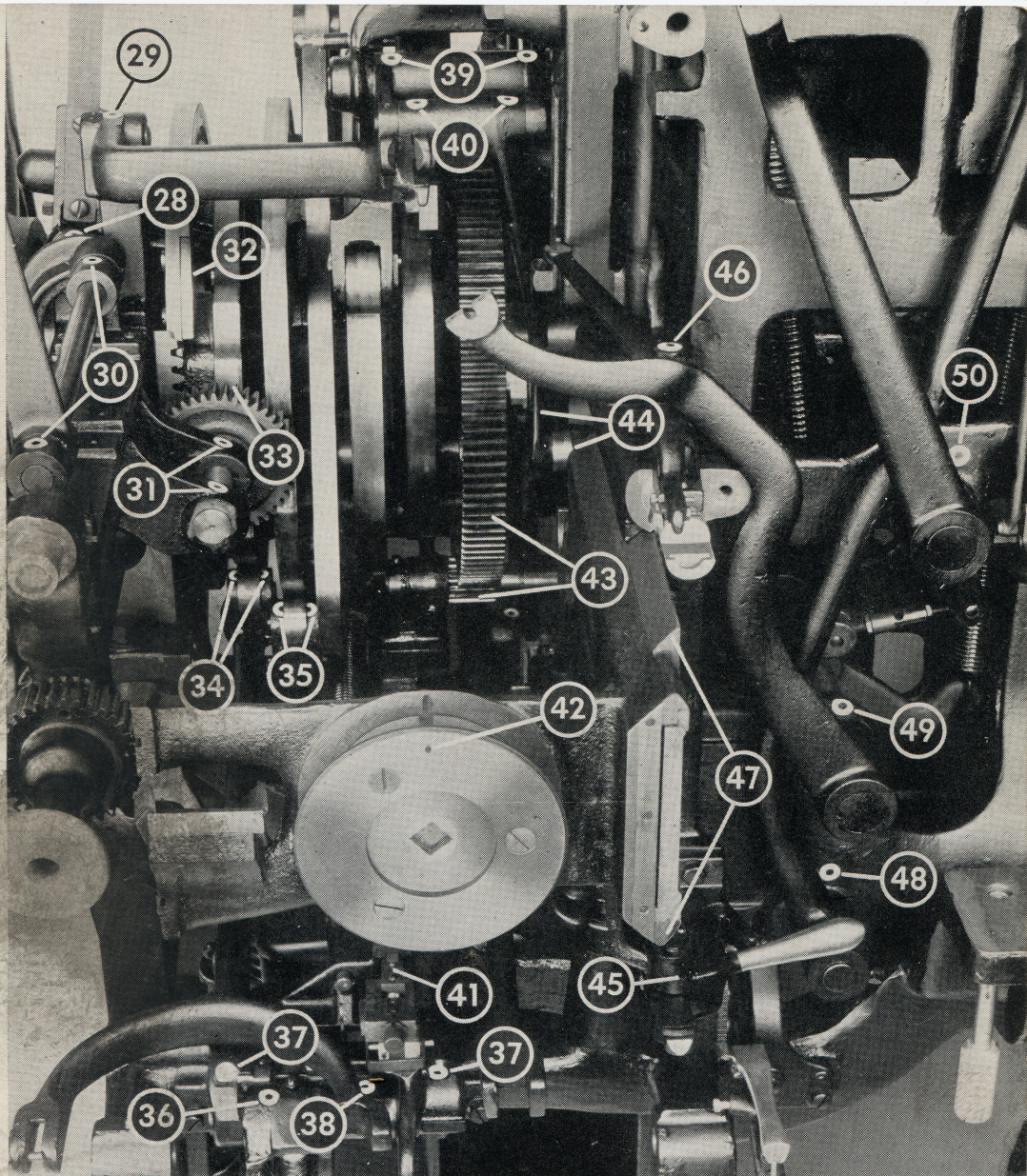
Note: On late machines oil holes will not be found at points 3, 6, 7, 8, 9, 12, 14 and 19. These places are now supplied with Oilite bearings which eliminate the necessity for manual oiling.



- 20** Assembler Entrance (Upper) Hinge Shaft Oil Holes (2) (one on each end of Shaft) (Models 29 and 30) *
- 21** Pivoting Front Guide Holder Balance Spring and Operating Cam Roll (Apply oil to Plunger Rod and Roll) (Models 29 and 30) *
- 22** Assembler Entrance (Upper) Snubber Piston (Apply oil to Plunger Rod) (Models 29 and 30) *
- 23** Assembler Entrance (Upper) (Aux.) Hinge Shaft Oil Holes (2) (one on each end of Shaft) (Model 30) *
- 24** Magazine (Aux.) Elevating Pinion Racks and Gears (Models 30 and 32) *
- 25** Assembler Entrance (Upper) Shift (Inter.) Driving Gear Shaft Oil Holes (one on Model 29) (two on Model 30) †
- 26** Assembler Entrance (Upper) Finger Key Shift Operating Cams and Rolls (one on Model 29) (two on Model 30) †
- 27** Assembler Entrance (Upper) Finger Key Shift Operating Cam Shaft Oil Holes (2) (Models 29 and 30) †
- Apply oil sparingly to all bearing surfaces not provided with oil holes. Do not allow any oil to get on Assembler Entrance (Upper) Finger Key Shift Roll Cams.*

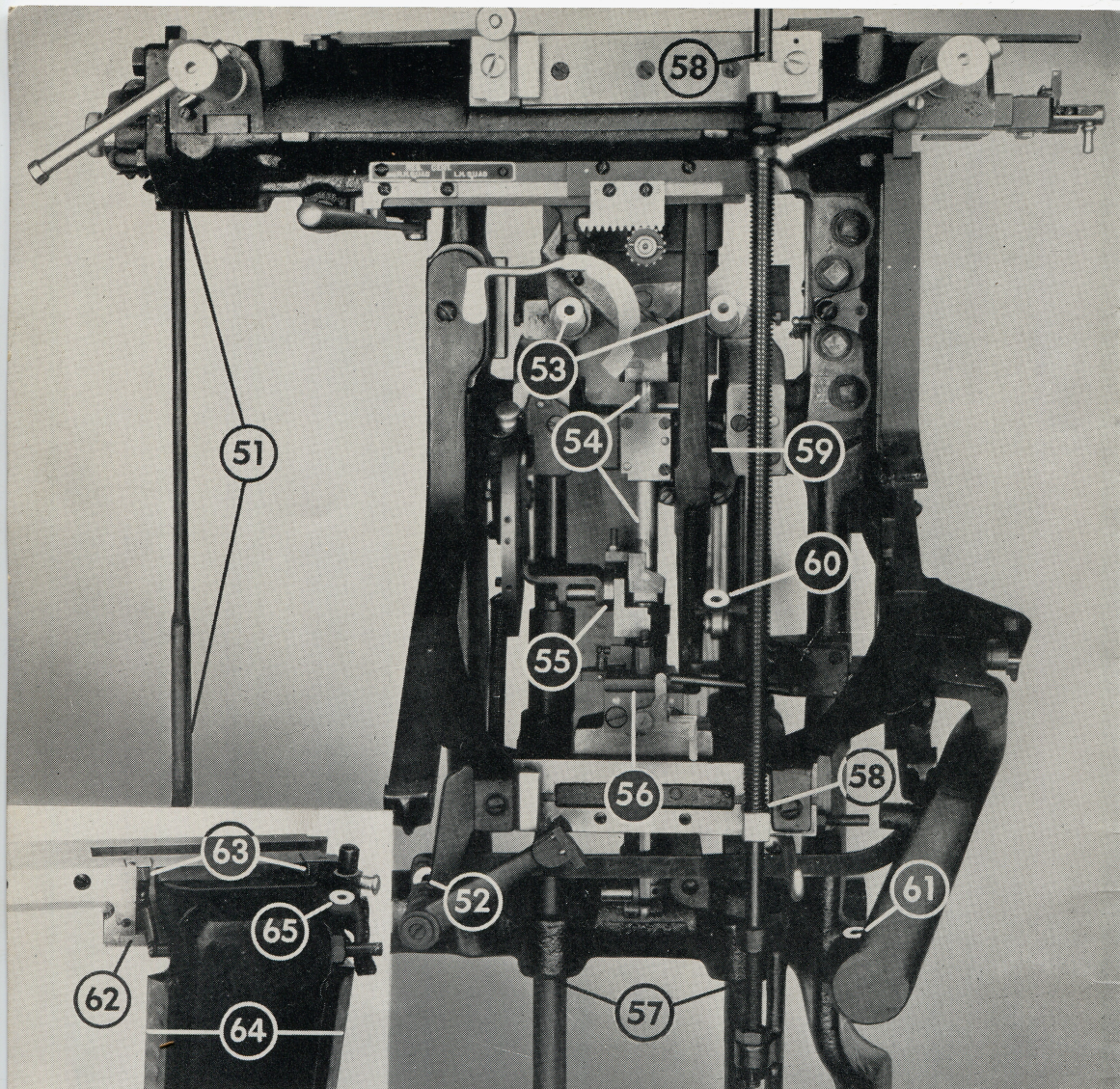
OPPOSITE PAGE:

- 28** Distributor Shifter Lever Shaft Oil Holes (2) (one on each end of shaft) *
- 29** Pot Pump Lever Oil Holes (3) *
- 30** Pot Crucible Vertical Mouthpiece Wiper Shaft Oil Holes (2) *
- 31** Mold Turning Square Block Shaft Oil Holes (2) *
- 32** Mold Turning Cam Shoes (2) (Oil felt on Gear Guard) *
- 33** Mold Turning Bevel Pinion (Apply oil to teeth of Gear and sides of square block) *
- 34** Vise Closing Cam Roll Oil Holes (2) *
- 35** Justification Cam Roll Oil Holes (2) *
- 36** Vise Jaw Locking Toggle Lever Oil Hole (Self-quadder) *
- 37** Vise Jaw Locking Toggle Lever and Control Rod Lever Shaft Oil Holes (2) (Self-quadder) *

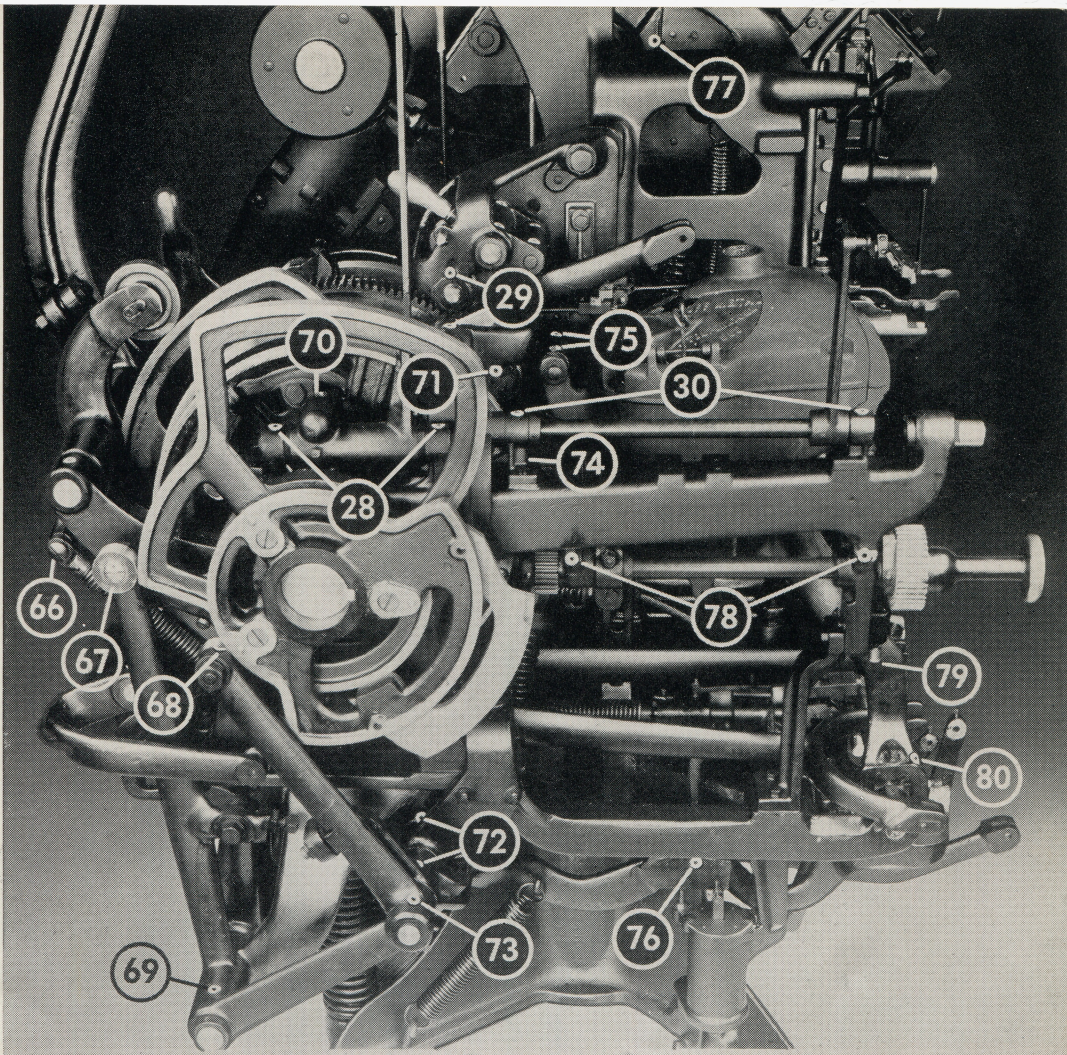


- 38** Vise Jaw Control Rod Lever Oil Hole (Self-quadder) *
- 39** Mold Cam Lever Handle Oil Holes (2) *
- 40** Mold Cam Lever Oil Holes (2) *
- 41** Justification Release Cam Lever Slide (Apply oil to bearing surfaces) (Self-quadder) *
- 42** Mold Disk Bearing Oil Hole *
- 43** Mold Cam and Driving Gear (Apply oil to teeth of Gear) *
- 44** Mold Cam Roll and Mold Cam Lever Roll (Apply oil to Rolls and Studs) *

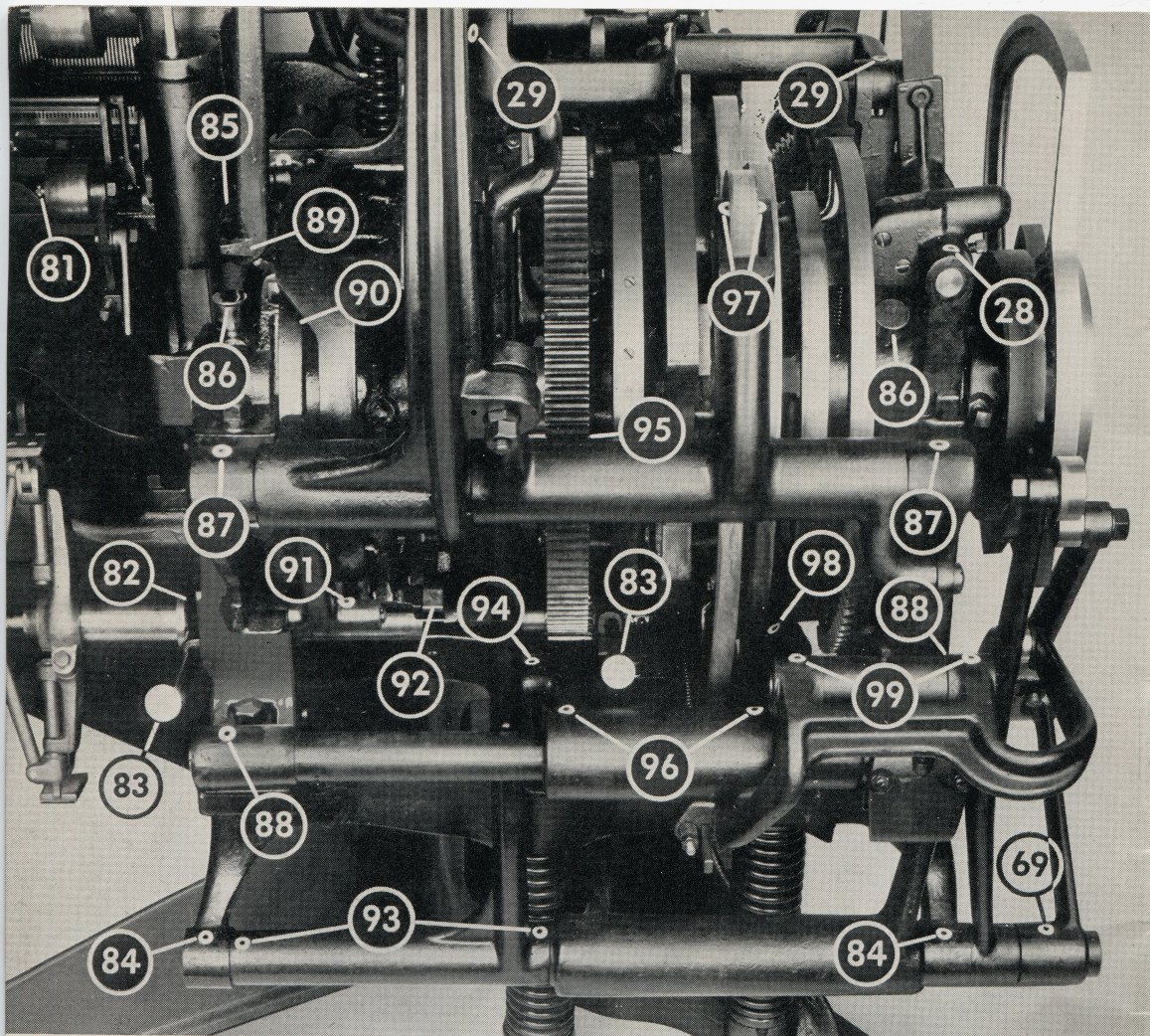
- 45** Starting and Stopping Lever Hinge Pin; also bearing surfaces of Connecting Rod *
- 46** Pot Pump Lever Stop Lever Operating Lever Oil Hole *
- 47** Mold Disk Slide (Pull slide part way out and apply oil to bearing surfaces) *
- 48** Spaceband Lever Shaft Oil Holes (2) (one in front and one in back) *
- 49** Delivery Slide Lever Shaft Oil Holes (2) (one in front and one in back) *
- 50** Elevator Transfer Lever Shaft Oil Holes (2) (one in front and one in back) *



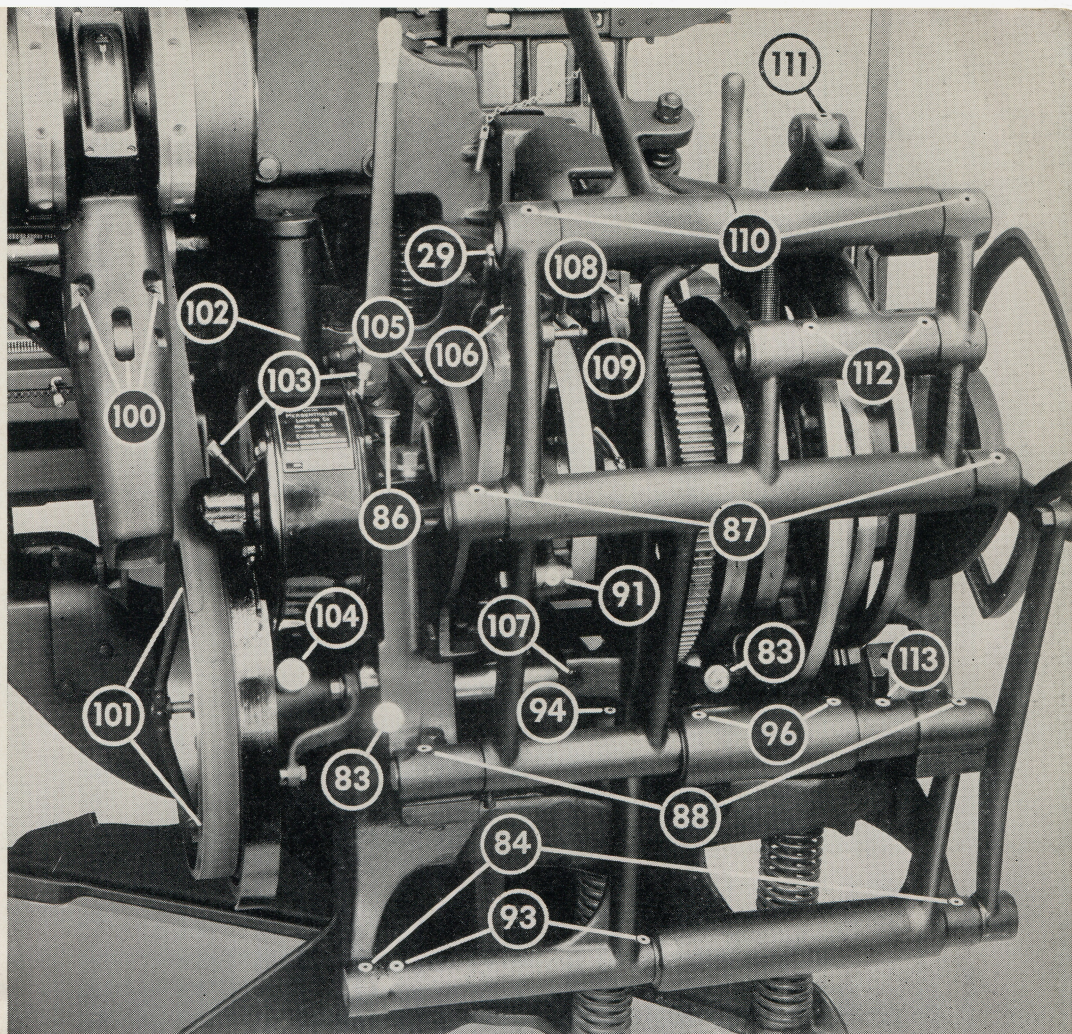
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| 51 Vise Jaw (L.H.) Wedge (Apply oil to bearing surfaces) * | 58 Knife Wiper Bar Rod (Apply oil to sides of Rod) * |
| 52 Slug Lever Arm Shaft Oil Hole * | 59 Mold Disk Dog (Apply oil to sides of Plunger) † |
| 53 Vise Jaw Operating Lever Fulcrum Stud Oil Grooves (2) (Self-quadder) † | 60 Vise Automator Stop Rod Lever Oil Hole † |
| 54 Vise Jaw Control Rod (Apply oil to sides of Rod) (Self-quadder) † | 61 Slug Lever Oil Hole * |
| 55 Justification Control Cam (Apply oil to bearing surface) (Self-quadder) † | 62 First Elevator Jaw Duplex Rail (Oil sparingly) ‡ |
| 56 Vise Jaw Locking Toggle Adjusting Screw Cam Oil Hole (Self-quadder) † | 63 First Elevator Jaw Duplex Rail Levers (Oil sparingly) ‡ |
| 57 Justification Rods (2) (Apply oil to sides of Rods) * | 64 First Elevator Slide (Apply oil to bearing surfaces) * |
| | 65 Knife Wiper Operating Lever Oil Hole * |



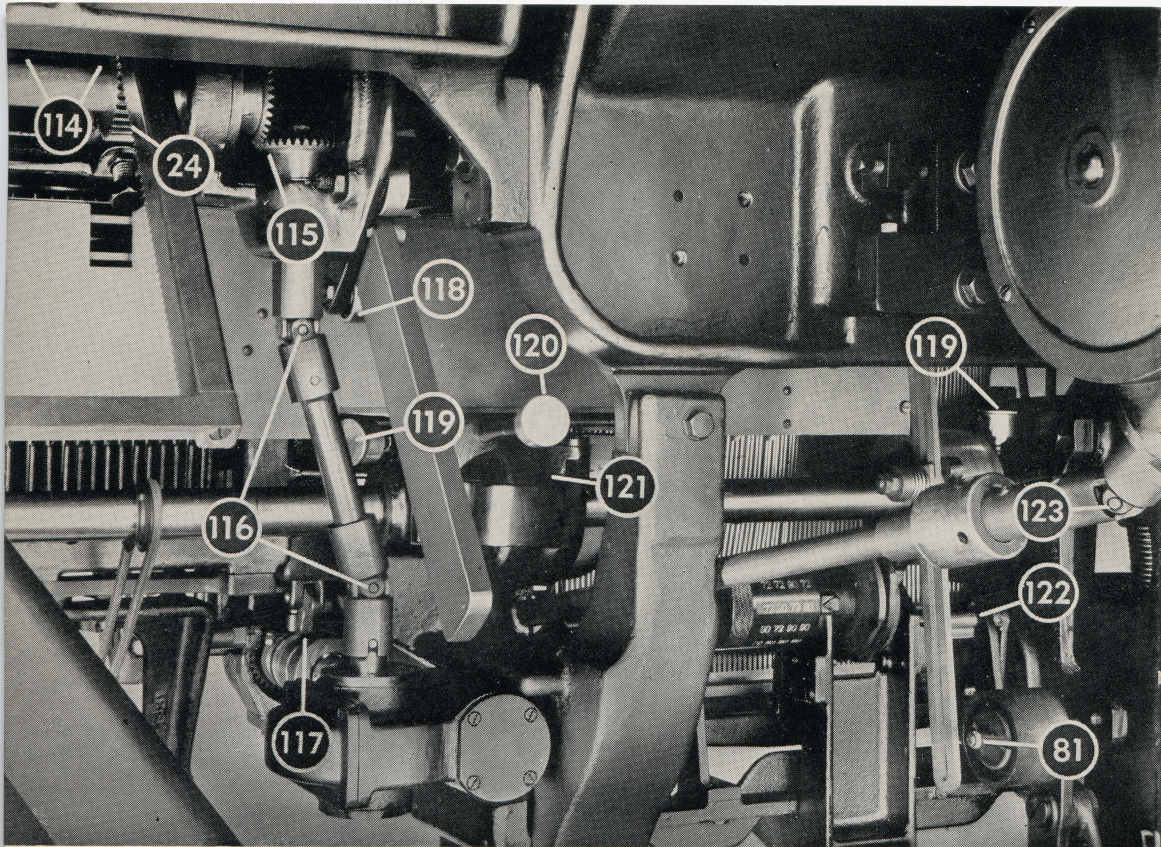
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| 66 Second Elevator Starting Spring Bolt Hinge Screw (Models 31 and 32) * | 74 Pot Cam Roll Oil Holes (2) * |
| 67 First Elevator Cam Roll Oil Hole * | 75 Pot Lever Oil Holes (2) * |
| 68 Vise Jaw Locking Toggle Cam Roll Oil Hole (Self-quadder) * | 76 Vise Jaw Locking Toggle Lever Roll Oil Hole (Self-quadder) * |
| 69 Vise Jaw Locking Cam Lever Bracket Support Oil Hole (Self-quadder) * | 77 Magazine Locating Block Support Lever Shaft Oil Holes (2) (one at each end of shaft) * |
| 70 Distributor Shifter Cam and Cam Rider * | 78 Mold Disk Pinion Shaft Oil Holes (2) * |
| 71 Pot Pump Lever Roll Oil Holes (2) * | 79 Mold Disk Guide Support Screw Grease Cup § |
| 72 Vise Jaw Locking Toggle Cam Lever Extension Arm Oil Holes (2) (Self-quadder) * | 80 Pot Leg Bushing Oil Holes (2) (one on each leg) * |
| 73 Vise Jaw Locking Toggle Cam Roll Lever Oil Hole (Self-quadder) * | |



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| 81 Intermediate Shaft Driving Belt Idler Pulley Oil Cup (72-90 machines) * | 91 Second Elevator Safety Pawl Oil Hole * |
| 82 Driving Shaft Clutch Flange (Oil bearing surfaces) * | 92 Delivery Cam Shoe (Oil bearing surface) * |
| 83 Driving Shaft Bearing Grease Cups (2) § | 93 Ejector Lever Oil Holes (2) * |
| 84 First Elevator and Ejector Lever Shaft Oil Holes (2) * | 94 Vise Closing Lever Spring Rod Oil Hole * |
| 85 Delivery Lever Cam Roll and Pin * | 95 Pot Return Cam (Oil bearing surface) * |
| 86 Cam Shaft Grease Cups (2) § | 96 Justification Lever Oil Holes (2) * |
| 87 Second Elevator Lever Shaft Oil Holes (2) * | 97 Second Elevator Cam Roll Oil Holes (2) * |
| 88 Justification and Vise Closing Lever Shaft Oil Holes (2) * | 98 Justification Lever Spring Rod Oil Hole * |
| 89 Elevator Transfer Cam Roll Oil Hole * | 99 Justification Release Cam Lever Oil Holes (2) (Self-quadder) * |
| 90 Delivery and Elevator Transfer Cam (Oil bearing surface) * | |



- 100** Magazine Elevating Shaft Anti-Friction Rolls (6) *
- 101** Driving Shaft Friction Shoe Rods and Pins *
- 102** Delivery Air Cushion Piston Fulcrum Screw *
- 103** Motor Armature Bearing Grease Cups (2) (NOTE: A medium ball-bearing grease should be used on the type of motor illustrated. For older style motors having oil cups, use Linotype oil X-24.)
- 104** Motor Driving Pulley Grease Cups §
- 105** Vertical Starting Lever Shaft *
- 106** Automatic Safety Pawl and Automatic Stopping Pawl (Oil bearing surfaces and hinge pins) *
- 107** Ejector Lever Shoe (Oil bearing surface) *
- 108** Ejector Lever Adjustable Pawl Plate (Oil bearing surface) *
- 109** Ejector Lever Adjusting Pawl Oil Hole *
- 110** Second Elevator Lever Shaft Oil Holes (2) (Models 29 and 30) *
- 111** Second Elevator Lever Link Oil Holes (2) (Models 29 and 30) *
- 112** Second Elevator Cam Lever Oil Holes (2) (Models 29 and 30) *
- 113** Vise Closing Lever Oil Hole *



114 Magazine (Aux.) Elevating Pinion Rack Guide Roll Oil Holes (2) (Oil holes are in face of Roll) (Models 30 and 32) *

115 Magazines (Aux.) Frame Elevating Shaft Gears (Models 30 and 32) *

116 Magazine (Aux.) Elevating Shaft Universal Joints (2) (Models 30 and 32) *

117 Magazine Elevating Shaft Clutch (one on Models 29 and 31) (two on Models 30 and 32) (Oil bearing surfaces) *

118 Magazine (Aux.) Frame Guide Rolls (4) (Models 30 and 32) *

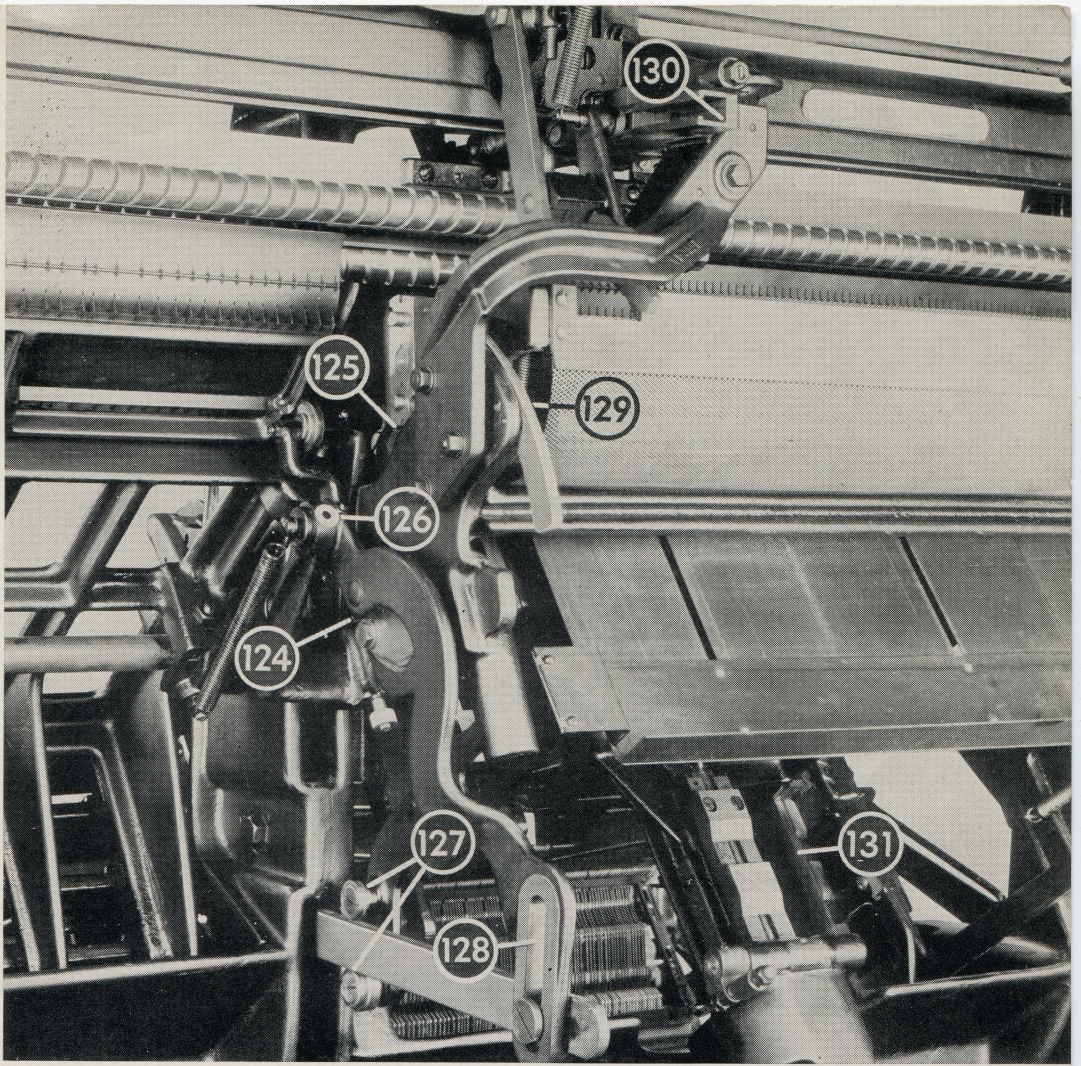
119 Intermediate Shaft Grease Cups (2) §

120 Assembler Driving Pulley Shaft Grease Cup §

121 Intermediate Shaft Bevel Gear and Assembler Driving Belt Gear *

122 Keyboard Rod Lever Slide Link and Cam Roll Lever Shaft Oil Holes (3) (Models 31 and 32 [72-90]) *

123 Magazine Elevating Shaft Universal Joints *



124 Distributor Screw Guard Safety Lock (Oil bearing surfaces) (Models 31 and 32 [72-90]) †

125 Channel Entrance Revolving Block (Oil bearing surfaces) (Models 31 and 32 [72-90]) †

126 Channel Entrance Frame Control Lever Link Oil Holes (2) (one hole on front of Link) (Models 31 and 32 [72-90]) *

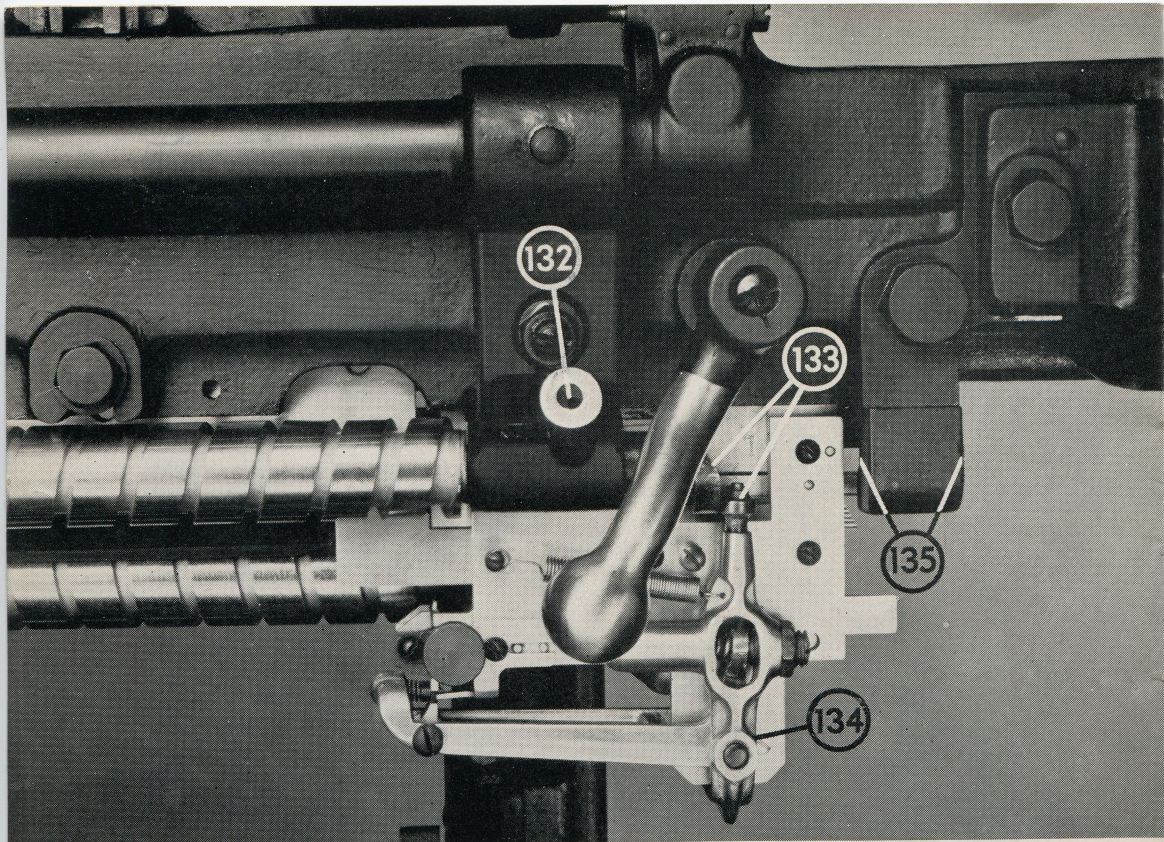
127 Channel Entrance Control Lever Link Guide Rolls (Oil studs) (Model 32 [72-90]) *

128 Channel Entrance Control Lever Link (Long) (Oil bearing surfaces) (Model 32 [72-90]) *

129 Channel Entrance Revolving Cams (Oil bearing surfaces) (Models 31 and 32 [72-90]) †

130 Distributor Bar Shifter Guide (Oil bearing surfaces) (Models 31 and 32 [72-90]) †

131 Magazine Frame (Lower) Guide Rails (2) (one on each side of frame) (Oil bearing surfaces) (Models 31 and 32) *

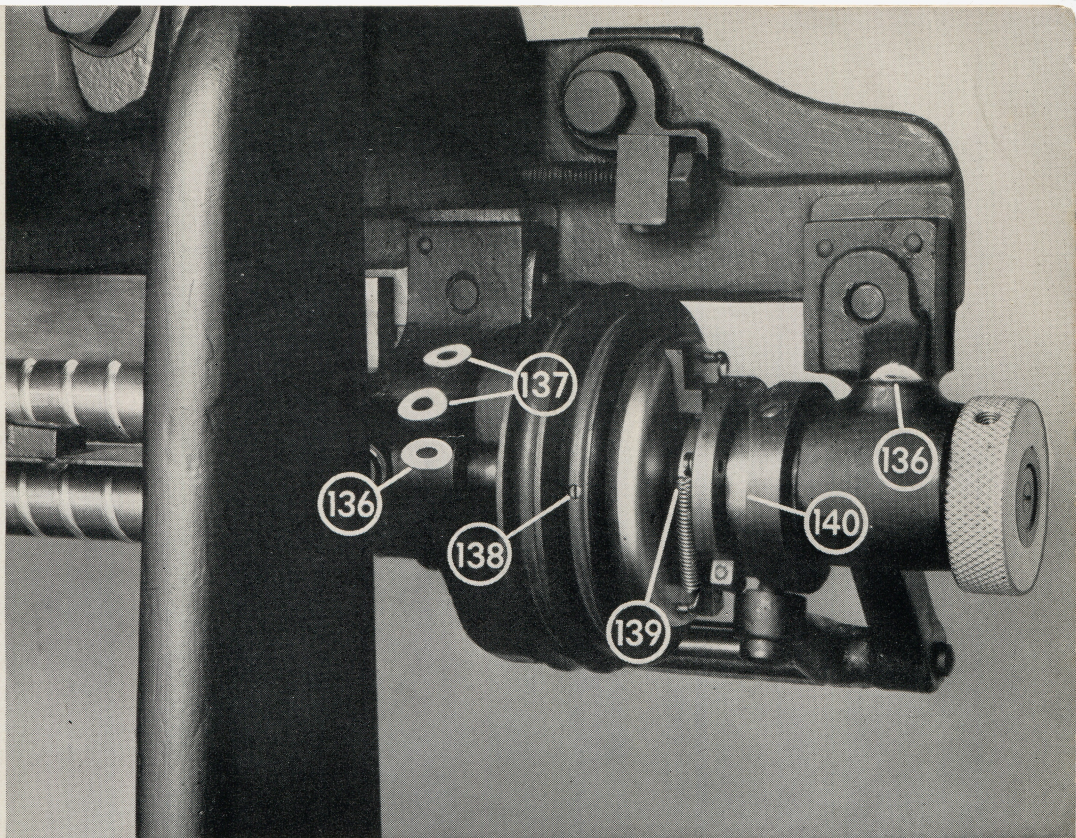


132 Distributor Back Screw Oil Holes
(2) (one hole at other end of screw)
(Models 31 and 32) †

133 Distributor Box Matrix Lift Cam and
Roll (Models 31 and 32) †

134 Distributor Box Matrix Lift Cam
Lever Oil Holes (2) (Models 31 and
32) †

135 Second Elevator Guide (Upper)
(Oil bearing surfaces) †



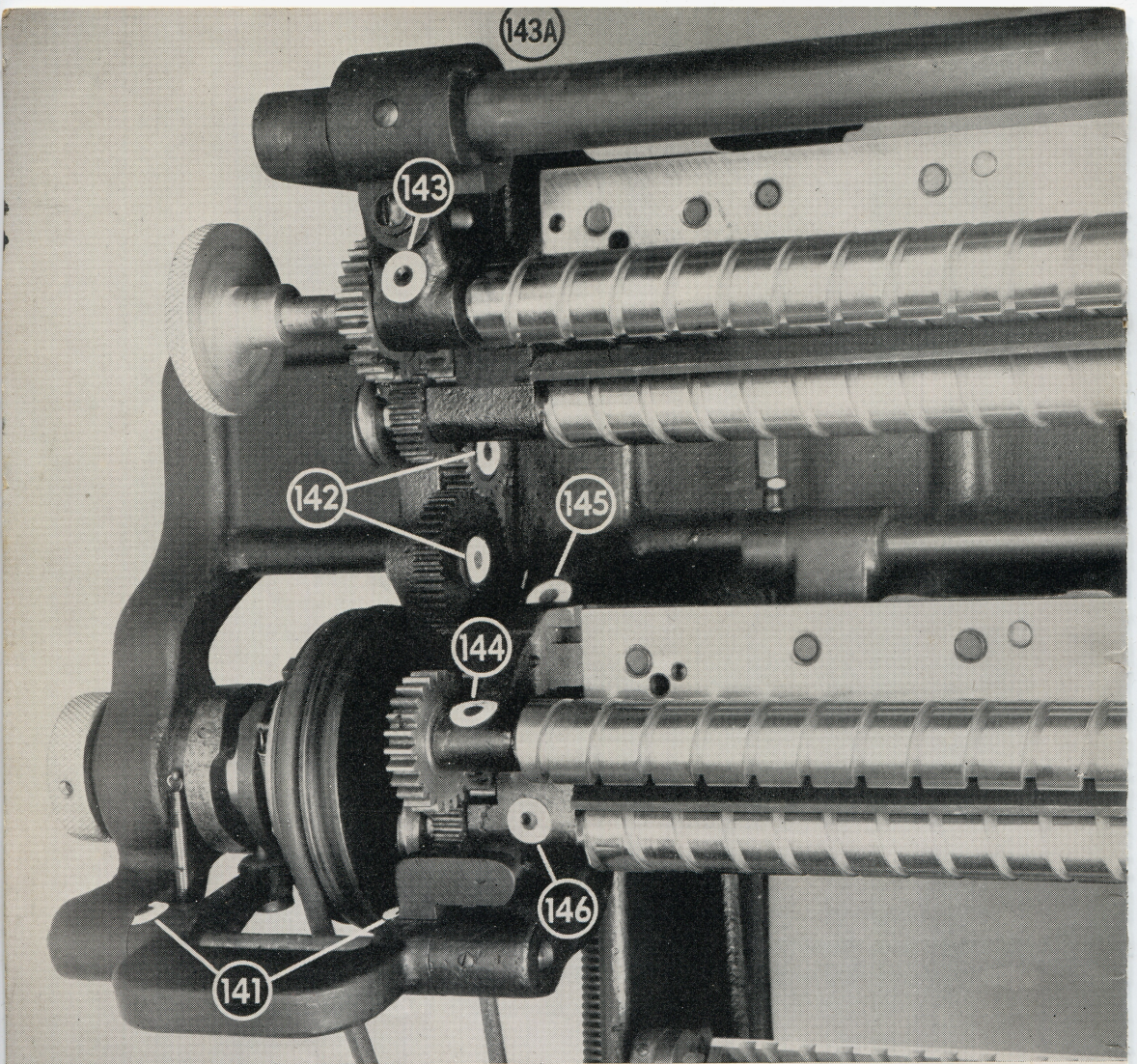
136 Distributor Clutch Shaft Oil Holes
(2) †

137 Distributor Front Screw Oil Holes
(4) (one hole at other end of each
screw) (Models 31 and 32) †

138 Distributor Clutch Pulley Oil Hole
(Remove screw to oil) †

139 Distributor Clutch Pulley Washer
Flange Oil Hole †

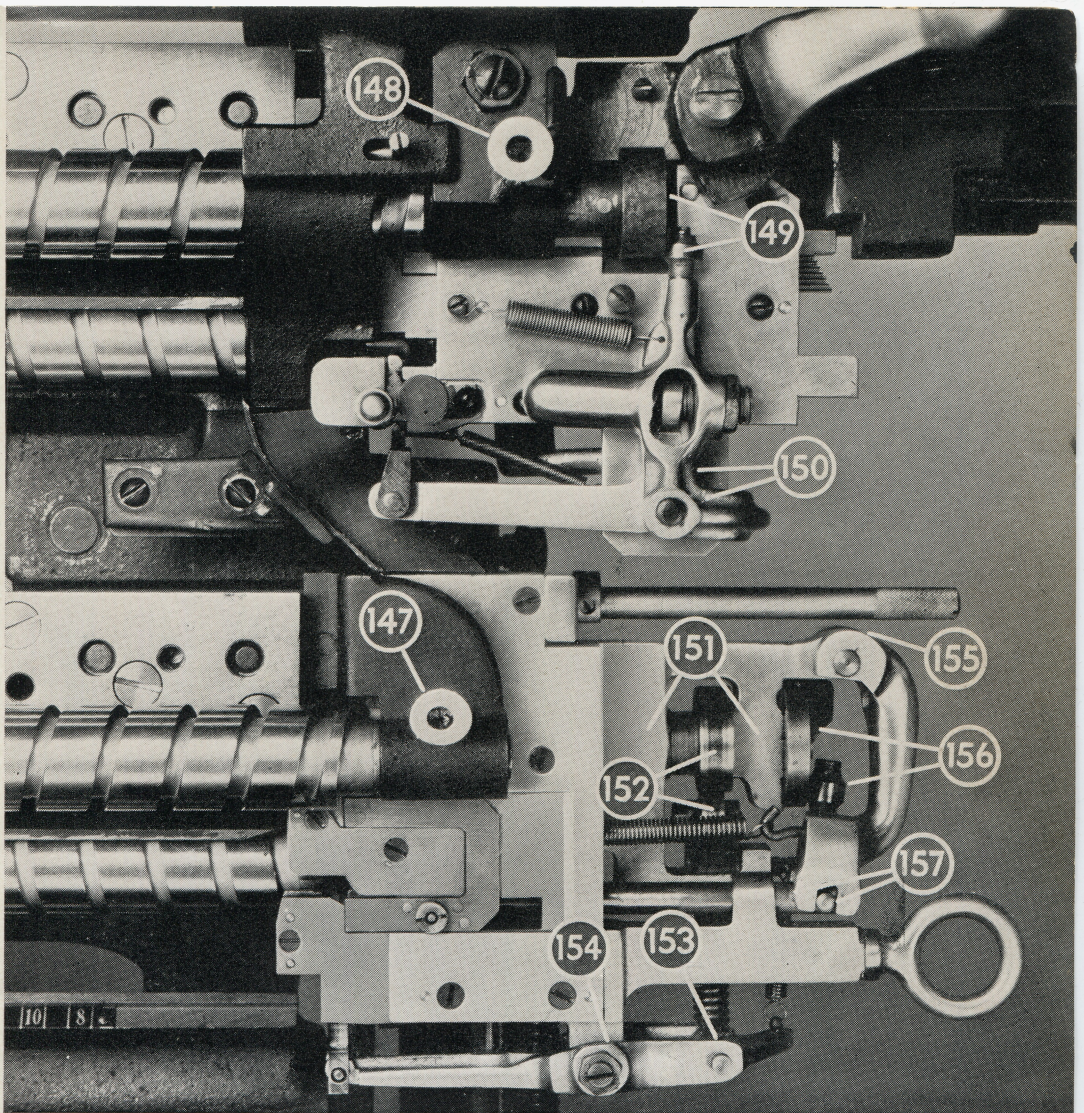
140 Distributor Clutch Flange Collar
(Oil bearing surface) †



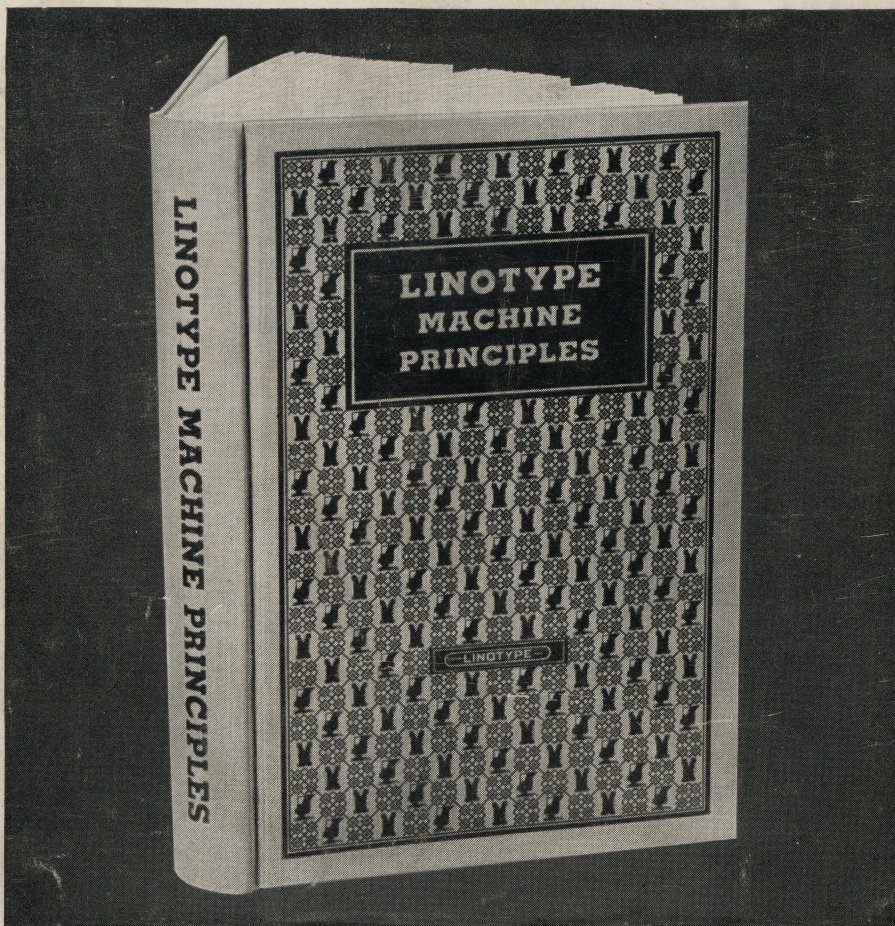
- 141** Distributor Clutch Lever Oil Holes (2) (Models 29 and 30) †
- 142** Distributor Screw Idler Gear Stud Oil Holes (4) (holes in head of each stud) (Models 29 and 30) †
- 143** Distributor Back Screw (Upper Set) Oil Holes (2) (one hole at other end of screw) (Models 29 and 30) †
- 143a** Distributor Front Screw (Upper Set) and Distributor Lower Screw (Upper Set) Oil Holes (4) (one hole

at each end of each screw—visible from top of machine) (Models 29 and 30) †

- 144** Distributor Back Screw (Lower Set) Oil Holes (2) (one hole at other end of screw) (Models 29 and 30) †
- 145** Distributor Front Screw (Lower Set) Oil Tube (one hole at other end of screw) (Models 29 and 30) †
- 146** Distributor Lower Screw (Lower Set) Oil Holes (2) (one hole at other end of screw) (Models 29 and 30) †



- 147** Distributor Back Screw (Lower Set) Oil Holes (2) (one hole at other end of screw) (Models 29 and 30) †
- 148** Distributor Back Screw (Upper Set) Oil Holes (2) (one hole at other end of screw) (Models 29 and 30) †
- 149** Distributor Box (Upper) Matrix Lift Cam and Roll (Models 29 and 30) †
- 150** Distributor Box (Upper) Matrix Lift Cam Lever Oil Holes (2) (Models 29 and 30) †
- 151** Distributor Box (Lower) Cam Shaft Bearing Oil Holes (2) (holes are in front of box) (Models 29 and 30) †
- 152** Distributor Box (Lower) Matrix Lift Cam and Roll (Models 29 and 30) †
- 153** Distributor Box (Lower) Matrix Lift Lever Oil Hole (Models 29 and 30) †
- 154** Distributor Box Matrix Lift Lever Fulcrum Screws (2) (Models 29 and 30) †
- 155** Distributor Box (Lower) Matrix Pusher Slide Lever Oil Hole (Models 29 and 30) †
- 156** Distributor Box (Lower) Matrix Pusher Slide Lever Cam and Roll (Models 29 and 30) †
- 157** Distributor Box (Lower) Matrix Slide Lever Fulcrum and Pusher Rods (Models 29 and 30) †



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