

*Graphotype*®

**Class 350**

SERVICE MANUAL

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**CLEVELAND 17, OHIO**

## GRAPHOTYPE CLASS 350 SERVICE MANUAL

Illustrations are on folded sheets in the back of this manual. Unfold the appropriate sheet when studying the description. The appropriate illustration is indicated in the text by the number just preceding the key letter. For example, collar 6K will be illustrated in figure 6, as key letter K.

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## REMOVAL OF THE COVER PLATES

The top cover is held in place by friction clips 1A and retainer clips 1B. It is not necessary to remove the top cover for visual inspection of the top mechanism. Just lift the forward part of the top cover and swing it up and back. To remove this cover from the machine, expand the clips 1B, on the rear inside of the cover, to clear the pivot pin 1C and lift off.

To remove the lower cover the exposed part of the carriage must be removed. To do this, slide the jaw to the bottom line embossing position. Remove the two screws 2A in the bed of the carriage. Lift the top part of the carriage off the two locating pins and clear of the machine.

Remove the type rack by releasing the stop lever 3A and sliding the type rack to the left and out of the machine.

Lay the machine on its right side and loosen the set screws in the carriage release lever 4E and the line space release lever 4D. Remove both levers.

Remove the two retaining screws 4C at the front part of the cover and the two retaining screws 4A at the rear of the cover. Lift the cover up and off the machine.

## INSTALLATION AND ADJUSTMENT OF THE TYPE RACK

The type rack will be shipped in the same carton with the machine, but wrapped in a separate container. To install the type rack, position the right end of the rack between the large upper guide roller 4H and the two large lower guide rollers 4G and between the two small horizontal guide rollers on the left side of the machine. Slide the rack to the right. Release the type rack stop lever 3A by pressing down on the rear of the lever. Slide the type rack past this stop lever 3A and release the lever. The purpose of this lever is to prevent the type rack from sliding out of the machine when moving the rack to the extreme left position. The type rack cannot be inserted or removed from the right side.

Adjust the eccentric pivot screw 4F so there is no rocking of the type rack. All four lower rollers should touch the type rack equally. Adjust the eccentric pivot screws 4B in the upper vertical guide rollers so that there is a minimum of play without bind. Check this adjustment on the entire length of the type rack. Lock with the nuts provided. Adjust the eccentric pivot studs 4J, for the small horizontal guide rollers, so there is a minimum of play without bind the entire length of the type rack. Lock with the hex nuts provided.

## JAW OPENING

Adjust the opening of the jaw with the three hex headed screws 5A on the top of the jaw. Insert a plate in the jaw. When holding the jaw open and with a plate in the jaw, a .005" gauge should go in and out of the jaw without bind and with equal clearance the length of the jaw. Lock this adjustment with the three hex nuts 5B on the lower side of the jaw.

## PLATE CLEARANCE

Adjust the jaw stop screw 6F as follows. Place the jaw in loading position. Hold the jaw open. Slide a plate against the plate stop 6E and into the jaw. Adjust the stop screw 6F so that the plate just clears the plate support and slides into the jaw freely.

With a plate in the jaw, and the jaw in embossing position, there should be .015" clearance between the lower surface of the plate and the lower inside slot in the type rack. Adjust the jaw stop screw 6G to obtain this adjustment. Lock with nut 6H.

## JAW SIDE PLAY

All side play should be removed from the jaw. Adjust the collar 6K on the jaw release lever for no play and no bind. Lock with the bristol head set screws 6J.

## PLATE ALIGNMENT

Emboss the letter "L" on the bottom line of the plate. Emboss this character on both the right and the left ends of the plate. Check the bottom dimension of each character with a plate micrometer. (See SA-1185-54, Plate Embossing Specifications Chart, on "How to Use the Plate Micrometer"). The measurements should be equal at each end of the plate. To adjust, loosen the lock nut 6C in the jaw support frame and turn the eccentric locating screw 6D.

## BOTTOM DIMENSION

Before adjusting the bottom dimension, be sure the bottom line of characters are parallel to the bottom edge of the plate, as explained in the previous paragraph. To change the bottom dimension, first loosen the lock nut 6B for the line spacing rack 6A. Turn the rack 6A in or out as required. One quarter of a turn will change the bottom dimension approximately .007". To increase the bottom dimension, turn the rack clockwise. Always lock the nut 6B on the rack 6A before embossing the character and taking a measurement, as there may be a slight movement of the rack as the nut is tightened.

## LINE SPACE SCALE

Move the jaw forward so the plate is in first line embossing position. Loosen the two lock nuts 6L located below the line spacing frame and move the scale 6N back or forward until the front edge of the line spacing carriage is above the Figure "1". The arrow will point to "1". Tighten the two locking nuts 6L.

## PLATE END DIMENSION

Place a plate into the jaw and move the jaw into embossing position. Emboss the letter "M" on the extreme left edge of the plate. Check the end dimension with a plate micrometer. To change the end dimension, loosen the lock nut 7B on the right end of the escapement rack 7A. Turning the escapement rack clockwise will increase the end dimension and turning the rack counter-clockwise will decrease the end dimension. One quarter of a turn will change the end dimension approximately .010". Tighten the locking nut 7B after each correction.

## DRAW BAND ADJUSTMENT

Adjust the pivot screw 8A in the barrel housing for the draw band so there is approximately four pounds pull when the carriage is about 1/16" from the carriage stop screw. This is in first character embossing position. When checking this adjustment, hold the carriage release lever 4E in its back position so the spacing teeth do not contact the escapement rack. Lock with the hex nut located below the base of the machine.

## CARRIAGE STOP

Move the carriage to its extreme left position. There should be approximately 1/2 tooth overthrow of the escapement rack before the carriage hits the stop screw 7D. To adjust, loosen the lock nut 7C and turn the stop screw in or out as required.

## CARRIAGE SCALE

Move the carriage to its extreme left, or first character embossing position. Loosen the two screws 9B that secure the character scale 9C to the bottom cover of the machine. Position the character scale 9C so that the indicator 9A on the carriage points to the first mark on the scale. Tighten the two screws 9B.

**CAUTION:** The operating handle must be in neutral when making the following two adjustments.

## TYPE RACK INDEXING PAWL

There should be .015" between the tip of the type rack indexing pawl 10B and the bottom of the type rack indexing teeth 10A. To obtain this adjustment, set the eccentric screw 10C so the high point of the eccentric is toward the rear, then adjust the screw for this clearance. Lock with the hex nut.

## SPACE PAWL ADJUSTMENTS

Before making any adjustments to the spacing pawls, the type rack indexing pawl clearance should be checked as explained in the previous paragraph. The escapement rack release pawl 11C should be in the center of an imaginary line drawn between the center of the space pawl pivot shaft 11D and the center of the escapement rack 11B. Turn the hex headed eccentric screw 11A to obtain this adjustment. Lock with the hex nut.

Adjust the height of the space pawl 12C and the release pawl 12B with the two small screws 12E. The pawls should just clear the small diameter of the escapement rack 12A. Lock with the hex nuts 12D.

## DIES AND PUNCH ADJUSTMENTS

**NOTE:** The condition of the dies and punches have an important effect on the embossing results. They should be in satisfactory condition before any attempt is made to set the embossing pressure. Obviously, a broken die or punch cannot produce a properly formed character. Likewise, if the die is filled with dirt or grains of metal from a plate, a well formed character cannot be produced. Should oil work its way into the face of the die, it will prevent the character from being embossed to its proper height or will result in excess breakage of dies and punches.

Spacing washers similar to 13F are inserted over the adjustable shafts. When adjustments are made, these washers must be in position before locking the shafts.

## DIE ADJUSTMENT

Loosen the upper left front locking nut and then the upper right front locking nut 13B for the eccentric stud 13C and move the serrated indexing washer 13E out of contact with the locating pin 13D. Place a plate between the die and punch, pull the handle 13A forward until the die is in its down position and just before the punch starts to raise. The operating handle will now be in an almost vertical position. Adjust the eccentric stud 13C by turning the serrated indexing washer 13E so there is a slight drag on the plate. The die should cause a slight scratch to appear on the surface of the plate. Set the serrated indexing washer 13E over the locating pin 13D and tighten the right lock nut 13B. Then tighten the left locking nut. This adjustment will not be effected by the punch adjustments; therefore, when set properly, it should not be changed.

NOTE: For a finer adjustment, loosen the nut 13B so that the serrated washer may be turned 180°.

#### PUNCH ANVIL CLEARANCE

There should be .015" clearance between the top of the punch anvil 14B and the bottom of the punch 14A when the operating handle is in neutral (back) position. To obtain this clearance, first loosen the left locking nut 10E and then loosen the right locking nut on eccentric stud 10D. Check this clearance on the letters "B", "M", "N", and "W". Obtain the clearance by turning the eccentric stud 10D with a screw driver. When proper clearance is obtained, tighten the right locking nut and then the left locking nut 10E. This clearance should be checked and adjusted, if necessary, whenever there is a change in the embossing pressure adjustment.

#### PUNCH PRESSURE

Loosen the lower left locking nut and then the lower right locking nut 15A. Slide the serrated indexing washer 15C out of contact with the locating pin 15D. Set the eccentric stud 15B so that the high point of the stud is down, or until it is obvious that the pressure is too light. Emboss the first line of characters from A to Z on the plate. Reset the eccentric stud 15B by moving the serrated indexing washer 15C up one notch.

Emboss another line of characters directly below the first line of characters. Continue to increase the pressure one notch of the serrated indexing washer at a time until the last line of embossing appears the same as the characters on the previous line of embossing. Any more pressure added from this point on will only distort the plate and wear the dies and punches. When the appearance of the characters on the last two embossed lines does not change, back off the pressure one notch of the serrated washer 15C and tighten the right locking nut 15A and then tighten the left locking nut.

NOTE: For a finer adjustment, loosen the nut 15A so that the serrated washer may be turned 180°.

#### TIMING OF THE GEARS

Because the gears are attached permanently to the die and punch drive cams and the cams determine when the dies and punches come together, it is important that the gears be timed properly. Each gear is marked so that it can be correctly timed to the next gear. Line up the tooth mark on the die drive gear and cam assembly 16A with the mark on the punch drive gear and cam assembly 16B. These marks are visible through the hole in the right side panel and through the hole in the operating handle gear segment 16D. The gears should be timed when the operating handle is in neutral (back) position. Time the gear segment 16D on the operating lever with the small intermediate drive gear 16C by lining up the marks on their teeth.

#### THE BLANKER

The blanker punch and die may be used to make minor changes in embossing, such as eliminating or changing folio numbers and code numbers.

When an embossing error is made, generally, the proper character may be embossed over the erroneous character without the latter having first been blanked out.

When blanking down characters within a word or in a position immediately adjacent to other characters, the characters preceding and following the blanked character may be tipped slightly by the blanker. Therefore, in such instances, it is necessary to re-emboss the characters in order to secure a perfectly legible impression from the plate.

### 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.

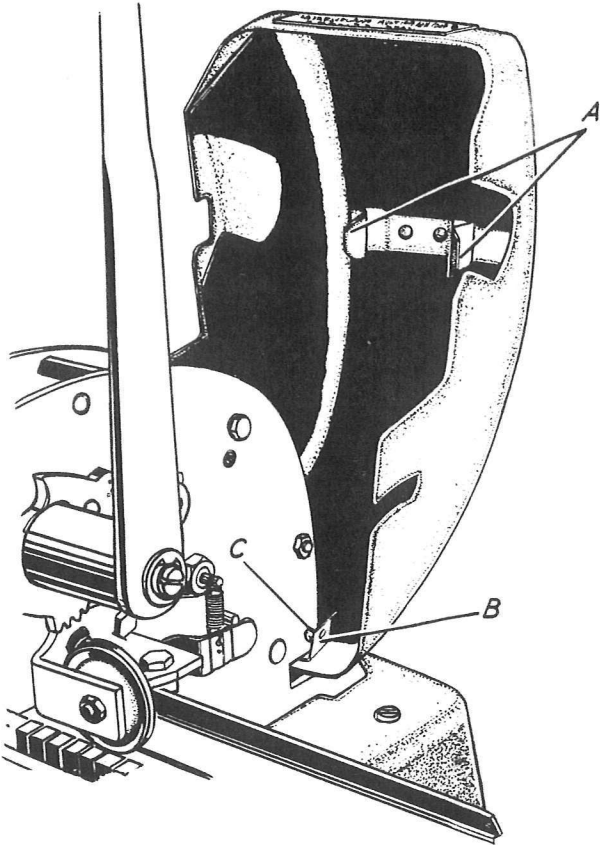


Figure 1

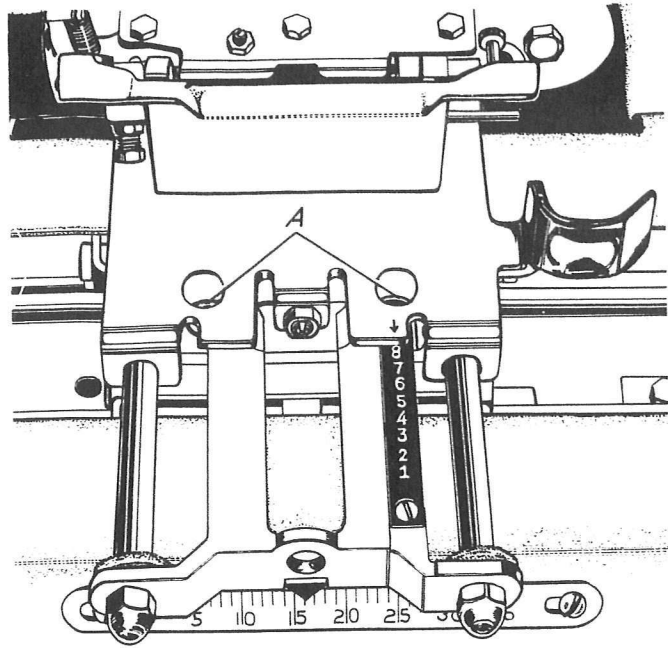


Figure 2

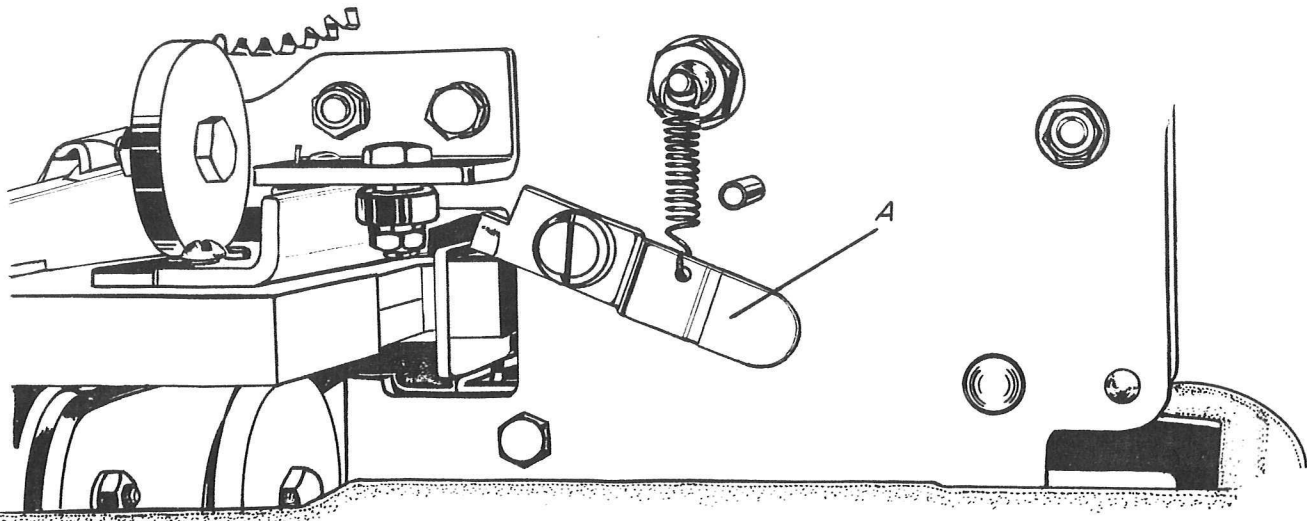


Figure 3



Fig.

1  
2  
3

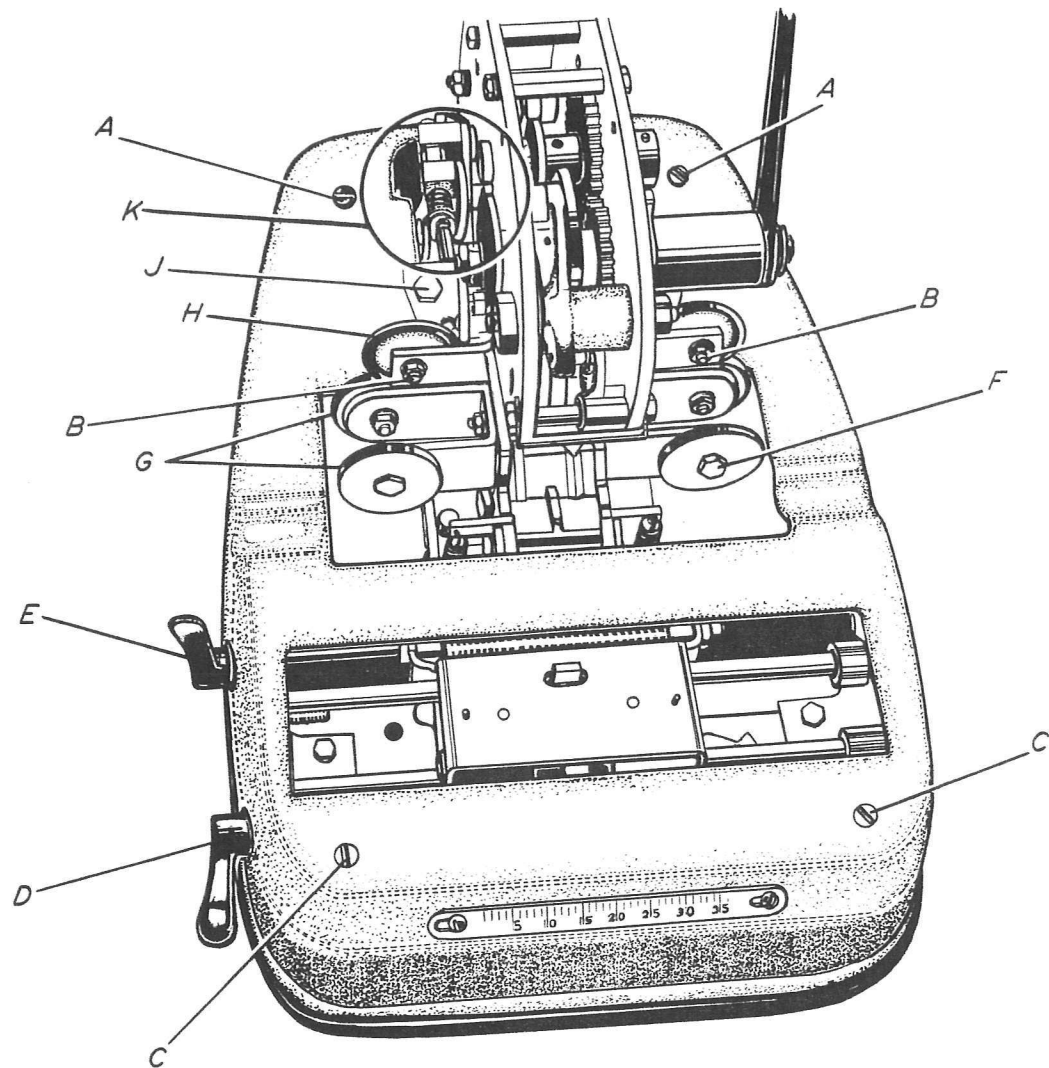


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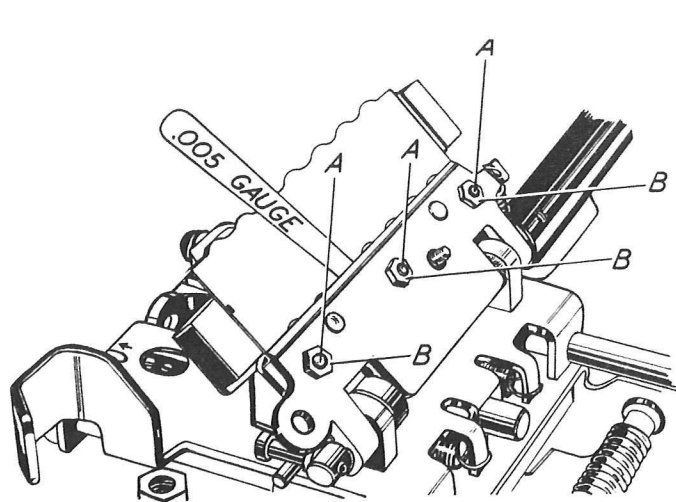


Figure 5

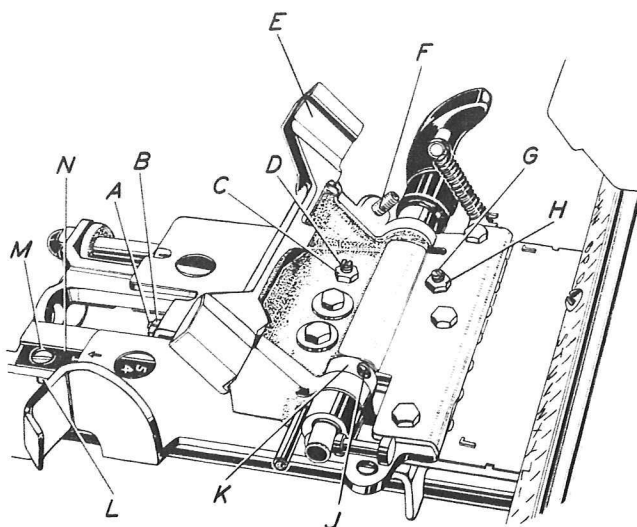


Figure 6

Fig.

4

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6

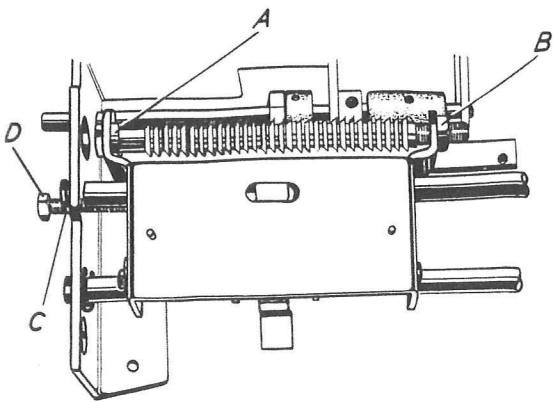


Figure 7

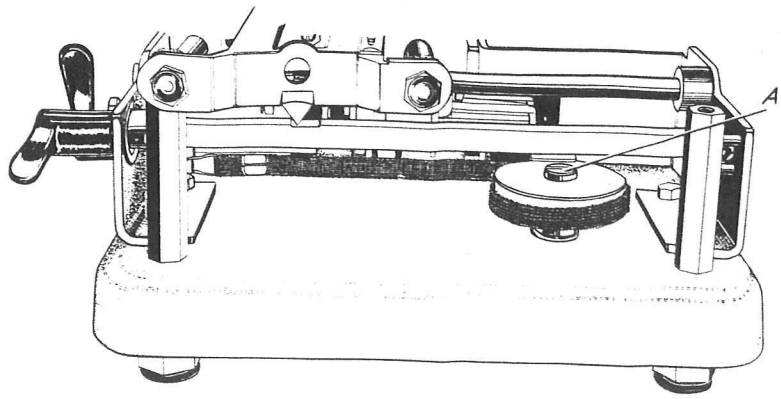


Figure 8

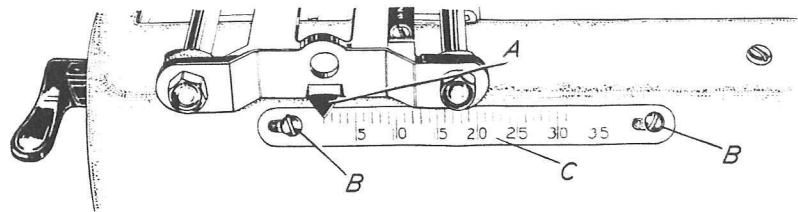


Figure 9

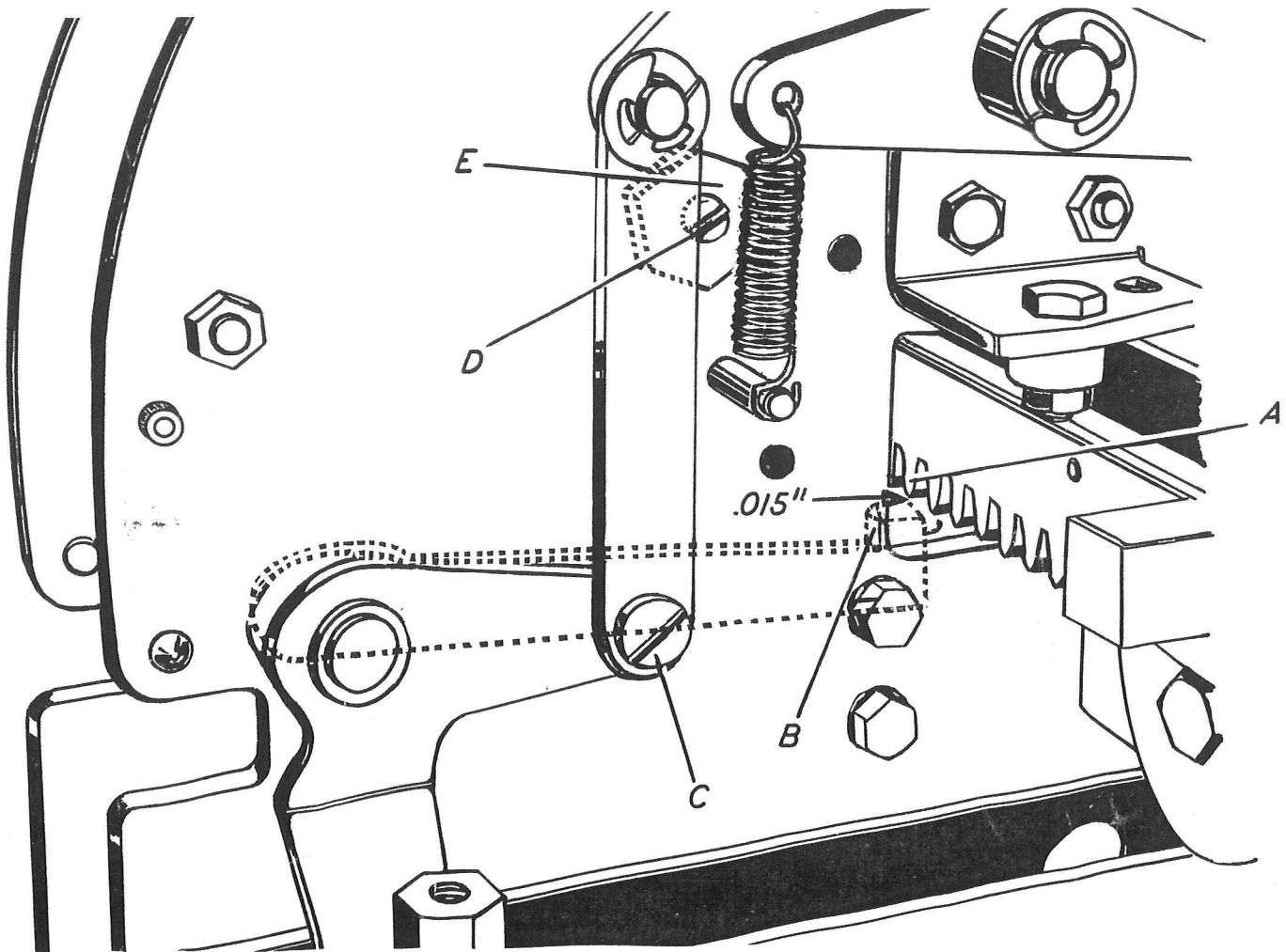


Figure 10

Fig.

7

8

9

10

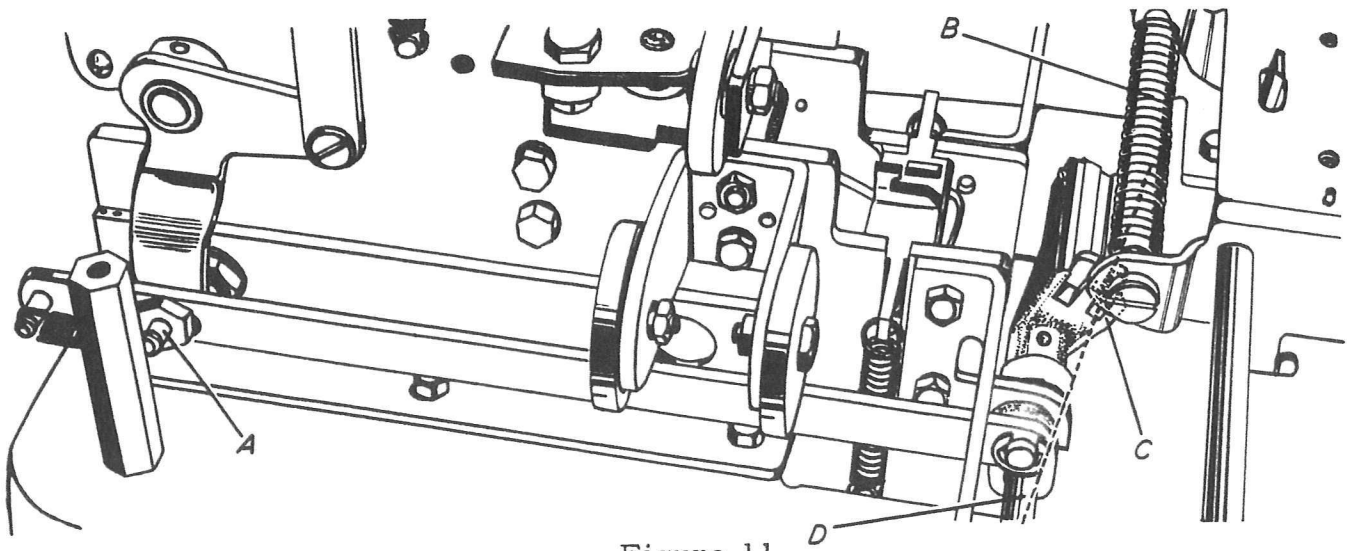


Figure 11

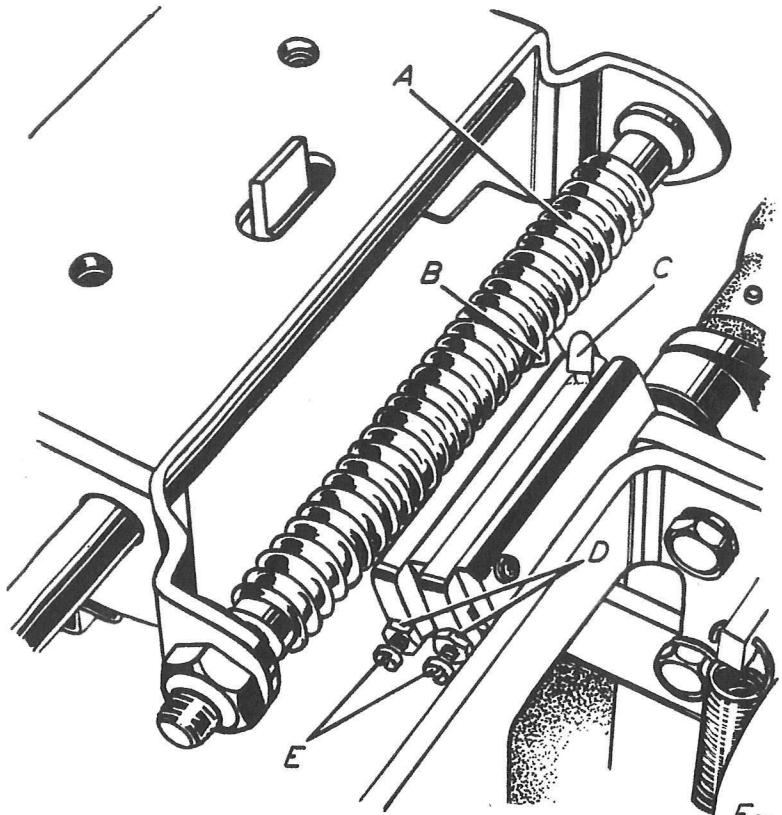


Figure 12

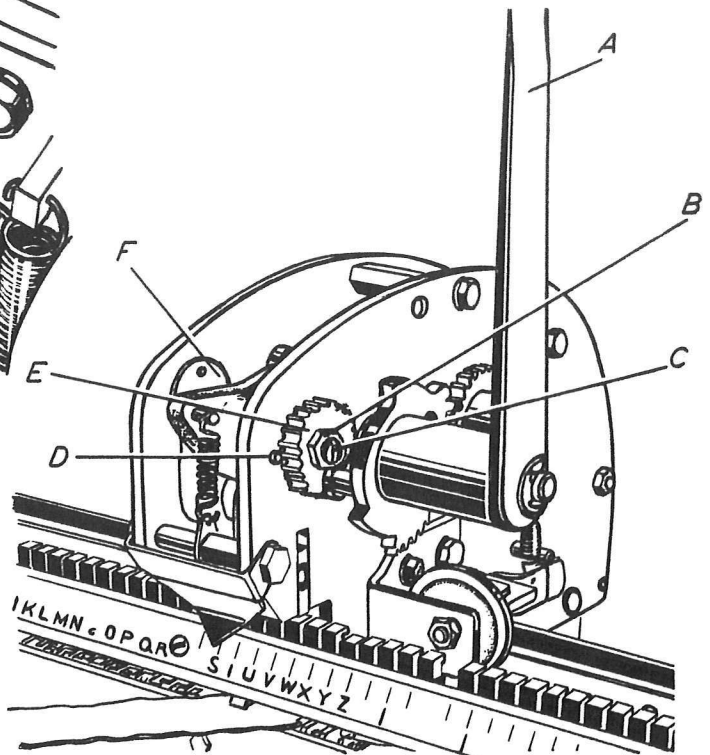


Figure 13

Fig.

11

12

13

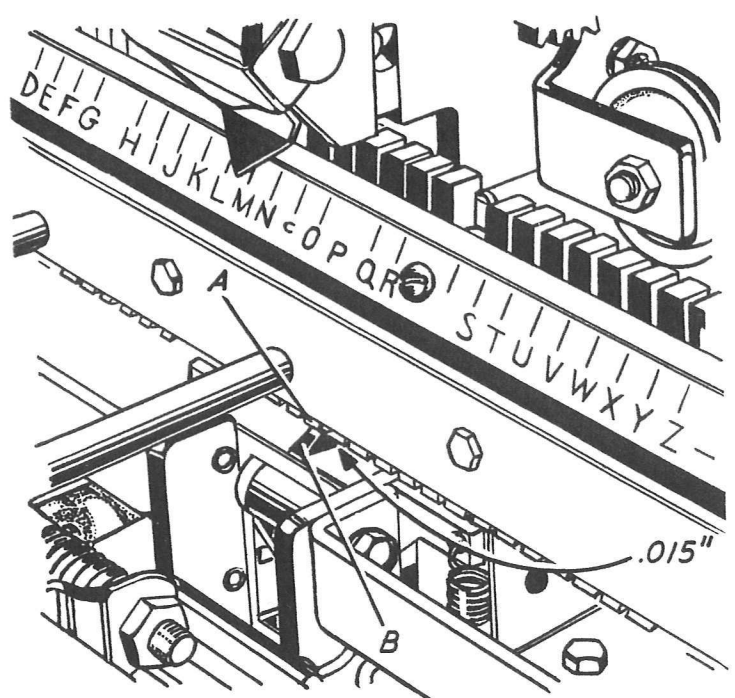


Figure 14

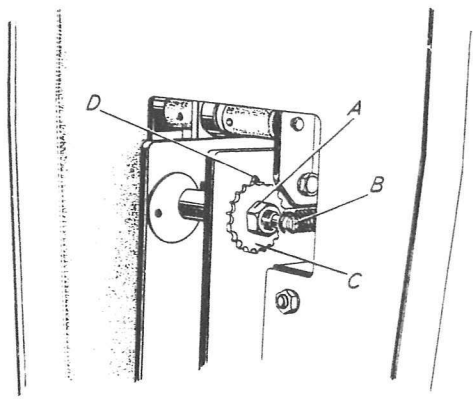


Figure 15

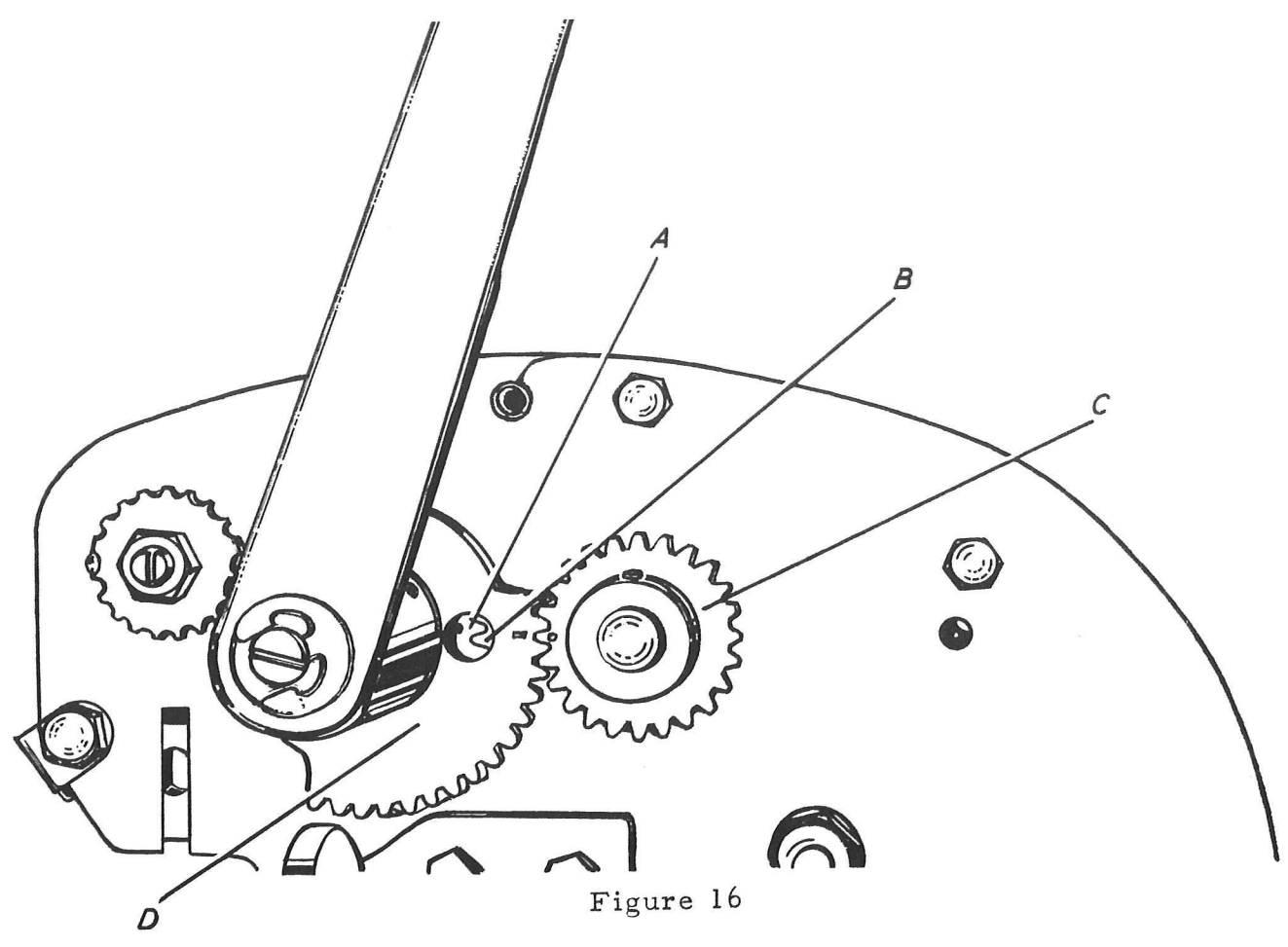


Figure 16



Fig.

14

15

16