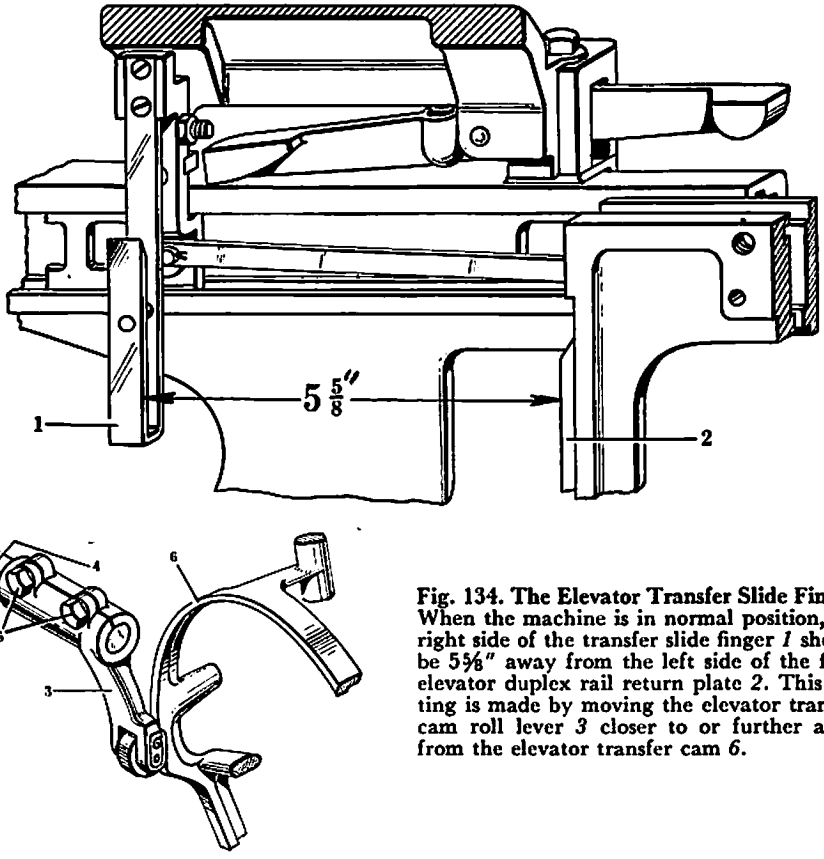

Fig. 134. The Elevator Transfer Slide Finger. When the machine is in normal position, the right side of the transfer slide finger *1* should be 5⅝" away from the left side of the first-elevator duplex rail return plate *2*. This setting is made by moving the elevator transfer cam roll lever *3* closer to or further away from the elevator transfer cam *6*.

bands are moved to the right by the returning spaceband lever through the transfer channel to the spaceband box, where they slide by gravity down the spaceband box top rails into position in the box. The two inward movements of the transfer levers are promoted by spring *8* as permitted by the shape of the elevator transfer cam. The two outward or withdrawing movements of the levers are promoted by the cam against tension of the spring.

Transfer Lever Adjustments

The following adjustments are the basic settings for the transfer levers and related parts. Proper operation of the machine depends, to a great extent, upon the relative accuracy of these adjustments. The mechanism concerned with the transfer is subject to little wear over a period of years and it should be necessary to change the settings only at long intervals. The settings should be checked from time to time, however, to make sure that the parts are operating properly.

Elevator Transfer Cam Roll Lever. When the machine is in normal position, there should be 5⅝" space between the right side of the transfer slide finger 1,

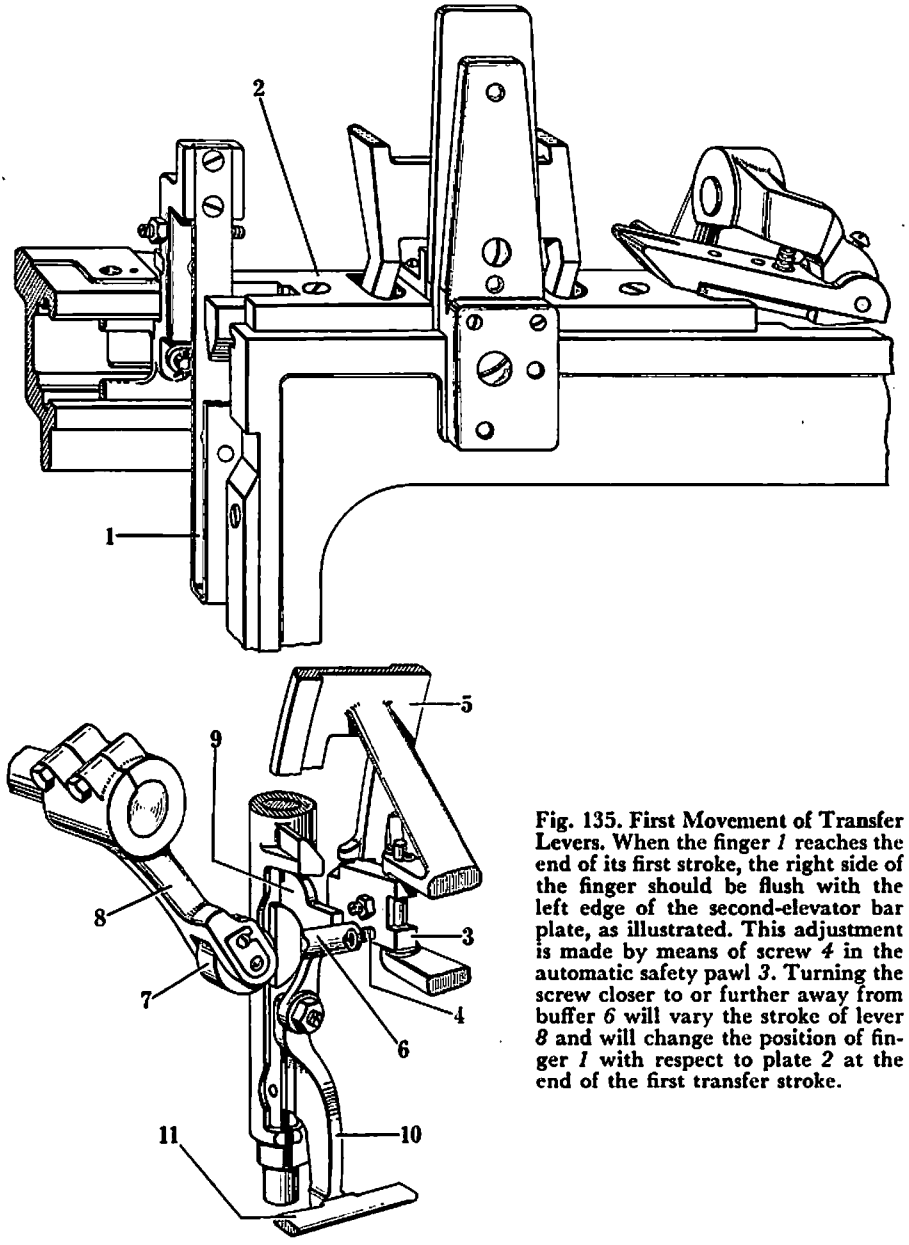

Fig. 135. First Movement of Transfer Levers. When the finger *1* reaches the end of its first stroke, the right side of the finger should be flush with the left edge of the second-elevator bar plate, as illustrated. This adjustment is made by means of screw *4* in the automatic safety pawl *3*. Turning the screw closer to or further away from buffer *6* will vary the stroke of lever *8* and will change the position of finger *1* with respect to plate *2* at the end of the first transfer stroke.

Fig. 134, and the left side of the first-elevator jaw duplex rail return plate 2, as illustrated. This setting insures clearance between the finger and the first-elevator jaw separating block when the elevator rises to transfer position and also locates the finger in the proper position with respect to a full 30-em line. The normal position of the elevator transfer slide finger is governed by cam roll lever

3, which is clamped on the end of the elevator transfer lever shaft *4*. Moving the lever closer to the elevator transfer cam *6* will widen the distance between the finger *1* and the duplex rail return plate *2;* withdrawing the lever will decrease the distance between the two parts. When the 5⅝″ setting has been obtained, tighten the two clamp screws *5* securely.

Automatic Safety Pawl. When the elevator transfer lever and the spaceband lever move together during their first stroke, as previously described, the line of matrices and spacebands is transferred from the first-elevator jaw to the transfer channel. When the levers reach their extreme inward position and the line is transferred completely to the second-elevator bar, the right side of the elevator transfer slide finger *1*, Fig. 135, should be flush with the left edge of the second-elevator bar plate 2. This adjustment insures the proper amount of engagement for matrices at the left end of the second-elevator bar. The inward position of the levers at the end of their first stroke is controlled by an adjusting screw *4* in the automatic safety pawl *3*, which is pivoted in the delivery and elevator transfer cam *5*. A buffer *6*, inserted in a slot in the cam, is moved in against the adjusting screw by cam roll *7* in lever *8* at the precise moment when the line is completely transferred to the second-elevator bar. The extreme inward position of the levers, therefore, can be adjusted by turning screw *4* closer to or further away from buffer *6*. Backing the screw away from the buffer will cause the transfer slide finger *1* to move closer to plate *2* at the end of the first transfer stroke.

When the line is completely transferred, the automatic safety pawl *3*, Fig. 135, is pushed against the rim of the cam, limiting the inward movement of the transfer levers according to the setting of screw *4*. It should be noted also that the pawl *3* is pushed far enough to the right to clear the upper stopping lever *9*, permitting the cams to continue revolving until the machine reaches normal position. If the transfer levers are locked for purposes of recasting, however, or if a distributor stop holds up the second elevator, the pawl will not be moved clear of the upper stopping lever. This will cause the lower stopping lever *10* to bear against the forked lever *11*, which disengages the clutch from the driving gear pulley and stops the machine at transfer position. If a line is being recast, the machine can be started again by pulling out the starting and stopping lever. If an obstruction has prevented the line from being transferred, however, or if the second elevator has been held up by a distributor stop, the machine will remain inoperative until the stop is cleared. *The spaceband lever pawl latch should always be locked and the starting and stopping lever should be pushed in when any obstruction prevents the line from being transferred.* After the obstructing condition has been corrected, grasp the spaceband lever, release the latch and let the levers move together slowly until they reach their full inward stroke. The machine can then be started by pulling out the starting and stopping lever.

Elevator Transfer Slide. When the second elevator raises the matrices out of the transfer channel, as previously described, the elevator transfer lever and the spaceband lever move together for the second time so that the spaceband lever pawl can engage the spacebands left in the transfer channel. The extreme inward position of the two levers during their second stroke is regulated by an adjusting screw *3*, Fig. 136, in the elevator transfer slide. The screw banks against a buffer *4* in the spaceband lever *5* and cushions the impact of the levers

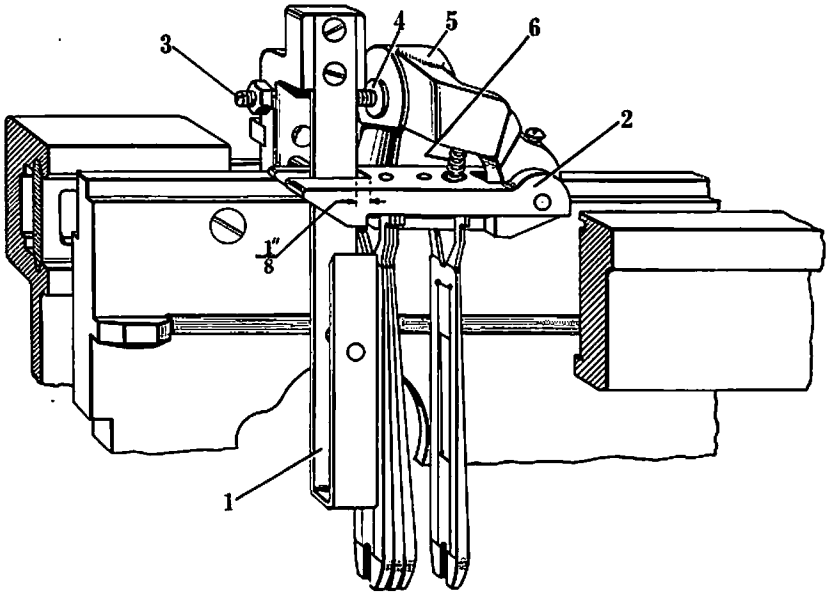

Fig. 136. Second Movement of Transfer Levers. After the second elevator lifts the matrices out of the transfer channel, the elevator transfer lever and spaceband lever move together for the second time so that the spaceband lever pawl *2* will engage the spacebands. As the levers approach the end of their stroke, the elevator transfer slide finger *1* pushes the spacebands under pawl *2* against tension of spring *6*. When the two levers meet, there should be ⅛" clearance between the right side of finger *1* and the bottom of the slot in pawl *2*, as illustrated. This adjustment is made by means of screw *3* in the transfer slide.

as they meet. Small felt washers are inserted under the buffer to provide the cushion effect. When screw *3* is banking against buffer *4*, there should be ⅛" clearance between the right side of the transfer slide finger *1* and the bottom of the slot in the spaceband lever pawl *2*. Adjust the screw for the required clearance and tighten the lock nut securely.

Spaceband Lever Turnbuckle. When the transfer levers withdraw after their second stroke, the spacebands which have been engaged by the spaceband lever pawl are pulled through the transfer channel to the spaceband box, where they slide by gravity down the inclined rails of the box into position. It is essential that the spaceband lever pawl move far enough to the right to carry the spacebands ⅛" past the level surface of the top rails as otherwise some of the spacebands may not slide into the box. The normal position of the pawl is controlled by an adjustable turnbuckle *16*, Fig. 133, which moves the spaceband lever further to the right or to the left. The turnbuckle can be reached through the opening in the machine column at the left of the keyboard. A hole is provided in the turnbuckle for the insertion of a rod or similar tool to facilitate turning the part.

Spaceband Lever Pawl. The spaceband lever pawl can be adjusted sidewise with respect to the transfer channel and the spaceband box. The pawl should be centrally located with respect to the transfer channel so that the lugs of the pawl will engage the spaceband sleeve lugs properly. If the pawl is overset toward the

back or the front of the channel, it may not engage the spacebands during the second stroke of the transfer levers. The pawl is adjusted easily for position after its set screw is loosened.

Transfer Slide Safety Devices

In outlining the mechanical requirements for the transfer of the matrices and spacebands, it was pointed out in the early part of the description that the transfer depends upon two basic conditions:

1. The first-elevator slide must rise high enough to align the matrices in the first-elevator jaw horizontally with respect to teeth of the second-elevator bar.

2. The second-elevator bar must come to rest in the transfer channel in centralized alignment with the teeth of the matrices.

Two safety devices are provided for the transfer slide to prevent the operation of the slide and the transfer levers if these two basic requirements are not fulfilled. If the first-elevator slide fails to make its complete upstroke to transfer position, the elevator transfer slide safety catch will lock the transfer levers. Similarly, if the second elevator fails to make its complete downstroke to the transfer channel, the elevator transfer slide releasing lever will prevent the transfer levers from operating. Both of these safeties prevent the "spilling" of matrices and spacebands which would occur if the transfer levers operated with the first elevator or the second elevator out of position.

Elevator Transfer Slide Safety Catch. The elevator transfer slide safety catch is shown at *1*, Fig. 137. The catch is pivoted on a shoulder screw threaded in the

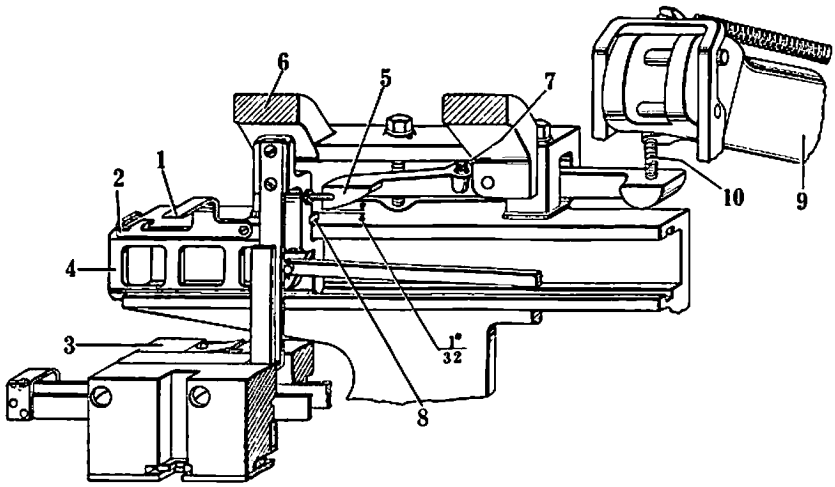

Fig. 137. Transfer Slide Safety Devices are provided to prevent the slide and the transfer levers from operating if the first elevator or the second elevator fail to seat at transfer position. The elevator transfer slide safety catch *1* and the releasing lever *5* normally lock the slide *4* in position. The transfer slide and levers cannot operate unless catch *1* is raised by the first-elevator jaw *3* and releasing lever *5* is depressed by the screw *10* in the second-elevator lever *9*. These safeties prevent "spilled" lines when an obstruction is present at transfer position.

face plate frame and is provided with a lug which extends into the path traveled by the first-elevator jaw *3* as it ascends to transfer position. At the left end of the catch there is another lug *2* which rests normally in a slot in the elevator transfer slide *4*. When the first-elevator slide makes its full upstroke to transfer position, the first-elevator jaw *3* raises catch *2* out of the slot in slide *4*, leaving the slide free to be operated by the elevator transfer lever. If the first-elevator slide fails to make its normal upstroke to transfer position, due to the use of the first-elevator slide recasting block or other cause, catch *2* will remain in the slot in slide *4* and will prevent the transfer levers from operating.

Elevator Transfer Slide Releasing Lever. The elevator transfer slide releasing lever *5*, Fig. 137, is pivoted on a pin in the first-elevator slide guide *6*. A compression spring *7* holds the left end of the releasing lever down in front of a stop block *8* on the transfer slide *4* when the machine is in normal position. When the second elevator *9* descends and positions the second-elevator bar in the transfer channel, an adjustable screw *10* in the second-elevator lever depresses the right end of releasing lever *5*. This raises the left end of the lever from in front of stop block *8* and leaves the elevator transfer slide *4* free to be operated by its lever. If the second elevator fails to make its complete downstroke, due to a distributor stop or other cause, releasing lever *5* will remain in front of block *8* and will prevent the transfer levers from operating.

Adjustment. The elevator transfer slide releasing lever *5*, Fig. 137, should clear the elevator transfer slide stop block *8* by 1/32″ when the second elevator has made its complete downstroke to the transfer channel. This adjustment is secured by means of screw *10* in the second-elevator lever *9*. The clearance between the releasing lever and the stop block should not exceed 1/32″, as otherwise the sensitiveness of the safety will be reduced. Sometimes a spaceband is placed too far to the left in the transfer channel by the operator, in which case the second-elevator bar cannot come to position in the transfer channel. If the clearance between lever *5* and block *8* is excessive, however, the transfer levers may operate and "spill" the matrix line.

Starting the Machine After a Transfer Stop. When the machine stops at transfer position due to an obstructing condition, *always push in the starting and stopping lever and lock the spaceband lever pawl latch before doing anything else.* This precaution will prevent "spilling" of the line and possible damage to the machine when the obstruction is cleared. If the machine has stopped because the first-elevator slide has not made its full upstroke to transfer position, there will be indication of this fact in that the first-elevator jaw *3*, Fig. 137, will not rise high enough to raise catch *1* out of engagement with the notch in the transfer slide *4*. This can be caused by leaving the first-elevator slide recasting block in operating position, by a matrix, spaceband, defective knife wiper or similar obstruction. If the machine stops because undistributed matrices are holding the second elevator up at distributing position, pull the second-elevator lever back by hand to relieve the matrices of its weight and clear the stop. Lower the second elevator *gently* to the transfer channel, grasp the spaceband lever, release the spaceband lever pawl latch and let the levers come together slowly. When the starting and stopping lever is pulled out, the machine will return to its normal position.

Maintenance. The transfer levers and related parts should be lubricated when the rest of the machine is being inspected and oiled. The elevator transfer lever and the spaceband lever are fastened to shafts which have bearings both at the front and at the back of the machine column. The four bearings should be oiled once a week. The elevator transfer cam roll *7*, Fig. 135, and the automatic safety pawl buffer *6* should be oiled weekly and the surfaces of the elevator transfer cam should be cleaned occasionally with gasoline. The elevator transfer slide finger *1*, Fig. 136, should clear the first-elevator jaw and the transfer bar when the matrices and spacebands are being transferred. If the finger is bent and rubs against either of these parts, the transfer levers may not work smoothly and the transfer of the line may be affected. The spaceband lever pawl *2* should pivot freely on its hinge pin in the spaceband lever. The elevator transfer slide *4*, Fig. 137, operates in grooves in the face plate frame. If dirt and gummy substances accumulate in the grooves and on the beveled edges of the slide, the slide should be removed and the parts should be cleaned thoroughly. To remove the slide, it is necessary only to remove the elevator transfer slide link hinge pin and the elevator transfer slide safety catch *1*. The releasing lever *5* should be tested by hand from time to time to make sure that it is working freely.

Second Elevator and Related Parts

In the preceding description of the transfer mechanism, the second elevator was outlined in connection with the transfer of the matrices from the first-elevator jaw to the second-elevator bar. In addition to receiving the matrices at transfer position, the second elevator also raises the matrices to the distributor so that they can be returned to their respective channels in the magazine. The mechanism which imparts the movements to the second elevator is shown in Fig. 138. The second-elevator bar *1* is fastened to plate *2* and both the bar and the plate are pivoted on a hinge pin passing through the legs of link *3*. The second-elevator adjusting spring *4* locates the second-elevator bar *1* accurately in position in the transfer channel by holding angle *5* against the lower second-elevator guide *6* when the second elevator lowers to transfer position. The assembled second-elevator bar, plate and link are supported on the second-elevator lever *7*, which is pivoted on a shaft *8* at the rear of the machine. The second-elevator lever is connected with cam lever *9* by an adjusting bolt *10*, a compression spring *11* and two nuts *12*. The spring cushions the second-elevator lever as it seats at the distributor and also provides overmotion in case the second-elevator lever is prevented from making its normal upward stroke. Cam roll *13* is held in contact with the second-elevator cam *15* by weight lever *14*, which rests against a lug on cam lever *9* through screw *16* and is fastened at the end of shaft *8* with a set screw.

Movements of Second-Elevator Lever. The second-elevator lever, through its connection with the second-elevator cam, makes two movements during one revolution of the cams. After the cast has been completed and while the first-elevator slide is rising to transfer position with the line of matrices and spacebands in the first-elevator jaw, the second-elevator lever descends to transfer position, lowering the second-elevator bar to position within the transfer chan-

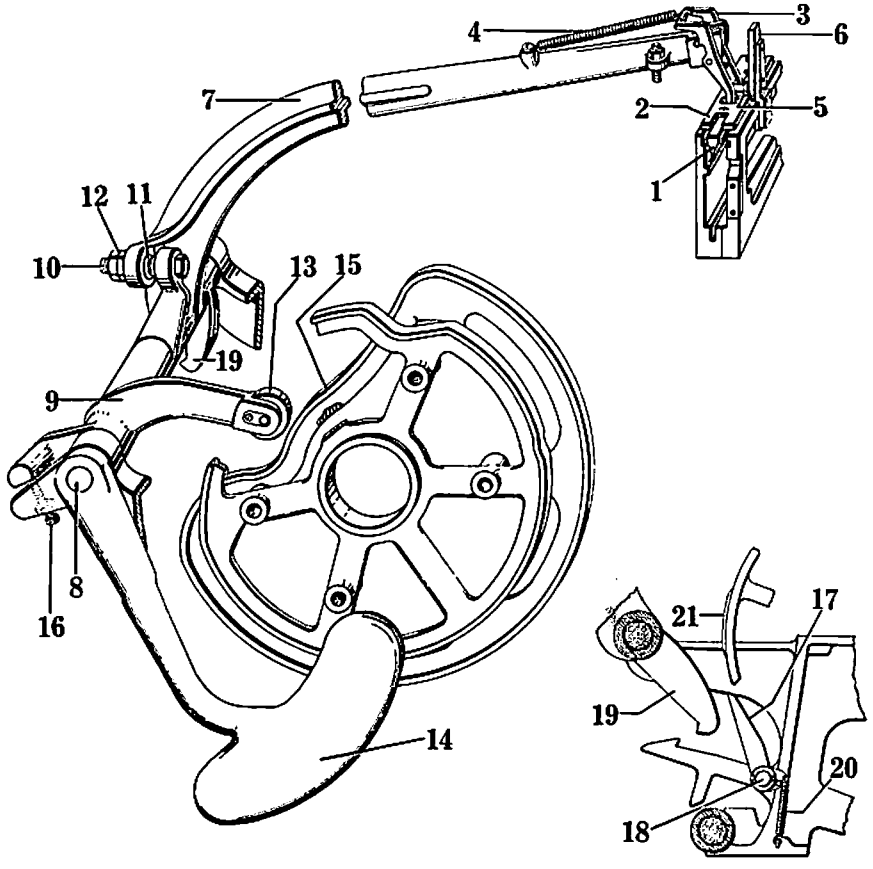

Fig. 138. Perspective View of the Second Elevator and Related Parts in Assembly. The second-elevator safety pawl is shown in the detail drawing.

nel. The second-elevator lever and bar dwell in this position until the elevator transfer slide finger moves the line of matrices and spacebands from the first-elevator jaw into the transfer channel, the matrix teeth engaging the second-elevator bar teeth during this movement. As soon as the elevator transfer lever and the spaceband lever withdraw, the second-elevator lever rises to normal position, carrying the line of matrices by their teeth on the second-elevator bar to position opposite and in alignment with the distributor box bar. The second-elevator cam roll is held in positive contact with the cam by the second-elevator weight lever.

Second-Elevator Safety Pawl. The second-elevator safety pawl *17*, Fig. 138, is provided to hold the second-elevator lever up near the distributor if a distributor stop or other obstruction prevents the lever from making its normal downstroke to the transfer channel. The safety pawl is pivoted on a hinge pin *18* in the right-hand cam shaft bracket and is held normally in front of an arm *19* on the second-elevator lever *7* by spring *20*. In the normal operation of the machine,

a pad *21* on the delivery and elevator transfer cam bears against safety pawl *17*, lowering the hooked end of the pawl from in front of the arm *19* on the second-elevator lever just before the lever is about to descend to the transfer channel. If the second-elevator lever is free to make its normal downstroke, it descends as permitted by the cam and the arm *19* passes over pawl *17*. If the second-elevator lever is held up by undistributed matrices, however, the pawl will rise in front of the arm as soon as the pad *21* on the delivery and elevator transfer cam clears the pawl. Consequently, when the distributor stop is cleared, the second elevator will be prevented from falling with an impact on the transfer channel. It should be borne in mind that the second elevator is not supported by the cam when it is held up at the distributor during transfer position—the depression in the second-elevator cam at this time is positioned under the cam roll. To clear the distributor stop, therefore, it is necessary to hold the second-elevator lever back against the distributor in order to relieve the undistributed matrices of the weight of the second-elevator lever.

The procedure previously outlined in connection with obstructing conditions at transfer position should be followed when the second-elevator lever is held up by undistributed matrices. When the machine stops at transfer position due to failure of the second-elevator lever to descend to the transfer channel, *always push in the starting and stopping lever and lock the spaceband lever pawl latch.* When the distributor stop or other obstructing condition is remedied, depress

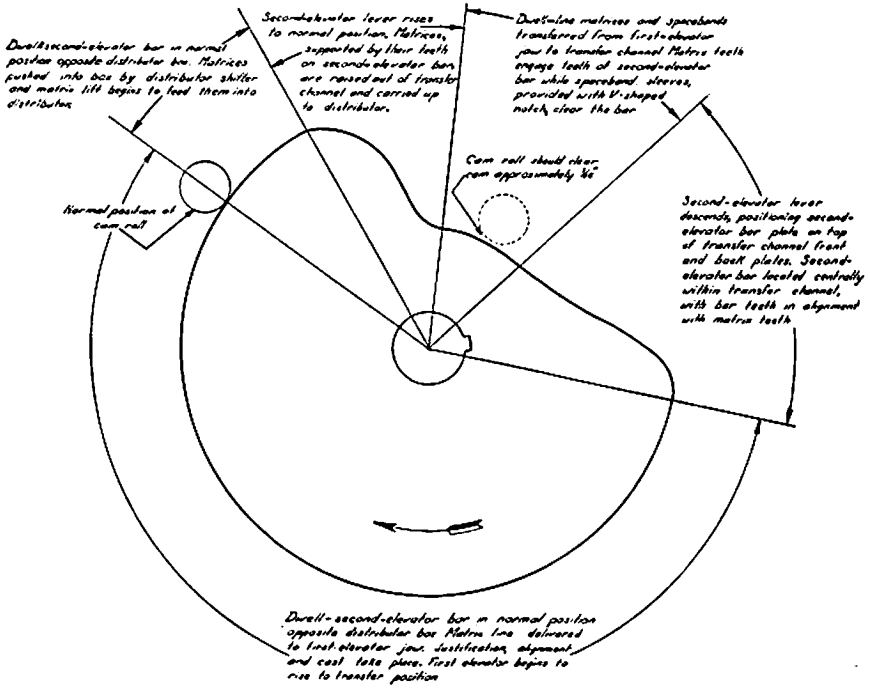

Fig. 138a. The Second-Elevator Cam, showing the surfaces of the cam which promote the main movements of the second-elevator lever.

the second-elevator safety pawl *17*, Fig. 138, and lower the second-elevator lever *gently* to the transfer channel. Grasp the spaceband lever, release the spaceband lever pawl latch and let the transfer levers move together slowly until they reach their full inward stroke. When the starting and stopping lever is pulled out, the machine will resume normal operation.

Adjustments: Second-Elevator Lever Adjusting Bolt. When the second-elevator lever *7*, Fig. 138, makes its downstroke to transfer position, the lever must be perfectly free to descend far enough to position the second-elevator bar *1* within the transfer channel, with the second-elevator bar plate *2* seated firmly upon the front and back plates of the transfer channel. To insure this condition, there should be approximately 1/16″ clearance between cam roll *13* and cam *15* when the second-elevator bar is seated on the transfer channel, as illustrated. This adjustment is made with adjusting bolt *10*, by means of which the cam roll and its lever can be moved closer to or further away from the cam. Tighten the check nut *12* securely when the adjustment is completed. The 1/16″ clearance setting made with the adjusting bolt will provide the proper overmotion for the second-elevator lever through spring *11*. The spring permits the lever to seat at the distributor with a cushion stroke.

Second-Elevator Weight Lever. The second-elevator weight lever *14*, Fig. 138, banks against cam lever *9* through an adjustable screw *16*. The adjusting screw is provided to locate the weight lever for clearance with respect to the first-elevator cam hub and the first-elevator auxiliary lever. Loosen the set screw, turn the adjusting screw until the weight lever clears the cam hub at its highest stroke and the auxiliary lever at its lowest stroke, then tighten the lock nut on the adjusting screw and the set screw securely.

Second Elevator at Distributing Position. When the second elevator rises to normal or distributing position, it is essential that the second-elevator bar be located in exact alignment with the distributor box bar. The reason for this pre-

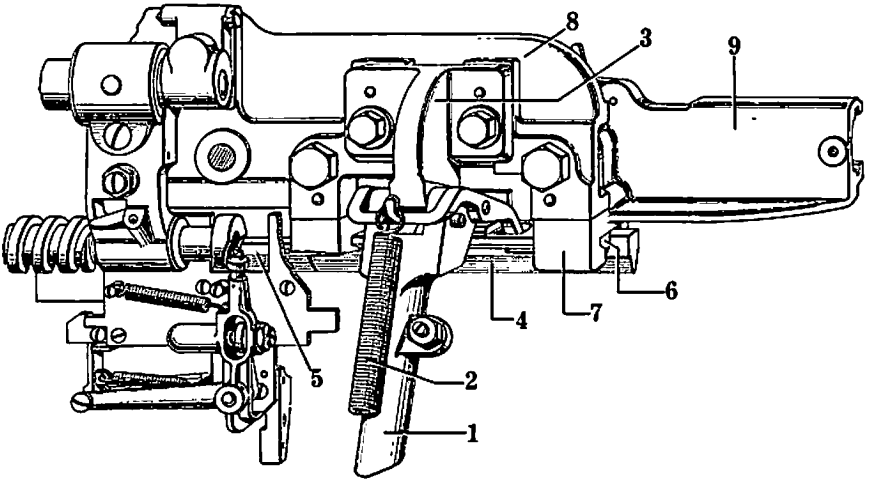

Fig. 139. The Second Elevator at Normal or Distributing Position. This illustration shows the upper second-elevator guide *3* and the lugs *7* on the distributor shifter slide guide which are provided to align the second-elevator bar *4* exactly with the distributor box bar *5*.

cise alignment is that the matrices must pass freely from one bar to the other and if the bars are not properly aligned, the matrix combination teeth will be subject to undue wear.

The parts provided for locating the second-elevator bar at normal or distributing position are shown in Fig. 139. The upper second-elevator guide *3* is fastened to the distributor beam *8*. The guide registers with a slot cut in the upper end of the second-elevator lever *1* and locates the lever and the second-elevator bar *4* in the correct sidewise position with respect to the distributor box bar *5*. The upper second-elevator guide is doweled in position when the machine is in the process of assembly. The horizontal and vertical alignment of the second-elevator bar with respect to the distributor box bar is provided for by two accurately machined lugs *7* on the distributor shifter slide guide 9. These lugs register with the top and back surfaces of the second-elevator bar plate *6* when the second elevator rises to distributing position and locate the second-elevator bar in its correct position for height and horizontal alignment. The second-elevator adjusting spring *2* holds the bar plate *6* in the correct position so that it will register with the locating surfaces on the distributor shifter slide guide *9* as the second elevator seats at distributing position.

The distributor box bar is held in the distributor box by two pins. The bar is *not* held rigidly in position but "floats" at its right end (viewed from the rear of the machine). At the right end of the bar there is a projecting lug which fits between the second-elevator bar and second-elevator bar plate. The lug and its engagement with the parts mentioned serve to align the teeth of the second-elevator bar exactly with those of the distributor box bar, providing a continuous path for the movement of the matrices as they are pushed into the distributor box by the distributor shifter. The floating arrangement of the distributor box bar is described in more detail in connection with the distributor box.

Double Distributor Second Elevator. The second elevator assembly applied to the latest double distributor or mixer machines differs somewhat in construction from the single distributor assembly but serves the same basic functions. The chief difference in the double distributor second elevator is the use of a swiveling arrangement for the second-elevator bar and plate with respect to the second-elevator lever. On the mixer Models F and G, the distributor box does not occupy a constant position but alternates between the front and back distributor as matrices from the upper and lower magazines pass through the font selector mechanism. Since the alignment between the second-elevator bar and the distributor box bar must be maintained at distributing position, it is necessary to provide means for permitting the second-elevator bar to follow the distributor box bar as the box moves between the front and back distributor. The swivel mounting of the second-elevator bar and plate provides this condition.

The mixer second-elevator lever differs also from the single distributor lever in its pivotal and overmotion arrangement. The mixer lever is pivoted further away from the back of the machine on a special frame. The conventional second-elevator lever adjusting spring is replaced in the mixer assembly by a cam lever link, link sleeve, spring and link casing. While these differences exist, the basic operation of the mixer second elevator is the same as that of the single distributor elevator.

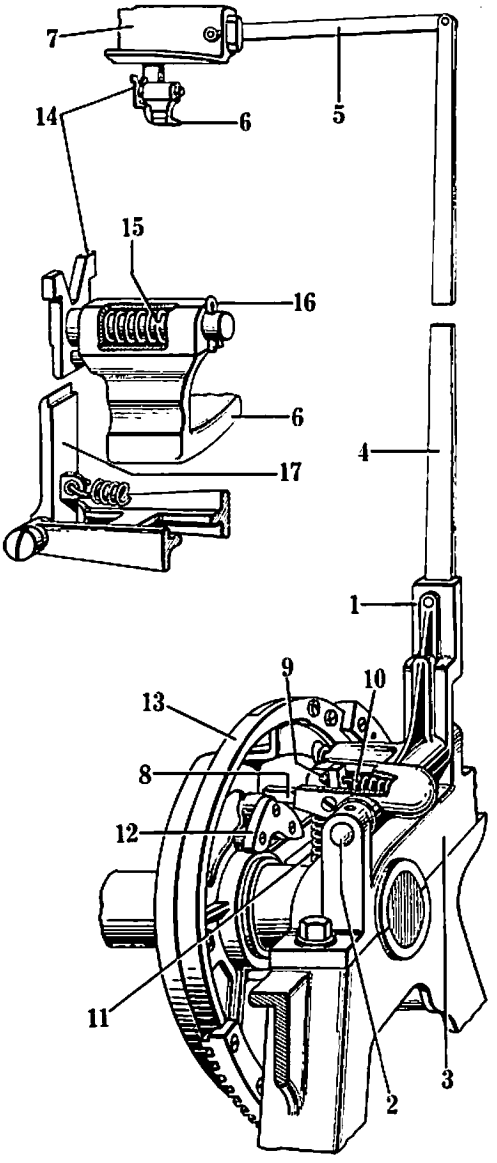

Fig. 140. Perspective View of the Distributor Shifter and Related Parts in Assembly. The detail view illustrates the overmotion arrangement provided for buffer *14*, which pushes the last few matrices in each line forward to the distributor box matrix lift *17*.

Maintenance. Part of the maintenance procedure for the second elevator has been outlined already in connection with the transfer mechanism. In addition to the parts mentioned, the second-elevator bar and bar plate should be kept free of gummy substances. All of the parts of the second-elevator bar plate which serve as locating surfaces should be given particular attention. These surfaces include the bar plate angle, the top and back surfaces of the bar plate and the base of the plate where it rests on the transfer channel front and back plates. The teeth of the second-elevator bar should be cleaned with gasoline, and burrs, if any, should be removed with a small triangular file or a piece of emery cloth. The locating surfaces of the distributor shifter slide guide *9*, Fig. 139, and the upper second-elevator guide *3* should be kept free of dirt and oil. Foreign substances on these parts tend to become gummy and interfere with the location and movement of the second elevator parts. Oil holes are provided for the second-elevator lever shaft and the cam roll. These parts should be oiled once a week. The surface of the second-elevator cam should be kept clean at all times.

The Distributor Shifter

The function of the distributor shifter is to move the line of matrices from the second-elevator bar to the distributor box bar inside the distributor box so that the matrices can be fed one by one into the distributing mechanism. The distributor shifter and its parts are shown in Fig. 140. The distributor shifter lever hub *1* is pivoted on shaft *2* passing through lugs on the mold gear arm *3*. The distributor shifter lever *4* is fastened in a slot in hub *1* and is connected at its upper end with the distributor shifter slide *6* through link *5*. The upper and lower edges of the shifter slide *6* are beveled and run in grooves in the distributor shifter slide guide *7*. There is a slot in the lower part of hub *1* in which the distributor shifter cam rider *8* is pivoted. The rider is held in contact with stop screw *9* through action of a compression spring *10*. A long tension spring *11*, connected with hub *1* and a screw at the other end, continually urges the shifter mechanism toward the distributor box. The distributor shifter cam *12*, fastened to the vise closing and mold turning cam *13*, promotes the movements of the shifter parts at the proper time during the revolution of the cams.

Movements of Distributor Shifter. The distributor shifter, through its connection with the distributor shifter cam, makes two strokes or movements during one revolution of the cams. As the second-elevator lever begins to rise to distributing position with the line of matrices on the second-elevator bar, the distributor shifter is withdrawn from the distributor box and out of the path of the second elevator. As soon as the second elevator seats in position with the second-elevator bar opposite and in alignment with the distributor box bar, the falling contour of the distributor shifter cam permits the shifter lever spring to pull the shifter slide back toward the distributor box. The matrices are thereby pushed into the distributor box, from which point they are fed into distributor screws.

Distributor Shifter Slide. A detail view of the distributor shifter slide is shown in Fig. 140. The shifter slide buffer *14* is mounted on a rod which is inserted in a hole in slide *6*. Spring *15* urges the buffer forward as permitted by pin *16*. When the distributor shifter slide has made its full inward stroke to the distributor,

buffer *14* is *not* brought to its final position by the slide but by the overmotion imparted by spring *15*. This arrangement is provided to prevent the buffer from damaging the vertical banking faces of the distributor box rails. The last few matrices in each line, therefore, are pushed forward to the matrix lift *17* by spring *15*. A back step is cut in the lower end of buffer *14* so that the lift *17* will not contact the buffer. If there were contact between these two parts, the edge of the matrix lift which raises the matrices would be subject to undue wear.

There are no adjustments to be made on the distributor shifter. Spring *10*, Fig. 140, provides overmotion in case an obstruction prevents the shifter slide *6* from making its normal outward stroke.

The distributor shifter applied to the double distributor or mixer Models F and G differs slightly in construction from the single distributor shifter but fulfils the same functions. A spring is applied to the mixer distributor shifter lever link to counterbalance the weight of the distributor shifter slide.

Maintenance. It is necessary occasionally to clean the distributor shifter slide and the grooves in the distributor shifter slide guide in which the slide runs. To remove the assembled slide, it is necessary only to turn out the stop screw at the left end of the guide and disconnect the slide from the distributor shifter lever. The assembled part can then be drawn to the left out of the guide. Clean the beveled edges of the slide and the grooves in the guide with gasoline and dry the parts thoroughly. Lubricate the slide and the guide with dry graphite and return the parts to position. The distributor shifter lever shaft should be oiled once a week.

The Font Distinguisher

The purpose of the distributor box font distinguisher is to prevent wrong font matrices from entering the distributor box and distributing into the magazine. The assembled distinguisher is shown in Fig. 141. This equipment is applied only to the single distributor models — the double distributor or mixer models are provided with a font selector mechanism which prevents wrong fonts and also controls automatically the distribution of the matrices into two or more magazines.

The font distinguisher consists of a finger *1* fastened to a block *2*. The block is mounted on a link *3* and a lever *4*, which pivot on screws in plate *5*. At the lower end of lever *4* is pinned a rod *6*, which extends down to the machine column and registers with a slot in indicator plate *7* within easy reach of the operator. As rod *6* is moved to the various font slot positions provided in plate *7*, finger *1* is moved to corresponding positions toward the front or the back of the distributor box. Due to the method used in mounting block *2*, the block and finger *1* always move in a horizontal plane as rod *6* is moved up and down.

The font slot positions provided on plate *7* correspond with the point sizes of the matrices. If a 12 point font is being used, the indicator lever rod is moved to the step in the indicator plate opposite figure 12; if an 18 point font is to be used, the rod should be located opposite figure 18 on the indicator plate, etc. When rod *6* is moved to a font slot position, of course, finger *1* is moved to position so that it will align with the font slot of the matrices in use. A matrix of any other

point size, therefore, will be stopped automatically, because its slot will not align with the finger *1*.

The font distinguisher has been improved in design recently to facilitate the removal of wrong font matrices caught by the font distinguisher finger. A releasing lever *8*, Fig. 141, has been fastened to block *2* and compression springs have

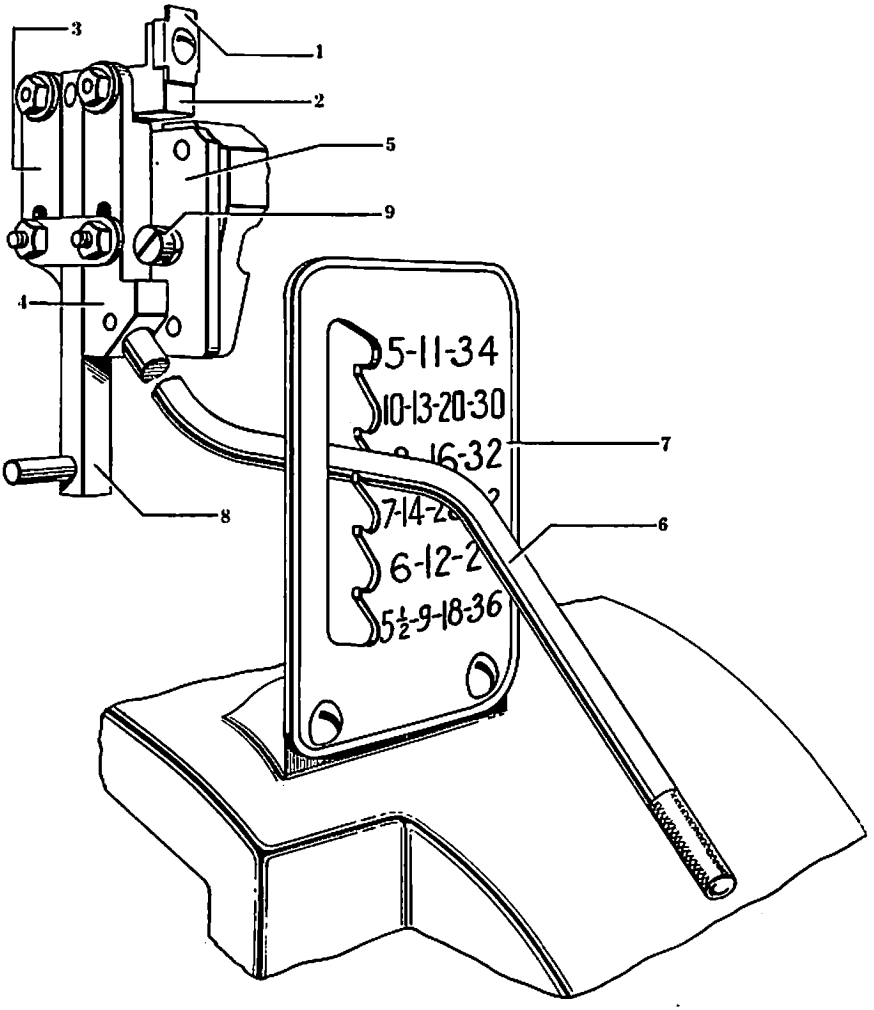

Fig. 141. The Font Distinguisher is applied to single distributor machines to prevent wrong font matrices from being distributed into the magazine in use. When the magazine is changed, rod *6* is set at the proper font slot position on plate *7*. The font slot setting on the indicator plate is made according to the point size of the matrices. Once the proper setting is made, matrices from the magazine in use will pass finger *1*, but matrices from other fonts will be stopped because their font slots will not align with the finger. Matrices from side magazines are provided with an extra wide font slot so that they will pass the font distinguisher at all settings.

been inserted in link *3* and lever *4* to hold finger *1* in its extreme upward position. Elongated holes in link *3* and lever *4* make it possible to pull finger *1* down by means of releasing lever *8*. The finger can be pulled down far enough to clear the bottom of the matrices, making it easier to push wrong font matrices back to the second-elevator bar for removal.

Adjustment of Indicator Finger. The font distinguisher indicator finger *1*, Fig. 141, can be adjusted for height with respect to the font slot in the matrix. Place a new matrix on the second-elevator bar and push the matrix forward until it is just in front of the finger. With rod *6* set in the proper notch of indicator plate *7*, hold a light in front of the distributor box and observe the relationship of finger *1* to the font slot in the matrix. The finger should be centrally located with respect to the font slot and there should be approximately .010″ clearance between the top of the finger and the bottom of the slot. Loosen the indicator finger screw, set the finger for height, then tighten the screw. If the finger is not centrally located with respect to the matrix font slot, rod *6* has probably been bent by improper use and will require slight fitting to locate the finger in its proper horizontal position. Two operating surfaces are provided on finger *1* so that the finger can be reversed after one surface wears. The assembled font distinguisher can be removed from the distributor box simply by removing screw *9*.

Distributing Mechanism

In the preceding description of the transfer mechanism, the various parts of the machine concerned with the transfer of the matrices and spacebands were presented in a sequence beginning with the first elevator and ending with the second elevator. The main parts described in the transfer mechanism were the first-elevator slide guide, the transfer channel, the elevator transfer lever, the spaceband lever and related parts, the elevator transfer slide and safety devices and the second elevator and related mechanisms. From the standpoint of the matrices and spacebands, therefore, we have followed their movements from the time the line was raised to transfer position by the first elevator up to the point where the matrices, supported by their teeth on the second-elevator bar, were lifted to distributing position by the second elevator. As soon as the second elevator seats at distributing position with the second-elevator bar opposite and in alignment with the distributor box bar, the distributor shifter, as previously described, moves the line of matrices from the second-elevator bar to the distributor box bar inside the distributor box. The third major automatic process of the machine—distribution—begins at this point.

Distributing Process (Single Distributor). Before proceeding with the description of the distributing mechanism itself, it will be helpful at this stage to summarize the detailed actions involved in the distributing process. These actions are outlined below and are presented in a sequence corresponding to the order in which they occur on the machine.

1. The second elevator seats at distributing position with the line of matrices supported by their teeth on the second-elevator bar. The teeth of the second-elevator bar, as described previously, are aligned exactly with the teeth of the distributor box bar by the upper second-elevator guide, the locating surfaces of

the distributor shifter slide guide and the projecting lug at the right end of the distributor box bar (viewed from the rear of the machine).

2. The distributor shifter moves toward the distributor box and pushes the line of matrices from the second-elevator bar to the distributor box bar inside the distributor box. As the matrices travel through the distributor box, they are supported by the distributor box bar until they are within approximately one-half inch of the vertical banking faces of the distributor box rails. As the matrices leave the distributor box bar, their upper lugs ride on the upper front and back plate rails, which support the matrices until they are ready to be lifted into the distributor by the distributor box matrix lift.

3. As each matrix is moved forward to the feeding end of the distributor box, the four matrix lugs bank against the vertical banking faces of the four distributor box rails. The faces of the rails locate the lower front edge of each matrix in positive position with respect to the lifting edge of the distributor box matrix lift. Each matrix is held squarely in position at this locating point by the pressure exerted by distributor shifter slide, which urges the matrices forward through tension of the distributor shifter lever spring.

4. The distributor box matrix lift is raised through movement imparted by the distributor box matrix lift lever, the matrix lift cam lever and the matrix lift cam. The lifting edge of the matrix lift engages the lower front edge of the matrix, which is located against the four vertical banking faces of the distributor box rails, and raises the matrix until its lugs are 1/32″ clear of the vertical banking faces of the rails. The raising movement of the matrix lift is timed with respect to the rotation of the distributor screws so that the matrix will be raised as the entering point of the screw threads come to position.

5. While the matrix is at its extreme upstroke of 1/32″ above the vertical banking faces of the distributor box rails, the matrix lift holds the matrix momentarily in this position until the revolving distributor screws contact the matrix lugs and begin to advance the matrix along the two upper distributor box rails. The matrix lift then descends and the distributor screws convey the matrix up the inclined surfaces of the rails to the level surfaces at the front of the distributor box.

6. The matrix, supported by its upper lugs on the two upper distributor box rails, is carried forward by the distributor screws. The front end of the distributor box rails locate the matrix in the precise vertical position required to align the matrix teeth exactly with the teeth of the distributor bar. Slightly before the matrix leaves the upper distributor box rails, therefore, its teeth engage the combination teeth of the distributor bar, which supports the matrix from this point on until it finally drops into its channel of the channel entrance.

7. The three revolving distributor screws, which engage the two upper lugs of the matrix and one of the lower lugs, move the matrix along the distributor bar above the channel entrance. When the matrix reaches a point directly above its channel in the channel entrance, there is a gap in the teeth of the distributor bar corresponding with the combination of teeth cut in the matrix. The matrix is thereby released from the distributor bar, from which point it drops directly into its proper channel in the channel entrance.

8. The partitions of the channel entrance are aligned precisely with respect to the channel grooves in the magazine. As the matrix slides down its channel in the channel entrance, the partitions guide the matrix so that its lugs enter the channel groove in the top and bottom plate of the magazine. The matrix continues to slide down the magazine channel until it comes to rest against the preceding matrix in the channel, from which point it is ready to be assembled again in succeeding lines as matrices are drawn from the magazine.

Distributing Process (Mixer or Double Distributor). In addition to the single distributor machines, Intertype Corporation manufactures two models in the mixer or double distributor group known as the Model F and the Model G. While the mechanism of the mixer machine will be described later in detail, it is desirable at this time that the outstanding features of the double distributor be compared with those of the single distributor. One of the outstanding features of the mixer machine, as described in the section on the assembling mechanism, is that matrices from two adjacent magazines, both main and side, can be assembled in the same line without having to shift the magazines in any way. This feature of "mixed" composition is made possible by a double assembler entrance and a double escapement rod mechanism, which control the release of matrices from both the upper and lower magazines in operating position. On a typical mixer machine equipped with a side magazine unit, therefore, it is possible for the operator, without shifting magazines, to assemble a line composed of matrices from a total of four magazines: the upper and lower main magazines and the upper and lower side magazines in operating position.

Having provided an assembling unit for assembling in one line matrices from four magazines, it was necessary next to develop a distributing unit to return the "mixed" lines of matrices to the proper magazines. The distribution of such a line of matrices involves three basic requirements:

1. A double distributing mechanism, for conveying the matrices simultaneously to the upper and lower magazines.

2. A font selector mechanism, for determining automatically whether the matrices will be delivered to the front or to the back distributor.

3. A distributor box clutch mechanism, for shifting the distributor box to the front and back distributors as the font selector determines to which distributor the matrices are to be delivered.

As mixed lines of matrices are delivered to the distributing mechanism of a double distributor machine, therefore, they are first presented to the font selector mechanism. The selector consists principally of two feelers, which cooperate with mixer notches cut in the bottom of the matrices. If the distributor box is in position opposite the front distributor, for example, the notch in all matrices drawn orginally from the upper main or side magazine will align with the font selector feeler and the matrices will be lifted into the front distributor. As soon as a matrix drawn originally from the lower main or side magazine is presented to the front feeler, however, the notch in the matrix, being in a different position with respect to the feeler, causes the matrix to trip the distributor box clutch mechanism. The distributor box is thereby moved to position opposite the back distributor, then the back feeler comes to position and since the notch in the