block to cause the knife to follow the movement of adjusting screws *3* after the two fastening screws are loosened. The left-hand knife is set so that it will remove the small shoulder of type metal at the top edge of the smooth side of the slug. This knife is not intended to shave metal off the body of the slug.

The position of the right-hand knife is controlled by the operating handle *4*, which is fastened to the rim of the knife block dial *5*. The dial is fastened to an operating screw *6* by three screws *7*. The operating screw is threaded in the knife block casting and the face of the screw travels to the left or to the right as the operating handle *4* is moved up or down. The right-hand knife *8* is held in positive relationship to the operating screw by a powerful tension spring *9*, which is attached at one end to a hook in the knife and at the other end, to a bracket *10* fastened to the knife block casting. A disk *11* is interposed between the knife and the operating screw. The disk is provided with three accurately finished bearing pads, which bear against the operating screw. The heads of the two right-hand knife adjusting screws *12* are provided with projections which enter holes in the disk and hold the disk in proper relationship to the knife so that the three bearing pads are in the proper relationship to the operating screw. The right-hand knife, as stated previously, is movable in a sidewise direction. The knife *8* is held under tension of spring *9* against two pads *13* and the operating screw, as previously described. When the knife is moved to the right to trim a larger size slug, the tension of the spring causes the knife to follow the movement of the operating screw. When the knife is moved to the left to trim a smaller size slug, it moves against the tension of the spring.

To change from one measure to another on the knife block dial scale *17*, it is necessary simply to raise detent *16* and to turn the dial until the detent registers with the proper notch in the dial. The detent is then released so that it will drop into the notch and lock the setting. Two dial stops *14* and *15* are provided to facilitate advertising figure composition, in which large display characters are cast on a slug body of a smaller size. If the operator is setting 24 point advertising figures with 8 point text, for example, the detent *16* should be set on any measure *above* 24 points and the upper stop *14* should be set against the bracket in which detent *16* is pivoted. The detent *16* should then be set on 8 points and the other dial stop *15* should be brought up to the bracket. When the stops have been set in this manner, the operator can alternate rapidly between the two measures without having to look at the dial settings. The dial stops are useful also in any other type of composition requiring frequent changes from one point size to another on the same machine.

Setting the Knives. Each knife is separately adjustable with respect to the mold. The left-hand knife should be set so that it will remove the small shoulder of type metal at the top edge of the smooth side of the slug. This knife, as stated previously, is not intended to shave metal from the body of the slug. To adjust the left-hand knife, loosen the two square head collar screws at the front of the vise frame which hold the knife in position. Do not loosen the two inside collar screws—these screws hold the right mold disk locking stud block in position. The two adjusting screws *3* for the left-hand knife are threaded through the knife block casting above and below the right-hand knife. These screws bank against the left-hand knife and adjust it further away from or closer to the slug. Spring

2 causes the knife to follow the movement of the adjusting screws. After the screws have been turned in the desired direction, tighten the two square head collar screws at the front of the vise frame. Assemble a 30-em line of matrices and spacebands composed of capital letters and cast the line to observe the effect of the adjustment. After each successive adjustment has been made, recast the line until the desired result is obtained. When the left-hand knife has been adjusted sufficiently to remove the small shoulder of metal at the top of the smooth side of the slug, the lock nuts on the adjusting screws and the two fastening screws at the front of the vise frame should be tightened securely. The shoulder of metal, of course, must be trimmed flush with the slug body for its entire length. If part of the shoulder is left on the slug, it is an indication that the knife has not been set parallel with respect to the mold body. A full-length slug should be used when adjusting the knives.

The right-hand knife is adjusted by means of two screws *12,* Fig. 85, which determine the relationship of the knife to the knife block operating screw. After the left-hand knife has been adjusted, the right-hand knife should be set parallel to it and far enough to the left or to the right to trim the slug to point size. Set the detent *16* on the point size of the slug being cast. Loosen set screws *18* and adjust screws *12.* Cast a few slugs and measure them at each end with a micrometer to determine the accuracy of the trim. The usual practice is to measure the slug on the second rib from each end of the slug. The slug should be allowed to cool, of course, before the measurements are taken. When the measurements at both ends of the slug are exactly equal, and according to the body thickness, tighten the two set screws *18.* A brass plug is inserted under each of the set screws to prevent them from damaging the threads of the adjusting screws.

Adjusting the Mold Banking Blocks. The mold banking block *19,* Fig. 85, supports the mold cap when the slug is being ejected from the mold. There are two additional banking blocks for the assembled mold, one of which is fastened to the vise frame under the front mold wiper and the other, to the knife wiper bar guide. The fitting of these blocks is highly important because they not only affect the efficiency of slug ejection but also can affect the casting process if they are not set properly. When the blocks are applied at the factory, they are set so that the mold contacts all three blocks *only* at ejecting position but not at casting position. If a mold should touch the blocks when the disk moves forward to casting position, a metal-tight lock-up could not be obtained and metal would escape when the slug is cast. The mold must be perfectly free at casting position to lock against the matrix line, which is supported at this time by the first-elevator front jaw and vise cap. To test these conditions, apply a thin coat of red lead to the three banking blocks and turn the machine forward to casting position. Back the machine until the mold disk withdraws from the vise frame, open the frame and look at the mold body and cap. No part of the mold should show signs of red lead at this time. The same test should be followed with the mold disk at ejecting position, at which time the mold body should show two red lead marks from the two stationary blocks and the mold cap, one mark from the adjustable block. If a knife wiper bar guide or a mold banking block is replaced, the red lead tests described above should be followed to verify the relationship of the mold at both the casting and ejecting positions.

Removal and Maintenance. To remove the knife block, first remove the assembled outside galley bracket. Loosen the two hexagon head screws which pass through holes *21* in the knife block casting. It is necessary only to turn the screws a few times, then remove the two half washers under the screw heads. The assembled knife block can then be removed by sliding it to the right and off the screws. The surfaces of the right-hand knife which slide on the pads of the knife block casting should be cleaned with gasoline and lubricated with graphite. The operating screw *6*, Fig. 85, should work freely in the thread grooves in the knife block casting and should be kept clean for this reason. The spring plate *20* occasionally requires cleaning with a piece of fine emery cloth. Type metal and gum sometimes accumulate on the surface of the plate which contacts the slugs. The function of the plate is to support the slug properly so that it will be delivered face upward in the galley. The plate should exert more tension on the bottom of the slug than on the top to obtain this result. The curved spring to the right of the plate can be fitted for this purpose.

If the knives are treated with care and the casting mechanism is handled properly, the knives will require resharpening only at long intervals. After continuous use for a long period of time, the trimming edges of the knives may become dull to a certain extent. If the edges are not too dull, they can usually be sharpened by lapping the knives on a cast iron block and finishing the edge with an oil stone. Sprinkle some No. 120 emery or carborundum on the block, moisten it with gasoline and rub the knife steadily back and forth across the block. Shift the knife with each stroke until its trimming edge is completely polished. *It is essential that the lapping block and oil stone be perfectly flat and maintained solely for use on trimming knives, as otherwise a correct trimming edge cannot be obtained.* Where such equipment is unavailable, it is advisable to send the knives to the nearest Intertype agency for regrinding. Special equipment not ordinarily available elsewhere is required for this type of work. It is advantageous to have an extra pair of knives on hand so that the machine can be operated while the dull set is being repaired. When knives have been sharpened or ground, it is necessary to reset them when they are returned to the machine. The procedure outlined previously for setting knives should always be followed.

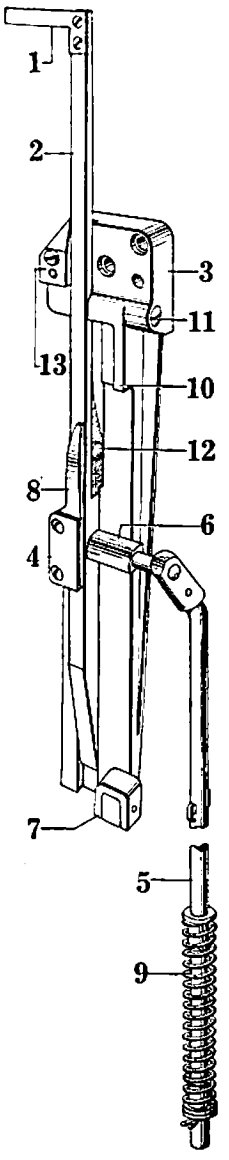


Fig. 86. The Intertype Knife Wiper is operated positively by a stop fastened to the bottom of the first-elevator slide. The wiper removes type metal shavings from the knives after the slug is ejected from the mold.

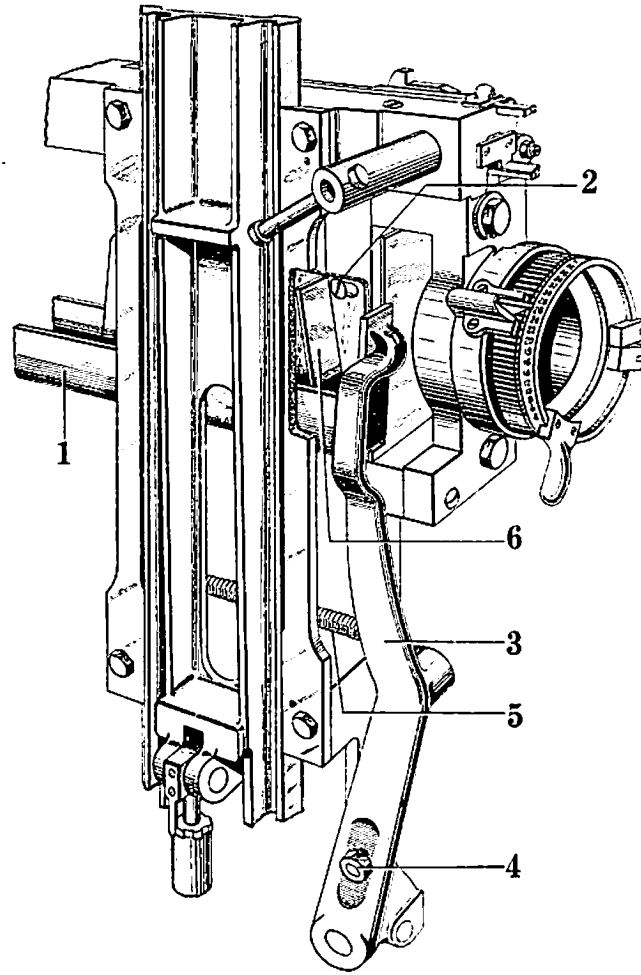


Fig. 87. The Inside Galley supports the slugs in a vertical position after they have been ejected from the mold. The slugs are moved to the left by slug lever *3*, which receives a positive and uniform movement from a formed cam on the pot leg.

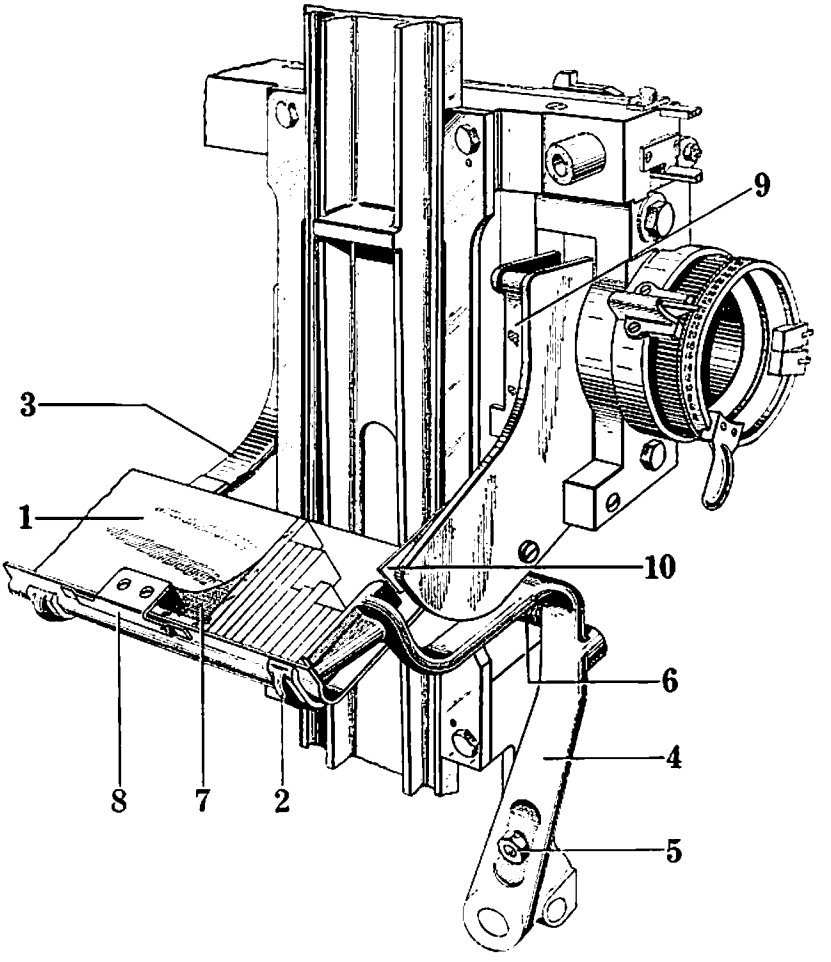


Fig. 88. The Outside Galley supports the slugs in an inclined position. The slug lever *4* moves the slugs and angle piece *7* to the left each time the pot moves forward. The movement of the slug lever is uniform and positive because it is controlled by a formed cam on the pot leg.

The Knife Wiper

The purpose of the knife wiper is to remove the small shavings of type metal which adhere to the knives as the slug is ejected from the mold. The parts of the knife wiper are shown in Fig. 86. The wiper *1* is fastened to a bar *2* which is inserted in a slot in guide *3*. Gib *4* is fastened to guide *3* and holds bar *2* in the slot in the guide. The knife wiper bar is operated by rod *5*, the lower end of which is inserted in a stop fastened to the bottom of the first-elevator slide (not shown). When the first elevator descends to the vise cap, the stop at the bottom of the slide banks on the cotter pin at the lower end of rod *5*. This action pulls rod *5* and bar *2* down until stud *6* banks on buffer *7*, which limits the downstroke of the assembled mechanism. Spring *8* exerts sufficient tension on bar *2* to prevent the wiping mechanism from dropping with a shock on buffer *7*. The spring also

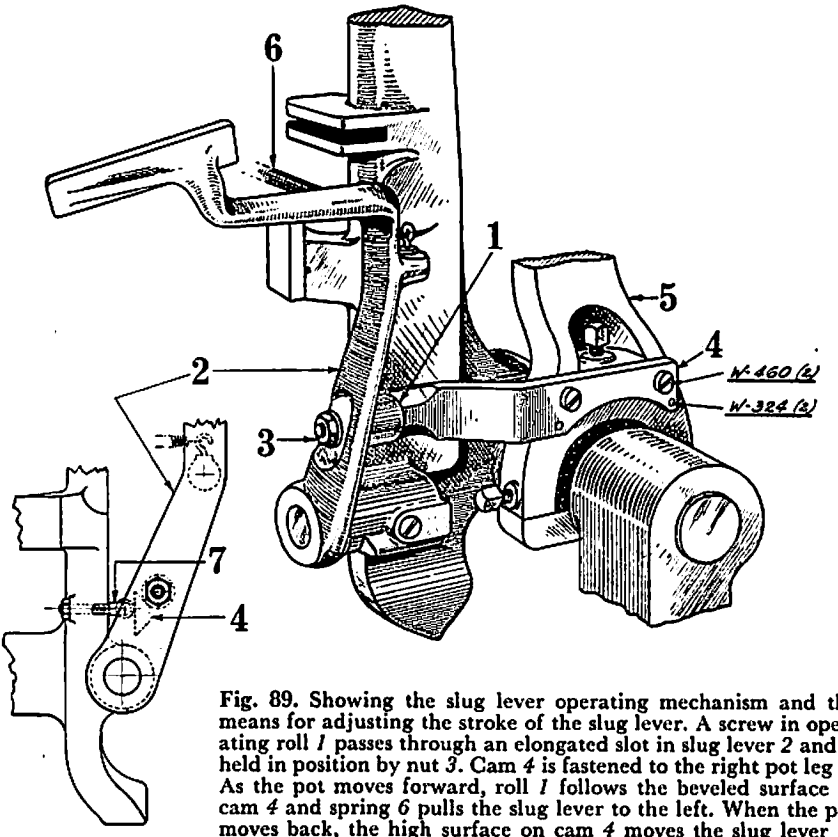


Fig. 89. Showing the slug lever operating mechanism and the means for adjusting the stroke of the slug lever. A screw in operating roll *1* passes through an elongated slot in slug lever *2* and is held in position by nut *3*. Cam *4* is fastened to the right pot leg *5*. As the pot moves forward, roll *1* follows the beveled surface of cam *4* and spring *6* pulls the slug lever to the left. When the pot moves back, the high surface on cam *4* moves the slug lever to the right, providing room for the next slug when it slides into the galley. The movement of the slug lever can be varied by loosening nut *3* and setting roll *1* with respect to cam *4*. The small detail drawing shows the support *7*, which should be turned out until the roll on the support touches cam *4*. The operating mechanism shown in this illustration is the same for the inside galley slug lever.

holds the wiper *1* against the trimming edges of the knives. When the first elevator rises to transfer position, the stop on the first-elevator slide raises spring *9* until the spring engages the lugs on bar *5*, then the assembled mechanism is raised until wiper *1* reaches the top of the knives. Lug *10* limits the upstroke of the parts and spring *9* permits the first-elevator slide to complete its movement to transfer position. As the wiper bar *2* reaches its highest stroke, a compression spring under screw *11* causes a friction ball to engage stop *12* on the bar. The ball holds the assembled wiping mechanism in this raised position until the first elevator descends to the vise cap with the next line. The plate shown at *13* is one of the stationary banking points for the mold when it is in ejecting position.

The Galley and Slug Lever

The galley is made in two forms, either of which is suitable for use on the machine. The inside galley *1*, Fig. 87, is suspended between the vise frame and the first-elevator slide on screws *2*. The slug lever *3* is pivoted on a stud in the vise frame. At the lower end of the lever there is an operating roll fastened in position by nut *4*. The roll engages the beveled surface of a cam attached to the right pot leg. When the pot moves forward, the roll follows the surface of the cam and permits spring *5* to pull the slug lever *3* to the left. The slugs, which are resting in the galley against angle piece *6*, are thereby moved to the left to make room for the next slug. The angle piece slides frictionally in the bottom of the galley and is moved with the slugs. When the pot withdraws from the mold after the cast, the cam on the pot leg moves slug lever *3* sufficiently to the right to clear the slug when it slides into the galley. It is essential that the forward stroke of the ejector blade be adjusted properly when the machine is equipped with an inside galley. The ejector blade should advance positively 1/32″ beyond the inside edge of the galley, the ejector lever buffer rod spring preventing any overthrow.

The outside galley is shown in Fig. 88. The galley *1* is supported by two brackets *2* and *3* fastened to the vise frame. The slug lever *4* is pivoted on a stud in the vise frame and is operated in the same manner as the slug lever for the inside galley. An operating roll fastened in position by nut *5* is adjustable with respect to the cam on the pot leg to govern the movement of slug lever *4*. Spring *6* holds the slug lever operating roll in contact with the cam and pulls the lever to the left when the pot moves forward. This action moves the slugs to the left to provide space for the next slug. The slugs are supported by an angle piece *7*, which slides frictionally along the galley through action of spring *8*. The function of the slug buffer *9* is to direct the slugs to the bottom of the chute so that they will be delivered face upwards in the galley. The underside of the buffer is provided with a leather pad to avoid damage to the face of the slug. An adjustable chute guide *10* is provided to direct slugs of various lengths to position as they slide out of the chute. Adjustment of the slug lever is made by loosening nut *5* and moving the operating roll with respect to the cam on the pot leg. This adjustment is indicated clearly in Fig. 89. The spring plate at the bottom of the galley chute should be polished from time to time to remove lead accumulations from its surface.

SPECIAL ATTACHMENTS FOR THE CASTING MECHANISM

Adjustable Knife Block Detent

An adjustable knife block detent is available for application to the Intertype knife block. The detent enables the operator to set the right-hand knife instantly for an oversize or undersize trim on each body size without disturbing the adjusting screws for the knife. The detent has proved very useful in offices where both conventional and odd point measurements are required. The left and right-hand knives are set to trim slugs accurately to point size so that conventional measurements can be obtained when required. Odd point measurements are then secured simply by turning a detent dial, which moves the right-hand knife in graduations of .001″. The range of the detent is plus or minus .001″ to .007″ inclusive. These measurements can be secured universally on any size slug from 5 to 48 points. When conventional point sizes are required, it is necessary only to turn the detent dial back to zero. The ease and rapidity with which even, half or quarter points can be obtained makes this device invaluable in offices where such variations are required. A close trim or a large leaded trim can be secured within precise limits merely by setting the detent.

The knife block detent is very simple in construction, as shown in Fig. 90. The mechanism is mounted in a bracket *1*, which is fastened to the knife block casting *2*. The detent dial *3* is pinned to a shaft *4*, on the other end of which is fastened the detent *5*. Shaft *4* is threaded in bracket *1* and advances or withdraws as dial *3* is turned. The movements of the shaft are transferred to the detent *5*, which is held on the shaft between a shoulder and a nut. When the dial is turned to a number on the plus side of the scale, the right-hand knife is opened and the slug will be oversize by the amount indicated. A setting on the minus side of the scale will trim the slug undersize by the amount indicated.

The complete plus and minus range of the detent, as stated previously, can be obtained on any body size from 5 to 48 points. If the size of the slug being cast, for example, is 10 points, detent *5* is raised and the large knife block dial *6* is turned until the notch for 10 points is directly under the detent. The detent is then released so that it enters the notch. Odd point measurements are then secured by turning the detent dial *3*. If the slug is required .005″ undersize, the dial is turned until minus 5 registers with the index *7*. If the slug is to be trimmed .003″ oversize, the dial should be turned until plus 3 registers with the index. To obtain the conventional 10 point slug, turn the detent dial back to 0.

Setting the Knife Block. To set a knife block equipped with the adjustable detent, lift detent *5*, Fig. 90, out of contact with dial *6*. Adjust the right-hand knife to trim the slug accurately to point size. The procedure for adjusting the knife has been outlined already on page 130. When the right-hand knife has been set parallel to the left-hand knife and far enough to the left or to the right to trim the slug precisely to size, turn the detent dial *3* until the zero on dial registers with the index *7*. Loosen screws *8* and turn dial *6* until detent 5 is centrally located above the notch corresponding with the point size for which the knife

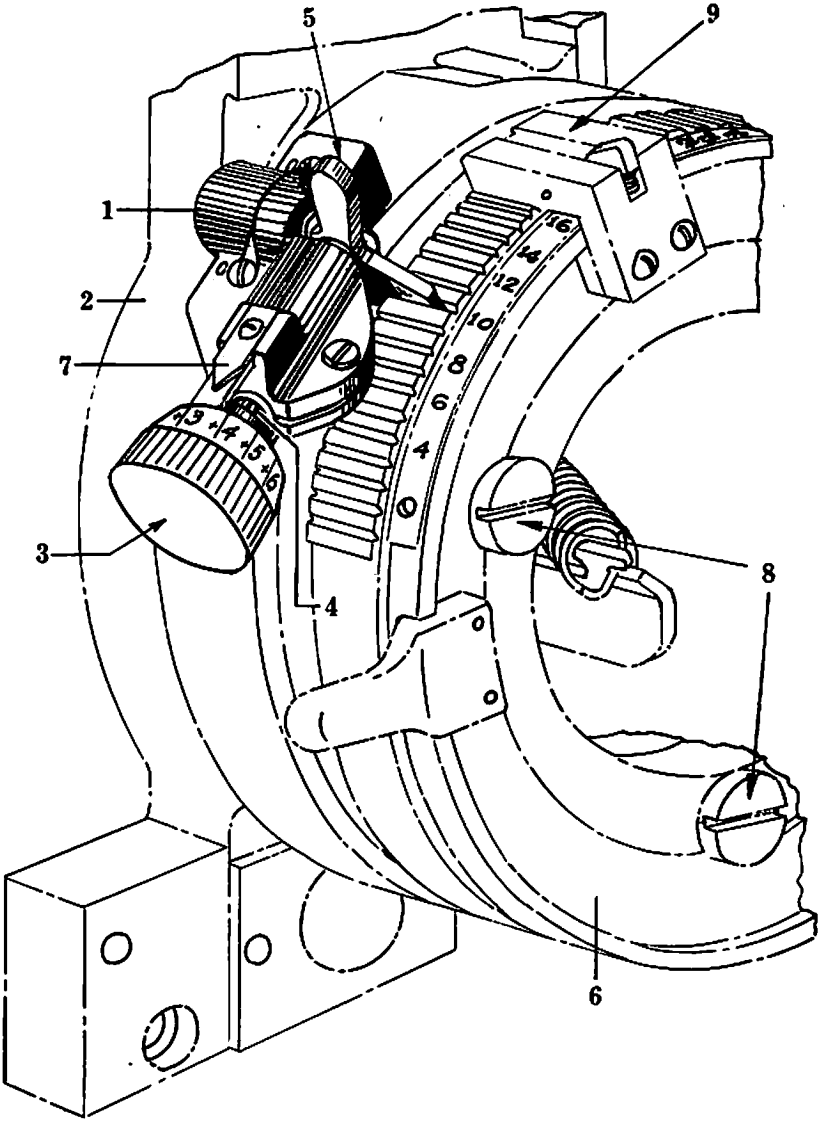


Fig. 90. The Adjustable Knife Block Detent makes it possible to set the knife block instantly to trim slugs plus or minus .001″ to .007″ inclusive. The knife block detent *5* is set on the point size of the slug being cast. Undersize or oversize trims are then secured simply by turning detent dial *3* to the desired setting on the scale. This attachment is especially useful in offices where frequent changes are made from conventional to odd point measurements.

has been set. For instance, if the knife has been set to trim a 10 point slug (.140"), loosen screws *8* and turn dial *6* until notch 10 is centrally located under detent *5*. Tighten screws *8* when this condition has been obtained. The dial stops *9* are not used when the adjustable detent is being set for odd measures and should be moved out of range.

Galley Chute for Short Slugs

The galley chute for short slugs is shown in Fig. 91. This auxiliary galley is used for stacking short slugs from 4 to 6 ems in length and from 5 to 14 points in width. The chute *1* is located and held in position by a clamp screw *2* in bracket *3*. The bracket fits over the right-hand galley bracket plate *4* and screw *2* locates the galley accurately in the sidewise direction. To apply the galley chute, place end *5* on bracket *6* and swing the entrance end of the galley down between spring plate *7* and the galley bracket until the end of rail *8* is slightly below the ledge of the knife block casting. Tighten clamp screw 2. When the galley chute is in this position, the slugs will slide down the chute against buffer *9*.

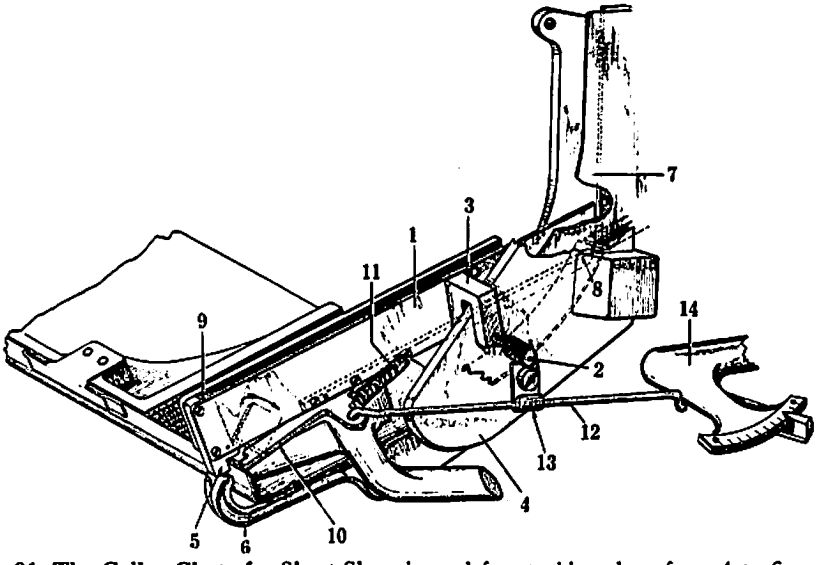


Fig. 91. The Galley Chute for Short Slugs is used for stacking slugs from 4 to 6 ems in length and from 5 to 14 points in width. The galley shutter, which permits the slugs to drop into the galley, is operated by the movement of the mold disk slide.

The galley chute shutter *10* is operated by the movement of the mold disk slide. The shutter is pivoted on a screw in the bottom of the chute and is held open by spring *11*. Operating rod *12* rests on support *13* with its back end directly in front of ejector shifter lever bracket *14*. When the mold disk slide moves forward to ejecting position, bracket *14* pushes rod *12* forward, causing shutter *10* to swing in and to close the opening in the bottom of the galley chute. The slug is ejected from the mold and comes to rest on top of the shutter. When the mold disk slide withdraws to normal position, spring *11* opens the shutter,

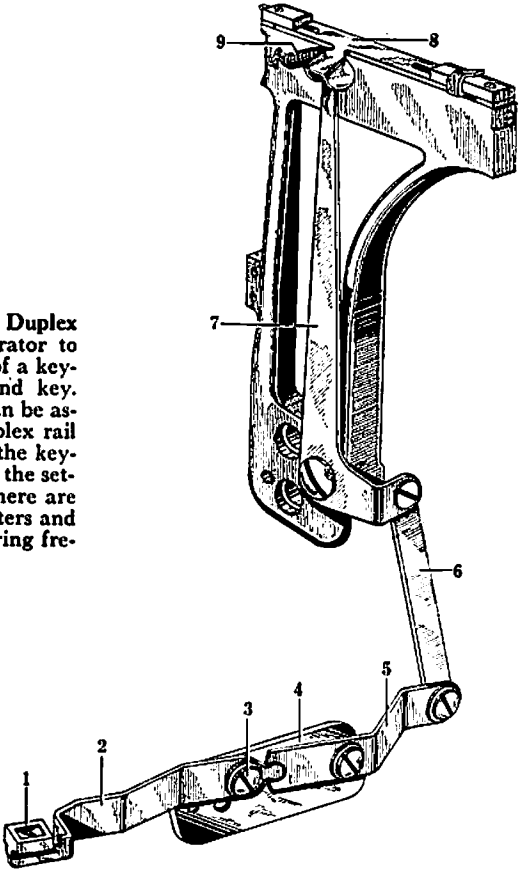


Fig. 92. The Assembling Elevator Duplex Rail Mechanism enables the operator to control the duplex rail by means of a keybutton located near the spaceband key. Any desired number of matrices can be assembled on the normal or the duplex rail simply by depressing or releasing the keybutton. This mechanism facilitates the setting of language work in which there are many accented and special characters and is useful also in composition requiring frequent use of the duplex rail.

permitting the slug to drop between the slug lever and the previous slug. Support *13* should be set to locate the end of rod *12* in front of the ejector shifter lever bracket, as shown in the illustration.

Assembling Elevator Duplex Rail Mechanism

The assembling elevator duplex rail mechanism is sometimes referred to as the "Greek attachment" because it was developed first for machines which set the Greek language. The attachment is useful in languages with a large number of special and accented characters punched in auxiliary position. It is useful also in other types of composition requiring frequent and extensive use of the assembling elevator duplex rail and can be applied to any machine on which such work is done.

The duplex rail attachment transfers the operation of the rail from the conventional operating lever on the assembling elevator to a keybutton located conveniently near the spaceband key. The mechanism is shown in Fig. 92. Keyboard lever *2* is pivoted on a screw *3* in plate *4*. The plate is fastened to the assembling elevator lever. When keybutton *1* is depressed, the rear part of ex-

tension *5* is lowered. This movement is transferred to link *6*, which causes the upper end of operating lever *7* to move to the right. The duplex rail *8* is thereby moved to the right against tension of spring *9*. At the end of the rail is riveted an L-shaped detaining plate, which is moved far enough to the right to receive the matrices as they enter the assembling elevator. Any number of matrices, therefore, can be assembled on the duplex rail merely by holding keybutton *1* in the depressed position. When the keybutton is released, spring *9* pulls the duplex

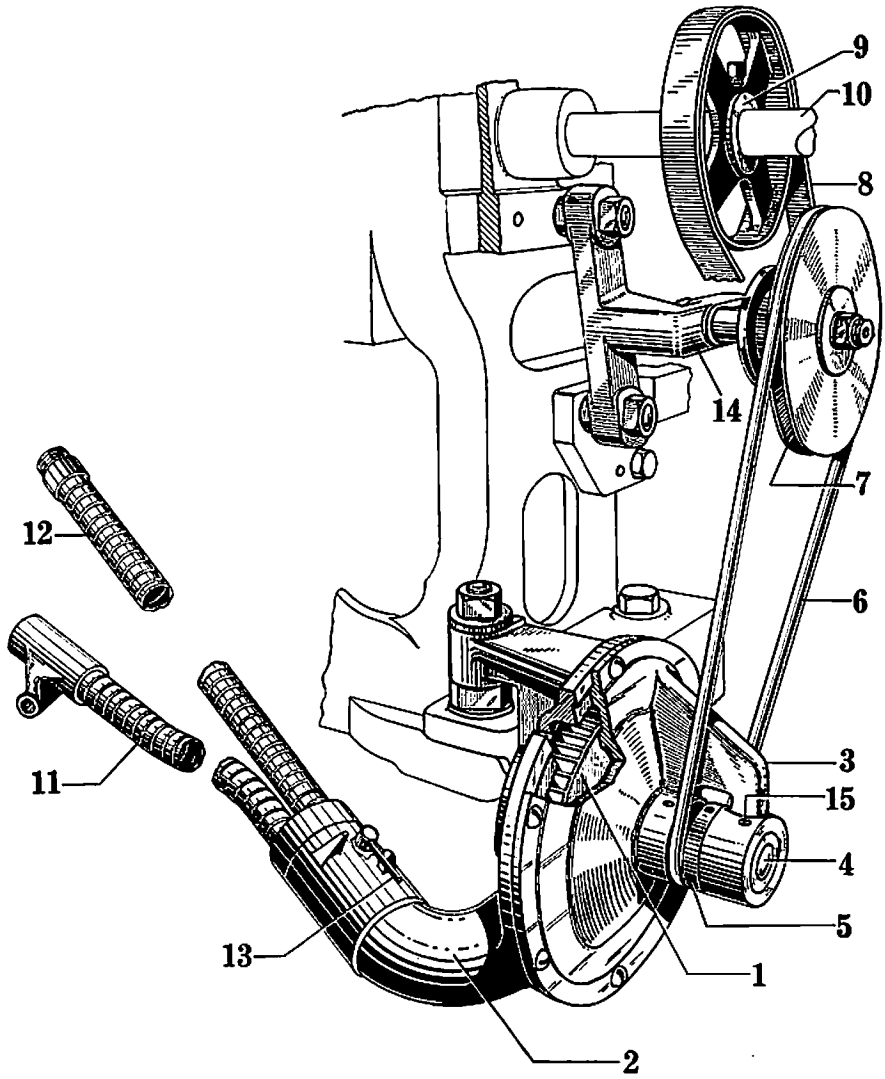


Fig. 93. The Mold Cooling Attachment blows a continuous stream of air across the face of the mold in operating position. The attachment is mounted on a screw passing through the machine column and is driven by a pulley on the intermediate shaft. This equipment is designed primarily for use on display machines casting large-bodied slugs.

rail sufficiently to the left to permit the following matrix to assemble on the lower or normal rail. All of the succeeding matrices will assemble in this position until the duplex rail is moved to the right again by depressing keybutton *1*. A special delivery channel front rail is provided with the duplex rail mechanism. The delivery channel rail has a clearance cut at its right end to accommodate the extra length of the assembling elevator duplex rail. There are no adjustments to be made on this device.

Mold Cooling Attachment

A mold cooling attachment is manufactured for machines devoted principally to headletter and display work. The equipment consists chiefly of a blower assembly, a number of pulleys and belts for driving the impeller and tubes which direct the air to the mold. The blower assembly is mounted on the machine column at the rear of the keyboard, as shown in Fig. 93. The blower assembly comprises the blower housing *2*, the impeller *1* and the housing cover *3*. The impeller *1* is pinned to a shaft *4*, which revolves in oilite bearings in the housing cover *3*. The impeller shaft pulley *5* is pinned to shaft *4* and turns the impeller *1* when it is driven by belt *6*. The movement of the impeller is promoted by driving pulley *9*, which is held in position on the intermediate shaft *10* by a set screw. The driving pulley is connected by belt *8* to compound pulley *7*, which drives the impeller *1* through pulley *5* and belt *6*. As the impeller is turned, a number of formed blades on the impeller draw air through an opening in the housing *2*. The air is then forced through an outlet in the housing into tubes *11* and *12*, the ends of which are located opposite the mold in normal position. Tube *12* is connected with the right-hand vise locking stud, in which a hole is provided to direct the air downward across the face of the mold. The bracket at the front end of tube *11* is fastened to the starting and stopping lever bracket, locating the tube outlet opposite the lower part of the mold being used and directing the air upward across the face of the mold. The combined effect of the two streams of air keeps the mold effectively cooled, especially when casting headletter and display slugs in the larger sizes. The air passing through tubes *11* and *12* can be regulated by turning the valve stem handle *13*. The handle moves a disk inside the tube connection and varies the opening through which the air passes.

The compound pulley *7* is mounted on an adjustable bracket *14*. The bracket is provided with elongated holes and should be set so that belt *8* will exert enough friction on pulley *7* to drive pulley at uniform rate of speed. The compound pulley itself can be adjusted so that belt *6* has the proper tension. The hole in bracket *14* through which pulley shaft passes is elongated for this purpose.

The maintenance of the mold cooling attachment has been simplified greatly by the use of "oilite" bronze bearings. The bearings are porous in composition and retain oil over long intervals. The revolution of the shafts inside the bearings warms the oil and causes it to flow out to the shafts. "Oilite" bearings require little attention and keep the shafts lubricated over a period of five or six months. Mobiloil 10-10W is recommended for use in "oilite" bearings because it is sufficiently pure to flow through the pores of the metal. Two screws *15*, Fig. 93, are threaded in the housing cover *3* to keep the oil ducts for the bearing closed in order to exclude dust. After filling the oil ducts, replace the two screws.

The Stick Attachment

The stick attachment provides mechanism suitable for casting hand-set lines in all sizes of type up to and including full-width 60 point caps. The attachment has a wide variety of uses, the most important of which is casting of one, two and three-column newspaper heads and other display lines on one-piece slugs. This system eliminates the time-wasting process of piecing and fitting separate slugs, besides making available display faces beyond the range of keyboard operation. The stick attachment is valuable also as a means of obtaining corrections quickly without shifting or replacing magazines. The corrected line is assembled by hand in a special composing stick and is inserted in the hinged first-elevator head. When the operating lever is pulled out, the first elevator descends for the cast in the regular way, then returns and stops immediately at normal position without rising to transfer position. The line of matrices and spacebands, therefore, can be removed from the first elevator almost immediately following the cast, without waiting for the machine to come to rest. This feature saves considerable time.

The special movements of the first-elevator slide occur only when the stick attachment operating lever is pulled out. When regular keyboard composition is being done, the first elevator and the other parts of the machine move through their usual cycle of operations. Automatic spaceband justification of all lines, whether set by keyboard or by hand, is provided with the attachment. Special spacebands of exclusive Intertype design are used with the large display faces.

The Composing Stick

The composing stick used with the stick attachment is shown in Fig. 94. The stick is shaped suitably for rapid hand assembling of Intertype matrices and spacebands and contains a sliding arrangement which facilitates the insertion of the line in the first-elevator jaw. The stick consists principally of the composing stick body *1*, a matrix guide *2* and a gib *3*. The line of matrices and spacebands is assembled in the conventional way from left to right. The first matrix in the line is placed on the body *1* against the keeper *4* and the succeeding characters are arranged in their natural reading order. The matrices are assembled face upwards with the triangular tooth recesses straddling the matrix guide *2*. The lower edge of the gib *3* acts as an additional guide for the matrices.

The special spacebands used with the stick attachment are easily assembled and are held positively in the composing stick. A spaceband of this type is shown in the detail drawing, Fig. 94. The stick attachment spaceband consists principally of a sleeve *11* and a wedge *12*. The sleeve on this type of spaceband differs from that used on other types in that it is provided with two lower lugs *13*. These lugs hold the spaceband properly in position when the line is justified preparatory to the cast. The triangular recess *14* at the top of the spaceband sleeve fits over guide 2 on the composing stick and aligns the sleeve properly with respect to the matrices. The stick attachment spacebands have a wide expansive range to insure proper justification of the large display lines in which they are used. The minimum measurement of the spaceband is .070″ and the maximum mea-

surement, .164". The complete expansive range of the spaceband, therefore, is .094", or slightly less than 7 points.

When the matrices and spacebands have been assembled in the stick, the length of the assembled line can be determined instantly by moving slide block *5* and detent block *6* against the line. The length will then be indicated by the scale on gib *3*, which is divided in half-em increments. Detent *7* in block *6* registers with notches in the composing stick body and locks the setting of the line at the desired length. To insert the line in the first-elevator jaw, it is necessary simply to swing back the hinged head of the first-elevator slide and insert the end *8* of the composing stick in the spaceband grooves in the jaw. When the composing stick is in position, wedge *9* will move keeper *4* out of the way and the assembled line can then be moved into the first-elevator jaw by sliding block *5* to the left. Spring *10* guides the matrices and spacebands into the jaw. After the slug has been cast, the composing stick is placed in the same position with respect to the first-elevator jaw and the assembled line is moved out of the jaw and on the stick again. The matrices and spacebands can then be distributed back to the case.

Display Italic Matrices and Spaces

The special display italic matrices used with the Intertype composing stick are shown in Fig. 95. These matrices, as well as hair spaces, end quads and other equipment used with the stick attachment are exclusively of Intertype design. The display italic matrices are of a special oblique construction which makes it

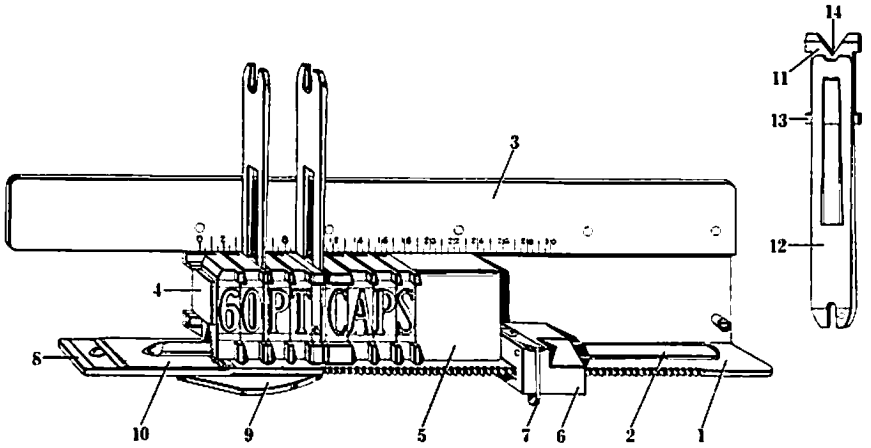


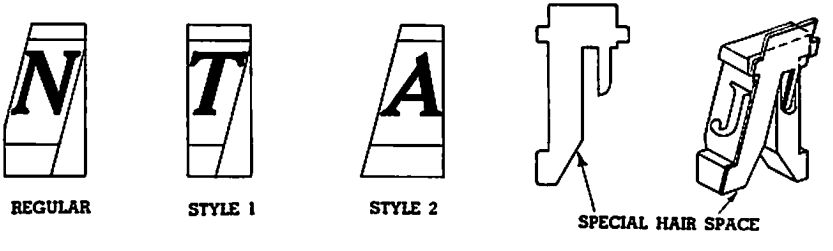
Fig. 94. The Intertype Composing Stick, developed for use with the stick attachment, is designed for easy hand assembling of matrices and spacebands. The stick is provided with an adjustable block arrangement for locking the setting at the various measures required. The scale on the composing stick is divided into half-em increments and indicates the length of the assembled line. The end of the composing stick gib fits into the regular spaceband grooves in the first-elevator jaw and locates the stick while the line of matrices and spacebands is being moved into the jaw.

The spaceband shown at the right of the illustration is especially designed for use with the stick attachment. It has an expansive range of .094", or nearly 7 points, insuring proper justification of the large display matrices with which this type of spaceband is used.

possible to fit the characters closely together. Due to this unique construction and to the resultant closeness of the characters, display italic faces are produced with the properly proportioned characters and precise spacing required in good typography.

The three matrices shown at the top of Fig. 95 illustrate the three types of angular construction provided for close fitting of characters. The regular construction consists of an angular cut on each side of the matrix. This construction suffices for most of the characters in a font and makes it possible to obtain the proper space relationship between the characters. In addition to matrices of the regular construction, caps T, V, W and Y are furnished with every font in style number 1 and caps A and L, in style number 2. Matrices in style number 1 have an angular cut only on the right side of the character, as shown in the illustration. This makes it possible, for example, to obtain a precise space relationship between a cap W and L, a cap W and A, etc. Style number 2 matrices have an angular cut only on the left, as illustrated. An accurate relationship between caps A and Y, L and W, etc., is thereby obtained.

Special opening and closing quads are provided to begin and to end the line. The quads are shown in position in the line of matrices at the bottom of illustration, Fig. 95. The purpose of the opening and closing quads, of course, is to fill the openings caused by the angular cuts on the two end matrices. This squares off the line at each end so that the vise jaws can lock tightly against the line. Ordinary spacebands can be used at either or both ends of the line if space permits.



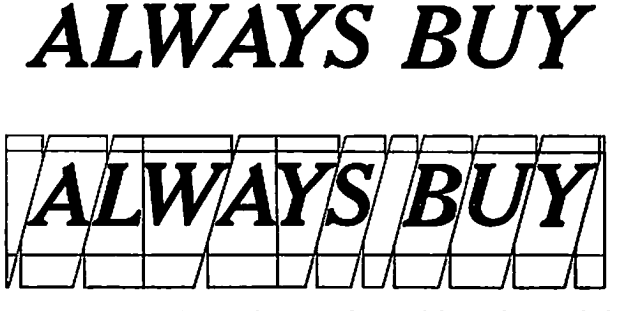


Fig. 95. Intertype Display Italic Matrices are of a special angular-cut design which makes it possible to fit the characters closely together. When the matrices are assembled, the angular cuts dovetail and the matrix characters are located properly with respect to each other. The precise spacing and proportion of characters demanded for advertising composition and other classes of display work are thereby obtained. Special opening and closing quads and hair spaces are provided for use with display italic matrices.

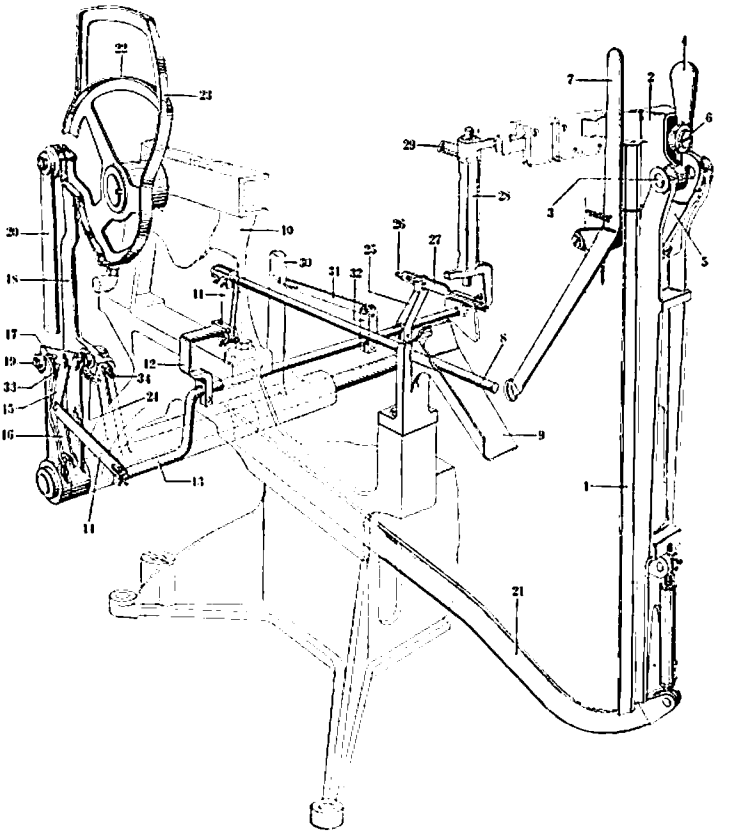


Fig. 96. Perspective View of the Stick Attachment, showing the operating parts of the mechanism in assembly. The complete cycle of operations provided for in the stick attachment is controlled by a single operating lever at the front of the machine.

Hair spaces (.014″ and .028″ wide) are made for use with display italic matrices in order to obtain correct spacing between words. Other spaces are available in 6, 8, 10, 12 and 14 point widths. The relationship of a hair space to one of the matrices is shown on the opposite page in Fig. 95. The lower back lug of the hair space fits into a formed recess in the matrix. This recess is provided in all matrices with angular cuts and serves to hold the space in position. The front part of the hair space follows the shape of the matrix and is locked tightly in position when the line is justified preparatory to the cast. The hair space is provided with a small projection or tab to facilitate handling when inserting it in the line or removing it. If justified composition is being set, the regular opening and closing quads are placed on each side of the spaceband.

Stick Attachment Operating Mechanism

The assembled operating mechanism for the stick attachment is shown in Fig. 96. The mechanism consists principally of parts for transferring the movement of the first-elevator slide from one cam surface to another and auxiliary

mechanism for starting the machine. Both of these movements are controlled by a single operating lever at the front of the vise frame. It is necessary only to pull out the lever to obtain the complete cycle of operations provided for in the stick attachment.

The first-elevator slide *1*, Fig. 96, is supported in the conventional way on the vise frame. The slide is held in position by two gibs, which guide the slide in its upward and downward movements. The first-elevator slide used with the stick attachment differs from the regular slide in that it is provided with a hinged head *2*. The head is pivoted on pins *3* in the first-elevator slide, making it possible to swing the head out to a horizontal position with respect to the slide after handle *4* is swung to the left. This facilitates the insertion of the line of matrices and spacebands in the first-elevator jaw. After the line has been inserted, the first-elevator head is moved back to position and is locked rigidly with respect to the first-elevator slide by the lower end of handle *4*. The end of the handle is provided with a beveled surface which drops in front of a formed surface on lock *5*. A coil spring around stud *6* causes the locking action of handle.

The main operating lever, as stated previously, transfers the movement of the first-elevator slide from one cam surface to another and starts the machine. The lever *7*, Fig. 96, is pivoted on a stud in the vise frame. When the lever is pulled back, its lower end banks against rod *8*, which is supported freely in the mold gear arm support *9* and the cam shaft bracket *10*. At the rear end of rod *8* is fastened an extension *11*. The extension is fastened pivotally to operating crank arm *12*, which is keyed on crank *13*. When extension *11* and arm *12* are moved back by rod *8*, therefore, crank *13* is turned in its bearing in the machine base. The crank is connected with a toggle operating link *14*, on the end of which are pivoted two latch links *15* and *16*. The upper link is fastened pivotally to latch *17* and the lower link *16* is pivoted on a pin in the inside first-elevator auxiliary lever *18*. When toggle link *14* is pulled forward by crank *13*, therefore, links *15* and *16* are drawn forward past the center of their pivot, raising latch *17* off stud *19*. This action disengages the first-elevator auxiliary lever *20* from connection with the first-elevator lever *21*. As the cams revolve, therefore, the first elevator will receive movement only from the inside auxiliary lever *18*, which is always connected with the first-elevator lever *21*. The cam surface on which the inside auxiliary lever *18* rides is the same as the cam surface provided for the outside auxiliary lever *20* up to the point where the first elevator begins to rise from the vise cap after the cast. From this point on, the low contour of cam surface *22* raises the first elevator to normal position, where it stops with the first-elevator jaw opposite and in alignment with the delivery channel. The outside auxiliary lever *20* is held in contact with the high cam surface *23* by spring *24*. This lever, however, has no effect upon the movement of the first-elevator slide at this time because it is disengaged from the first-elevator lever when latch *17* is raised, as previously described.

In addition to transferring the movement of the first-elevator slide from the regular cam surface *23* to the low surface *22*, Fig. 96, the main operating lever *7* also starts the machine. Operating crank *13*, as stated previously, is turned by rod *8*, extension *11* and arm *12* when the main operating lever is pulled out. Starting lever *25* is fastened on crank *13*. When the crank is turned, the pin in