Sidewise Alignment of Partition Plates with Magazines. The method used in mounting the two partition plates in the channel entrance frame permits separate adjustment of each plate with respect to its magazine. The screws used for setting the plates are shown clearly in the perspective view, Fig. 164. Screw *12* sets the sidewise position of the assembled lower partition plate *3* and screw *9* serves the same function for the upper partition plate *2*.

In setting the partition plates sidewise with respect to their magazines, it is necessary that the relationship of the channel entrance partitions to the magazine channels be seen while making the adjustment. The lower partition plate can be made visible simply by removing the upper nuts from studs *61*, Fig. 170, and the two hinge studs *63* to free the upper partition plate. When the upper magazine is removed and the channel entrance is closed, it will be possible to lift the lower partition plate matrix guard *65* and to look down upon the partitions and the magazine channels from the front of the machine. An extension light should be placed in a suitable position to illuminate the interior of the magazine and channel entrance while making the adjustment.

The precise sidewise location of the channel entrance partitions with respect to the magazine channels was shown previously in connection with the single distributor machine in Fig. 163 and the relationship shown is correct for the double distributor machine as well. As shown in the drawing, the left side of every partition should be exactly aligned with or slightly to the left of the straight or constant side of each magazine channel. The precise alignment required is indicated at *a*. If the partition plate requires resetting, loosen the binding screws *13*, Fig. 164, adjust screw *12* until the partitions are correctly aligned with respect to the magazine channels, then tighten the binding screws. Make sure that the partition plate bar is banking against the adjusting screw *12* before tightening the binding screws.

After the channel entrance has been set sidewise, the adjustment should be tested by distributing matrices from all of the channels under power. Assemble matrices from the lower case, figure and cap sections of the keyboard and send them over to the casting mechanism. When at least one matrix of every character has passed through the distributor, open the hinged matrix guard *65*, Fig. 170, to see if all the matrices have entered the magazine. If a matrix has remained in the channel entrance, observe the alignment between its partitions and the magazine channel and make the necessary fitting. In the case of a wide channel, it is possible to direct the matrices properly into the magazine simply by curving the partition spring.

When the upper partition plate is replaced, essentially the same procedure is used to set it sidewise with respect to the magazine. The assembled upper plate is set by means of screw *9*, Fig. 164, after the upper nuts on the adjusting studs *8* are loosened. Make sure that the partition plate bar is banking against the adjusting screw before tightening the nuts on the studs. The aligned relationship between the partitions of the upper partition plate and the channels of the magazine should be the same as that outlined previously for the lower plate and the same final test under power should be used.

Channel Entrance Frame Stop Screws (Front). When the assembled channel entrance is in its closed operating position, there should be 1/32″ space between

the lower edges of partition plates *57* and *58,* Fig. 170, and the tops of the magazine plates *59* and *60,* as illustrated. The purpose in providing this space is to prevent the partition plates from striking against and damaging the magazine plates each time the channel entrance is closed. Clearance between the partition plates and the magazines is secured by the two front channel entrance frame stop screws *67,* Fig. 169, against which the channel entrance frame banks when it is in its closed operating position. When the required clearance is obtained, make sure that the channel entrance frame is banking with equal pressure against both adjusting screws, then tighten the lock nuts.

Channel Entrance Latch. Following the setting of the channel entrance frame front stop screws, the channel entrance latch *26,* Fig. 169, should be set to engage hook *27* and to hold the channel entrance in its closed operating position. The latch can be adjusted forward or backward by means of screw *68* after the two latch bracket screws *69* are loosened. The latch should be set so that it engages hook *27* fully when the channel entrance frame is banking against the front stop screws *67.* The latch should not have too much play with respect to the hook as otherwise the channel entrance partition plates will not be held close enough to the magazines. Tighten screws *69* and the lock nut on the adjusting screw when the correct setting has been made.

Channel Entrance Frame Banking Blocks. The function of the banking blocks *70,* Fig. 169, is to hold the channel entrance down positively on the yoke stop screws *56.* When the channel entrance is in its closed operating position, there should be a very slight amount of clearance—not more than .005″—between the banking blocks and the lugs they engage on the channel entrance frame. The right-hand banking block *70* is set by means of screw *71* after the binding screw is loosened. The left-hand banking block (not shown) is held on the left-hand channel entrance frame front stop screw and is set for the same amount of clearance after the stop screw lock nut is loosened.

Magazine Releasing Lever. Before proceeding with the adjustment of the magazine releasing mechanism, the magazine releasing lever adjusting screw *72,* Fig. 165, is first set to limit the movement of releasing lever *12.* The releasing lever transmits movement to the cable lever *73* through compression springs in order to prevent undue strain on the cables *13* and *36.* In adjusting screw *72,* therefore, operating lever *11* should be released and depressed slightly, then the screw should be set to stop releasing lever *12* when there is approximately 1/16″ clearance between the releasing lever and the cable lever *73.* It will be necessary to look at the underside of the releasing lever in order to see the clearance between the parts.

Magazine Releasing Cable. Following the setting of the magazine releasing lever, the magazine releasing cable *13,* Fig. 165, is adjusted by means of nuts *74* to operate the magazine releasing cam lever properly. It was pointed out previously that when releasing lever *12* is raised by the operator in preparation for the opening of the channel entrance, the magazine releasing cable *13* is drawn backward. The releasing cable, as shown in Fig. 168, thereby pulls rod *17* and block *19* backward, causing the pin in the pivoted cam lever *51* to rise into the upper part of the slot in bracket *52.* The formed slot then controls the operation of the magazine release lever automatically as the magazine and its carriage are

raised to their upper or "shifting" position to be locked. In setting the magazine releasing cable, therefore, it is necessary only to provide sufficient movement for the pin in cam lever *51* to move up freely into the slot in bracket *52*.

The stroke of the cam lever may be increased or decreased by means of the cable adjusting screw nuts *74*, Fig. 165. If the nuts are turned to draw the threaded sleeve of the casing forward, the upward stroke of the releasing cam lever *51*, Fig. 168, will be decreased when the releasing lever is raised by the operator. Tighten the casing screw nuts securely when the cam lever is released positively in preparation for the opening of the channel entrance.

Magazine Lifting Lever Connecting Link. A stop screw *75*, Fig. 168, is applied to the magazine lifting lever connecting link *10* to limit the opening movement of the magazine lifting levers. It was pointed out previously that when the lifting levers raise the lower magazine from operating to shifting position, the magazine carriage, as shown in Fig. 167, is raised until the magazine carriage catch *40* is slightly above the upper lug of block *42*. At this point, the magazine releasing cam mechanism permits catch *40* to move to the right over the block, thereby locking the magazine carriage in its upper shifting position.

The magazine releasing cam lever *51*, Fig. 168, releases the magazine carriage catch mechanism when the pin in the lever drops into the upper part of the slot in bracket *52*. In adjusting stop screw *75*, therefore, it is necessary only that the magazine lifting mechanism be stopped at the point where the pin in the pivoted cam lever *51* will drop freely into the slot. To make this adjustment, release lever *12*, Fig. 165, and depress operating lever *11* all the way. While holding the operating lever down with excessive pressure and then with moderate pressure, operate the release lever *12* and observe the freedom with which the cam lever pin drops into its slot. If the pin does not drop freely under both conditions, reset stop screw *75*, Fig. 168, until the correct operation is obtained, then tighten the lock nut securely.

Magazine Lifting Lever Counterbalance Spring. The counterbalance spring *76*, Fig. 168, is provided to assist in the downward movement of operating lever *11* as the channel entrance is opened and as the lower magazine in operating position is raised to shifting position. The spring can be adjusted for tension by means of the spring hook at its upper end threaded in the right-hand channel entrance frame bracket. The spring is most easily removed and replaced when the operating lever is depressed all the way. Set the hook to obtain proper counterbalancing action as the operating lever is depressed from normal position.

Left-Hand Magazine Lifting Lever Shoe. An adjustable shoe *45*, Fig. 167, is provided on the left-hand magazine frame lifting lever *46* to equalize its pressure with that of the right-hand lever as lower magazine and its carriage are raised from operating to shifting position. It was indicated previously that shoes *45* and *43* on the lifting levers engage blocks *41* and *44* on the magazine carriage and lift the carriage to its upper position.

Theoretically, the shoes on both levers should contact the magazine carriage blocks simultaneously. It has been found, however, that since the power for raising the magazine and its carriage is applied directly through the right-hand lifting lever *5*, Fig. 167, the left-hand lever *46* tends to have slightly less leverage against its magazine carriage block. The shoe *45* of the left-hand lever is set.

therefore, approximately .010″ in advance of the shoe on the right-hand lever for the purpose of equalizing the pressure of the two levers.

To test the setting of the shoe, release the operating lever at the right of the keyboard and depress the lever until the left-hand lever shoe *45*, Fig. 167, is almost touching block *44*. Insert a strip of paper about .015″ thick between the right-hand lifting lever shoe *43* and block *41* and insert a strip of .005″ paper between the left-hand shoe *45* and its block *44*. Depress the operating lever until the .015″ paper just drags as it is withdrawn from the right-hand lever parts, then adjust the left-hand lever shoe *45* until the .005″ paper is held with the same degree of tightness. The shoe is adjusted by means of screws *77* and is held in its set position by screw *78*. Test the adjustment by depressing and raising the operating lever and lock the setting securely when the magazine and its carriage move with maximum freedom.

Magazine Releasing Rod Adjusting Nut. The releasing rod adjusting nut *79*, Fig. 166, governs the tension of spring *18*, which imparts the power necessary for moving the magazine releasing parts back to normal position. Turning the adjusting nut in will increase the tension of the releasing rod spring. In setting nut *79*, however, it should be noted that the nut must clear the face of the lifting lever *5* by at least 1/32″ when the releasing rod *17* is drawn back to its furthest released position. Since this position occurs when the pin in cam lever *51*, Fig. 168, is at point *a* of the formed slot, depress the operating lever until the cam lever pin is at the point indicated. Adjust nut *79* until there is 1/32″ space between the nut and the face of lifting lever, then lock the setting with nut *80*.

Escapement Rod Depressing Cable. When releasing lever *12*, Fig. 165, is raised in preparation for the opening of the channel entrance, tripping lever *35* should have sufficient stroke against extension *34* to lower the escapement rod depressing levers *31* and *32* to within .005″ of the escapement rods. The stroke of the tripping lever is adjusted by means of nuts *81* and *82* on the threaded sleeves in the cable casing. Tighten the nuts securely when the tripping lever has the correct stroke.

Maintenance. It is important that the pivotal points of the channel entrance and magazine lifting levers be lubricated at least once a week to provide maximum freedom of operation. Oil holes are provided for the channel entrance fulcrum studs *28*, Fig. 165, the operating levers *7*, connecting link *10* and the shaft on which operating lever *11* pivots. Oil holes are also provided in the left and right-hand magazine frame supporting brackets for the shaft on which the lifting levers *5* are pinned. The bearing surfaces of the magazine frames in which the carriages slide should be lubricated with a light film of oil. These surfaces are shown clearly in Fig. 167. The pin in magazine releasing cam lever *51*, Fig. 168, and the cam track in bracket *52* should be greased lightly from time to time.

Channel Entrance Operating Mechanism (Power)

The new power-driven channel entrance operating mechanism is now being applied to all four-magazine Universal machines equipped with double distributors. The mechanism can also be applied to two-magazine Universal machines with double distributors, at an additional charge.

The new operating mechanism consists basically of a group of cams and levers which perform certain functions preparatory to the shifting of the magazine frames. The chief functions of the operating mechanism are:

1. To open and to close the channel entrance.
2. To raise and to lower the magazine in the lower operating position.
3. To depress the escapement rods.

All of these functions are controlled by an operating lever located conveniently at the right of the keyboard. The new power channel entrance operating mechanism replaces the manually operated lever formerly applied for the same purpose to mixer machines.

Channel Entrance Operating Clutch Mechanism. The mechanism provided for operating the channel entrance and related parts of the machine is shown in Fig. 171. Power for operating the mechanism is derived from a pinion *12* keyed on the intermediate shaft *11*. The shaft is driven in the conventional way by the regular motor gear drive of the machine. The rotation of pinion *12* is transferred to the operating clutch drum *16* through a gear *13* and pinion *14* keyed on the secondary shaft *15*. The clutch drum *16*, therefore, rotates continuously whenever the machine is in operation.

The channel entrance and other parts connected therewith operate only when the friction shoe facings *23*, Fig. 171, are permitted to engage the revolving clutch drum *16*. The facings are held away from the drum when the mechanism is in normal position. The friction drive principle incorporated in the clutch prevents damage to parts if an obstruction is present, such as a matrix protruding from the channel entrance, a raised matrix guard, etc.

When the channel entrance is to be opened, the operating lever *1*, Fig. 171, is pulled forward. The lever should be released immediately after it has tripped the mechanism because holding the lever out thereafter subjects the friction shoe facings to undue wear. The operating lever is connected with the pawl trip lever *5* by link *2*, lever *3* and link *4*. Forward movement of lever *1*, therefore, causes lever *5* to pivot on its fulcrum and to latch in front of stop *9*. At the same time, pawl *7* is moved clear of the stop and since the pressure of lever *5* has been released from bracket *17* in the lower end of clutch fork *18*, flange *20* and the clutch rod *21* are permitted to move to the left. The flange is connected with the clutch rod by a screw, and a compression spring *25* inside cam shaft *19* causes the rod and flange to move to the left. When the clutch rod moves in, the friction shoe facings *23* are pressed against the revolving clutch drum *16* by the linkage illustrated. A sectional view of the clutch parts just described is shown clearly in Fig. 172.

Operation of Channel Entrance. As soon as the friction shoe facings engage the clutch drum, the channel entrance latch is released so that the entrance can be opened. The channel entrance latch *42*, Fig. 171, is released by cable *51*. When the cable draws the magazine releasing rod block *36* back, the roll on screw *37* depresses cam *38* and causes link *39* to move down. Latch lever *41* is thereby raised under latch *42* and the latch is disengaged from its hook, leaving the channel entrance free to be opened by the clutch mechanism.

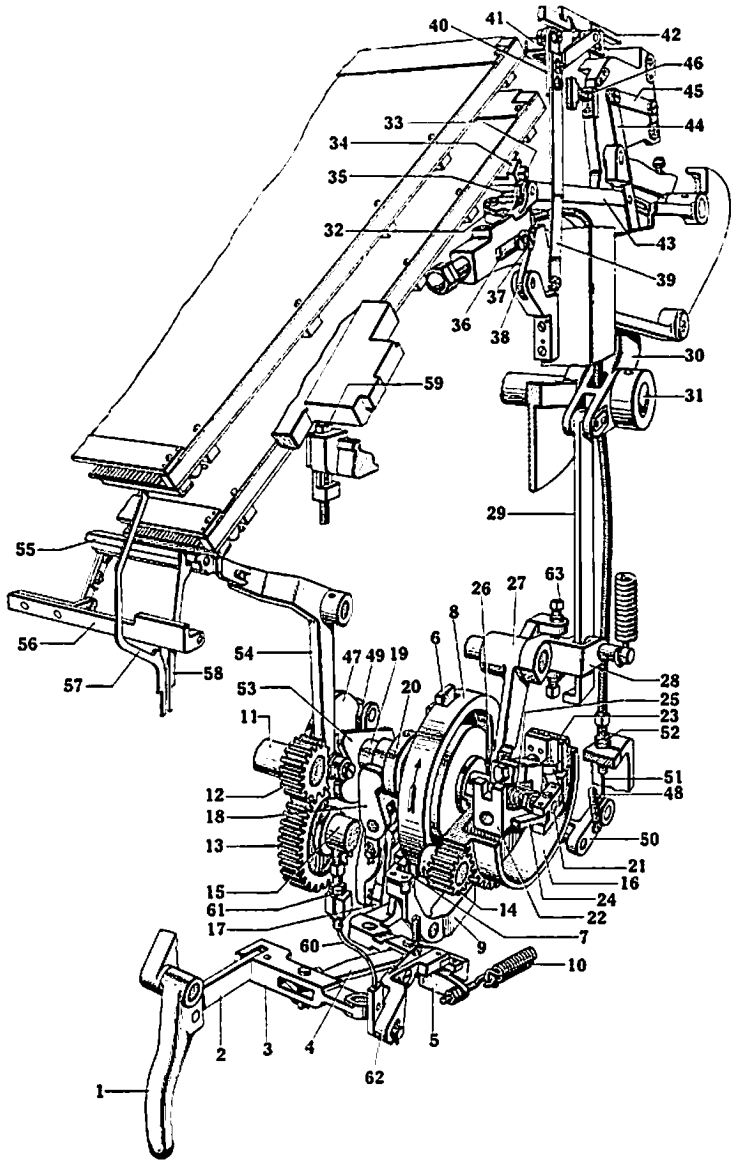


Fig. 171. Perspective View of Channel Entrance Operating Mechanism (Power). Like the manually operated unit, the power mechanism operates five main assemblies: the channel entrance levers, the magazine lifting assembly, the magazine carriage releasing parts, the channel entrance latch mechanism and the escapement rod depressing levers.

The opening of the channel entrance is promoted by the operating cam *8*, Fig. 171. As the clutch arm *22* turns with gear *16*, cam *8* is turned in the same direction. The groove in the operating cam controls the opening and closing movements of the channel entrance. The movement of the cam is imparted to the channel entrance through cam lever *27*, auxiliary lever *28*, link *29* and the left and right-hand magazine lifting levers, the latter of which is shown at *30*. As the lifting levers, which are pinned to shaft *31*, pivot with the shaft, the channel entrance is moved away from the magazines and toward the back of the machine by releasing link *43*, lever *44* and link *45*. When the channel entrance is fully opened, pawl *6* banks against stop *9* and moves the stop forward far enough to disengage trip lever *5*. Spring *10* then causes the trip lever to bear against the roller in bracket *17* and fork *18* pushes clutch rod *21* out, thereby releasing the clutch by drawing the clutch facings *23* away from drum *16*. When the channel entrance is to be closed, lever *1* is pulled forward and the clutch mechanism operates as described in the preceding outline.

When the channel entrance is opened manually to its furthest position from the rear of the machine, the channel entrance releasing links, *43*, Fig. 171, are temporarily disengaged from the operating levers *44*. It is obvious, then, that if operating lever *1* at the front of the machine is manipulated to close the entrance, the operating parts will function but the entrance, being disengaged from the operating levers, will simply remain in its open position. The channel entrance can be closed by hand from the rear of the machine in this instance, but to avoid confusion, the entrance should always be closed from the rear of the machine if it was opened from the rear originally. In opening the entrance manually, it is necessary to lift the releasing links *43* before depressing the channel entrance latch *42*.

Escapement Rod Depressing Mechanism. When the channel entrance operating clutch begins to operate, the escapement rod depressing mechanism is operated by a cam *53*, Fig. 174, on cam shaft *19*. The cam lever 54 engages an extension on the back depressing lever *55*, which is connected with the front depressing lever *56* by a link. When the channel entrance clutch operates and rotates cam *53*, the front and back depressing levers are lowered against their respective escapement rods. If one of the rods has remained in its raised position, therefore, it will be returned to normal position before the magazine and its carriage are withdrawn. For a perspective view of the escapement rod depressing mechanism in relation to assembled channel entrance mechanism, see Fig. 171.

Magazine Releasing and Lifting Mechanism. Whenever the channel entrance is opened, the lower magazine in operating position is released and withdrawn from between the front and back sets of escapement rods. The magazine releasing mechanism is shown in Fig. 173. The magazine carriage catch *33* is released by the bellcrank lever *32* pivoted on the right-hand magazine lifting lever *30*. The bellcrank is operated by releasing cable *51*, which is connected with cam lever *50* pivoted in the gear case. Cam roll *49* on the lever is held against cam *47* by spring *48*. When the channel entrance operating lever is pulled forward and the clutch begins to operate, the releasing cable assembly causes the bellcrank *32* to push in the magazine carriage catch *33* and to hold the catch in its released position until the magazine has been withdrawn fully, at which point the catch

is released and is permitted to lock the magazine carriage in its upper position. The magazine and carriage will be locked in this inoperative position until they are returned again to operating position.

The mechanism which lifts the lower magazine from between the front and back sets of escapement rods is shown in Fig. 171. The lifting of the magazine and its carriage is effected by the left and right-hand lifting levers, the latter of which

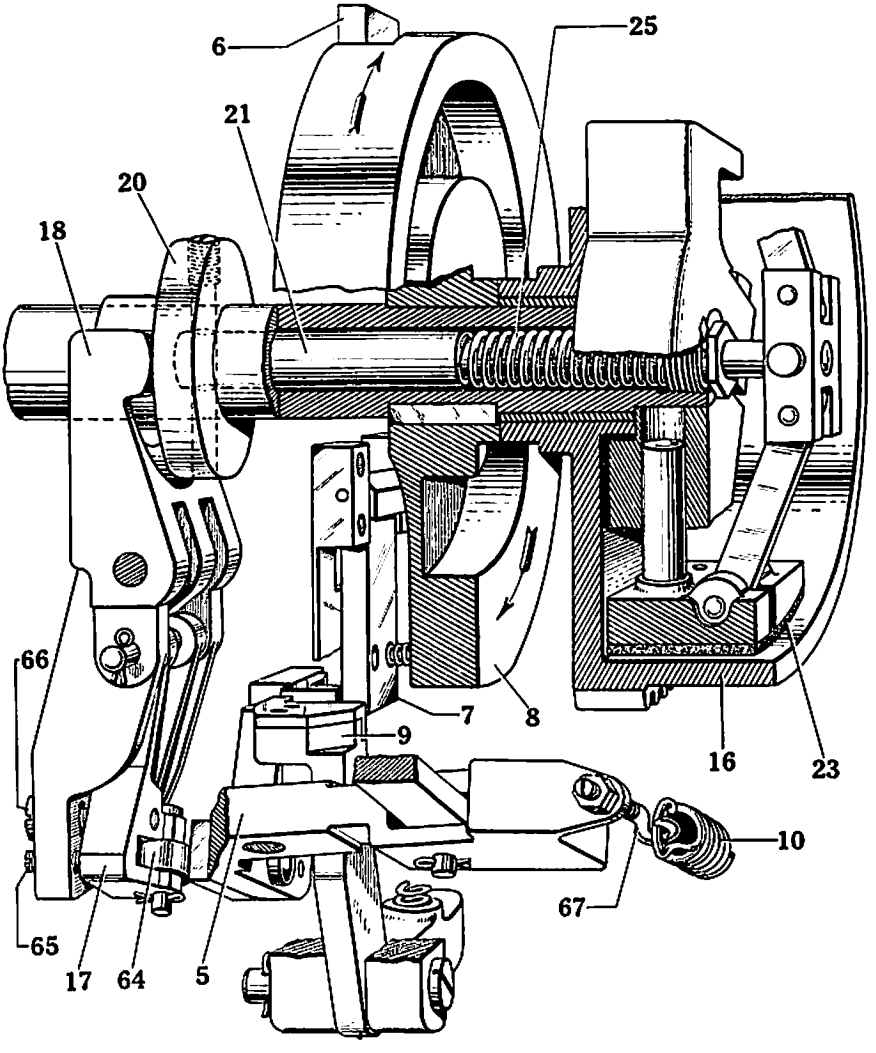


Fig. 172. Sectional View of Channel Entrance Operating Clutch. The clutch arm has been turned out of position for the purpose of illustrating the clearance required between the friction shoe facings *23* and the clutch drum *16* when the clutch is disengaged and the parts are in normal position. The clearance is important in that it prevents undue wear of the facings.

is shown at *30*. The magazine is lifted simultaneously with the opening of the channel entrance through movement imparted by cam *8*. As the lifting levers pivot with shaft *31*, two shoes *35* engage blocks *34* fastened to the magazine carriage and withdraw the lower magazine in operating position from between the escapement rods *57* and *58*.

Channel Entrance Safety Stop Lever. A safety stop lever *62*, Fig. 171, is provided to lock the operating lever *1* whenever the magazine frame is not fully seated in any of its various operating positions. The stop lever is pivoted on a shoulder screw so that its front end can be raised or lowered with respect to the pawl trip lever *5*. A cable *60*, Fig. 175, connects the stop lever with a plunger *59* at the right of the main magazine frame. When the frame is fully seated in any of its operating positions, it banks on the plunger and causes the cable *60* to raise the front end of stop lever *62* approximately 1/64" above the trip lever *5*. This leaves the trip lever free and the channel entrance operating lever may be pulled forward to close the channel entrance. If the magazine frame does not seat fully in operating position, however, stop lever *62*, Fig. 171, will remain in front of trip lever *5* and the operating lever *1* will be locked by the linkage illustrated. When the obstructing condition has been removed and the magazine frame is fully seated, the stop lever will be raised and the channel entrance mechanism will operate normally.

A similar operating cable is applied to the side magazine frame when the machine is so equipped. The cable is connected with the stop lever in the same way and operates exactly as described in the case of the main magazine assembly.

Adjustments

The following list of settings outlines all of the adjustable parts of the channel entrance operating mechanism. Proper operation of the parts depends, to a great extent, upon the accuracy with which the adjustments are made.

Channel Entrance Operating Cam Lever. Two adjusting screws *63*, Fig. 171, are threaded in cam lever *27* to regulate the closing movement of the channel entrance and the height to which the lower magazine in operating position is raised when the channel entrance is opened. The adjusting screws should be set so that the channel entrance frame banks firmly against stop screws *46* when the entrance is closed. In addition, the cam lever adjusting screws should be set so that when the channel entrance is opened, the lower magazine carriage in operating position will be lifted high enough for catch *33* to slide freely into its slot and lock the magazine carriage in its raised position. If the lower magazine in operating position is not raised high enough to lock, the entire magazine frame will be locked and it will be impossible to shift the magazines. When the adjusting screws have been set properly for the two conditions outlined, tighten the lock nuts and the two fastening screws securely.

Magazine Lifting Levers. The magazine lifting levers, as previously described, withdraw the magazine in the lower operating position when the channel entrance is opened and lower the magazine when the entrance is closed. A left and a right-hand lever are provided for this purpose, the latter of which is shown at *30*, Fig. 173. Two shoes *35* are fastened to the levers and engage blocks

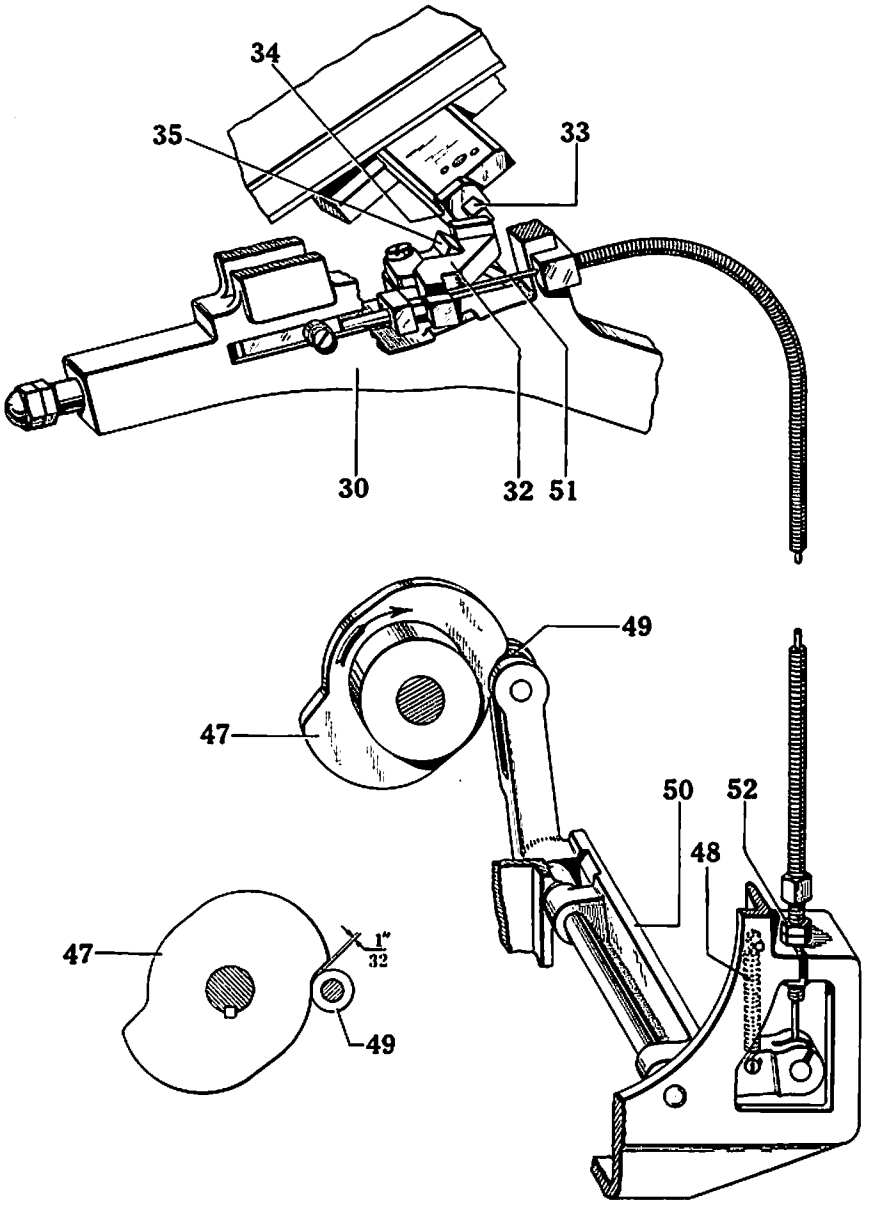


Fig. 173. Detail view of the magazine carriage catch releasing mechanism. Whenever the channel entrance is opened, the lower magazine in operating position is lifted from between the front and back sets of escapement rods and is locked in an inoperative position. The bellcrank *32* pushes in and releases the magazine carriage catch *33* preparatory to the lifting of the magazine and its carriage. The bellcrank also releases the catch when the magazine is to be returned to operating position.

34 on the magazine carriage whenever the magazine is to be raised. The shoe *35* on the right-hand lever is fixed in position but the corresponding shoe on the left-hand lever has been made adjustable in order to obtain equal pressure on both levers. When the machine is assembled, of course, the lifting levers are pinned tightly to the shaft and the adjustable shoe on the left-hand lever is adjusted correctly. While there should not be any occasion for readjusting the shoe, the adjusting procedure is outlined to provide a complete understanding of the lifting levers and their operation.

Theoretically, the shoes on both levers should contact the magazine carriage blocks at the same time. It has been found, however, that since the power for raising the magazine and its carriage is applied directly through the right-hand lifting lever, the left-hand lever tends to have slightly less leverage against its magazine carriage block. This condition may cause the magazine carriage to bind its frame and the shoe on the left-hand lever is set, therefore, approximately .010″ in advance of the shoe on the right-hand lever for the purpose of equalizing the pressure of the two levers.

To test the setting of the shoe, trip the channel entrance clutch and turn the intermediate distributor driving shaft by hand until the left-hand magazine lifting lever is almost touching its carriage block. Insert a piece of paper about .015″ thickness between the right-hand lifting lever block and the carriage block and insert a piece of .005″ paper between the corresponding parts of the left-hand lever. Turn the intermediate driving shaft until the .015″ paper just binds between the parts, then adjust the left-hand lever block until the .005″ paper is held with equal tightness. The freedom with which the magazine is lifted may be checked to some extent by turning the intermediate distributor driving shaft by hand. The desirable result, of course, is to obtain maximum freedom in the raising and lowering of the magazine and its carriage.

Operating Clutch Fork Roller Bracket. When the channel entrance clutch reaches the end of its closing or opening stroke, as previously described, starting and stopping pawl *6* or *7*, Fig. 172, moves stop *9* forward and releases the trip lever *5*. Spring *10* then causes the trip lever to bear against the roller *64* at the lower end of fork *18*. The fork moves the clutch rod *21* to the right through its connection with flange *20* and the clutch facings *23* are thereby drawn away from the clutch drum *16*. It is desirable that the facings be drawn completely away from the drum when the clutch is not in operation. If the facings were to remain in contact with the drum, they would be subjected to undue wear and the clutch would begin to slip as the wear increased.

The roller bracket *17*, Fig. 172, is adjustable in relation to the pawl trip lever 5. The bracket should be adjusted so that the clutch will be released slightly before stop *9* banks fully against screw *68*, Fig. 175. This condition will be established if approximately ⅛″ play is provided between the roller *64*, Fig. 172, and the pawl trip lever *5 when the friction shoe facings 23 are in contact with the clutch drum 16*. The roller bracket *17* is adjusted by means of two headless screws *65* and is clamped in position by screw *66*.

Starting and Stopping Pawl Trip Lever Spring. In describing the release of the channel entrance clutch, it was pointed out previously that the friction shoe facings *23*, Fig. 172, are drawn away from the clutch drum *16* when the clutch

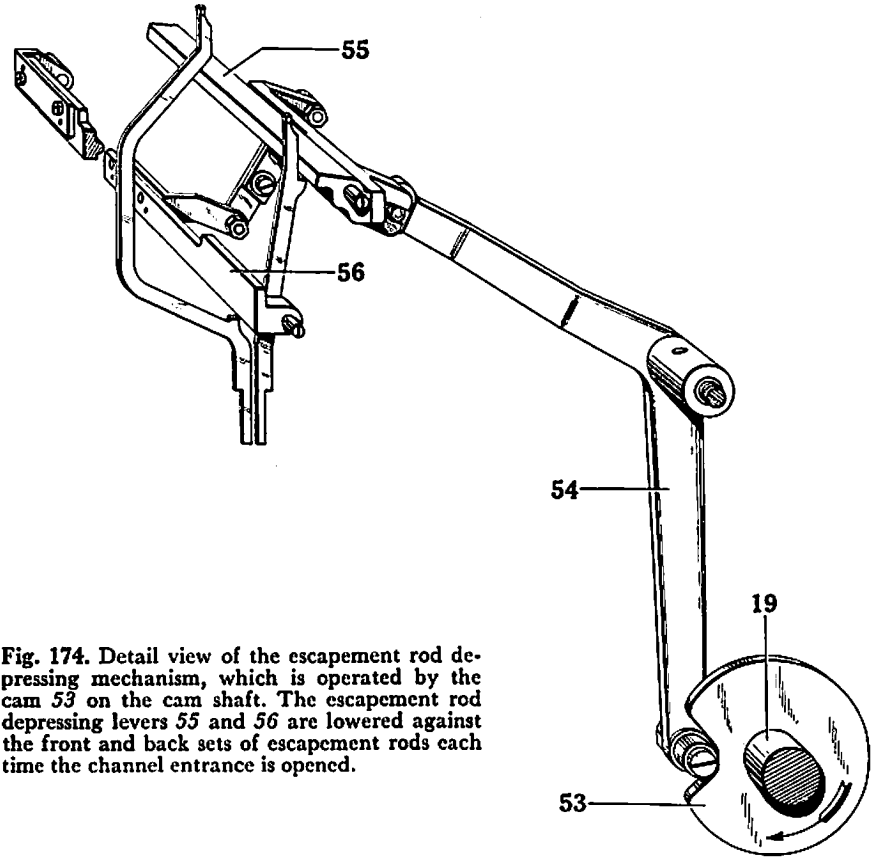


Fig. 174. Detail view of the escapement rod depressing mechanism, which is operated by the cam *53* on the cam shaft. The escapement rod depressing levers *55* and *56* are lowered against the front and back sets of escapement rods each time the channel entrance is opened.

rod *21* is moved outwardly to the right. Power for moving the rod to the right is supplied by the pawl trip lever spring *10*. When either of the pawls *6* and *7* banks against stop *9*, trip lever *5* is released. Spring *10* then causes the left end of the trip lever to bear against roller *64* at the lower end of fork *18*. Since the fork is pivoted on a hinge pin, its upper end is moved to the right against flange *20*. The flange is connected with the clutch rod *21* by a screw and the facings *23* are drawn away from the drum *16* by the linkage illustrated. *The tension of the pawl trip lever spring 10, therefore, is extremely important* because it governs the clearance between the friction shoe facings and the clutch drum *after the compression of spring 25 has been overcome.* The pawl trip lever spring hook *67* should be adjusted, therefore, to produce sufficient tension on spring *10* so that when the clutch is released, there will be at least .005″ and preferably .010″ clearance between the facings and the clutch drum. The clearance is most easily tested by sliding a piece of paper of the required thickness between the parts. With proper care and adjustment, the facings should last for several years. When the friction shoe facings wear to such an extent that they fail to grip the drum, they may be shimmed, but it is preferable to replace them with new facings.

Starting and Stopping Pawl Stop. When the channel entrance operating mechanism completes an opening or a closing stroke, as previously outlined, one of the pawls *6* or *7*, Fig. 172, banks against stop 9. The stop is moved forward far enough to permit the pawl trip lever *5* to disengage and to release the clutch, after which pawl *7* holds cam *8* in normal position by banking against stop *9*. An adjusting screw *68*, Fig. 175, is threaded in the bottom of the gear case to limit the movement of the stop *9*. The screw should be adjusted to bank against the stop when the high surface of cam *47* is not more than 1/32″ away from roller *49*, as shown in the detail view, Fig. 173. Tighten the lock nut securely when the clearance is obtained.

Magazine Releasing Cable. Releasing cable *51*, Fig. 173, is drawn backward by pressure of cam *47* against lever *50*. When the cable is operated, bellcrank *32* should push the magazine carriage catch *33* in far enough to release the carriage so that the magazine can be lowered as the channel entrance is closed. The

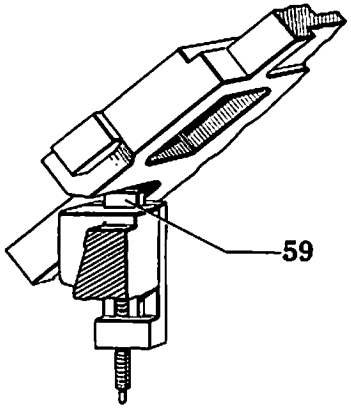
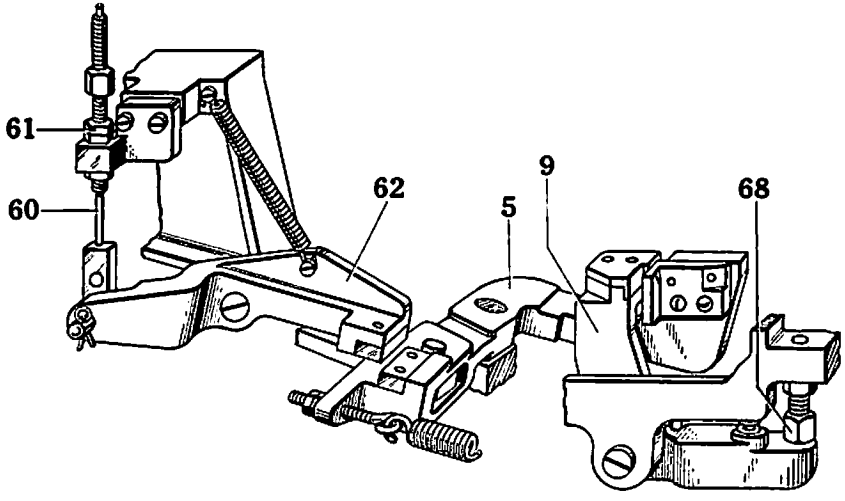


Fig. 175. View of the channel entrance safety stop lever and its operating parts. The stop lever *62* is raised from in front of pawl trip lever *5* only when the magazine frame is fully seated in any of its operating positions. This leaves the channel entrance operating lever free to be operated and the channel entrance may be closed. If an obstruction prevents the magazine frame from seating fully in position, however, the safety stop lever *62* will remain in front of lever *5* and it will be impossible to close the channel entrance until the obstructing condition is remedied.



stroke of the bellcrank against the catch can be increased or decreased by adjusting the threaded sleeve fastened by nuts *52*. If the sleeve is raised in its bearing, the bellcrank *32* will push catch *33* in further; lowering the sleeve will decrease the stroke of the bellcrank. Tighten the lock nuts securely when the adjustment is correct.

The releasing cable *51*, Fig. 171, also releases the channel entrance latch *42*, as indicated previously. When the cable is adjusted properly to release the magazine carriage catch *33*, the stroke of the roller on screw *37* against cam *38* should be sufficient to cause lever *41* to disengage latch *42* from its hook. If the latch does not disengage, it will be necessary to readjust link *39* with respect to extension 40.

Magazine Releasing Rod Adjusting Nut. When the magazine releasing rod block *36*, Fig. 171, is drawn backward by cable *51*, bellcrank *32* should move catch *33* in far enough to release the magazine carriage. The adjustment of this mechanism has been described in the preceding paragraph. At the front end of the rod fastened to block *36* is threaded a nut which governs the tension of the magazine releasing rod spring inside the lifting lever. The adjusting nut should clear the face of the lifting lever by at least 1/32″ when bellcrank *32* has released catch *33*. If this clearance is not provided, the magazine carriage catch may not be released positively when channel entrance mechanism is operated. Tighten the releasing rod adjusting lock nut securely when the clearance is established.

Channel Entrance Operating Safety Stop Lever. The stop lever *62*, Fig. 175, should just clear the top of the pawl trip lever *5* when the magazine frame is fully seated. Adjusting the threaded sleeve fastened by nuts *61* will raise or lower the stop lever. Raising the sleeve in its bracket will cause the front end of the stop lever to lower in relation to the pawl trip lever.

Escapement Rod Depressing Cam Lever. Cam lever *54*, Fig. 174, can be adjusted with respect to the depressing lever extension. A connecting stud passing through the elongated slot in the upper end of the cam lever can be moved forward or backward to set the cam lever with respect to the depressing levers. When the cam lever is on the high surface of cam *53*, there should be approximately .005″ play between the depressing levers *55* and *56* and the escapement rods.

Maintenance

The maintenance of the channel entrance operating mechanism has been simplified, to a great extent, by the use of oilite bearings in the gear case and in the brackets which support the intermediate shaft. These bearings are pre-lubricated and retain oil over long periods of time. The chief parts requiring lubrication are the operating cam lever *27*, Fig. 171, the escapement rod depressing cam lever *54*, the magazine lifting lever connecting link *29*, the various fulcrum studs on which the channel entrance frame pivots and the cam rolls which operate on cams *47*, *53* and *8*. The friction shoe links *24* may require oil from time to time but *it is essential that the inside face of the clutch drum 16 be kept clean at all times.* Proper operation of the clutch depends upon perfect friction between the facings and the drum. The groove in cam *8* should be greased occasionally.

The Distributor Clutch

The purpose of the distributor clutch applied to both single and double distributor machines is to turn the distributor screws so that the matrices will be conveyed along the distributor bars and will be returned to the magazines from which they were originally drawn. The Intertype distributor clutch incorporates a friction drive which is both positive in operation and extremely sensitive to obstructing conditions. The distributor clutch pulley is driven by a belt connected with a pulley on the right end of the intermediate shaft of the machine. If a channel of the channel entrance becomes clogged with matrices, the distributor clutch is automatically disengaged to prevent damage to the channel entrance partitions or to the matrices.

A sectional view of the Intertype distributor clutch is shown in Fig. 176. The clutch pulley *1* is mounted freely on the distributor clutch shaft *2*. The clutch flange *3* is provided with a key *4* which fits into a long slot in the clutch shaft *2*. The key causes the flange to turn the clutch shaft and at the same time, the long slot in the shaft will permit the flange to move endwise when the clutch is to be disengaged. Inserted between the clutch pulley *1* and flange *3* is a friction washer *5*, which is held normally against the face of the clutch pulley by compression spring *6*. The spring bears against a shoulder on the clutch flange and is tensioned by adjusting collar *7*. Whenever the distributor clutch is in operation, therefore, spring *6* causes flange *3* to hold friction washer *5* against the revolving

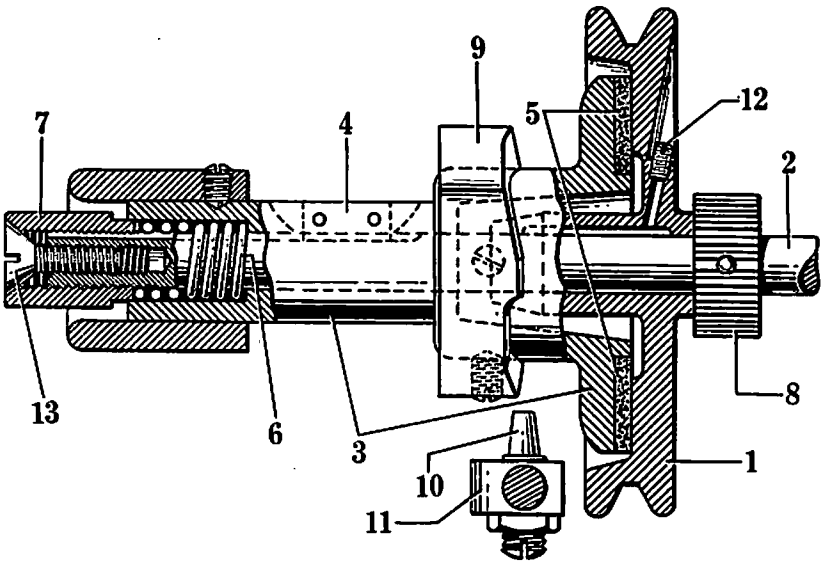


Fig. 176. Intertype Distributor Clutch, shown partly in section to indicate its basic operaing principle. The pulley *1* is mounted freely on shaft *2* and is turned continuously by a pulley on the intermediate shaft when the motor is running. Friction washer *5* is normally held against the pulley through action of spring *6* and rotation of the pulley is transmitted to shaft *2* and the distributor screw assembly. Whenever screw *10* engages collar *9*, however, washer *5* is withdrawn from the driving pulley *1* and the distributor screws are stopped.

clutch pulley *1*. The rotation of flange *3* is transmitted to the clutch shaft *2* through key *4*. Gear *8* pinned on the clutch shaft is thereby rotated and the distributor screws are caused to turn.

While the automatic stopping feature of the distributor clutch is described in connection with matrix distribution under the next bold heading, it should be noted at this point that the clutch is stopped by collar *9*, Fig. 176, and a screw *10* in the distributor clutch lever *11*. Collar *9* is fastened to the clutch flange *3* and turns with the flange whenever the clutch is in operation. If screw *10* is permitted to move up in front of the formed face of collar *9*, however, the collar will move flange *3* to the left against tension of spring *6*. This will release washer *5* from the clutch pulley *1* and will permit the pulley to rotate independently of the flange *3*. The clutch shaft *2*, therefore, remains stationary and no movement will be imparted to gear *8* or to the distributor screws until washer *5* is permitted to resume contact with the clutch pulley *1*.

Operation of Distributor Clutch. The distributor clutch is shown in relation to the distributor screws and part of the channel entrance in Fig. 177. It was mentioned previously that the distributor clutch is disengaged whenever screw *10* in clutch lever *11* is permitted to engage collar *9*. The screw is normally held clear of the collar by a right-angled plate *15* on clutch lever *11* and a plate *16*

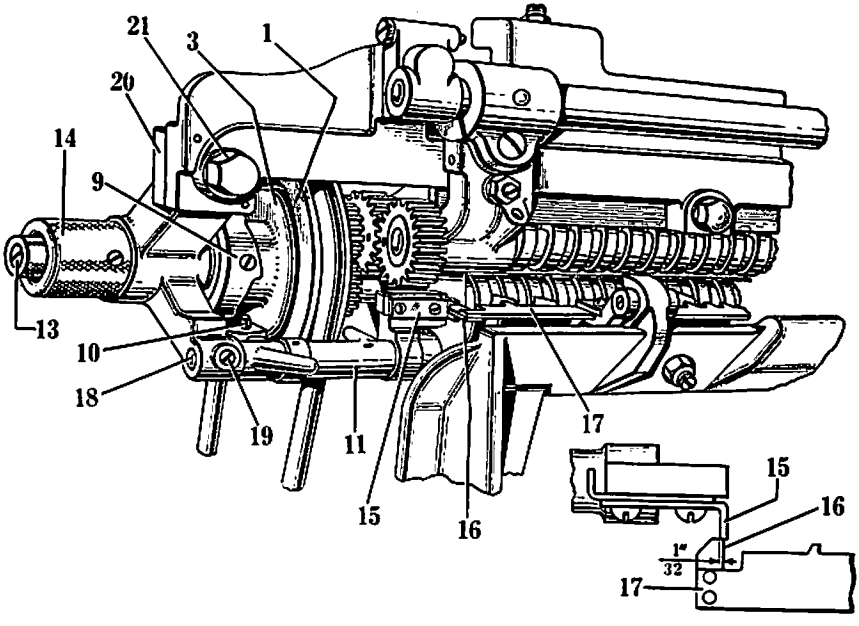


Fig. 177. Distributor Clutch and Channel Entrance Automatic Stopping Bar. The automatic stopping bar plate *16* engages plate *15* on the clutch lever *11* and holds pawl screw *10* away from flange collar *9*. This permits the distributor clutch to turn the distributor screws and to move the matrices along the distributor bar. If a channel becomes clogged with matrices, however, the distributor screws will move the last matrix against a partition and will cause stopping bar *17* to move to the left. This will disengage plate *16* from plate *15*, causing pawl screw *10* to engage collar *9* and to stop the distributor screws automatically.