The Single Distributor

In the description of the distributing mechanism thus far, we have followed the course of the matrices up to the point where they were ready to be lifted into the distributor. We have seen how the distributor shifter moved the line of matrices into the distributor box, how the matrix lift raised each matrix above the distributor box upper rails or lift rails into the distributor screws and how the distributor screws conveyed the matrices along the rails to the point where the teeth of the matrices engaged the teeth of the distributor bar. From this point on, the matrices will be conveyed along the bar supported by their teeth until they reach the points on the bar directly above their respective channels in the channel entrance. As each matrix reaches the point directly above its channel, 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 and drops into its proper channel in the channel entrance, through which it is guided into its channel in the magazine.

A view of the distributor applied to single distributor machines is shown in Fig. 157. The distributor beam *2* is fastened at the top of distributor bracket *1* by two large hexagon screws *3* passing through the bracket from the front of the machine. The distributor bar *4* is doweled on the beam and is clamped in position by screws *5*. The two distributor front screws *6* and *7* are mounted in brackets fastened at the front of the distributor beam and occupy fixed positions with respect to the front of the distributor bar. The distributor back screw *8* is supported in two brackets *9* which pivot with shaft *10*. When the distributor is in operation, a spring catch *11* engages bracket *9* and holds the distributor back screw in its normal operating position with respect to the distributor bar. The inward position of the distributor back screw is adjusted by means of a screw *12* in each of the distributor back screw brackets. The pivotal arrangement of the distributor back screw is designed to provide access to matrices on the distributor bar. In the process of making a distributor adjustment, a matrix may twist on the distributor bar and the pivotal mounting of the distributor back screw makes it easier to remove the matrix. It is not advisable, however, to disengage the back screw when there are more than one or two matrices on the distributor bar, because it will be difficult under these conditions to time the screw gears and to engage the matrix lugs with the screw threads.

The distributor screws applied to all models of the Intertype machine are of the two pitch type, that is, the screws are provided with two threads per inch. For every complete revolution of the distributor screws, therefore, the matrix is advanced a distance of one-half inch on the distributor bar. This speed is ideal for matrix distribution because the matrices are fed out of the distributor box at a rapid rate and are returned to the magazines at a speed in excess of the requirements of the fastest composition. The one-half inch distance between the distributor screw threads also provides ample space between the matrices on the distributor bar for efficient distribution. As each matrix drops off the distributor bar, it has sufficient time to drop into the channel entrance before the succeeding matrix advances to the same point. The two-pitch distributor screw, therefore,

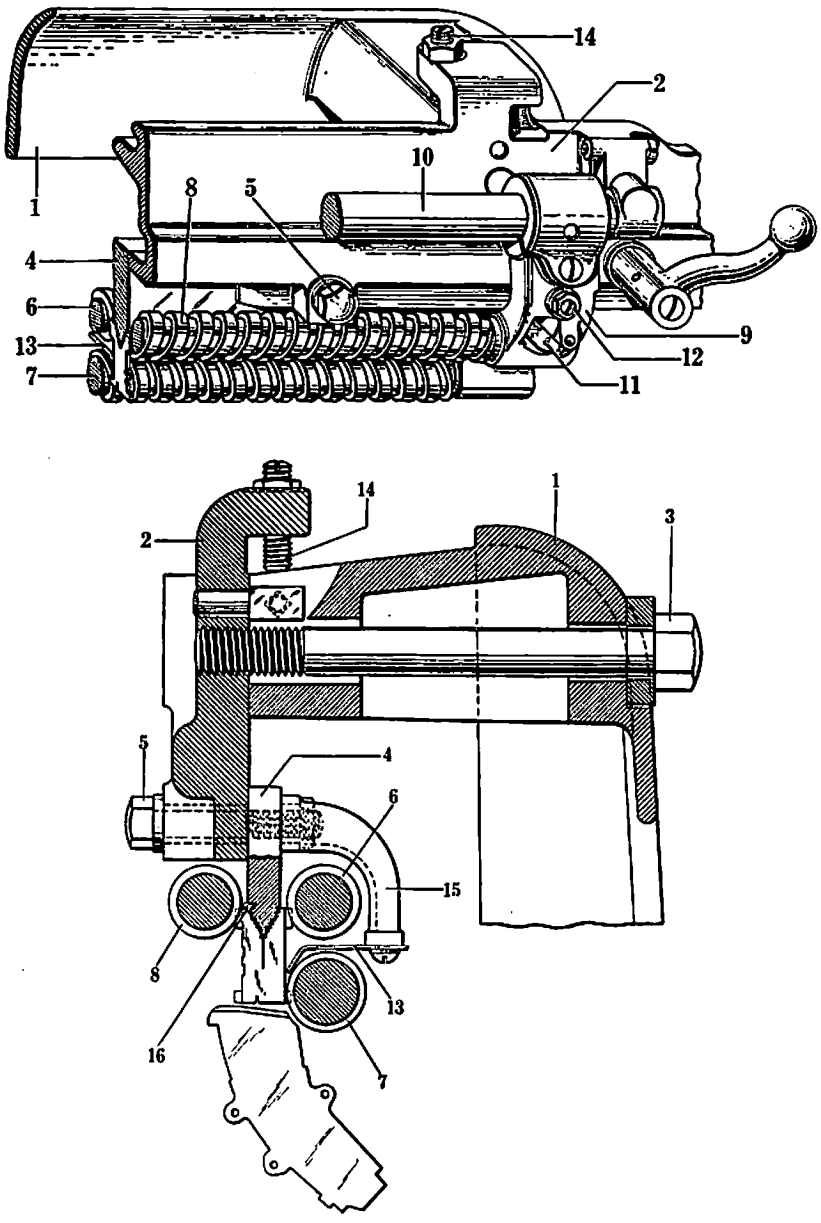


Fig. 157. Views of the Single Distributor, showing its relationship to the distributor bracket and other parts of the machine. The end view shows how the distributor screws engage the matrix lugs and also illustrates the method of setting the height of the assembled distributor.

not only speeds up matrix distribution but also insures positive release and delivery of matrices to the channel entrance.

The matrices, as previously described, are moved along the distributor bar by the threads of the distributor screws. An end view of the distributor screws in their relationship to the matrix on the distributor bar is shown in Fig. 157. On single distributor machines, the upper front distributor screw *6* and the lower front screw *7* engage the upper and lower lugs respectively on the reference side of the matrix; the back distributor screw *8* engages the upper lug on the punch side of the matrix. When the distributor screws are assembled with their gears, of course, they are timed so that the threads of the screws contact the matrix lugs simultaneously. As the distributor screws revolve, therefore, their threads move the matrix along the distributor bar and keep the matrix at a perfect right angle with respect to the bar.

The matrix moves along the bar until it reaches the point directly above its channel in the channel entrance. The teeth of the distributor bar at this point are suitably blanked to remove the teeth which supported the matrix up to the point where it is to be released. When the matrix drops off the distributor bar, its upper lug on the reference side strikes distributor screw guard *13*, Fig. 157, which deflects the matrix as it enters its own channel in the channel entrance. The deflection of the matrix as it is entering its channel prevents the upper matrix lug from being caught by the lower front distributor screw and also tilts the matrix at the proper angle so that it will slide through the channel entrance more readily.

It will be helpful at this point to describe briefly the principle of matrix distribution in order to indicate how each matrix is returned to the proper channel in the magazine from which it was originally drawn. Automatic matrix distribution is based upon the provision of a different combination of teeth for each character in the font. Every matrix, before undergoing the operation known as "combination cutting," is provided with seven teeth on each side of the triangular opening at the top of the matrix. In the process of combination cutting, certain of the teeth are cut away and others are retained on the matrix. The teeth are always cut away or retained in pairs, that is, if the top tooth on one side of

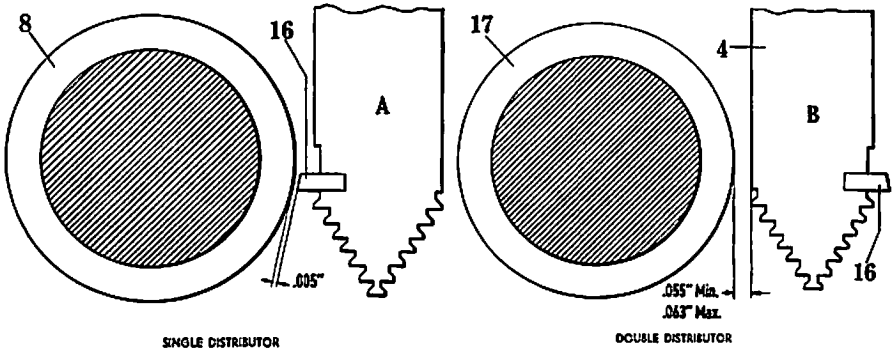


Fig. 158. Detail views of the distributor back screw (single distributor and mixer), showing the clearances established between the screws and distributor bar or distributor bar strip.

the matrix is to be removed, the top tooth on the other side would also be removed. Conversely, if the second tooth on one side is to be retained, the second tooth on the other side would also be left intact, etc. By removing certain of the matrix teeth and leaving others intact, it is possible to obtain 126 different tooth combinations—enough to control the distribution of all of the matrices to both the main and side magazines and the pi stacker. The maximum number of channels in the main magazine is 91, counting the extra lower case "e" channel, and the standard side magazine contains 34 channels—a total of 125 channels, each of which requires a different tooth combination for the matrices. A matrix on which all seven teeth are retained is called a "pi" matrix. Pi matrices do not drop into any of the magazines but are conveyed along the entire length of the distributor bar to the pi stacker tube, through which they are guided to the pi stacker at the right of the main keyboard.

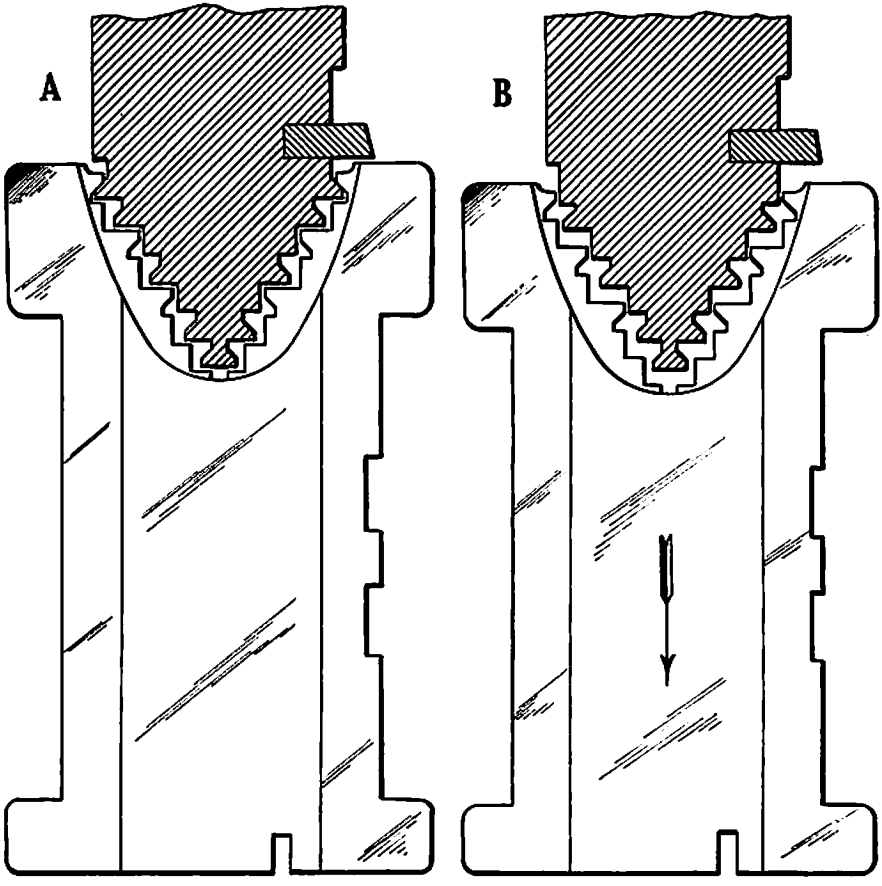


Fig. 159. Matrix and Distributor Bar Tooth Combinations, showing how a matrix (lower case "v") is supported on the bar (drawing *A*) and how the same matrix is released when it reaches the point directly above its channel in the channel entrance (drawing *B*).

The matrices, as outlined previously, are supported by their teeth as they are moved along the distributor bar by the distributor screws. Like the matrices, the distributor bar is originally provided with seven teeth on each side of its triangular lower end, but in the process of distributor bar combination cutting, the teeth are broken up into various combinations so that each matrix will be left without support at the point where it is to be released. Two end views of a matrix in the process of distribution are shown in Fig. 159. The matrix illustrated in both cases is a lower case v, the tooth combination of which consists of teeth 1, 3 and 5 with the other teeth cut away. In drawing *A,* the matrix is shown at a point on the distributor bar just preceding its releasing point. Since a lower case v matrix is shown, the point of the distributor bar illustrated is obviously the point where the lower case p is released, because the character p precedes the v in the standard layout. At this point of the distributor bar, the v matrix is supported by its two top teeth, which engage the corresponding teeth of the distributor bar. While the matrix also has teeth number 3 and 5, these teeth are inoperative at the section of the distributor bar shown because the corresponding teeth of the bar are cut away. (It should be noted, however, that teeth 3 and 5 were utilized previously on the bar when they were required to support the matrix at sections of the bar where the top teeth were missing.)

In drawing *B,* Fig. 159, the same matrix (lower case v) is shown at its releasing point on the distributor bar, which point is directly above the v channel of the channel entrance leading to the v channel in the magazine. As indicated in the illustration, the distributor bar combination at the v point is the reverse of the tooth combination of the matrix—whereas teeth 1, 3 and 5 have been left on the matrix, these same teeth have been removed from the distributor bar. When the matrix reaches its releasing point on the distributor bar, therefore, there is a gap in the teeth of the bar opposite each of the supporting teeth of the matrix. The matrix is thereby released and drops by gravity off the distributor bar into its channel in the channel entrance, from which point it is guided into its channel in the magazine.

To summarize the principle of automatic matrix distribution of the Intertype machine, therefore, the entire system may be said to consist simply in providing a different tooth combination for each character in a font and blanking each of these combinations at the necessary points along the distributor bar. This automatic matrix distribution system is one of the most ingenious methods yet devised for controlling mechanically so many objects of diverse size with such perfect results. The inception of automatic matrix distribution marked the start of a new era in the field of line casting machinery, because through its introduction printing was liberated for the first time from its most time-consuming and expensive process—hand distribution of matrix and type equipment.

Adjustments: Height of Distributor. The vertical position of the assembled distributor with respect to the tops of the channel entrance partitions is adjusted by means of two screws at the top of the distributor beam. One of the adjusting screws in shown at *14,* Fig. 157. The two screws should be adjusted so that when a matrix is being conveyed along the distributor bar, there will be approximately 1/16″ clearance between the bottom of the matrix and the tops of the channel entrance partitions along the entire length of the channel entrance. In making

this adjustment, the assembled distributor, comprising the distributor beam, bar, screws, etc., is raised or lowered as a unit.

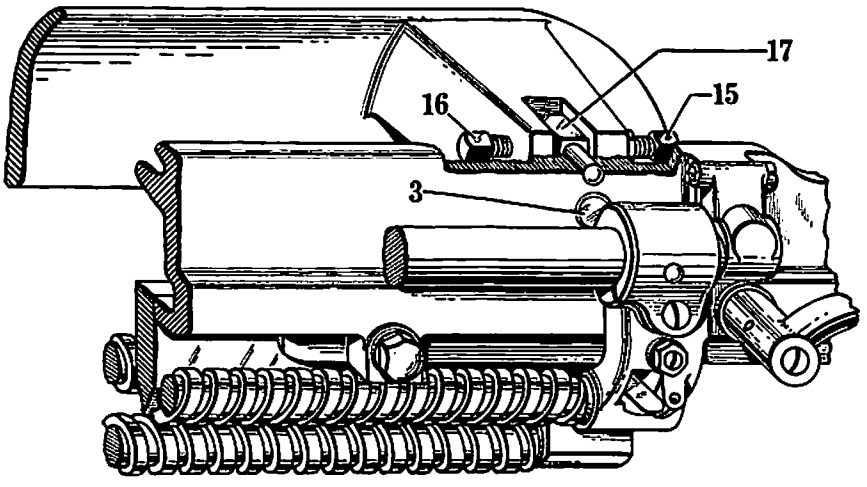
In setting the height of the distributor, disconnect the distributor driving belt and obtain two pi matrices. Insert one of the matrices in the distributor box, turn the distributor screws until the matrix is within approximately five inches of the end of the distributor bar, then insert the second matrix and turn the screws until the second matrix is on the distributor bar. By this procedure, a matrix will be positioned at each end of the distributor and will facilitate the process of checking the height of the matrices with respect to each end of the channel entrance. The two distributor beam screws *3*, Fig. 157, and screw *16*, Fig. 160, must be loosened before the adjusting screws *14*, Fig. 157, can be turned. Set the adjusting screws so that the bottom of each matrix is about 1/16″ above the top of a channel entrance partition, then tighten the beam screws *3*. Turning the adjusting screws in will raise the distributor and will increase the clearance between the matrices and the channel entrance. The holes in the distributor bracket *1* through which the beam screws *3* pass are large enough to permit the screws to raise or lower with the distributor beam as it is adjusted.

Sidewise Adjustment of Distributor. In addition to adjusting the height of the distributor so that the matrices will clear the top of the channel entrance, the assembled distributor can be adjusted sidewise with respect to the channel entrance so that the matrices will drop freely into the channels. The parts provided for adjusting the distributor sidewise are shown in Fig. 160.

Before making any adjustment relative to the sidewise location of the distributor, it should be understood that *the magazine is the fixed or constant factor in the process of matrix assembly and distribution.* The magazine is supported in a fixed vertical and sidewise position when it is in the magazine frame. Every magazine in the main frame, of course, assumes the same relative position when it is moved into operation, as do the side magazines as well. Since every magazine is constant in its sidewise operating location, therefore, all parts related to the return of matrices to the magazine must obviously be adjusted to the magazine. *The magazine, therefore, may be regarded as the starting point for all adjustments related to the distribution of matrices.*

In the process of matrix distribution, as previously indicated, the matrices drop from the distributor bar into the channels of the channel entrance, which guide the matrices into the channels in the magazine. Since the magazine is constant in position, the first step obviously is to adjust the channel entrance properly with respect to the magazine so that the matrices will enter the magazine channels freely. Following the setting of the entrance, the distributor beam may be adjusted with respect to the entrance so that the matrices will drop properly into their respective channels when they are released from the distributor bar. The procedure for checking and setting the channel entrance is described on pages 283-286.

In setting the distributor sidewise so that the matrices drop properly into the channels of the channel entrance, the entire distributor is shifted as a unit. When the distributor bar is moved with the beam, all of the releasing points on the bar are shifted in one direction with respect to the channels of the channel



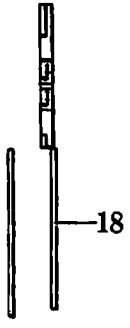


Fig. 160. Top View of the Distributor. The main drawing indicates the adjustable parts provided for setting the distributor sidewise in relation to the channel entrance. The left view shows how a released matrix touches the right-hand channel entrance partition when the distributor screws are turned slowly by hand. When the screws are turning under power, momentum causes the matrices to drop centrally between the partitions.

entrance. The release of all the matrices, therefore, can be delayed or advanced with respect to the channels.

To set the distributor sidewise, disconnect the distributor driving belt and insert a few lower case matrices in the distributor box. Any character may be used for the setting, but for purposes of illustration, let us assume that lower case "f" matrices are used. Open the channel entrance, locate the "f" channel and scribe a mark on the channel entrance stopping bar in front of the channel so that the channel can be located easily when the entrance is closed. Turn the distributor screws by hand and as the first matrix approaches its channel, turn the screws very slowly in order that the precise relationship between the dropping matrix and its channel entrance partitions may be seen.

When the matrix is released from the distributor bar, the right side of the matrix (viewed from the rear of the machine) should just touch the right-hand partition *18,* as shown in the detail drawing, Fig. 160. In establishing this condition, of course, it should be understood that when the distributor is running under power, momentum will cause the matrices to travel further to the left so

that they will drop centrally between the partitions. If the matrix is dropping too far away from the right-hand partition *18* when the distributor screws are turned by hand, the assembled distributor should be moved to the right (viewed from the rear of the machine). This is accomplished by loosening the two distributor beam screws *3* at the front of the distributor bracket, backing off the right-hand distributor adjusting screw *15*, and turning in the left-hand screw *16* until stud *17* banks against screw *15*. Screw *15* should be backed off only as far as the distributor is to be moved. For example, if the matrix is dropping 1/16″ too far to the left, the adjusting screw would be turned out approximately the same distance. Tighten the beam screws *3* and test the distributor again by turning the screws by hand and watching the matrices as they drop. When the matrix just touches the partition *18*, tighten the lock nut on the right-hand screw *15* and make sure that screw *16* is banking against stud *17*.

The final test of the sidewise setting of the distributor is made with the screws running under power. This is done most easily by having the operator assemble lines from the lower case, figure and cap sections of the magazine while the person making the adjustment observes the distribution of the matrices at the back of the machine. If the majority of the matrices drop centrally between the channel entrance partitions, the basic setting of the distributor may be regarded as correct. Sometimes a partition is bent out of position and the matrix may fall on top of it instead of dropping into the channel. Minor variations of this nature are corrected by bending the partitions back into position with a pair of duckbill pliers.

It should be noted finally that whenever a change is made in the operating speed of the machine (slugs per minute), a corresponding change should be made in the intermediate shaft driving pulley (S-46) so that the distributor and other units of the machine will operate at their standard speeds. In the process of assembling machines at the factory, all non-quadding machines are geared to turn 6½ revolutions per minute, and all quadding machines, 7⅓ per minute, unless the order specifies otherwise. When the speed of the casting unit is established, therefore, an intermediate shaft driving pulley of suitable diameter is applied so that the distributor and other parts of the machine will operate at their proper speeds. If a new pinion is applied to the motor to speed up the casting mechanism, however, and no change is made in the pulley, the speed of the distributor will be increased and the matrices may overthrow their respective channels in the process of distribution. The same increase in speed would also result, of course, in the case of the keyboard, assembler, pi stacker, etc., which are driven by the intermediate shaft.

Distributor Screw Guard. The function of the distributor screw guard *13*, Fig. 157, is to deflect matrices away from the lower front distributor screw *7* as they drop into the channels of the channel entrance. The upper lug on the reference side of each matrix strikes the guard as the matrix is released, causing the matrix to be deflected away from the screw and into the channel of the entrance. The screw guard is supported by two brackets *15* at the front of the distributor bar and is provided with elongated holes so that it can be adjusted in relation to matrices on the distributor bar. As the matrices are being conveyed along the bar, the guard should be 1/32″ clear of their reference sides. To obtain this set-

ting, run two pi matrices on the bar so that each matrix is near the end of the bar, then adjust the guard to the matrices. The screw guard setting is quite important from the standpoint of distribution. If the guard is set so close to the matrices that it bears against their reference sides, it may spring the matrices over the channel entrance and cause them to fall on the floor. A binding condition between the guard and the matrices will be indicated by a horizontal score line on the reference side of the matrices. On the other hand, the guard should not bear against the lower front distributor screw *7*. Clearance in this respect is easily verified by inserting a strip of paper between the screw and the guard and moving the paper along the entire length of the guard.

Distributor Back Screw Bracket Adjusting Screws. The distributor back screw *8*, Fig. 157, is adjustable with respect to the distributor bar *4*. The screw, as previously described, is supported in two brackets *9*, which pivot with shaft *10* so that the screw can be moved away from the distributor bar to provide access to matrices on the bar. The normal operating position of the distributor back screw with respect to matrices on the distributor bar is adjusted by a screw *12* in each of the back screw brackets *9*. The adjusting screws are set so that there is approximately .005″ clearance between the distributor back screw *8* and the distributor bar strip *16*.

An enlarged detail view of this clearance is shown in drawing *A*, Fig. 158. In establishing the clearance indicated, the distributor back screw will revolve without touching the strip and at the same time, the threads of the screw will have the proper amount of engagement with the lugs of the matrices. The setting of the distributor back screw is practically permanent and will probably never require attention unless the adjusting screws work loose. In the event that the adjustment must be made, however, a .005″ feeler gauge can be inserted between the distributor back screw and the distributor bar strip to establish the necessary clearance. The upper and lower distributor front screws are supported in fixed brackets and do not require adjustment.

In the case of machines with double distributors, it should be noted that the distributor bar strip applied to the back distributor bar faces the middle distributor screw instead of the upper back distributor screw. The upper back screw *17* and its relation to the back distributor bar *4* are shown in drawing *B*, Fig. 158. Since the distributor bar strip *16* is on the opposite side of the distributor bar, the assembled distributor back screw unit is adjusted in relation to the finished face of the distributor bar itself. As indicated in the drawing, the normal operating position of the back screw is .055″—.063″ from the distributor bar. This dimension is obtained by inserting a gauge of the required thickness between the upper back distributor screw *17* and the distributor bar *4* while making the adjustment. The adjustment is made by means of a screw in each of the back screw brackets. It should be noted finally that the .055″ dimension as shown in drawing *B*, Fig. 158, is a *minimum* clearance setting—the clearance may be slightly more than .055″, but under no condition should it be less. The reason for this is that the body of the distributor screws between the threads should clear the lugs of the matrices as they are being conveyed along the distributor bar. If less than .055″ clearance is provided, the screws may rub the lugs and interfere with distribution.

The other distributor screws of the mixer machine (distributor middle screw and upper and lower front screws) are supported in fixed brackets and require no adjustment.

Removal of Distributor. Probably the only occasion on which the assembled distributor will have to be removed is when the machine is to be moved to a new location. Back the machine until the second-elevator lever descends about six inches, open the channel entrance, remove the font distinguisher and the distributor box, remove the distributor shifter slide stop screw and draw the slide out of the distributor shifter slide guide, disconnect the distributor driving belt and withdraw the pi tube from the pi tube entrance. Turn the distributor adjusting screw *16,* Fig. 160, away from stud *17* and loosen the distributor beam screws *3* slightly. Two persons should support the distributor at the back of the machine while another removes the beam screws at the front. The distributor should be held forward against the distributor bracket while the beam screws are being removed to avoid binding the screws. When the assembled unit is lifted off the machine, care should be taken not to damage the channel entrance or its partitions.

The removal of the mixer distributor is accomplished by essentially the same procedure as that outlined above. When the machine is equipped with a distributor signal light, a metal feeder or an automatic font distinguisher or selector, however, the additional parts should be disconnected before the distributor beam screws are loosened. *It is a good plan to inspect the entire distributor just before the beam screws are removed to make sure that the beam is wholly free of parts fastened to other units of the machine.*

Maintenance. The distributing unit of the machine should be cleaned at regular intervals to maintain efficient distributing conditions and to keep the matrices and the magazines clean. Dust, oil and gummy substances on the distributor screws or bar are objectionable not only from the standpoint of matrix distribution but also because the foreign substances are carried into the magazines and affect the assembling of matrices and subsequent processes related to alignment, justification and casting. To clean the distributor screws, open the channel entrance, cover both the entrance and the tops of the magazines with several sheets of newspaper or a heavy cloth and hang a weight on the distributor clutch lever so that the distributor screws will run while the channel entrance is open. Saturate a watchmaker's brush with high-test gasoline and move the brush along the distributor screws as they revolve under power. Give particular attention to the faces of the distributor screw threads which contact the matrix lugs. The combination teeth of the distributor bar are sometimes fouled with oil which has dropped off some part of the machine onto the matrix teeth. The teeth of the bar are most easily cleaned with the back distributor screw raised. In oiling the distributor screws, only one or two drops should be applied to each bearing once a week. The distributor screws do not have a heavy duty to perform—they simply move the matrices along the distributor bar at a uniform rate of speed. There are six oil holes for the distributor screws of the single distributor machine and ten for the screws of the mixer machine—two oil holes for each screw. Oil each point sparingly and wipe the ends of the distributor screws and their bearings occasionally with a clean cloth.

Channel Entrance (Single Distributor)

The purpose of the channel entrance is to receive the matrices as they drop off the distributor bar and guide them into the channels of the magazine. The channel entrance applied to single distributor machines is shown in Fig. 161. The entrance consists principally of a curved brass base plate *1*, known as the partition plate, on which the partitions *2* are mounted. Two rows of slots are punched in the partition plate at the proper intervals for the insertion of the two back lugs of each partition. The lugs of the partitions are provided with holes through which locking rods *3* and *4* pass. The locking rods pass under the partition plate and pull the partitions firmly against the plate, locking them rigidly in the slots. When the partitions have been assembled on the partition plate *1*, the locking strip *6* is applied. A single row of slots is punched in the strip for the upper lugs of the partitions, which are locked firmly in position by a rod *5* similar to those used under the partition plate. The purpose of the locking strip is to maintain the same space between the partitions at the top as that established by the slots in the partition plate below.

The matrix guard *7*, Fig. 161, is fastened to two hinges *8* which pivot on locking rod *5*. The pivotal arrangement of the matrix guard is provided to facilitate the removal of matrices from the channel entrance and also to prevent damage to the magazine in case the channel entrance is operated when a matrix is partly in the entrance and partly in the magazine. The hinged matrix guard is useful also from the standpoint of adjusting the channel entrance because it provides a convenient means of checking the relationship between the partitions and the magazine channels when the channel entrance is in its closed operating position.

An important feature to note in connection with the Intertype channel entrance is the variable spacing of the partitions to suit the different widths of the characters in a font. The lower case i matrix, for example, is much thinner than the capital W and in establishing the width of the lower case i channel in the channel entrance, it is logical to expect that the channel would be narrower than that provided for the capital W. The same principle holds true for all the other characters in a font, the thin characters (lower case f, l, j, comma, period, quotation marks, etc.) having narrower channels than the wide characters (ffl, em space, capitals A, M, W, Z, etc.). Every individual channel is wide enough, of course, to receive the widest character passing through the channel. In establishing channel dimensions according to character widths as outlined, Intertype has secured two advantages of paramount importance: *all of the matrices are positively controlled by their channel entrance partitions from the time they drop off the distributor bar until they enter the magazine channels and secondly, full-width 18 point faces can be run in the standard 90-channel magazine without distortion of the characters or departure from accepted rules of type face design.* If the partitions of the channel entrance were spaced at uniform intervals, it is obvious that certain of the channels would be too wide to control very thin matrices with accuracy and secondly, the channels for the widest characters (capitals M and W) would be too narrow for these characters in the wider boldface designs.

A detail drawing of the Intertype channel entrance partition is shown in

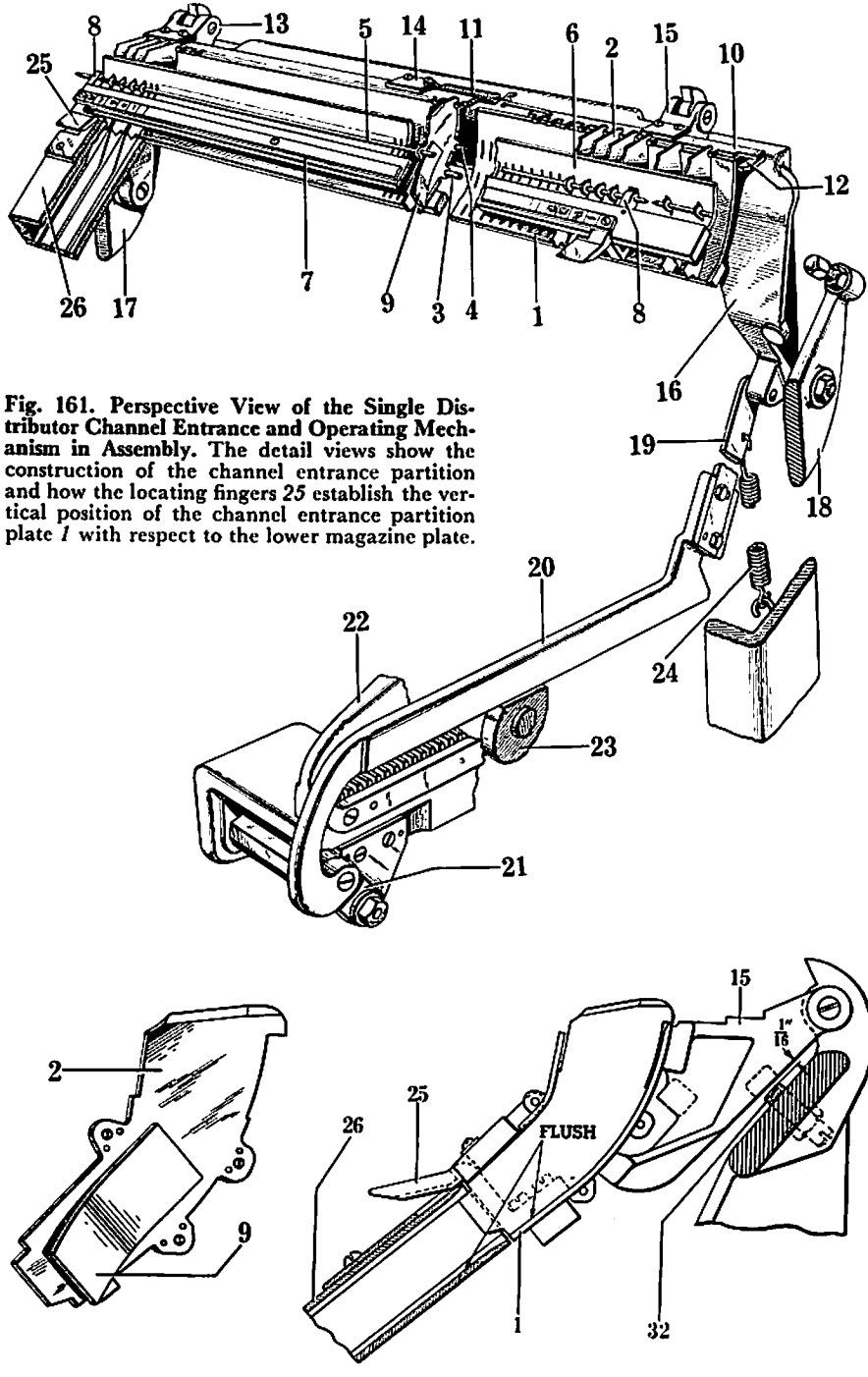


Fig. 161. Perspective View of the Single Distributor Channel Entrance and Operating Mechanism in Assembly. The detail views show the construction of the channel entrance partition and how the locating fingers *25* establish the vertical position of the channel entrance partition plate *1* with respect to the lower magazine plate.

Fig. 161. At the lower end of each partition *2* there is an extended lug which projects about ¼" in the magazine. These lugs guide the matrices positively into the magazine channels because they control the matrices until both the lower and upper lugs have entered the channel. This is indicated clearly in Fig. 162. A spring *9*, Fig. 161, is welded to each partition to hold the matrices upright as they slide through the entrance channels and also to assist in guiding the matrices into the magazine channels. The lower ends of the springs can be curved by drawing a pair of duckbill pliers from the center to the bottom of the spring. This is usually necessary only in the case of the widest channels (ffl, em space, M, W, @, etc.). The springs applied to the channel entrance partitions permit matrices of all thicknesses to pass through the channels freely—the wider matrices press the springs to the left as they slide through the channels while the thinner matrices are supported by the springs and the right-hand sides of the partitions (viewed from the front of the machine).

Due to the method of locking the channel entrance partitions on the partition plate, as shown in Fig. 161, the upper part of each partition is flexible. The locking lugs of each partition, as indicated in the illustration, are located approximately at the center or below the center of the partition, leaving the upper portion of the partitions free. Running along the back of the channel entrance is an automatic stopping bar *10*, which is supported freely in the partition plate brackets *13*, *14* and *15*. The stopping bar is provided with lugs which are held against the partitions through action of spring *11*. On the end of the stopping bar is riveted a plate *12* which engages part of the distributor clutch lever (not shown) and holds the clutch lever out of engagement with the distributor clutch flange when the distributor is operating normally. While the distributor clutch mechanism will be described later, it should be noted at this point that if the stopping bar *10* and plate *12* are moved to the right, the distributor clutch lever will engage the clutch flange and stop the distributor screws. If a channel of the channel entrance is clogged with matrices, therefore, succeeding matrices intended for the same channel will eventually pile up high enough to obstruct other matrices which are being conveyed along the distributor bar by the distributor screws. One of the matrices being moved forward by the screws will then bear against the obstructing matrix in the channel, causing the partition of the channel to spring to the right. The partition will move the stopping bar *10* and plate *12* in the same direction and the distributor clutch will be disengaged, as previously described. The distributor screws are thereby stopped, preventing damage to the channel entrance parts, and at the same time, informing the operator of the obstructing condition.

Channel Entrance Operating Mechanism. The operating mechanism for the single distributor channel entrance is shown in Fig. 161. The assembled channel entrance is fastened to two brackets *13* and *15* which are pivoted on screws passing through lugs on the channel entrance frame *16*. The frame is pivoted on two shoulder screws threaded in brackets *17* and *18*, which are fastened to the left and right sides of the distributor bracket. Attached to a shoulder screw at the right side of the channel entrance frame *16* is a lever *19*, the lower end of which is fastened to a bracket *20*. The front end of the bracket is connected pivotally with a link *21*, which is held on a stud passing through the magazine frame sup-

porting bracket *22*. Under bracket *20* there is a cam surface *23* which is part of the magazine frame operating chain upper sprocket. The cam surface turns under bracket *20* and operates the channel entrance automatically as the magazine frame is moved forward or backward. Spring *24* holds the assembled channel entrance in its closed position and causes bracket *20* to follow the contour of cam *23*. When the magazine frame operating handle is turned to move a different magazine into operating position, the high point of cam *23* rises under the bracket *20* and moves the channel entrance out and away from the magazines against tension of spring *24*. As the magazine frame seats in position, the flat sur-

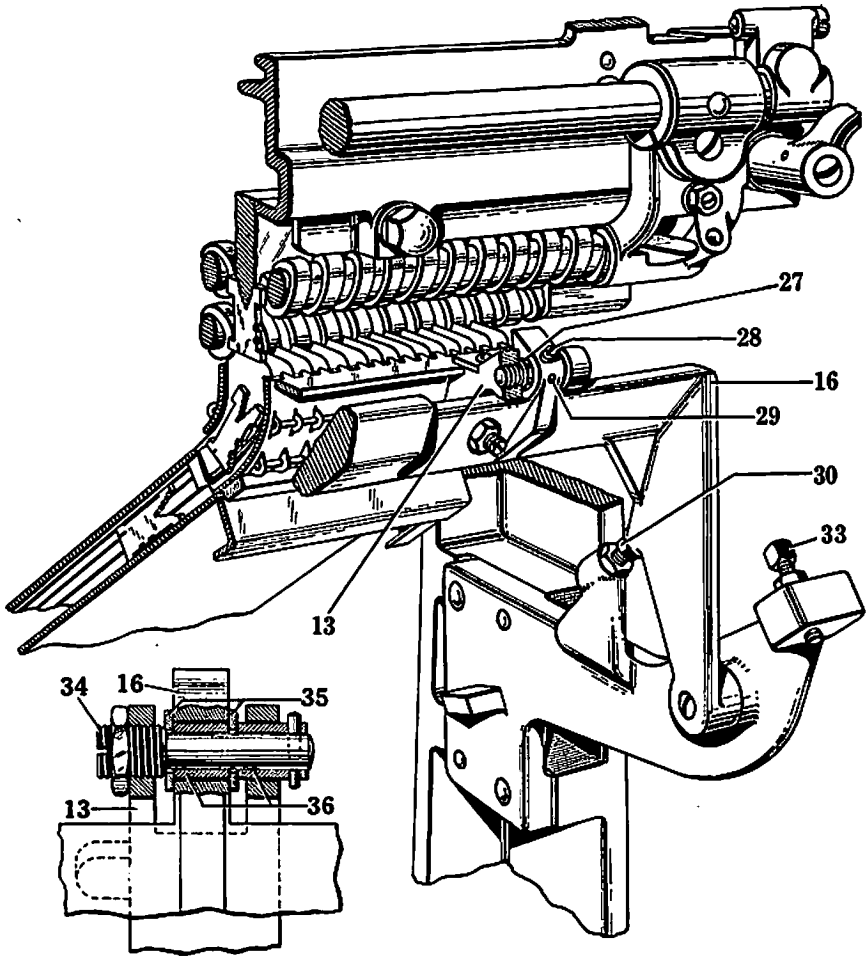


Fig. 162. Channel Entrance in Relation to Distributor and Magazine. The general view indicates how the matrices are released from the distributor, slide through the channel entrance and enter the channels of the magazine. The detail view shows the latest channel entrance partition plate adjusting screw *34*, which facilitates the sidewise setting of the partition plate with respect to the magazine. The new adjusting screw *34* replaces the pinned bushing *27* shown in the main drawing.

face of cam *23* comes to position under bracket *20*, permitting spring *24* to pull the channel entrance back to its closed operating position.

Like the manually operated channel entrance formerly applied to the machine, the mechanically operated channel entrance now applied can be opened from the rear of the machine for inspection of magazines, removal of matrices, etc. The entrance opens to a wide position and all parts of the distributor and the magazines are fully accessible. When the channel entrance is opened manually from the rear of the machine, the linkage connected with the entrance is moved temporarily to an inoperative position. The entrance should always be closed by hand from the rear of the machine, therefore, if it was opened from the rear originally.

Adjustments: Sidewise Position of Channel Entrance Partition Plate. Two different adjustable arrangements are provided for setting the single distributor channel entrance partition plate sidewise with respect to the magazine channels. The first arrangement applied until recently consisted of a bushing *27*, Fig. 162, which was pinned in position when set. The latest device is a simple adjusting screw *34* (detail drawing), which is held in position by the conventional type of lock nut.

In the case of the first style bushing arrangement, it should be noted that the bushing is inserted in the lug of the channel entrance frame *16*, Fig. 162, and fits snugly between the two lugs of the partition plate bracket *13*. When the machine is in the process of assembly, the channel entrance is set in the correct sidewise location and set screw *28* is tightened to hold the bushing and the entrance in position. A hole is then drilled in the lug of the channel entrance frame and partly into the bushing for pin *29*, which holds the bushing in its final set position. Since the magazines are positively located in the magazine frames and since the channel entrance is not likely to shift once it is set, the entrance will probably not require adjustment. However, the procedure for setting the channel entrance partition plate sidewise in relation to the magazine is outlined below in case it is necessary to apply an entrance to an outstanding machine.

In setting the sidewise location of the channel entrance partition plate, it is preferable to use the top magazine in the frame to make the parts most accessible for inspection and adjustment. With the channel entrance in its closed operating position, open the hinged matrix guard *7*, Fig. 161, and observe the relationship between the channel entrance partitions and the magazine channels. It will be necessary to stand on a chair at the front of the machine and to get as close as possible to the channel entrance in order to see the partitions and the lower plate of the magazine most clearly. An extension light should be placed in a suitable location to illuminate the interior of the channel entrance and the magazine while the adjustment is being made.

The ideal sidewise setting of the channel entrance partition plate *1* is indicated in Fig. 163. The assembled plate should be set so that the left side of every partition is exactly aligned with or slightly to the left of the straight or constant side of each magazine channel. The precise alignment required between the left sides of the partitions and the constant sides of the channels is indicated at *a*. If the partitions are not properly aligned with the magazine channels, it will be necessary to drill out pin *29*, Fig. 162, loosen set screw *28*, turn bushing *27* in its

bearing, relocate the assembled partition plate by shifting it sidewise, and then tighten screw *28* and pin bushing *27* in its new position. When setting the channel entrance partition plate, it should be borne in mind that the partitions are correctly spaced and aligned on the plate when assembled. The spacing and alignment of the partitions, of course, are based upon the spacing and angle of the channels in the magazine plates. In adjusting the partition plate as an assembled unit, therefore, almost every partition should align automatically with its channel—if one or two of the partitions have been bent out of position by improper handling, they can be straightened with a pair of duckbill pliers.

In the case of the new adjusting screw *34,* Fig. 162, it is necessary only to

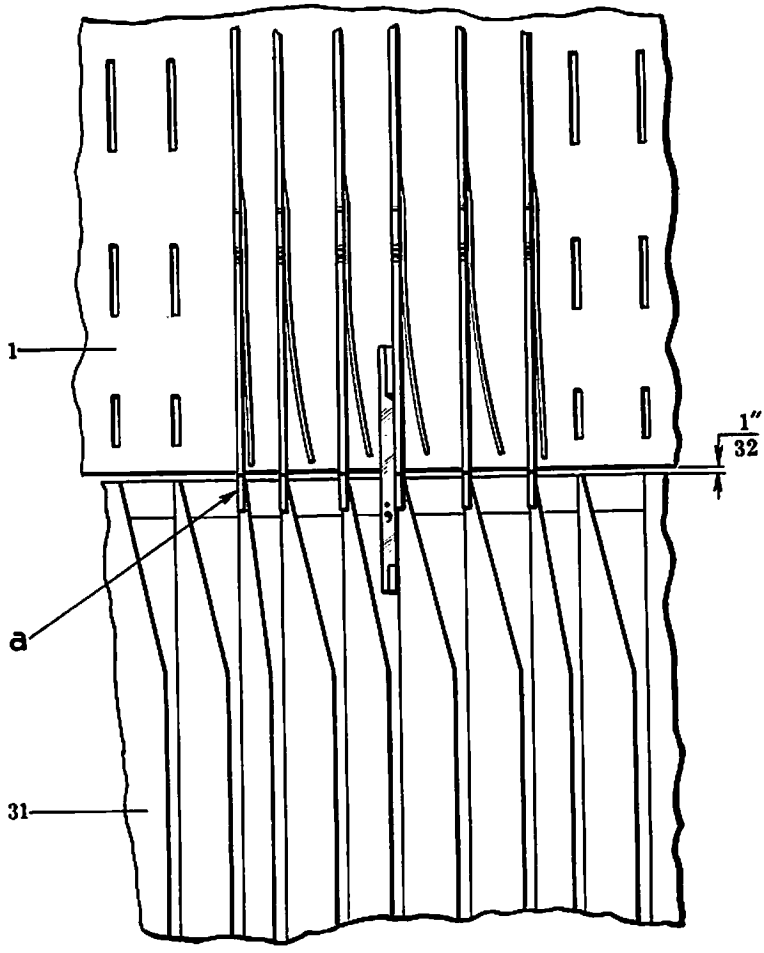


Fig. 163. Top View of Channel Entrance Partition Plate and Lower Magazine Plate. When setting the channel entrance sidewise with respect to the magazine, the channel entrance partitions should align with the straight or constant sides of the magazine channels, as indicated at *a*.