Chapter II

THE CASTING MECHANISM

The Delivery Slide

The second major mechanism of the Intertype machine is the casting mechanism. Up to this point we have followed the course of the matrices and spacebands through the various parts of the assembling mechanism to the assembling elevator. The assembled line must now be conveyed to the casting mechanism, where a slug or type bar will be cast. The line of matrices and spacebands is carried to the casting mechanism by the delivery slide, which is the connecting link between the assembling and casting units of the machine.

The delivery slide is mounted in the face plate and rests directly above the assembling elevator when in normal position. The slide consists of a long finger *1*, Fig. 31, a short finger *2*, a notched adjusting rod *3* and several beveled blocks *4* attached to a series of sliding bars. The beveled blocks run in two grooves milled in the face plate and support the slide in its movements to and from the casting mechanism. The adjusting rod *3*, mounted between the long finger and the short finger, contains notches one em apart. The delivery slide can be adjusted for lines of different length by raising the adjusting detent *5* and moving the long finger along adjusting rod *3*. The short finger is never adjusted because the assembled line always ends at the same place.

The delivery slide is connected to the delivery lever *7* through a link *6* with a detachable flat spring. Lever *7* is pinned to shaft *8*, which is connected by spring arm *9* to a spring *10* inside the machine column. When the line of matrices and spacebands is raised to the delivery slide, the assembling elevator bears against lug *2* of delivery pawl *1*, Fig. 30, lowering the right end of the pawl out of engagement with the short finger *3*. As soon as the pawl is tripped, spring *10*, Fig. 31, acting upon the delivery slide through lever *7* and link *6*, moves the slide rapidly to the left through the delivery channel into the first-elevator jaw. The speed of the delivery slide is brought under control as it enters the delivery channel by an air cushion device *12*, which is connected to shaft *8* through a link and cam roll arm *15*. As the shaft and cam roll arm are turned by spring *10*, the piston forces air out of cylinder *12* through an adjustable vent *13*. This cushions the stroke of the delivery slide as it enters the first-elevator jaw, at which point it is stopped by screw *14* on the face plate.

When the delivery slide enters the first-elevator jaw and banks against stop screw *14*, Fig. 31, cam roll *16* pushes pawl *17* off upper stopping lever *18*. This permits the clutch to operate and the cams begin to revolve. The first elevator descends to the vise with the line of matrices and spacebands in the first-elevator jaw. As the first elevator seats on the vise cap, the delivery slide is returned to normal position. The revolving delivery cam *19* bears against cam roll *16* on arm *15* until the high point *20* of the cam is reached. At this point on the cam the short finger *3*, Fig. 30, is overthrown 1/16″ past delivery pawl *1* and spring *4* raises the pawl in front of the short finger. The slide remains in normal position

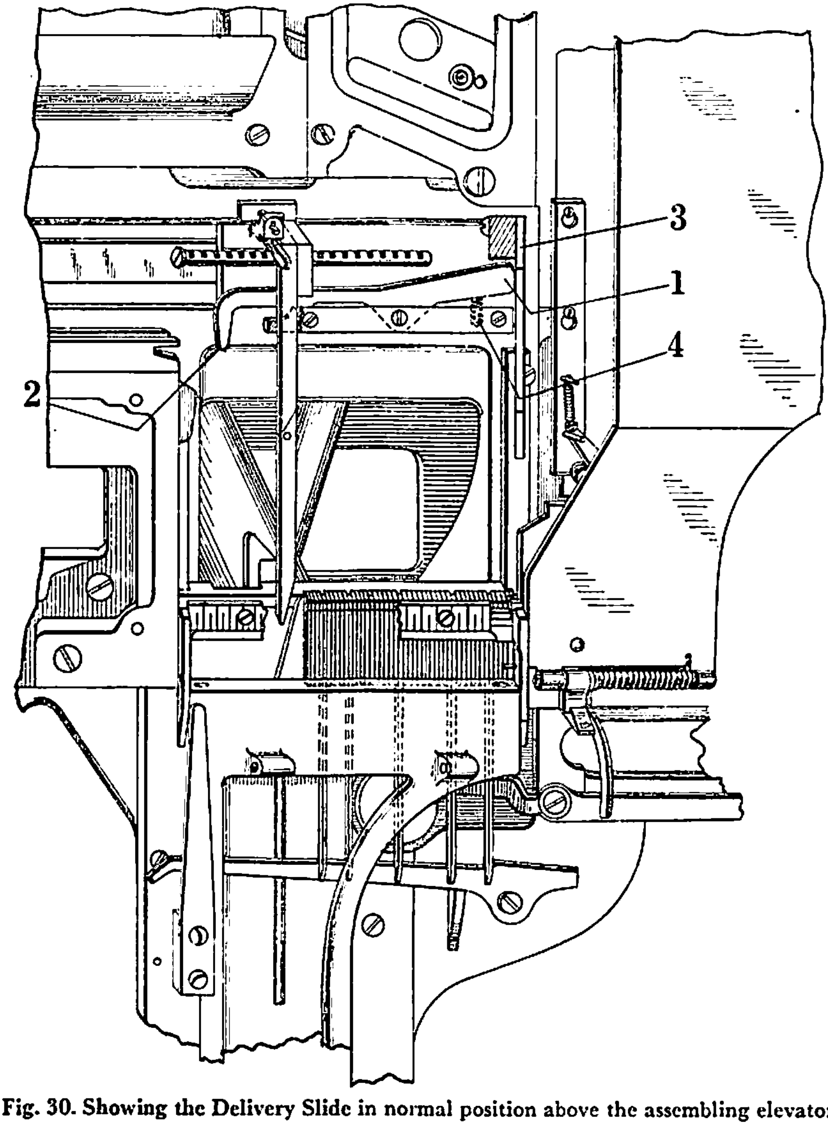


Fig. 30. Showing the Delivery Slide in normal position above the assembling elevator

until the delivery pawl is tripped again when the next line is raised in the assembling elevator. If the following line is sent in before the cams have made one complete revolution, cam roll *16*, Fig. 31, bearing against the dwell *21* of the delivery cam, will hold the line in the delivery channel. As the delivery cam *19* returns to normal position, the shape of the cam will permit the delivery slide to move into the first-elevator jaw.

Adjustments: The Return Stroke. When the delivery slide returns to normal position the short finger *3*, Fig. 30, should move 1/16″ past the right end of delivery pawl *1*. This adjustment is made with the delivery slide in normal position. Disconnect the pot pump plunger and run the machine ahead until the high point *20* of delivery cam *19*, Fig. 31, is directly opposite cam roll *16*. Loosen the two clamping screws *22*, move cam roll arm *15* until roll *16* touches the cam, then tighten the screws. Back the machine by hand until there is 1/16″ space

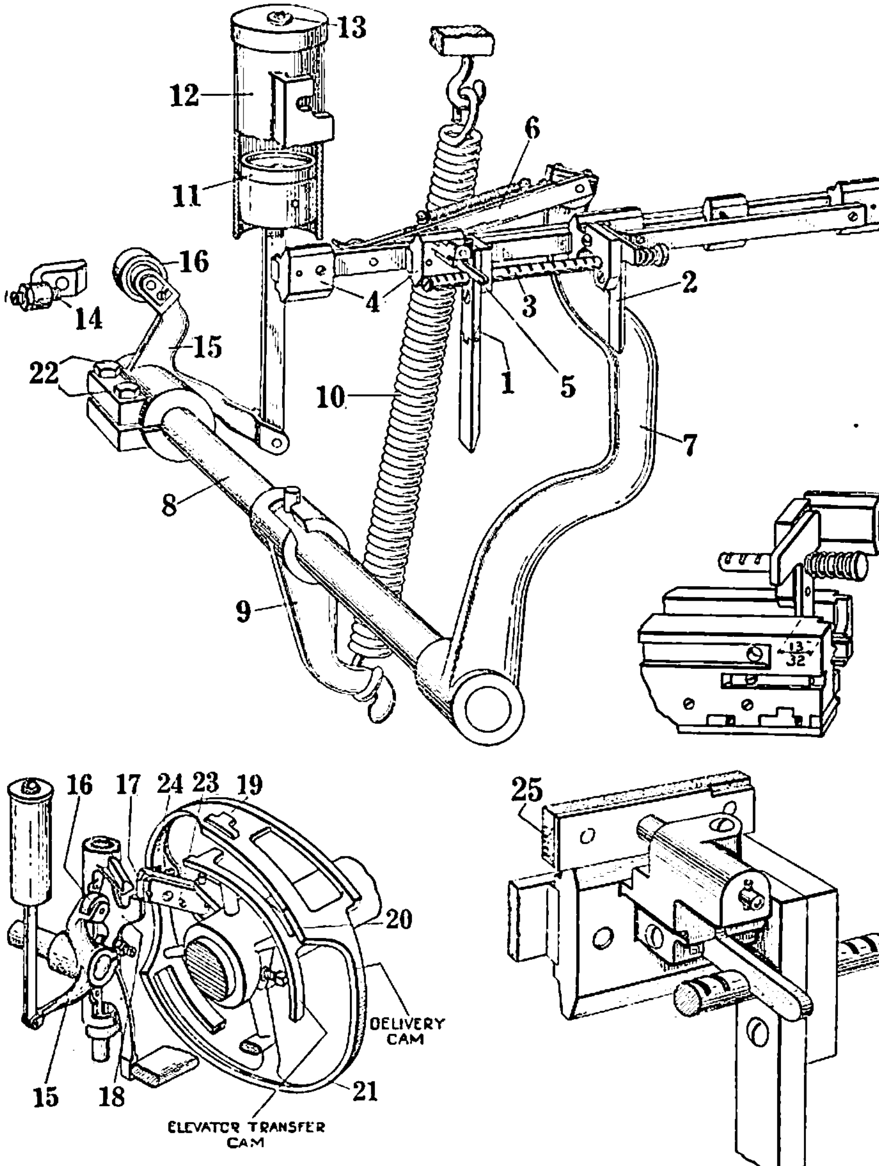


Fig. 31. Perspective View of the Delivery Slide and Related Parts in Assembly

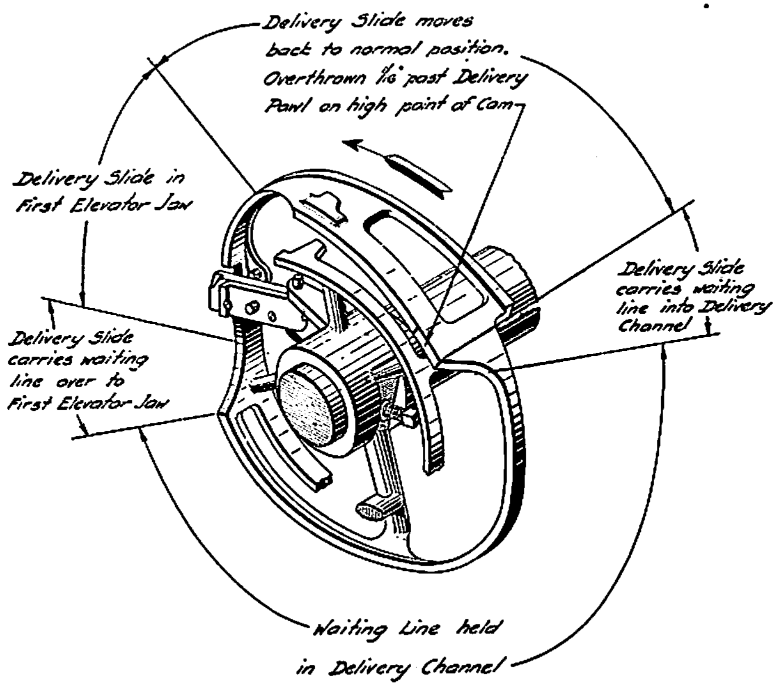


Fig. 31a. The Delivery and Elevator Transfer Cam, showing the surfaces of the delivery cam which promote the main movements of the delivery slide

between roll *16* and cam *19,* loosen screws *22* again and move arm *15* until roll *16* touches the cam. Tighten the two clamping screws. The overmotion of the delivery slide at the end of its return stroke should not exceed 1/16". While this adjustment is being made, the pot mouthpiece will be in contact with the mold. It is advisable, therefore, to make this adjustment when the pot is cold or to place a dummy mold in operating position.

The Casting Stroke. When the delivery slide has made its extreme stroke to the left, the short finger should be 13/32" inside the first-elevator jaw as shown in the detail drawing, Fig. 31. This adjustment is made by means of stop screw *14,* against which the delivery slide banks at the end of its casting stroke.

Stopping Pawl Plate Adjustment. Before making this adjustment, see that the casting and return strokes of the delivery slide are set properly and that the stopping pawl is 15/16" from the edge of the cam. If these three basic adjustments are correct, set plate on stopping pawl *17,* Fig. 31, so that roll *16* pushes the pawl 1/64" clear of upper stopping lever *18* when the delivery slide is banking against stop screw *14.* To obtain this adjustment, loosen screw *23,* adjust screw *24,* then tighten screw *23.*

Delivery Air Cushion Cylinder Vent. The speed of the delivery slide should be regulated so that it will come to a gradual stop as it enters the first-elevator jaw. The vent *13,* Fig. 31, on top of cylinder *12* can be adjusted to obtain the required effect. Before making this adjustment, however, make sure that the piston packing is soft and fits the cylinder snugly. The packing can be softened with oil, but new packing should be applied whenever excessive wear appears.

Maintenance. The casting stroke of the delivery slide will be annoyingly slow if gum and dirt are allowed to accumulate on beveled edges of the slide blocks and in the grooves in the face plate in which the blocks move. The slide should be removed from the machine and cleaned thoroughly under such conditions. Run the machine ahead until the first elevator rests on the vise cap. Remove the delivery slide stop. Trip the delivery pawl and let the slide run over to the left. Disconnect the delivery lever link from the link stud in the back of the slide and draw the slide out of the face plate grooves. Clean the edges of the beveled blocks and the grooves in the face plate with high test gasoline. See that all the screws in the various parts of the delivery slide are tight. Roughen the surface of the friction shoe leather *25*, Fig. 31, with a piece of emery cloth. The purpose of this shoe is to prevent the long finger from moving until the matrix line has closed up against it. Rub a small amount of graphite on the edges of the beveled blocks and return the slide to the machine.

The Delivery Channel

The purpose of the delivery channel is to support the matrices and spacebands in their proper positions while the delivery slide is conveying the line to the first-elevator jaw. The delivery channel, Fig. 32, contains three levels of rails,

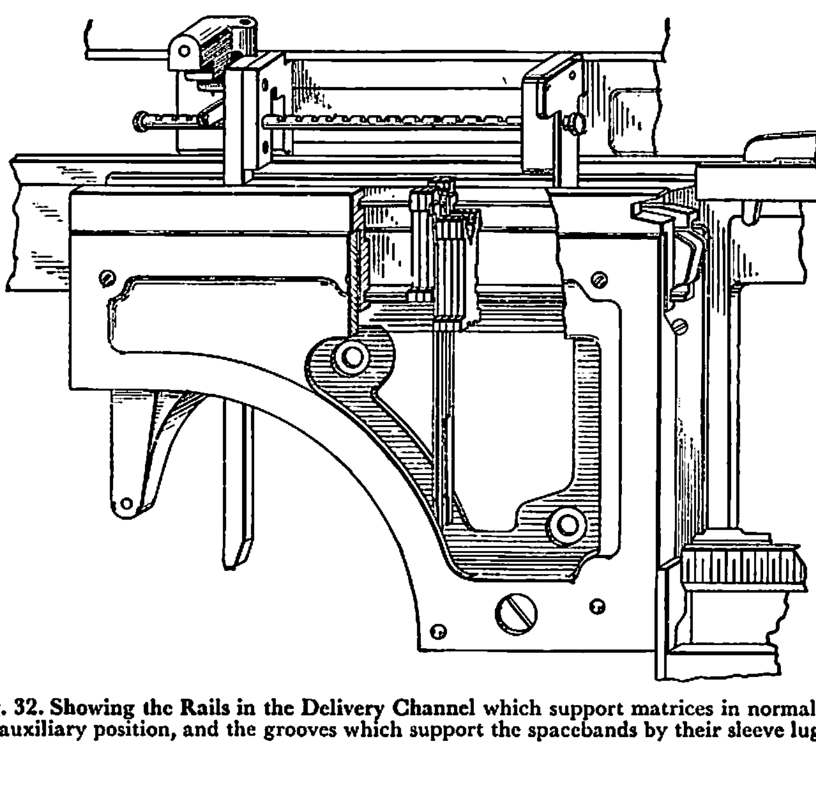


Fig. 32. Showing the Rails in the Delivery Channel which support matrices in normal and auxiliary position, and the grooves which support the spacebands by their sleeve lugs

two of which support the matrices in normal and auxiliary position, and the third of which supports the spacebands by their sleeve lugs. When the assembled line is raised in the assembling elevator to the delivery slide, the matrices align with the rails in the delivery channel corresponding to the positions in which they were assembled. The spacebands, having but one position, always enter the same grooves in the delivery channel. The assembling elevator should be raised as gently as possible to the delivery slide. If it is raised continually with too much force, the matrices and spacebands will be jarred out of alignment with the rails in the delivery channel, and the rails will be burred as the lines are carried over to the first-elevator jaw. Burrs at the ends of the delivery channel rails should be removed with a piece of fine emery cloth, but this will be unnecessary if the assembling elevator is handled properly.

The First Elevator

The line of matrices and spacebands is carried by the delivery slide through the delivery channel into the first-elevator jaw. The first-elevator jaw consists of a front jaw *1*, Fig. 33, a back jaw *2* and a separating block *3* held together by

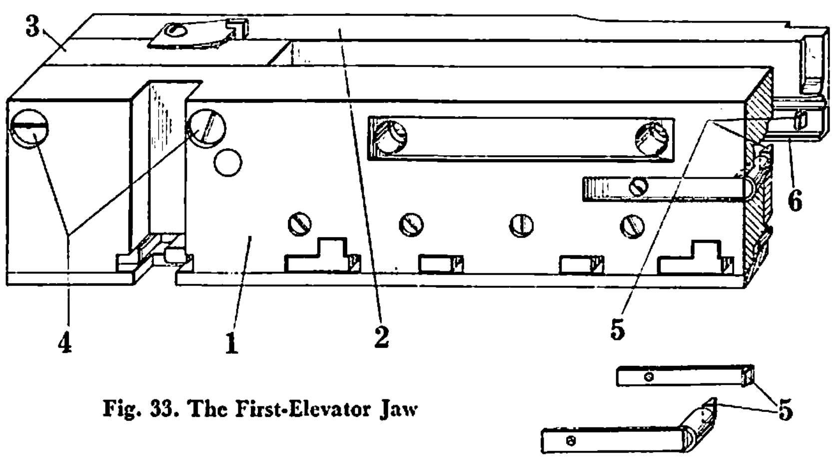


Fig. 33. The First-Elevator Jaw

screws *4* at the left-hand end of the jaw. The assembled jaw is held securely on the first-elevator slide by a key and two screws passing through the front jaw into the slide. There are two detents *5* at the open end of the jaw which are held in place by flat springs (detail drawing). The detents are moved outward by the entering line of matrices and spacebands, but spring back in place again as soon as the last matrix is within the jaw. The detents are made in triangular form and can be turned to present new edges as they wear. The purpose of the detents is to retain end matrices in the jaw during its movements from normal to casting position, and from casting to transfer position. An adjustable line stop *4*, Fig. 34, serves the same purpose at the left-hand end of the jaw. The position of the matrices is always constant at the right but varies at the left, according to the length of line being set.

The first-elevator jaw contains rails which align with those of the delivery

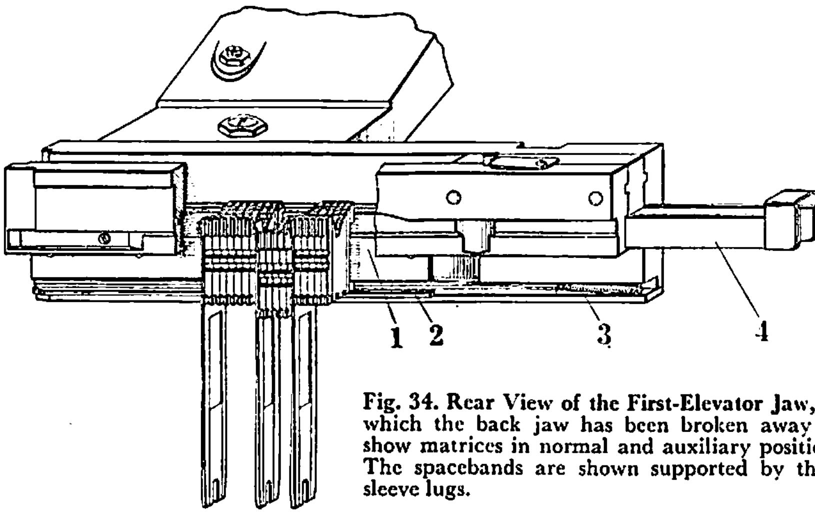


Fig. 34. Rear View of the First-Elevator Jaw, in which the back jaw has been broken away to show matrices in normal and auxiliary position. The spacebands are shown supported by their sleeve lugs.

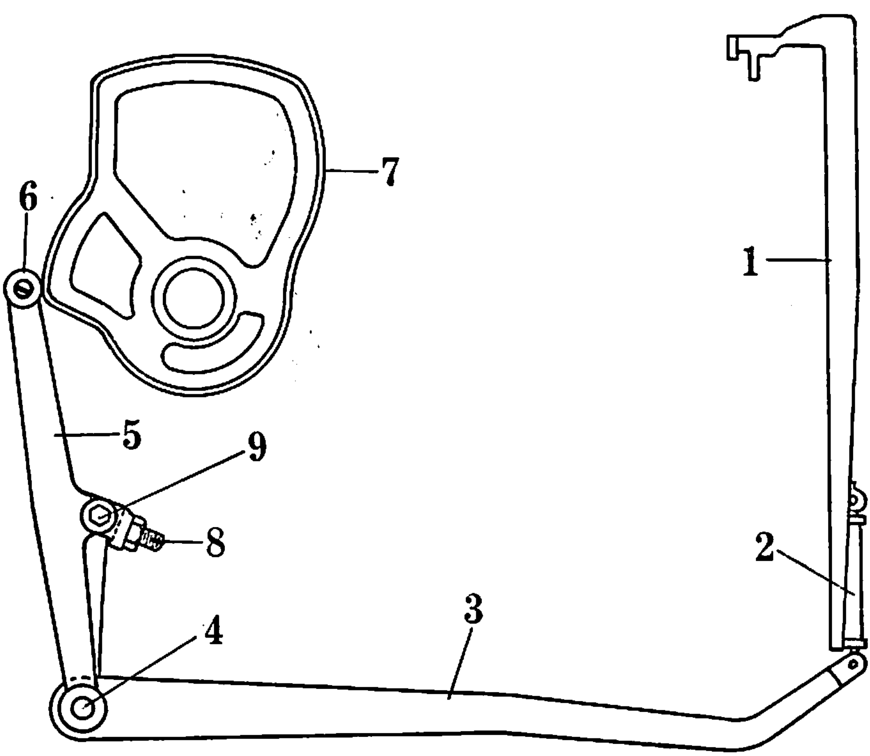


Fig. 35. Side View of the First Elevator and Related Parts in Assembly

channel and support the matrices and spacebands in the positions in which they were assembled. On the back jaw *2*, Fig. 33, there is a lip *6* which supports the matrices in normal position. The corresponding part of this rail in the front jaw is called the adjusting bar *1*, Fig. 34, which is held in place by five screws. The bar not only helps to support the matrices in normal position but also serves as a banking point for the matrices during alignment. The duplex rail *2* is movable and supports matrices in auxiliary position. This rail is made movable so that matrices in auxiliary position can be dropped to normal position just before the line is transferred to the second elevator. The duplex rail is drawn from under these matrices by an operating bar fastened to the first-elevator slide guide. Spring *3* returns the duplex rail to place as the first elevator descends from transfer to normal position. The first-elevator jaw also contains grooves into which the lugs on the spaceband sleeves fit. The short sleeves of the spacebands are held in position by their lugs so that only the long wedges can move during justification of the matrix line.

The first-elevator jaw is fastened to the first-elevator slide *1*, Fig. 35. The slide is held in a vertical position on the front of the vise frame by two gibs, which guide the slide in its upward and downward movements. The first-elevator slide is connected at its lower end to a link *2*, which consists of two eyebolts, a

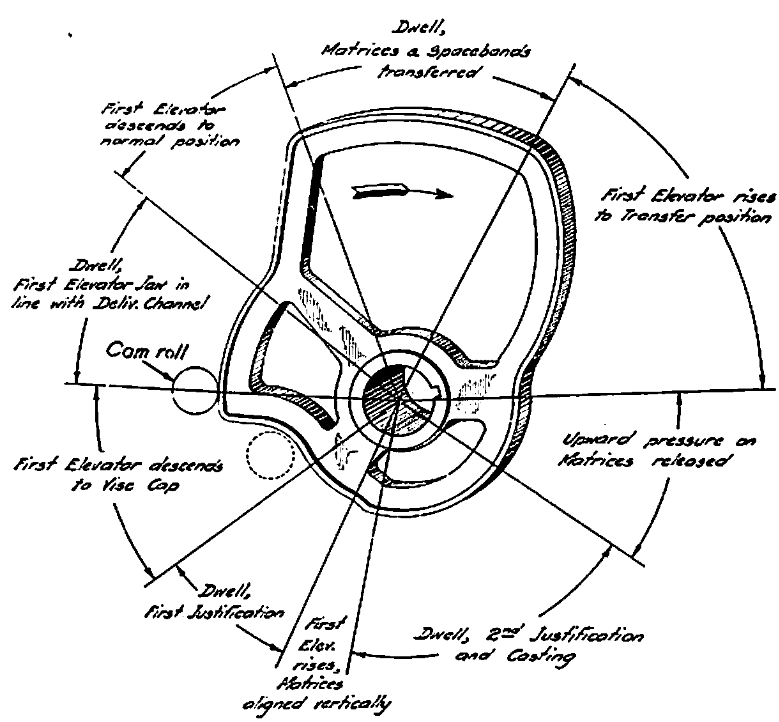


Fig. 35a. The First-Elevator Cam, showing the surfaces of the cam which promote the main movements of the first elevator. When the cam roll is in the position indicated by the dotted lines, the vise frame can be lowered to second position.

spring and a cylinder. The function of this link is to provide overmotion when the first elevator rises to align the matrices and when it seats at transfer position. The lower end of the link is connected by a pin to the first-elevator lever *3*, which is pivoted on shaft *4* at the rear of the machine. Lever *3* is connected to the first-elevator auxiliary lever *5*, on which is mounted a cam roll *6* which rides on the first-elevator cam *7*.

The first elevator, through its connection with the first-elevator cam, makes four strokes or movements during one revolution of the cams. As soon as the delivery slide has carried the line of matrices and spacebands into the first-elevator jaw and the cams begin to revolve, the first elevator descends to the vise cap and positions the matrix line in front of the mold. This is called the casting stroke. The second stroke takes place when the first elevator rises about .010″ to align the matrices against the mold. The third stroke occurs when the first elevator rises from casting to transfer position, and the fourth when it descends to normal position with the first-elevator jaw opposite and in alignment with the delivery channel. All of the upward movements of the first elevator are controlled positively by the first-elevator cam. All of the downward movements are controlled by the weight of the first-elevator slide itself as permitted by the shape of the cam.

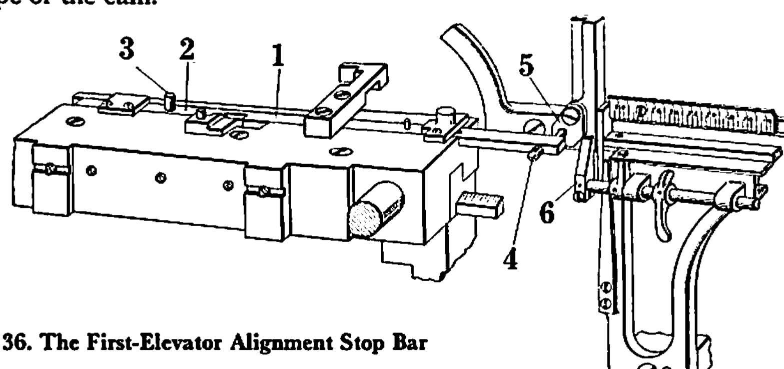


Fig. 36. The First-Elevator Alignment Stop Bar

When the first elevator descends to the vise cap with the matrix line, an adjustable screw in the first-elevator head banks on a device known as the first-elevator alignment stop bar *1*, Fig. 36. When the operator is setting straight roman composition in the smaller sizes of type, the screw in the first-elevator head banks on the stop bar at point *2*, holding the first-elevator jaw in normal position on the vise cap. The chief use of the alignment stop bar, however, is in connection with headletter, display and special alignment matrices, which are usually punched in auxiliary position. Although these matrices are supported on the normal or lower rail in the first-elevator jaw, they are presented to the auxiliary alignment groove in the mold body by alignment stop *3*, which holds the first-elevator jaw in its respective position on the vise cap. When display matrices are being used, stop bar *1* is moved to the right by means of knob *4*. This positions alignment stop *3* directly under the banking screw in the first-elevator head. Also when bar *1* is moved to the right, duplex rail stop plate *5*, operated by a pin in the end of the bar, swings behind duplex rail stop lever *6*. The purpose of the stop plate is to prevent the operator from assembling matrices on the assembling elevator duplex rail when alignment stop *3* is in operative position. If it were possible to do this, the matrices would be positioned too high in relation to the mold and their lugs would not enter the alignment grooves in the mold body. The alignment stop bar is valuable also whenever a large amount of italic or bold-face composition in the smaller sizes of type is being done. The operator may assemble all of the matrices on the normal or lower rail in the assembling elevator, and the first elevator will present the matrix line to the auxiliary alignment groove in the mold body as long as the alignment stop *3* is in position under the banking screw in the first-elevator head.

Adjustments: First-Elevator Slide Gib. The first-elevator slide is held in a vertical position on the front of the vise frame by two gibs. The right-hand gib is doweled and fixed in position. The left-hand gib is adjustable and should be set so that there will be about .005″ clearance between the gib and the beveled edge of the slide. Care should be taken, however, that there is an equal amount of play at both the top and bottom ends of the gib. If the clearance at both ends is unequal, the first-elevator jaw will not be parallel with the mold and matrices will not align properly. This condition will make it difficult to adjust the side trimming knives, because the letter characters will be at an angle to the constant side of the slug instead of parallel with it. To test the parallelism of the first-elevator jaw with the mold, place a new thin pi matrix in each end of the jaw. Run the machine ahead until the first elevator seats on the vise cap. Depress the mold cam lever handle and pull the mold disk forward until the locking studs enter the stud block bushings on the vise frame. The lower back lugs of the two pi matrices will then be in engagement with the alignment groove in the mold body. Tap the mold disk about .010″ back from the vise frame and lift the first elevator up by hand. While holding the elevator up, grasp each matrix in the jaw with a pair of tweezers and feel how they bind. If they do not bind equally, the left-hand gib should be reset until the required clearance and parallelism are obtained.

Alignment of First-Elevator Jaw With Delivery Channel. The rails in the first-elevator jaw should be exactly aligned with or a trifle lower than the corresponding rails in the delivery channel when the machine is in normal position. The position of the first-elevator jaw, which is fixed on the first-elevator slide, is controlled by an adjusting screw *8*, Fig. 35, in the first-elevator auxiliary lever

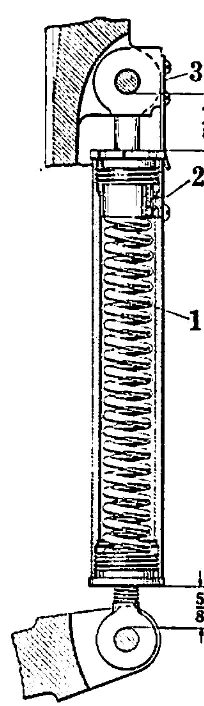


Fig. 37. The First-Elevator Lever Link, showing the ⅞″ and ⅝″ eyebolt settings which must be maintained at all times to insure proper compression of spring *1*. To obtain these settings, remove the link from the machine and turn the eyebolts. The upper link bushing, screwed into nut *2*, bears against spring *1* and cushions the movements of the first-elevator slide when it aligns the matrices vertically and when it raises the matrices and spacebands to transfer position. Spring *3* holds the casing in position after the eyebolt settings have been made.

5. Readjustment of this screw will rarely be necessary unless the nut works loose. Whenever it is necessary to realign the first-elevator jaw with the delivery channel, however, the screw in the first-elevator auxiliary lever should *not* be adjusted until the settings of the first-elevator lever link eyebolts have been inspected. Remove the link from the machine and check the ⅝″ and ⅞″ settings of the eyebolts as indicated in Fig. 37. If the settings are incorrect, turn the eyebolts until the required measurements are obtained. *These settings must be maintained to provide for proper compression of the lever link spring.* Replace the link, and with the machine in normal position, turn the auxiliary lever adjusting screw *8*, Fig. 35, until the rails in the first-elevator jaw are in line with or a trifle below the corresponding rails in the delivery channel. Tighten the nut on the adjusting screw and tighten the auxiliary lever connecting screw *9*, which holds the first-elevator lever and the auxiliary lever in proper relationship to each other.

Downstroke Banking Adjustment. When the first-elevator jaw positions the matrix line between the vise jaws and the mold disk comes forward, there should be .010″ clearance between the toes of the matrices and the top of the alignment groove in the mold body. Place a *new* pi matrix in each end of the first-elevator jaw. Disconnect the pot pump plunger and run the machine ahead until the first elevator rests on the vise cap. Depress the mold cam lever handle and pull the mold disk forward until the locking studs enter the stud block bushings on the vise frame. Tap the mold disk back slightly and feel how much play there is between the toes of the matrices and the groove in the mold body by lifting and lowering the first elevator by hand a few times. If there is more or less than the required amount of play, adjust screw *2*, Fig. 38, in the first-elevator head until the .010″ clearance is obtained, then tighten the nut on the screw.

Maintenance. The maintenance of the first elevator and its cooperating mechanisms consists mainly in keeping the parts clean and working freely. The surfaces of the first-elevator jaw, especially those surfaces which come into contact with the vise cap and the first-elevator slide guide, should be cleaned with high-test gasoline whenever dirt and gum begin to accumulate. Careless use of tools on the jaw will raise burrs on its surface. Such burrs should be removed with a piece of fine emery cloth, but this will be unnecessary if the jaw is treated with care. The movable duplex rail in the front jaw is held in place by six screws and a cap at the base of the jaw. If the rail works stiffly remove it from the jaw, clean it with high-test gasoline and rub a small amount of graphite on its riding surfaces. The beveled edges of the first-elevator slide should be cleaned occasionally with gasoline and lubricated with a very light film of oil. Oil the hole in the first-elevator lever shaft bearings occasionally, and make sure that the first-elevator cam roll is revolving freely. Keep the surface of the first-elevator cam clean at all times.

The Vise Automatic

When the first elevator makes its downward stroke to the vise cap, the matrix line must be presented to the mold in such a position that the toes of the matrices will enter the grooves in the mold body when the mold disk advances to the matrix line. In the normal operation of the machine, this is provided for by an adjustable banking screw *2*, Fig. 38, in the first-elevator head, which holds the first elevator in a positive position when it is resting on the vise cap. If an obstruction prevents the first elevator from making its complete downstroke, however, the matrices will be positioned too high in relation to the mold. The toes of the matrices would be damaged under such conditions were it not for a safety device known as the vise automatic, which stops the machine when an overset line or other obstruction prevents the first elevator from seating fully on vise cap.

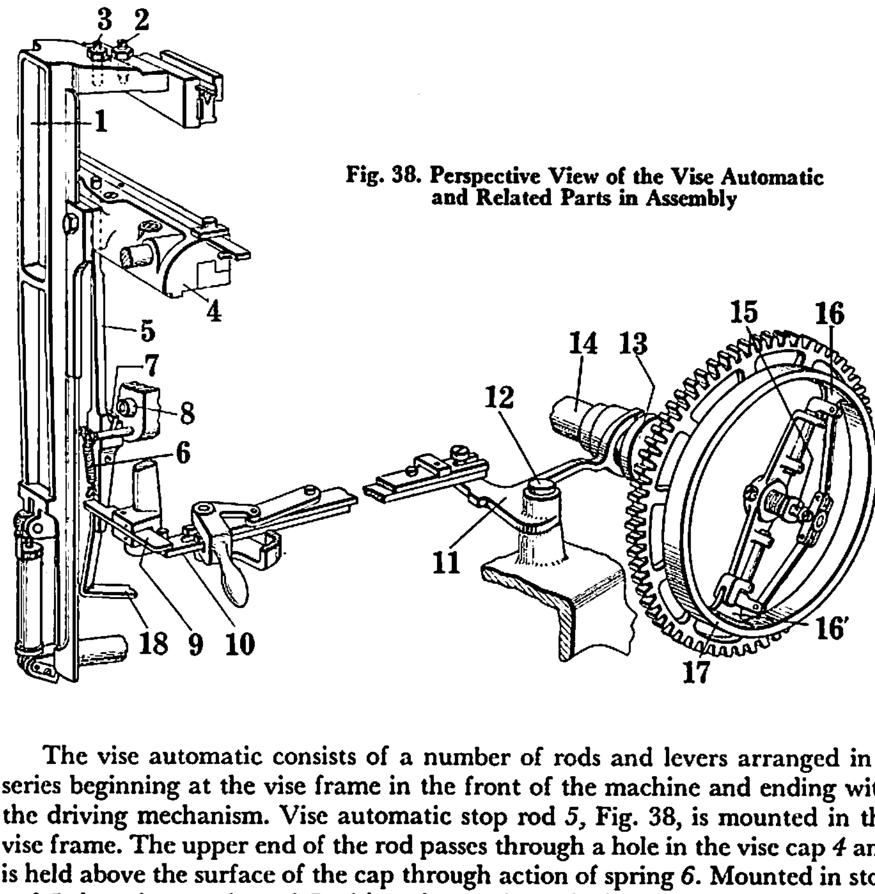


Fig. 38. Perspective View of the Vise Automatic and Related Parts in Assembly

The vise automatic consists of a number of rods and levers arranged in a series beginning at the vise frame in the front of the machine and ending with the driving mechanism. Vise automatic stop rod *5*, Fig. 38, is mounted in the vise frame. The upper end of the rod passes through a hole in the vise cap *4* and is held above the surface of the cap through action of spring *6*. Mounted in stop rod *5* there is a steel pawl *7* with a sharp edge, which faces the back end of a device known as the vise automatic stop mold disk dog *8*. The dog projects through a hole in the vise frame and faces the mold disk at its other end. Normally the first-elevator slide *1* descends to position the matrix line between the vise jaws and is stopped at the end of its downstroke by screw *2*, which banks on the alignment stop bar in the vise cap *4*. Just before screw *2* banks on the stop bar, vise automatic stop screw *3* in the first-elevator head depresses stop rod *5*. The edge of pawl *7* clears the dog *8*, which is pushed back towards the stop rod by the advancing mold disk, and the machine completes its revolution as though the device were not present.

If an obstruction prevents the first elevator from seating fully on the vise cap, however, vise automatic stop screw *3* cannot depress stop rod *5* far enough. This leaves pawl *7* directly in line with dog *8*. The advancing mold disk pushes the dog against the pawl, which causes the lower end of stop rod *5* to bear against stop lever *9*. Lever *9* in turn bears against a pin in connecting bar *10*, the rear end of which engages a stud in the forked lever *11*. The forked lever, pivoted on shaft *12*, swings through a small arc and bears against flange *13* on driving shaft *14*. Flange *13* is connected by a screw to clutch rod *15* within the hollow end of the driving shaft. The pressure of forked lever *11* on flange *13* moves clutch rod *15* out from driving shaft *14*. This draws friction shoes *16* and *16′* away from the inner rim of driving gear pulley *17*, which stops the machine until the obstruction under the first-elevator slide is removed.

The mold disk makes two main forward strokes to the vise frame. It advances against the matrix line so that the slug can be cast, and later it moves forward to the vise frame so that the slug can be ejected. When the disk advances for the cast, pawl *7* in stop rod *5* is depressed under dog *8* by screw *3* in the first-elevator head. When the disk advances to ejecting position, however, another device is provided to prevent the vise automatic from operating. The extension *18* on stop rod *5* serves this purpose. Before the mold disk advances, the vise closing lever (not shown) banks on the extension *18* and pulls the stop rod down so that the dog will clear the pawl.

Adjustment of Vise Automatic. The vise automatic, as described above, is a safety device designed to stop the machine if the first-elevator slide fails to make its complete downstroke to the vise cap. Since the proper operation of the vise automatic depends entirely on the downstroke of the first elevator, the adjustment of the banking screw *2*, Fig. 38, in the first-elevator head should always be checked before attempting to adjust the vise automatic. *The downstroke banking adjustment of the first elevator must be positive at all times.*

When the first elevator descends to the vise cap and banks on screw *2*, Fig. 38, vise automatic stop screw *3* should depress stop rod *5* just far enough to permit dog *8* to pass over pawl *7*. The clearance between the dog and the pawl should not exceed 1/64″. To obtain this adjustment, disconnect the pot pump plunger and run the machine ahead until the first elevator rests on the vise cap. Adjust screw *3* in the first-elevator head until the edge of pawl *7* is about 1/64″ below the sharp edge of dog *8*, then tighten the nut on the screw. When the adjustment is made, place a thin-space matrix on the exact spot on the alignment stop bar where screw *2* banks and pull the starting lever. If the adjustment is correct, dog *8* will strike pawl *7* and stop the machine. If the machine does not stop, some part of the vise automatic mechanism is probably worn. See if the spring inside the dog and vise automatic stop rod spring *6*, Fig. 38, have the proper tension. If either spring is weak, replace it with a new one. If the edge of pawl *7* is rounded, reverse the pawl in the rod to present a new edge.

The edge of the pawl should rest 1/32″ above the edge of the dog when the machine is in normal position. The upper position of stop rod *5* is limited by a shoulder on the rod at its upper end. On machines that have been in use for a long period of time, it is sometimes necessary to file the shoulder on the rod very slightly to permit spring *6* to raise the pawl to the required position.

The Vise Frame

The vise frame is pivoted at the lower end on a shaft which also serves as a bearing for the pot legs. On the vise frame are mounted the first-elevator slide, the vise closing attachment, the justification rods and block, the mold disk locking stud blocks, the knife block, the knife wiper and front mold wiper, the slug galley and slug lever, and the vise cap and vise jaws. The vise cap is fastened to the top of the vise frame and contains a groove in which the vise jaws slide. The vise cap and the vise frame support the first-elevator jaw and other parts of the casting mechanism when the matrix line is justified and ready to be cast. Two vise locking screws, threaded through both ends of the vise cap, lock the vise frame securely to the frame of the machine. The right-hand screw engages a stud attached to the machine column and the left-hand screw engages a stud on the mold gear arm. When both screws are turned to the left, the vise frame is held rigidly against the frame of the machine.

Opening the Vise Frame. The vise frame can be opened to two positions. When the machine is in normal position, the vise frame can be opened to first position simply by turning the vise locking screw handles to the right and lowering the frame until it banks on the vise frame rest. The inside of the frame is easily accessible in this position. The mold disk and mold disk slide also can be pulled out far enough in this position to enable the operator to inspect or clean the front and back of the molds and the pot mouthpiece. Simply depress the mold cam lever handle and pull the disk forward. To lower the frame to second position, disconnect the pot pump plunger and run the machine ahead until the first elevator seats on the vise cap and stop the machine before the mold disk moves forward. Turn the vise locking screw handles to the right, open the frame to first position, withdraw the vise frame rest and lower the frame to second position. When the frame is in this position, the mold disk and mold disk slide, the metal pot and other parts can be removed from the machine when necessary. To pull the mold disk and slide forward or to remove it entirely from the machine, remove the ejector lever link and depress the mold cam lever handle.

The Mold

As the first elevator descends and carries the line of matrices and spacebands between the vise jaws the mold disk turns one-quarter of a revolution, bringing the mold in use to a horizontal position in front of the matrix line. There are two general types of molds, the universal adjustable mold and the triangular shelf mold. The universal adjustable mold, which casts solid slugs from 5 to 14 points in body thickness, is the most commonly used mold. It consists mainly of the mold body *1*, Fig. 39, the mold cap *2* and two liners *3* and *4*. The body *1* is fastened to the mold disk by four screws *5*. The liners *3* and *4* are located on the top of the mold body by two dowels *6*. The dowel *7* in the mold cap fits into one of the two intersecting holes in the right-hand liner and locates the mold cap accurately in relation to the liners and mold body. The mold cap *2* is held down upon the liners by nuts *8* and swivel bolts *9*. The right-hand or constant liner *4* varies in thickness but is always of the same length. The left-hand liner *3* varies both in thickness

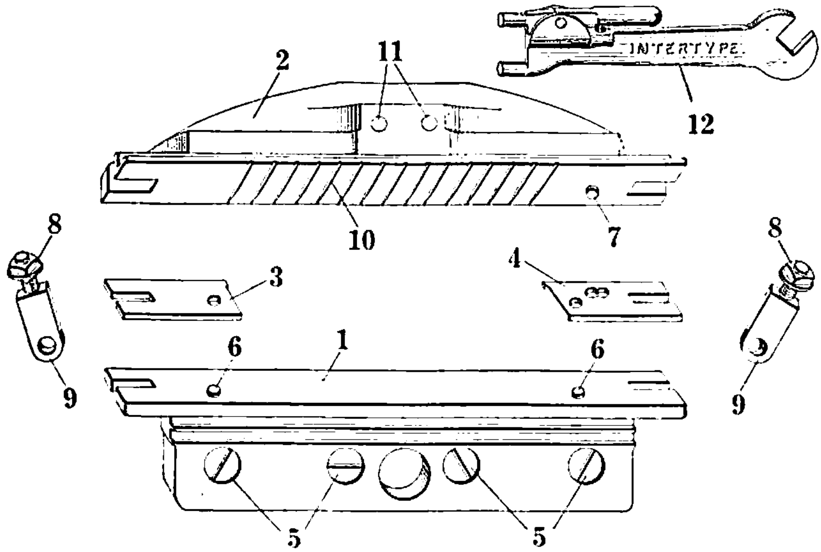


Fig. 39. An Intertype 30-Em Universal Adjustable Mold

and in length. The thickness of the liners determines the size of the body of the slug; the length of the left-hand liner determines the length of the slug. The underside of the mold cap *2* contains tapering grooves *10* which form ribs on the slug. These ribs are trimmed to accurate body size by the right-hand knife when the slug is ejected from the mold.

The triangular shelf mold cap *1*, Fig. 40, is used mainly for the larger sizes of slugs from 10 to 48 points in body thickness. This type of cap is recessed a varying number of points, depending upon the size of the slug to be cast. The purpose of the recessing in the cap is to decrease the amount of type metal used in casting slugs and consequently to facilitate the process of "chilling" molten metal into slugs. The recessing in the cap is designed also to produce a solid triangular shelf of type metal under the face of the slug. This shelf, shown at *2*, supports the face of the slug rigidly under dry mat pressure. A small adaptor or stop-off block *3* is used with this type of mold to stop off the type metal at the left-hand end of the mold cavity. The block is located by a small dowel *4*, which fits into a hole *5* in the left-hand liner. Left-hand liners of any length made with this hole can be used with other Intertype molds. Intertype liners and ejector blades can be used interchangeably with universal adjustable molds, recessed molds, advertising figure molds and triangular shelf molds. These exclusive features of Intertype mold design lower operating costs and enable the operator to make mold changes quickly and efficiently.

To change the liners or mold cap on an Intertype mold, simply loosen nuts *8*, Fig. 39, and swing the swivel bolts *9* away from the mold. The mold cap can then be lifted off by inserting the forked end of the mold cap wrench *12* in the two holes *11* in the mold cap. Remove the liners, wipe off the top of the mold

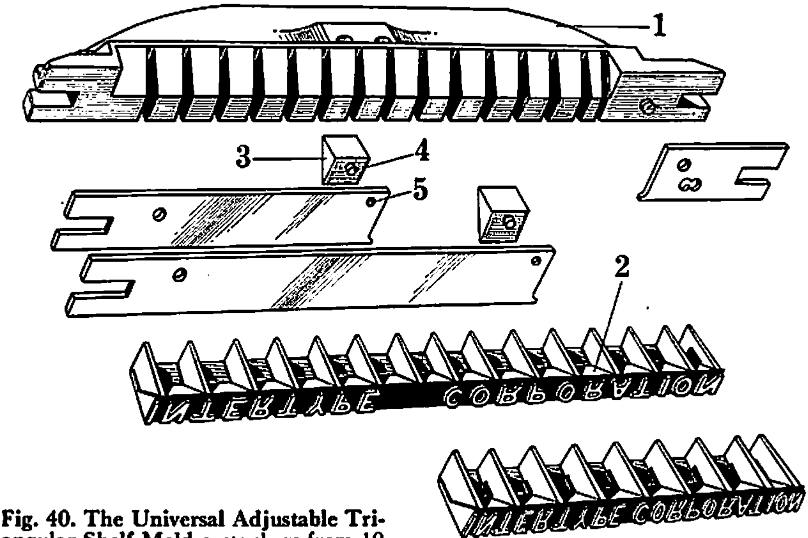
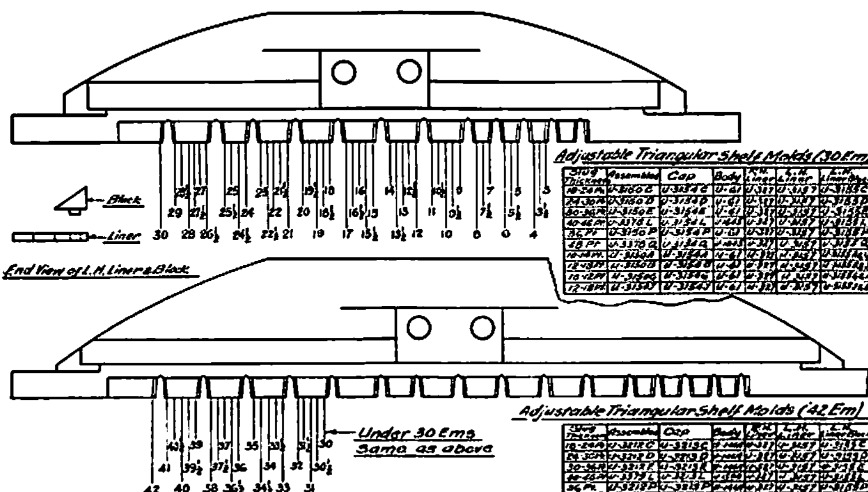


Fig. 40. The Universal Adjustable Triangular Shelf Mold casts slugs from 10 to 48 points in body thickness. The face of the slug cast in this type of mold is supported by a solid triangular shelf designed to withstand dry mat pressure. Slugs of different lengths can be cast with this type of mold, as shown in the illustration.



Adjustable Triangular Shelf Molds (30 Em)

Slug Thickness	Assembled	Cap	Body	R.H. Liner	L.H. Liner	L.H. Liner Block
18-24 Pt.	U-3150 C	U-3154 C	U-61	U-317	U-3157	U-3153 C
24-30 Pt.	U-3150 D	U-3154 D	U-61	U-317	U-3157	U-3153 D
30-36 Pt.	U-3150 E	U-3154 E	U-61	U-317	U-3157	U-3153 E
40-46 Pt.	U-3178 L	U-3154 L	U-643	U-317	U-3157	U-3153 L
36 Pt.	U-3150 P	U-3154 P	U-61	U-317	U-3157	U-3153 P
48 Pt.	U-3178 Q	U-3154 Q	U-643	U-317	U-3157	U-3153 Q
10-14 Pt.	U-3150 A	U-3154 A	U-61	U-317	U-3157	[illegible]
12-13 Pt.	U-3150 B	U-3154 B	U-61	U-317	U-3157	[illegible]
10-12 Pt.	U-3150 G	U-3154 G	U-61	U-317	U-3157	[illegible]
12-18 Pt.	U-3150 J	U-3154 J	U-61	U-317	U-3157	[illegible]

Adjustable Triangular Shelf Molds (42 Em)

Slug Thickness	Assembled	Cap	Body	R.H. Liner	L.H. Liner	L.H. Liner Block
18-24 Pt.	U-3212 C	U-3213 C	[illegible]	[illegible]	[illegible]	[illegible]
24-30 Pt.	U-3212 D	U-3213 D	[illegible]	[illegible]	[illegible]	[illegible]
30-36 Pt.	U-3212 E	U-3213 E	[illegible]	[illegible]	[illegible]	[illegible]
40-46 Pt.	U-3179 L	U-3213 L	[illegible]	[illegible]	[illegible]	[illegible]
36 Pt.	U-3212 P	U-3213 P	[illegible]	[illegible]	[illegible]	[illegible]
48 Pt.	U-3179 Q	U-3213 Q	[illegible]	[illegible]	[illegible]	[illegible]
10-14 Pt.	U-3212 A	U-3213 A	[illegible]	[illegible]	[illegible]	[illegible]
12-13 Pt.	U-3212 B	U-3213 B	[illegible]	[illegible]	[illegible]	[illegible]
10-12 Pt.	U-3212 G	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12-18 Pt.	U-3212 J	U-3213 J	[illegible]	[illegible]	[illegible]	[illegible]

Lengths of Slugs which can be cast with Standard Adjustable Triangular Shelf Molds.

If any other lengths are required they must be specified when ordering.

body, insert the new liners and replace the mold cap. Swing the swivel bolts back to a vertical position and turn the nuts until they bind firmly but not too tightly on the mold cap.

Care of the Mold. Intertype molds are manufactured under rigid standards of precision which insure a high degree of accuracy in all important dimensions of the mold. If molds are used with the care and consideration which fine parts

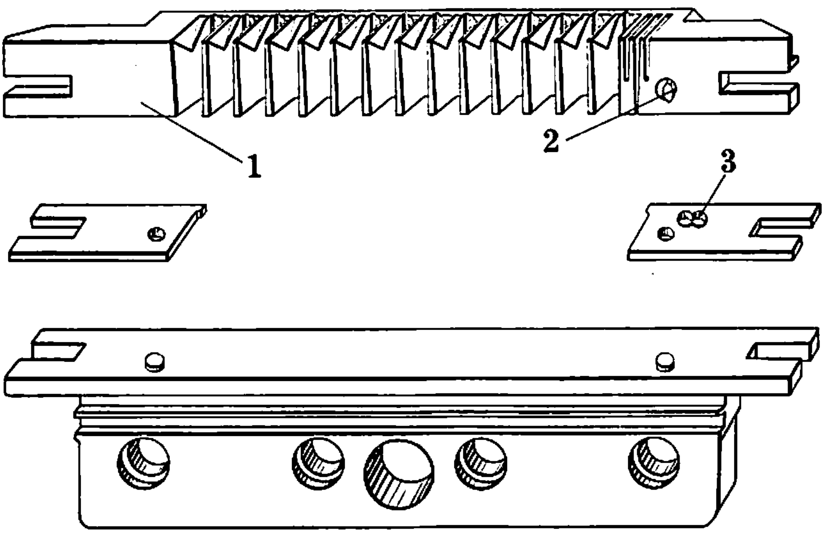


Fig. 41. View of the Old-Style Recessed Mold. Left-hand liners of different lengths can be used with this type of mold, making it possible to obtain large slugs of varying lengths, including half-em measures. This is accomplished by the use of an elliptical dowel *2* in the mold cap *1*. The dowel fits into either of two intersecting holes *3* in the right-hand liner, enabling the operator to shift the mold cap from one position to another in order to align the ribs in the mold cap with the ends of the liners.

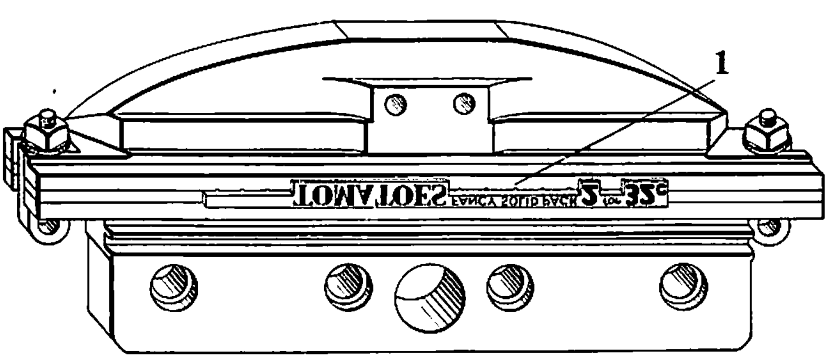


Fig. 42. The Advertising Figure Mold is used for casting large overhanging display characters on a slug body of smaller size. The overhanging characters cast against a wide lip *1* on the mold cap and are supported by the slug immediately following. The number of points it is possible to overhang on a mold of this type varies with the width of the lip on mold cap.

deserve, they will give satisfactory service. Molds are made of carefully tempered steel designed to withstand the normal casting temperature of the type metal. If excessive heat is applied to the mold, however, the temper will be drawn from the parts. For this reason, gas torches should not be used near the mold and *the machine should never be left with the pot mouthpiece against the mold for any length of time.*

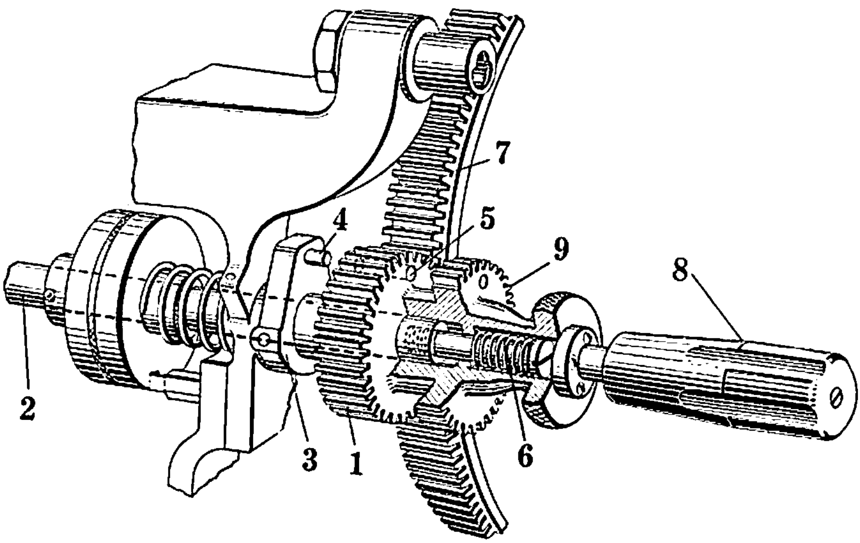


Fig. 43. Showing the Relationship Between the Mold Disk Driving Pinion and the Mold Driving Pinion Shaft. The shaft *2*, as shown in Fig. 46, is turned by a series of pinions which are set in motion by two segments on the mold turning cam. Pinned to the front end of shaft *2* (this figure) is a flange *3* with a pin *4* in its front edge. The pin is normally seated in a hole *5* in the mold disk driving pinion *1* through action of spring *6*, which continually urges the pinion towards the flange *3*.

To change the mold by revolving the mold disk *7*, simply pull out handle *8*, which will disengage pin *4* from hole *5*. The mold disk can be revolved by hand as long as handle *8* is held out. The mold disk is geared to the mold disk driving pinion at a ratio of four to one. To change from one mold to an adjacent mold, therefore, will require one full turn of pinion *1*. When the desired mold on the disk comes to position, spring *6* will re-engage pinion *1* with pin *4*.

When the vise frame is opened to first position, the mold disk can be pulled forward about two inches. The mold disk pinion *9* keeps the mold disk in time with the driving pinion when this is done. If the disk is entirely disengaged from pinions *1* and *9*, however, always retime the disk by matching the punch mark on pinion *9* with one of the punch marks on the edge of the mold disk.

After the mold has been in use for a certain length of time, the casting surfaces of the mold body and cap will gradually become coated with a greyish film of oxide. This oxide film, commonly regarded as a detriment, is really of great benefit to the mold because it insures easy ejection of slugs. When the casting surfaces of the mold are new and perfectly clean, the steel has a considerable affinity to type metal. After twenty-five or thirty slugs are cast in rapid succession without permitting the mold to cool, ejection becomes difficult because the type metal adheres closely to the highly finished mold surfaces. It is this metal adhesion which must be prevented. There is a systematic procedure which should