CHAPTER 25

Multiple Distributor Models 29 and 30

MODELS 29 AND 30 are the successors in the mixing-machine field to Models 25 and 26. Carrying up to four main magazines—and on the Model 30, as many as four auxiliary magazines also—they afford continuous mixed composition from, and continuous distribution to, adjacent pairs of magazines. These models are used particularly for two kinds of composition. First, that requiring frequent changes of faces even though they are not mixed in the same line. In such work, the continuous distribution feature allows the operator to change to the adjacent magazine of the pair in use without waiting for the last line to distribute—thus speeding-up production. Second, composition requiring assembly in one line of characters from more than one magazine; such as catalog and encyclopedia listings calling for roman, bold, small caps, italic, bold italic, and perhaps even accents and special characters.

The design and equipment of Models 29 and 30 require that they have a mechanism for raising and lowering both the main and auxiliary magazines to and from operative positions. That mechanism is the same "one-turn shift" which is employed on the single distributor Models 31 and 32, and originally developed for Blue Streak Models 8 and 14.

The magazines are raised and lowered so that any adjacent two of them are in operative position with respect to the two fronts. Changing from one matrix face to the other in the pair of magazines, is accomplished by an upper assembler entrance which oscillates so as to receive matrices from either of the two fronts which are fixed in front of their respective magazines during assembling, and to guide these matrices to the long vertical sections of the partitions which in turn guide them to the assembler.

The pivoting front guide holder, although fixed in front of the upper one of the pair of magazines while matrices are being released from that magazine is, nevertheless, hinged so that it may be swung forward when not in use and thereby allow full view of the matrices as they are released from the lower of the pair of magazines.

Oscillation of the upper entrance is controlled by the Quick Mixing Key located at the right of the keyboard. A touch of this key starts in operation a cam which is linked to the upper entrance to oscillate it on its pivot, bringing the desired magazine into operation. This cam action is similiar to that for releasing matrices, but instead of a rubber roll, a steel shaft is used with a V-shaped groove into which an eccentric cam falls when the mixing key is depressed. This mixing key has the same light touch as the keyboard keys.

In Chapter 4, Fig. 10-4 shows this upper assembler entrance, or front, in position to guide matrices from the upper, and Fig. 11-4 shows it in position to guide matrices from the lower of the two magazines. Both figures also show the keyboard key rods, the intermediate levers, etc., between the keyboard and the escapements in the escapement frames beneath the magazines.

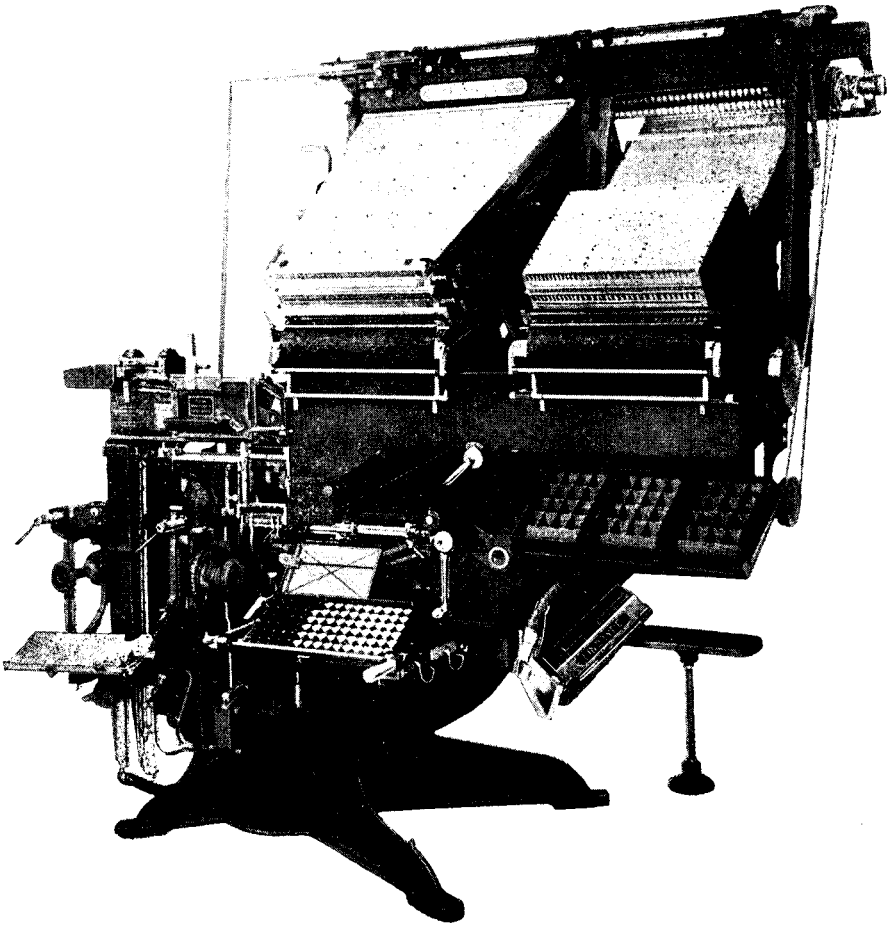

FIG. 1-25. Model 30 Linotype as viewed from the front.

Fig. 12-4 is a perspective section through the auxiliary magazines, escapements and assembler fronts on auxiliary and shows a construction similar to that on the main portion of the machine. Mixing from auxiliary magazines is accomplished in the same manner as from the main magazines.

A second mixing key located immediately to the right of the main magazine key causes the auxiliary upper assembler front to oscillate so as to receive matrices from either of the auxiliary magazines in operating position. It should be noted from Figs. 10 and 11-4 that oscillating the upper assembler front to receive matrices from either magazine also makes it possible to release matrices from that magazine and renders it impossible to release matrices from the other magazine of the pair in operating position.

The auxiliary magazines are raised and lowered by operation of the same one-turn shift used for the main magazines, as described in Chapter 27.

The auxiliary magazines are the wide 34-channel, such as used on Models 28, 32 and on some of the Models 14 and 26.

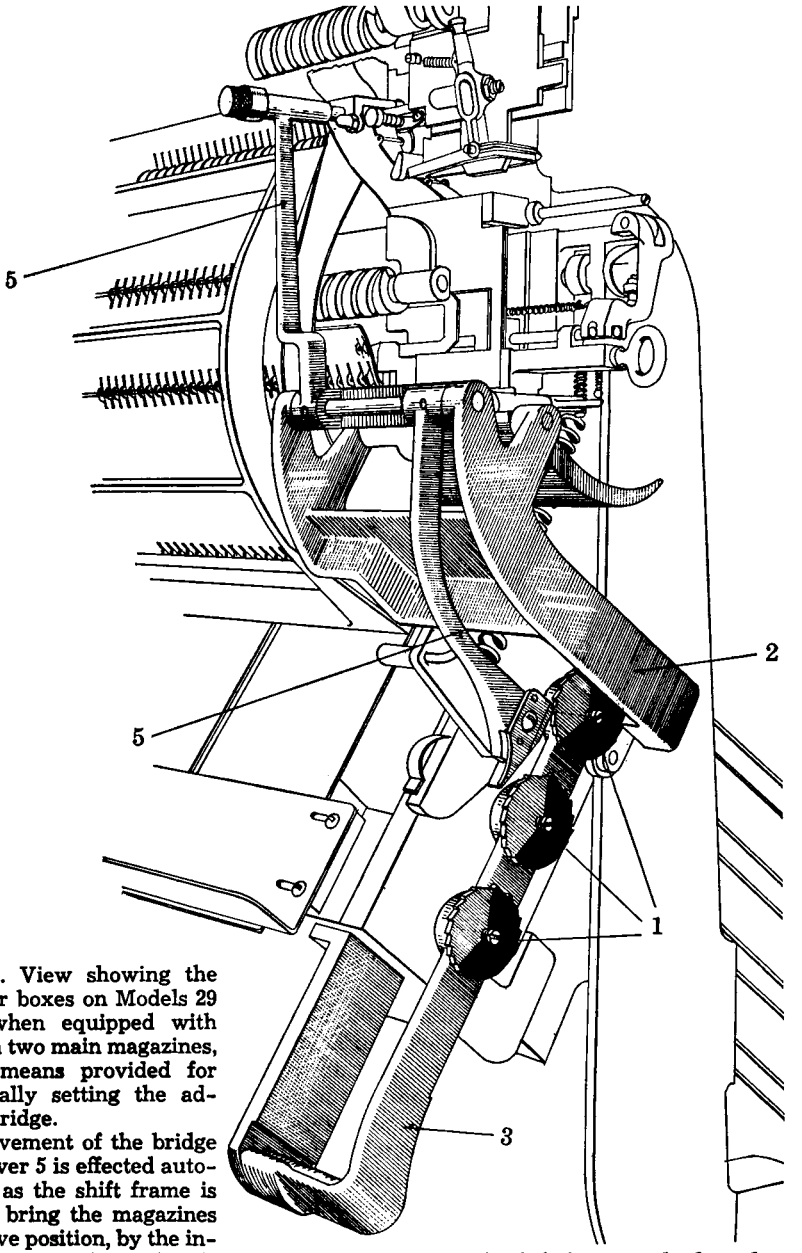

FIG. 2-25. View showing the distributor boxes on Models 29 and 30 when equipped with more than two main magazines, and the means provided for automatically setting the adjustable bridge.

The movement of the bridge control lever 5 is effected automatically as the shift frame is moved to bring the magazines to operative position, by the indicators *1* mounted on a bracket *3* carried by the movable shift frame and adapted to engage the lower end of the lever 5 mounted on the bracket *2*. The lower end of this lever is offset from the upper arm so as to register with indicators *1*.

Indicators *1* are all alike and each is provided with a series of stepped surfaces located at different distances from the center of the indicator. It is these surfaces against which the lower end of the lever 5 banks. Consequently, different settings of the indicators will effect different settings of the bridge through the lever 5.

Any magazine on Models 29 and 30 can be changed by bringing it to the upper operative position and using the in-built magazine support arms. On earlier models the support arms are not built in, but are similar to those used on the Models 8 and 14.

The description in this chapter concerns itself only with Models 29 and 30 equipped with all main magazines alike, whether of 90- or 72-channel. Two-in-One Models 29 and 30, which can carry a much wider range of type faces than "straight" models, are described in Chapter 26.

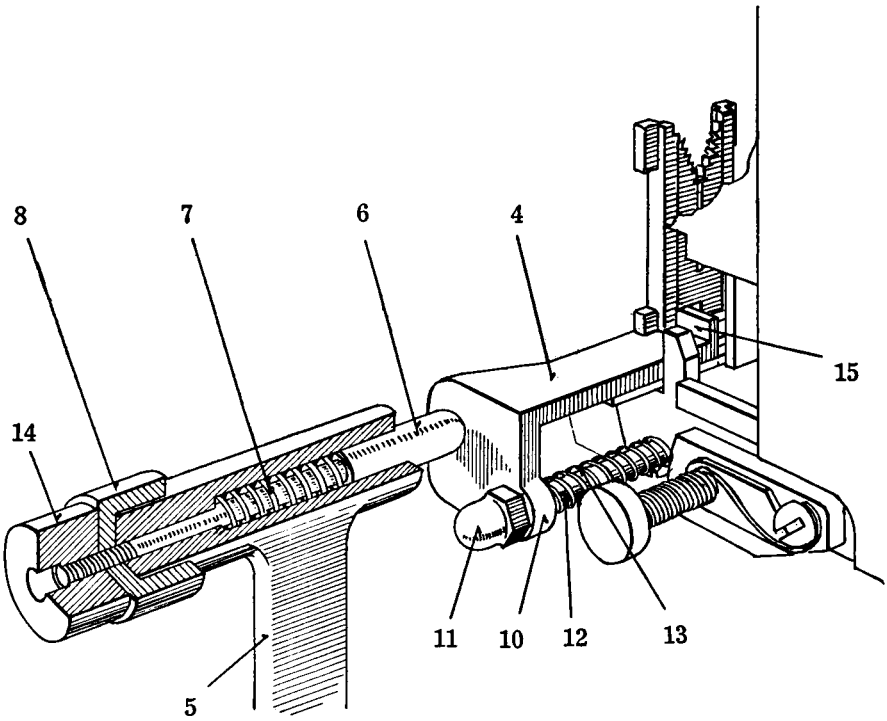

FIG. 3-25. View showing details of the adjustable bridge mechanism used on Models 29 and 30 equipped with more than two main magazines.

The bridge for routing the matrices to their respective magazines is in the form of an upstanding lip *15* presented at the front end of a horizontal slide *4* mounted between the side walls and at the right end of the distributor box, upper. The slide *4* is adjustable in a fore-and-aft direction by a long lever *5* centrally pivoted at the rear of the machine and bearing at its upper end against the slide *4*. Movement of this lever *5* against the slide *4* moves the slide forward against the pressure of the spring *13* which encircles the slidable plunger *12* attached to the slide *4*. The plunger *12* extends through the distributor box lower rails and limits the movement of the slide *4* by means of the head on its opposite end.

In order to prevent breakage of the parts in the event of some obstruction, the motion of the lever *5* is transmitted to the slide *4* by means of the spring-cushioned plunger *6* which extends through the head of the lever *5* and is threaded into a cup-shaped element *8* and a knurled knob *14* which together act as a pair of lock nuts, and by means of which the position of the plunger *6* can be adjusted to insure proper adjustment of the bridge.

DISTRIBUTION

The method of distribution is in every way similar to that described for the Models 25 and 26, except that, obviously, with more than two magazines on the machine, a fixed matrix bridge cannot be used. Instead, there is employed a movable bridge with a single projection on it. This single projection bridge is not changed for different faces. It is moved to the proper position crosswise of the matrix automatically each time the magazines are raised or lowered. The location of the bridge is controlled by the setting of an indicator similar in construction to the automatic font distinguisher indicator on the single distributor machine. There are three of these indicators, one for each of the three magazines, any one of which may at some time be the upper one of a pair of magazines in operative position. A fourth indicator is not required because the fourth, or lowest, magazine is never used in the upper operative position.

As in Models 25 and 26, matrices to be returned to the magazine in the upper operative position will match the bridge, drop to the lower distributor box and be carried by the lower distributor screws to the upper magazine. Matrices to be returned to the magazine in the lower operative position will be supported by the bridge and be carried by the upper distributor screws along their distributor bar until allowed by it to fall through the lower channel entrance to the lower of the two magazines. With this movable bridge having but the single projection, it is necessary only that the matrices in the magazine which is in the upper operative position at any time shall have in them a font slot or a bridge notch that does not appear in the matrices carried by the magazine which is in the lower operative position at that time.

Chapter 29 contains a table of matrix bridge notches for the Four-Magazine Models 29 and 30, and a detailed description of their use in separating matrices for distribution into all magazines on the machines.

Because there can be so many combinations of bridge notches for the above purpose, and because in actual practice the purchaser—especially of a Four-Magazine Model 29 or 30—wishes to use some fonts of matrices already in his possession and having bridge notches, it is necessary to have the bridge notches for matrix equipments of Models 29 and 30 worked out carefully by an experienced person when the machines are ordered. Such details are frequently referred to the factory at the time of the order.

Distributor Box, Upper

The distributor box, upper, on the Four-Magazine Model 29 or 30 has on it the movable single projection matrix bridge for performing the functions above described and is shown in Figs. 2 and 3-25 with the mechanisms for setting the movable parts.

OSCILLATING MECHANISM OF THE UPPER ASSEMBLER ENTRANCE

This mechanism is built in two forms, one for Model 29 and the other for Model 30. A grooved cam is added to either form of mechanism to control the keyboard rod lever slide on a "Two-in-One" type of either Model 29 or 30.

The following description relates to the oscillating mechanism used on the "Two-in-One" Model 30, the most complete form of the mechanism.

As already stated, this mechanism is controlled by two Quick Mixing Keys—one for the main and one for the auxiliary upper (oscillating) assembler en-

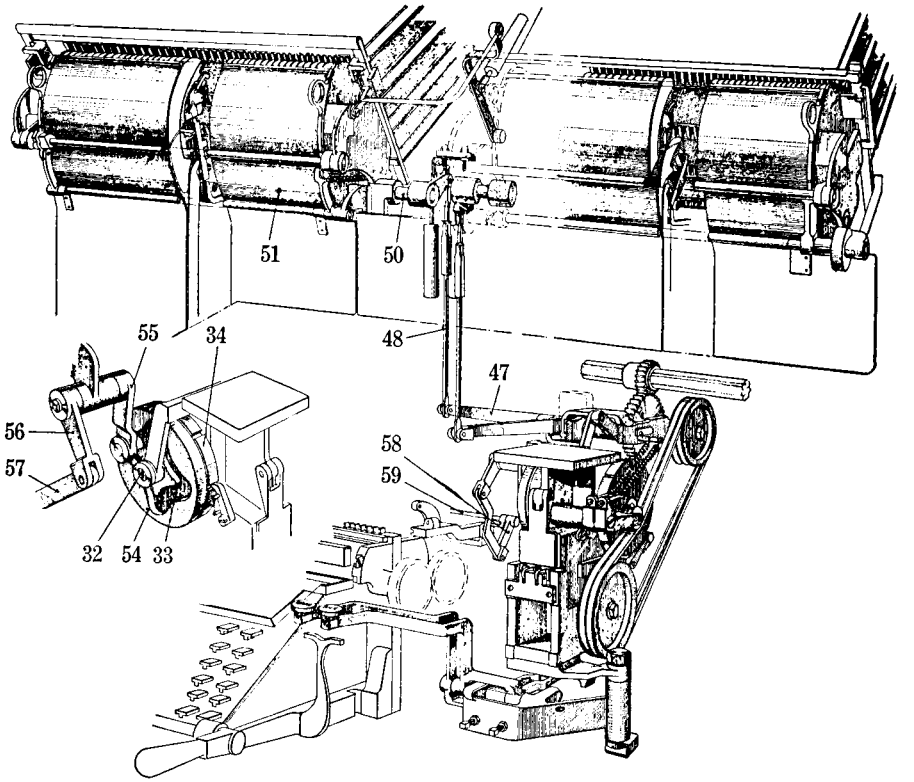

FIG. 4-25. Perspective view with parts broken away, showing oscillating mechanisms for both "Main" and "Aux." upper assembler fronts, and showing also the cam and lever mechanism for operating the keyboard rod lever slide on "Two-in-One" type of Model 30.

The cam *54* is fast to the side of the cam disk *34* which contains the cam *33* for controlling the upper assembler entrance, main, *51*. Through the lever arms *55* and *56*, which together form one lever, the link *57* and the lever *58* on the shaft *59*, the cam *54* causes the keyboard rod lever slide to be moved forward and back on the "Two-in-One" Models 29 and 30. Of course this keyboard rod lever slide with its shifting mechanism is not required on regular Models 29 and 30.

trances, or fronts. It embodies the same principle as used in the release of a Linotype matrix. Instead of a rubber roll, there is a rotating steel shaft with two V-shaped grooves, into either one of which an eccentric metal cam falls, depending upon which Quick Mixing Key is depressed—"Main" or "Aux." The grooved steel shaft is turned by two small V belts, each with its separate idler pulley. These two belts receive power from a two-groove pulley on a short jack-shaft which is geared to the intermediate shaft of the machine, and therefore the grooved steel shaft is turned continuously in one direction. Depression of either mixing key trips a yoke in which an eccentric cam is mounted, and at the same time removes a pawl latch from one of the eight notches on the periphery of a cam disk, so that the cam disk can be moved one-eighth of a revolution around its center by the up-stroke of the cam yoke acting through a ratchet pawl upon an eight-toothed ratchet wheel fast to the side of the cam disk. By an ingenious

arrangement of the pawl latch and another retaining latch pivoted on the frame of the mechanism and held continuously, by a spring, against another portion of the cam disk periphery, the cam disk is allowed to be turned one-eighth of a revolution each time the finger key is operated, but is locked against turning at all in either direction thereafter until the finger key is again operated.

This cam disk has on it a groove cam designed so that it will alternately raise and lower (for each one-eighth of a revolution) a cam lever mounted horizontally on the frame of the mechanism. The cam lever is linked to another longer lever pivoted on the frame of the machine and having its end attached to a long vertical link which is constructed so as to be both slightly extensible and slightly compressible in length. The upper end of this link operates a lever which has its fulcrum hub pinned to the shaft onto which the upper assembler front is also pinned and around the center of which it oscillates. The end of this lever is linked to a double acting piston operating in an air chamber having a separate air valve at each end. This combination cushions the motions so that the assembler front

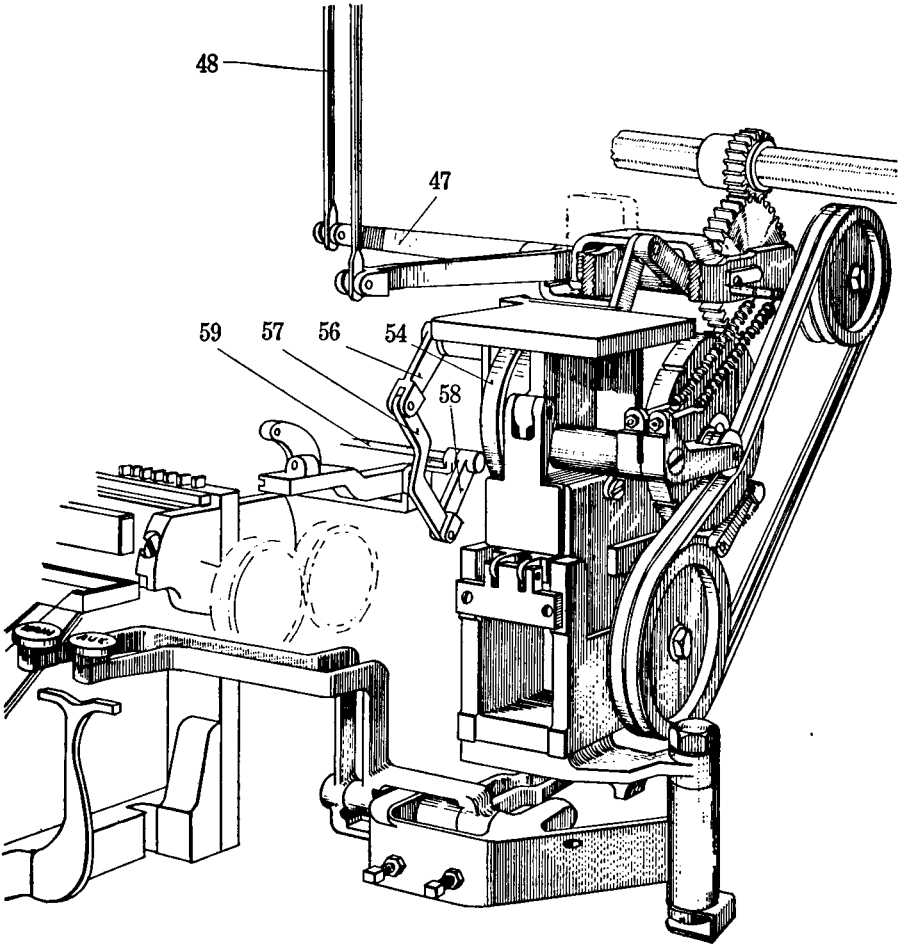

FIG. 5-25. Enlarged view of a portion of Fig. 4-25.

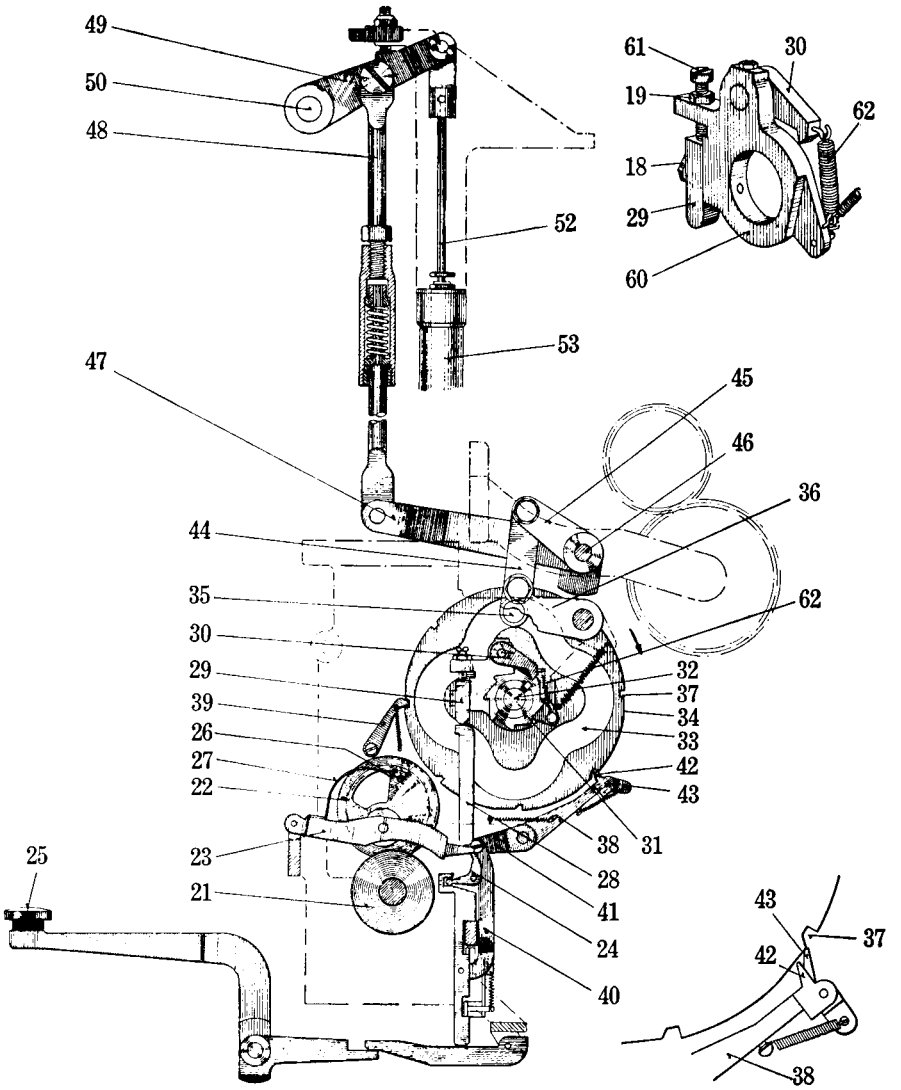

FIG. 6-25. Side view of "Main" Quick Mixing Finger Key and the mechanism which is set in motion by depression of that key. This mechanism consists of a continuously rotating roller *21*, and a cam *22* eccentrically mounted in a yoke *23* which is pivoted at one end and normally held, by a trigger *24* under its free end, in a position in which the cam *22* is above and out of contact with the continuously rotating roller *21* having around it a V-shaped groove into which the V-shaped periphery of the cam *22* is adapted to engage. When the trigger *24* is actuated, by the depression of the finger key *25*, to release the yoke *23*, the latter falls by gravity and the cam *22* is rotated by contact with the roller *21* thus raising the yoke *23*, during which action (the finger key *25* having been released) the trigger *24* returns to position to support the yoke *23* and the cam *22* is brought to rest out of engagement with the roller *21* by the laterally projecting pin *26* in contact with the stop spring *27*.

It should be noted here that depression of the finger key *25* performs another very

important function in unlatching that part of the mechanism which is to be operated upon by the upward motion of the free end of the cam yoke *23*. This unlatching operation is hereinafter described.

The push rod *28*, raised by the end of the yoke *23*, actuates a spring-loaded rocker *60* carrying a pawl *30* engaging a ratchet wheel *31* operatively fastened to the cam disk *34* which has on it the cam groove *33*, the rocker *60* being loosely mounted on the shaft *32* carrying the cam disk *34* and the ratchet wheel *31*. The cam groove *33* engages a roller *35* on a stud projecting laterally from a lever arm *36* fulcrumed on the frame of the mechanism. The disk *34* is formed with notches *37* in its periphery which are engaged by the spring latches *38* and *39*. These latches serve to prevent over-running or rebounding of the cam disk *34*, so that the latter is positively locked in successive positions corresponding to alternating high and low portions of the cam *33*, the lever *36* which controls the upper assembler entrance being thus adjusted and locked, by successive depressions of the finger key, in different positions controlling the two operative positions of the assembler entrance. The release of the latch *38*, in order to allow the cam disk to be moved forward is effected by the same depression of the finger key *25* which releases the trigger *24* in order to contact the eccentric cam *22* with the roller *21*. The link *40* lifted by depression of the finger key *25* is attached to the short arm *41* of the latch *38* which is a two-armed lever fulcrumed on the frame of the mechanism, and having at the end of its long arm a stationary pawl *42* and also a spring-held escapement pawl *43* adapted to hold the latch *38* out of engagement with that notch *37* from which it has just been removed by a depression of the finger key *25*, and to allow the latch to engage the next succeeding notch *37* when that notch arrives at that place after the cam disk has been advanced one-eighth of a revolution around its axis.

The mechanism designed for Model 30 contains a duplication of the parts already described, and parts yet to be described, in order to operate also the pivoted assembler entrance, auxiliary, on that machine.

The complete mechanism is carried on a frame casting which is fastened to the frame of the machine. A link *44* connects the cam lever arm *36* to the lever *45* fulcrumed at *46* on a bracket also fastened to the frame of the machine. The lever *45* is part of a longer lever *47* to the end of which is attached a long link *48* extending vertically upward where it is attached to another lever *49* on the same shaft *50* with the upper assembler front *51*. The link *48* is constructed so as to be slightly compressible and extensible, so as not to require a fine adjustment for length. The lever *49* is connected to a double acting piston *52* in a cylinder *53* fastened to the machine.

comes to rest silently and gently at each end of its motion. A "Two-in-One" Model 29 or 30 requires that there should be added to the mechanism above described, at the left end of its cam shaft, another cam similar in contour to that for operating the assembler front, but for the purpose of operating the keyboard rod lever slide.

It has already been noted that both finger keys "Main" and "Aux." cause to be set in motion mechanisms almost exactly alike in construction and operation. Therefore the description above should suffice for both.

MAINTENANCE

Assembler Front Oscillating Mechanism—Fig. 6-25 shows the mechanism for operating the disc *34* to move the upper assembler front sufficiently to permit the release of matrices from either the upper or lower magazine.

If for any reason the mechanism does not release properly, or if it should jam, none of the parts should be distorted or filed until the cause is located.

Jamming of the mechanism is usually caused by the trigger *24* being released before the pawl latch *43* snaps out of the notch *37* in the disk *34*. It will be noted that the lower end of the link *40* is offset, and this offset can be lengthened or

shortened by bending the link to give the correct relationship between the parts so they will function properly.

To maintain the best operating condition of the oscillating mechanism, the latch *39* must always be in proper engagement with the notches *37* in the cam *34*. If necessary to adjust, proceed in the following manner:

Release the top end of the tension spring *62*. Hold end of pawl *30* up so that it clears the teeth of the ratchet wheel *31*. Then revolve the ratchet pawl rocker *60* until the lock screw *18* is in a horizontal position. Release the lock nut *19* and loosen lock screw *18* very slightly, leaving it just tight enough to hold the shoe *29* in position.

When in motion, if cam disk *34* does not move far enough to allow the notches *37* to engage with latch *39*, adjustment should be made by turning screw *61* forward or backward slightly until latch *39* enters notch *37* in the cam disk *34* with a clearance of approximately $\frac{1}{32}''$. When this adjustment is correctly made, latch *38* will automatically enter the notches of the cam *34*. Tighten screw *18* and lock nut *19*, revolve ratchet pawl collar to its original position and replace spring *62*.

To insure correct action of the latch *38*, the dimensions between the points of the stationary pawl *42* and the spring-held escapement pawl *43* must not exceed the $\frac{3}{32}''$ as shown in diagram at lower right of Fig. 6-25.

Adjustment of Bridge Indicators—The indicators *1* are provided each with a pin adapted to seat in one or another of a series of holes drilled in bracket *3* and located to correspond to the operative positions of the various stepped surfaces. Each indicator is rotatably mounted on a shoulder screw which is threaded into the bracket *3* and held in its different adjusted positions by a compression spring reacting between the head of the screw and the indicator. To adjust, all that is necessary is to pull the indicator out until the pin clears the hole and turn to bring the desired stepped surface to operative position. (See Fig. 2-25.)