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INSTRUCTION BOOKLET NO. 19

THE MORSE PRINTER

Models :

No. 1-T TAPE PRINTER.

No. 1-P PAGE PRINTER.

CREED

Creed & Company Limited

TELEGRAPH HOUSE,

CROYDON.

2.5.04

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THE MORSE PRINTER.

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THE MORSE PRINTER.

The Creed Morse Printer is the standard printer for translating Morse signals in a perforated tape into Roman characters, printed upon a paper tape or in page form on a paper roll.

It consists of mechanism to feed and control the perforated tape, mechanism to select from the perforations and mechanism to translate this selection into print.

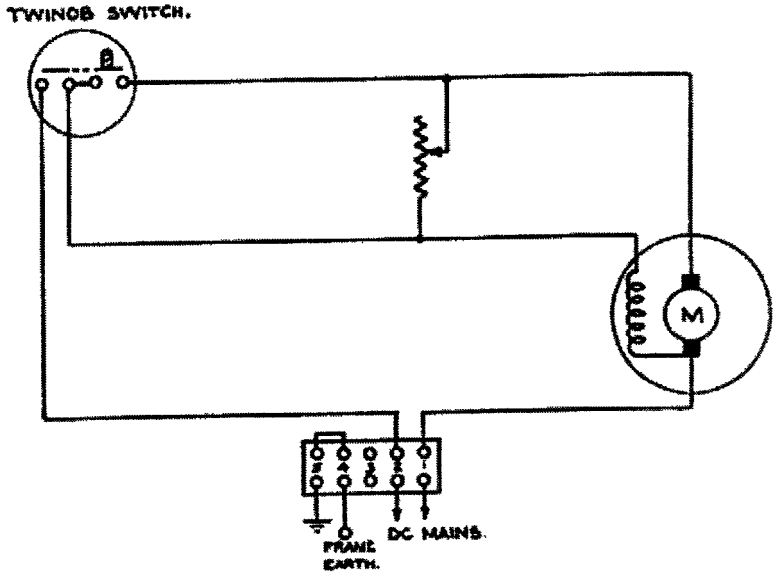
Model No. 1T prints upon a paper tape $\frac{3}{8}$ in. or $\frac{1}{2}$ in. wide and will operate satisfactorily at 100 words per minute. Its motor is rated at $\frac{1}{8}$ h.p., and consumes 120 watts, and both the printer and motor are mounted on an aluminium base fitted with a metal tape drawer with a recess for small tools. The types are inked by means of small rollers, which can be changed readily when exhausted.

The Page Printer (Model 1P) has fitted, in place of the tape printing attachment as supplied on Model 1T, a simple page printing paper carriage and feeding mechanism. The return of the paper carriage, when the end of a line of printing is reached, is controlled by a carriage return signal, which is transmitted over the line. Simultaneously, the platen is turned and the paper fed upwards.

The Page Printer is normally mounted on a pedestal, and the driving motor, which is rated at $\frac{1}{8}$ h.p. and consumes approximately 120 watts, is placed on a shelf beneath the Printer. It is inadvisable to run this machine at more than 80 words per minute.

The perforated tape from the Creed Morse Reperforator is fed into the Printer by first pushing in the non-stop check lever with one hand, thus holding the selectors down, and feeding the tape along the guide plate with the other until the tape engages with the tape feed sprocket wheel, which will then automatically feed the tape forwards. When engagement is made the non-stop check lever should be released allowing the selectors to operate.

The Creed Morse Printer prints one sign per revolution, i.e., the figure o is printed in the same time as the letter E. Also it pulls through only one space of blank tape per revolution, so that blank spaces on the perforated tape represent loss of time in printing. For this reason not more than five spaces should be left between messages. Longer spaces, besides causing delay in printing, cause a delay in gumming, the gummer having to tear off the long portion between messages.



Rhostat Value
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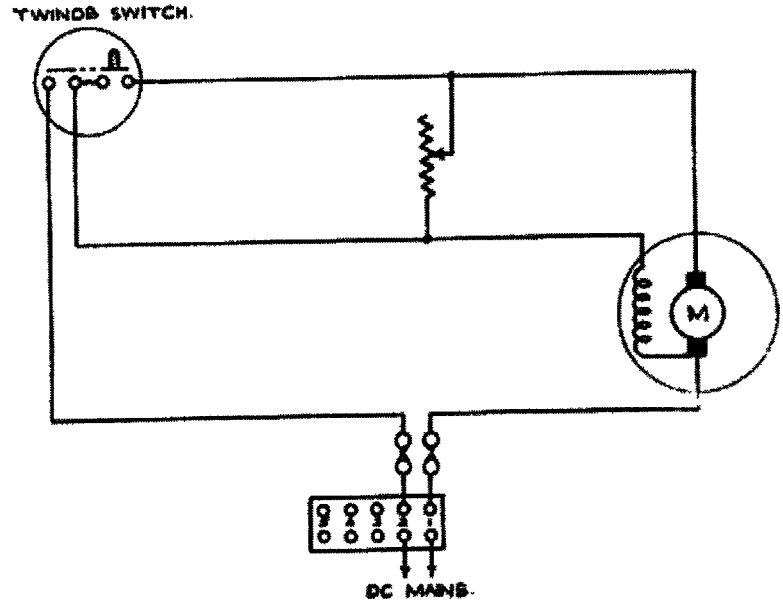
1000 ohms for 220 volt. supply

TAPE PRINTER WIRING DIAGRAM



Rhostat Value
300 ohms for 100 volt. supply
1000 ohms for 220 volt supply

PAGE PRINTER WIRING DIAGRAM.

Fig. 1.

OPERATION.

The tape from the Creed Morse Reperforator is passed into the Printer as shown in Fig. 2, and is fed forward, letter by letter, in a guide way over a series of ten pairs of selectors (a pair of which is shown).

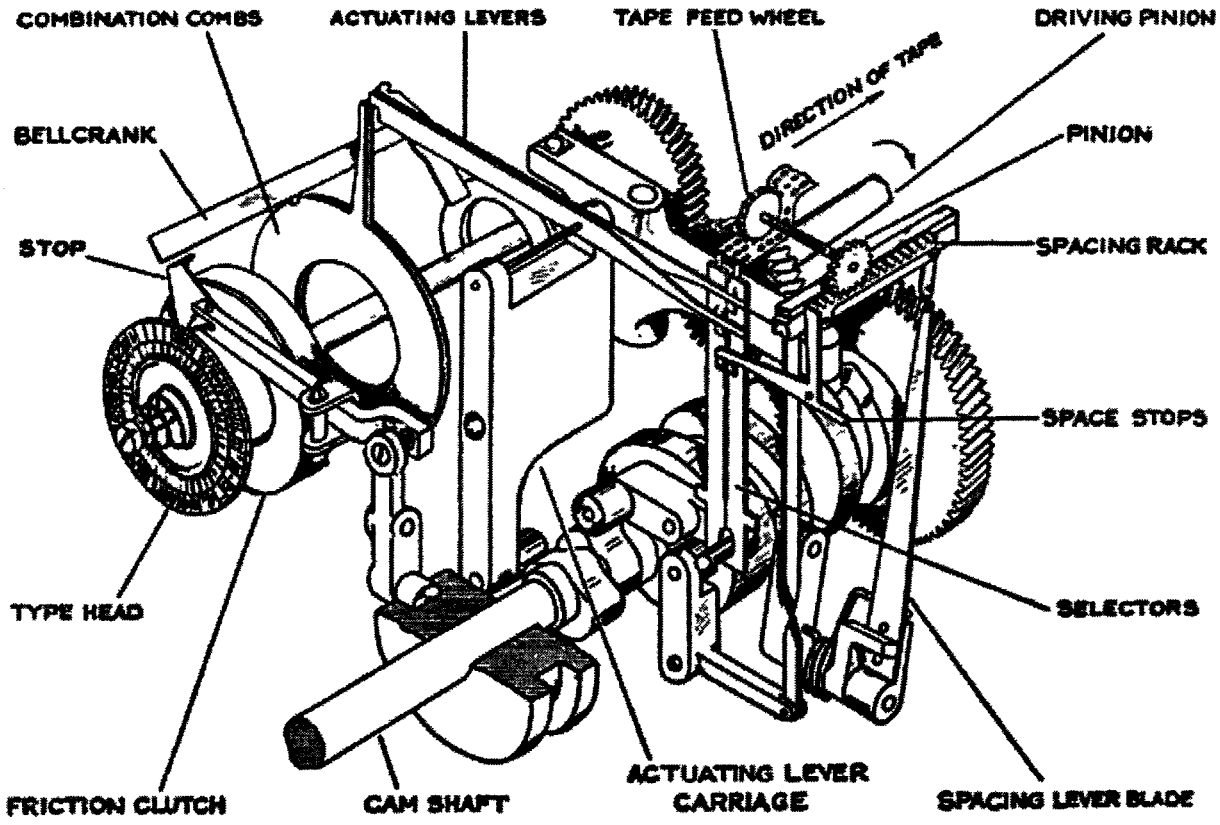


Fig. 2.

When a selection is being made these selectors are permitted to rise under the action of springs (not shown) until their ends either come into contact with the tape or pass through a perforation in the tape, so that some move upwards further than others.

Engaging with each selector is an actuating lever, pivotted at its centre on the actuating lever carriage. As a result of the upward movement of the selectors, the further extremities of the actuating levers are set in one of two positions, depending on whether the selectors controlling them have passed through a hole or not. When moved to the lower position they are

brought in line with the tops of the combination combs and, on being moved to the left by the actuating lever carriage, turn these combs through a small angle.

When in the upper position, the extremities of the actuating levers in their movement to the left, pass over the combs without moving them.

Each of these combination combs is slotted on its edge with a different arrangement of slots, and can be made to occupy one of two positions, one of which, in combination with other selected combs, opens a longitudinal slot in the whole series of twenty combs, and permits a spring-controlled bellcrank to drop in.

Passing through the axis of the drum is a spindle which continually rotates the typehead and type stop through a friction clutch.

When the selected combs have opened a longitudinal slot and permitted a bellcrank to drop, the outer end of the latter is projected into the path of the stop, thus arresting the rotating typehead and causing the clutch to slip.

A cam on the main shaft is timed to actuate a hammer after the typehead has ceased to revolve, and thus causes it to strike the back of that particular type directly opposite the paper, and so record an impression.

There are actually fifty-four radial positions round the circumference of the combs. Two of these are taken up by the comb extension, two others are allotted to blank types, one corresponding to the selection of a space, the other to no tape or reversals, and on page machines one to the selection of the carriage return and line feed signal. Thus on tape machines the total number of printing positions available is fifty and on page machines it is forty-nine.

The perforated tape is fed forward by a star-wheel fitted to a small spindle carrying a toothed wheel, which is rotated as required by the movement of a cam-controlled rack.

This rack is given a forward motion for feeding purposes, but is disengaged from the toothed wheel on its return so that the tape is only fed in one direction.

The extent of the forward movement of the rack is controlled by its preceding backward movement, and this is limited by the distance to the first space signal, that is, the length of a letter.

To provide for this limit there is a group of ten space levers or space stops normally in the path of the rack, and preventing its backward movement.

Each space stop is also in the path of one pair of selectors, and when either selector of a pair passes through a perforation in the tape, the corresponding space-stop is moved out of the path of the rack.

Hence with any letter or figure of the International Morse Code there is a clear backward path for the feed rack until it reaches a space signal, or a portion of the perforated tape bearing centre-holes only, in which case no space stops are moved.

It will thus be seen that the length of the forward feeding movement is controlled by the distance the rack travels back to the first unmoved space stop.

On the tape model, printing takes place on a small circular rubber-faced platen, which is moved round one letter space per revolution of the cam shaft by means of a feed pawl working on a ratchet wheel.

On the page model, in place of the small circular platen, is a typewriter platen mounted on a suitable carriage.

The platen bracket is supported by two pivots arranged so that the bracket may be dropped back clear of the type-head to permit of the renewal of the inking rollers and the cleaning of the types.

The bracket is held in its operating position by two spring blades which engage with slots in two specially shaped screw-heads on the base. The height of these screws is variable, thus giving an adjustment of the distance between the type face and the platen. The blades may be disengaged from the screws by pressing them sideways with the thumbs.

The bracket may be completely removed from the base by withdrawing the two pivots, which are screwed in. With the pivots out, it is possible to slide the bracket from its locating faces on the base. In doing this, the trunnion rod which operates the carriage is withdrawn from the trunnion.

The mechanism is connected to the main feed lever on the base of the machine through a universal joint. The reciprocating motion of the feed lever is transmitted through suitable links to the feed pawl, which engages with the ratchet wheel attached to the spring drum. This drum also carries a rack-toothed wheel, which meshes with a corresponding rack on the platen carriage. Mounted parallel to the link, which operates the feed pawl, are two other links carrying dogs, which, when depressed, engage with the clutch cross head and partake of its motion. One of the links is connected to the line feed mechanism, and the other to a lever, which throws the feed pawl and its associated retaining pawl out of engagement with the ratchet wheel. The carriage return control lever is mounted on the base of the machine with one end held by spring pressure against the lower edge of the bellcrank which responds to the carriage return signal. The other end projects beyond the base and over the two dogs.

When the Printer is in operation the carriage is fed along, one letter at a time, for each revolution of the cam shaft, and in doing so winds up the carriage return spring contained in the drum. On the arrival of the carriage return signal the bell-crank above the control lever drops into its slot and the control lever, under the impulse of the spring, follows it, thus bringing the dogs, which are normally at rest, into engagement with the oscillating clutch cross head.

The movement thus imparted to the dogs causes one of them, through its associated link, to rock the line feed lever, causing the line feed pawl to turn the platen shaft. The other dog disengages the feed and retaining pawls, thus allowing the drum to revolve under the impulse of the carriage return spring, and return the platen to a position ready to start a fresh line. The auxiliary links connected to the dogs have suitable extensions whereby the paper may be fed up, or the carriage returned, by hand if required.

DISMANTLING AND RE-ASSEMBLING INSTRUCTIONS.

1. TO REMOVE THE PAGE ATTACHMENT.

(1) Remove the pivot screws, one from each end, and lift the carriage from the machine, disengaging it from the cross head.

2. TO REMOVE THE SELECTING HEAD.

(1) Unhitch the actuating lever carriage spring from the lever carriage.

(2) Remove the three fixing screws from the base of the unit and lift the unit clear of the machine.

Note.—If the unit is not to be dismantled, a spare comb stop rack should be slid over the actuating bars before the removal of the unit.

3. TO DISMANTLE THE SELECTING HEAD.

Note.—Do NOT remove :

(a) The actuating bar pivot pin.

(b) The space stop pivot pin.

(c) The springs from the selectors and/or the spring anchor pin.

Each actuating bar has been set to suit its associated selector and each space stop to suit its own associated pair of selectors. It is very important that their relationships be retained, or difficulty will be experienced when reassembling.

(1) Remove the four cam rollers.

(2) Remove the actuating lever carriage pivot pin and remove the carriage *complete* with the bars.

(3) Remove the actuating lever carriage spring.

(4) Lift the selector spring anchor pins off their support pins.

(5) Remove the spacing rack guide lever link screw from the top of the spacing rack guide lever link and remove the link from the guide.

(6) Remove the top of the spacing lever blade from the spacing rack link and swing the blade clear of the rack.

(7) Remove the space stop bracket (2 screws) from the side of the selector face plate, complete with the space stops and springs.

(8) Remove the selector face plate (4 screws) complete with the selector guide plate and the detachable slip.

(9) Remove the retaining plate from the selector cam lever.

(10) Remove the selector returning bar and lift the selectors out in two groups of ten selectors each.

(11) It is not normally necessary to dismantle the unit further.

4. TO RE-ASSEMBLE THE SELECTING HEAD.

(1) Replace the selectors in two groups; separate one group from the other by means of the " Detachable Slip " placed on edge between them.

(2) Replace the selector returning bar, with the pin upwards, and secure it with its keep plate.

(3) Replace the selector spring anchors on their support pins.

(4) Replace the tape feed spindle in the selector face plate.

(5) Replace the selector guide plate, ensuring that it is fully engaged with its locating pin, and feed the selectors into their respective holes.

(6) Replace the selector face plate.

(7) After ensuring that the face plate is seating fair and square on the supporting casting, replace the four fixing screws.

(8) Remove the detachable slip from between the selectors and check that the selectors have perfect freedom of movement.

(9) Position the space stops in their respective racks, slide the spacing rack in front of the space stops, and hold the space stops back with the spacing rack.

(10) Ensure that the space stop bracket locating key is in the keyway *in the selector face plate.*

(11) With the selectors in the up or raised condition, replace the space stop bracket, ensuring that the space stops engage with the lower pips on the selectors.

(12) Replace the two fixing screws and ensure that the space stops and selectors have freedom of movement.

(13) With the selectors held down, replace the detachable slip.

(14) Re-engage the spacing rack guide lever link in the spacing rack and replace the shouldered screw.

(15) Re-engage the spacing lever blade with the spacing rack link and replace the retaining ring.

(16) Replace the actuating carriage spring on the casting.

(17) Mount a spare comb rack C.P. on the actuating bars and slide the rack to the selecting head end of the bars to set them at the correct pitch.

(18) Insert the actuating bars into the selectors, engaging them with the pairs of pips on the selectors.

(19) Replace the actuating lever carriage pivot pin.

(20) Ensure that with the selectors both up and down, the actuating bars move in and out perfectly freely.

(21) Replace the cam rollers. The two long rollers, with their shoulders away from each other, should be mounted respectively on the cam levers of the actuating lever carriage and the selector lever.

Mount the short roller, without a chamfer, on the spacing cam lever and the fourth roller, with a chamfer at each end, on the cam lever of the spacing lever blade.

(22) Do not tension the actuating lever carriage spring until the unit has been replaced.

5. TO REMOVE THE COMBINATION HEAD.

(1) Remove the gear guard (2 screws).

(2) Remove the inker bracket (2 screws).

(3) Remove the fixing screws of the combination head and rear bearing and lift the complete unit from the machine.

6. TO DISMANTLE THE COMBINATION HEAD.

(1) The comb rack is fitted with a small, loose plate, which acts as a supporting plate for the comb returning pins.

By means of this plate the twenty returning pins and springs can be removed together with the comb spring bracket, leaving the comb rack on the combination head.

To remove the pins and springs, first remove the clamp plate from the typehead side of the bracket, then insert a pair of opened tweezers between the comb rack and the pin supporting plate. Whilst supporting the pins with the first finger of the left hand, compress the twenty springs simultaneously. This will pull all the twenty pins out of the rack and leave the assembly free to be lifted vertically clear of the unit.

(2) Slacken the fixing nut beneath the comb stop plate and lift the comb rack clear of the unit.

(3) Tap out the taper pin from the gear wheel and remove the gear from the typehead shaft.

(4) Remove the type hammer (2 screws), complete with cam lever.

(5) Tap out the typehead and clutch shaft from the rear end.

(6) Remove the comb stop plate.

(7) With the small end of the "clutch shoe holder," remove the body bush from the rear bearing.

(8) Remove the rear bearing, complete with bellcrank lifting lever and washer.

(9) Remove the bellcrank springs from the bellcranks, leaving them anchored to the support plate.

(10) Lift out the bellcranks, laying them out in order as they are removed.

(11) With the large box spanner provided, unscrew the body lock nuts and remove the remainder of the loose items from the unit. Care must be taken not to lose any of the twenty-one distance rings between the combs.

(12) Do not remove the locating pin from the side of the front plate, nor the circular body from the mounting casting, unless absolutely necessary.

7. TO RE-ASSEMBLE THE COMBINATION HEAD.

(1) Replace the narrow distance ring, followed by :—

Wire ring.
Comb No. 20.
Wire ring.
Comb No. 19.
Wire Ring,
and so on.
Comb No. 1.
Wire Ring.
Inner bellcrank support plate.
Wide distance ring.
Outer bellcrank support plate.
Bellcrank bearing.
2 locknuts, leaving them slack, so that the bellcrank bearing is friction tight.

(2) By means of a bellcrank inserted from the front of the head, line up the outer bellcrank support plate so that it is neutral with the slots in the front of the body. Check in several positions.

(3) Tighten the two locking nuts and ensure that the outer bellcrank support plate is still correctly positioned.

(4) Replace the bellcranks in the slots from which they were removed. Ensure that *every* bellcrank can drop by its own weight.

(5) Replace the bellcrank springs, ensuring, if the spring anchor holes are not dead in line with the bellcranks, that the spring to the right of the comb extensions (looking from the gear end) is leaning away from the comb extensions.

(6) Replace the bellcrank lifting collar washer, *with the chamfered face towards* the bellcranks.

(7) Replace the rear bearing and body bush, but do not tighten the latter nor replace the typehead shaft.

8. TO REPLACE THE COMBINATION HEAD.

(1) Position the combination head, on its key. Replace the six fixing screws, tightening the front two screws only.

(2) With the small end of the "clutch shoe holder," tighten the body bush and clamp the four fixing screws in the rear bearing.

(3) Slacken the clamping screws and adjust the knurled nut of the bellcrank lifting collar until, when in the position of maximum lift, the bellcranks are just clear of the combs and allow them free movement. Excessive clearance is unwanted and throws an unnecessary load on the machine. Tighten the clamping screws.

(4) Replace the comb stop plate.

(5)—(a) Replace the comb rack, if pin support plate referred to in paragraph 6 (1) is fitted, but not the pins or springs.

(b) If the above plate is not fitted, *withdraw the top row of pins, resting the pins against the back face of the comb rack.* Replace the complete assembly, and, when finally clamped in position, replace the top row of pins in their holes.

(6) Replace the typehead and shaft.

(7) Replace the gear, complete with the thrust washer, on the typehead shaft and insert the taper pin.

(8) Replace the typehammer and bracket.

(9) Replace the inker bracket.

9. TO REPLACE THE SELECTING HEAD.

(1) Place the selecting head on its key, ensuring that the washer on the camshaft does not foul either the actuating lever or the selector lever cam roller. Secure with three fixing screws.

(2) With a spare comb rack placed on the actuating bars, to pitch them correctly, re-engage the actuating bars in the comb rack and ensure that the actuating lever carriage has freedom of movement.

(3) Replace the comb retaining pins and springs, in a reverse manner to which it was removed, on machines fitted with the additional support plate.

10. TO DISMANTLE THE PAGE ATTACHMENT.

(1) By means of the escapement pawl, situated behind and on the right-hand side of the drum, completely unwind the carriage spring.

(2) Remove the screw from the centre of the platen knob at the right-hand end of the carriage and remove the knob and the click wheel.

(3) Remove the fixing pin from the platen piston at the right-hand end of the spindle, with a brass punch. This is a parallel pin and may be punched out in either direction.

(4) Remove the locking ring from the top of the platen pawl link at the left-hand end of the carriage.

(5) Gently tap out the platen spindle from the right-hand end and remove the spindle, complete with bearing bush, and platen from the carriage.

(6) Remove the screw from the rear of the spring drum and tap the drum spindle through the casting.

(7) The removal of the remainder of the unit is self-evident. No attempt should be made to remove the carriage spring from its drum unless a new spring is to be fitted. Care must then be taken to keep the outer turn of the spring away from the drum cover fixing screws while it is being removed and replaced.

11. TO RE-ASSEMBLE THE PAGE ATTACHMENT.

(1) Replace any parts removed from the carriage casting.

(2) Replace the spring drum, securing it with the screw and washer.

(3) Wind up the spring drum by oscillating the crosshead, until the feed pawl rests on the blank tooth.

(4) Replace the carriage at the extreme left-hand end of the casting, engaging it with the track rail and the teeth on the spring drum but ensuring that the drum is not turned in the process.

(5) Insert the platen spindle from the left-hand end and after it has passed through the carriage replace the piston loosely on the spindle.

(6) After ensuring that the bush on the left-hand end of the spindle is correctly positioned, i.e. with the hole uppermost and the groove towards the front, reinsert the right-hand end of the spindle in the casting, simultaneously engaging the platen pawl link at the left-hand end.

(7) Replace the click wheel and platen knob on the right-hand end of the spindle and secure with the screw and washer.

(8) Re-engage the jockey roller spring.

(9) Replace the locking ring to secure the platen pawl link at the left-hand end of the carriage.

(10) Replace the piston fixing pin, ensuring that it enters freely. If difficulty is experienced turn the piston on the spindle and try again. It should be possible to insert a pin most of the way with finger pressure.

(11) By means of the slotted bush at the rear of the spring drum, rewind the drum sufficiently to ensure a speedy return of the carriage but without undue violence.

12. TO REPLACE THE PAGE ATTACHMENT.

(1) Unlink the carriage feed lever link from the feed lever C.P. and remove the latter from the base.

(2) Remove the trunnion rod from the cross head pin on the carriage and fit it in the feed lever C.P.

(3) Replace the carriage on the machine and re-insert the pivot screws.

(4) Replace the feed lever C.P. and re-engage the trunnion rod with the cross head.

(5) Replace the locking ring to secure the feed lever C.P. and re-engage the carriage feed lever link.

(6) Lift the column feed rod C.P. at the back of the carriage, feed in the paper under the rod and around the platen and under the paper knife. With the platen friction roller removed, line up the paper with the paper coming up the back of the machine. Position the clips of the column feed rod C.P. so that they just touch the edges of the paper. Depress the column feed rod C.P. and replace the platen friction roller C.P.

(7) Check the adjustments in accordance with the Adjustment Section.

13. SLIP ATTACHMENT (MODEL 1T).

(1) To dismantle the slip attachment, first lift off the paper guide cap ; take off the spring ring on top of the platen pin and lift off the platen holder.

(2) Next remove the paper feed roller spring from the platen pin, and thus free the feed roller spindle.

(3) Remove the split ring from the bottom end of the feed roller spindle, and pull out the spindle from the feed roller spindle pivot.

(4) Unscrew the feed roller spindle nut, and lift off the paper feed pawl lever. When renewing the platen, first cut the existing one off its holder and slide the new one over the top of the holder into position.

ADJUSTMENTS

1. BELLCRANK LIFT.

By means of the knurled nut at the rear of the combination head, adjust the bellcrank lift so that the combs can move freely beneath them when the cam has lifted the bellcranks to their maximum height. The clearance between the combs and the bellcranks should be kept to a minimum. Retighten the nut clamping screw.

2. SPACING RACK.

By means of the small screw at the front end of the spacing rack, adjust the final position of the rack so that the holes in the perforated tape are central with the peckers.

3. CARRIAGE FEED.

Adjust the retention pawl pivot bush, located behind the rear plate of the carriage, so that when the feed pawl is completely fed there is a .012" gap between the retention pawl and the tooth on the feed wheel. Clamp the pivot bush with the clamping screw. Replace the plate with the washers *between* the plate and the casting.

4. PLATEN FEED PAWL.

By means of the adjustable arm at the left-hand end of the carriage, set the feed pawl so that, with the cross head moved completely to the right, by the machine, and with the line feed dog in engagement, the line feed wheel is fed two teeth and the jockey roller is seated snugly in the click wheel.

Ensure that in the rest and actuated positions the adjustable lever, at the left-hand end, does not foul the casting.

5. TYPEHAMMER.

By means of the locknuts on the typehammer, adjust its position so that it is just clear of the back of the types.

6. PLATEN.

By means of the adjusting screws at the sides of the machine, adjust the platen, forwards or backwards, until the printing is uniform in strength at both the top and the bottom of the types. A forward adjustment will strengthen the top of the printing and *vice versa*.

POSSIBLE FAULTS AND RECTIFICATION.

WRONG LETTERS.

These may be due to the bellcranks not being lifted high enough to clear the combs when they are moved.

MISSING LETTERS.

These may be due to the space stops wearing and the feed rake slipping past them. This happens especially at high speeds. They may also be caused by the end of the feed rake wearing and feeding the tape too far forward and therefore obstructing the movement of the selectors.

In any trouble with the selecting head, it is as well first of all to ascertain that the selectors are all rising and falling freely. Attention should then be given to the feeding mechanism to see that the tape is fed so that the holes are over the selectors. Then look to see that the space stops function properly, i.e., are free in their slots, and arrest the rake properly.

BREAKAGE OF TYPES.

Breakage of the letter P and those types near to it, such as N. O. Q. R. etc., has been found to be due to mis-selections passing through the machine. When blank tape is passing, the typehead is arrested in a certain position corresponding to the space signal. If a mis-selection immediately follows the space signal, the gear ratio of the typehead is such that the hammer will fly out and strike the types at a position corresponding to the letter P or thereabouts, whilst they are revolving. Although the hammer is fitted with a spring safety device the continual tapping on the letter P and adjacent types eventually causes their breakage. The mis-selections referred to are generally key signals on the tape between messages. We recommend that particular attention should be given to the strength of the flat spring behind the type hammer, so that it is as light as possible, and that care should be taken to avoid running key signals through the Printer.

BAD PRINTING.

This may be due to oil getting on the type faces, or to the type hammer being too far away from the type wheel, or because the paper is too far from the type wheel. The correct distance between the paper and the types is 1/32in., and between the hammer and the types .02in.

CARRIAGE TROUBLES (MODEL 1P only).

Excessive lubrication of the paper carriage mechanism or the use of a too heavy grade of oil is in many cases the cause of carriage troubles.

The paper carriage mechanism of the Creed Morse Printer consists entirely of slow-moving parts and only the lightest lubrication is required.

This applies particularly to :—

(1) The shaft carrying the platen ;

(2) The piston which fits the dash-pot on the platen ;

(3) The control dogs.

Excessive lubrication, or the use of heavy oil on these parts will cause sluggish operation and faulty feeding of the paper.

Referring to items (1) and (2), only the lightest oil should be used and this should be applied in very small quantities. Care should be taken to keep the piston free from dirt.

If dirt is allowed to accumulate on this part the platen will be stopped on its return travel before it reaches the end of the line ; the feed and retaining pawls will remain disengaged, and the platen will not be fed forward on the commencement of a fresh line.

Referring to item (3), the control dogs are actuated by spring controlled levers and are also returned to their normal positions by springs.

It is, therefore, highly important that they should operate freely on their pivots and that undue friction caused by the use of heavy lubricating oil should be avoided.

The faults which can be caused by clogged dogs are :—

(a) Failure of line feed due to the fact that the spring operating the line feed lever is not strong enough to press the dog into engagement against the extra friction caused by the clogging.

(b) Continuous line feed due to the returning spring on the dog not being strong enough to disengage the dog.

(c) Failure of carriage-return, due to the spring operating the carriage-return lever not being strong enough to press the dog into engagement.

MAINTENANCE.

Oil working parts and bearings with No. 2 Lubricant.

A drop of paraffin placed on the inking wheel will considerably lengthen the life of the wheel and cause a better impression to be given.

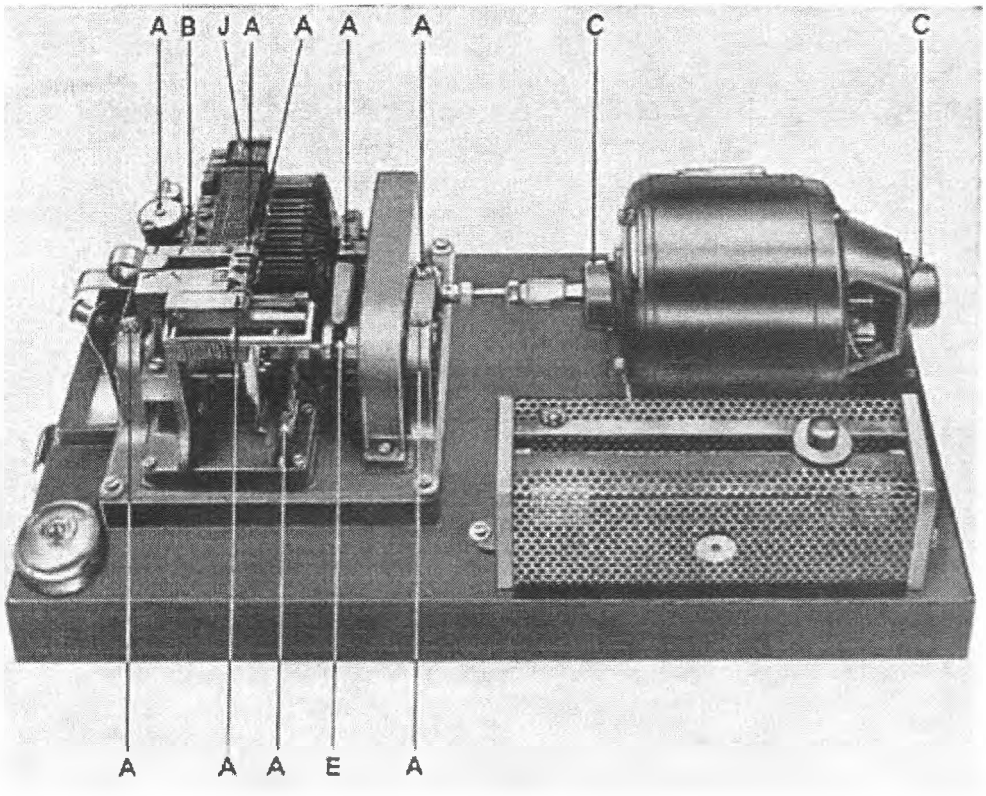
The Creed typehead clutch requires grease once every four weeks. The grease gun supplied with the machine enables this operation to be done easily and without dismantling the clutch.

In order to fill the gun, the plunger should be withdrawn and the barrel half filled with " Crimsengere "; the plunger should be inserted and pushed in until the shoulder is flush with the top end of the gun. Surplus grease should be wiped from the end of the gun. The amount left in the barrel will then be a suitable charge for the clutch.

One of the screw holes on the clutch body is marked with a line or dot. Removal of the screw from this hole uncovers a channel which leads into the clutch chamber.

Hold the gun by the knurled portion between finger and thumb, press the nozzle into the hole in the clutch body, holding the gun at a slight angle so as not to damage the types. Then press the plunger down as far as it will go.

Full oiling instructions are given in the Lubrication Charts on pages 23 and 24.



MORSE TAPE PRINTER

MODEL 1-T.

KEY.

A. Fill the lubricators or oil holes every twelve hours with Lubricant No. 2.

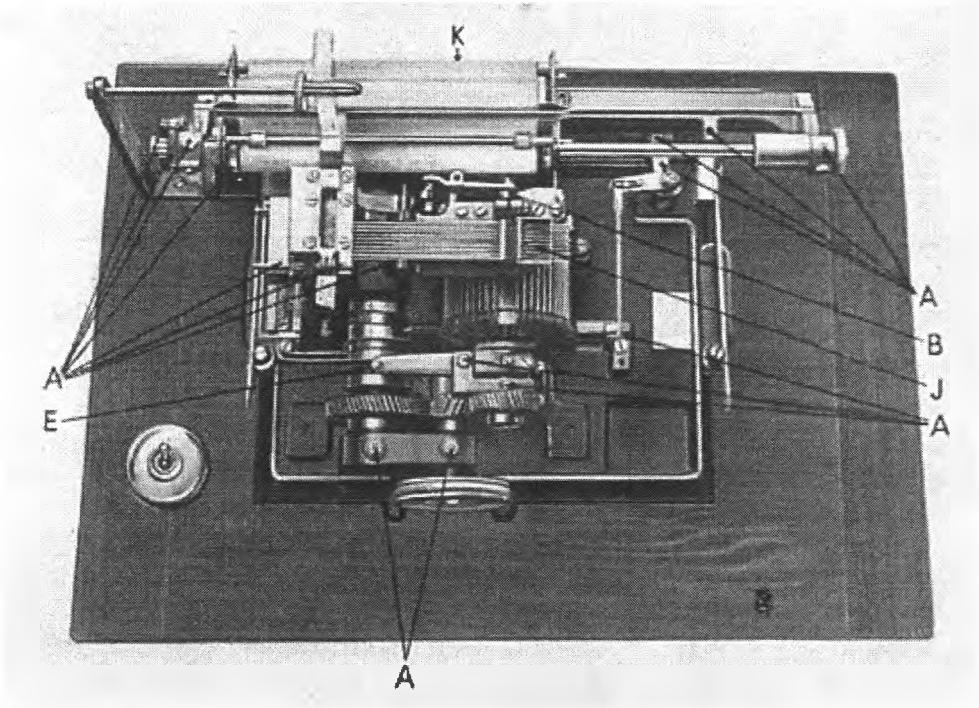
B. Grease to be inserted in the clutch about once every four weeks. One of the screw holes on the clutch body is marked with a line or dot. Removal of the screw from this hole uncovers a channel, which leads into the clutch chamber. Half fill the grease gun with " Crimsengere " then push the plunger down until the shoulder is flush with the top end of the gun and wipe off the surplus grease from the end of the gun. Insert the nozzle in the hole in the clutch body, holding it at a slight angle so as not to damage the types. Then press the plunger down as far as it will go.

C. The motor bearings require grease every six to twelve months. If a grease cup is provided, screw it down one turn once a month. If no grease cup, but a hole, insert grease with aid of a grease gun. Alternatively, the bearing cup should be removed once a year and repacked with grease.

E. Spread a few drops of Lubricant No. 2 along the cam tracks each day, so as to lubricate the rollers, levers, etc.

J. Apply a few drops of Lubricant No. 2 to the comb returning pins every twelve hours.

The following oils are recommended for Lubricant No. 2; Castrol XL. or Shell Oil CY.2 ;



MORSE PAGE PRINTER

MODEL 1-P.

KEY.

A. Fill the lubricators or oil holes every twelve hours with Lubricant No. 2.

B. Grease to be inserted in the clutch about once every four weeks. One of the screw holes on the clutch body is marked with a line or dot. Removal of the screw from this hole uncovers a channel, which leads into the clutch chamber. Half fill the grease gun with " Crimsengere " then push the plunger down until the shoulder is flush with the top end of the gun and wipe off the surplus grease from the end of the gun. Insert the nozzle in the hole in the clutch body, holding it at a slight angle so as not to damage the types. Then press the plunger down as far as it will go.

C. The motor bearings require grease every six to twelve months. If a grease cup is provided, screw it down one turn once a month. If no grease cup, but a hole, insert grease with aid of a grease gun. Alternatively, the bearing cup should be removed once a year and repacked with grease.

E. Spread a few drops of No. 2 Lubricant along the cam tracks each day, so as to lubricate the rollers, levers, etc.

J. Apply a few drops of Lubricant No. 2 to the comb returning pins every twelve hours.

K. The oil hole for the spindle of the Spring Drum is situated midway along the carriage casting, but is liable to be overlooked, as the paper support and paper overhang. Oil every twelve hours with Lubricant No. 2.

The following oils are recommended for Lubricant No. 2; Shell Oil CY.2 ; Castrol XL.

SPARE PART LIST

FOR THE

MORSE PRINTER

WHEN referring to this list, it should be noted that the lettering C.P. affixed to part names indicates a complete part. A complete part consists of two or more separate parts assembled to form a convenient section or unit which may be easily attached to, or detached from, the machine.

The serial number of the instrument, which will be found on the name plate, must be quoted in all cases when ordering spares, as well as the name and number of the part required.

In the past, it has been found that the identification of Types has presented some difficulty. If the following instructions are carefully complied with no trouble will be experienced in ordering Types.

First quote the class of Type (" AQ ") and the style number by reference to the Type Style Chart (Fig. 24). In the latter, style numbers for Morse Page Printers will be found in the second column and for Tape Printers, in the fourth column. The character number, which can be ascertained from the Master Type Charts (Fig. 25 for large types, and Fig. 26 for small types), should be quoted last.

Thus an order for six large letters " K " for a Morse Tape Printer would read :—

6 Types AQ/306/11.

Bei allen Aufträgen für Ersatzteile sind die Nummer der Maschine, die sich auf dem Firmenschild befindet, sowie auch der Name und die Nummer des verlangten Teiles zu geben.

Dans tous les cas de commander des pièces de rechange, le numéro de la machine, qui se trouve sur le plaque, ainsi que le nom et le numéro de la pièce exigée, doivent être cités.

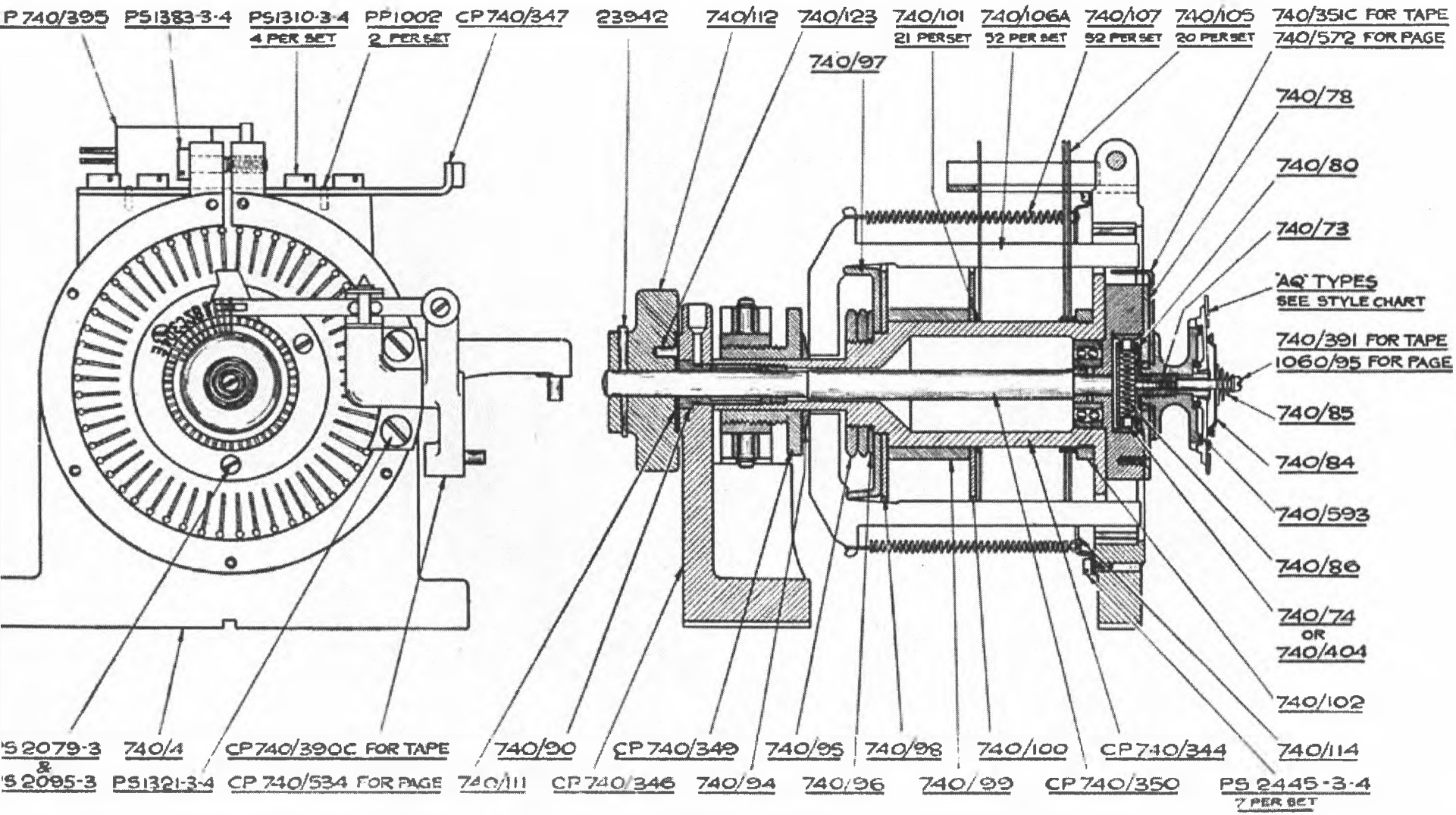
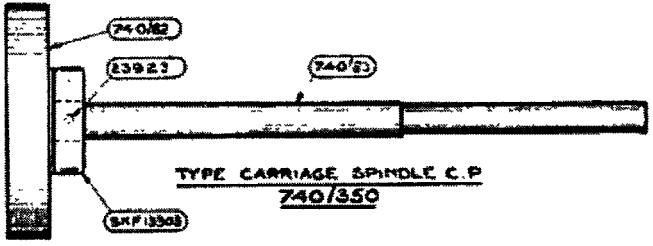
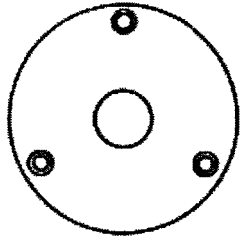


Fig. 3. Elevation and Longitudinal Section of Combination Head.



TYPE CARRIAGE SPINDLE C.P
740/350



CLUTCH PLATE
740/78

TAPER PIN
23923

TYPE CARRIAGE
BALL RACE
S.K.F. N°13303

1 OFF PS 2079-3 2 OFF PS 2095-3
CLUTCH PLATE FIXING SCREWS

TYPE CARRIAGE
CLUTCH SHOES
740/74

CLUTCH SHOES
(SPECIAL FOR HIGH SPEED MACHINES)
740/404

TYPE CARRIAGE
CLUTCH
740/75

TYPE CARRIAGE
CLUTCH SPRING
740/86

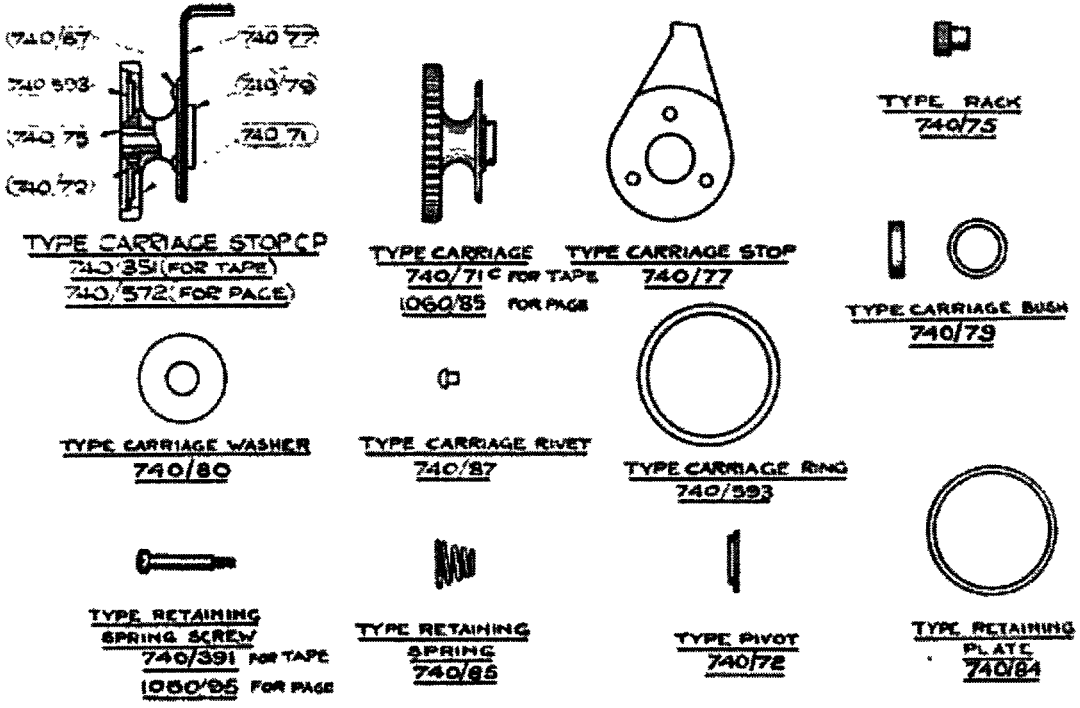


Fig. 4. Typehead Parts.

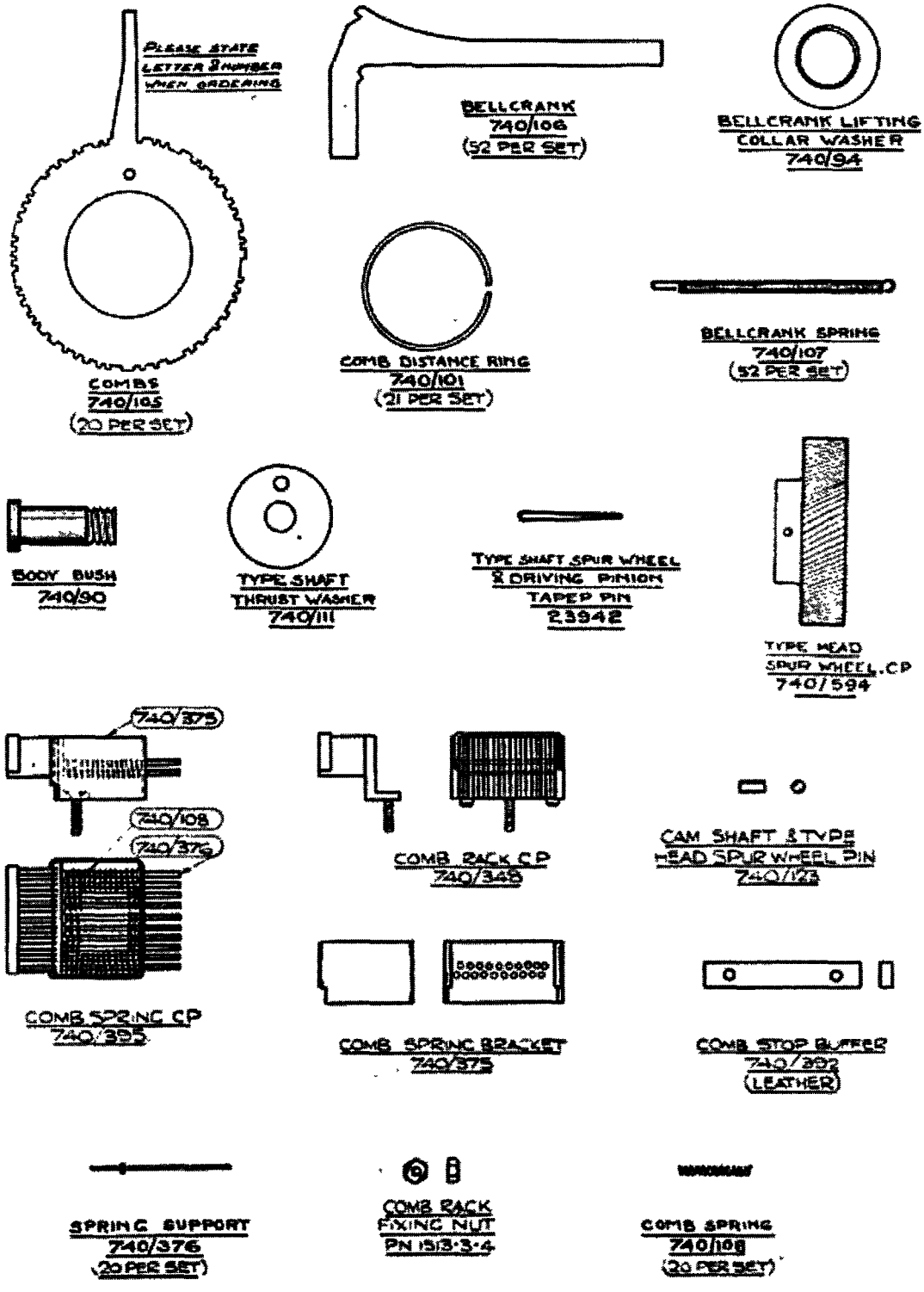


Fig. 5. COMBINATION HEAD PARTS.

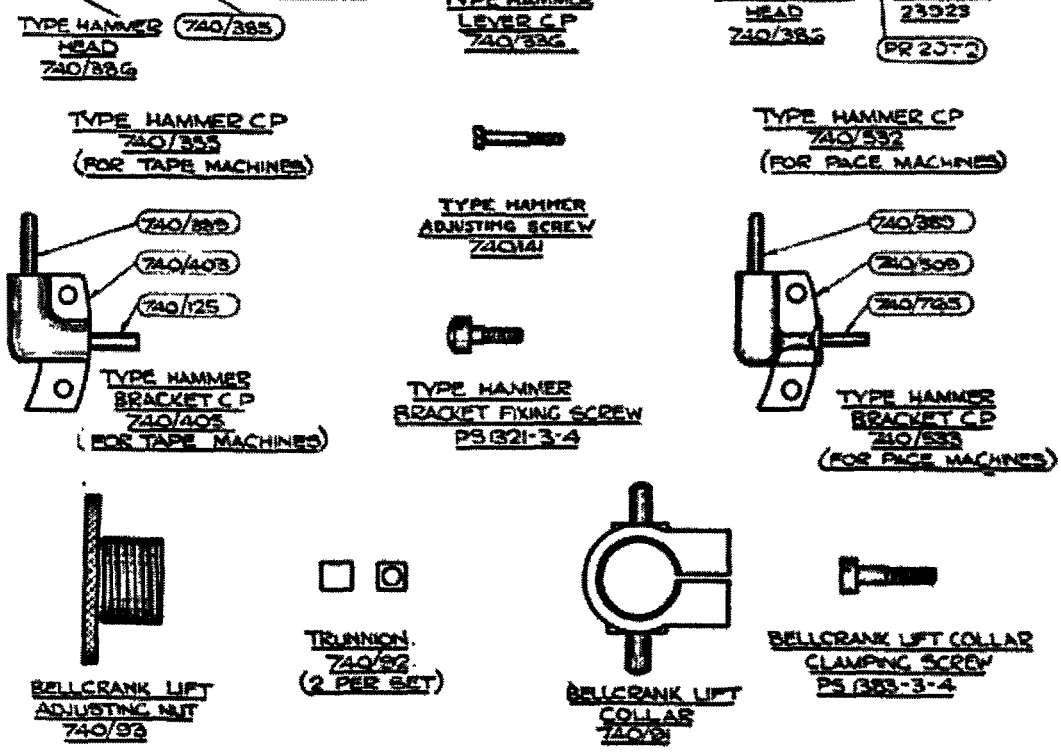
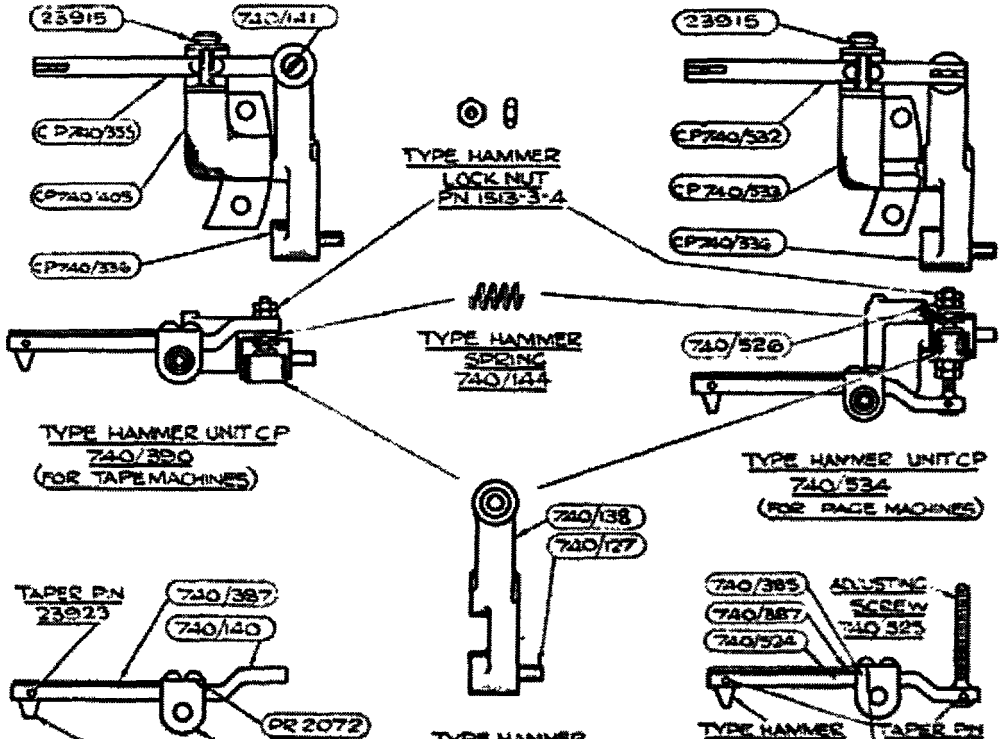


Fig. 6. Type Hammer Parts.


23915
740/141
CP 740/355
CP740/405
CP740/334
TYPE HAMMER LOCK NUT PN 1513-3-4
23915
CP740/532
CP740/533
CP740/334
TYPE HAMMER SPRING 740/144
740/526
TYPE HAMMER UNIT CP 740/390 (FOR TAPE MACHINES)
TYPE HAMMER UNIT CP 740/534 (FOR RACE MACHINES)
740/38
740/127
TAPER PN 23923
740/387
740/140
PR 2072
740/385
740/387
740/534
ADJUSTING SCREW 740/525
TYPE HAMMER
TAPER PN

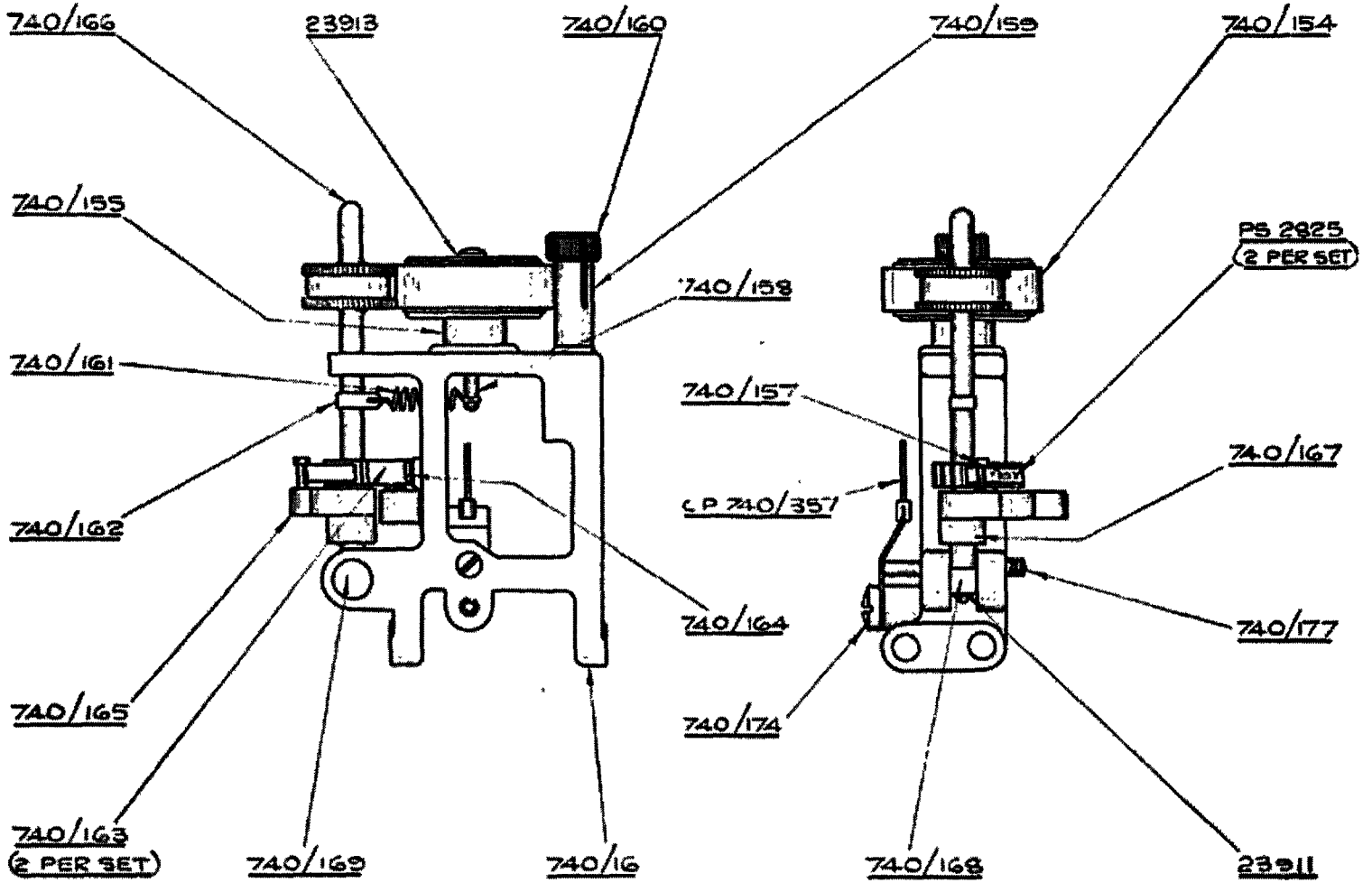


Fig. 7. PRINTING HEAD C.P.

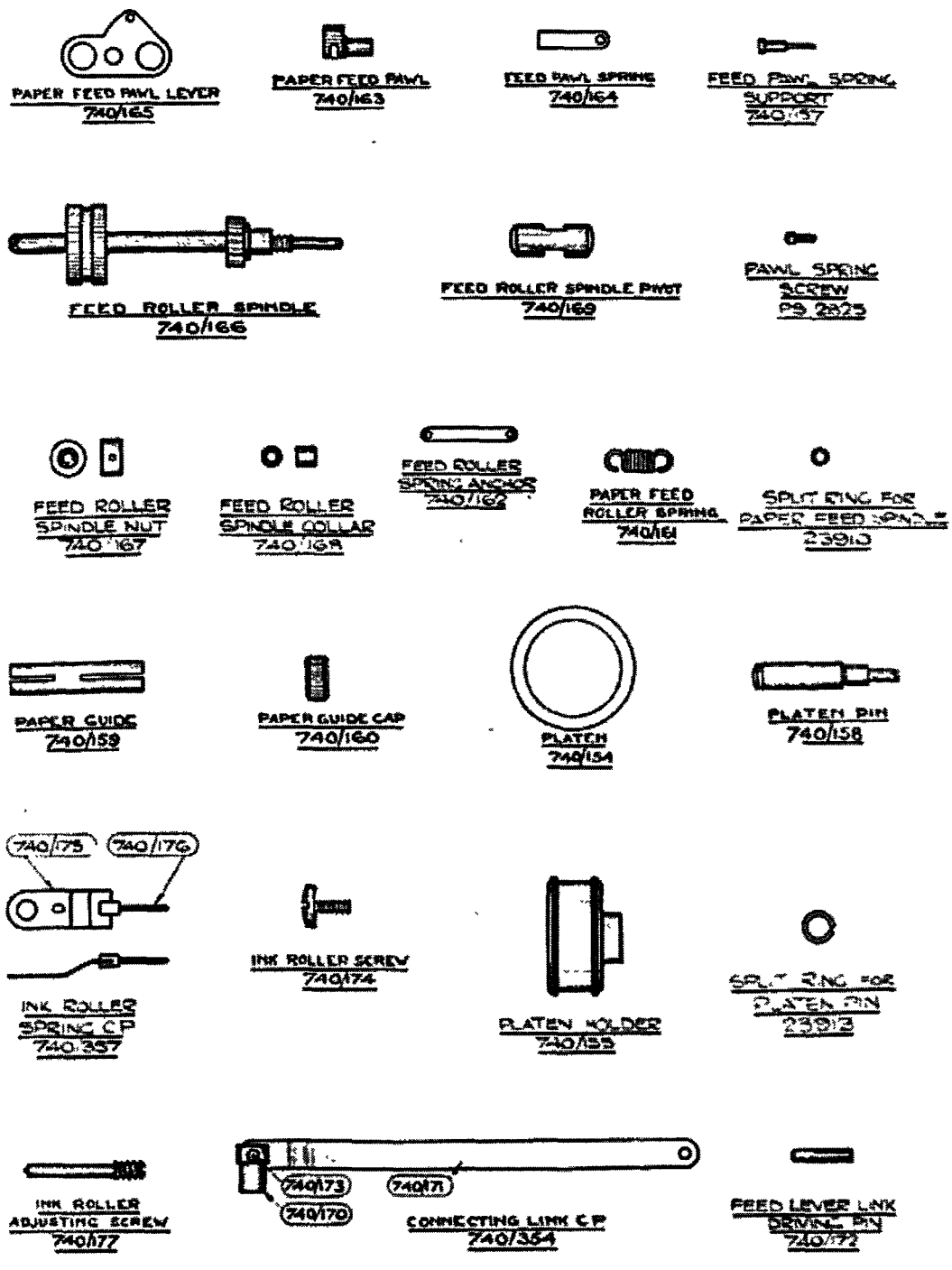
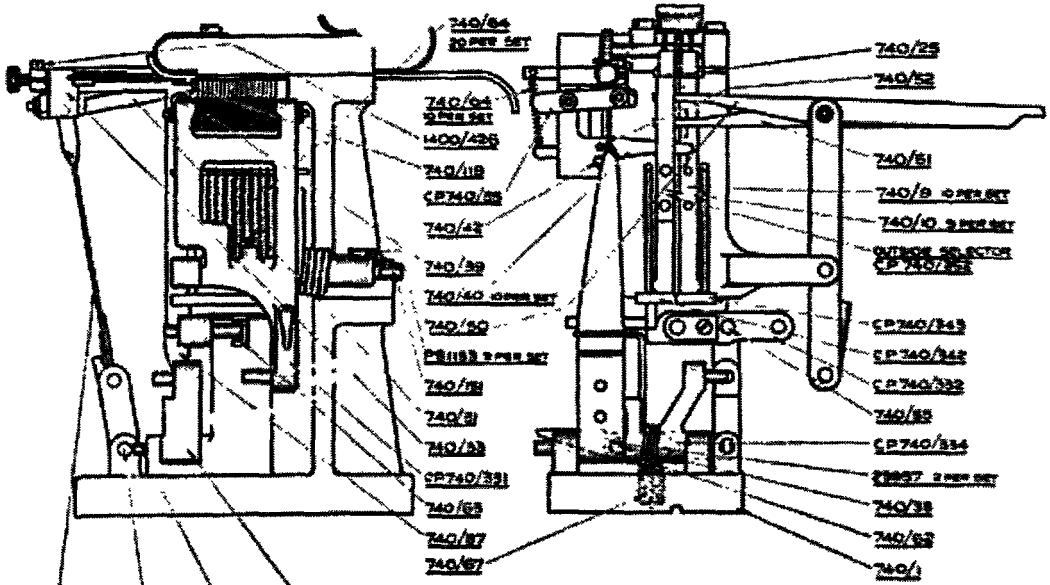


Fig. 8. Printing Head Parts.


740/64
740/64
1400/426
740/118
CP740/335
740/42
740/39
740/40
740/50
740/78
740/31
740/33
CP740/331
740/65
740/87
740/67
740/25
740/52
740/51
740/9
740/10
CP740/343
CP740/342
CP740/332
740/35
CP740/334
740/38
740/53
740/1

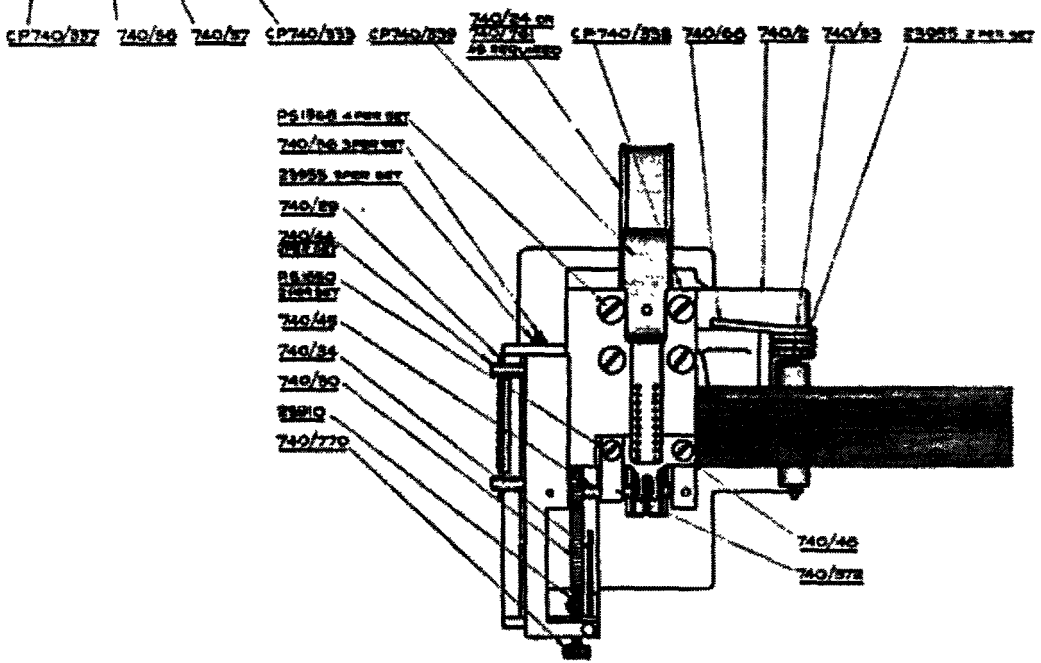


Fig. 9. Selecting Head C.P. 740/70.

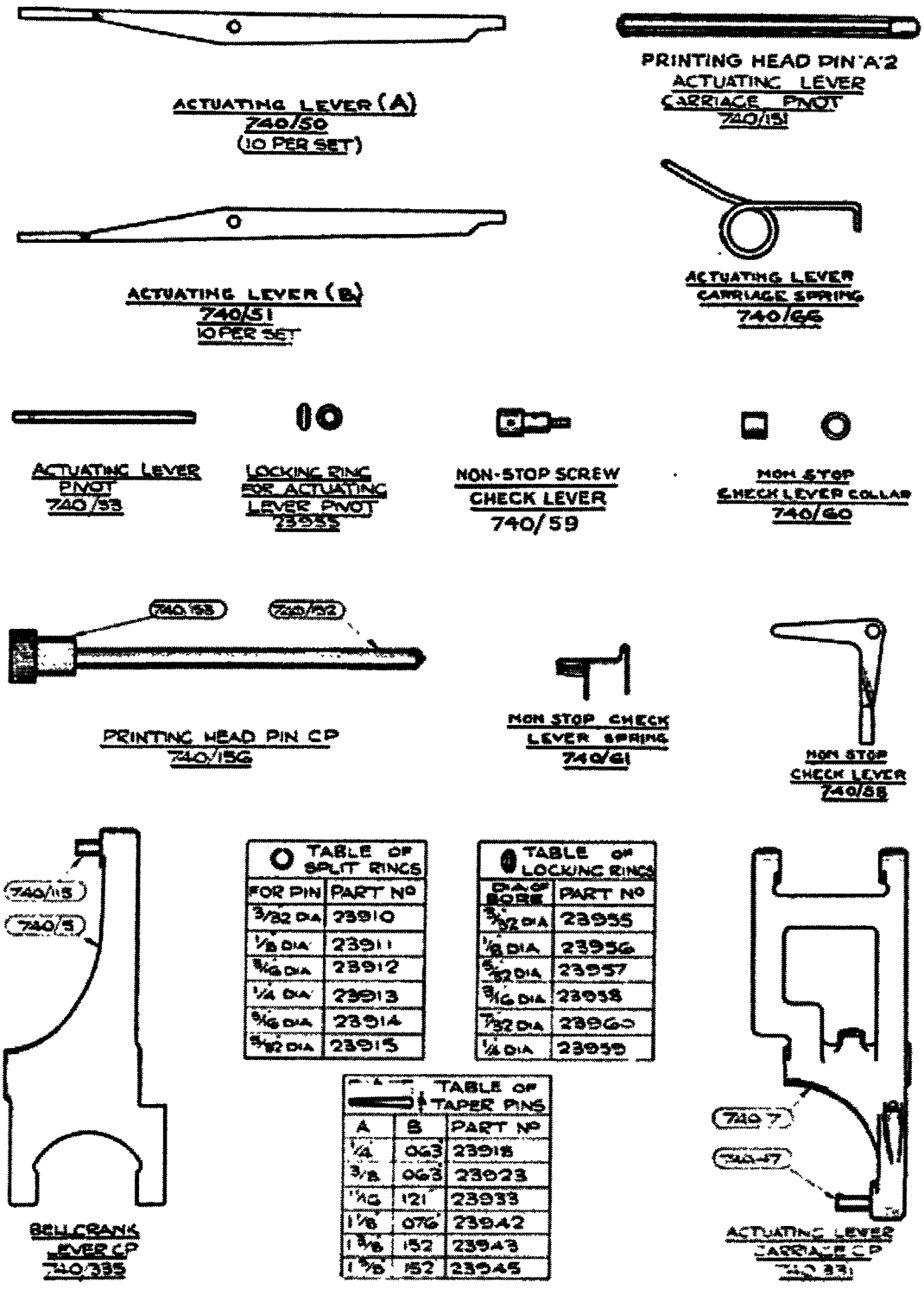


Fig. 10. Selector Parts.

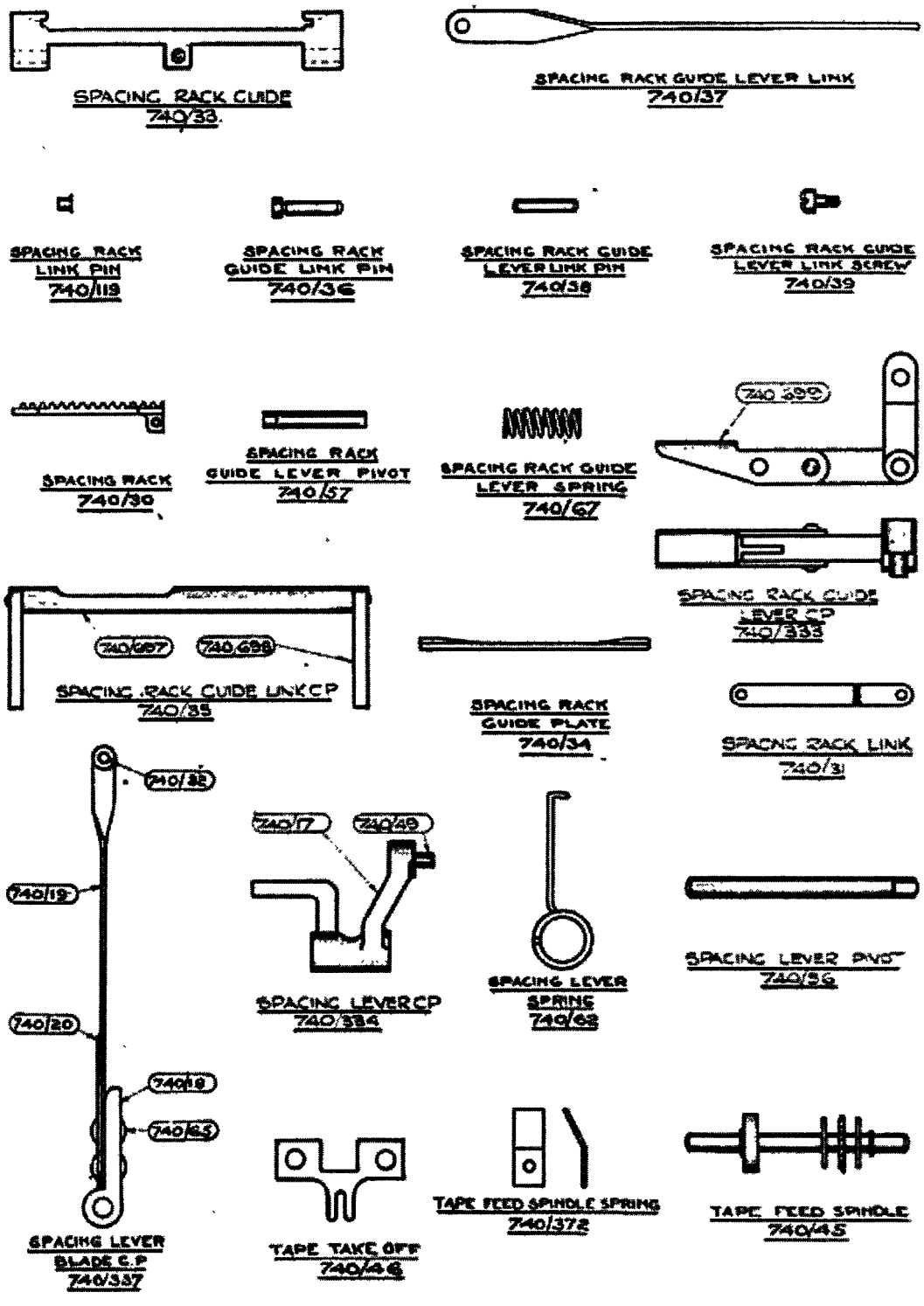


Fig. 11. Selector Parts.

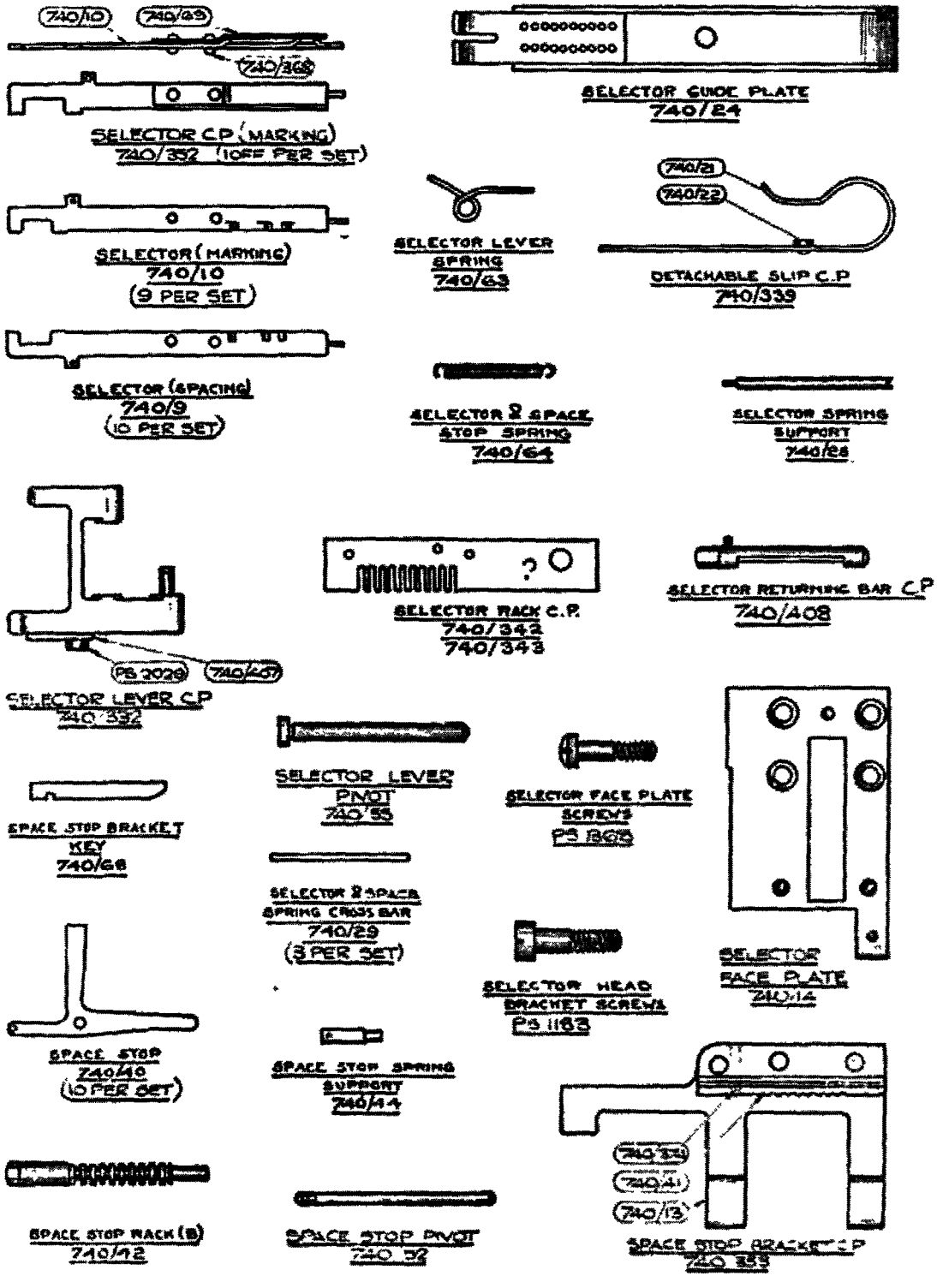


Fig. 12. Selector Parts.

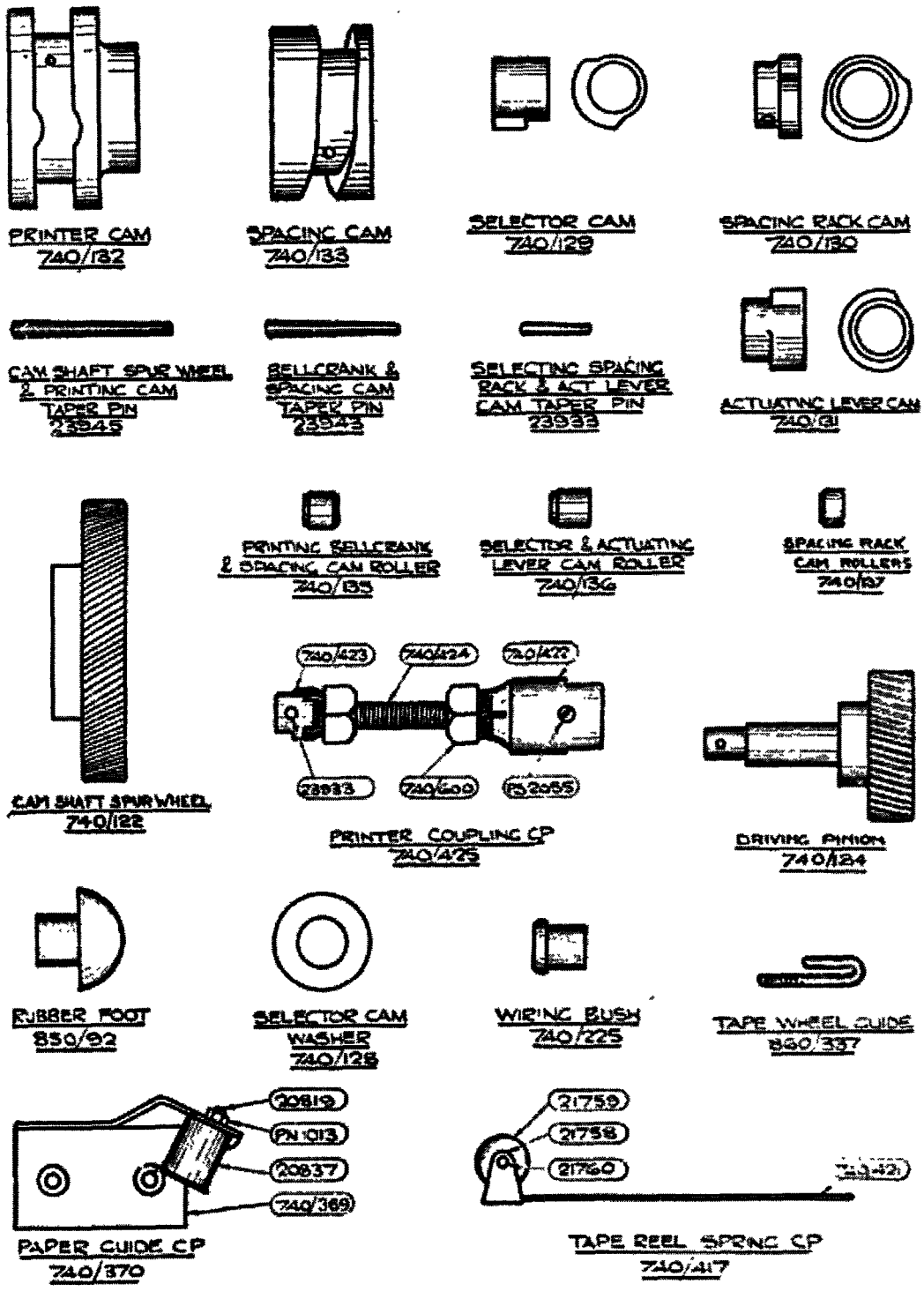
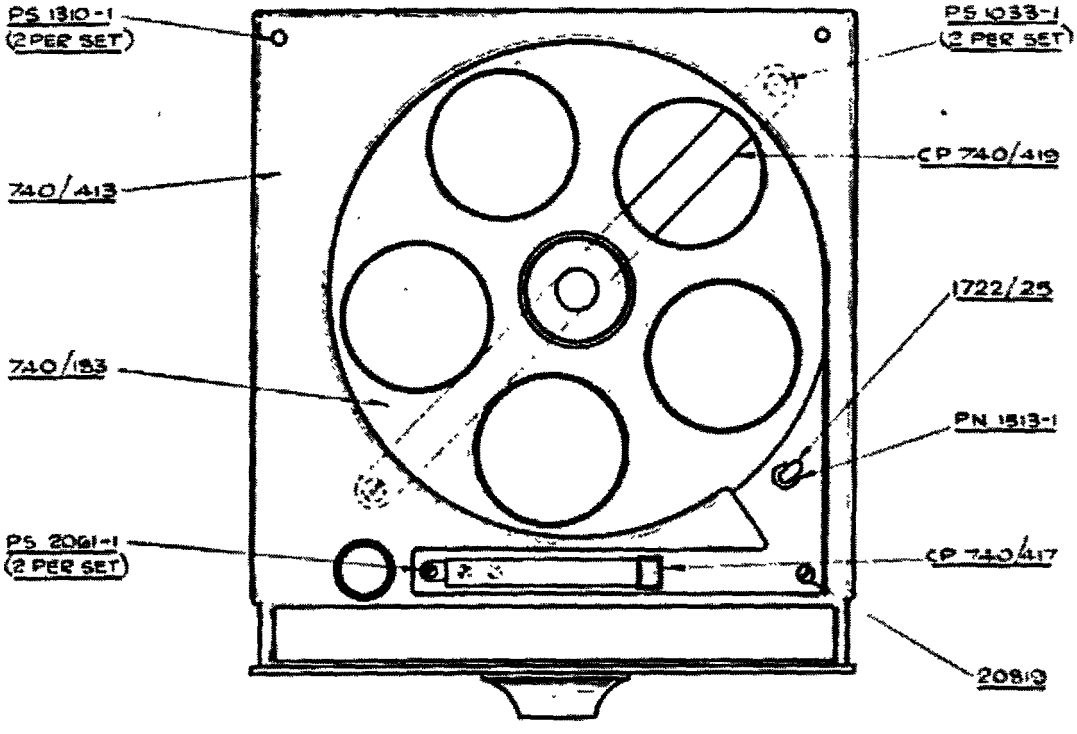
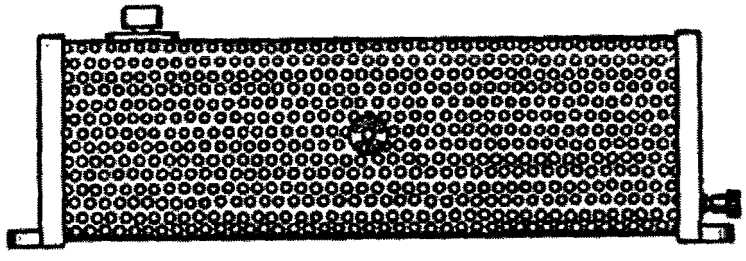


Fig. 13. Base Parts.



TAPE WHEEL DRAWER C P
740/414



MICKLEWRIGHTS SLIDING RESISTANCE
100ᵂ FOR 110 V
300ᵂ FOR 220 V

INK ROLLER
SUPPLIED IN BOTTLES
EACH CONTAINING 100 ROLLERS

GRADES & COLOURS

'A' QUALITY	'B' QUALITY (SPECIAL)
PURPLE RECORD	PURPLE COPYING
PURPLE COPYING	
BLACK RECORD	
UNINKED ROLLERS	

Fig. 14. Base Parts.

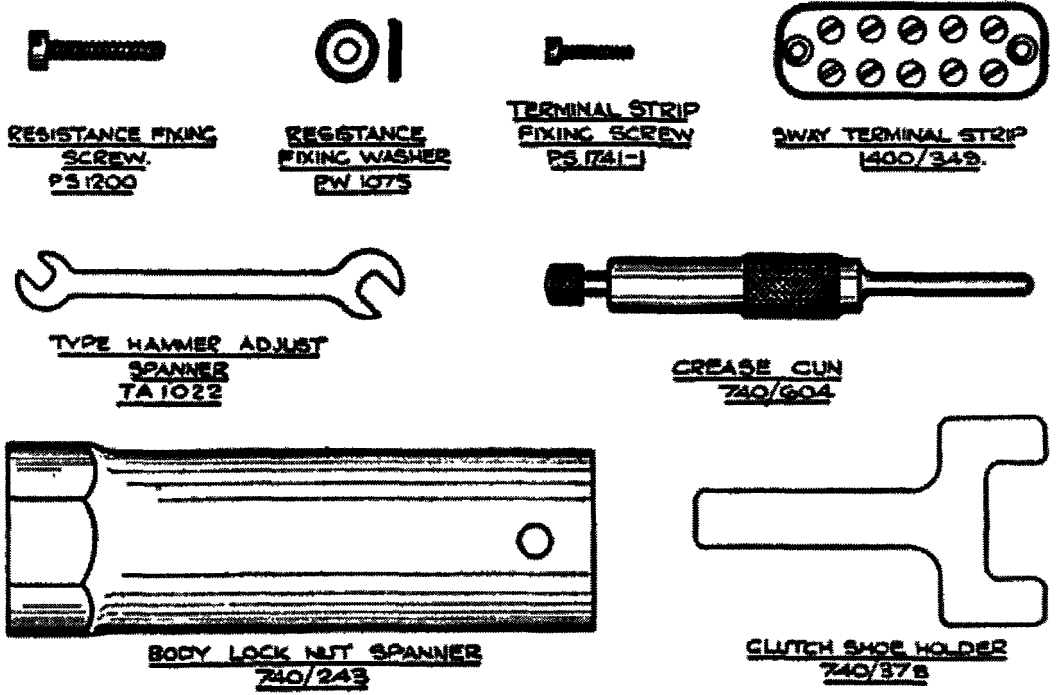
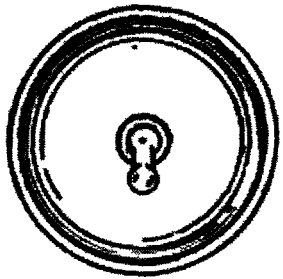
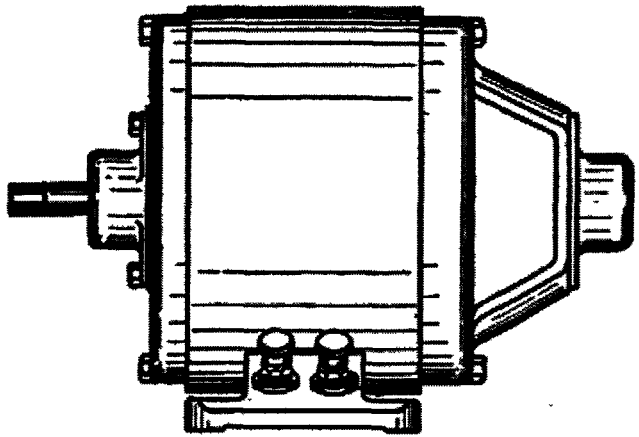


Fig. 15. Base and Accessory Parts.



5AMP SINGLE POLE
CRABTREE TUMBLER
SWITCH
CODE 4835



PRINTER MOTOR
240/181
STATE FULL PARTICULARS ON NAME PLATE.

CRABTREE TUMBLER
SWITCH FIXING SCREW
PS 1575

PRINTER UNIT BASE
FIXING SCREW
PS. 1281
(4 PER SET)

PRINTER MOTOR
FIXING NUT
P.N. 2509.
(4 PER SET)

PRINTER MOTOR
FIXING BOLT
PS. 4184
(4 PER SET)

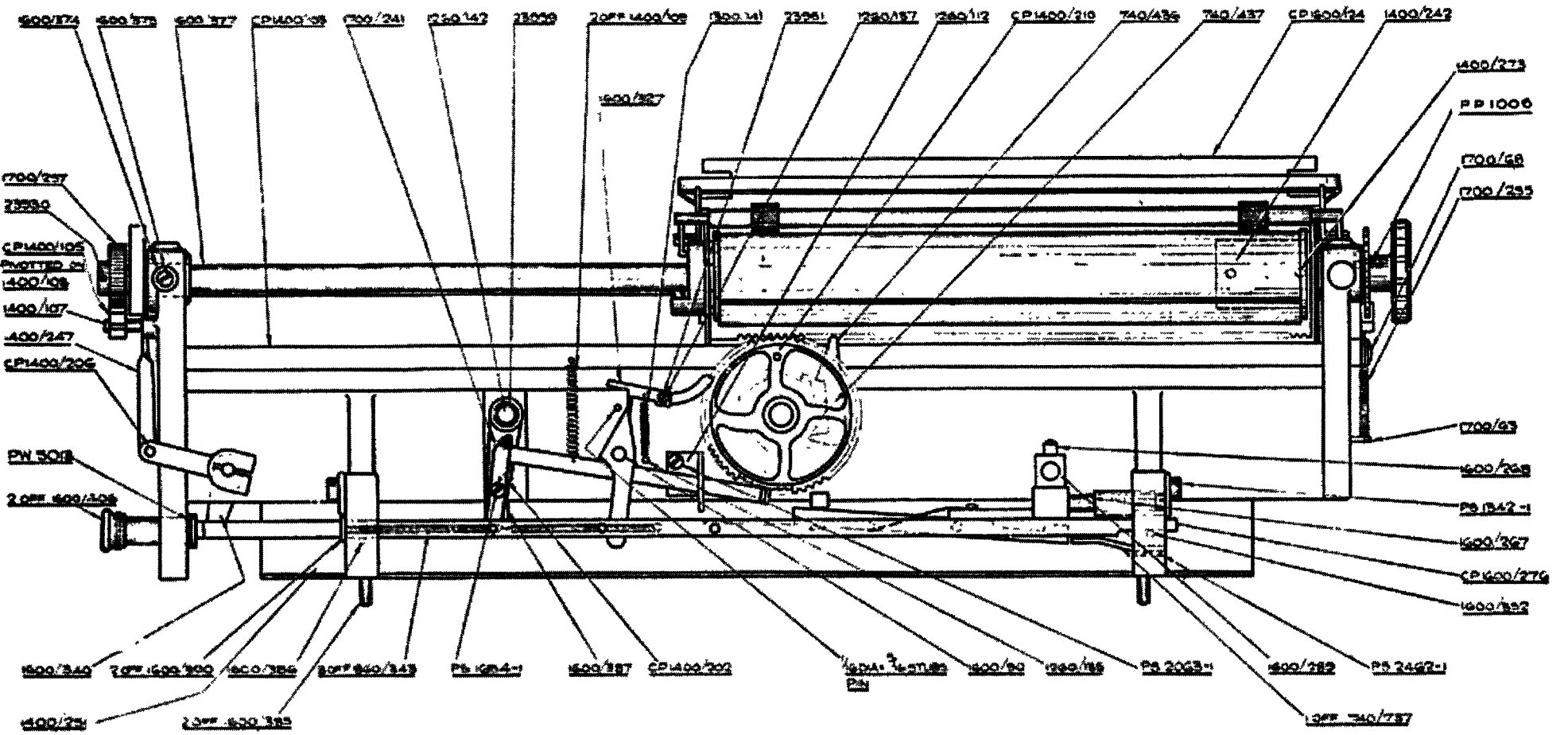


Fig. 16. Morse Page Printer Carriage Assembly (Elevation).
1600/330.

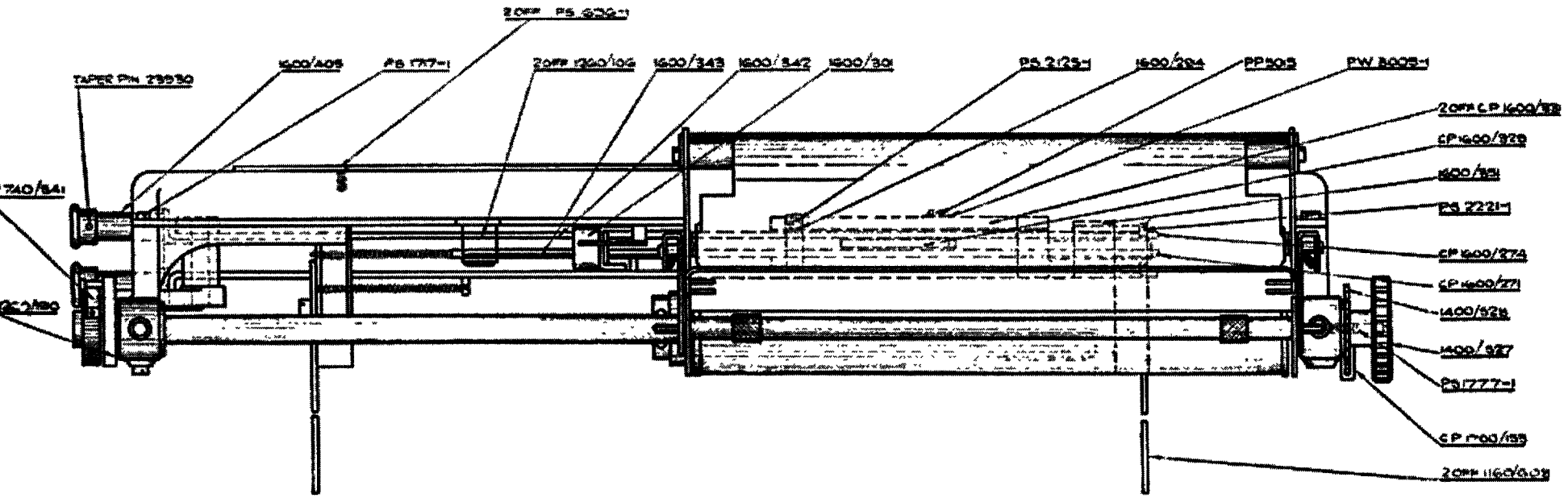


Fig. 17. Morse Page Printer Carriage Assembly (Plan).

1600/330.

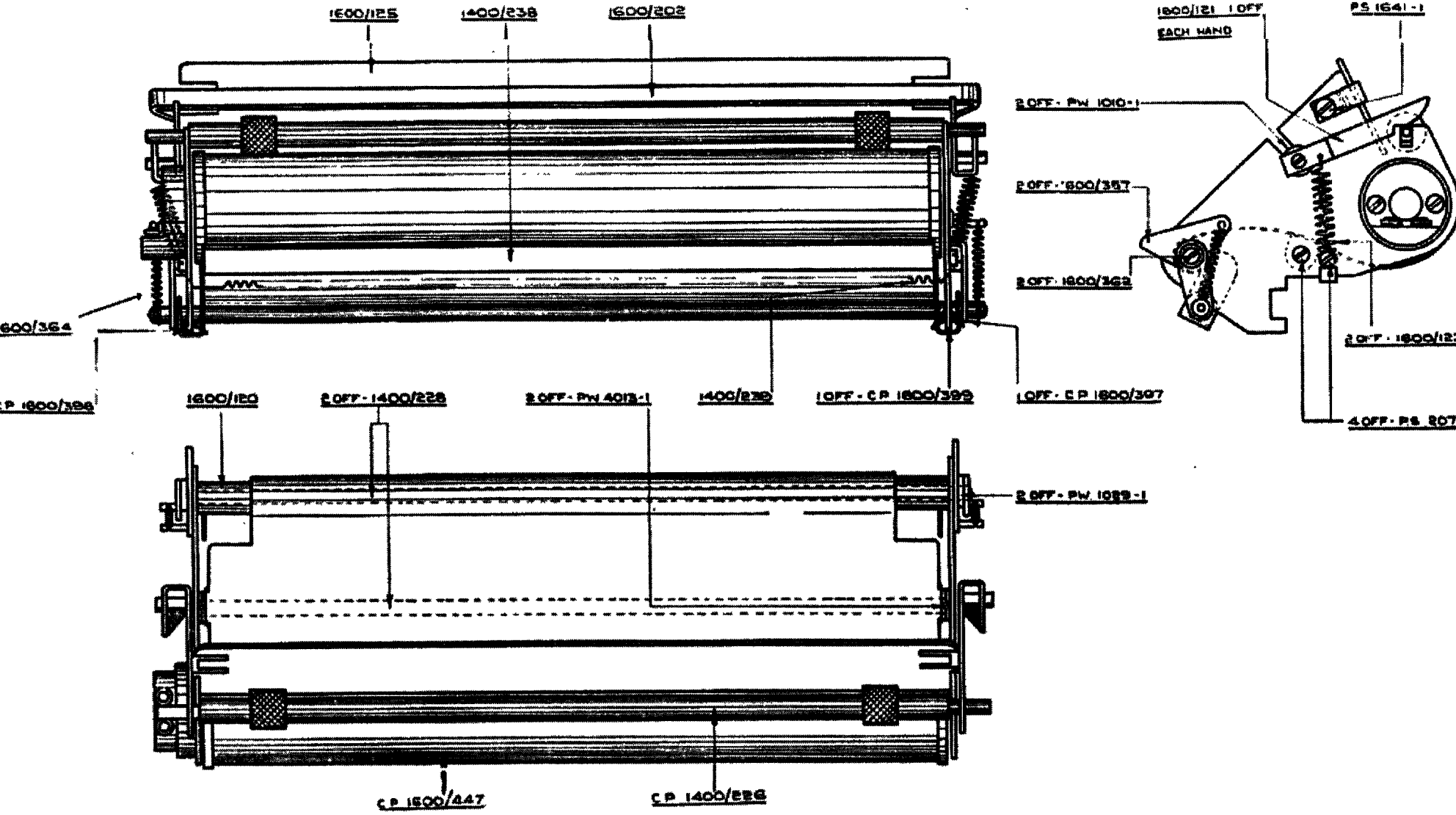


Fig. 18. Carriage C.P.
1600/124.

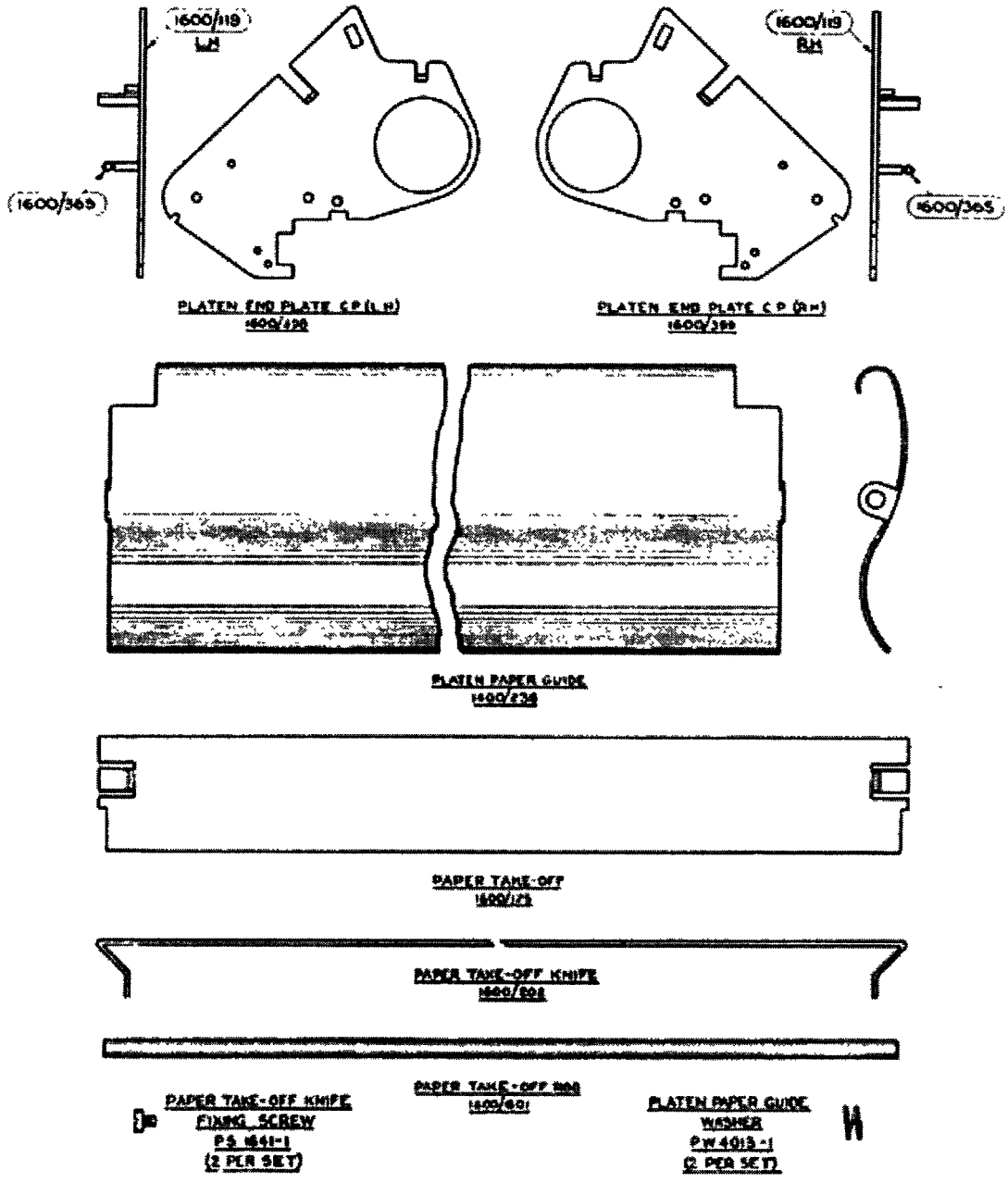


Fig. 19. Carriage Platen Parts.

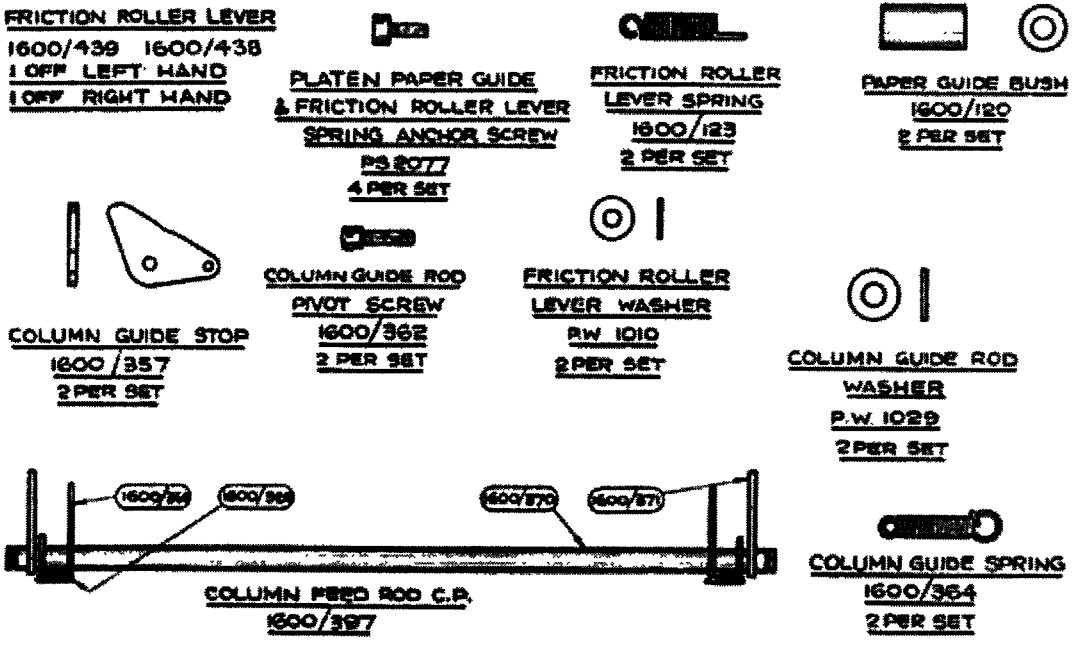
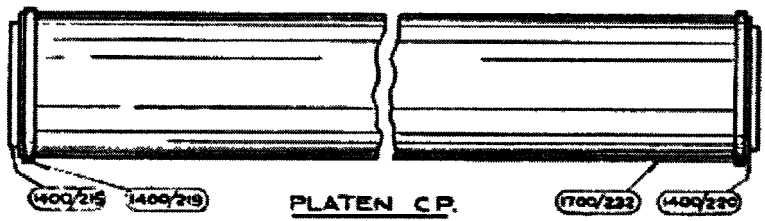


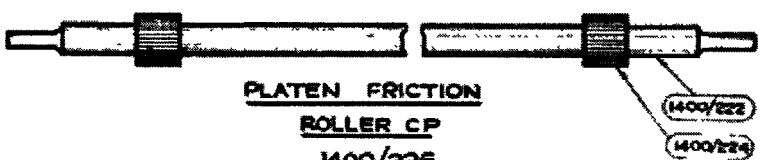
Fig. 20. Carriage Platen Parts.

PLATEN DISTANCE
COLLAR C P
1600/359 (PLAIN)
1600/448 (SCREWED)

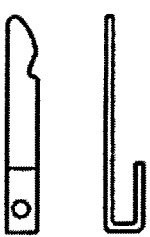


PLATEN C.P.
1600/447

PLATEN DISTANCE
COLLAR FIXING SCREW
PS 2173
(2 PER SET)



PLATEN FRICTION
ROLLER CP
1400/226



PLATEN RACK
1400/239

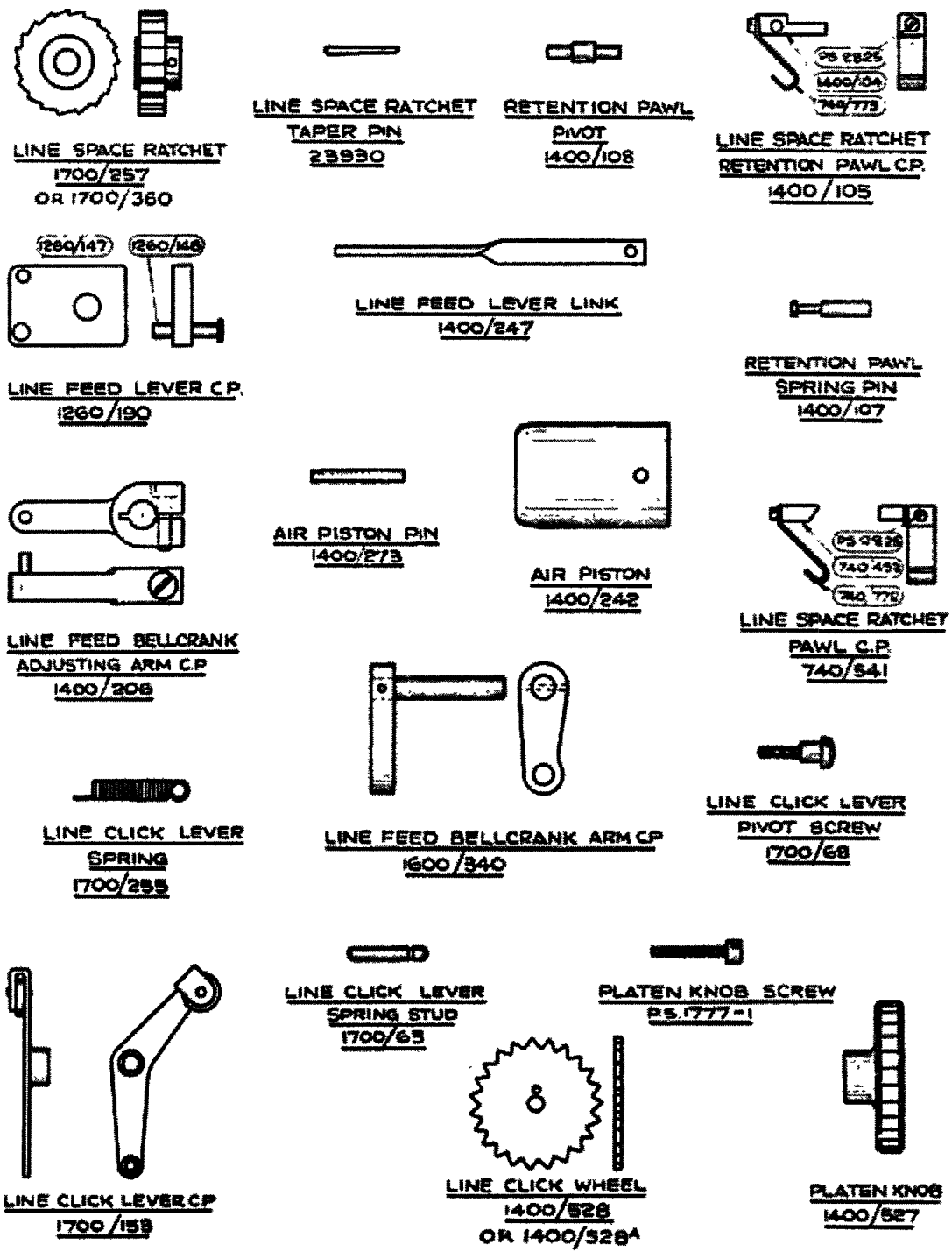


Fig. 21. Carriage Parts.

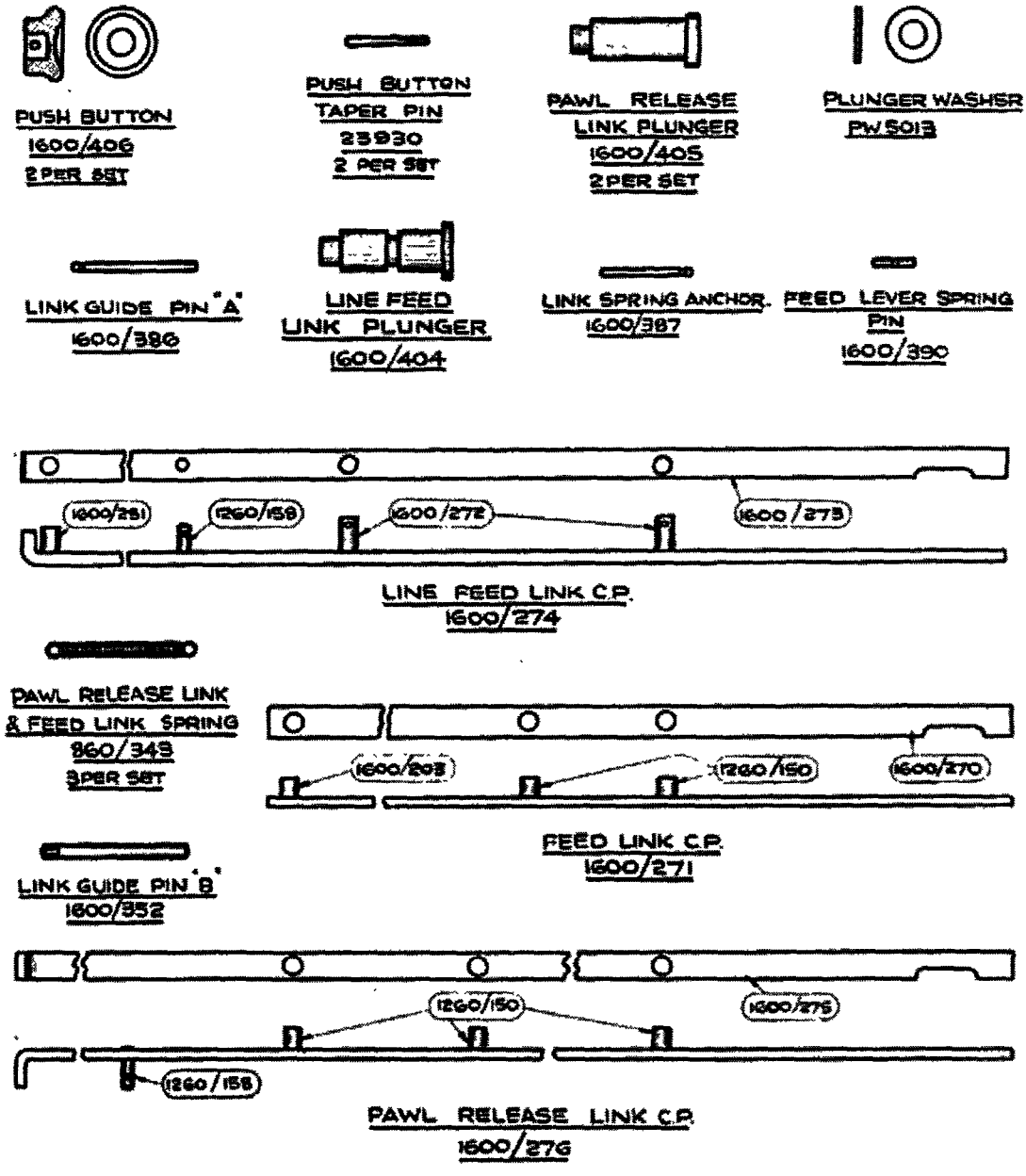


Fig. 22. Carriage Parts.

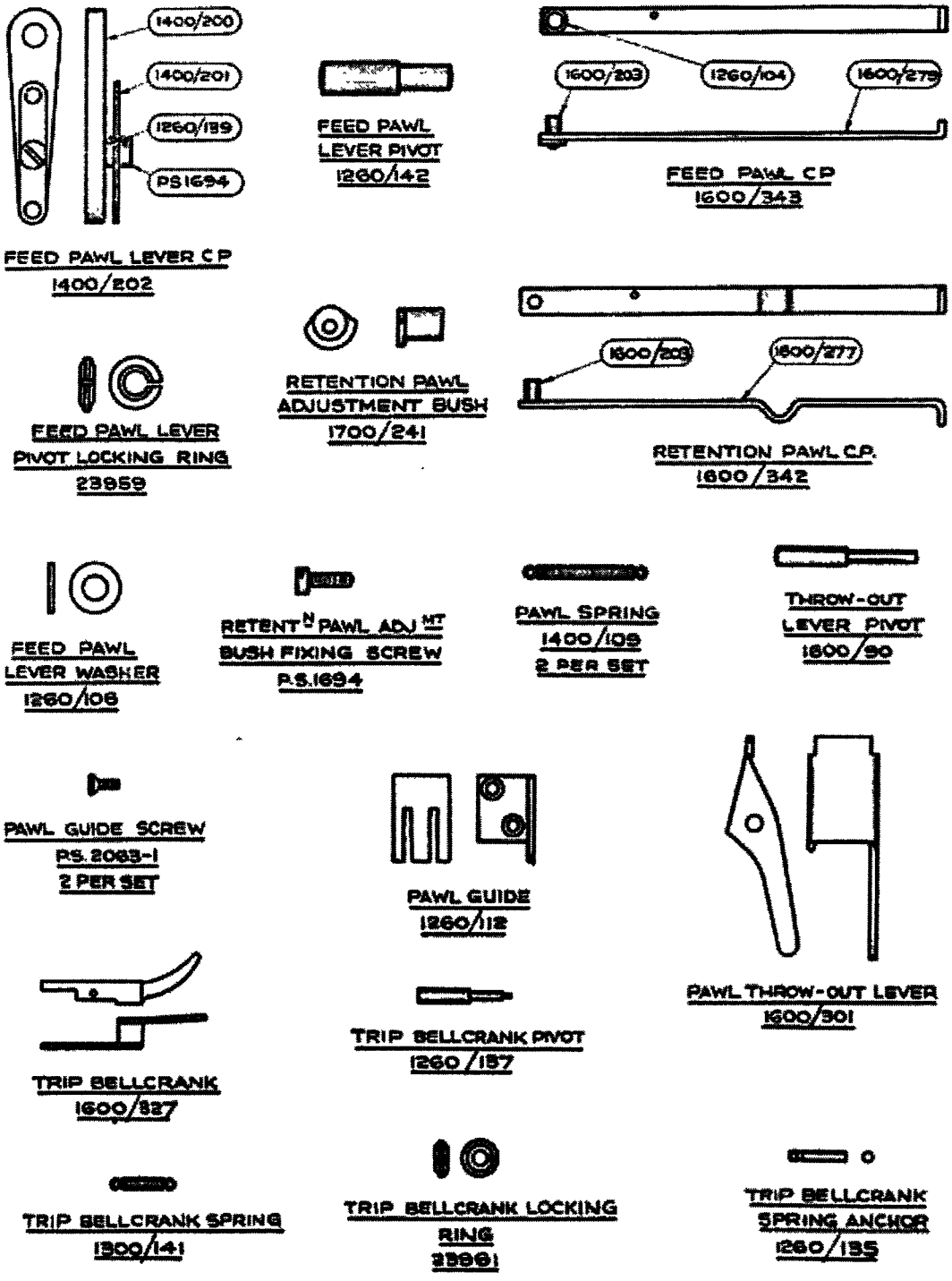


Fig. 23. Carriage Parts.

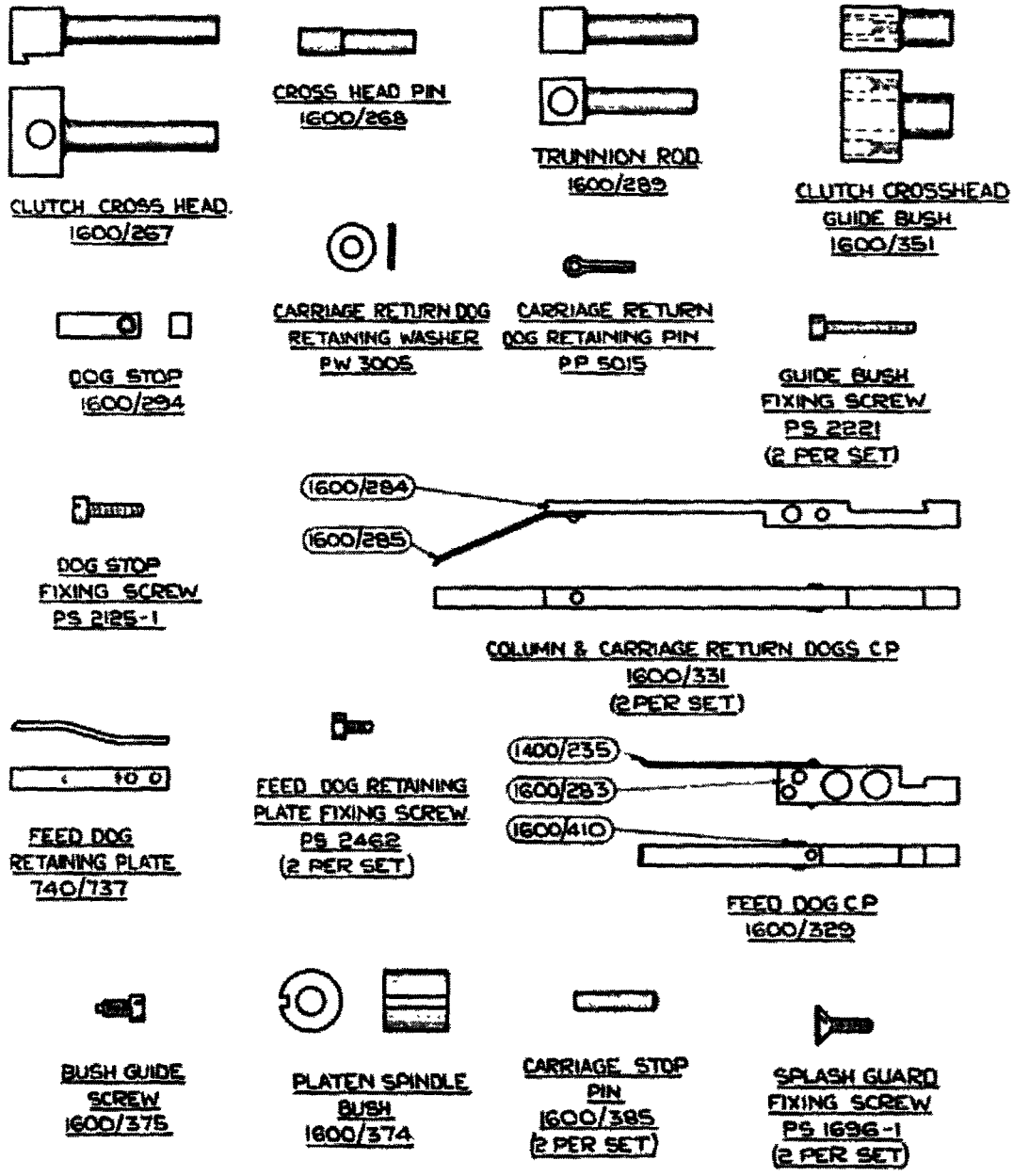


Fig. 24. Carriage Parts.

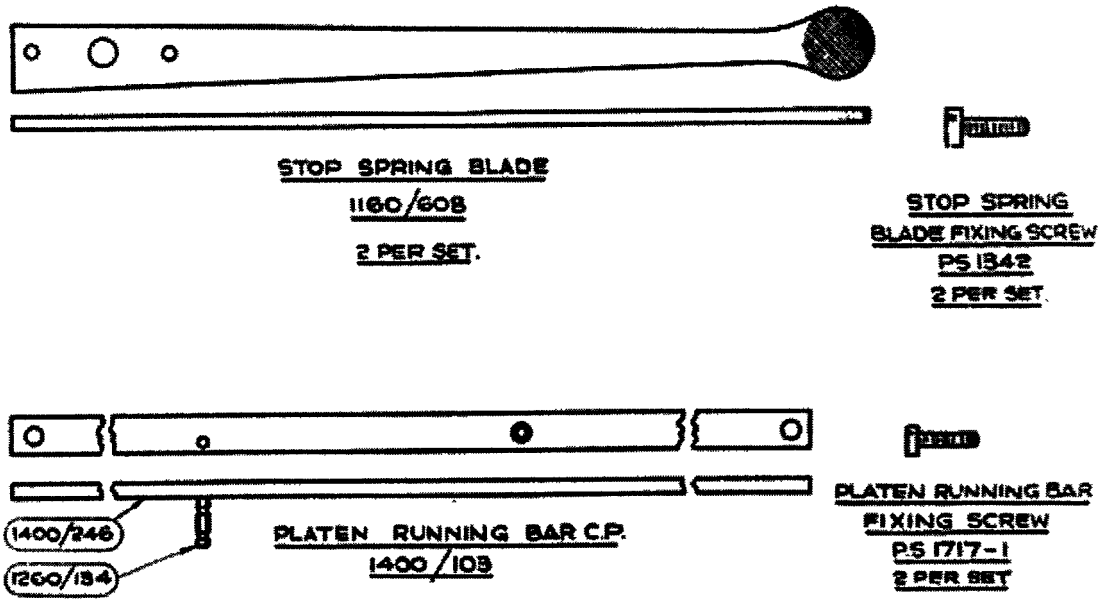
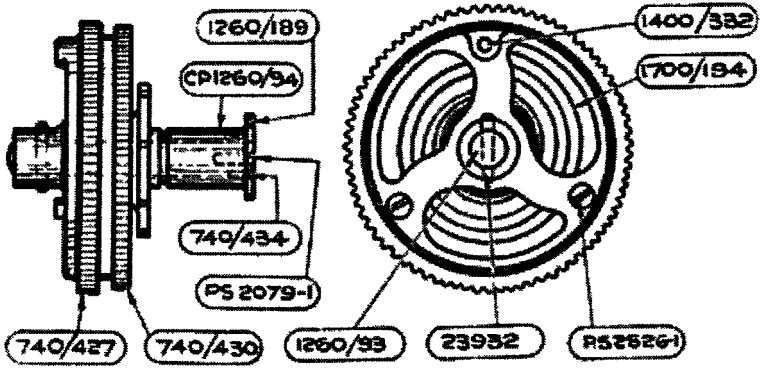
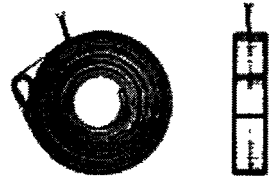


Fig. 25. Carriage Parts.



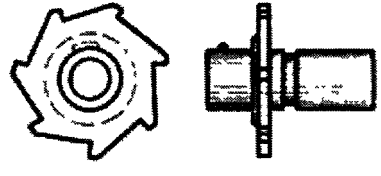
SPRING DRUM COMPLETE
1400/210



CARRIAGE RETURN
SPRING
1700/194

SPRING RATCHET
PAWL
740/436

DRUM RATCHET
PAWL PIN
740/437



SPRING ARBOR CP
1260/94

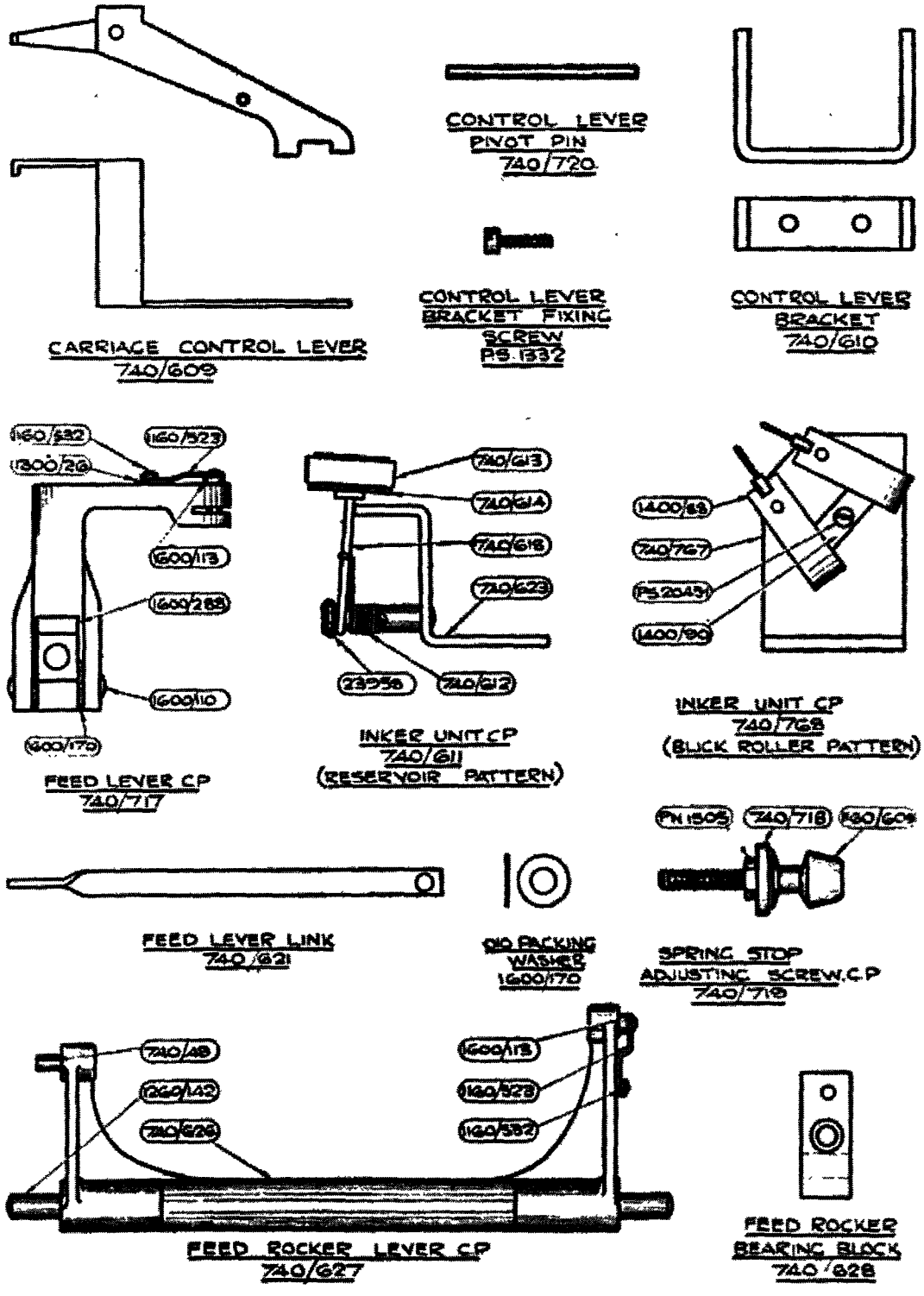


Fig. 26. Page Printer Base Parts.

MORSE PRINTER.

(See Figs. 3 to 26).

Numerical Index of Parts.

Part No.	*Description.*	
720/199	Spanner (for typehammer adjustment)	*Replaced by* TA.1022
720/230	Motor packing	
720/9	Selector (spacing)	
740/10	Selector (marking)	
740/23	Flanged pin (detachable slip retaining stud)	*Renumbered* PP.8553
740/24	Selector guide plate	
740/29	Selector and space stop spring cross bar	
740/30	Spacing rack	Supplied as C.P.740/798
740/31	Spacing rack link	
740/33	Spacing rack guide	
740/34	Spacing rack guide plate	
740/35	Spacing rack guide link C.P.	
740/36	Spacing rack guide link pin	
740/37	Spacing rack guide lever link	
740/38	Spacing rack guide lever link pin	
740/39	Spacing rack guide lever screw	PS.5285
740/40	Space stop	
740/41	Space stop rack "A"	
740/42	Space stop rack "B"	
740/44	Space stop spring support	
740/45	Tape feed spindle	
740/46	Tape take-off	
740/50	Actuating lever "A"	
740/51	Actuating lever "B"	
740/52	Space stop pivot	PP.6526
740/53	Actuating lever pivot	
740/55	Selector lever pivot	
740/56	Spacing lever pivot	
740/57	Spacing rack guide lever pivot	
740/58	Non-stop check lever	

Part. No.	*Description.*	*Renumbered.*
740/59	Non-stop check lever pivot screw	PS.5526
740/60	,, ,, ,, ,, bush	PB.1125
740/61	,, ,, ,, spring	PG.3038
740/62	Spacing lever spring	
740/63	Selector lever spring	
740/64	Space stop and selector spring	PG.7034
740/66	Actuating lever carriage spring	
740/67	Spacing rack guide lever spring	
740/68	Space stop bracket key	KY.1009
740/70	Selecting head C.P.	
740/73	Clutch	
740/74	Clutch shoe	
740/78	Clutch plate	
740/79	Bush for type carriage	PB.1103
740/80	Type carriage washer	PW.5017
740/84	Type retaining plate	
740/85	Type retaining spring	PG.3012
740/86	Type clutch spring	PG.5006
740/87	Type carriage stop rivet	PR.5025
740/89	Type carriage assembly C.P. (Tape machines)	
740/90	Body bush	
740/91	Bellcrank lifting collar	
740/92	Trunnion (for bellcrank lifting collar)	
740/93	Bellcrank lift adjusting nut	
740/94	Bellcrank lifting collar washer	PW.5157
740/95	Bellcrank bearing nut	PN.5039
740/96	Bellcrank bearing washer	PW.5134
740/97	Bellcrank bearing	
740/101	Comb distance ring	
740/102	Comb distance ring "B"	
740/103	Bellcrank lever pivot	PP.6530
740/105	Comb (please state marking)	
740/106	Bellcrank	
740/107	Bellcrank spring	PG.7085
740/108	Comb spring	PG.5019
740/111	Typeshaft thrust washer	
740/116	Body locating pin	PP.6576
740/119	Spacing rack link pin	

Part No.	*Description.*	*Renumbered.*
740/120	Combination head C.P. (Tape machines)	
740/134	Bellcrank cam	
740/135	Cam roller (hammer operating lever, bellcrank lifting lever, etc.)	
740/136	Cam roller (selector and actuating lever)	
740/137	Cam roller (spacing rack)	
740/141	Typehammer adjusting screw	
740/144	Typehammer spring *Replaced by*	PG.5014
740/145	Body front support key	
740/146	Body rear support key	
740/147	Selector bracket key	
740/148	Camshaft bearing bush	PB.1129
740/149	Driving pinion spindle bearing bush	PB.1128
740/151	Actuating lever carriage pivot	
,,	Printing head pin "A"	
740/154	Platen	
740/155	Platen holder	
740/156	Printing head pin C.P.	
740/157	Feed pawl spring anchor	PP.9014
740/158	Platen pin	PP.9001
740/160	Paper guide cap	
740/161	Feed roller spring	PG.7091
740/162	Feed roller spring anchor	
740/163	Paper feed pawl	
740/164	Feed pawl spring	PG.2028
740/165	Feed pawl lever	
740/166	Feed roller spindle	
740/167	Feed pawl lever nut	
740/168	Feed roller spindle collar	
740/169	Feed roller spindle pivot	
740/172	Feed lever link driving pin	
740/174	Ink roller spring screw	
740/177	Ink roller adjusting screw	
740/181	$\frac{1}{8}$ h.p. D.C. motor	
740/190	Printing head C.P.	
740/225	Wiring bush	PE.1001
740/243	Body spanner	TA.1016

Part No.	*Description.*	*Renumbered*
740/331	Actuating lever carriage C.P.	
740/332	Selector lever C.P.	
740/333	Spacing rack guide lever C.P.	
740/334	Spacing lever C.P.	
740/335	Bellcrank lever C.P.	
740/336	Typehammer lever C.P.	
740/337	Spacing lever blade C.P.	
740/338	Selector face plate C.P.	
740/339	Detachable slip C.P.	
740/342	Selector rack C.P. (marking side)	
740/343	Selector rack C.P. (spacing side)	
740/347	Comb stop C.P.	
740/348	Comb rack C.P.	
740/350	Type carriage spindle C.P.	
740/351	Type carriage stop C.P.	
740/352	Selector C.P.	
740/353	Space stop bracket C.P.	
740/355	Typehammer C.P.	
740/357	Ink roller spring C.P.	
740/370	Paper guide C.P.	
740/372	Tape feed spindle spring	
740/376	Comb spring support	PP.8570
740/378	Clutch shoe holder	TA.1017
740/381	Driving pinion	GR.2014
740/382	Driving pinion shaft	
740/384	Cam shaft C.P.	
740/385	Typehammer shackle	
740/386	Typehammer head	
740/387	Typehammer head spring	PG.2053
740/390	Typehammer unit C.P.	
740/391	Type carriage stop screw	PS.5501
740/392	Comb stop leather buffer	
740/393	Felt (used under tape printer base)	PF.1027
740/395	Comb spring C.P.	
740/404	Clutch shoes (high speed)	
740/405	Typehammer bracket C.P.	
740/407	Selector bar retaining plate	
740/408	Selector bar returning bar C.P.	
740/417	Tape wheel spring C.P.	

Part No.	*Description*	*Renumbered.*
740/421	Tape reel spring	PG.2051
740/422	Motor coupling sleeve	
740/423	Printer coupling sleeve	
740/424	Flexible coupling	
740/425	Printer coupling C.P.	
740/525	Typehammer adjusting screw	PS.6808
740/526	Typehammer adjusting nut	
740/532	Typehammer C.P.	
740/533	Typehammer bracket C.P.	
740/534	Typehammer unit C.P.	
740/572	Type carriage stop C.P.	
740/577	Type carriage assembly C.P. (Page machines)	
740/583	Spacing paper roller bracket collar	PB.1130
740/585	Page Printer table C.P.	
740/590	Combination head C.P. (Page machines)	
740/593	Type carriage washer	PW.5173
740/594	Type head spur wheel C.P.	
740/600	Coupling sleeve lock nut	
740/604	Grease gun C.P.	TA.1015
740/607	Lifting handle (R.H.)	
740/608	Lifting handle (L.H.)	
740/609	Carriage control lever	
740/621	Feed lever link	
740/699	Spacing rack guide extension lever	
740/715	Oil splash guard	
740/716	Main frame base plate	
740/717	Feed lever C.P.	
740/718	Spring stop adjusting screw collar	PB.1134
740/719	Spacing stop adjusting screw C.P.	
740/723	Felt (used under Page Printer base)	PF.1028
740/736	Paper tension roller C.P.	
740/767	Inker bracket C.P.	
740/768	Inker unit C.P.	
740/769	Retaining clip	
740/770	Rack adjusting screw	
740/783	Motor belt (¼in. dia.)	
740/785	Tape reel spring and bracket C.P.	
740/786	Tape guide adjustable arm	
740/795	Oval link chain	

Part No.	*Description.*	*Renumbered.*
740/798	Spacing rack and link C.P.	
850/92	Rubber foot	RB.1006
850/121	Carriage control lever spring anchor pin	PP.6008
920/38	Paper roll bush screw	PS.6205
1060/95	Type carriage stop screw	PS.5502
1160/523	Feed lever spring clip	PK.2003
1160/532	Feed lever spring clip rivet	PR.5018
1160/609	Spring stop adjusting screw	
1285/53	Locking ring pliers	TA.1023
1285/58	Spanners (8 B.A. and 10 B.A.)	TA.1036
1300/26	Feed lever spring clip washer	PW.5003
1300/123	Feed lever pivot	
1300/260	Carriage pivot pin	PP.5513
1400/88	Ink roller spring C.P.	
1400/90	Ink roller spring clamping plate	
1400/349	5-way terminal strip C.P.	CB.1011
1400/392	Paper tension roller	
1400/393	Paper tension roller spindle C.P.	
1400/493	Paper roll bush	
1600/110	Trunnion block pivot	
1600/113	Feed lever link pivot	PP.7596
1600/170	Trunnion block washer *Replaced by*	PW.5226
1600/288	Trunnion block	
1600/330	Platen carriage C.P. (see separate list for components)	
1600/385	Carriage stop pin	
1600/389	Carriage control lever spring	PG.7098
1700/286	Spanner (4 B.A. and 6 B.A.)	TA.1022
1722/25	Tape guide (for tape wheel drawer)	
20819	Tape guide screw	PS.5519
20837	Paper guide roller	RL.1024
21759	Tape reel spring roller	
21760	Tape reel spring roller pivot	
23089	Self closing oiler	
23910	Split ring (for securing space rack link to blade)	
23911	Split ring (for securing feed roller spindle)	

Part No.	*Description.*	*Renumbered.*
23912	Split ring (for securing bellcrank lifting collar trunnion (1) and selector lever pivot (2))	
23915	Split ring (for securing type-hammer C.P.)	
23918	Taper pin (for securing hammer head)	
23923	Taper pin (for securing type-hammer head and typehammer adjusting screw)	
,,	Taper pin (for securing clutch body to typehead spindle)	
23933	Taper pin (for securing actuating lever, selector and spacing rack cams)	
23933	Taper pin (for securing printer coupling sleeve)	
23941	Taper pin (for securing driving pinion to shaft)	
23942	Taper pin (for securing typehead spur wheel)	
,,	Taper pin (for securing driving pulley)	
23943	Taper pin (for securing spacing and bellcrank cams)	
23945	Taper pin (for securing printing cam and camshaft spur wheel)	
23955	Locking ring (for securing actuating lever pivot)	
,,	Locking ring (for securing spacing rack guide link pins)	
23956	Locking ring (for securing connecting link C.P.)	
,,	Locking ring (for securing control lever pivot)	
23957	Locking ring (for securing spacing rack guide lever link pin)	
23959	Locking ring (for securing feed lever and platen)	

Part No.	*Description.*	*Renumbered.*
MB.1003	Motor brush for Wilson Wolf and Horace Green motors (2 per set)	
MB.2003	Motor brush for Croydon Motor (2 per set)	
PN.1005	Nut (for securing tape guide)	
PN.1005	Nut (for securing tape guide adjustable arm)	
PN.1013	Nut (for securing paper guide roller)	
PN.1505	Nut (for securing collar to spring stop adjusting screw)	
PN.1513	Locknut (for securing tape guide to tape wheel drawer)	
PN.1513	Locknut (for typehammer adjustment)	
PN.2509	Nut (for securing paper roller bracket)	
PN.2509	Nut (for securing motor)	
PP.1033	Steady pin for comb stop	
PP.1129	Parallel pin (steady pin for feed rocker)	
PP.1146	Parallel pin (control lever pivot)	
PP.5065	Split pin (for securing paper tension roller chain to spindle)	
PR.1093	Rivet (for securing spacing rack guide lever extension)	
PR.1102	Rivet (for securing space stop rack)	
PR.2072	Snap head rivet (for securing typehammer shackle and spring)	
PR.3136	Rivet (for securing page machine base felt)	
PR.5023	Special rivet (for securing type carriage stop)	
PS.1033	Screw (for securing tape wheel pivot strap)	
PS.1183	Screw (for securing selector bracket C.P.)	
PS.1200	Screw (for securing resistance)	

Part No.	*Description.*	*Renumbered.*
PS.1231	Screw (for securing tape printer C.P. to metal base)	
PS.1286	Grub screw (for securing motor coupling sleeve)	
PS.1301	Screw (for frame earth)	
PS.1307	Grub screw (for securing motor pulley and paper roll bush)	
PS.1310	Screw (used as stop for tape wheel drawer)	
PS.1310	Screw (for securing comb stop C.P.)	
PS.1321	Screw (for securing typehammer assembly C.P.)	
PS.1332	Screw (for securing splash guard)	
PS.1332	Screw (for securing oil splash guard, control lever bracket, inker unit and spring stop adjusting screws)	
PS.1356	Screw (for securing lifting handles)	
PS.1368	Screw (for securing selector face plate C.P. and space stop bracket C.P.)	
PS.1374	Screw (for securing tape guide adjustable arm)	
PS.1378	Screw (for clamping bellcrank lift adjustment)	
PS.1383	Screw (for clamping body front bracket)	
PS.1390	Screw (for securing combination head, selecting head and gear cover)	
PS.1390	Screw (for securing feed rocker bearing block)	
PS.1575	Screw (for securing tumbler switch)	
PS.1650	Screw (for securing tape take-off)	
PS.1694	Screw (for securing main frame base plate)	
PS.1697	Screw (for securing paper guide C.P.)	

Part No.	*Description.*	*Renumbered.*
PS.1741	Screw (for securing 5-way terminal strip)	
PS.2029	Screw (for securing selector bar retaining plate)	
PS.2045	Screw (for securing ink roller springs)	
PS.2061	Screw (for securing tape wheel spring C.P.)	
PS.2072	Screw (for securing rack adjusting screw)	
PS.2079	Screw (for clutch plate grease gun hole)	
PS.2095	Screw (for securing clutch plate)	
PS.2445	Screw (for securing bellcrank spring anchor)	
PS.2825	Screw (for securing feed pawl springs)	
PS.4189	Screw (for securing motor)	
PS.4191	Screw (for securing paper roller brackets (4) and Motor (4))	
PW.1075	Washer (used with tape printer fixing screws (4) and resistance fixing screws (2))	
PW.1078	Washer (used under frame earth screw)	
PW.3007	Washer (used with resistance fixing screw)	
PW.3011	Washer (used with motor fixing screws)	
PW.4016	Spring washer (used with tape guide adjustable arm fixing screw)	
PW.5171	Felt washer (used with tape printer fixing screws)	

Part No.	*Description.*	*Renumbered.*	
R101	Screws	PS.1183	*See previous sheets.*
R102		PS.1368	
R104		PS.2095	
R105		PS.1383	
R107		PS.1378	
R108		PS.1390	
R109		PS.2825	
R111		PS.1332	
R118		PS.1332	
R121		PS.1694	
R130		PS.2445	
R135		PS.2095	
R139		PS.2045	
R146		PS.1694	
R147		PS.1650	
R153		PS.1321	
R173		PS.1033	
R176		PS.2029	
R186		PS.2061	
RB.1005	Rubber sleeve (bush for tape printer fixing screw holes)		

Un-Numbered Parts and Accessories.

5-amp. single pole 1-way Crabtree switch Code 4835
Micklewright sliding resistance :
100 ohms for 110v. motor.
300 ohms for 220v. motor.
Artic fuse No. 501.
$\frac{3}{8}$ in. brass cuphook (for securing paper tension roller chain to shelf)
S.K.F. ballbearing No. 13303 (for type spindle)
Medium oil.
Typehead grease (Crimsengere).
Oil can (watch type)
Tweezers
Screwdriver No. 1 (5in. by $\frac{1}{8}$in.)
Screwdriver No. 2 (5in. by $\frac{1}{4}$in.)

Part No.	*Description.*	*Renumbered.*
	Paper for Tape Printer (ABARP)	
	Paper for Page Printer (ABATA)	
	Ink rollers (black record on purple copying)	

PAGE PRINTER CARRIAGE PARTS.

740/427	Spring drum	
740/430	Carriage feed ratchet wheel	
740/434	Drum spindle pin	
740/436	Spring ratchet pawl	
740/437	Drum ratchet pawl pin	PP.9015
740/458	Ratchet pawl spring	
740/541	Line space ratchet feed pawl C.P.	
740/737	Feed dog retaining plate	
740/772	Ratchet pawl spring	
860/343	Spring	PG.7014
1160/608	Stop spring blade. (2 per set)	
1260/93	Spring drum spindle	
1260/94	Spring arbor C.P.	
1260/106	Feed pawl lever washer	PW.5057
1260/112	Pawl guide	
1260/135	Trip bellcrank spring anchor	
1260/137	Trip bellcrank pivot	
1260/139	Feed pawl lever retaining plate washer	PW.5049
1260/140	Retention pawl pin	
1260/142	Feed pawl lever pivot	
1260/146	Line feed lever pin	PP.7605
1260/147	Line feed lever	
1260/189	Spring arbor washer	
1260/190	Line feed lever C.P.	
1300/141	Spring	PG.7075
1400/103	Platen running bar C.P.	
1400/105	Line space ratchet retention pawl C.P.	
1400/107	Retention pawl spring pin	
1400/108	Retention pawl pivot	
1400/109	Pawl spring	PG.7037
1400/200	Feed pawl lever	

Part No.	*Description.*	*Renumbered.*
1400/201	Feed pawl lever retaining plate	
1400/202	Feed pawl lever C.P.	
1400/206	Line feed bellcrank adjusting arm	
1400/210	Spring drum C.P.	
1400/226	Platen friction roller C.P.	
1400/228	Paper take off rod	
1400/238	Platen paper guide	
1400/239	Platen rack	
1400/242	Air piston	
1400/247	Line feed lever link	
1400/251	Paper splash guard	
1400/273	Air piston pin	
1400/527	Platen knob	
1400/528	Line click wheel (21 teeth)	
1400/528A	Line click wheel (23 teeth)	
1400/601	Paper take off rod	
1600/90	Throw-out lever pivot	
1600/120	Paper guide bush	
1600/123	Friction roller lever spring	PG.7097
1600/124	8½ Carriage C.P.	
1600/125	8½ in. paper take off	
1600/202	Paper take off knife } supplied assembled	
1600/267	Clutch cross head } as 1600/437	
1600/268	Cross head pin	
1600/271	Feed link C.P.	
1600/274	Line feed link C.P.	
1600/276	Pawl release link C.P.	
1600/289	Trunnion rod	
1600/294	Dog stop	
1600/301	Pawl throw-out lever	
1600/327	Trip bellcrank	
1600/329	Feed dog C.P.	
1600/331	Column and carriage return dog C.P.	
1600/340	Line feed bellcrank arm C.P.	
1600/342	Retention pawl C.P.	
1600/343	Feed pawl C.P.	
1600/351	Clutch cross head guide bush	
1600/352	Link guide pin	
1600/357	Column guide stop	

Part No.	*Description.*	*Renumbered.*
1600/362	Column guide rod pivot screw	
1600/364	Column guide rod spring	
1600/447	Platen C.P.	PG.7096
1600/374	Platen spindle bush	
1600/375	Bush guide screw	PS.6413
1600/385	Carriage stop pin	
1600/386	Link guide pin	
1600/387	Link spring anchor	
1600/390	Feed lever spring pin	PP.6023
1600/397	Column feed rod C.P.	
1600/398	Platen end plate C.P. (left hand)	
1600/399	Platen end plate C.P. (right hand)	
1600/405	Pawl release link plunger	
1600/406	Push button	
1600/437	Clutch crosshead C.P.	
1600/438	Friction roller lever (R.H.)	
1600/439	Friction roller lever (L.H.)	
1600/447	Platen C.P.	PG.7096
1700/63	Line click lever spring stud	
1700/68	Line click lever pivot screw	
1700/153	Line click lever C.P.	
1700/194	Carriage return spring	PG.1502
1700/232	Platen rubber	
1700/241	Retention pawl adjustment bush	
1700/255	Line click lever spring	PG.7092
1700/257	Line space ratchet (21 teeth)	
1700/360	Line space ratchet (23 teeth)	
23930	Taper pin	
23955 23959	Locking rings	
PG.7098	Control lever spring	
PS.1342	2 B.A. × $\frac{9}{16}$" Ch. Hd. M.S. screw.	
PS.1641	4 B.A. × $\frac{1}{8}$" Ch. Hd. M.S. screw.	
PS.1694	4 B.A. × $\frac{3}{8}$" Ch. Hd. M.S. screw.	
PS.1696	4 B.A. × $\frac{3}{8}$" Csk. Hd. M.S. screw.	
PS.1717	4 B.A. × $\frac{1}{2}$" Ch. Hd. M.S. screw.	
PS.1777	4 B.A. × $\frac{7}{8}$" Ch. Hd. M.S. screw.	
PS.2063	6 B.A. × $\frac{1}{4}$" Csk. Hd. M.S. screw.	
PS.2077	6 B.A. × $\frac{5}{16}$" Ch. Hd. M.S. screw.	

Part No.	*Description.*	*Renumbered.*
PS.2079	6 B.A. × $\frac{5}{16}$" Csk. Hd. M.S. screw.	
PS.2125	6 B.A. × $\frac{1}{2}$" Ch. Hd. M.S. screw.	
PS.2221	6 B.A. × $\frac{7}{8}$" Ch. Hd. M.S. screw.	
PS.2462	8 B.A. × $\frac{1}{4}$" Ch. Hd. M.S. screw.	
PW.1010	Std. 4 B.A. brass washer.	
PW.1029	Std. 2 B.A. mild steel washer.	
PW.3005	Std. $\frac{5}{32}$" mild steel washer.	
PW.4013	Std. $\frac{3}{16}$" double coil phos. bronze washer.	
PW.5013	$\frac{3}{4}$" O.D. × .10" thick × .377" hole, single coil steel spring washers (special).	
PP.5015	Std. $\frac{3}{64}$ dia. × $\frac{1}{2}$" length split pin.	
—	$\frac{3}{64}$" × $\frac{7}{16}$" Stubs pin.	
—	$\frac{1}{16}$" × $\frac{5}{16}$" Stubs pin.	

Woodscrews used on Page Printer.

Length.	*Head.*	*Size.*	*Material.*	*Finish.*	*For Securing.*
$\frac{5}{8}$"	C'sk.	No. 6	MS	—	Location strips
$\frac{5}{8}$"	Rd.	No. 8	MS	Black Japan	Pulley guard
$\frac{5}{8}$"	Rd.	No. 8	MS	Black Japan	Sliding resistance
$\frac{3}{4}$"	C'sk	No. 6	MS	—	Fuses
$\frac{7}{8}$"	Rd.	No. 6	MS	No. 1	5-way terminal strip
1"	Rd.	No. 6	BS	—	Switch
1"	Rd.	No. 10	MS	Black Japan	Tape guide C.P.
1"	Rd.	No. 10	MS	Japan	Table top
1$\frac{3}{4}$"	Rd.	No. 10	MS	Black Japan	Shelf

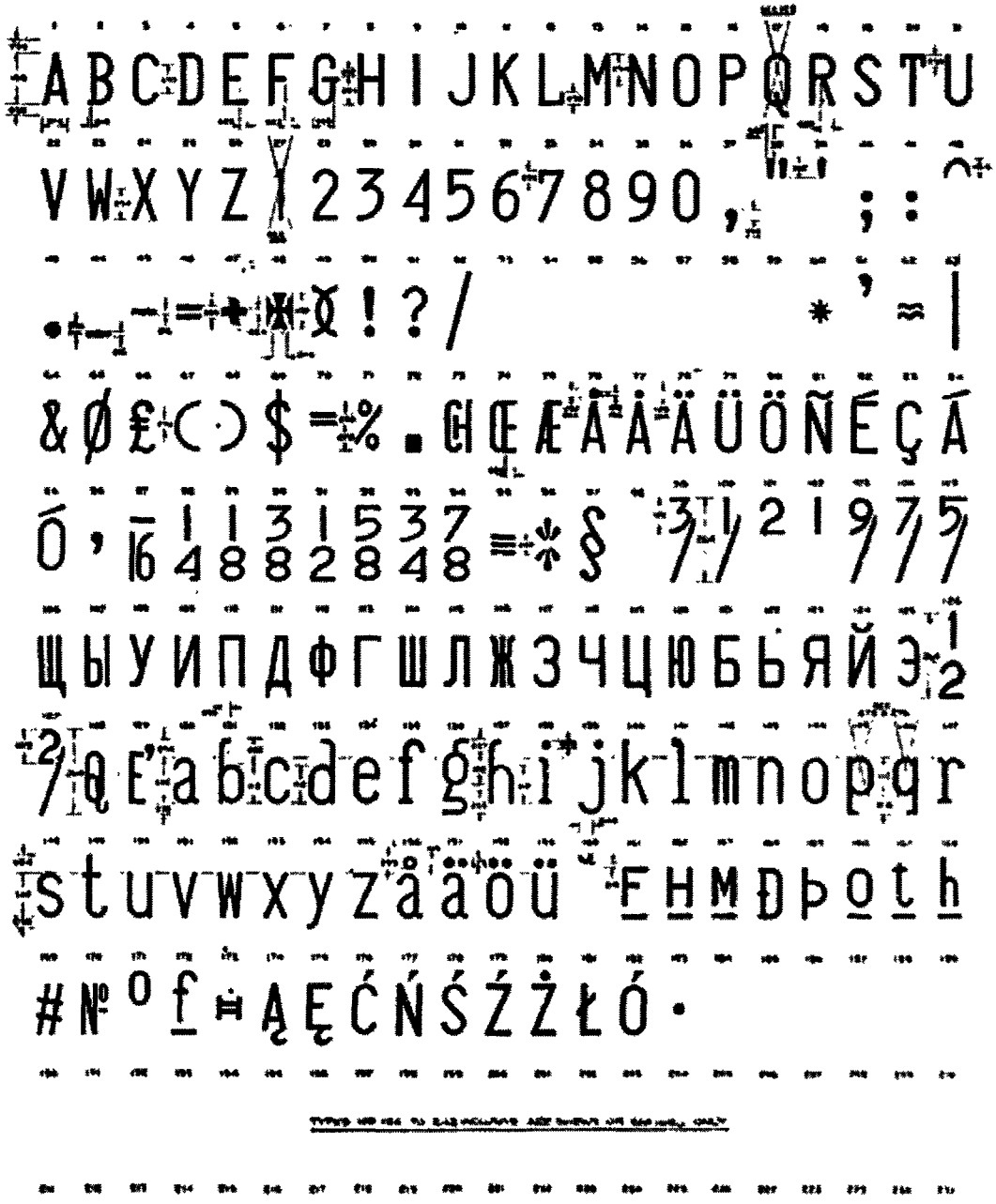


Fig. 25. Master Type Chart.
(Large Types).

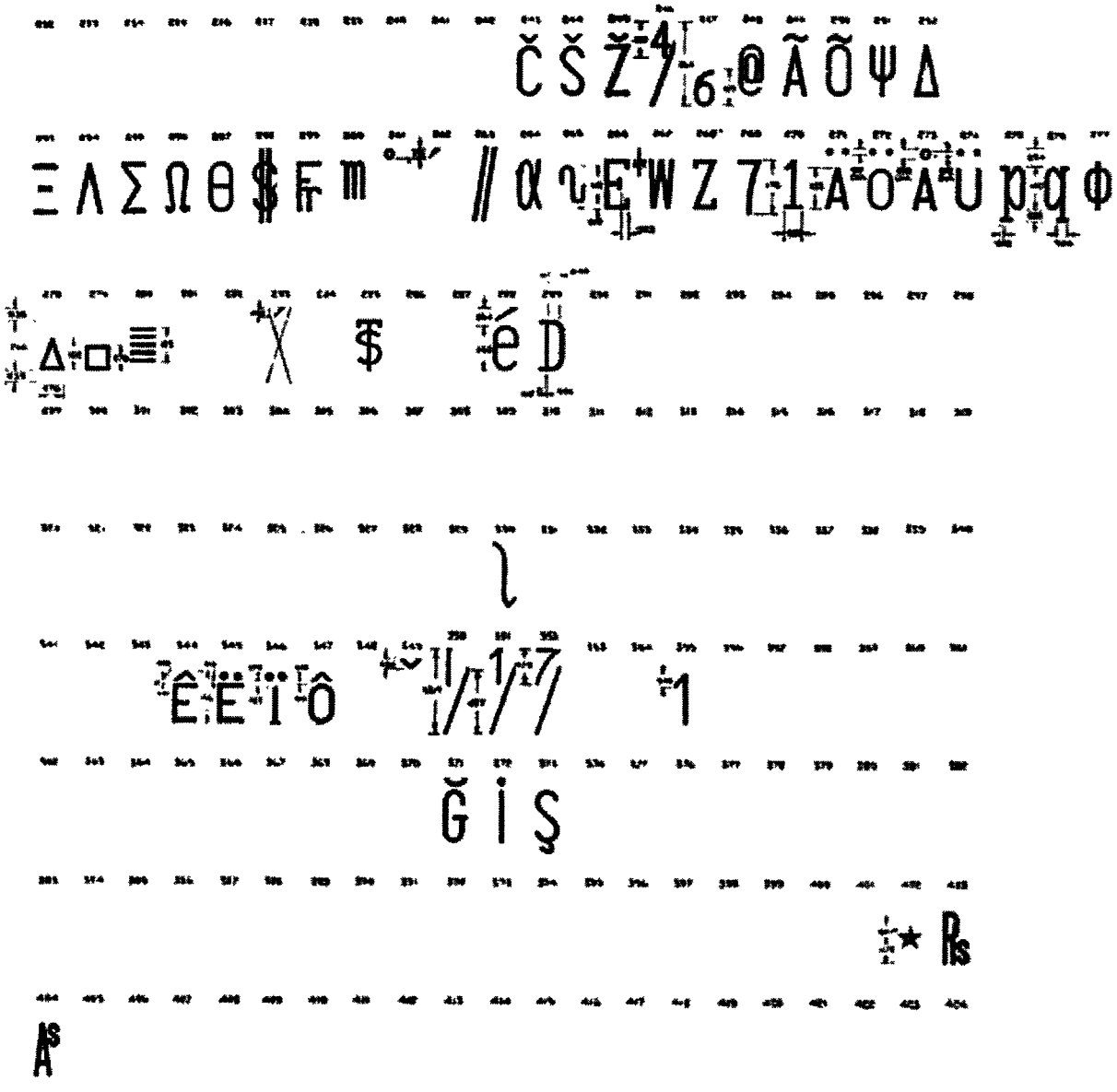


Fig. 26. Master Type Chart.
(Large Types)—*contd.*

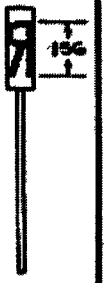
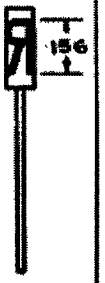
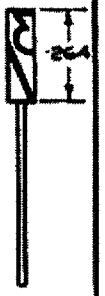
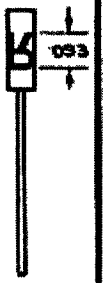
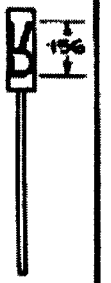
"AQ" TYPE CONCAVE FACE	PAGE PRINTER CONCAVE FACE			TAPE PRINTER FLAT FACE			MORSE PRINTER FLAT FACE		"AQ" TYPE FLAT FACE
									
STYLE	308	309	309	307	310	312	311	306	STYLE
PAD	1260/289	740/527	740/527	1260/289	740/253 A	1650/343	1260/289	740/253 A	PAD
MASTER CHART	S.N° 1680	S.N° 1680	S.N° 1670	S.N° 1680	S.N° 1670	S.N° 1670	S.N° 1680	S.N° 1670	MASTER CHART

Fig. 27. TYPE STYLE CHART.