

Graphotype[®]

Class 6100, 6200, 6300

SERVICE MANUAL

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**ADDRESSOGRAPH-MULTIGRAPH CORPORATION
CLEVELAND 17, OHIO**

GRAPHOTYPE

Illustrations are on folded sheets in the back of this manual. Unfold the appropriate sheet when studying the description. The appropriate illustrations are indicated in the text by the number just preceding the key letter. For example, register bolt 2C will be illustrated in Figure 2, as key letter C.

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CLASS 6100

GRAPHOTYPE ADJUSTMENTS

DIE HEAD & REGISTER GROUP

There should be .007" clearance between the underside of a STRAIGHT plate support 1A and the top surface of the lower section of the die head 1C. Before making any adjustment, it must be determined that the underside of the plate support is resting on the main frame lugs and that the plate support mounting screws 1B are securely tightened. The die head may be raised or lowered by means of the headless set screw 2A on the underside of the base of the Graphotype.

As the operating lever 4A is pulled forward, the pawl 2C enters the teeth of the register wheel 2B and holds the die head in position for embossing. The register rocker 3B should be adjusted by means of the two nuts 3D so that when the register pawl 2C is fully engaged between the teeth of the register wheel the punch driving screw 4E will locate centrally on the head of a punch 4G and the die driving screw 4J will locate centrally on the head of the corresponding die 4H.

DIE AND PUNCH STRIPPERS - DIE

When the operating handle is in the neutral position, the die stripper 5A should clear the stripper levers 5B by approximately 1/16".

CLASS 6140

This adjustment is obtained by varying the thickness of the felt pad 3C.

CLASS 6150 & 6180

A stud driven into the main frame provides a stop for the operating handle. The adjustment of the die stripper is obtained by locating the stud as required.

When the operating lever 4A is in neutral position, the register pawl 2C should clear the teeth of the register wheel 2B by 1/16". This adjustment is obtained by turning the screw 2D as required.

PUNCH

When the operating lever 4A is in neutral position, the punch stripper 5K should clear the stripper levers 5J by 1/16". This will allow approximately 1/16" up and down movement of the toggle rocker 4D.

THE CLASS 6140

The felt pad at the rear of the toggle rocker 4D should be shimmed or trimmed to obtain this adjustment.

THE CLASS 6150 & 6180

A headless set screw in the punch arm, to the rear of the die head shaft, may be adjusted as required to obtain this clearance.

As the operating handle is pulled forward, the blade 4B should clear the block on the register rocker 4C by 1/64". This adjustment is obtained by grinding the upper edge of the blade 4B.

CHARACTER INDICATOR ADJUSTMENTS

MITER GEAR

The miter gear 3A on the die head shaft should be raised or lowered so that the teeth of the gear will fully engage the teeth of the miter gear 3E on the handwheel shaft. However, the teeth of the one gear should not "seat" completely between the teeth of the opposite gear. It should be possible to move the handwheel shaft in and out slightly.

Lock the position of the miter gear 3E on the die head shaft by means of the clamping screw 3F in the collar. The slot in the collar should be in line with the slot in the clamping portion of the miter gear.

6140 ONLY

The character dial should be located so that the indicator will point directly to the character to be embossed. Pull the operating handle 4A forward so that the die head is locked in embossing position. Then locate the character dial so that the indicator points directly to the character corresponding to the die and punch in embossing position.

Follow the same procedure with the die head turned so that the die and punch at the opposite side of the die head are at embossing position. With the operating handle forward, observe the alignment of the indicator with the character on the character strip. If the indicator is not aligned with the character, shift the character strip slightly so that the alignment of the indicator and the character will be "off" the same amount when the character at either side of the die head is at embossing position.

Then place the celluloid disc over the character strip and fasten the indicator ring securely with the headless set screw.

6150 & 6180 BUMPER STOP

When the die head is turned either to the left or right as far as it will go, the bumper stop 6A should stop the die head in such position that the register pawl will enter the teeth of the register wheel without moving the die head when the operating handle is pulled forward. Adjustment is made by forming the ends of the cushion stop spring 6B as required.

POINTER LOCATION

The pointer should be located on the indicator cord so that the pointer will point directly to the character "1" on the character strip when the operating handle is pulled forward. By aligning the pointer at this position, any misalignment of the indicator with the character at either end of the character strip will be equally divided.

6150 & 6180

The handwheel used for rotating the die head is equipped with a friction clutch to prevent possible crowding of embossed characters by turning the die head when the register bolt is engaged in the register wheel. When turning the handwheel for normal character selection, the handwheel should not slip. When the register pawl is engaged in the register wheel, the handwheel should slip when turned. Adjustment is made by tightening or loosening the three screws 6D in the handwheel hub as required.

CARRIAGE ADJUSTMENTS

The screws 7K and 7L (at each end of the carriage) which form the axis for the four horizontal carriage rollers are eccentric and should be adjusted so that all four rollers bear equally against the carriage rail and so that the carriage will operate freely along the carriage rail—without looseness and with positively no bind. The carriage rail must be kept clean. Dirt or grit on the rail will cause the carriage to bind even though the eccentrics are properly adjusted. Excessive looseness of the carriage will result in the lines of embossed type being wavy or not perfectly straight. On the other hand, binding of the carriage on the rail may cause "crowding" difficulty, due to failure of the carriage to space or failure to space quickly enough.

The screw 7G should be adjusted so that when the jaw is opened in position to insert a plate, the inside surface of the upper jaw will be on a plane with the bosses on the carriage frame against which the plate rests. When a plate is held flat against the carriage bosses, and the

plate jaw is opened, the bottom edge of the plate should insert freely into the jaw, without striking the edge of either the upper or lower jaw.

With a plate in the jaw, and the jaw in position to emboss the plate, the plate should rest flat on the plate support. Adjust the screw 7M so that it bears against the carriage frame when the plate is flat on the plate support.

The plate jaw should have no end-to-end "play" in the carriage and yet should not bind when turned up to insert a plate or turned down into embossing position. If end-to-end "play" exists, the right end of the shaft 7A should be filed. If a "bind" exists, the right side of the right lug 7N of the carriage should be filed slightly as required.

The carriage draw band should have just enough tension so that it will not unhook from the pin in the carriage frame when the carriage is against the right bumper stop on the carriage rail. The amount of tension for the draw band may be adjusted, turning the stud 10H as required. Care must be exercised in making this adjustment—too much tension will cause the carriage to skip and will also result in excessive wear or breakage of the release lever, spacing pawl or escapement rack. Too little tension on the other hand may cause "crowding" of embossed characters.

SPACING ADJUSTMENTS

When the operating handle 10E is in neutral position, the spacing rod 8F should clear the upper edge of the slot in the carriage rail by $1/16''$. Adjustment is obtained by moving the spacing block 8E on the spacing rod.

The carriage spacing lever 10L pivots in an eccentric bushing in the carriage rail, which should be adjusted so the pawl on the spacing lever enters centrally between the teeth of the escapement rack. This adjustment will permit the carriage to half-space and should be tested as follows: Pull the operating handle 10E forward very slowly, about three inches, until the carriage moves a half-space to the right. Then as the operating handle is returned to its neutral position, the carriage will complete its space. Test the escapement adjustment by moving the operating handle back and forth, half-spacing the carriage, the full length of the escapement rack.

To prevent "skipping" it is important that the lowest point of the release lever pawl 10R contacts the vertical surface of the teeth on the escapement rack. To attain this condition, the pawl 10R should be carefully twisted clockwise, so that the engaging surface of the pawl will be slightly angular to the vertical surfaces of the escapement rack, and the very lowest point of the pawl 10A will contact the vertical surfaces of the escapement rack teeth.

A lug on the operating handle raises the carriage spacing rod to space the carriage. The release lever pawl 10A should clear the escapement rack by $1/64''$ to $1/32''$. This adjustment is obtained by forming the end of the release lever 10R. With the operating handle in the forward position, the spacing lever 10L should clear the rack by $1/64''$ to $1/32''$. This adjustment is obtained by forming the end of the spacing lever 10L.

ATTAINING PROPER EMBOSSING PRESSURE

In the Class 6140 Graphotypes, the felt pad 8G must be removed from the toggle rocker. (There is no corresponding pad on the toggle rocker of the Class 6150 and 6180 Graphotypes.) Make certain that the toggle rocker 8H passes forward of dead center, as the operating handle is pulled as far forward as it will go. If the toggle does not pass dead center, the felt pad 8D on the operating lever must be temporarily removed. Then proceed as follows:

Remove the character "B" punch from the die head.

Remove the die stripper 10A from the die arm.

Turn the die head so that the capital "B" die is at the embossing position.

Hold an address plate on the plate support 10S in embossing position and bring the operating lever as far forward as it will go.

While holding the operating lever forward, pull the address plate from beneath the die. With the die driving screw 10T properly set, a slight drag should be noticed when pulling the address plate from under the die; at the same time the pressure of the die should cause a slight scratch to appear on the plate. This adjustment is made by raising or lowering the die driving screw and should be securely locked by means of the lock nut as it is a permanent adjustment.

The spring retaining nut 9D is used for increasing or decreasing the pressure. The check nuts 9A are used only for maintaining .015" to .020" clearance between the milled under surface of the punch arm, and the top check nut, when embossing the capital "B" character.

Proceed as follows:

Adjust the pressure nut 9D and check nuts 9A until the pressure is unmistakably too light, always maintaining the specified .015" to .020" clearance of the check nuts 9A when embossing the capital "B" character. On the top line of the address plate, emboss all upper case characters from A to Z, period and comma.

Increase the pressure by turning the pressure nut 9D one-fourth of a turn. Adjust the check nuts 9A to obtain the .015" to .020" clearance at maximum pressure when embossing the capital "B" character.

Now emboss all characters across the address plate underneath the line of type previously embossed, to determine by comparison the result of the adjustment. With the aid of a magnifying glass, carefully inspect the embossed characters. It will be observed that the face of the type characters of the line that was embossed will be more distinct and will show a better formation than the other lines. The serifs, which are the fine cross lines on the top and bottom of such characters as the E, H, T, X, etc., will not appear as drooped or rounded in the last line of type as they do in the first line.

Using the same routine, repeat the procedure just explained, increasing the pressure only one-fourth of a turn for each test and always maintaining the specified clearance of .015" to .020" check nut clearance when under maximum pressure embossing the capital "B" character. Continue in this manner until the character formation of the last line embossed shows no difference from that of the line previously embossed. When this point is reached, it will be an indication that the pressure is sufficient and should be increased no further. The pressure should now be decreased one-fourth turn and a full line of characters embossed—this line should appear the same as to character formation—as the one directly above. As a double check, decrease the pressure another fourth of a turn and emboss another line of characters. The formation of the characters in this last line embossed should be less pronounced and not so full as that of the line immediately above. If this is the case, it will indicate that the pressure of the next to the last line embossed was correct; therefore, the pressure should be increased one-fourth turn and locked securely. The practice of increasing the pressure a little at a time and making a comparison of lines of type previously embossed and double checking by backing off the pressure eliminates the possibility of adjusting the pressure to excess.

Lock the punch driving screw by inserting the cotter pin 9C. Also replace the die and punch strippers, and the felt pad.

Insufficient embossing pressure will result in poor formation of characters and an indistinct impression when the address plate is imprinted on any of the various Addressograph models.

Excessive pressure will result in breakage of punches and dies, premature wear of the Graphotype, and may also distort the address plate.

When the pressure is properly set, the characters should emboss to a height of .030" above the thickness of the metal plate material, except Speedamat type which is .021". For example, the thickness of Addressoloy plates may be .015". Therefore, the total height of the embossures on an Addressoloy plate, measuring from the underside of the plate to the top of the embossures should be .045".

The address plate should be flat or straight from top to bottom after it is embossed. Check by laying a straight-edge across the back of the plate. If it is slightly concave or "dished out" (from top to bottom) after embossing, the punch driving screw and the die driving screw should each be raised slightly and the same amount. Should the address plate become convex or bulged upward (top to bottom) from embossing, the punch and die driving screws should each be lowered slightly and the same amount. By adjusting each screw the same amount, the pressure adjustments will not be changed. From end to end, the plate will usually be slightly convex after embossing. This is a normal condition, and no corrective action is required.

The condition of the punches and dies has an important effect on the formation of the embossed characters. Broken punches or dies obviously cannot produce perfectly formed characters. Likewise, if the recesses of the dies are filled with grit or metal chips from the plates, the embossed characters will not be properly formed. Should oil work its way onto the face of the die it will also affect the embossing results, usually causing the corners of the various characters to droop and not form up as distinctly as they would otherwise.

ADJUSTMENT OF TOGGLES

Check the adjustment of the felt pad 8D under the operating lever.

Place a blank address plate on the main frame of the Graphotype directly under the pad.

Bring the capital "B" character to embossing position and with an address plate in position to be embossed, pull the operating lever forward. With the pad properly adjusted, the operating lever should remain in the forward position when the operator's hand is removed. Next, place two blank address plates beneath the pad and pull the operating lever forward to emboss the capital "B" character. With the pad properly adjusted, the operating lever should spring back immediately when the operator's hand is removed. If necessary, shims for the pad should be added or removed to obtain this adjustment.

6140 ONLY

With an address plate in the carriage at embossing position, hold a blank address plate beneath the pad 8D and pull the operating handle forward to emboss the capital "B" character. When the height of the pad is properly adjusted, the toggle rocker will just pass dead center and will not produce a sharp noise as the toggle rocker strikes the main frame. If the pad is not of the proper height, the rocker will pass too far over dead center as the embossure is being made, causing a sharp noise. If the pad is too thick or shimmed too much, it will not allow the punch driving screw to rise high enough and will affect the pressure adjustment. By adding or removing thin metal shims, the correct adjustment of the pad may be obtained.

As a further check to see that the above adjustment is correct, hold two blank, style "B", address plates on the main frame beneath the pad 8D. Pull the operating lever forward to emboss the capital "B" character. If the adjustment of the pad is correct, the toggle rocker should not

pass over dead center, but should drop back to neutral position. If the rocker does pass over dead center, it is an indication that the pad is too thin and should be shimmed or replaced.

ADJUSTING END AND BOTTOM DIMENSIONS

The proper carriage jaw, plate stop, and line spacing racks to be used for embossing each style of plate with each style of type to the proper dimensions may be determined by referring to the Plate Embossing Specifications SA-1185.

For maintaining uniform margins, alignment of filled-in salutations and addresses with the body of form letters, etc., it is imperative that standard dimensions for location of embossed type of a plate are always accurately maintained.

The location of the first type character from the left end of the plate is determined by means of a plate micrometer, measuring from the edge of the plate to the center element of the capital "M", embossed in the extreme left position of the plate.

To change the location of the first type character from the left end of the plate, loosen the knurled screw 7E and turn the adjusting screw 7F left or right, thus shifting the plate stop 7C as required.

The location of the bottom line of embossed type on the plate is determined by measuring with the plate micrometer, from the bottom edge of the plate to the lower extremity of the capital "M" character, embossed on the last line of the plate. In order to alter the bottom dimensions, it is necessary to form (very slightly) the prongs of the line spacing lever 7D.

To increase the bottom dimension, bring the ends of the prongs against the cross support member of the carriage and using a broad face punch against the center of the prongs, tap lightly with a hammer.

To decrease the bottom dimension, tap the prongs from the opposite side. It must be understood that forming the prongs of the line spacing lever 7D will serve to increase or decrease the dimensions but a few thousandths of an inch. Care must be taken to always form both prongs an equal amount so that the bottom dimensions on both ends of the line of type on the plate will be the same.

ALIGNMENT OF LINE SPACING LEVER

The line spacing racks 7B should be checked as follows:

The two extending prongs of the line spacing lever 7D must be on the same horizontal plane, so that the tooth on each arm will fully engage the teeth of the line spacing racks 7B.

The two extending prongs must be parallel, so that the tooth on each arm will engage the full width of the line spacing racks 7B when the line spacing lever 7D is shifted either to the right or left.

The extending arms of the line spacing lever 7D should be formed either in or out as required to obtain both of the above conditions. The bottom dimension should then again be checked.

The shaft 10C for the line spacing lever should be located so that the line spacing lever will properly engage both sets of line spacing racks when shifted either to the right or left. Then lock the position of the shaft by tightening the screw 10D.

CARRIAGE TRIP LEVER AND SPACING CAM

As the plate jaw is turned downward into embossing position, the spacing cam 7P on the side of the jaw engages the end of the trip lever 10F on the side of the carriage, causing the plate jaw to move rearward (away from operator) into the proper position for embossing the first line of characters on the plate. This cam and trip lever are sometimes called a "throw-over." For embossing sectional plates, there are two cams and two trip levers, known as a "double throw-over." The "double throw-over" is adjusted in the same manner as a single "throw-over." When the spacing cam 7P engages the trip lever 10F, the jaw and line spacing frame should move rearward to the extent that the tooth on each of the line spacing levers will locate approximately half way between the first and second tooth of the line spacing racks 7B. Then as the spacing cam trips off the trip lever, the two teeth of the line spacing lever will engage the first tooth of each of the two line spacing racks. If the jaw is forced too far rearward, grind the edge of the trip lever 10F. If the jaw does not move far enough rearward, install the proper new trip lever and/or spacing cam.

CARRIAGE SCALE AND CARRIAGE STOP

The carriage scale 7J should be located so that when the spacing lever 10L is engaged in the last tooth of the carriage escapement rack 7H, the indicator on the carriage will point to line "1" of the top row of lines of the carriage scale 7J. The two mounting holes for the carriage scale are elongated so that the scale may be shifted as required.

The left bumper stop 10M for the carriage must be adjusted for the number of characters per line to be embossed as specified in the Plate Embossing Specifications SA-1185, plus one-half space over-throw when it is brought against the bumper stop 10M. The stop may be tapped lightly with a small hammer to obtain this condition.

ADJUSTING BACK SPACER

When the Graphotype is equipped with a back spacer (which is not applicable to Class 6140), the pawl on the back spacer rod 10P should clear the teeth of the escapement rack 7H by approximately 1/64" and should engage the teeth fully when back spacing. This adjustment is obtained by forming the back spacer rod as required. When the back spacing lever is fully depressed, it should move the carriage a full space to the left. This adjustment is obtained with the adjusting screw 10N in the lower part of the back spacer handle.

ADJUSTMENT OF PLATE ROLLER (6150 and 6180)

If the Graphotype is equipped with a plate roller (which is not applicable to the Model 6140), the stop screws for the plate roller operating lever should be adjusted so the lower roller travels the entire length of the anvil block. The stop screw, for the forward stroke of the handle, is located in the base of the Graphotype, while the stop screw for the return stroke of the handle, is located in the upper portion of the plate roller main frame.

The plate roller should roll the regular Addressograph plate to a height of .045" for Addressoloy, .047" for Addressozinc. Thin paper shims may be placed under the lower anvil block to obtain these results.

CLASS 6200 GRAPHOTYPE ADJUSTMENTS

DIE HEAD & REGISTER GROUP

There should be .007" clearance between the underside of a straight plate support and the top surface of the lower section of the die head (in which the punches are retained). Before checking this clearance, it must be determined that the bottom of the plate support is resting on the two main frame lugs and that the plate support mounting screws are tightened securely. The die head is raised or lowered by means of the headless set screw 11F in the underside of the table top.

The thrust screw 12A in the top of the die head shaft 12D should be adjusted for .002" clearance between the top of the screw 12A and the under side of the toggle shaft. Lock the adjustment with the set screw 12C.

Pull the operating handle 13A all the way forward. This will cause the flat milled portion on the underside of the handle to seat against the beveled edge of the stop block 13L. With the operating handle in this position, the center of the roller 14D should travel no farther than to within 1/32" of the high point of the bevel of the cam block 14C. Proper adjustment is obtained by placing thin shims under the block 13L. Should the center of the roller pass closer than 1/32" to the high point of the cam block, it will cause the operating handle to bind.

The lock bolt 15A must have absolutely no side play. If side play is prevalent, it may be eliminated by loosening the screw 11J in the support plate 11H, underneath the table top, and sliding the beveled adjusting block 11K toward the rear of the Graphotype. This adjustment must be made carefully, to allow the lock bolt free movement and still eliminate all looseness.

Pull the operating handle 13A all the way forward and hold it in this position. Turn the nut 15G until there is a 3/32" clearance between the rear surface of the nut and the front surface of the washer 15H. Lock the position of the nut by tightening the nut 15F.

Keeping the operating handle all the way forward, adjust the nut 15B so there is 1/64" clearance between the nut 15B and the collar 15E when the collar is against the stud in the lock bolt. Lock the adjustment with the lock nut 15D.

With the operating handle 13A in neutral position, there should be 1/32" clearance between the end of the lock bolt 11L and the teeth of the register wheel 11G when pushing rearward on the pull rod 14A to remove any play in the lock bolt. Obtain this clearance by trimming or shimming the pad 13C as required.

TRIP RETURN AND TIMING ADJUSTMENT

With the drive rod 16A at the upward limit of its stroke, an imaginary straight line should pass through the center of the three pins 16A, 16F and 16E. Obtain this adjustment by turning the clevis 16D up or down as required. Then lock the adjustment with the nut 16C.

With the upper die arm 17A at the downward limit of its stroke, the lower face of the driving block should clear the face of the recessed portion of the upper shuttle block by .007". Adjustment is by means of the screw 18B.

The top of the trip restoring finger 19F must be on a horizontal plane with the center of the pin 19E. The restoring finger 19F may be turned as required and locked with the nut on the rear side.

With the lower die arm 17C at the limit of its upward travel and the trip restoring finger 19F at the left extremity of its travel, there should be .002" clearance between the top surface of the

finger 19F and the underside of the upper shuttle block 19C. Adjust by turning the locating stud 19D as required. The two compression springs on the locating stud 19D position the trip restoring finger, and it is of vital importance that these springs be in good condition. The upper compression spring is a weaker spring than the lower spring.

With the upper die arm 17A at the limit of its downward travel, there should be $1/64''$ minimum clearance between the side of the die driving block and the side of the recess in the shuttle block 17B. With the machine in the same position there should be $1/64''$ minimum clearance between the side of the punch driving block 20A and the sides of the recess in the shuttle block 20B. These clearances must be equal and are obtained by forming the links 17D and 20F for the shuttle blocks 17B and 20B. Check and determine that there is no bind in the pivot lever or the links for the shuttle blocks.

The guide block 21F should be positioned so that the end of the lock rod 21H will rest squarely against the end of the pull rod 21G. Then tighten the screw 21E securely.

With the upper die arm 17A at the limit of its downward travel, trip the release lever 21C so that the pivot lever 21A moves to the left. When the operating handle is pulled forward, the operating lever 21D must travel far enough to the left to permit the operating handle to lock in the forward position. If the operating handle does not lock, it will be necessary to form the operating lever 21D. After forming the operating lever 21D, for the above condition restore the operating handle to neutral position. In this position the lock rod 21 H must clear the pull rod 21G.

As the trip restoring finger 19F engages the upper shuttle block 19C to restore the trip mechanism, it should cause the lower end of the pivot lever 22A to move to the right and clear the end of the trip release lever 22J by $1/16''$ minimum. This clearance is obtained by means of the eccentric stud 19A. When adjusting the eccentric stud 19A be sure the trip return finger 19F does not cause the pivot lever 22A to strike the main frame, while restoring the trip mechanism, nor should the trip return finger 19F strike the shoulder of the die driving anvil, in the lower die driving arm 17C, when the trip mechanism is latched up (neutral position).

With the machine in neutral position the bottom end of the pivot lever 22A must be perfectly flush with the underside of the trip release lever 22J. This adjustment is obtained by forming the stop pin 22E slightly up or down as required.

Pull the operating handle 23A all the way forward. The underside of the spacing plate 23G should be $1/32''$ above the top of the trip block 23E on the space rod 23D. Adjust by turning the trip block 23E on the space rod 23D. When locking this adjustment with the nut 23F the trip block 23E must be kept square with the edge of the spacing plate 23G.

With the pivot lever 24A latched up (neutral position) and the operating handle 23A in neutral position, slowly pull the operating handle 23A forward. The space rod 23D should trip first—that is, the trip block 23E will locate under the spacing plate 23G. With not more than $.005''$ further forward movement of the operating handle 23A, the pivot lever 24A should trip off the end of the release lever 24J.

The tripping of the pivot lever 24A from the release lever 24J is controlled by the location of the screw 24F in the trip rod 24C. Move the screw 24F in or out as required. The top of the screw 24F is slotted for the spring 24H. The spring 24H, when connected, should locate in the slot without causing the trip rod 24C to twist. As the operating handle is pulled further forward—not more than $.005''$ —the trip rod 24C should trip. This adjustment is controlled by the screw 26E. Now with the pivot lever 24A latched over the release lever 24J pull the operating handle 23A slowly forward—the spacing rod 23D should trip first, the pivot lever 24A second and the trip rod 24C third—with only a slight movement of the operating handle 23A between the tripping of these parts. After the trip rod 24C has tripped, there must be a minimum of $.010''$ remaining

forward movement in the travel of the operating handle 23A.

When in neutral position the lower bent over portion of the die stripper 27A should clear the stripper levers 27B by .010". The punch stripper 27D should also clear the stripper levers 27C by .010". The adjustments are obtained by forming the die and punch strippers.

SPACING ADJUSTMENTS

Draw the carriage to the embossing position and adjust the screw 23J so that the spacing lever 25C clears the teeth on the carriage escapement rack by 1/64" minimum to 1/32" maximum, when the thumb lever 23M is depressed. If more than the specified clearance is allowed at this point, it may cause the carriage to skip. The release lever 25B should also clear the teeth of the escapement rack by 1/64" to 1/32". This clearance is obtained by forming the forward end of the lever. To prevent "skipping" it is important that the lowest point of the pawl on the release lever 25B contacts the vertical surface of the teeth on the escapement rack. To attain this condition, the pawl on the release lever 25B should be carefully twisted clockwise so that the engaging surface of the pawl will be slightly angular to the vertical surfaces of the escapement rack, and the very lowest point on the pawl on the release lever will contact the vertical surface of the escapement rack teeth.

The carriage release lever 25B pivots in an eccentric bushing 25A in the carriage rail, which should be adjusted so that the carriage release lever enters centrally between the teeth of the escapement rack. This adjustment will permit the carriage to half-space, and should be tested as follows: Pull the operating handle very slowly forward until the spacing rod trips. Then move the operating handle slowly toward its neutral position until the carriage spaces. Now by moving the operating handle back and forth for a distance of about two inches, the carriage should half-space on the forward stroke of the handle and complete its space on the rear stroke of the handle. This test should be repeated a number of times, half-spacing the carriage the full length of the escapement rack to insure that the proper adjustment for the spacing of the carriage has been obtained.

When the adjustment in the foregoing paragraph has been correctly set, the carriage spacing lever 25C should rise the same distance when the thumb lever on the operating handle is depressed, as it does when the operating handle is pulled forward. To test this adjustment, bring the carriage to the embossing position and alternate depressing the thumb lever and pulling the operating handle. The carriage should move one space with each stroke of the operating handle and one space each time the thumb lever is depressed.

CARRIAGE ADJUSTMENTS

Same as 6100

CHARACTER INDICATOR ADJUSTMENTS

Miter Gears

Same as 6100

Bumper Stops

Same as 6100

Pointer Location

Same as 6100

ADJUSTING EMBOSSING PRESSURE

The condition of the punches and dies has an important effect upon the embossing results obtained and they should, therefore, be in a satisfactory condition before any attempt is made to set the embossing pressure. Obviously a broken punch or die cannot produce a properly formed character. Likewise, if the face of the die is filled with dirt or grains of metal from the plate, a well-formed character cannot be produced. Should oil work its way onto the face of the die it will prevent the character from being embossed to the proper height and will also result in excessive breakage of punches and dies.

The two pressure nuts 28B are used only for increasing or decreasing the pressure. The check nuts 28C are used only for maintaining .015" to .020" clearance from the lower face of the punch driving rocker at maximum pressure when embossing the capital "B". Any change in the pressure adjustment will also affect the check nut clearance, and it is therefore necessary, whenever the pressure is changed, to re-check the clearance.

To adjust the pressure, proceed as follows: First, adjust the pressure nuts 28B until the pressure is unmistakably too light, always maintaining the specified clearance of the check nuts 28C when embossing the capital "B" character. Then, on the top line of a plate, emboss all characters from A to Z, period and comma.

Now increase the pressure by turning the pressure nuts 28B clockwise one corner, or one-sixth of a turn. Adjust the check nuts 28C to obtain the specified clearance under the maximum pressure when embossing the capital "B" character. Then turn on the power and emboss all characters across the plate—directly beneath the line previously embossed to determine by comparison the result of the adjustment. With the aid of a magnifying glass inspect the embossed characters. It will be observed that the face of the type characters of the line that was embossed last will be more distinct and will show a better formation than the previous line. Repeat the routine just explained, increasing the pressure only one-sixth of a turn for each test and always maintaining the specified clearance of the check nuts at maximum pressure when embossing the capital "B" character. Continue in this manner until the formation of the characters on the last line embossed shows no difference in formation from the characters of the line just previously embossed. This will indicate that the pressure should be increased no further and should be decreased one-sixth of a turn. As a double check, decrease the pressure another sixth of a turn and emboss another line of characters. The formation of the characters in this last line embossed should be less pronounced and not so full as that of the line immediately above. If this is the case, it will indicate that the pressure of the next to the last line embossed was correct; therefore, the pressure should again be increased one-sixth of a turn and locked securely. This procedure, increasing the pressure a little at a time for each test and making comparison with the lines of type previously embossed, and double checking by backing off the pressure, eliminates the possibility of adjusting the pressure so that it is excessive. Too much pressure will result in premature breakage of punches and dies, excessive wear of the Graphotype, and may also distort the plate. Insufficient pressure will result in poor character formation, and an indistinct impression when the plate is used in any of the various models of Addressograph equipment.

If there is less than the specified check nut clearance when embossing the capital "B" character, it will not allow the pressure screw 28A to rise to the proper height when embossing the small characters.

When the pressure is properly set, the lowest characters should emboss to a height of .030" above the thickness of the plate material. For example, the thickness of the Addressoloy plates is .015". Therefore the total height of the embossures on an Addressoloy plate, measuring from the underside of the plate to the top of the embossures, should be .045".

END AND BOTTOM ADJUSTMENT

Same as 6100

ALIGNMENT OF LINE SPACING LEVER

Same as 6100

CARRIAGE TRIP LEVER AND SPACING CAM

Same as 6100

CARRIAGE SCALE AND CARRIAGE STOP

Same as 6100

BACK SPACER

Same as 6100

PLATE ROLLER ADJUSTMENT

Three adjusting bushings (two of which are shown as 29G and 29P) are provided in the plate roller main frame, with which the position of the plate roller in relation to the Graphotype main frame may be varied slightly.

These bushings must be correctly adjusted to obtain the three following conditions:

- (a) Parallel alignment of the plate roller main frame with the carriage rail and Graphotype main frame.
- (b) The teeth of the driving gear 29M must completely engage the teeth of the main drive shaft without "bottoming".
- (c) The lower anvil block 29S must be perfectly level, end-for-end.

With the plate roller frame aligned with the carriage rail, push the carriage jaw rearward, with the line spacing levers engaged in the set of line spacing racks which brings the jaw closest to the lower anvil block 29S. Then loosen the retaining screws for the lower anvil block, and align the block parallel with the carriage jaw, and so that there is .020" minimum clearance between the front edge of the lower anvil block and the carriage jaw, at all points. Then tighten the mounting screws for the lower anvil block.

Loosen the mounting screws for the upper anvil block, and align the block parallel with the lower anvil block, and the front edge of the upper anvil block vertical to the front edge of the lower anvil block. Then tighten the mounting screws.

Turn the two eccentric screws 29N and 29R high point up, and tighten the nuts temporarily.

Adjust the eccentric screw 29N so that when turning the plate roller by hand, the roller 29A will travel the full length of the anvil block, but the operating lever 29B will not strike the casting on the right stroke of the lever (facing the machine from the rear).

With the operating lever at the left limit of its stroke (again facing from rear), there must be .015" clearance between the end of the driving pawl 29D and the driving blade 29E, holding the operating lever to the left. Turn the eccentric 29R to obtain this clearance.

The eccentric screw 29N adjusts the stroke of the plate roller, and the eccentric screw 29R equalizes the stroke to regain the .015" clearance stated above. The adjustment of these two eccentrics must be worked together—each time one screw is turned, the adjustment of the other must also be checked.

Set the stop screw 29F so that, when the lever 29B is at its extreme right position, there will be .007" maximum clearance between the boss on the lever and the surface of the screw 29F.

With the end dimension of the embossures on the plates correctly established, adjust the stud 29C so that the Addressograph plate will locate centrally on the anvil block when the carriage is against the stud 29C.

As the carriage is brought to the extreme right position, against the bumper stop, the lower section of the carriage frame strikes the pin 29L in the rocker and trips the pawl 29D. After the pawl has been tripped, the carriage should have approximately 1/8" additional travel to the right for style A, C, and EE plates and approximately 1/4" additional travel for other style plates. This travel may be obtained by forming the pin 29L. With the carriage in the extreme right position against the bumper stop 29C, there should be approximately 1/4" play in the rocker 29H. This may be obtained by forming the stop pin 29J.

When the driving pawl 29D is in neutral or latched position, the underside of the pawl should clear the blade 29E by 1/16" minimum to 3/32" maximum. This adjustment is obtained by forming the pin in the driving pawl 29D.

NOTES

CLASS 6340 GRAPHOTYPE ADJUSTMENTS

DIE HEAD, STOP ARM & KEYBOARD FRAME ADJUSTMENTS

The plate support must be resting on the two main frame lugs, and the plate support mounting screws must be securely tightened. The opening in the plate support must also be centered over a punch in the die head when the stop arm is latched over a stop block. Adjust the height of the die head so that there is a clearance of .007" between the central slot in the die head and the underside of the plate support. This is obtained by means of the two lock nuts 30C, located on the upper end of the die head shaft. The plate support used in making this adjustment must be perfectly straight. The thrust nut 30A should be set to clear the wear sleeve on the toggle shaft 30F by .002"—.003" and locked in position with the lock nut 30B.

Adjust the keyboard frame by placing thin shim washers beneath the keyboard spacing washers, so that the lower edge of the contact plate 32C on the stop arm 31H will clear the guide ring 32D at all points by 1/16". This adjustment may be tested by using four blank Addressoloy plates as a gauge. These should fit snugly between the guide ring 32D and the lower edge of the contact plate 32C, testing at the character positions 6, A, B, and P. A slight friction should be felt as the stop arm 31H is moved back and forth. With the stop arm latch pawl 31A in its neutral position, the lower edge of the pawl 31A should be 1/32" below the lower edge of the contact plate 32C. This relation of the pawl 31A to the contact plate 32C was established at the Factory by grinding the contact plate 32C as required. Then when the contact plate 32C clears the guide ring 32D by 1/16" as previously explained, the bottom of the latch pawl 31A automatically clears the guide ring 32D by 1/32". When installing a new latch pawl 31A only, and the 1/16" clearance between the contact plate 32C and the guide ring 32D is already established, it may be necessary to grind the bottom of the latch pawl 31A slightly to obtain clearance between the latch pawl 31A and the guide ring 32D.

When locked in position, the latch pawl 31A must not bind the stop blocks and yet must be fitted sufficiently close to prevent "knocking down" difficulty. Depress the character "6" and lock up the stop arm 31H on the character "6" stop block. Then turn the high point of the eccentric pivot stud 31J for the latch pawl 31A outward, away from the die head shaft 32K, just sufficiently to obtain .003" to .005" clearance between the latch pawl and the raised stop block. The high point of the eccentric stud 31J must be away from the die head shaft when the .003" to .005" clearance is obtained or else the pivoting end of the latch pawl 31A may bind on the guide ring 32D when the pawl latches over the stop block. Also, the face of the latch pawl 31A would be "angular to" instead of "parallel with" the stop block and contact plate 32C when the stop arm 31H is latched on the stop block. It should be tested on a number of stop blocks at various positions of the guide ring 32D.

Depress the forward end of the trip latch 32B and place an address plate between the entrance hole in the die head shaft and the inward projecting end of the trip latch 31D. Latch up the stop arm 31H on figure "6" stop block. Turn the flywheel until the upper die arm 33A is at the upward limit of its stroke and the register bolt 33B is fully engaged. Now release the keybar latch blade 34C by pulling it forward and observe the action of the keybar for the figure "6". As soon as the latch blade 34C is released, the keybar should restore to neutral position. Repeat this test on characters "B", "A", "P", which take in the four opposite positions of the guide ring. Each keybar should restore of its own accord when the keybar latch blade 34C is released.

If a bind exists at all four positions and in the same direction (that is, that the bind may be removed by forcing the stop arm 35H in the same direction at each of the four positions), this indicates that the stop arm 35H is not properly aligned in relation to the die head; (the die head being locked with the indexing bolt). To re-align the stop arm 35H, remove the taper pins from the stop arm 35H and clamp the stop arm to the die head shaft by means of the clamp screw 35E

only. Then using a small hammer, tap the stop arm 35H in the direction required to relieve the bind.

When the stop arm has been properly aligned, re-ream the taper pin holes in the stop arm and die head shaft, and taper pin the arm to the shaft.

When making the test it is found that a bind exists only in one, two, or three of the four positions, this indicates that the keyboard was not leveled properly, or that the keyboard is not properly aligned with the stop arm and die head.

If the alignment of the keyboard is not correct, loosen the keyboard mounting screws, and shift the keyboard slightly in the direction required to relieve the bind of the stop arm. Then tighten the mounting screws, and repeat the test. Do not use a hammer and punch to shift the position of the keyboard, as extensive and costly breakage of the casting may result. Use leverage only at the positions where the keyboard is mounted.

Depress the forward end of the trip latch 35D and raise the trip rod 36E into the die head shaft as far as it will go. With the trip rod 36E in this position, the contour of the inner edge of that portion of the trip latch 37D which extends into the die head shaft should follow as closely as possible the curvature of the trip rod 36E. The outer front edge of the trip latch 37D should project approximately $1/32''$ beyond the face of the contact plate 37G. There should be about $1/32''$ clearance between the end of the trip latch 37D and downward extended portion of the contact plate 37G. The adjustments just explained are made with the eccentric pivot screw 37F for the trip latch 37D. When these adjustments are made correctly and the trip rod 36E is in its downward position, the trip latch 37D should project approximately $3/16''$ to $1/4''$ beyond the face of the contact plate 37G.

TRIP RETURN MECHANISM

With the driving rod 39B at the upward limit of its stroke, an imaginary straight line should pass through the center of the three pins 39A, 39E and 39F. Obtain this adjustment by turning the clevis 39D up or down as required. Then lock the adjustment with the nut 39C.

With the upper die arm 38A in its lowered position, the lower face of the die driving block 38B should clear the face of the recessed portion of the upper shuttle block 38C by $.007''$. Adjust by means of the screw 40A which raises or lowers the die arm 38D.

The bumper 41D should then be adjusted so that the felt pad fully contacts the end of the lower die arm 41E but does not force it downward.

The top surface of the trip restoring finger 41F must be on a horizontal plane with the center of the pin 41G. The finger may be turned as required and locked with the nut on the rear side. With the upper die arm 41A at the limit of its upward travel, and the trip restoring finger 41F at the left extremity of its travel, there should be $.002''$ maximum clearance between the top surface of the finger 41F and the underside of the upper shuttle block 41R.

Obtain this adjustment by turning the locating stud 41H as required. The two compression springs on the locating stud 41H position the trip restoring finger 41F and it is, therefore, of vital importance that these springs be in good condition and not weakened or compressed. To insure the correct replacement of these compression springs in the event they are dropped or lost—the upper compression spring is a weaker spring than the lower one.

SHUTTLE BLOCKS AND PIVOT LEVER ADJUSTMENTS

The purpose of the shuttle block adjustment is to set the relationship between the upper 42B

and lower 43A shuttle blocks so that it will not be possible to engage the upper shuttle block 42B without engaging the lower shuttle block 43A.

If an operator depresses a character key and the result is a blank space on the plate rather than an embossed character, it indicates the shuttle blocks are not properly adjusted.

This can only happen when a die is driven down (causing the carriage to space) and the punch is not driven up. The adjustment should be carefully made and re-checked.

Disconnect the index lever operating link 41J and the register bolt 41B.

Remove the plate support. Turn the flywheel by hand until the upper die arm 41A just reaches the limit of its downward travel.

Depress the trip latch 44D on the stop arm 44H allowing the shuttle blocks 42B and 43A to move against the anvils 42C and 43B.

With the eccentric pivot stud 41L in the pivot lever 41N, keeping the high point of eccentric down, adjust the eccentric pivot stud 41L until the upper left corner of the punch shuttle block 43A just touches the side of the punch driving block 43B and the recess of the die shuttle block 42B is .005" from the upper die anvil 42C.

Machines that are not equipped with the eccentric pivot stud 41L in the pivot lever 41N should be adjusted the same as outlined in the Class 6200 Section.

The trip lever mounting bracket 45H should be located so the trip rod 45E will locate centrally between the two pivot blocks in the trip lever assembly 45J. Also check to determine that the upper end of the trip lever assembly 45J does not rub against the stop bracket 45L on the main frame.

Loosen the screw 45G and turn the eccentric 45F so the high point of the eccentric 45F is up and the upper end of the trip lever 45J is at the extreme raised position. Tighten the screw 45G. (This is a temporary setting.)

Set the screw 45N in the bracket 45L so the end of the screw extends 1/8" from the bracket.

Depress the blanker key and latch the stop arm 45P on the blanker stop block. Turn the flywheel until the restoring finger 46F has moved to its extreme left stroke. Turn the eccentric 46A until the lower right end of the pivot lever 45S is 1/32" from the end of the screw 45N. Restore the machine to neutral position.

Depress the trip latch 45B on the stop arm 45P and turn the flywheel by hand, holding the stop arm 45P stationary with the other hand until the upper shuttle block 46C begins to travel to the left. Continue to turn the flywheel slowly, until the trip latch 45B on the stop arm 45P snaps out. The drive pin 45R in the trip lever assembly 45J should be 5/16" to 1/2" from the edge of the pin 45R to the screw 45N. Adjust by turning the eccentric 45F. Restore the machine to neutral.

REGISTER BOLT ADJUSTMENT

Connect the indexing rod 47J. Adjust the turn buckle 47M to obtain .003" to .005" clearance between the register bolt 47B and the guide ring 47S on the die head.

With the upper die arm 47A at the limit of its upward travel lock up the stop arm on a stop block. With the lower end of the pivot lever 48A at the limit of its left stroke adjust the stop screw 48F for a clearance of 1/32" between the stop screw 48F and the pivot lever 48A.

DIE AND PUNCH STRIPPERS

There must be .010" clearance between the upper edge of the slot in the die stripper 47P and the pin in the upper die arm 47A. The pin should not rub against either side of the slot. The mounting holes in the die stripper 47P are large enough to permit shifting the die stripper 47P as required to obtain these clearances. The inward, extended portion of the die stripper 47P should clear the underside of the die ring in the die head by approximately .002". The die stripper 47P may be formed to obtain this clearance. It should, however, always be removed from the machine for forming.

The inward, extended portion of the punch stripper 47K should clear the top edge of the indexing ring by .002". This clearance may be obtained by forming the stripper 47K.

RESTORING MECHANISM

With the machine in neutral position and the lower die arm 47A at the upward limit of its stroke, the bottom of the roller 49J should be approximately 1/32" below the bottom of the beveled block 49A on the control rod 49B. This adjustment is obtained by loosening the clamp screw 49K and raising or lowering the control rod 49B.

Press the restoring rod 49G beneath the block 49H and turn the flywheel slowly by hand. As the restoring rod 49G is rising to its neutral position, press and hold the control rod 49B toward the rear of the Graphotype to take up any play or looseness in these parts. Continue turning the flywheel until the block 49H has reached the upward limit of its stroke and again starts to move downward. Now the restoring rod 49G must clear the edge of the block 49H by 1/32". This adjustment is obtained by forming the stop pin 49F.

As the restoring mechanism takes effect, the upper end of the restoring rod 49G must locate 1/2 to 2/3 of its diameter beneath the block 49H.

With the punch driving rocker at the highest point of its travel, there should be 3/32" clearance between the lower edge of the block 49H and the top of the restoring rod 49G. This clearance is obtained by adding or removing shims from beneath the pad 49C.

With the restoring rod 49G driven to the lowest limit of its stroke, there should be 1/16" clearance between the nut 49E and the lower edge of the safety guide link. This adjustment is made by pressing the restoring rod 49G into position beneath the block 49H and turning the flywheel slowly by hand until the restoring rod 49G is at the lowest limit of its stroke—then adjust the nut 49E for the specified clearance.

With the machine in neutral position, there must be .015" minimum clearance between the keybar latch 50C and the lower edge of the restoring levers 50A and 50D. This can best be tested by holding the keybar latch 50C forward as far as it will go, while moving the levers 50A and 50D back and forth by hand. It may be necessary to file the lower end of the levers 50A and 50D to obtain this adjustment.

SPACING ADJUSTMENTS

Adjust the screw 51B so that the top portion of the spacing rocker 51C clears the casting by 1/16".

There must be no "play" or lost motion in the connecting link 51G or the spacing rocker 51C. Adjust the nuts on the rod 51G.

The trip block 51E must have 1/32" clearance from the space plate 51D. The trip block 51E must also locate squarely in relation to the space plate 51D. The spacing rod 51L is threaded

and adjustment is obtained by raising or lowering the trip block 51E.

As the space bar is depressed, the pawl should rise and clear the teeth in the escapement rack from 1/64" to 1/32". This adjustment is obtained by means of the adjusting screw 51F.

The carriage release lever 52B pivots in an eccentric bushing 52A in the carriage rail which should be adjusted so that the carriage release lever 52B enters centrally between the teeth of the escapement rack. This will permit the carriage to half-space. With the carriage in embossing position, depress the space bar 50B about half way. The carriage should then half-space and, on releasing the space bar 50B permitting it to restore to the raised position, the carriage should complete the space. This test should be repeated several times, half-spacing the carriage the entire length of the escapement rack. To prevent "skipping" it is important that the lowest point of the pawl on the release lever 52B contacts the vertical surface of the teeth on the escapement rack. To attain this condition, the pawl on the release lever 52B should be carefully twisted clockwise, so that the engaging surface of the pawl will be slightly angular to the vertical surfaces of the escapement rack and the very lowest point of the pawl on the release lever 52B will contact the vertical surfaces of the escapement rack teeth.

The carriage should space completely after embossing, before the die head starts to move. Lock the stop arm over the "B" character (which is used because it is the longest punch and die) and turn the flywheel slowly by hand. The carriage must complete its full space just as the capital "B" die and punch reach full neutral position after embossing. This adjustment is obtained by means of the adjustable sleeve 51J on the connecting link 51K to make the carriage space more quickly or to retard its spacing.

The space bar 50B must have 1/16" minimum down travel after the carriage spaces. This adjustment is obtained by trimming the felt stop pads 50E for the space bar.

ACTION SEQUENCE

Following is a brief outline of the action which takes place when a character is depressed and the flywheel is turned. Servicemen should acquaint themselves with this sequence of action inasmuch as it will be of value in checking the various adjustments to determine the cause of difficulties which may be encountered.

1. Character is depressed.
2. Stop arm latches up on stop block.
3. Trip lever is released, unlatching pivot lever.
4. Register bolt enters slot in indexing ring.
5. Punches and dies come together—emboss.
6. Carriage half-spaces.
7. Trip return finger engages shuttle block.
8. Trip restoring mechanism takes effect.
9. Carriage completes its space.
10. Die head starts to turn.
11. Clearance of 1/16" appears between safety guide link and adjusting nut.
12. Trip lever restores.

CLUTCH

The clutch consists of 10 steel and 10 bakelite discs (in alternate order with bakelite discs on bottom) which revolve against each other under the pressure of a compression spring, and thus produce the necessary friction to drive the die head. It is important to keep the clutch filled with Duro-Vis Oil to the height of the friction discs. If the clutch were allowed to run dry, the friction of the discs rubbing against each other would cause the fiber discs to heat and warp—making replacement of the discs necessary. There should be .010" to .015" clearance between the

underside of the clutch cover 53A and the upper edge of the clutch housing 53B. The clutch cover 53A may be raised or lowered to obtain this clearance and locked in position by means of the clamping screw 53D. When tightening the clamp on the clutch collar, check to determine that the ball bearing assembly at the top of the die head shaft is carrying the weight of the die head and shaft assembly. Frequently, the shaft is forced upward slightly when tightening the clamp on the clutch collar, and the weight is thereby removed from the bearing assembly, defeating its purpose. The teeth of the miter gear on the clutch should fully mesh without bottoming in the teeth of the miter gear on the drive shaft. Add or remove shim washers 53C under the miter gear on the clutch as required.

CARRIAGE ADJUSTMENTS

(Same as 6100)

BACK SPACER ADJUSTMENTS

(Same as 6100)

EMBOSSING PRESSURE

(Same as 6200 except when embossing #35 type. The check nut clearance is .032")

END AND BOTTOM ADJUSTMENTS

(Same as 6100)

ALIGNMENT OF LINE SPACING LEVER

(Same as 6100)

CARRIAGE TRIP LEVER AND SPACING CAM

(Same as 6100)

CARRIAGE SCALE AND CARRIAGE STOP

(Same as 6100)

PLATE ROLLER ADJUSTMENT

(Same as 6200)

NOTES

CLASS 6380 GRAPHOTYPE ADJUSTMENTS

DIE HEAD, STOP ARM AND KEYBOARD FRAME ADJUSTMENTS

(Same as 6340) Keep machine in lower case.

TRIP RETURN MECHANISM

(Same as 6340)

SHUTTLE BLOCKS AND PIVOT LEVER ADJUSTMENTS

(Same as 6340)

MECHANICAL SHIFT MECHANISM

Adjust the tumbuckle 54B so the shift shaft 54A will flex about $1/32''$ when the shift key bar is fully depressed.

With the shift key bar in the lower case position (fully up) set the collar 54D on the lower connecting rod 54C to reset on the table top. Adjust the tension of the spring 54E by the lower collar 54F so that the shift key may be depressed with minimum effort, but still has a positive, unhesitated return to neutral position when released. Loosen the screw 58A in the shift lever. Depress the shift lock key and lock it down.

Adjust the lever 58B so it holds the shift key bar at the extreme limit of its downward stroke and lock the screw 58A.

ELECTRICAL SHIFT MECHANISM

LOWER CASE ADJUSTMENT

With the eccentric pivot screw 55B, set with the high point down, turn the eccentric pivot screw 55B, keeping the high point toward the front of the machine, until the brass shoes are in their upward position without binding against the yoke. Excessive pressure of the shoes against the yoke will cause premature wear of the shoes.

With the machine in lower case position, position the stop 56A $1/16''$ above the top of the shift bar 56D. (4 alloy plates).

Position the shift latch pin 57B so the latch 57C will lock on the latch pin when either shift lock 57A or shift key 57D is depressed.

With the shift lock 57A latched on the latch pin 57B, adjust the lever 58B, by the screw 58A, to hold the shift key bar 56D so there is $1/64''$ (1 alloy plate) clearance between the top of the shift key bar 56D and the stop 56A.

Position the Micro-switch 56B, on the bracket 56C, for $1/32''$ overtravel when the shift key 57D is latched on the latch pin 57B.

UPPER CASE ADJUSTMENT

The upper case adjustments are obtained by loosening the frame mounting screws 55D for the shift solenoid 55E and holding the plunger down by its pin 55F until the shift yoke has reached the limit of its downward travel.

Move the body of the solenoid upward so the plunger contacts its intergral stop. Then secure the four mounting screws 55D. Adjust the stop screw 55C so that it bears lightly against the main frame.

REGISTER BOLT ADJUSTMENT

Set the eccentric pivot shaft 59B for the register bolt 59C so the high point of the eccentric is down. Adjust the eccentric so the register bolt just clears the indexing ring by .003" to .005".

DIE AND PUNCH STRIPPERS

With the height of the die head correctly adjusted, there should be a minimum of .002" clearance between the punch stripper 59D and the extending portion of the punches. This same clearance should exist between the die stripper 59A and the extending portion of the dies. The punch and die stripper are correctly set at the factory, and if the height of the die head is correctly adjusted, there should be no occasion to change the strippers.

RESTORING MECHANISM

(Same as 6340)

CARRIAGE ADJUSTMENT

(Same as 6100)

SPACING ADJUSTMENT

(Same as 6340)

BACK SPACER

(Same as 6100)

ACTION SEQUENCE

(Same as 6340)

EMBOSSING PRESSURE

(Same as 6200)

END AND BOTTOM DIMENSION

(Same as 6100)

ALIGNMENT OF LINE SPACING LEVER

(Same as 6100)

CARRIAGE TRIP LEVER AND SPACING CAM

(Same as 6100)

CLUTCH

(Same as 6340)

PLATE ROLLER

(Same as 6200)

GRAPHOTYPE GENERAL INSTRUCTIONS

REMOVING A DIE HEAD SHAFT (CLASS 6150 and 6180)

Remove the screw (or pin) from the Indicator Cord drum.

Turn the die head and shaft so that the small end of the taper pins will be accessible. Then lock the die head and shaft in position by pulling forward on the operating handle.

Drive out all taper pins from the die head shaft, identifying them so that they may again be inserted in the same holes.

Loosen the clamping screw for the mitre gear on the die head shaft.

With the machine removed from the stand, remove the support plate for the die head shaft from underneath the main frame casting.

Withdraw the die head shaft from the bottom. Do not pound on the top of the shaft or place a punch in any of the taper pin holes to drive the shaft down. With all parts removed and the shaft clean, it should be possible to pull the shaft down and out of the machine from the bottom.

INSTALLING NEW DIE HEAD

(6150 - 6180 only) With the die head shaft, and all parts which attach thereto, out of the machine, first attach the indicator cord drum to the die head shaft.

(Class 6140 and 6150) Place the die head on the shaft so that the figure "6" position in the die head is on the same side of the shaft as the spring in the indicator cord drum (Class 6180). Place the die head on the shaft so that the figure "6" position is on the opposite side of the spring in the indicator cord drum.

The large end of all taper pins is to be on the same side of the shaft as the spring in the indicator cord drum.

With the die head in this position, ream the holes for the die head through the die head shaft, and fit the taper pins into the holes.

Disassemble the parts from the die head shaft and insert the shaft, and all parts attached thereto, into the machine.

Taper pin the die head to the shaft and then adjust the height of the die heads.

Align the hole in the register wheel with the hole in the die head shaft and clamp the register wheel by means of the two clamping screws. Then pull the operating handle forward to lock the position of the register wheel, and check the die head to see that the die anvil and the punch driving block are located centrally over a die and below a punch, respectively. If necessary, turn the register wheel as required to obtain this objective. Then again tighten the clamping screws on the register wheel. Then again lock the register wheel by pulling forward on the operating handle and ream the holes in the register wheel and pin the wheel to the shaft.

(6150 - 6180) The bumper stop on the die head shaft should have the extended portion downward. Turn the die head until the character shown at either end of the character strip is at embossing position. Then locate the bumper stop so that it is against the cushion strip to stop the die head at this character position. Then pin the bumper stop to the die head shaft.

INSTALLING NEW DIE HEAD SHAFT

When installing a new die head shaft, follow the same instructions as explained under the

heading "Installing New Die Head".

INSTALLING NEW REGISTER WHEEL

When installing a new register wheel, follow the same instructions which pertain to the register wheel under the heading "Installing New Die Head".

REMOVING A DIE HEAD SHAFT (Class 6200)

Remove the screw (or pin) from the indicator cord drum.

Turn the die head and shaft so that the small end of the taper pins will be approximately 45° to the left of the rear of the machine facing the machine from the front. Then lock the die head and shaft in position by pulling forward on the operating handle.

Drive out all taper pins from the die head shaft, identifying them so that they may again be inserted in the same holes.

Loosen the clamping screw for the miter gear on the die head shaft.

Loosen the two clamping screws for the register wheel.

Remove the plug below the die head shaft from the underside of the machine.

Loosen the motor mounting screws and move the motor out of the way.

Withdraw the die head shaft from the bottom. Do not pound on the top of the shaft or place a punch in any of the taper pin holes to drive the shaft down. With all parts removed and the shaft clean, it should be possible to pull the shaft down and out of the machine from the bottom.

INSTALLING NEW DIE HEAD

With the die head shaft, and all parts which attach thereto, out of the machine, first attach the indicator cord drum to the die head shaft.

(Class 6250). Place the die head on the shaft so that the figure 6 position in the die head is on the same side of the shaft as the spring in the indicator cord drum. (Class 6280) Place the die head on the shaft so that the figure 6 position is on the opposite side of the spring in the indicator cord drum. The large end of all taper pins is to be on the same side of the shaft as the spring in the indicator cord drum.

With the die head in this position, ream the holes for the die head through the die head shaft, and fit the taper pins into the holes.

Disassemble the parts from the die head shaft and insert the shaft, and all parts attached thereto, into the machine.

Taper pin the die head to the shaft and then adjust the height of the die head.

Align the hole in the register wheel with the hole in the die head shaft and clamp the register wheel by means of the two clamping screws. Then pull the operating handle forward to lock the position of the register wheel, and check the die head to see that the die anvil and the punch driving block are located centrally over a die and below a punch, respectively. If necessary, turn the register wheel as required to obtain this objective. Then again tighten the clamp screws on the register wheel. Then again lock the register wheel by pulling forward on the operating handle and ream the holes in the register wheel and pin the wheel to the shaft.

The bumper stop on the die head shaft should have the extended portion downward. Turn the die head until the character shown at either end of the character strip is at embossing position. Then locate the bumper stop so that it is against the cushion stop to stop the die head at this character position. Then pin the bumper stop to the die head shaft.

REPLACING REGISTER WHEEL

Remove the main frame from the table top by removing the three mounting screws. Then remove the old register wheel.

Install and align the new register wheel in the same manner as described under the heading, "Installing New Die Head (Class 6200)".

INSTALLING NEW DIE HEAD SHAFT

Remove the die head shaft as explained under that subject. For installing the new shaft, follow the instructions as given under the heading, "Installing New Die Head".

QUICK CHANGE PRESSURE DEVICE.

There is available a "Quick Change Pressure Device" which makes it possible for an operator to conveniently change the embossing pressure from alloy to zinc or aluminum (Addressolite, Cardoplate, and Credit Plates CR5-10) on the same Graphotype machine.

To adjust the pressure set the knob 60D on Z C L. Using ZINC plates adjust the pressure as outlined under Pressure Adjustment. When the pressure is set accurately for (Z) zinc plates, it will also be correct for (C) Cardoplates .018", Credit plates (CR5-10) .020", and (L) Addressolite .017". By pressing rearward on the knob and rotating it 180° it will be possible to emboss (A) Alloy plates .015". Figure 60 shows the quick change pressure set for embossing Address-alloy plates.

QUICK CHANGE PLATE ROLLER

With the knob 60A rotate the upper pressure block until the notch marked ZL is over the pin 60B.

Roll an embossed zinc plate and check the rolled height with a micrometer. It should roll to .047". Add or remove shims from beneath the lower plate roller pressure block 60C if necessary to obtain this dimension.

The remaining settings for alloy plates (notch A) and aluminum Credit Plates (CR5-10 notch C) will automatically be correct. Setting for Addressolite and Cardoplate material is the same as for zinc (notch Z L).

EMBOSSING PRESSURE PLASTIC PLATES

Loosen the pressure nuts 60H and check nuts 60F until all the tension on the pressure spring is released. Lock up the die head on the character I. With a plastic card in embossing position turn the flywheel until the die and punch come together with maximum pressure. Tighten the pressure nut 60H finger tight against the pressure spring 60G. Tighten the check nut 60F finger tight against the bottom of the punch rocker 60F. Restore the machine to neutral position. With a wrench, tighten the pressure nut 60H, ten corners and lock the pressure nuts 60H together. Turn on the machine and emboss the character I on a plastic card. With a micrometer carefully measure the height of the character. A properly embossed character should be .018" above the thickness of the plastic card.

To increase the character height loosen the check nut 60F 1/6 of a turn or one corner at a time.

Continue to loosen the check nut 60F until the standard embossing height is obtained or to the point when a change in check nut 60F setting does not change the embossing height.

To decrease the pressure tighten the check nuts 60F 1/6 of a turn or one corner until the proper height is desired.

With the embossing height properly set lock the check nuts 60F.

Emboss all the characters in the die head leaving a space between each character. Measure the embossed height of the character. It may be necessary to readjust the check nuts 60F slightly.

CLASS 6300

REMOVING DIE HEAD SHAFT

Remove the spring from the trip latch on the stop arm and pull the latch back so that the projecting end will not enter the opening in the die head shaft.

Loosen the clamp screw in the clutch collar.

Latch the stop arm on the character "E" stop block, and using a suitable punch, drive the taper pins out of the stop arm and all other taper pins in the die head shaft. (The small ends of the taper pins are on the same side of the stop arm as the oil cup. All other taper pins in the die head shaft have the small end on this same side.) When driving out the taper pins, an assistant should exert force against the shaft from the opposite side with a heavy metal block, to prevent bending or distortion of the die head shaft. If the same taper pins are to be reinserted, they should be properly identified so that they will be re-inserted in the same holes from which they were removed. If the ends of the taper pins have been "mushroomed" or damaged in any way, they should not be reused.

Remove the pivot screw for the trip lever, and remove the trip lever and trip rod from the machine.

Remove the motor from its mounting base.

Loosen the bearing nuts and thrust nut at the top of the die head shaft. These nuts must be turned counter-clockwise very slowly and carefully, as the working space is limited and binding may easily result. Do not use these nuts to force the shaft downward. Pull must be exerted on the lower end of the shaft for removal. Stripping or damage to threads on the upper end of the shaft by forcing will make replacement of the shaft necessary.

Grasp the lower end of the die head shaft and pull it downward and out of the machine.

TO RE-INSTALL DIE HEAD SHAFT

Follow the procedure (in reverse order) as employed for removing the die head shaft. When ready to re-insert taper pins, lock the stop arm on the character "J" stop block. Then check the die head to see that the figure "6" is directly above the stop arm. Then check the holes in the shaft with the holes in the die head and stop arm to see that the holes all taper in the same direction.

Using a brass rod, drive in all taper pins solidly. Again an assistant should brace the opposite side of the die head shaft to prevent bending or distortion of the shaft.

Check the rotation of the stripper discs on the die head to determine that they do not bind on the protruding end of a taper pin or at any other point.

TO INSTALL NEW STOP ARM

Remove the die head shaft and old stop arm from the machine.

If the parts on the old stop arm (springs, screws, nuts, latch pawl and trip latch) are serviceable, transfer them to the new stop arm. Any parts not serviceable should be replaced with new parts.

With the shaft and stop arm out of the machine, place the stop arm on the shaft, and place the trip rod into the die head shaft. With the projecting end of the trip latch seated against the trip rod in the shaft, adjust the eccentric pivot for the trip latch so that the opposite end of the trip latch extends $1/32$ " beyond the face of the contact plate. At the same time, the end of the trip latch should clear the downward extended portion of the contact plate by approximately $1/32$ ". When correct adjustment is obtained, lock the position of the eccentric pivot.

Remove the stop arm and trip rod from the die head shaft. Insert the die head shaft and all parts which attach thereto into the machine in their proper relationship. Determine that the bearing for the top of the shaft is in the correct position. (This is important because this bearing carries the entire weight of the die head and shaft assembly.) As soon as the shaft has been inserted upward far enough so that the threads at the upper end of the shaft begin to protrude above the bearing, the bearing nuts and thrust nut should be screwed onto the shaft and turned on slowly as the shaft is gradually raised. If the nuts are not put on in this manner, there will be no room to install them when the shaft has reached the correct height, and it will be necessary to again lower the shaft.

With the holes in the shaft and the holes in the die head properly aligned, taper pin the die head to the shaft, while an assistant exerts force against the opposite side of the shaft with a heavy metal block, to prevent bending or distorting the shaft.

Adjust the height of the die head as previously explained.

Adjust the thrust nut at the top of the die head shaft.

With the end of the stop arm directly below the character "6" in the die head, align the holes of the stop arm with the holes in the shaft as accurately as possible by sighting through the holes. Then clamp the stop arm to the shaft by means of the clamp screw.

Next check the height of the stop arm in relation to the stop bar guide ring.

Adjust the eccentric for the latch pawl.

Depress the forward end of the trip latch and place an address plate between the entrance hole in the die head shaft and the inward projecting end of the trip latch. Latch up the stop arm on the figure "6" stop block. Turn the flywheel until the upper die arm is at the upward limit of its stroke and the register bolt is fully engaged. Now release the keybar latch blade by pulling it forward, and observe the action of the keybar for the figure "6". As soon as the latch blade is released, the keybar should restore to neutral position. If it does not, this indicates that the stop arm is binding the stop bar and is not in proper alignment. Using the small hammer, tap the stop arm slightly in the direction required to relieve the bind. Repeat this test with the stop arm latched on the characters "B", "A", and "P" stop blocks which take in the four opposite positions of the guide ring. Each keybar should restore of its own accord when the keybar latch blade is released. If unable to attain proper alignment at all four positions, it indicates that the keyboard requires re-adjustment.

When the alignment of the stop arm has been correctly obtained so that there is no bind on any of the four positions, lock up the stop arm on the character "J" stop block, and be sure that the

register bolt is fully seated in the register ring. Then ream the top hole in the stop arm through the die head shaft, and insert a taper pin in this upper hole. Then unlock the stop arm from the character "J" stop block and again check the stop arm on the characters "6", "A", "B", and "P" stop blocks as explained in the preceding paragraphs.

If the alignment of the stop arm is found to be correct, again lock up the stop arm on the character "J" stop block. Ream the bottom hole in the stop arm, and insert the taper pin in this hole.

If the alignment of the stop arm was found to be incorrect after the first taper pin was inserted then remove the taper pin, re-align the stop arm, and ream the lower hole in the stop arm and pin the stop arm to the die head shaft. Then recheck the alignment of the stop arm in the characters 6, A, B, and P stop blocks for no bind, and when found to be correct re-ream the first hole in the stop arm and securely taper pin the stop arm to the die head shaft.

TO INSTALL NEW DIE HEAD SHAFT

With the die head shaft and all the parts attached thereto removed from the machine, place the die head and the stop arm on the new shaft. Then locate the stop arm so that the projecting end of the trip latch enters the hole in the die head shaft. Then locate the die head so that the the figure "6" is directly above the end of the stop arm. This places the stop arm and die head in correct relationship to each other.

Determine that the lower collar on the die head is in such position that when the latch for the stripper disc is seated in the collar, the type opening in the stripper disc will be centered between the small "c" and the " " punches. Then ream the hole in the lower collar on the die head carefully through the die head shaft, reaming only enough to get the full bearing surface for the reamer. Check to determine that the opening in the stripper disc is still in the correct location. Then while an assistant exerts force against the opposite side of the shaft with a heavy metal block to prevent bending or distorting the shaft, securely taper pin the lower collar on the die head to the die head shaft.

Then ream the hole in the upper collar on the die head in the same manner as previously described, and insert the taper pin.

Then again check the location of the openings in the stripper discs, and rotate the stripper discs to determine that they do not bind in any position when completely rotated.

Disassemble the die head and shaft and install these parts on the machine. Proceed with the insertion of the die head shaft and lining up of the stop arm, as previously explained under the heading "To Install New Stop Arm," beginning with paragraph (d).

TO INSTALL NEW DIE HEAD

When installing a new die head, follow the same procedure as explained under the heading "To Install New Die Head Shaft."

It is impreative that the spring stripper discs attached to the die head cover plates be in good condition; that is, the edges of the slots should not be bent or damaged, the discs should not be weakened or separated, and the retaining rivets should not be loose. The friction pins should be tight in the head and exert sufficient tension to hold the adjoining punches and dies with very little drop, when a die and punch is being depressed during embossing action.

At no time should the machine be operated with type missing from the die head. To do so distorts the wall separating the type slots in the die head. This distortion will cause type to bind in the die head or may even cause breakage of the walls separating the type. Such difficulty would necessitate replacement of the die head.

KEYBOARD INFORMATION AND ADJUSTMENTS

In the keyboard frame casting, there is a dowel pin which engages in the slot in the guide ring. The guide ring is held secure in position by tightening the clamping screw in the frame casting.

The keybars should pivot freely in the keybar posts; however, there should not be any excess side play of the bars in the posts. To remove side play of a keybar, compress the slot in the keybar post by tapping the post lightly with a hammer. To remove any bind of a keybar in the post slightly spread the slot in the post.

The keybar must not bind in the spacing comb or in the swivel post on the stop blocks. These conditions may be caused by either of the following:

- a. Improper forming of the keybar.
- b. Twisting the keybar post when tightening the post to the frame. If the keybar post is not twisted, it will be necessary to bend the keybar as required, to remove the bind at either or both positions.

With the felt restoring pad held upward against the bottom of the keybars, and the play taken out of the stop bars by pushing upward on them from the bottom, the top of the stop bars should be flush with, or .010" below the top surface of the stop bar guide ring. Also, when depressing a keybar, the front end of the keybar must travel downward far enough to insure positive latching of the bar on the keybar latch blade. These conditions are obtained by bending and forming the keybars as required. Each keybar must be checked in this same manner.

The keybar latch blade should pivot freely without excess side play. Adjust the pivot screws at either end of the latch blade to attain this condition. The latch blade should also move far enough forward to insure a full latch on the keybars. Attain this condition by adjusting the stop screw at the right end of the frame as required.

The space bar should pivot freely without excess side play, and the stop lugs on the space bar should be centered over the felt stop pads in the keyboard frame.

TO REMOVE A KEYBAR

Remove the retaining screws from the keybar spacing comb and remove the comb.

Remove the manual key restoring lever.

Remove the right pivot screw for the key restoring rocker, and slide the restoring rocker out to the left.

Back out the pivot screws for the spacing keybar, and allow the space keybar to drop as far as it will.

Remove the screw for the keybar pivot post. Drop the keybar downward, disengaging it from the post on the stop block, and remove the keybar from the machine.

CONVERTER DC TO AC

All 6380 Graphotypes with D.C. motors have 110 V 50/60 cycle A.C. shift solenoids.

These machines have a converter to change 110 V D.C. to 110 V 50/60 cycle A.C. Figure 61 shows the wiring diagram of the converter.

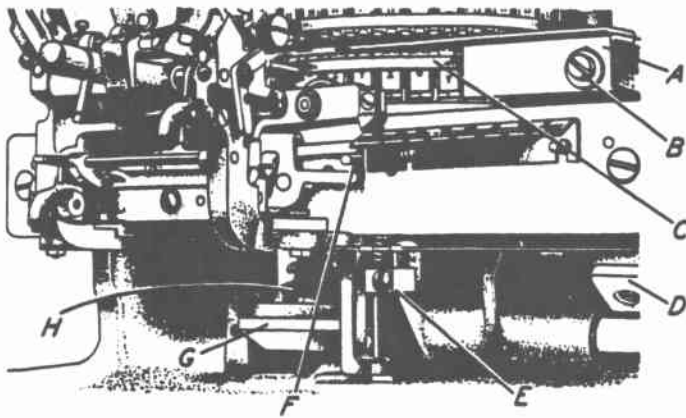


Figure 1

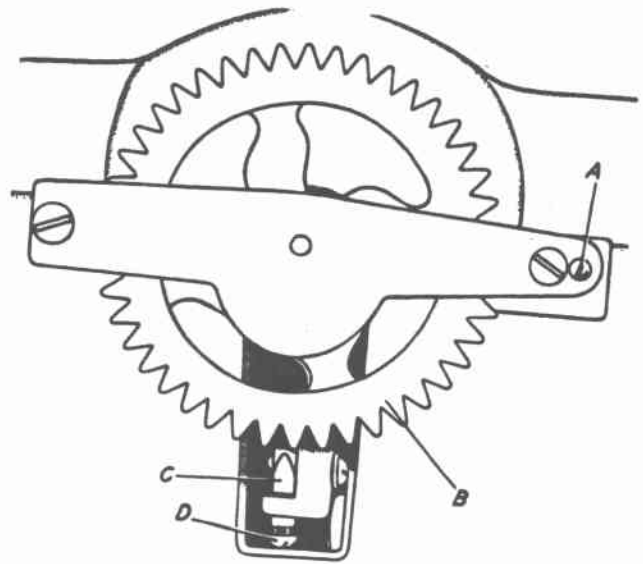


Figure 2

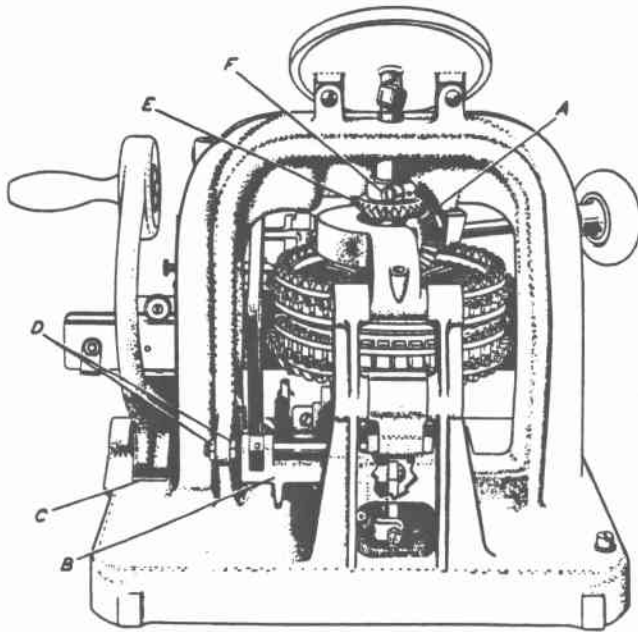


Figure 3

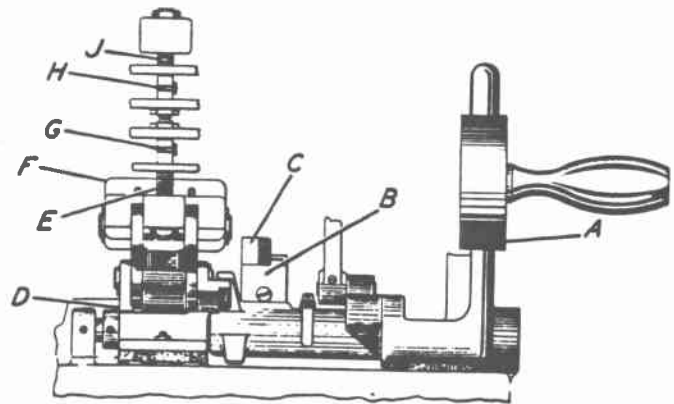


Figure 4

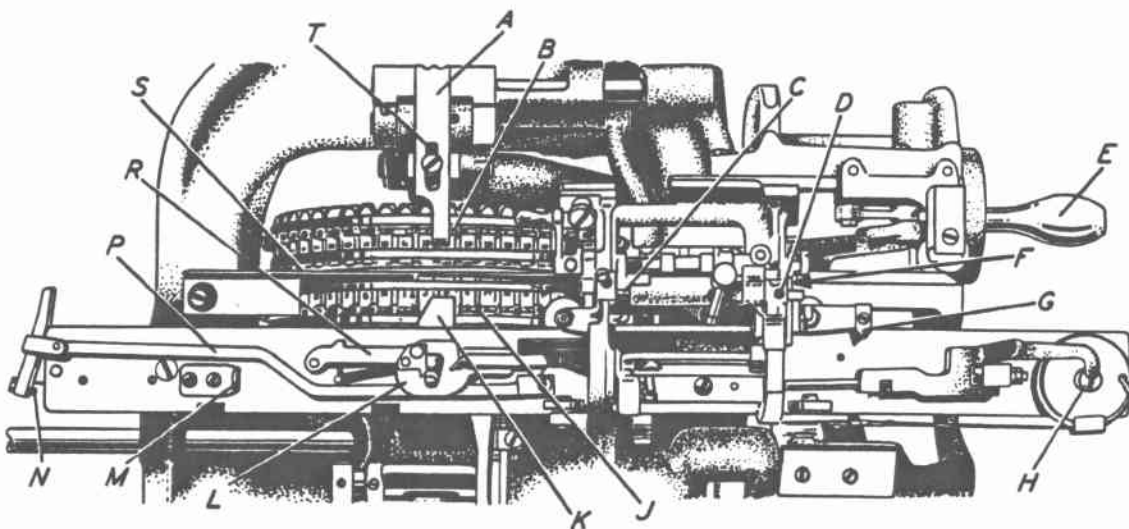


Figure 5

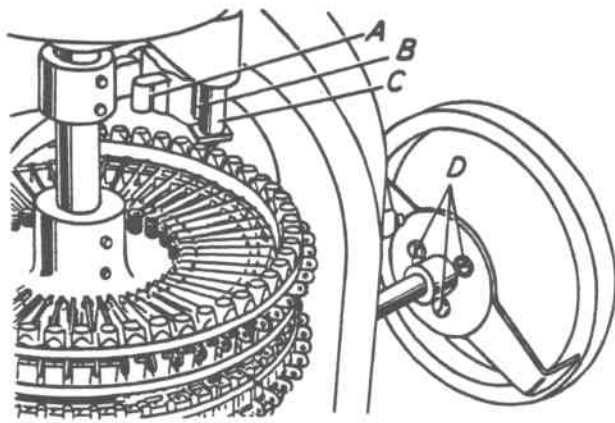


Figure 6

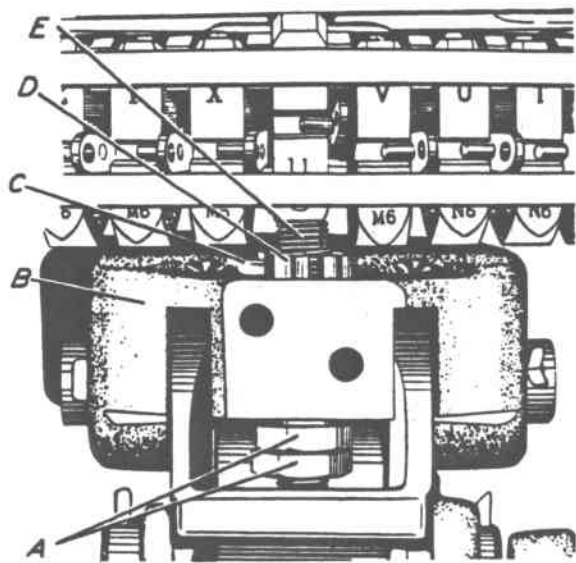


Figure 9

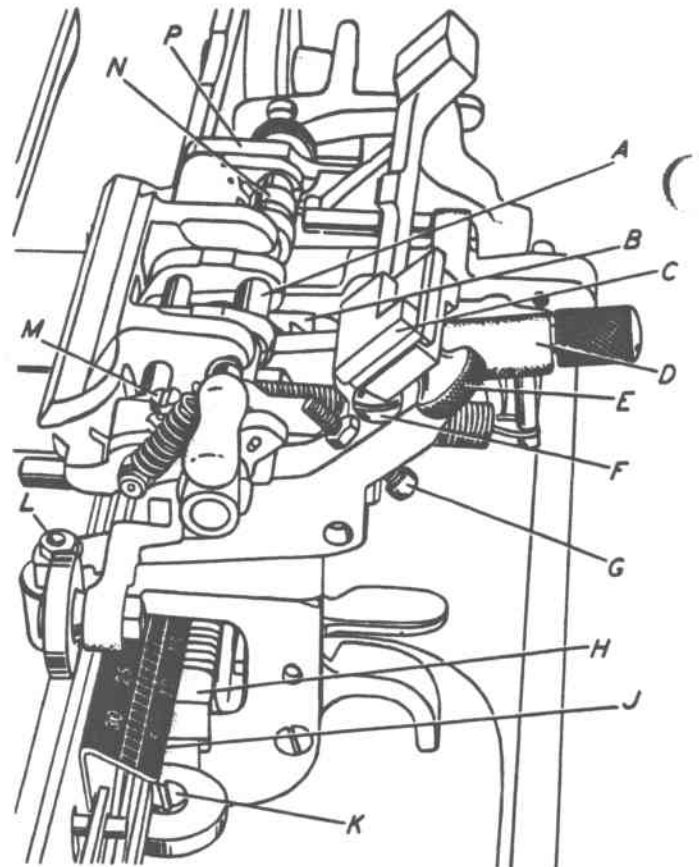


Figure 7

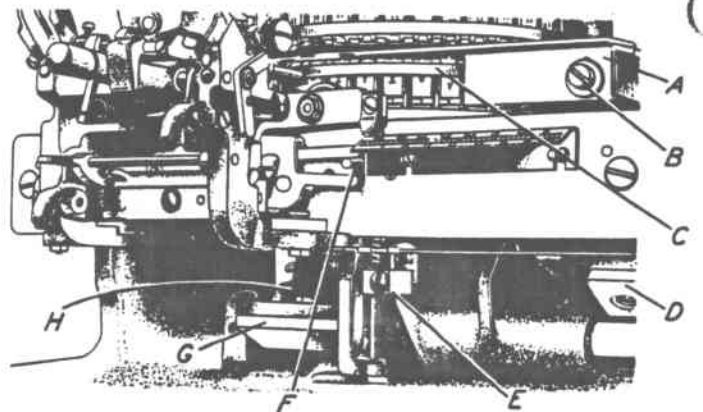


Figure 8

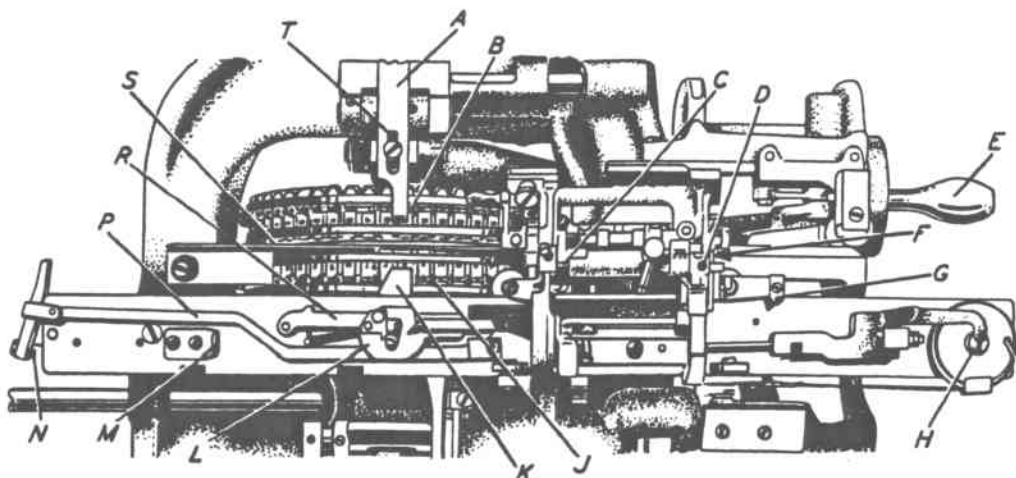


Figure 10

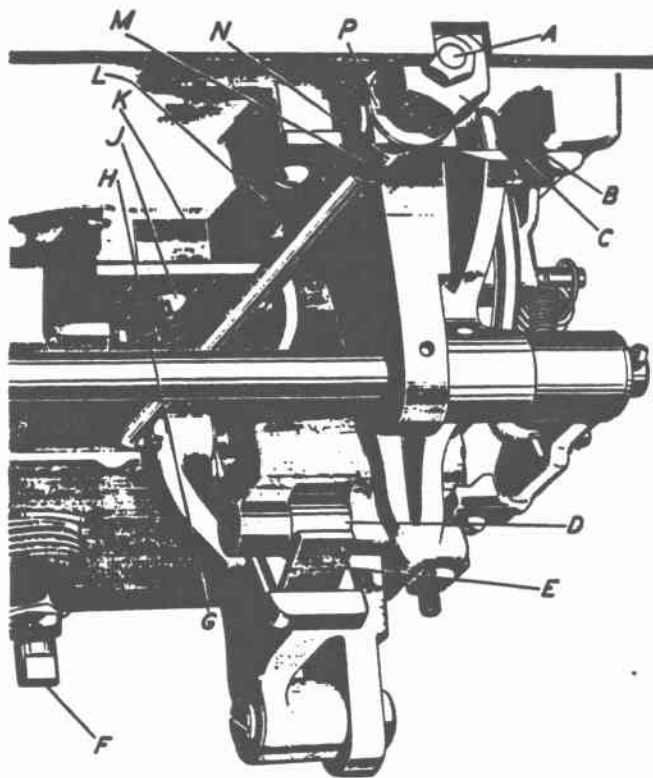


Figure 11

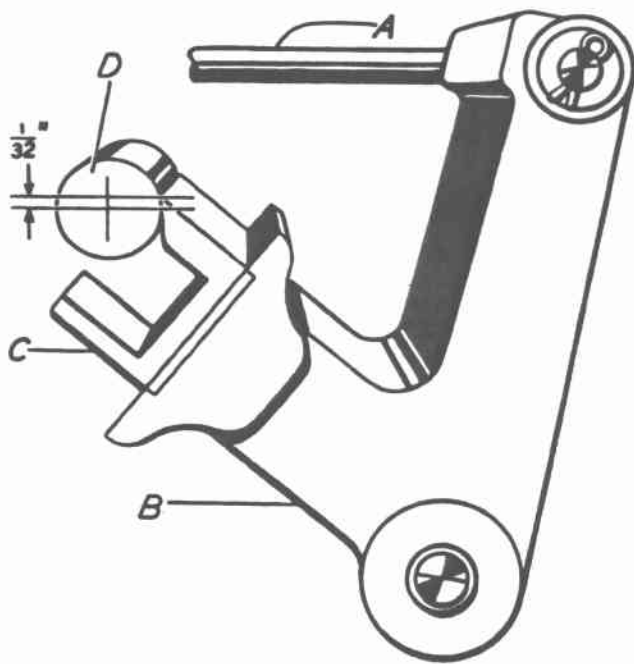


Figure 14

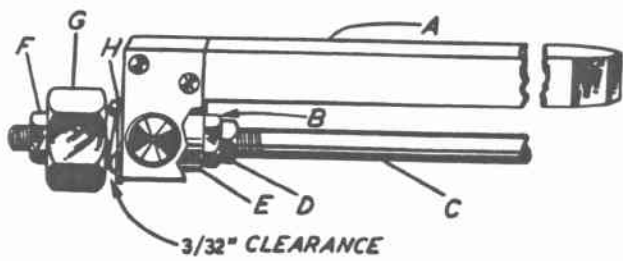


Figure 15

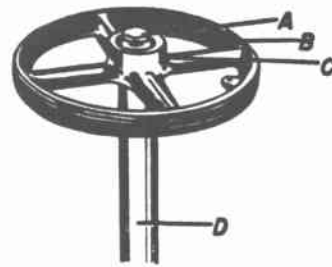


Figure 12

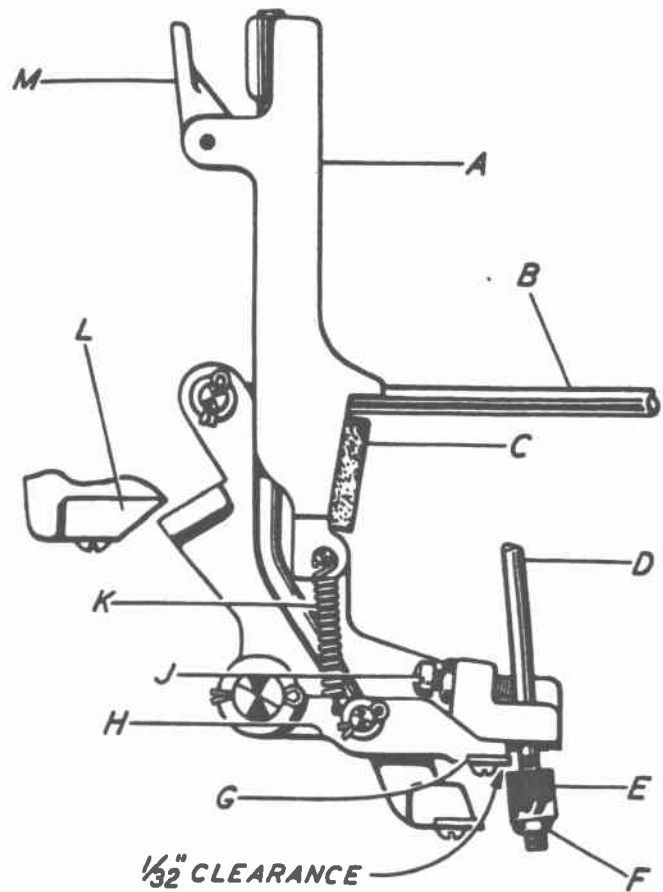


Figure 13

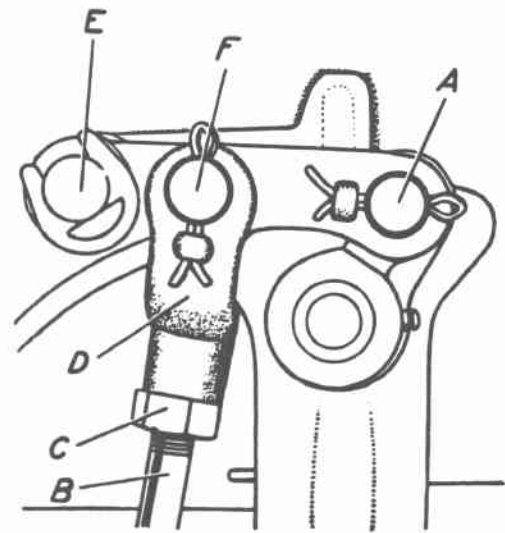


Figure 16

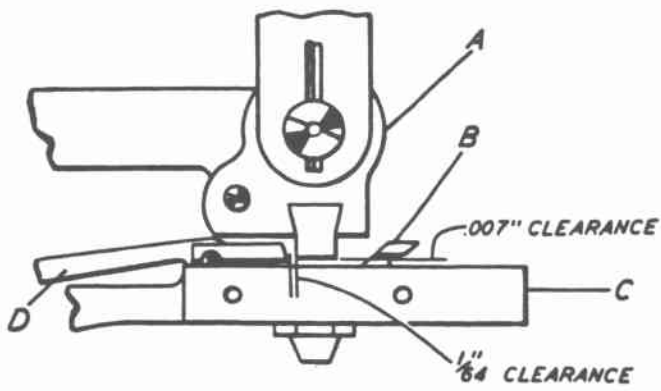


Figure 17

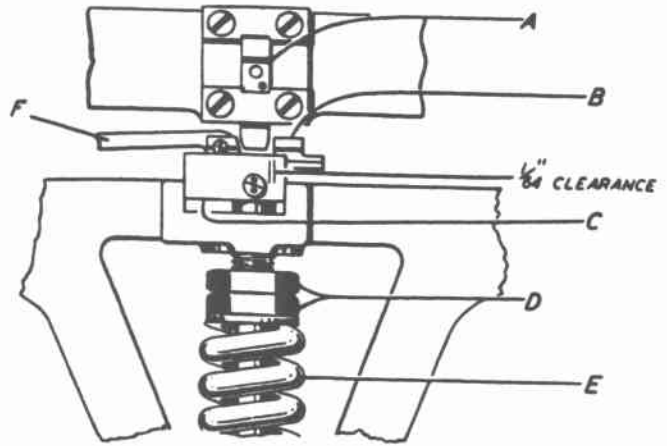


Figure 20

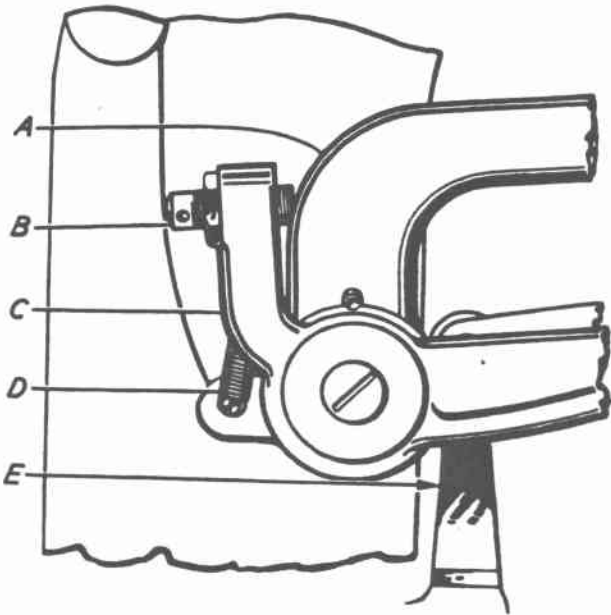


Figure 18

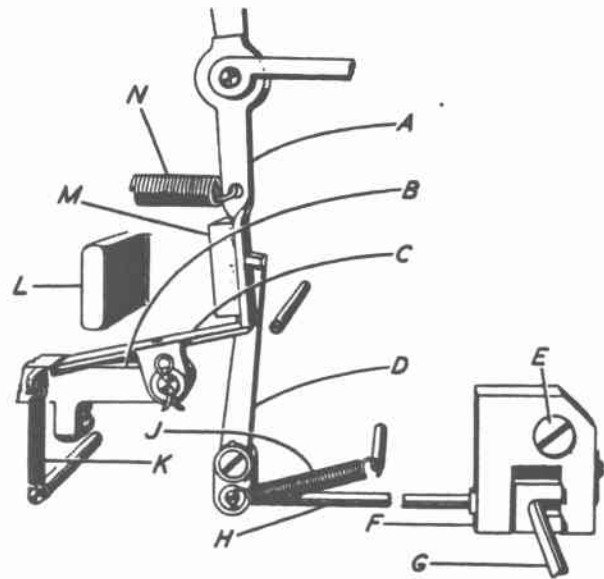


Figure 21

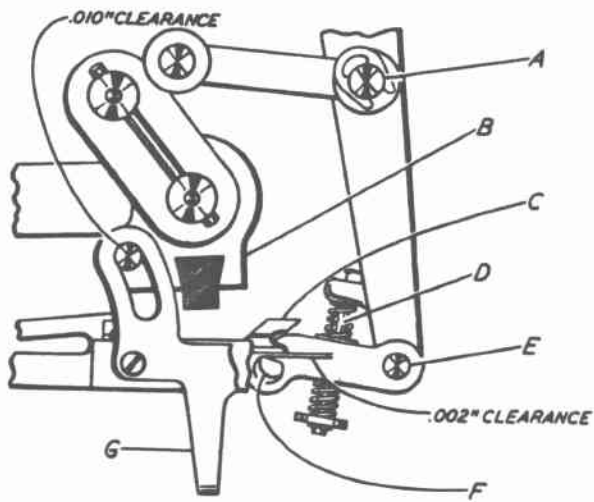


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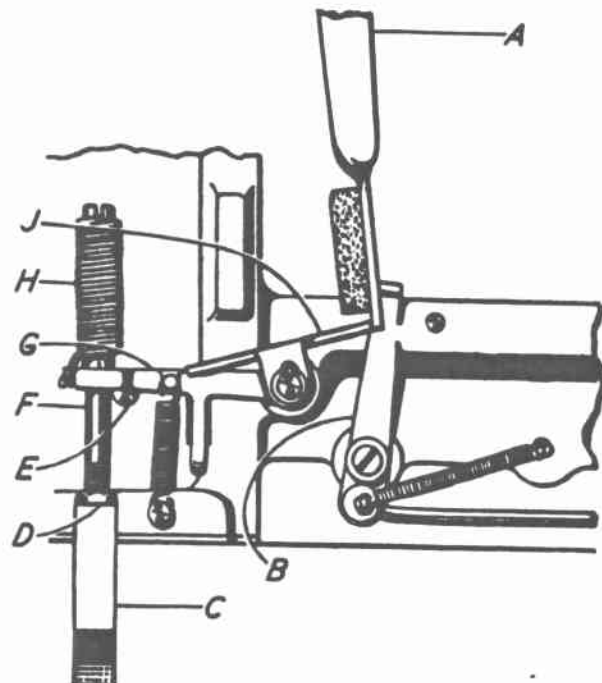


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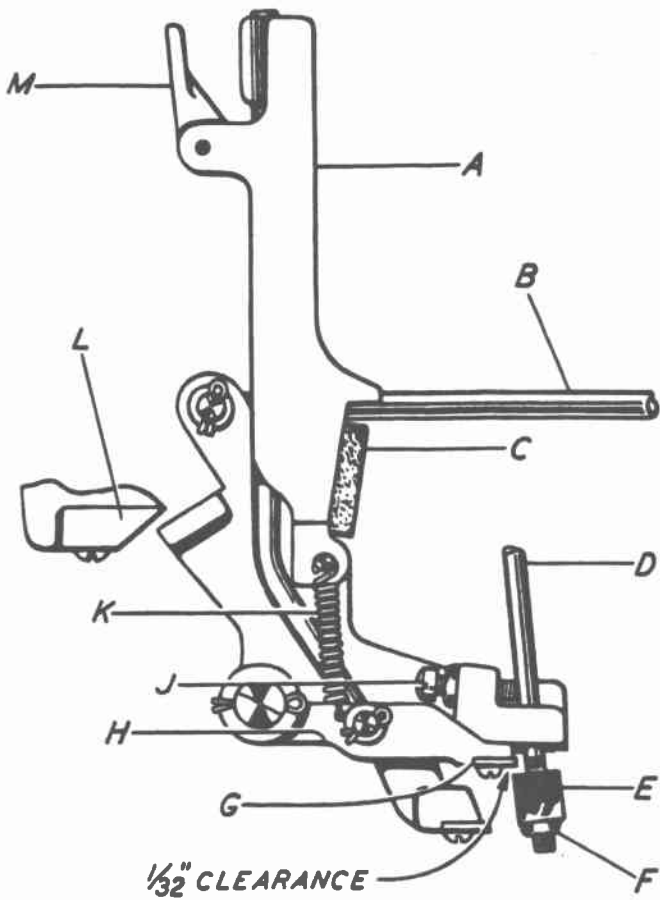


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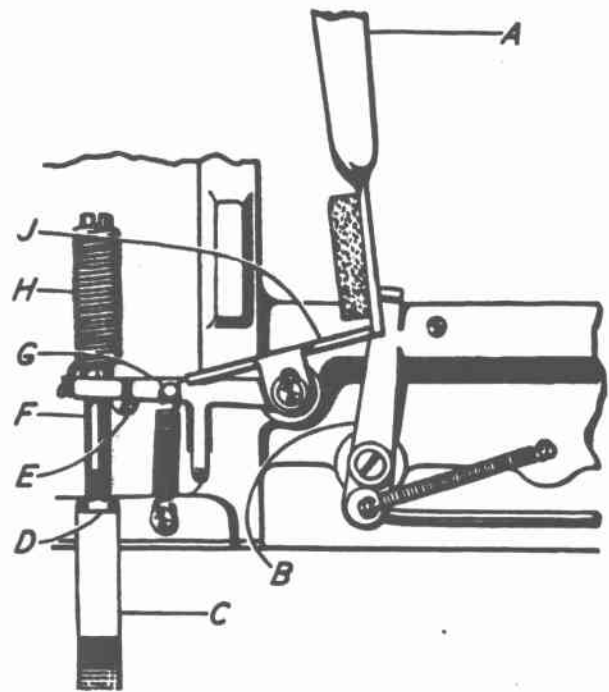


Figure 24

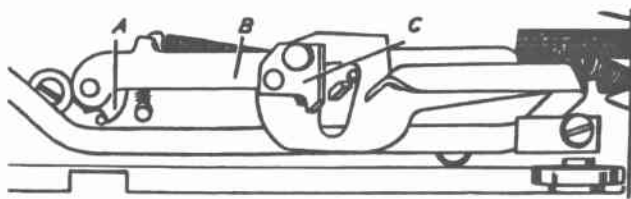


Figure 25

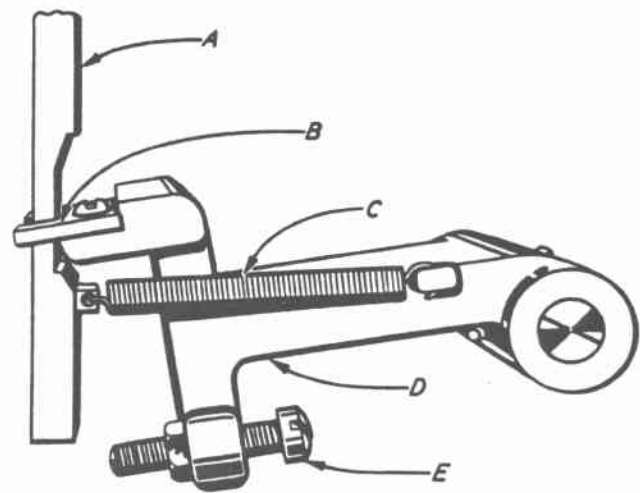


Figure 26

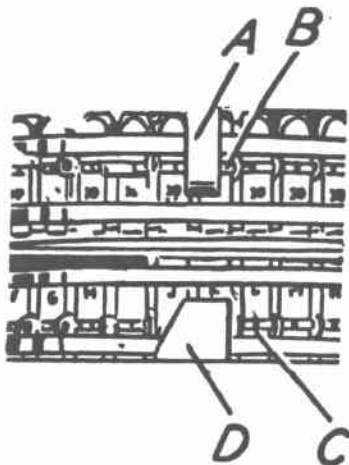
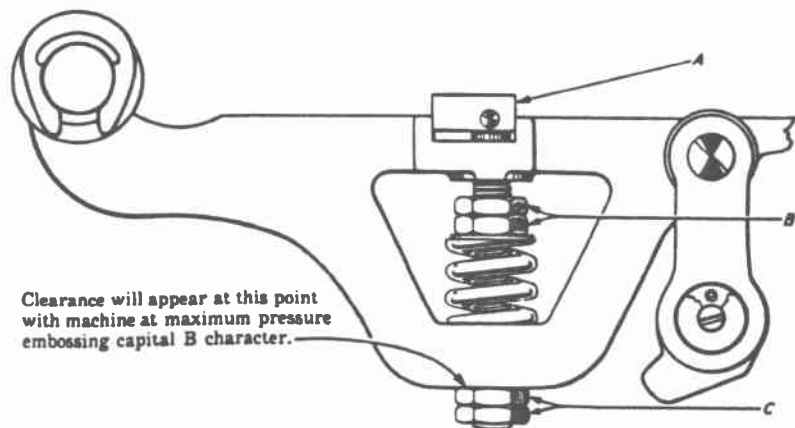


Figure 27



Clearance will appear at this point with machine at maximum pressure embossing capital B character.

Figure 28

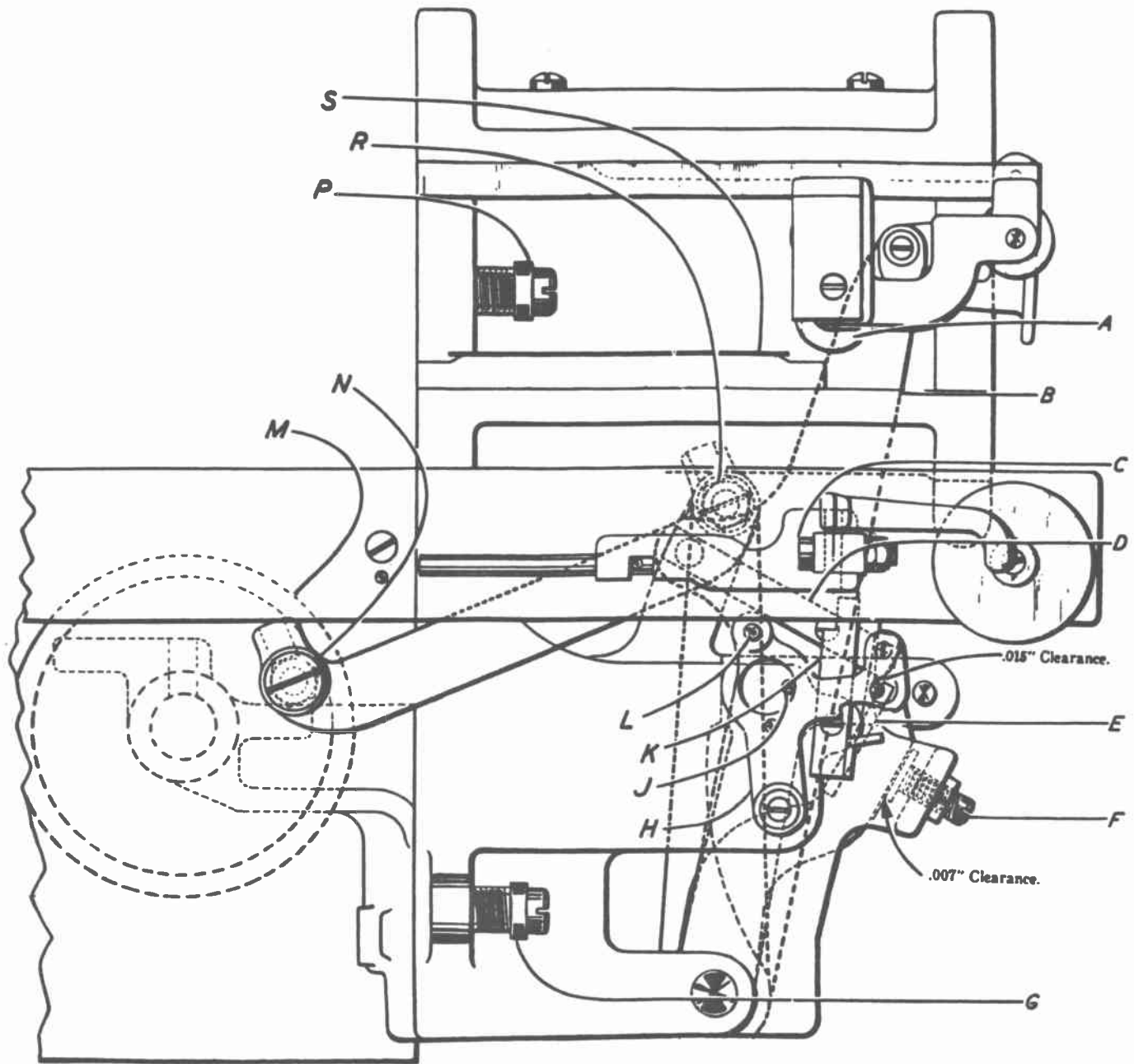


Figure 29

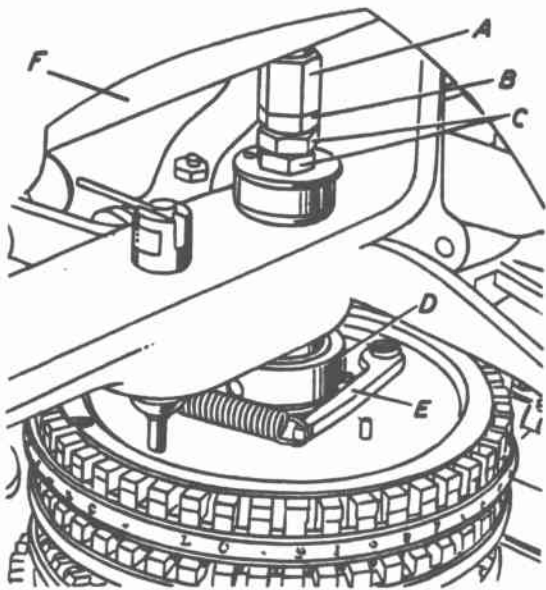


Figure 30

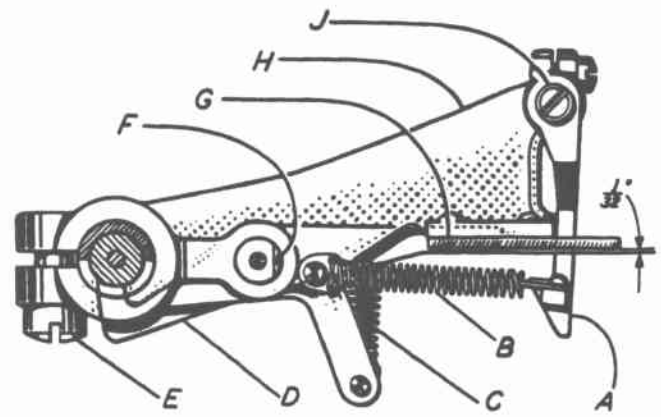


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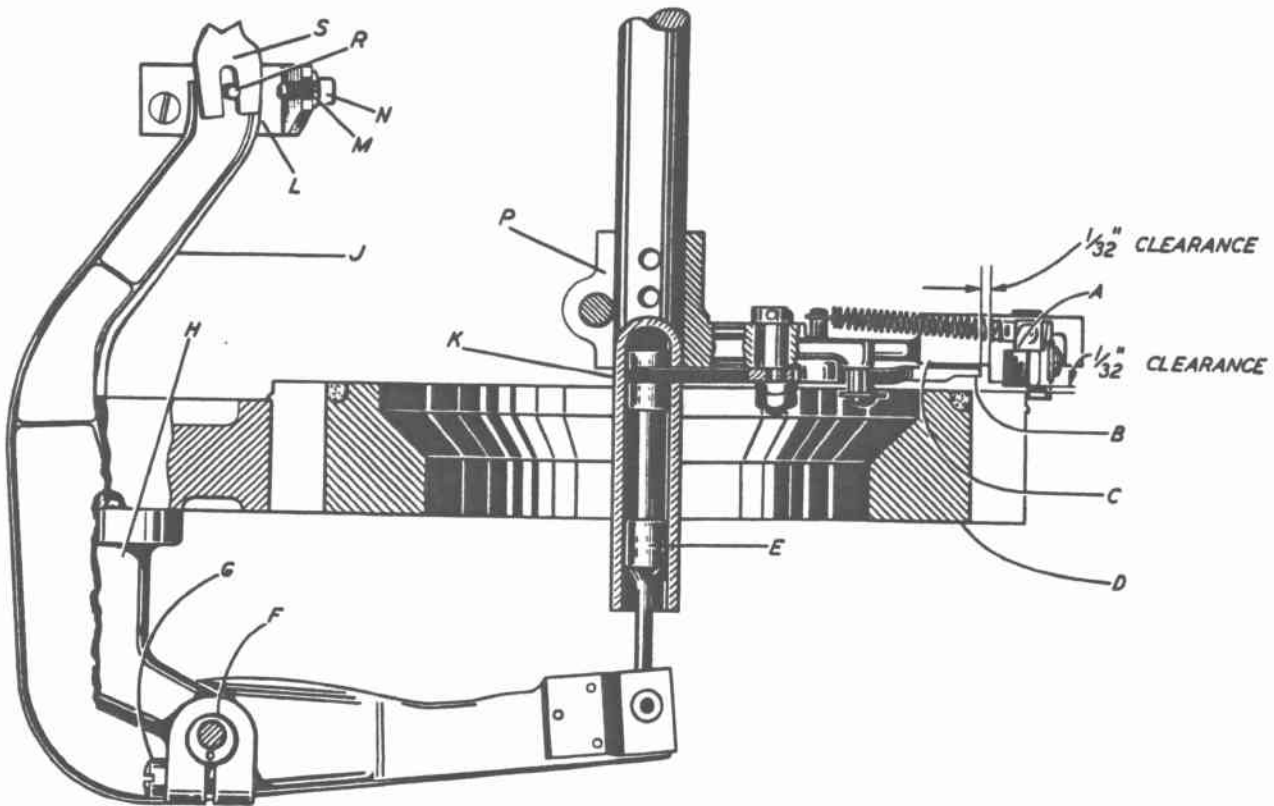


Figure 32

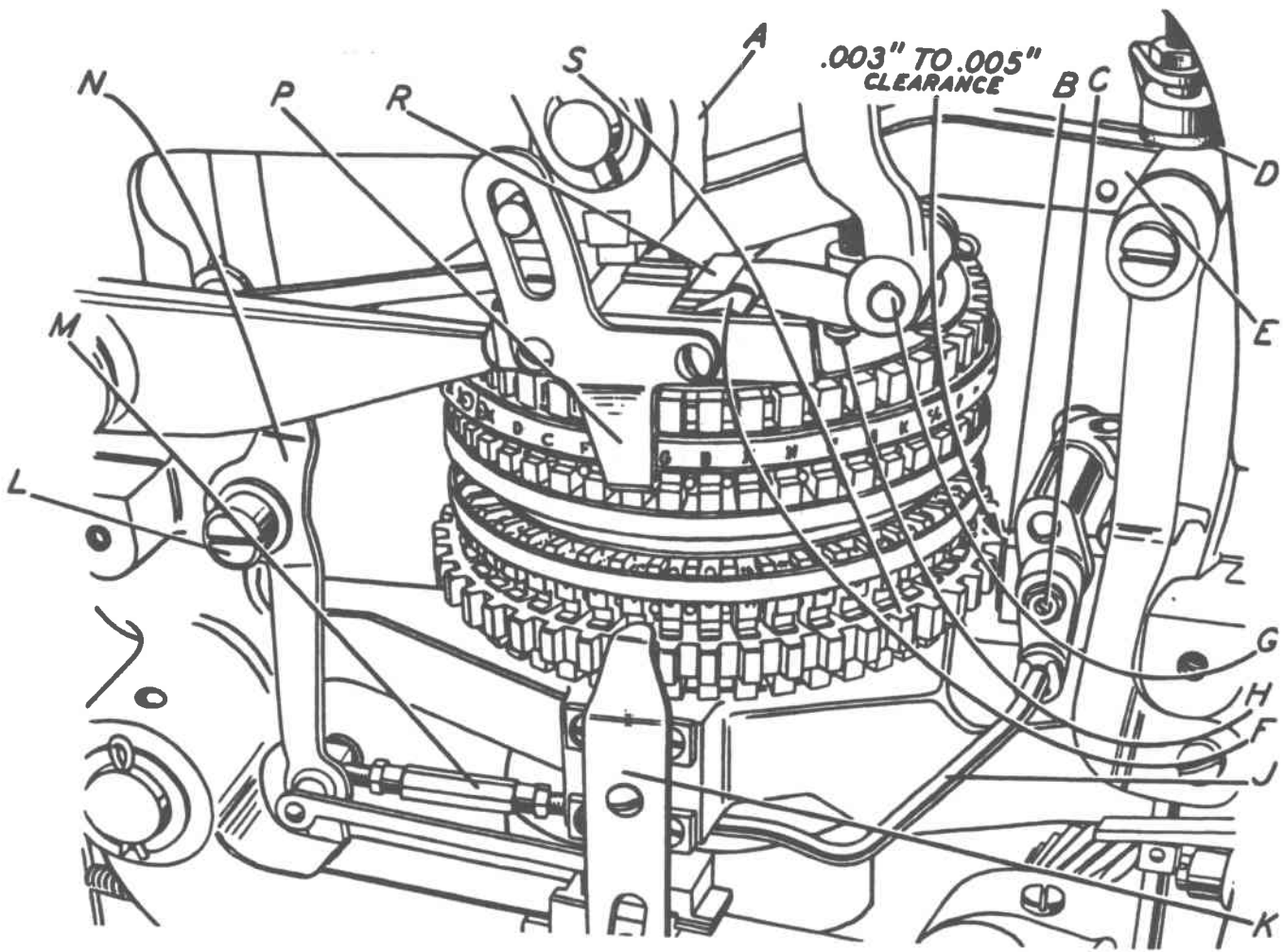


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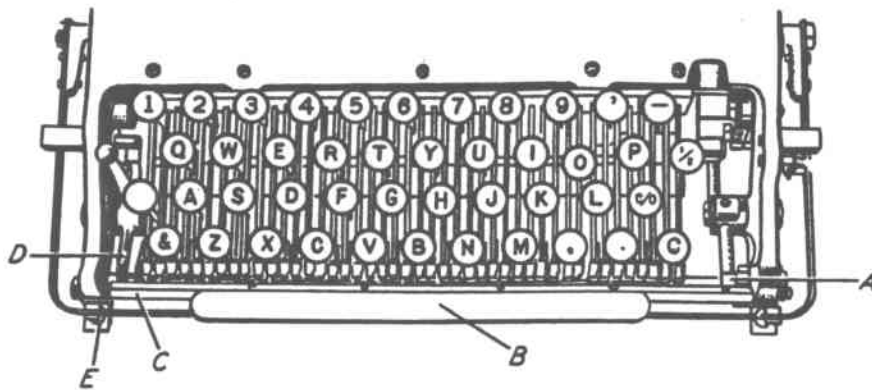


Figure 34

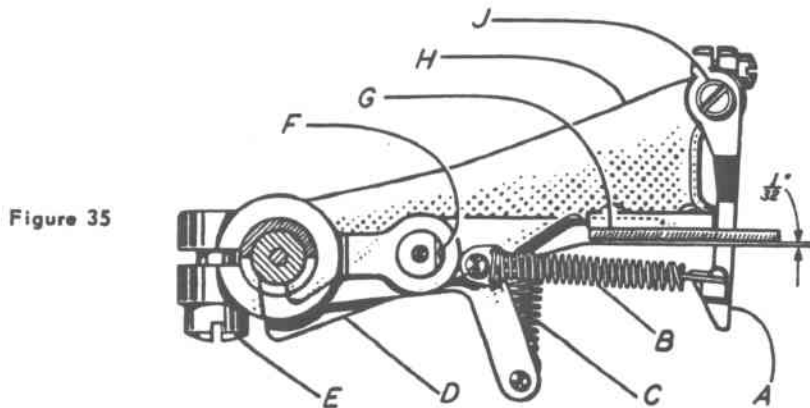


Figure 35

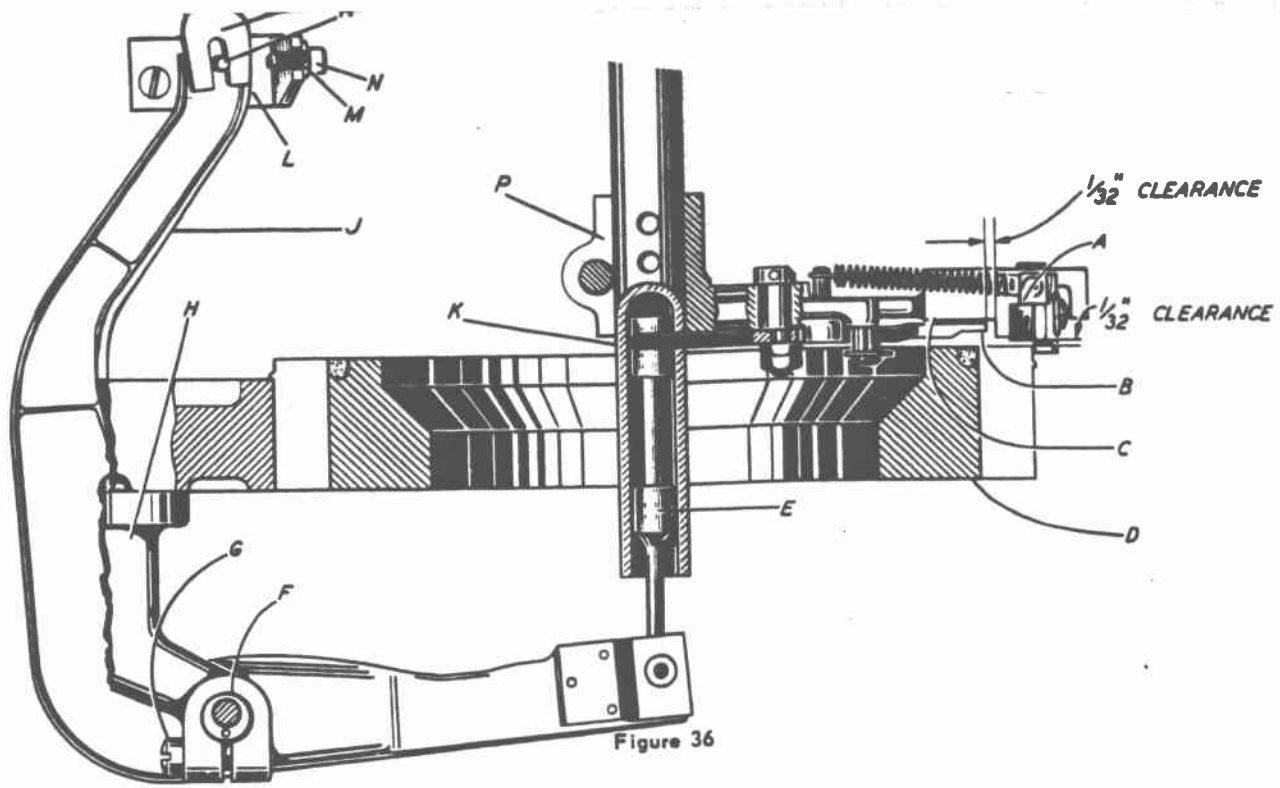


Figure 36

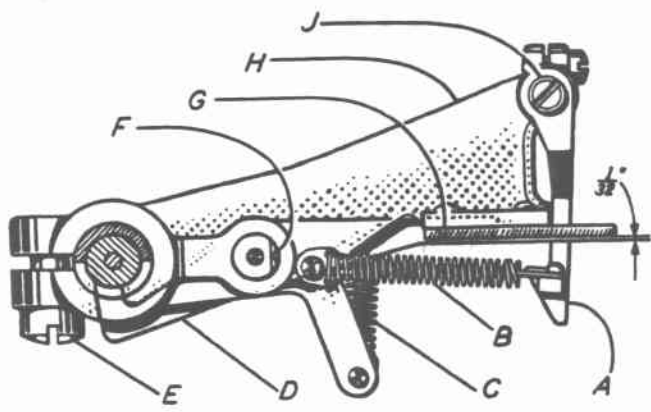


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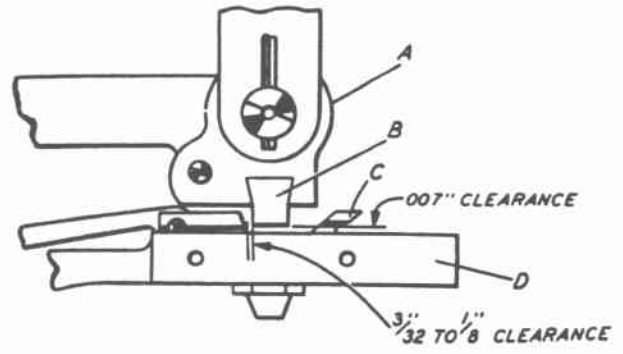


Figure 38

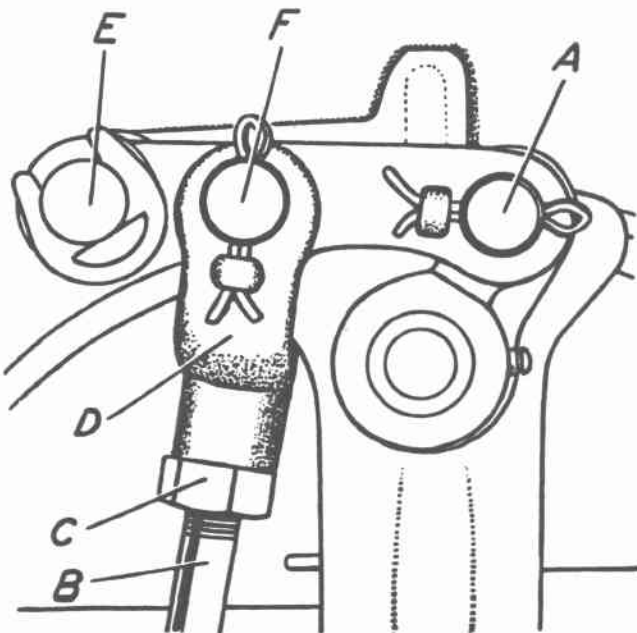


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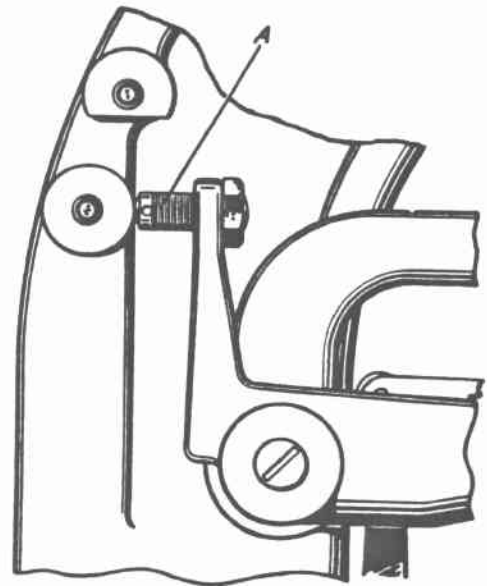


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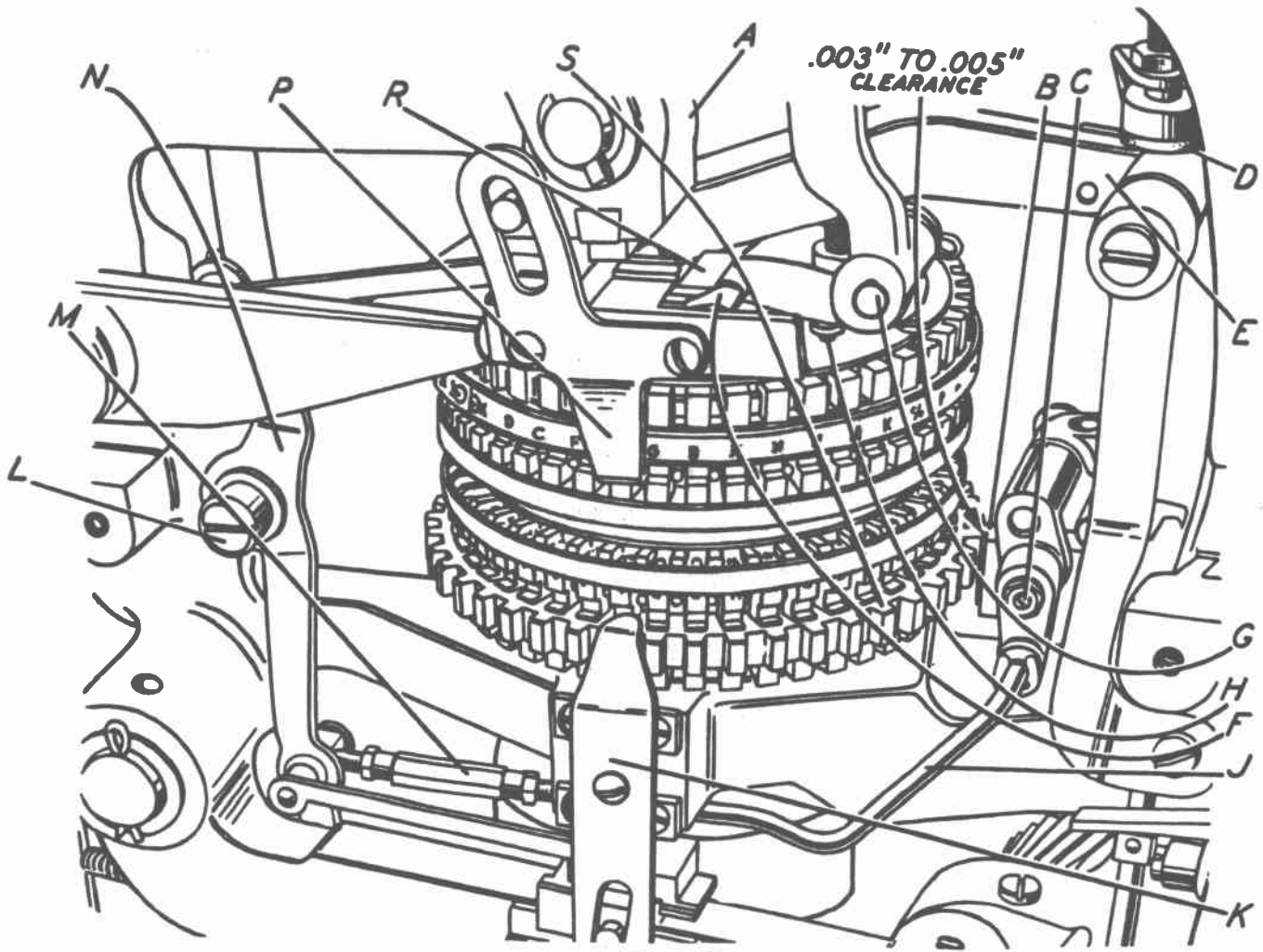


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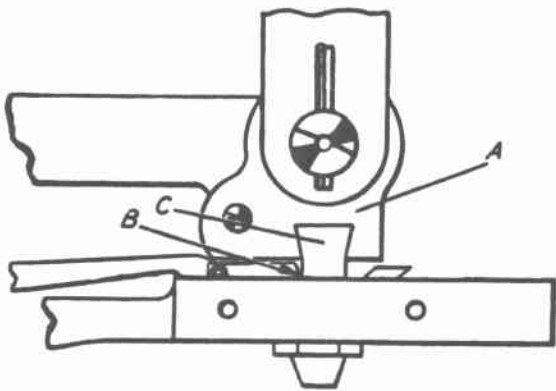


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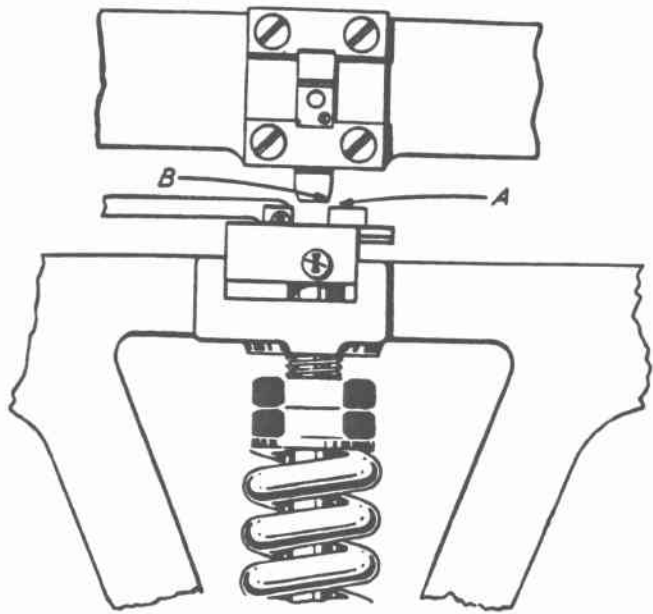


Figure 43

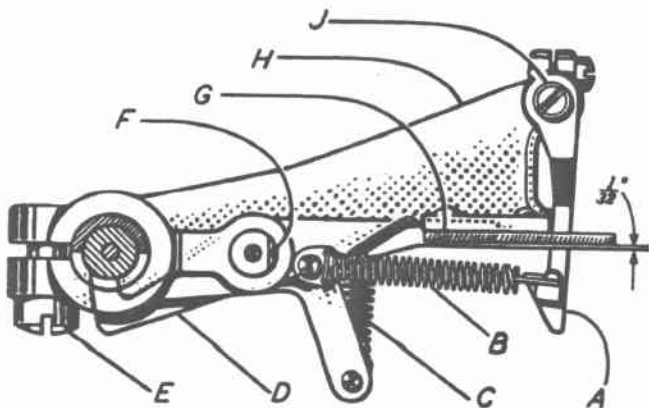


Figure 44

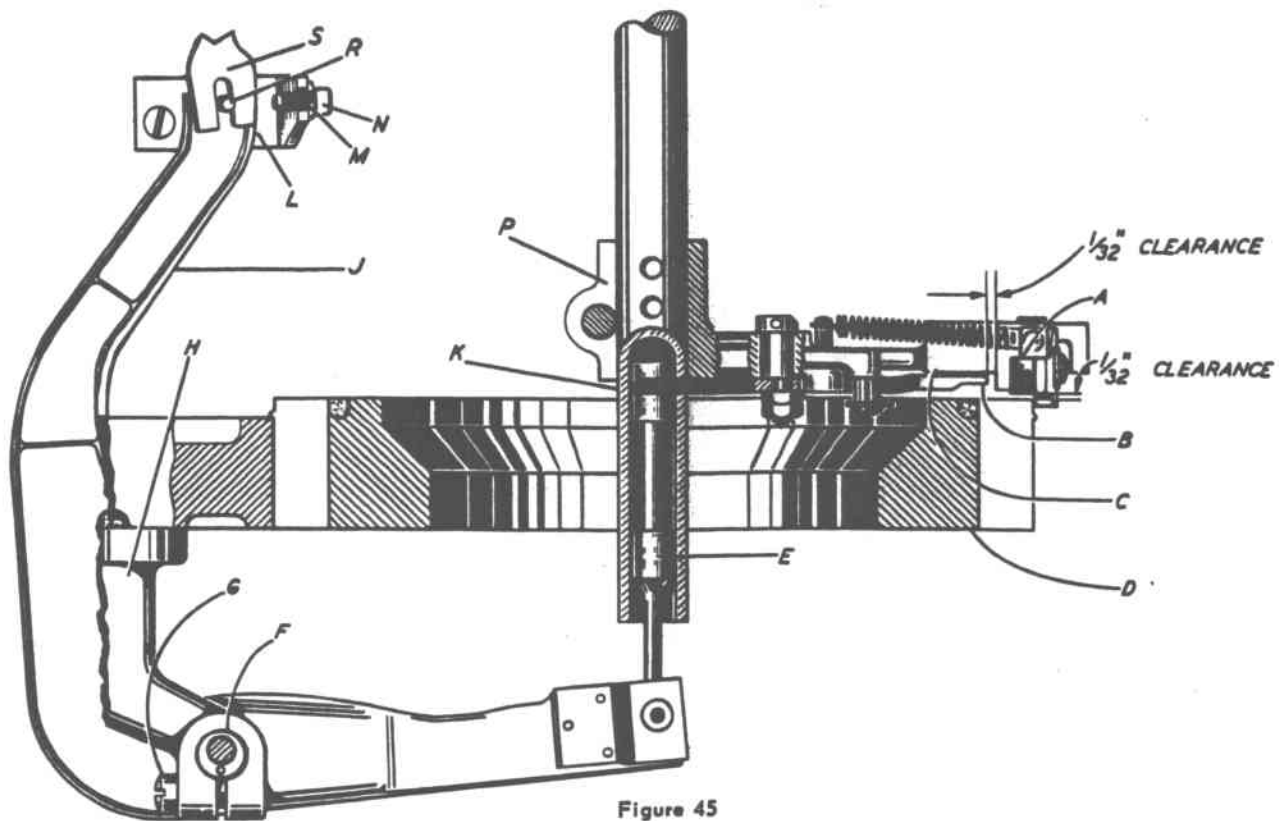


Figure 45

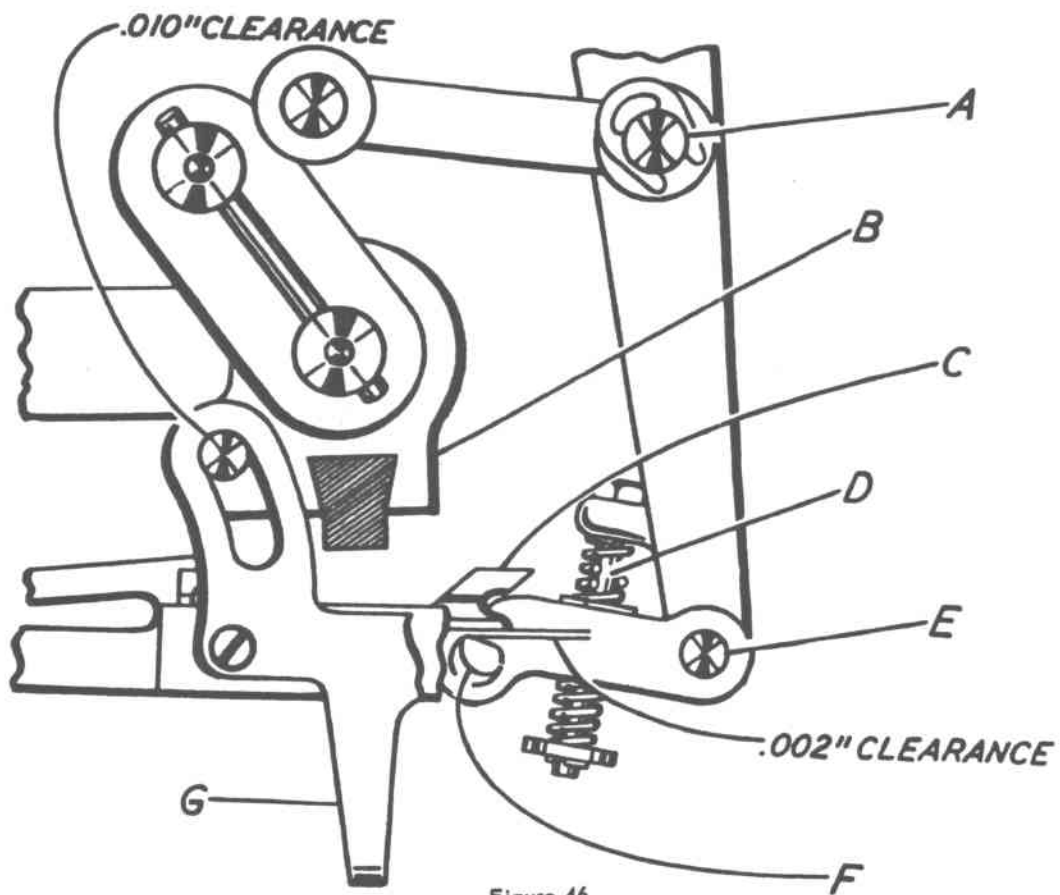


Figure 46

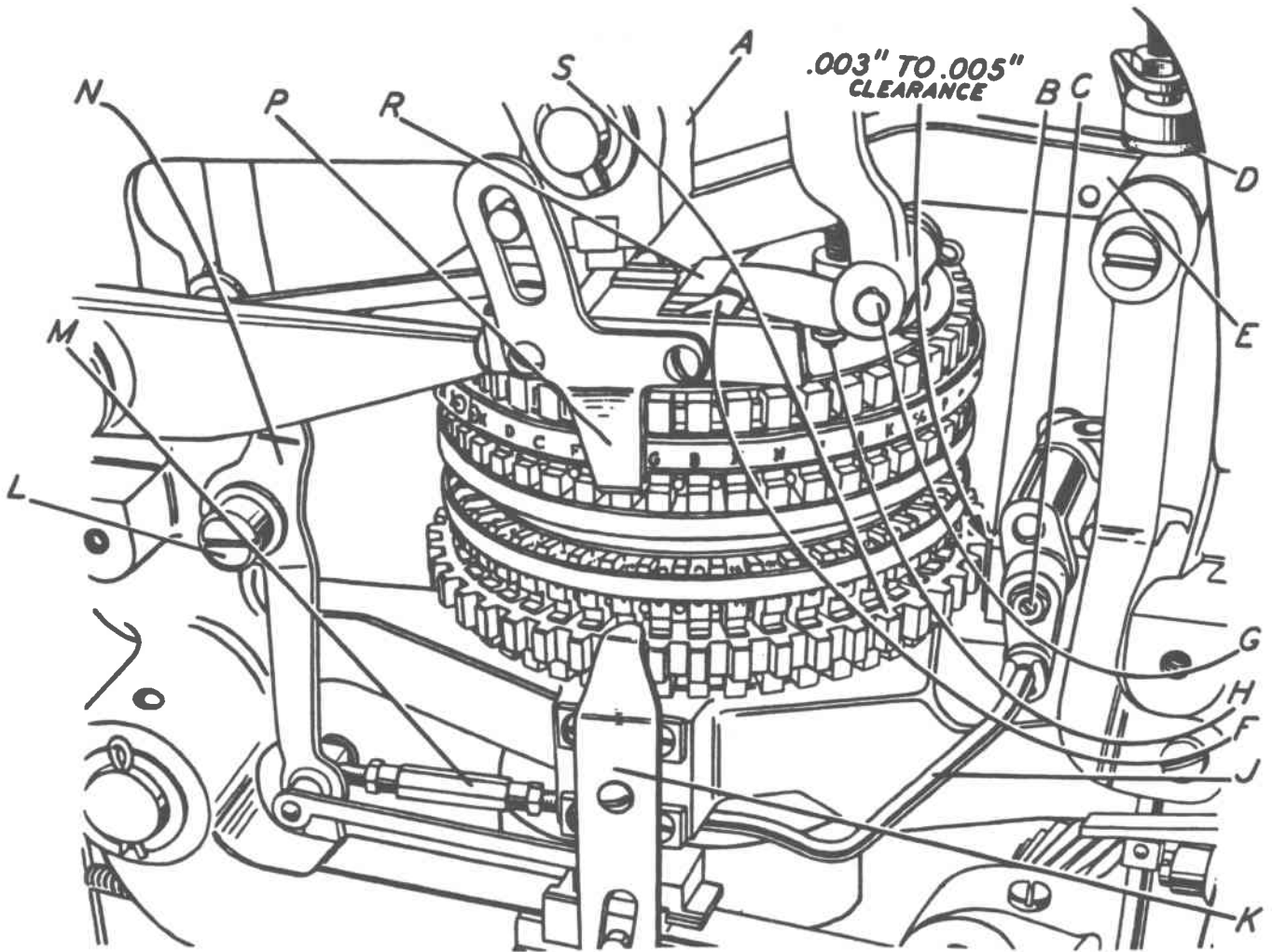


Figure 47

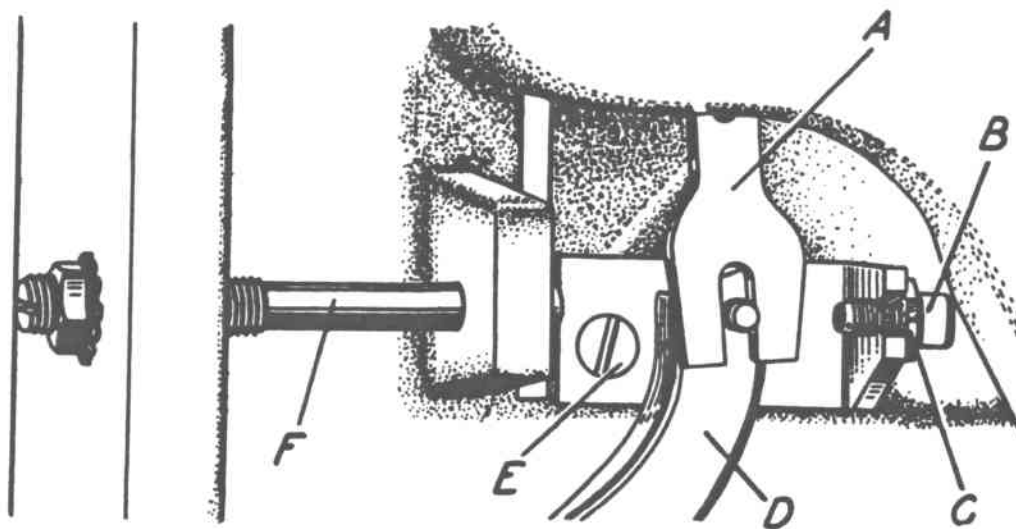


Figure 48

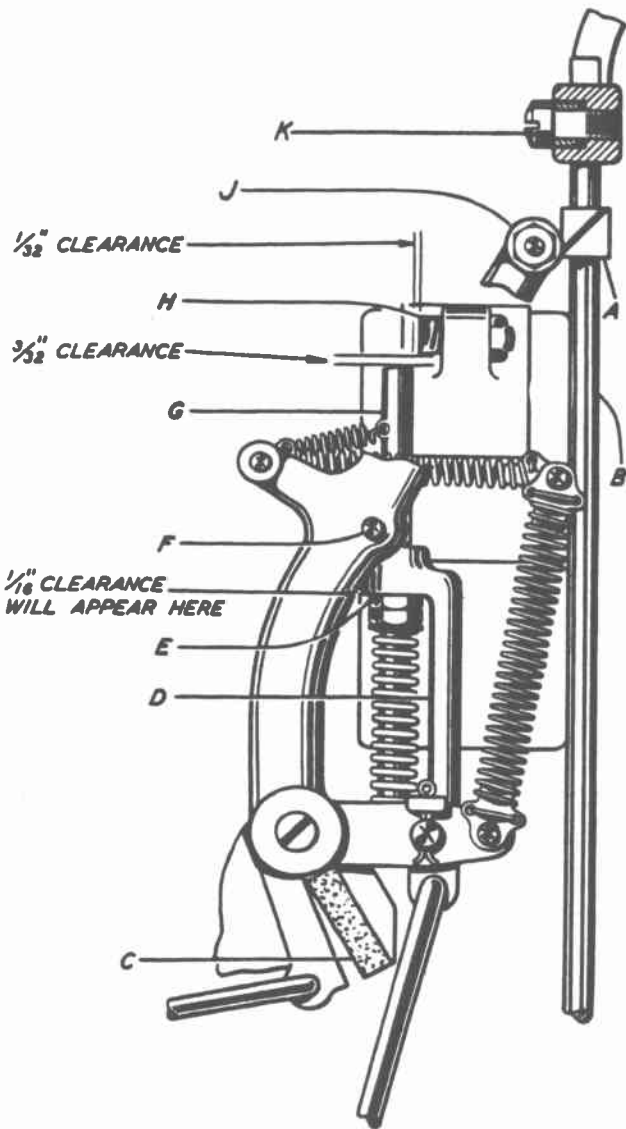


Figure 49

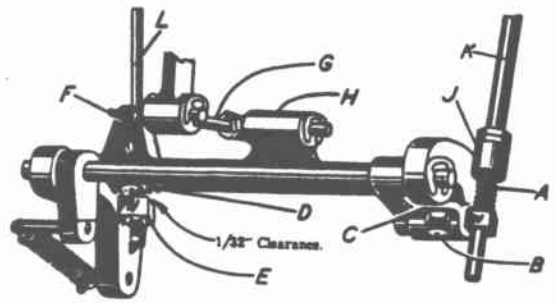


Figure 51

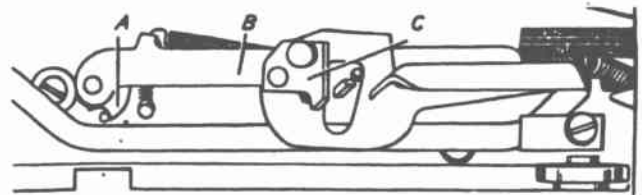


Figure 52

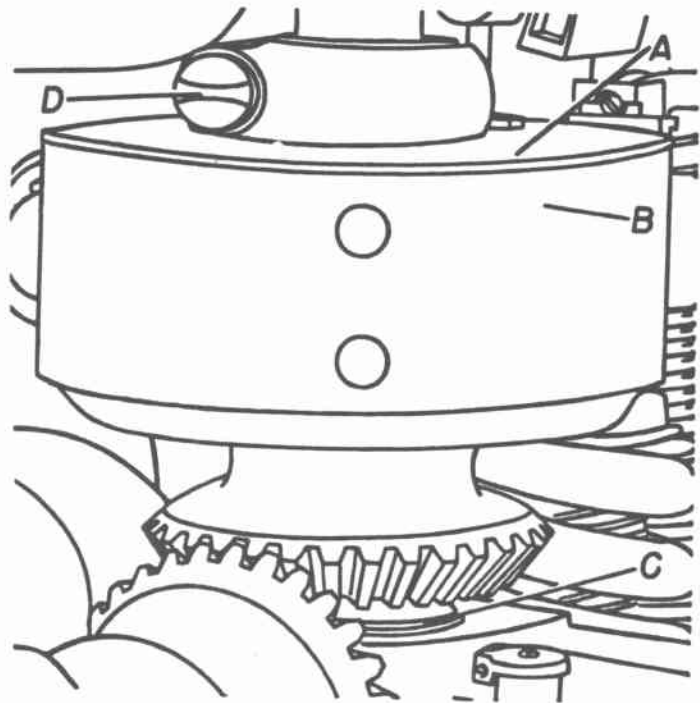


Figure 53

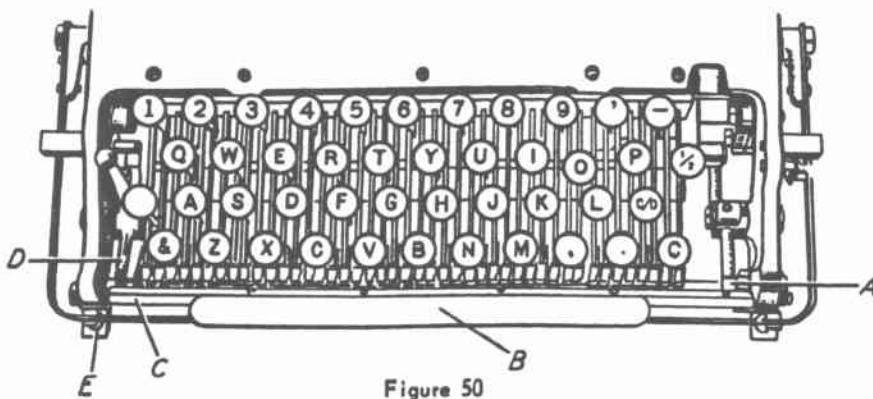


Figure 50

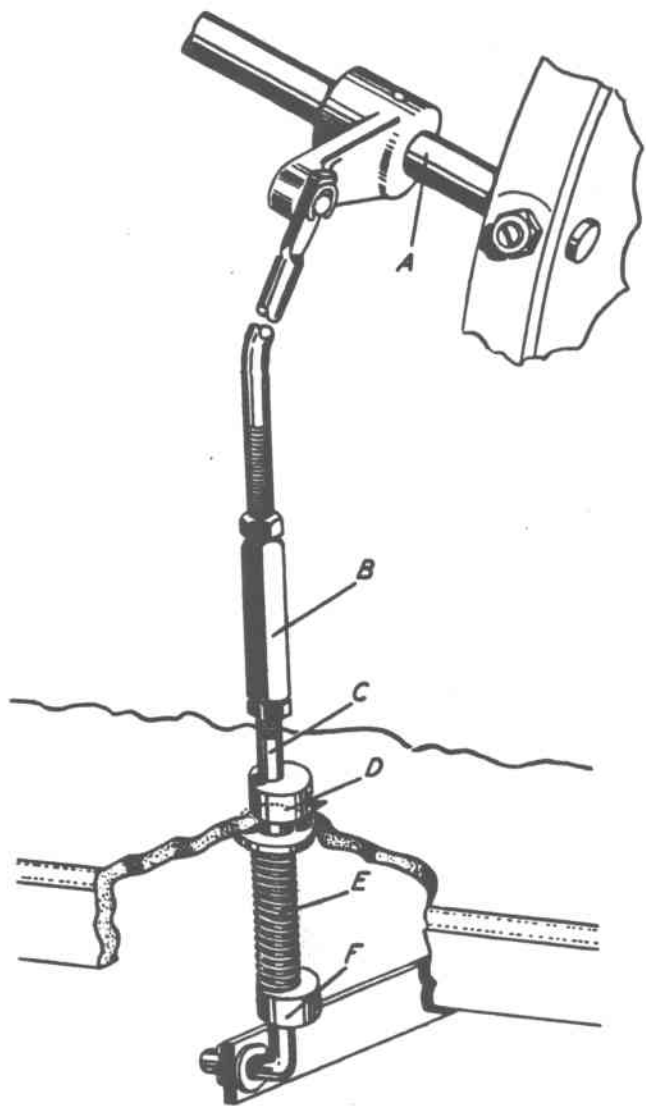


Figure 54

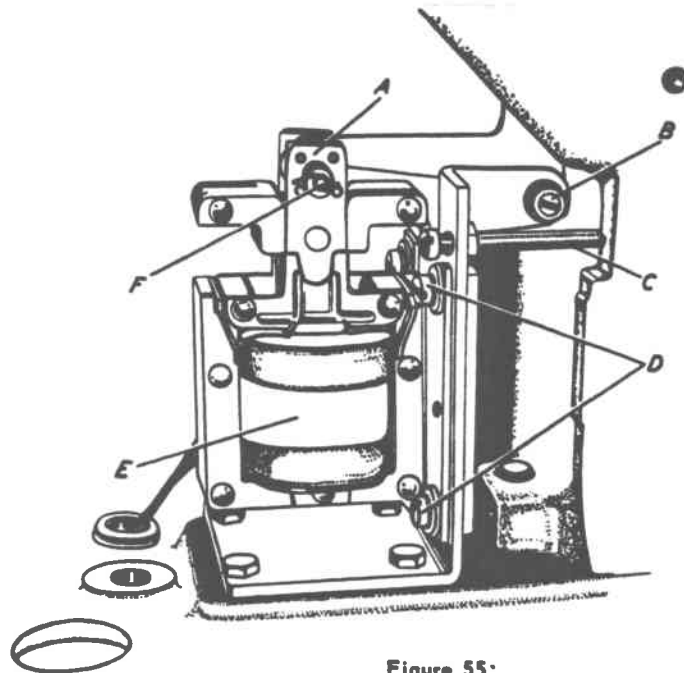


Figure 55

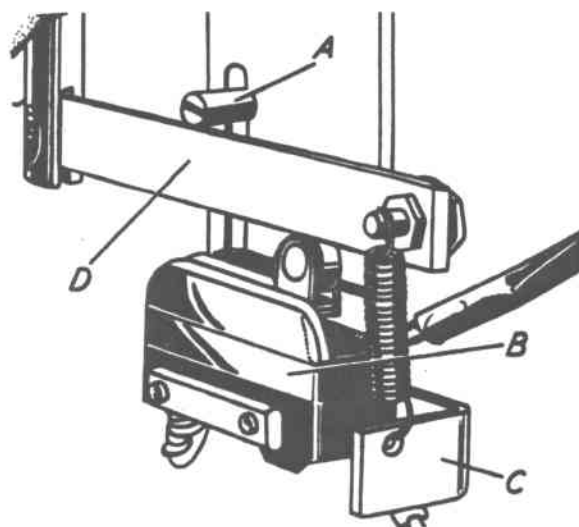


Figure 56

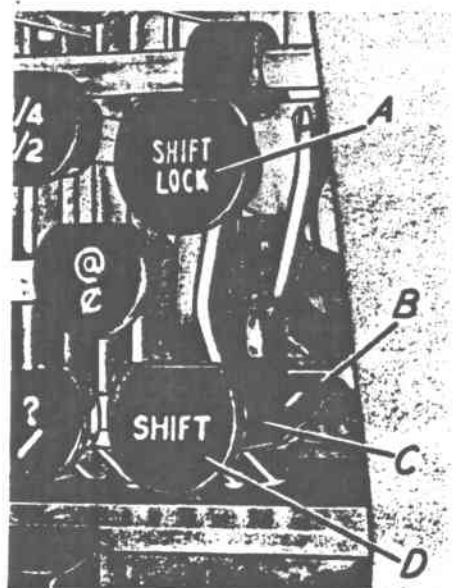


Figure 57

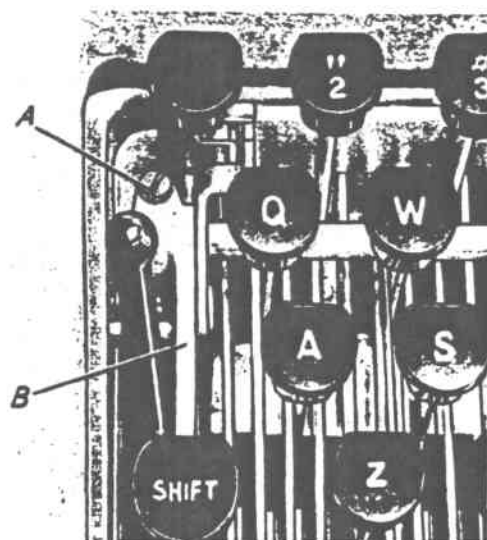


Figure 58

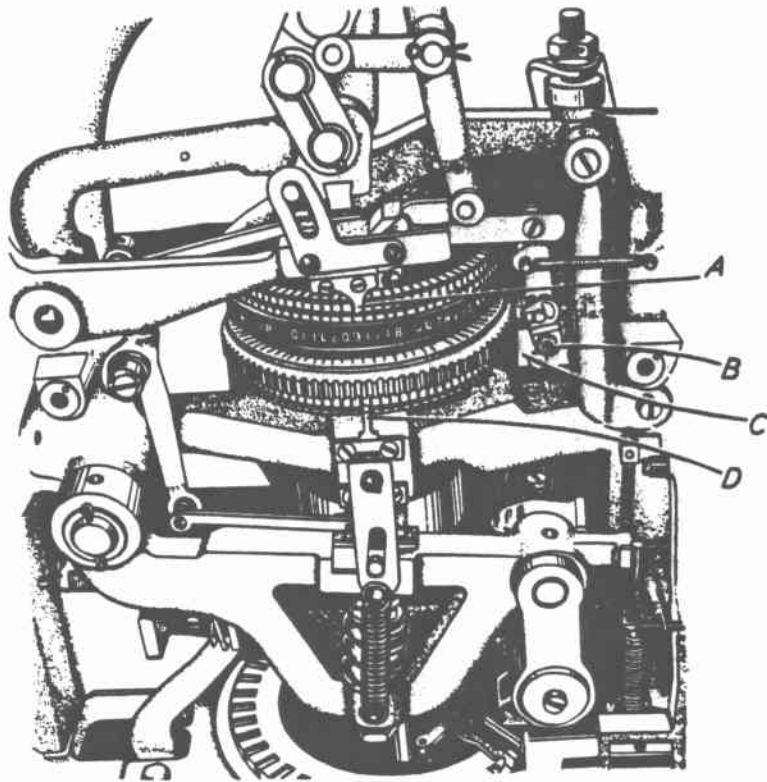


Figure 59

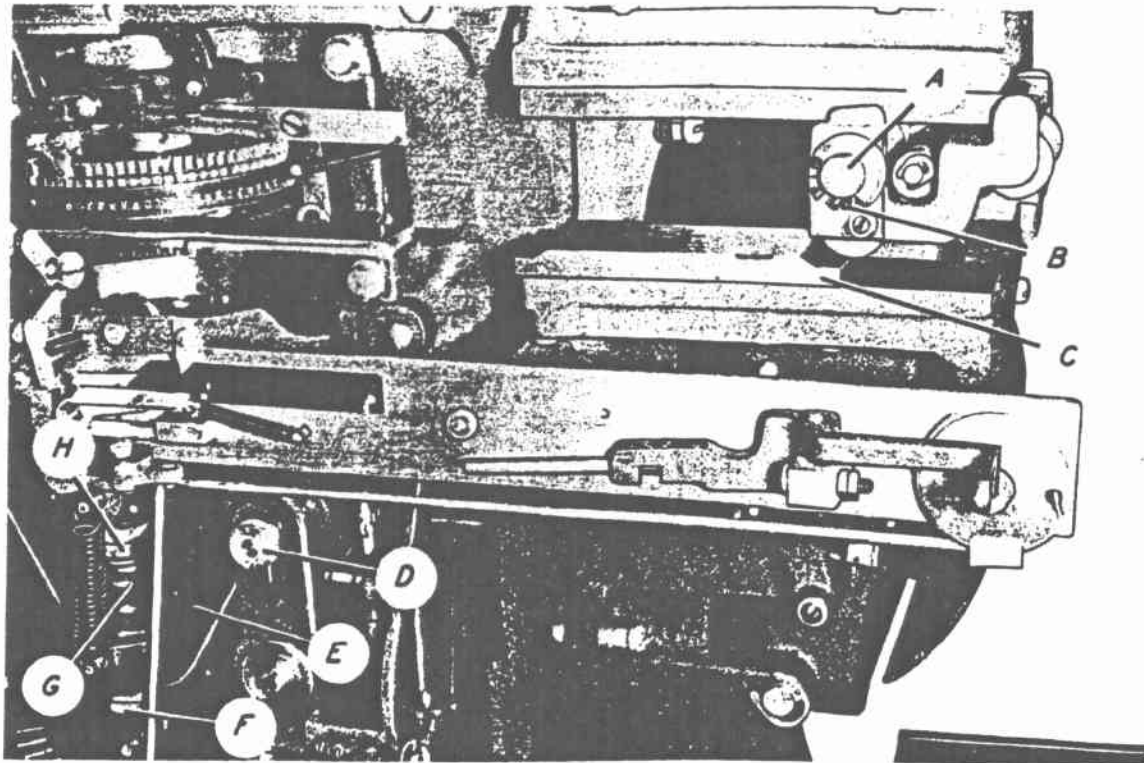


Figure 60

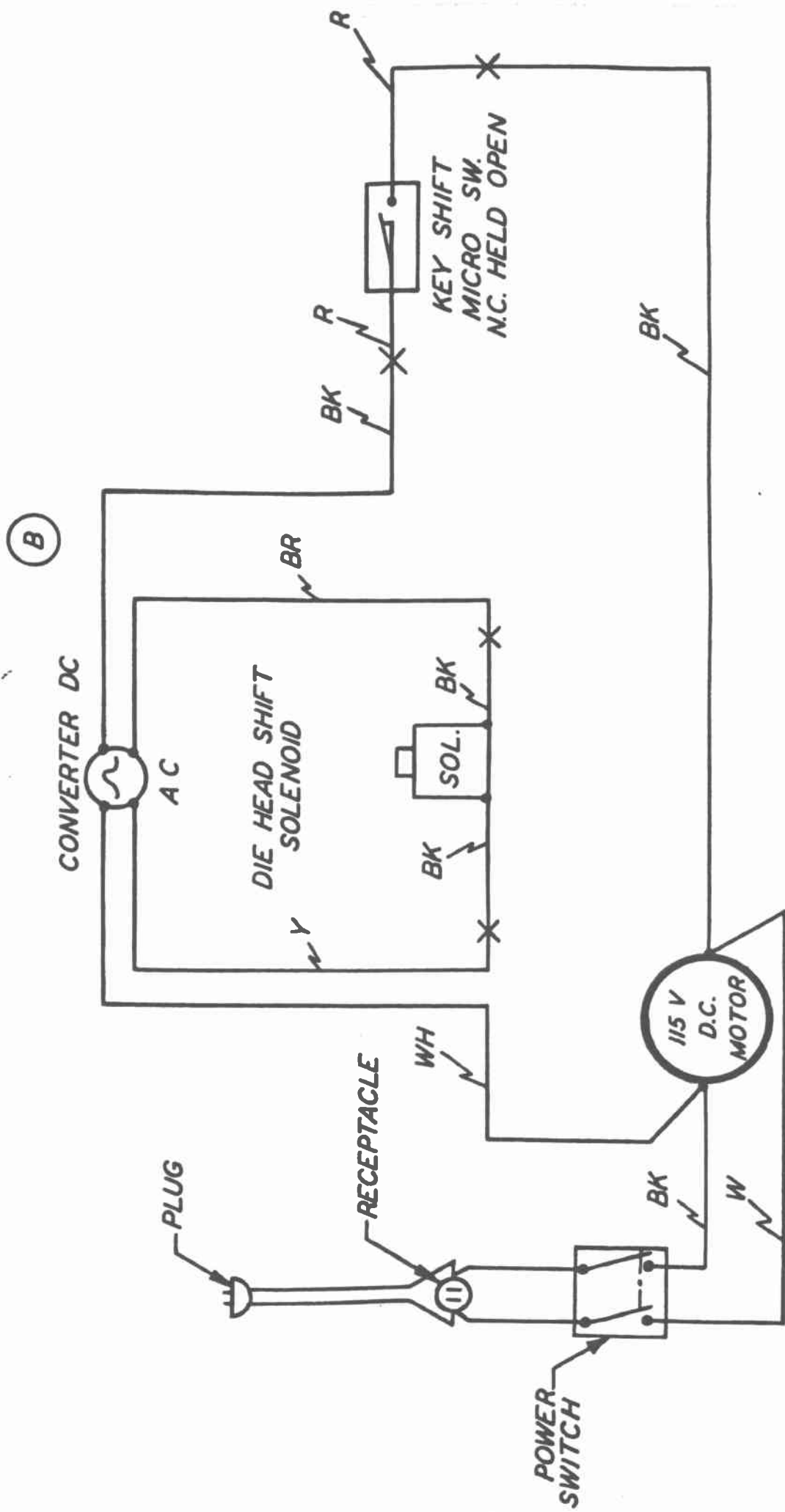


Figure 61

SAFETY STOP

The purpose of the safety stop 4K is to prevent the carriage from spacing when the type rack is positioned on either of the two blank spaces located on the type rack. These spaces are between the letters G and H and the numbers 2 and 3. This unit requires no adjustment, having been permanently arranged at the Factory.

CLEANING AND LUBRICATION

Naturally, any dirt or grit that accumulates on the sliding surfaces, such as the guide rails on the type rack and the guide pins for the carriage, will cause binds. Much better machine performance will be obtained by making sure all parts are clean and free of dirt. A thin coat of Duro-Vis lubricating oil should be applied to all bearing surfaces and points of possible wear. Roller bearings should be periodically repacked with Duro-Vis bearing grease and not oiled.