30 from plate *27,* then pull the cam plate out of the switch box to the front of the machine. When the cams have been set on the plate, return the parts and operate the magazine frame to observe the effect of the settings. When link *6* banks firmly but not with too much pressure against both stop screws *35* and *36,* the adjustment of the switch cams may be regarded as basically correct.

When the control switch cams have been adjusted properly for the forward and backward positions of the magazine frame, the center position (moving forward and backward) will be fairly accurate but may require a slightly finer adjustment. The center position is set primarily by lever *51,* Fig. 203, as described below.

Control Switch Operating Lever. In describing the front and back seating locations of the magazine frame, it was pointed out previously that the frame is stopped positively in its supporting blocks when link *6,* Fig. 203, banks against screws *35* and *36.* Since the center position of the magazine frame does not have a solid stop, a slightly different method of adjustment is used when setting the lever *51.*

Before starting to adjust the center location of the magazine frame, the operating worm brake *37,* Fig. 203, should be removed from the worm. Take out the front magazine frame supporting block screw, then pull the brake out of the block. Test the seating of the magazine frame by moving the frame under power to center position, moving both forward and backward. The lug of the magazine frame should in each case move approximately 3/64″ past the seat in the supporting blocks *49,* Fig. 209. It is understood, of course, that when the brake is replaced on the worm, the magazine frame will be stopped precisely in its seating location. In order to see the overthrow stroke of the magazine frame, it is necessary to remove screw *50* from the left-hand magazine frame supporting bracket.

If the frame does not move forward far enough and overthrows too far toward the rear of machine, it is an indication that the cams on plate *27,* Fig. 203, are being located too far toward the front of the machine. This condition is remedied by adjusting lever *51* so that link *30* will move the plate backward. Try the adjustment by moving the magazine frame forward and backward under power to center position and tighten the clamping screws securely when the magazine frame overthrows the seat in the supporting block by 3/64″. It may be necessary to readjust the control switch cams on plate *27* slightly if the precise overthrow forward or backward cannot be obtained entirely by adjusting the lever *51.*

Magazine Frame Operating Worm Brake. Following the overthrow adjustment as described above, the operating worm brake *37,* Fig. 203, should be replaced and adjusted to stop the frame precisely in the supporting blocks in center position. The magazine frame banks on the adjustable screw in the brake and prevents the worm from overthrowing after the operating switches have cut off the circuit. The magazine frame should be moved forward and backward to center position and the brake adjusting screw should be set to stop the frame at the precise moment when it seats in supporting blocks *49,* Fig. 209. The adjusting screw should not be turned out so far, however, that the magazine frame will be prevented from seating in the supporting blocks.

Removal of Parts and Maintenance

The magazine frame control switch boxes can be disengaged from their supporting brackets and lifted to accessible positions for inspection or cleaning. To remove the main magazine switch box, first move the magazine frame to its full forward position. *Turn off the main motor switch or cut-out switch 56, Fig. 203, at this point* because when cam plate *27* is removed, all of the contacts inside the switch box meet and a short circuit will result if the current is not turned off. Remove the shoulder screw at the rear of link *30,* loosen screw *55* and disconnect the cables from the clamp. Pull cam plate *27* out of the switch box, depress lever *33* and pull the assembled switch box out to the front of the machine.

The side magazine switch box is removed by essentially the same method. After the side magazine frame has been moved fully forward under power, the line switch should be turned off preparatory to the removal of the switch cam plate. The cam plate may be pulled out to the front or rear of the machine after the shoulder screw at the rear of the cam plate link is removed. The assembled switch box can then be pulled out of its bearing to the rear of the machine after the switch rack bolt lever is depressed.

From the standpoint of maintenance, it may be necessary at long intervals to replenish the supply of oil in the geared sections of the magazine frame operating motors. Engine oil No. 965 is recommended because it provides the proper lubrication and is not affected as much by extreme changes in temperature as are oils of different viscosity. The motors should be filled to the overflow plug and an occasional check should be made to guard against leakage. As to the magazine frame operating mechanism, it is essential that all of the parts related to the movement of the magazine frames be lubricated periodically to insure maximum freedom. The magazine frame lower shaft, upper shaft and rolls, operating worm and worm gear are the chief parts to be checked. The operating worm and worm gear should be given particular attention. *The bearings of the worm should be oiled at least once a week and the threads of the worm and worm gear should be coated heavily with graphite grease.*

Procedure for Erecting Universal Intertype Machine with Power Shift

The following outline indicates the general sequence to be followed in assembling a Universal Intertype machine equipped with the magazine frame power operating mechanism, commonly referred to as the power shift. The outline deals chiefly with the new parts incorporated in the power shift mechanism and covers the most important assembling operations up to and including the application of all of the new parts. The application of all other parts is carried out by the same procedure formerly followed in the regular erecting routine and is therefore omitted from this summary.

It should be noted that the following outline describes the erection of a Universal machine with both the main and side magazine frame power shift. If a machine is equipped only with a main magazine power shift, the outline may still be used except that all references to the side magazine power shift parts

should be disregarded. The illustrations referred to show only the parts for the main magazine unit of the machine. The various parts for the side magazine unit, however, can be identified easily by the names used for the corresponding parts of the main magazine unit.

Parts referred to by number in the following outline are shown in Fig. 203.

1. Apply the distributor bracket.
2. Apply the intermediate bracket.
3. Apply the face plate.
4. Apply the assembled channel entrance operating gear mechanism.
5. Apply the intermediate shaft and pulleys. The shaft passes through a bronze bearing in the gear cover fastened to the gear housing. Make sure that the shaft turns freely when rotated by hand and see that the key is inserted in the bakelite driving pinion.
6. Apply the main magazine frame supporting brackets, right and left-hand.
7. Remove worm *10* and brackets *11, 12* and *13* from the right-hand magazine frame supporting bracket *1*. Remove the assembled switch guide *60*. Remove pinion *31* and washers from the magazine frame lower shaft *5*. Remove stop screw bracket *36* from the channel entrance operating gear housing. Insert the magazine frame lower shaft *5* and links *6* and replace the parts previously removed from the shaft. Make sure that the timing mark on pinion *31* is matched with the mark on rack *32*. Replace worm *10* and its bearings and fasten switch box guide *60* in position.
8. Apply the assembled motor bracket *57* to the distributor bracket.
9. Remove safety plunger bracket *58* and switch actuating plates *19* from pi bracket *21* and apply the pi bracket to the machine. Cable *22* connected with the magnetic switch box *59* is provided with one switch *20* if the machine is equipped only with the main magazine power shift, or two switches if the side magazine power shift is applied as well. The switch or switches are drawn through the machine to bracket *21* as follows:

Draw the cable under the distributor bracket, through the opening at the top of the channel entrance operating gear housing to position inside bracket *21*. See that cable *22* clears the operating levers *17* as they are moved to their various positions and (if the machine is equipped with both main and side magazine power shifts) make sure that the short connecting cable from the side switch to the main switch *20* passes under lever *17*. Replace the actuating plates *19* and the bracket *58*. To locate the switch *20* in its proper operating position see the description of "Magazine Frame Operating Switch" in the preceding section on adjustments.

10. Remove the control switch side cover *61*, and the insulating plate; remove the terminal block *62* and back plate *63* from the switch box, as shown in the detail drawing. This will free the cables, back plate and terminal block from the switch box *without having to disconnect any of the wires from their terminals.* Draw the cables, back plate and terminal block between the distributor bracket brace and the distributor bracket, through the opening at the top of the channel entrance operating gear housing to the front of the machine. Fasten the terminal block, side cover, insulating plate and back plate to the switch box, then

insert the assembled box in its guide *60*. Connect operating cam plate *27* with link *30*.

11. Remove side magazine operating worm, bearings and driving pulley from the left-hand side magazine frame supporting bracket. Also remove the switch box guide. Fasten the supporting bracket in position, then replace the parts previously removed.

12. Apply the right-hand side magazine frame supporting bracket.

13. Remove the switch rack pinion and washers from the side magazine frame lower shaft and remove the magazine frame pinion link back stops from the side magazine frame supporting brackets. Apply the lower shaft and magazine frame pinion links, then replace the switch rack pinion, washers and stops.

14. Apply side magazine frame lifting lever assembly.

15. Fasten assembled side magazine switch box, guide and rack to right-hand side magazine frame supporting bracket. Make sure that the pinion on the magazine frame lower shaft is timed with the switch box rack.

16. Apply side magazine switch box operating lever and shaft. Connect the operating lever link with the side magazine switch box cam plate.

17. Apply the intermediate shaft bearing bracket, covers and intermediate distributor driving pulley.

18. Apply the main magazine frame lifting lever assembly.

19. Apply the main magazine frame and related parts. Insert the full complement of magazines and set counterbalance springs.

20. The distributor signal light is mounted in bracket *21*. Draw the small cable under the pi bracket to the hole provided in the bottom of the bracket. Run the cable through the hole, draw it through the opening at the top of the channel entrance operating gear housing and fasten it to the bottom of the distributor bracket with the clips provided. Connect the signal light wire to the transformer on the inside of the plate at the rear of the distributor bracket.

21. Connect the line cable *25* with the main machine motor switch at the right of the vise frame. Draw the cable under the distributor bracket through the machine column to the switch. Clamp *55* is provided to take up slack in the cable.

22. Fasten safety switch *41* to guide *40*.

23. Test the main magazine power shift and set the adjustable parts, if necessary, as outlined under "Magazine Frame Operating Control Switch Cams," "Control Switch Operating Lever" and "Magazine Frame Operating Worm Brake."

24. Apply side magazine frame, insert full complement of magazines and set counterbalance springs. Set the adjustable power shift parts, if necessary, as outlined for the corresponding main magazine parts in section on adjustments.

Replacement of Assembler Driving Belt. On machines equipped with the power shift and channel entrance operating mechanism, a guide is provided around the assembler driving pulley to facilitate the replacement of the assembler driving belt. To insert a new belt, first remove the knobs from the control operating levers *17*, Fig. 203. Take out the screw near the top of the control lever locating plate *18* and swing the plate down out of position. Insert one end of the new belt between the assembler driving pulley and the guide, then push the belt

over the pulley while turning the intermediate shaft by hand. When the belt is on the driving pulley, draw both ends of the belt between the pi bracket and the idle pulleys. Join the ends of the belt with the hook provided, turn the belt one-half turn counterclockwise, then place the belt on the assembler pulley in the regular way. In placing the belt on the assembler pulley, it will be easier if the delivery slide is permitted to move away from the assembling elevator and if the belt is not engaged with the idle pulleys until it is on the assembler pulley. When the belt is operating properly, replace the control lever locating plate and knobs.

Automatic Font Distinguisher for Single Distributor Machines

An automatic font distinguisher of the type shown in Fig. 210 is available for single distributor machines. The device sets the font distinguisher indicator finger automatically at the correct font slot positions as the various magazines are moved into operating position.

The automatic font distinguisher consists principally of indicator lever *2*, Fig. 210, the assembled link *3* and levers *5* and *7* pinned to shaft *6*. Threaded in the end of the operating lever *7* is stud *8* which registers with shoes *9* fastened to the magazines. Whenever the magazines are shifted, the shoe *9* on the magazine in operating position comes to rest on the operating stud *8*. This causes operating lever *7* to move the link lever *5* toward the back of machine through shaft *6*. This movement is transmitted to the lower end of the indicator lever *2* through link *3*. Since lever *2* is pivoted on a stud, backward movement at the lower end of the lever causes the indicator finger *1* to move forward. The finger

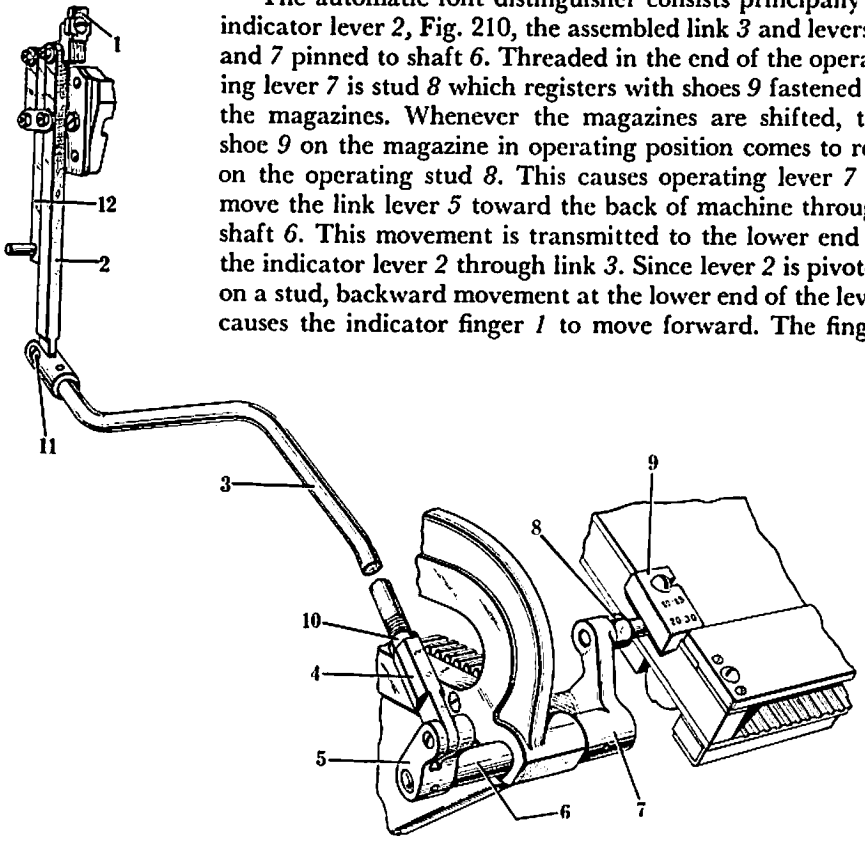

Fig. 210. Automatic Font Distinguisher for Single Distributor Machines. This device sets the indicator finger *1* automatically at the correct font slot positions by means of shoes *9* fastened to the lower ends of the magazines. It is applicable to all machines of the single distributor type.

is thereby set at the position corresponding with the font slot of the matrices in the magazine in operating position. The finger will remain at that setting as long as the magazine remains in operating position. When the other magazines are moved into operating position, the shoes on the magazines set the indicator finger *1* automatically at the correct font slot positions.

When the indicator finger *1*, Fig. 210, is set at the correct font slot location by the magazine shoe *9*, matrices of different point sizes from other magazines will be stopped by the finger before they enter the distributor box. To facilitate the removal of wrong font matrices under these conditions, releasing lever *12* is provided to pull the indicator finger *1* down clear of the matrices. The matrices can be pushed back to the second-elevator bar more easily for removal when the finger is depressed.

Adjustment. Since the magazine shoes *9*, Fig. 210, set the indicator finger *1* automatically at its correct font slot locations, it is necessary only that the basic stroke of the mechanism be set with respect to one shoe. All other locations will then be made automatically by the shoes themselves. The stroke of the mechanism is set by adjusting link *3* with respect to connection *4*. First, remove a matrix from the magazine in operating position and place it on the second-elevator bar just in front of finger *1*. Make sure that stud *8* is banking against shoe *9*. With the channel entrance open, hold a light in front of the distributor box and observe the relationship between finger *1* and the font slot in the matrix. The finger should be centrally located with respect to the slot in the matrix. If this relationship is not present, remove screw *11*, loosen lock nut *10* and turn link *3* to obtain the necessary setting. Turning link *3* further into connection *4* will cause finger *1* to be located further to the rear of the machine. Reconnect the parts and observe the effect of the adjustment. When the finger is correctly located, make sure that nut *10* is tightened securely.

Universal Non-Mixer Intertypes

The outstanding feature of Universal Intertype non-mixer machines is that provision is made for the use of two main and two side magazines without having to shift the magazine frames or change the magazines in the frame. The double assembling and distributing units of the Universal non-mixers with side units make it possible to have four magazines in position ready for use simply by shifting the keyboard keyrods from the front set of escapement rods to the back set.

The Universal non-mixer machine uses only one distributor at a time—the front distributor when matrices are being assembled from the upper magazines, or the back distributor when matrices are being drawn from the lower magazines. The font distinguisher mechanism provided for non-mixer machines is similar in principle to that applied to the conventional single distributor machines in that it simply prevents wrong font matrices from entering either the front or the back distributor.

In addition to the font distinguishing mechanism, the Universal non-mixer machines are equipped with mechanism suitable for shifting the distributor box automatically to the front or the back distributor as the keyboard keyrods are shifted to draw matrices from the upper or lower magazines. This mechanism directs the matrices to the front or back distributor so that they will be returned

to the magazines from which they were originally drawn. The last innovation to be noted in connection with the non-mixer machine is that the distributor box is similar to that used on single distributor machines. In describing the Universal non-mixer machine, therefore, the font distinguishing mechanism, the distributor box clutch operating mechanism and the distributor box will be the main subjects and will be presented in the sequence indicated.

Font Distinguishing Systems. The distinguishing systems devised for Universal non-mixer machines are fully universal in that they are adaptable to any composing room system now in operation. For those printing establishments which have single distributor machines as the main part of their equipment, a font distinguishing system has been devised which operates on the basis of the regular font slots provided in all matrices. For the composing rooms using mixer machines, the Universal non-mixer distinguisher is adapted to the use of mixer notches 6 to 12. Another distinguishing system developed for composing rooms with two or four magazine Model F and G machines operates as a two notch system, using mixer notches such as 8 and 11, 7 and 10, etc. This system is suitable in cases where only two notches are used for selecting purposes and where the selector parts are set manually.

It is apparent, therefore, that the Universal non-mixer font distinguisher is fully adaptable to outstanding machine and matrix equipment and fits in well with composing room systems based upon previous Intertype equipment.

Font Distinguisher Mechanism

The assembled font distinguisher and operating mechanism is shown in Fig. 211. The back font distinguisher finger *1* aligns with font slot or mixer notch of all matrices passing through the back distributor and front finger *2* fulfils the same function at the front distributor. The back finger is mounted on a block *22* which is inserted in a slot in carriage *3;* the front finger is mounted on a similar block *23* inserted in carriage *5*. A plunger and spring arrangement is provided under both finger blocks to hold the fingers in their upward or operative positions. If a wrong font matrix is caught by either finger, however, the finger block can be pulled down far enough to move the matrix freely back to the second-elevator bar for removal. The finger blocks can also be fastened temporarily in an inoperative position when it is necessary to use a font of matrices with a font slot or a mixer notch not provided for in the distinguishing scheme of the machine or to permit matrices without notches to pass. In making the distinguisher inoperative, the finger blocks are held down while screws *14* are tightened. All matrices will pass the distinguisher fingers under these conditions.

The sidewise location of the font distinguisher fingers is controlled by the carriages on which finger blocks are mounted. The back carriage *3*, Fig. 211, is pinned to shaft *4* and the front carriage *5* is pinned to sleeve *6*. Sleeve *6* is free to move in its bearing in the font distinguisher bracket *7* and shaft *4* is free to move in the sleeve. The back finger *1* on carriage *3* is moved by auxiliary lever *8*, operating lever *9* and link *10*, which are provided to operate shaft *4*. The front finger *2* on carriage *5* is moved by auxiliary lever *11*, operating lever *12* and link *13*, which operate sleeve *6*.

Automatic Font Distinguisher Setting Mechanism. Universal non-mixer machines can be equipped with an automatic or a manual setting mechanism for locating the font distinguisher fingers at their various operating positions. The automatic mechanism is particularly convenient in cases where the fonts of matrices to be used on the non-mixer machine have a wide variety of font slots or mixer notches. In such cases, it is advantageous to provide an automatic font distinguisher because a very appreciable saving in time is effected.

The automatic font distinguisher mechanism is similar to that provided for the automatic font selector. The font distinguisher fingers are set by cams fastened to the undersides of the main magazines. The cams set operating slides at the left of the main magazine frames by means of pivoted cam levers. When the main magazines are shifted into operating position, therefore, the pins in the operating slides bank on shoes at lower ends of links *10* and *13*, Fig. 211. The links operate the font distinguisher parts previously outlined and locate the fingers *1* and 2 in position to align with the notches in the matrices. Matrices having font slots or mixer notches other than those in use, therefore, will not align with the fingers and will be prevented from distributing into the magazines.

Manual Font Distinguisher Setting Mechanism. The manually operated font distinguisher setting mechanism is designed for Universal non-mixer machines on which few changes are required for distinguishing purposes. *Specifically, the manual font distinguisher is recommended only for machines using a two notch system such as 8-11, 7-10, etc.* Many composing rooms equipped with two or four magazine F or G machines with or without side magazines use a two notch sys-

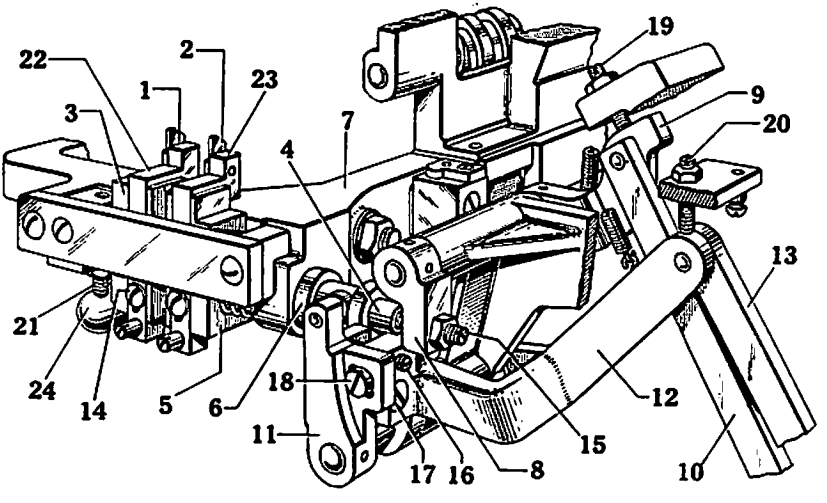

Fig. 211. Font Distinguisher for Universal Non-Mixer Intertypes. The front finger *2* prevents wrong font matrices from entering the front distributor and the back finger *1* serves the same purpose at the back distributor. The fingers are operated by either an automatic or a manual mechanism. The automatic device operates through shoes affixed to the undersides of the main magazines, and the manual device through setting disks at the left of the main magazine frame.

tem and the manual font distinguisher is suitable in such cases because the font distinguisher fingers are maintained at a constant pair of settings. In all other cases involving changes in the distinguisher settings, the automatic font distinguisher is recommended from standpoint of speed, efficiency, and convenience.

The manually operated parts of the font distinguisher are shown in Fig. 212. The font distinguisher operating links *30* and *31* are fastened at their upper ends to font distinguisher operating levers *9* and *12*, as shown in Fig. 211. The links are supported at their lower ends by a guide *27*, Fig. 212, fastened to left-hand magazine shutter cam. Two shoes *28* and *29* fastened to the operating links bank

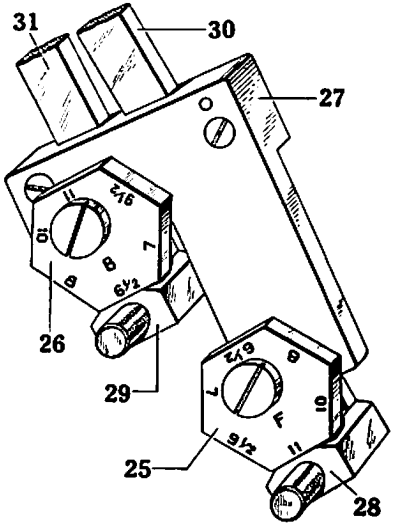

Fig. 212. Manual Font Distinguisher Setting Disks. The disks *25* and *26* are set at the two notch locations required and remain constant thereafter. This manual setting mechanism is recommended only for machines using a two-notch system such as 8-11, or 7-10, etc.

against the font distinguisher setting disks *25* and *26* and set the font distinguisher fingers at the required notch positions. The front setting disk *25* controls the location of front distinguisher finger *2*, Fig. 211; the back disk *26*, Fig. 212, serves the same function with respect to back finger *1*, Fig. 211. Each of the setting disks *25* and *26*, Fig. 212, are provided with six faces of various heights and the notch settings controlled by each face is stamped opposite the face. While only two notch settings are required for any one machine, it was thought advisable to provide six locations on each setting disk so that the disks would fit all composing room systems. Notches 7 and 10 might be used in one case, for example, while in another, 8 and 11 might be required, etc. Once the disks are set for the required pair of notches, no further change is made in the settings.

To set the location of either of the font distinguisher fingers, it is necessary only to pull the operating links down, turn the setting disks until the desired notch locations come to position opposite the operating link shoes, then release the links so that the shoes will bank against the disks. The adjustments of the manual font distinguisher are the same as those of the automatic unit because the same assembly of operating levers is used in both cases.

Adjustments: Font Distinguisher Fingers. Both of the font distinguisher fingers *1* and *2*, Fig. 211, are adjusted centrally with respect to a notch of the matrices, after which all other notch locations are set automatically by the operating cams on the magazines. In the case of the manual font distinguisher, the basic adjustment of the fingers is made with the setting disks at the required notch locations and the settings remain constant thereafter. The back finger *1* is set by adjusting screw *15* in lever *8*. Remove a matrix from the lower magazine in operating position and place the matrix on the distributor box bar immediately in front of finger *1*. Adjust screw *15* until the finger is centrally located with respect to the notch in the matrix, then tighten the lock nut securely.

The front finger *2* is adjusted by means of screws *16* and *17* in a manner similar to the procedure outlined for the back finger. Before the adjusting screws are turned, the connecting screw *18* should be released slightly. If operating lever *11* and the front finger *2* are to be moved toward the back of the machine, screw *17* should be backed off and screw *16* should be turned in. Connecting screw *18* should be tightened when the adjustment is completed.

Operating Lever Stop Screws. Stop screws *19* and *20*, Fig. 211, are provided to limit the movement of levers *9* and *12* when magazine frame is being shifted and the distinguisher operating slides are lifted temporarily off the operating links. The stop screws should clear the operating levers by at least 1/32″ when the font distinguisher is in operation so that there will be no interference to the location of the distinguisher fingers.

Distributor Box Clutch Operating Mechanism

The purpose of the distributor box clutch operating mechanism is to direct the matrices to the front or back distributor so that the matrices will be returned to the magazines from which they were originally drawn. This is accomplished by synchronizing the movement of the distributor box with the shifting of the keyboard keyrods from the upper magazines to the lower magazines or vice versa. When matrices are assembled from the upper magazines, for example, the distributor box is located opposite the front distributor so that the matrices will be delivered to the upper magazines. Similarly, when matrices are assembled from the lower magazines, the distributor box is positioned opposite the back distributor and the matrices are returned to the lower magazines.

To summarize this feature of the Universal non-mixer machine, therefore, it may be stated, first, that two main and two side magazines are always ready for use and, secondly, that as the upper or the lower magazines are used for composition, the distributor box is automatically moved to the proper distributor so that the matrices will be returned to their respective magazines.

The assembled distributor box clutch operating mechanism is shown in Fig. 213. The keyboard keyrods are mounted in the regular frame *34*, which is pivoted on two lugs so that the keyrods can be aligned with the front set of escapement rods *35* or back set *36*. At the left side of the keyrod frame is pivoted the keyrod frame shifting lever *33* which engages a pin on the keyrod frame. The shifting lever is connected in the regular way with the operating lever *32*, which indicates the level of magazines from which the matrices are being drawn.

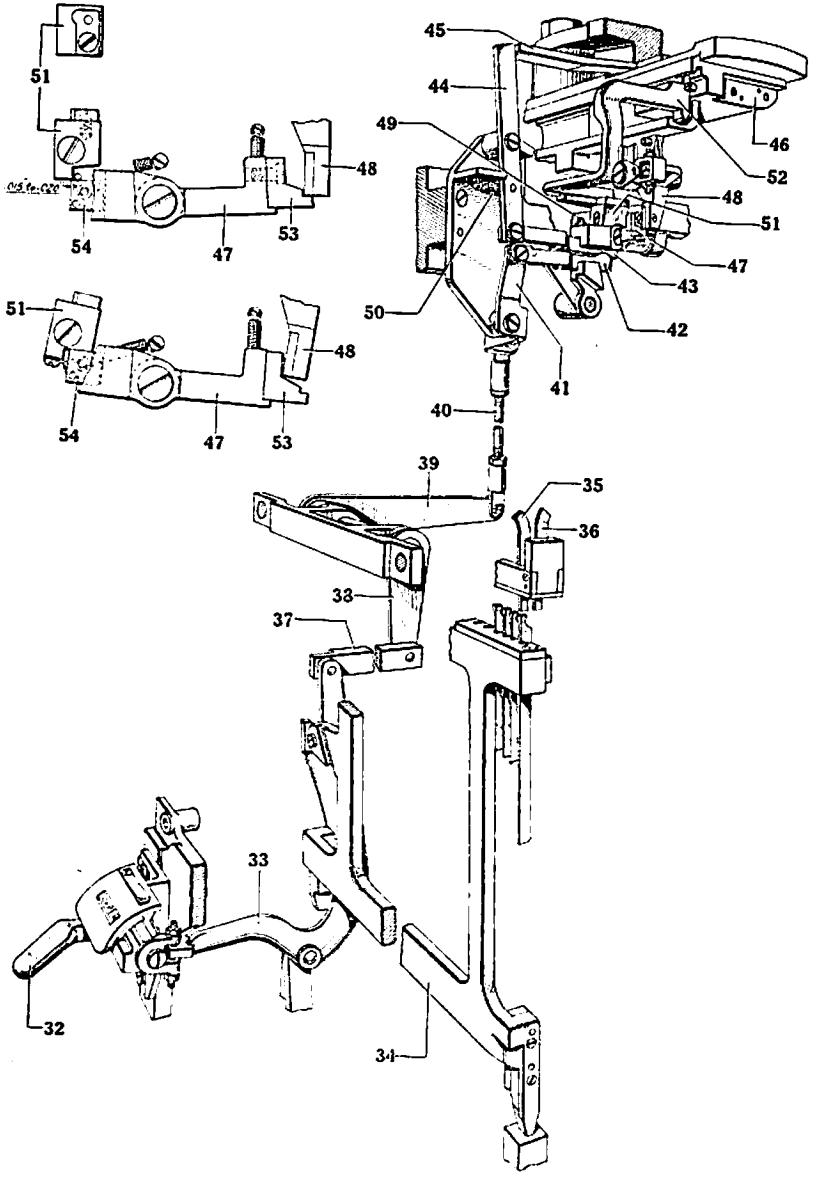

Fig. 213. Distributor Box Clutch Tripping Mechanism and Related Parts in Assembly. The two detail drawings illustrate the lock *51* and the block *54* which prevent the distributor box from being moved until all the matrices of the last line set have passed through the box.

From the standpoint of the distributor box clutch mechanism, the movements of the keyrod frame are transferred to the clutch through a series of links and levers connected with the shifting lever *33*, Fig. 213. Link *37* connects the shifting lever with a connecting rod *40* through levers *38* and *39*, which are pivoted on a bracket fastened at the rear of the machine column. The connecting rod *40* operates lever *41*, which controls the forward and backward movements of the clutch trip cam *42*. A synchronizing cam *43* rests on top of the trip cam *42* in the position shown in the illustration when the distributor box is in a stationary position. The synchronizing cam *43* operates in a slot in the distributor box clutch tripping lever *47* and disengages the lever from the operating lever *48* whenever the keyrods are shifted from one level of magazines to the other. Whenever the tripping lever *47* is disengaged from lever *48*, as illustrated in the lower detail drawing, the distributor box clutch mechanism moves the distributor box to the opposite distributor, that is, from the front to the back distributor or vice versa.

Operation of Distributor Box Clutch Mechanism. The specific operation of the parts just outlined is most easily understood in terms of the relative movements of operating lever *32*, Fig. 213, and cam *42*. For purposes of illustration, let us assume that the operating lever *32* is moved to the "lower" position so that matrices may be drawn from the lower main and side magazines in position. Downward movement of the operating lever causes lever *41* to draw cam *42* towards the front of the machine through the linkage illustrated. When cam *42* is drawn forward, the pivoted synchronizing cam *43* is raised against the adjustable screw *49* in the left end of the tripping lever *47*. The right end of the tripping lever is thereby lowered out of engagement with operating lever *48*, as shown in the lower detail drawing. The distributor box clutch mechanism is then engaged with the distributor clutch shaft and the distributor box arm *46* moves the distributor box to position opposite the back distributor. When the matrices enter the distributor box, therefore, they are lifted into the back distributor and are returned to the lower magazines from which they were originally drawn.

Whenever the distributor box arm *46*, Fig. 213, moves to back distributing position, the synchronizing lever operating lever *45* moves away from lever *44*. This permits spring *50* to draw the synchronizing cam *43* toward the front of the machine so that the depression in the cam registers with the protruding part of the trip cam *42*. When the distributor box arm *46* reaches the end of its movement, therefore, the right end of tripping lever *47* is permitted to move up in front of the clutch operating lever *48*, as shown in the upper detail drawing. This causes the distributor box clutch to disengage and to remain in normal position until the operating lever *32* is shifted again.

The synchronizing operating lever *45*, Fig. 213, serves another important purpose in that it prevents the distributor box from being located accidentally opposite the incorrect distributor. If the box is located correctly opposite the back distributor, for example, and lever *47* is accidentally tripped while one is working around the distributor, lever *45* will bank against lever *44* when the distributor box arm moves to the front distributor and cam *43* will be raised on cam *42*. This will prevent the tripping lever *47* from engaging lever *48* while the distributor box is at the front distributor and the clutch will continue to operate until the

box is returned to the back distributor. The same action will occur if the tripping lever is released accidentally while the distributor box is located at the front distributor.

Distributor Box Clutch Tripping Lever Lock. A locking block *51,* Fig. 213, is pivoted above the left end of the distributor box clutch tripping lever *47* to prevent the lever from being tripped until the last matrix in every line has been raised out of the distributor box into the distributor screws. The operator of the Universal non-mixer machine should always bear in mind that the keyrods cannot be shifted until all of the matrices have cleared the distributor box—if it were possible to do this, of course, the matrices would not be returned to the correct magazines. Since the distributor shifter slide *52* controls the forward movement of the matrices through the distributor box, provision is made for the slide to operate the locking block *51.* When the slide is fully forward and all of the matrices have cleared the distributor box, block *51* is moved clear of block *54* fastened to tripping lever *47,* as shown in the lower detail drawing, leaving the lever free to be operated so that the distributor box can be shifted when the keyboard keyrods are moved to the opposite set of escapement rods. Whenever the shifter slide is retracted, however, block *51* (upper detail drawing) locks the tripping lever *47* through block *54* and prevents the keyboard keyrods from being shifted or the distributor box clutch from operating.

Operating Procedure. The foregoing description of the distributor box clutch operating mechanism contains several facts of importance to the operator of the Universal non-mixer machine. The first detail which the operator should remember is that *keyrod frame operating lever 32, Fig. 213, should not be shifted until all of the matrices of the last line have been delivered to the distributor box.* If the lever were shifted before the last line is actually delivered to the distributor box, for example, the distributor box would be shifted to the opposite distributor and the line would be stopped by the font distinguisher finger. It would be necessary under these conditions to withdraw the line from the finger, shift the keyrod frame operating lever so that the distributor box would return to the correct distributor, then permit the line to be moved into the distributor box.

Another point related to the one just described is that the keyrod frame operating lever is locked while matrices are being shifted through the distributor box. The actual locking part is the block *51,* Fig. 213, (upper detail drawing), which engages block *54* on the clutch tripping lever *47* whenever the distributor shifter slide is retracted and prevents the distributor box clutch operating parts from being moved. With this point in mind, therefore, the operator should not try to shift the keyrod frame until the matrices are clear of the distributor box because forcing the operating lever will subject the parts to unnecessary strain.

The last detail for the operator to bear in mind is that *each line of matrices must be assembled from only one level of magazines at a time* because the machine is designed only for that type of composition. Although the non-mixer distributor is a double unit like that of the mixer machine, it should be borne in mind that no provision is made on the non-mixer distributor for simultaneous distribution of matrices to the front and back distributor. Since only one distributor is used at a time on the non-mixer machine, matrices may be assembled from only one level of magazines at a time. If a line contains matrices from both

an upper and a lower magazine, the matrices will be stopped by one of the font distinguisher fingers and it will be necessary to sort the matrices and to return them to the proper distributor.

Adjustments: Operating Lever Connecting Rod. The connecting rod *40*, Fig. 213, is threaded at both ends so it can be lengthened or shortened to set trip cam *42* with respect to the synchronizing cam *43*. When the distributor box is stationary at *both* the front and back distributing positions, the raised surface of cam *42* should be centralized within the depression of cam *43*. Move the operating lever *32* to the "upper" and "lower" positions to observe the relationship outlined, and adjust connecting rod *40* if necessary. The purpose of centralizing the operative surfaces of the cams, of course, is to permit the tripping lever *47* to move freely back to normal position and to engage operating lever *48*, as shown in the upper detail drawing. These two levers should always be engaged fully when the distributor box clutch is in normal position.

Tripping Lever Adjusting Screw. When operating lever *32*, Fig. 213, is shifted to the "upper" or "lower" position, cam *43* is raised against screw *49* in lever *47*. This action lowers shoe *53* out of engagement with lever *48*, as shown in the lower detail drawing, permitting the distributor box clutch parts to engage and to move the distributor box to the opposite distributor. The screw *49* should be turned in sufficiently to lower the operating edge of the shoe approximately .010″ below the plate on lever *48* when lever *32* is shifted. Verify the tripping action when the distributor box is at both the front and back distributor positions and tighten the lock nut when the adjustment is correct.

Universal Non-Mixer Distributor Box

The distributor box applied to the Universal non-mixer machine serves the same purpose as those applied to other machines in that it receives the matrices from the second-elevator bar and lifts them one at a time into the distributor screws. Due to the fact that the non-mixer distributor box is designed to operate only at one distributor while a line of matrices is in the process of distribution, its design is similar to that of the single distributor box.

The non-mixer distributor box is shown in relation to the matrix lift mechanism in Fig. 214. The most important change to be noted in connection with the distributor box is that the matrix lift mechanism is an integral part of the box itself. As shown in the illustration, block *56* is fastened to the back plate *55*. The matrix lift lever *58* is pivoted on a fulcrum screw *57* passing through the block. Unlike the matrix lift parts of the mixer machine, therefore, the matrix lift assembly of the non-mixer distributor box is carried with the box as it moves from one distributor to the other.

The matrix lift *59*, Fig. 214, is pivoted at the front end of the lift lever and is held against the distributor box block *61* by spring *60*. The block is adjustable and is set so that the square edge of the matrix lift has .028″ engagement with the lower front edge of the matrix. A roll *62* on each side of the matrix lift lever rests on a hardened surface at the front end of operating lever *63*. The operating lever is raised and lowered by cam lever *64* through movement imparted by the matrix lift cam *65* on the lower back distributor screw. The lifting action of the

matrix lift *59*, therefore, is the result of a compound action in that it is promoted by operating lever *63* and lift lever *58*. The lift lever spring *66* holds lift lever *58* in positive contact with lever *63*.

The adjustments of the matrix lift assembly for the non-mixer machine are the same as those for the mixer machine. The .028″ engagement of lift *59* with the matrix is made by moving block *61* with respect to the lift. The height to which the matrix lift raises the matrices is set by the regular adjusting screw *67* in the lift lever yoke. The screw should be set so that the lift *59* raises the matrices 1/32″clear of the distributor lift rails when cam roll *68* is on the high point of cam *65*.

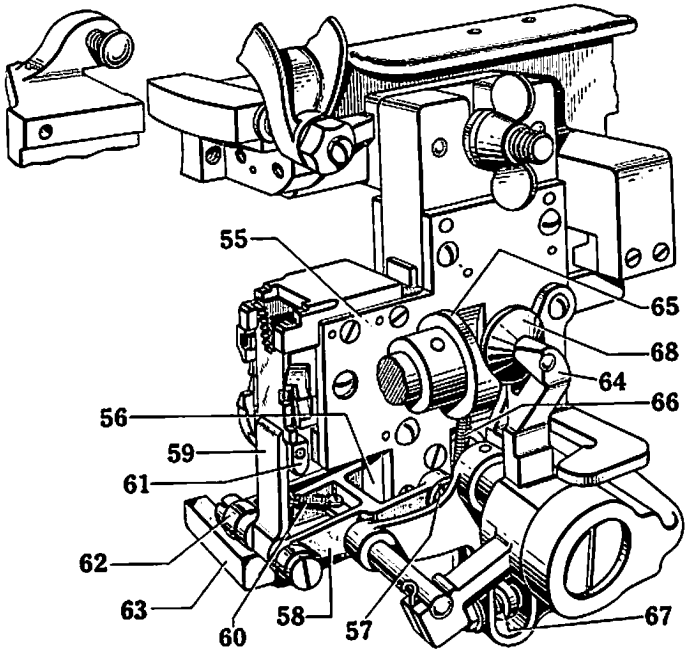

Fig. 214. Detail view of the non-mixer distributor box, showing its relation to the matrix lift mechanism

Matrix Lift Lever Yoke Stop Screw. This lift lever yoke stop screw *21*, Fig. 211, is used to hold the matrix lift cam lever upright when the distributor back screws are raised out of position. The matrix lift cam lever is shown at *64*, Fig. 214, in operating position in regard to matrix lift cam *65*. When cam *65* is raised with the distributor back screws, however, roll *68* and lever *64* would move forward if the previously mentioned stop screw were not provided. It would be difficult under these conditions to return the distributor back screws to position because roll *68* and lever *64* would be in the path of cam *65*.

In adjusting the lift lever yoke stop screw, the distributor screws should be turned by hand until roll *68* is on the *low* point of cam *65*. At this position, screw *21*, Fig. 211, should be approximately 1/64″ clear of yoke *24* so that it will not interfere with the normal operating stroke of the matrix lift parts. When the distributor back screws are raised, therefore, the matrix lift cam roll will be held in a position which will permit the cam to return freely when the distributor screws are lowered.

Font Selectors for Universal Mixer Intertypes

Universal machines equipped with double distributors can be supplied as mixer or non-mixer machines. In the case of Universal mixer machines equipped with side magazines, matrices from two adjacent main magazines and two adjacent side magazines may be assembled in the same line. From the standpoint of distribution, matrices drawn originally from the upper main and side magazines are returned to their channels by the front distributor, and those drawn from the lower main and side magazines are returned by the back distributor. Any one of three font selector devices can be applied to Universal mixer machines to suit existing composing room systems, but no matter which selector is applied, its basic function is to separate the matrices automatically and to deliver them to the proper distributor so that they will be returned to the magazines from which they were drawn.

The type of selector applied to a Universal mixer machine depends upon a number of factors, the most important of which are the selecting system adopted previously by the composing room and the extent to which matrices are to be mixed on the Universal machine. Five mixer selecting schemes have been devised for Universal machines, but before these schemes are described, it is essential that the outstanding feature of each of the three selectors be understood. Following the general outline of the selector devices, the mixer selecting systems will indicate in each case which type of selector is used.

1. Setting Disk Selector. The setting disk selector is shown in Fig. 216. The outstanding feature of this selector is that feelers *3* and *4* are located solely by two setting disks *6* and *7*. Neither the disks nor the feelers are affected when the magazines are shifted — the notch locations of the feelers are constant once the disks have been set.

2. Operating Stud Selector. The links and studs of this selector are shown in drawing *B*, Fig. 217. The chief point to note in connection with this selector is that the feeler settings are changed automatically by two studs *14* and *15* when middle pair of main magazines is moved into operating position. When either the upper or the lower pair of main magazines is in operating position, the feeler locations are controlled by the setting disks illustrated in Fig. 216.

3. Operating Cam Selector. This selector is shown in assembly in drawing *A*, Fig. 217. The outstanding feature of this selector is that the locations of selector feelers are automatically determined by cams *33* and *34* fastened to the undersides of the four main magazines. The cams and their slides are always operative —each time the main magazine frame is shifted, the cams and slides of the magazines in position automatically set the selector feelers.