Centering Adjustment. The adjustment for centering, as mentioned previously, is made by adjusting the left vise jaw rack *12*, Fig. 102, with respect to the left vise jaw 2. The adjusting screw *37* is held in the left vise jaw block by two collars. When the screw is turned, the threaded end of the screw causes rack *12* to move to the left or to the right. In adjusting the screw for centering, place a 30-em mold in operating position, set the vise jaw em scale on 30 ems, set lever *4* at center position and place the line spread indicator *36* on 0. Lock the spaceband lever pawl latch, assemble one vertical rule matrix and send it in to the casting mechanism. If two slugs are cast and placed back to back, the position of the two rules with respect to each other will indicate the error from center. If the centering adjustment is made properly, the two rules will coincide exactly. To readjust the centering adjusting screw, place lever *4* on flush left position and move the left vise jaw *2* against the right vise jaw *3*. When the left vise jaw is in this position, set screw *38* is directly under a hole drilled in the top of the vise cap to the right of the first-elevator vise automatic stop. The set screw can be loosened with a small screwdriver. The adjusting screw *37* can be reached with a screwdriver inserted under the slot in the vise cap cover plate *39* fastened to the right end of the vise cap. If a light is held on the inside of the vise frame directly in front of the two jaws and the left vise jaw is moved back until the head of the centering adjusting screw is under the hole in the top of the vise cap, it will be easier to see whether the screwdriver is in the slot of the screw. Turning the adjusting screw clockwise moves the center line further to the left. Tighten set screw *38* after each adjustment, push the left vise jaw all the way back to the left against its stop, set lever *4* on center and cast two slugs to observe the position of the rules, as previously described. When the rules coincide, the centering adjustment is correct and the set screw should be tightened securely.

Vise Jaw Automatic Adjustable Release Latch. When the first elevator is descending to the vise cap with the matrix line, the operating lever *25*, Fig. 102, pulls downward on spring *24*. This action builds up tension on lever *16* and rack *1*, but the parts do not move at this time because latch *31* is resting in front of stop *32* on rack *1*. Just before the first elevator seats on the vise cap, however, the first-elevator jaw banks on lever *33*, raising latch *31* from in front of stop *32* and permitting lever *16* to pull rack *1* to the left through action of spring *24*.

The arrangement of the release device is shown clearly in Fig. 104. To set the device, place the first-elevator alignment stop bar in *normal* position and turn the machine forward by hand until the first elevator seats on the vise cap and before the mold disk moves forward. Lift the first elevator and place a .093" feeler gauge on the stop bar where the adjustable screw in the first-elevator head banks. With the elevator resting on the gauge, loosen fulcrum block screw *B*, Fig. 104, move block *A* slowly to the left or to the right until the latch just releases the right vise jaw rack, then tighten screw *B*.The purpose in releasing the rack before the first elevator has made its complete downstroke is to produce a wiping action between the vise jaws and the two end matrices in the line. The downward movement of the matrices against the vise jaws prevents metal from building up on the jaws. No further adjustments are necessary on the device. When the alignment stop bar is moved to the *headletter* (H. L.) and *high* align-

ment positions, a pivot block, working in a slot in the fulcrum block, automatically raises the release lever to the proper height, as shown.

Vise Jaw Rack Release Stop. The latest rack release stops *C*, Fig. 104, have been changed to facilitate adjustment. After the right-hand vise jaw has been set so that the type line is flush with the end of the slug body, the stop *C* should be adjusted so that the release latch disengages freely. Before placing the vise jaw rack in the machine, tighten the release stop screws just enough to hold the stop firmly on the rack but with sufficient freedom to permit the stop to move lengthwise when the adjusting screw *D* is turned. The adjusting screw can be reached through the right end of the vise cap after the rack is replaced. When the release latch is in normal position in front of stop *C*, there should be from .005″ to .010″ clearance between the right-hand vise jaw and its stop screw. When the adjustment is completed, remove the vise jaw rack from the machine and tighten the release stop screws securely. If there is excessive clearance between the right-hand

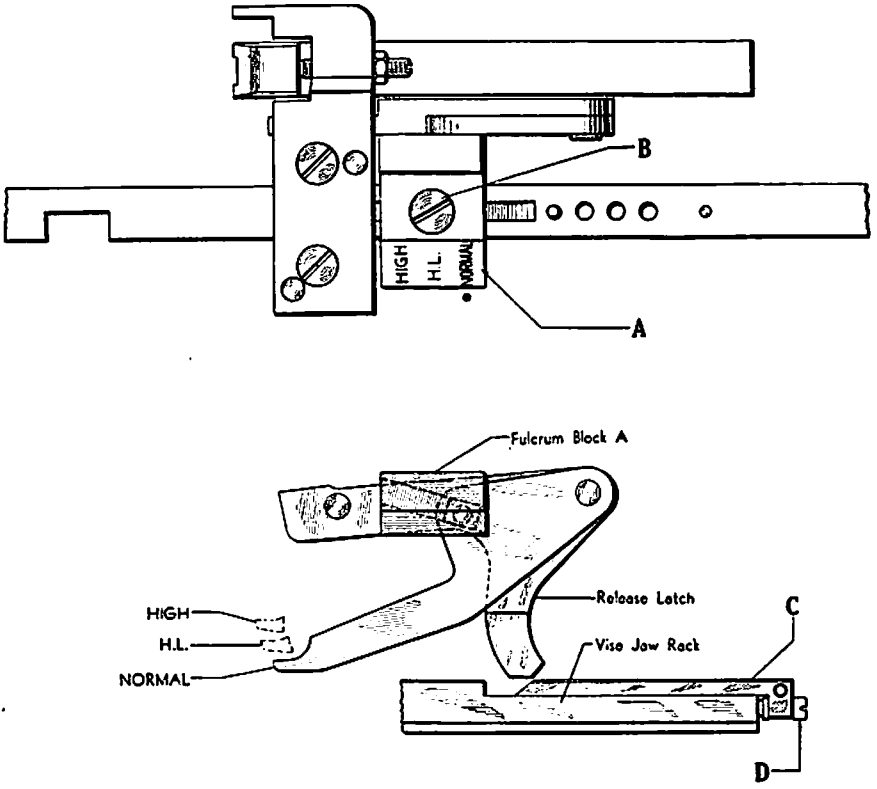

Fig. 104. The Vise Jaw Automatic Adjustable Release is operated when the first elevator descends to the vise cap. The release determines the precise moment when the right-hand vise jaw rack makes its operating stroke and closes the vise jaws against the matrix line. The release is adjusted by means of the fulcrum block *A*, which automatically sets the release to the various positions of the first-elevator alignment stop bar for headletter and high alignment work.

to the latest Intertype quadding and centering machines are provided with a spring detent which holds the left vise jaw in positive relationship to the vise adjusting mechanism. On such machines, the left vise jaw automatically follows the movements of the vise adjusting mechanism.

The Line Spread Device. In addition to setting the main operating lever *4*, Fig. 102, at the flush left, center and flush right positions as required, the operator will have occasion to set the line spread indicator lever *36* with respect to the line spread scale *40*. The line spread device is simple in operation but is extremely important in function, because it controls the justification and quadding operations of the machine. The mechanical operation of the line spread device is described briefly in the succeeding material and in more detail in the section dealing with the Justification and Quadding Mechanism, pages 169 to 175. For purposes of making operating changes, however, the various settings of the line spread device are described below under their respective headings.

A detail drawing of the line spread device is shown in Fig. 107. The line spread indicator lever *A* is provided with a small indicator which registers with scale *B*. On the other end of lever *A* there is a projecting arm *C* which is located inside the vise cap above the line spread pawl *D* fastened to the right vise jaw rack *E*. As indicator lever *A* is moved to the various settings on scale *B*, arm *C* is moved with respect to the line spread pawl *D*. *The position of the arm with respect to the pawl after the line has been positioned between the vise jaws determines whether the line will justify or quad.* The settings of the line spread indicator lever *A* as outlined in the following description, therefore, should be understood thoroughly by the operator.

Fully Justified Composition. When setting fully justified composition, the main operating lever is placed at the flush left position. The line spread scale *B*, Fig. 107, is indexed from 0 to 3½ ems. *These figures represent the amount of slack or looseness permissable in the assembled lines when setting fully justified composition.* If indicator lever *A* is set at 2 on scale *B*, for example, all lines must be assembled to within at least 2 ems of the full measure to justify. Similarly, if the lever were set at 3, all lines would have to be assembled to within at least 3 ems of full to justify. Since wear of the assembler star wheel affects the accuracy of the assembler scale reading, *it is best to allow at least ½ em leeway to be sure that the lines will justify.* Thus, if the line spread lever is set at 2, assemble all justified lines to within 1½ ems of full; if a setting of 3 is being used, assemble all justified lines to within 2½ ems of full, etc. As on a non-quadding machine, all justified lines must contain a sufficient number of spacebands for the amount of expansion required. Three or four bands for each em expansion is a good rule. If a line is set to within the amount indicated on the line spread scale but does not contain a sufficient number of spacebands for the required expansion, it will not cast, exactly as in the case of a loose line on a non-quadding machine. *All lines shorter than the amount indicated on the line spread scale will quad automatically.* This makes it possible, therefore, for the operator simply to send in the quadded line without having to change the line spread scale setting.

The usual settings of the line spread device for fully justified composition are from 2 to 3½ ems on the indicator scale, depending upon the length of line being

set. The common setting for justified composition up to 12 ems is 2 on the indicator scale; for longer measures, a 3 or 3½ setting is generally used. Many operators prefer to use a constant setting of 3 for justified composition, assembling all lines to within ½ to 2½ ems of full, according to the length of line being set. This setting insures justification, because all lines are being assembled well within the limit of looseness with a sufficient number of spacebands for the required expansion. The constant setting of the line spread indicator achieved by this method, of course, relieves the operator of an added operation.

Quadded and Centered Composition. When all of the composition is quadded to the left or to the right or centered, the line spread lever should be set at 0 on the scale. At this setting, all lines will cast, whether they contain spacebands or not. Thus, a line of matrices without spacebands or even a single matrix will be quadded left or right, or will be centered automatically without any attention on the part of the operator. Quadded lines with spacebands are handled in the same manner, quadding or centering according to the setting of the operating lever and casting automatically, regardless of the length of the line, size of type or any other factor which would have to be taken into account on a non-quadding machine.

Newspaper Headlines in Pyramidal Style. Many newspapers prefer to use the conventional inverted pyramid style for setting headlines, illustrated below:

Committee Says Any Revival
Must Fit Several Different
Aims and Conditions

In this style of composition, the first line is justified to the full column measure and the second and third lines are centered. While fully justified composition is regularly set with the operating lever on flush left position, as previously described, it is possible on the Intertype quadding and centering device to set both the justified and the centered lines of the subhead with the operating lever constantly at center position. In setting the justified line, the operator sets the line spread indicator lever at 3 on the line spread scale. With the operating lever at center position, the line will justify to the full measure if it is of the proper length and contains a sufficient number of spacebands for the amount of expansion required. In setting the two succeeding lines, which are simply to be centered on the measure, the line spread lever is set at 0 on the scale, exactly as is done for quadded composition. This method of setting subheads is very convenient for the operator, because it eliminates the necessity of changing frequently from flush left (for the justified line) to center position and also minimizes the possibility of incorrectly set lines due to failure to set the operating lever properly.

While justified composition, particularly on short newspaper measures, can be obtained with the operating lever set at center position, *it should be remembered that when the largest part of the composition is to be justified, the lever should be placed at flush left position.* The quadding and centering device is designed to justify lines principally in this position.

Justification and Quadding Mechanism

In describing the two fundamental characteristics of the quadding machine, it was pointed out previously that the justification mechanism on such machines is designed not only to produce fully justified composition, but also to operate auxiliary mechanism related to the quadding of lines. The operation of the justification and quadding mechanism is completely automatic once the operator sets the main operating lever and the line spread lever for the type of composition desired. For purposes of clarifying the quadding and centering device and to assist in the adjustment and maintenance of the parts, however, the basic operation of the justification and quadding mechanism is presented in following material.

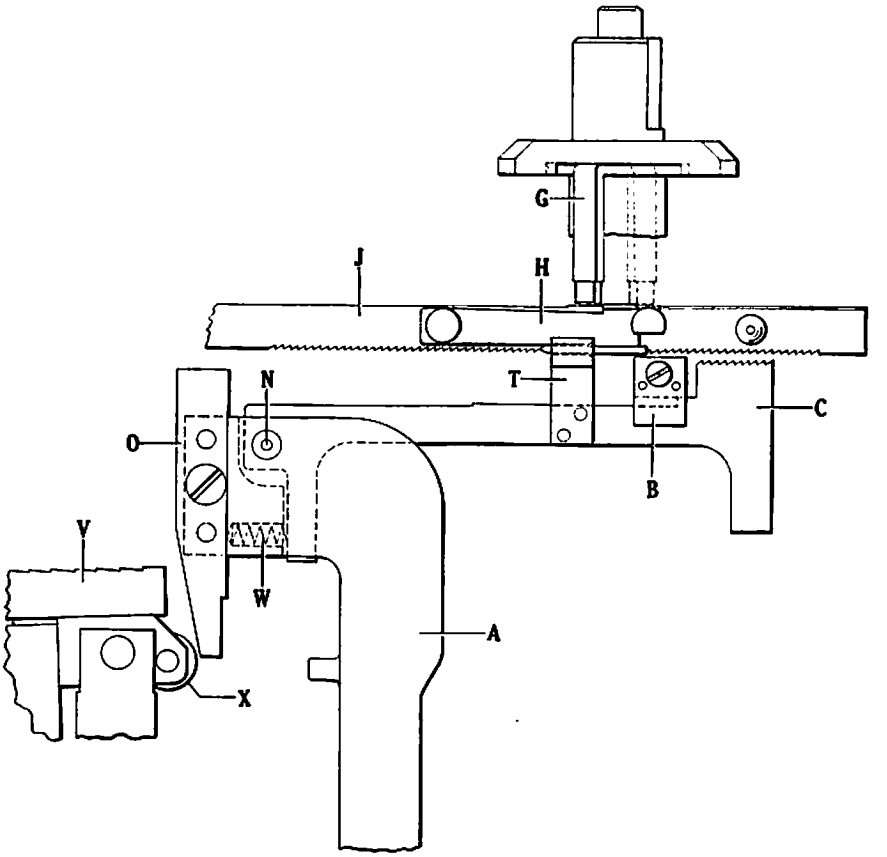

Fig. 108. Detail view of the parts which control the justification and quadding functions of the machine. *The justification or the quadding of the line depends upon the relationship between the line spread arm G and the line spread pawl H when first justification is about to occur.* The position of these parts at this time determines whether pawl *C* will engage or will be held down out of engagement with rack *J*. If the pawl engages the rack, the line is quadded; if the pawl is held down out of engagement with the rack, the line will justify, provided it is of the proper length and contains a sufficient number of spacebands for the required expansion.

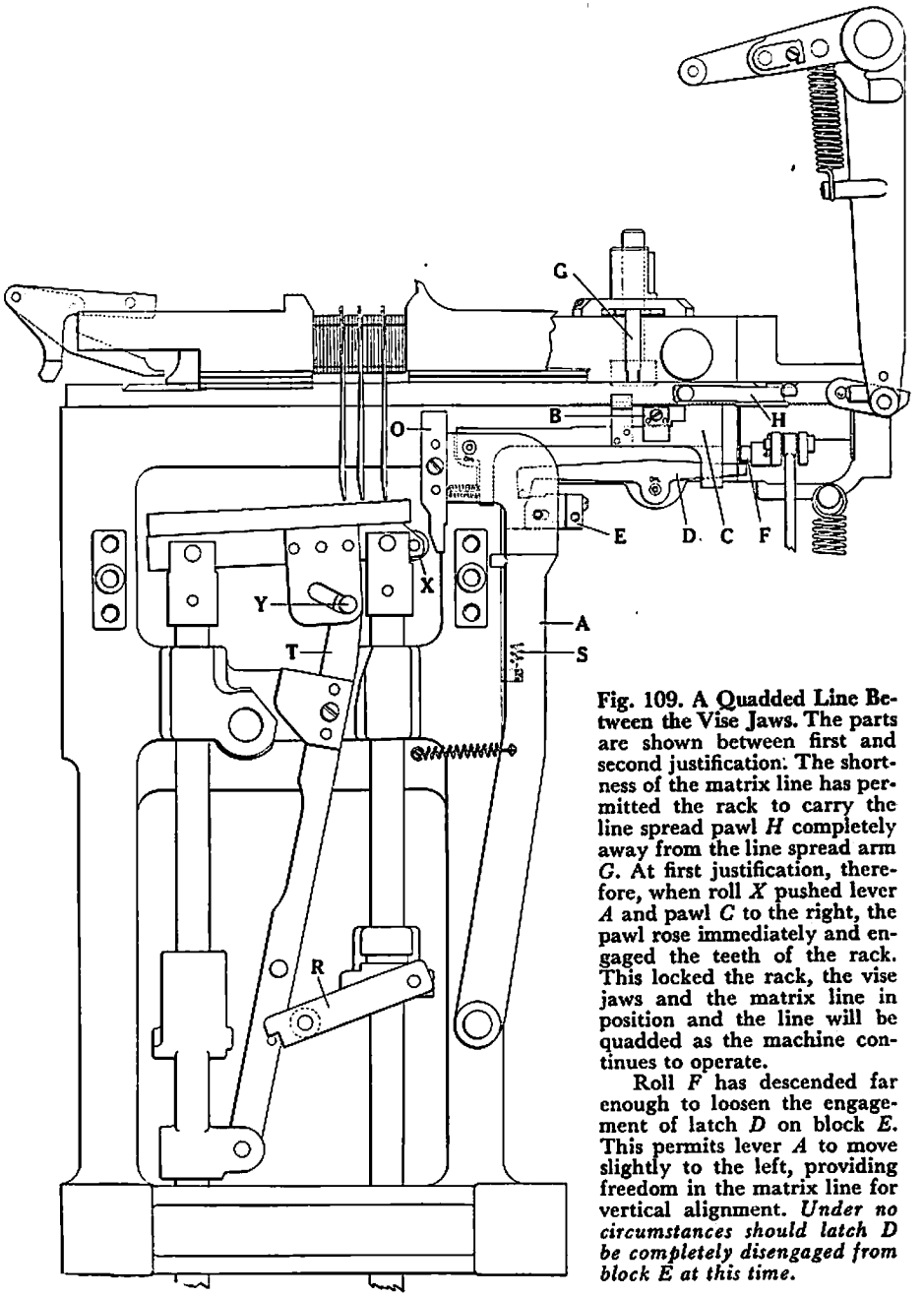

Fig. 109. A Quadded Line Between the Vise Jaws. The parts are shown between first and second justification. The shortness of the matrix line has permitted the rack to carry the line spread pawl *H* completely away from the line spread arm *G*. At first justification, therefore, when roll *X* pushed lever *A* and pawl *C* to the right, the pawl rose immediately and engaged the teeth of the rack. This locked the rack, the vise jaws and the matrix line in position and the line will be quadded as the machine continues to operate.

Roll *F* has descended far enough to loosen the engagement of latch *D* on block *E*. This permits lever *A* to move slightly to the left, providing freedom in the matrix line for vertical alignment. *Under no circumstances should latch D be completely disengaged from block E at this time.*

The principal parts of the justification and quadding mechanism are shown in detail in Fig. 108. *The justification or the quadding of the line depends entirely upon the relationship between the line spread arm G and the line spread pawl H when first justification is about to occur.* The line spread arm and the line spread pawl control the engagement of the vise jaw rack pawl *C* with the vise jaw rack *J*. The vise jaw rack pawl *C* is pivoted on a hinge pin *N* at the upper end of lever *A*. A compression spring *W*, interposed between a solid banking point and pawl *C*, continually urges the toothed end of the pawl upwards toward the teeth of rack *J*. The right end of pawl *C* engages normally under a step cut in the back of rest *B*, which holds the pawl down out of engagement with the rack until first justification takes place. After the pawl *C* is released from rest *B*, its engagement with the rack depends upon the position of the line spread arm *G* with respect to the line spread pawl *H*. If the projection at the top of pawl *H* is underneath arm *G*, the vise jaw rack pawl *C* will be held down out of engagement with rack *J* through rest *T*. *The rack, vise jaws and matrices will be free to move under these conditions and the line will justify.* If pawl *H* is *not* underneath arm *G* just before first justification, there will be nothing to prevent the vise jaw rack pawl *C* from rising immediately and engaging the teeth of rack *J*. *The rack and the vise jaws are held tightly under these conditions and the line is quadded.* In reading the following description, therefore, it should be borne in mind, as previously stated, that *the quadding or the justification of the line depends entirely upon the position of arm G with respect to pawl H when first justification is about to occur.* This statement has reference, of course, only to the mechanism of the quadding and centering device. The length of the line and the number of spacebands also have a bearing on the justification and quadding process.

The Quadding of the Line. When all of the composition is to be quadded to the left or to the right or centered, the line spread lever is set at 0 on the indicator scale. At this setting, the line spread arm *G*, Fig. 108, occupies the position shown by the solid lines. The lower end of the arm is moved completely to the left of the projection at the top of pawl *H*, as shown. When the first elevator descends and positions the matrix line between the vise jaws, the vise jaw latch is released, permitting rack *J* to be moved to the right by the vise jaw lever. The vise jaw or jaws which are engaged with the rack are then moved to position until they close tightly against the matrix line. When rack *J* moves to the right, of course, the line spread pawl *H* is carried with it. This leaves the vise jaw rack pawl *C* free to rise and to engage rack *J* immediately as soon as it is released from rest *B*. When the vise justification block *V* rises for first justification, therefore, roll *X* contacts cam *O*, moving lever *A* to the right. Pawl *C* is moved by the same action from under rest *B*, and spring *W* causes the toothed end of the pawl to rise and to engage the teeth of rack *J*. This action locks the rack, the vise jaws and the matrix line tightly in position. Just before the parts are locked in position, the justification block *V* is permitted to rise just high enough to drive the spacebands very slightly. At the same time, roll *X* exerts increasing pressure against cam *O*, pressing lever *A*, pawl *C* and rack *J* further to the right and locking the line tightly for the cast. The slight upward drive of the spacebands and the locking pressure of the parts just described produces a metal-tight seal for the cast.

A quadded line is shown in position between the vise jaws in Fig. 109. The vise jaws have closed against the line, the vise justification block has made its first upward stroke and pawl *C* has engaged the teeth of the right vise jaw rack. The vise closing lever has descended, permitting the left vise jaw to withdraw slightly from the matrix line. The vise closing link has also descended far enough to carry roll *F* down on latch *D*. This raises the left end of the latch and relaxes its grip on block *E*, permitting lever *A*, pawl *C*, the right vise jaw and the vise jaw rack to move *slightly* to the left. *This action is extremely important because it provides the freedom necessary in the matrix line for vertical alignment.* It should be borne in mind, however, that *latch D should under no circumstances be completely disengaged from block E at this time.*

After vertical alignment has occurred, the vise closing link rises, permitting spring *S* to pull latch *D* tightly over block *E* again. The vise justification block

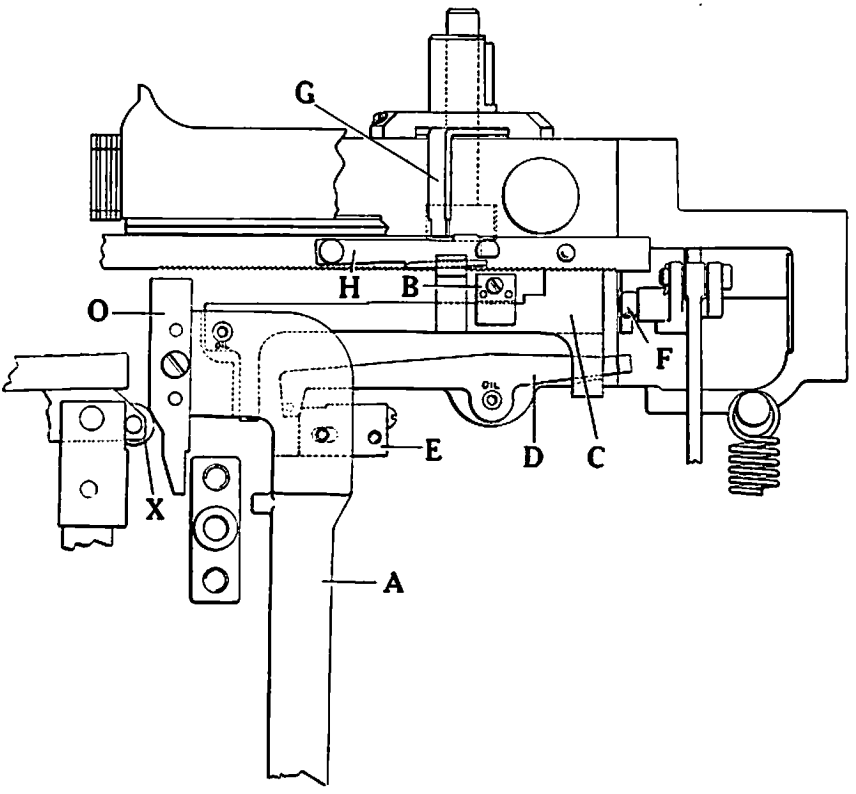

Fig. 110. Detail view, showing the position of the vise jaw rack pawl *C* and related parts with respect to a quadded line just before the cast. Since the line spread lever has been set on 0, arm *G* has no engagement with the line spread pawl *H*. Pawl *C*, therefore, engaged the rack as soon as first justification began and locked the rack, vise jaws and the matrix line in the quadded position. The line is now being held tightly between the vise jaws by the pressure of roll *X* against cam *O* and by the wedging action of latch *D* over block *E*. After the cast, the vise justification block will descend and release the pressure of roll *X* from cam *O*, but the matrix line will be held tightly until after the breakaway by latch *D* and block *E*.

then rises for second justification, causing roll *X* to contact cam *O* and to press lever *A* to the right again. Pawl *C* follows the same movement and locks the rack, the vise jaws and the matrix line tightly for the cast, as previously described. The parts are shown in this position in Fig. 110. Directly following the cast the vise justification block descends, carrying roll *X* away from cam *O*. While the mold is withdrawing the slug from the matrix line, however, the matrix line is held in position by the wedging action of latch *D* over block *E*. *This wedging action of latch D is of great importance,* because it prevents the matrices from moving during the withdrawal of the slug. Any movement of the matrices at this time will result in slurring of the characters on the slug. An improved wedge lock has been developed for the quadding and centering device and the justified quadding attachment to hold the matrix line more firmly between the vise jaws during the breakaway. This new device is described on pages 177 and 186. After the breakaway, roll *F* depresses latch *D* and pawl *C* sufficiently to disengage the pawl teeth from the rack teeth. This frees the matrix line and while the first elevator is rising to transfer position, the vise jaws and related parts are returned to their normal position.

Justification of the Line. Justified composition, as outlined briefly in the preceding material, is obtained by preventing the vise jaw rack pawl from engaging the teeth of the right vise jaw rack. When the pawl is held down out of engagement with the rack, the right vise jaw and the matrices are free to move and the vise justification block pushes the spacebands upward until line is fully justified.

When setting fully justified composition, the main operating lever is set on flush left position and the line spread lever is set for the required amount of expansion. This moves the line spread arm *G* to approximately the dotted position shown in Fig. 108. In flush left position, as previously described, only the right vise jaw is engaged with the rack. Consequently, when the first elevator positions the line of matrices and spacebands between the vise jaws and trips the vise jaw latch, the right vise jaw and the matrix line are pulled by the rack toward the left vise jaw until the line is clamped between the two jaws. If the assembled line has been set to within the limit of slack or looseness indicated on the line spread scale, the line spread pawl *H* is carried by the rack until it comes to position under line spread arm *G* (dotted outline). When pawl *C* is moved from under rest *B* during first justification, therefore, the line spread pawl *H*, banking under arm *G*, holds pawl *C* down out of engagement with rack *J* through rest *T*. This leaves rack *J* and the right vise jaw perfectly free to move. *The justification of the line, therefore, may be said to consist simply in preventing pawl C from engaging the teeth of rack J.*

An illustration of a justified line is shown in Fig. 111. The line of matrices and spacebands has been positioned between the vise jaws and the rack has moved the right vise jaw and the line against the left vise jaw. The line spread pawl *H* has been carried with the rack to position under arm *G*. The exact position of the pawl with respect to the arm is determined in this case, as in all cases, by the length of the line which has been sent in to the casting mechanism. Arm *G* is in position corresponding to the amount of expansion for which the line spread lever was set. Since the line was assembed to within the limit of looseness indicated on the line spread scale, pawl *H* came to position under arm *G* when the

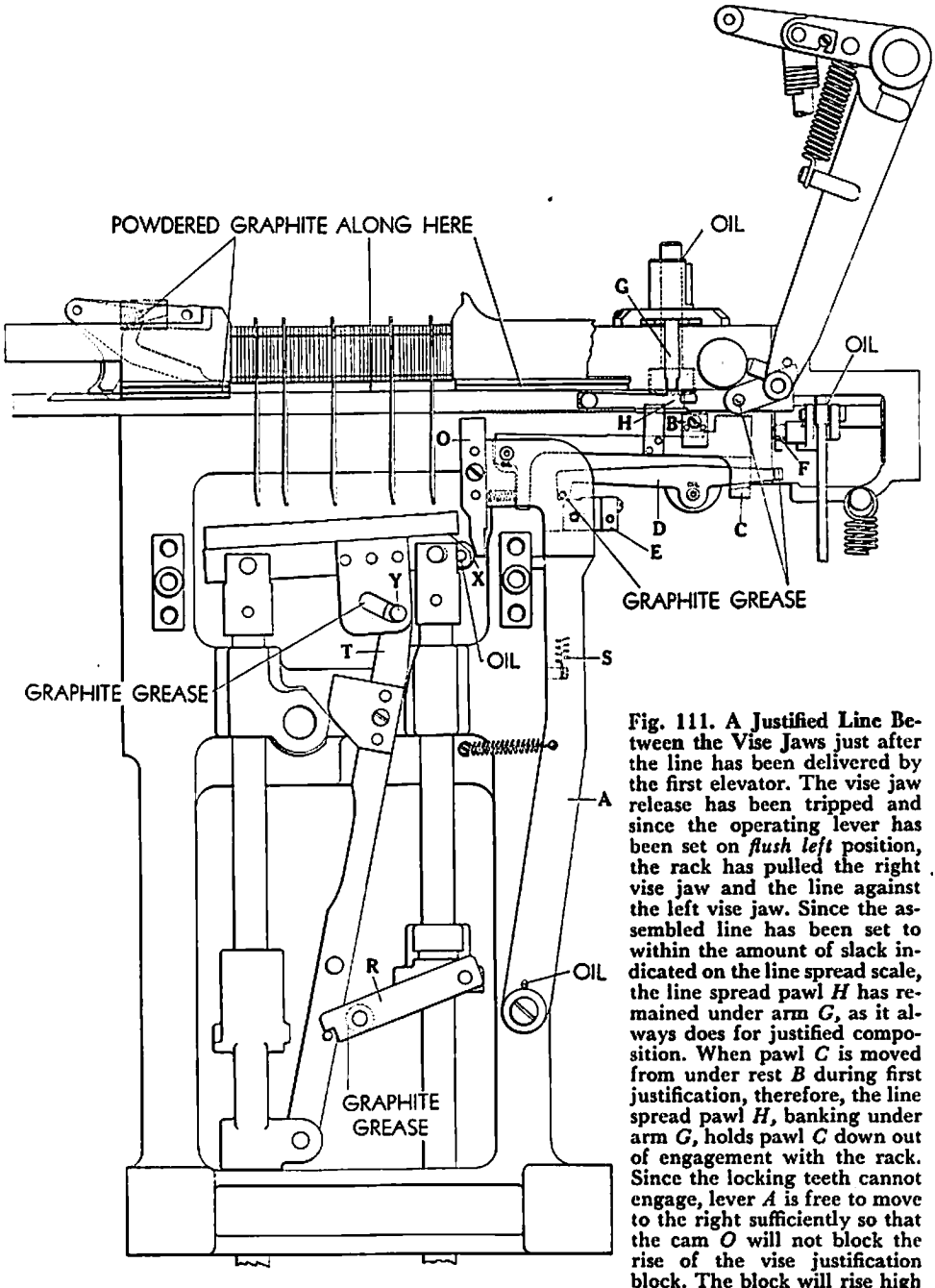

Fig. 111. A Justified Line Between the Vise Jaws just after the line has been delivered by the first elevator. The vise jaw release has been tripped and since the operating lever has been set on *flush left* position, the rack has pulled the right vise jaw and the line against the left vise jaw. Since the assembled line has been set to within the amount of slack indicated on the line spread scale, the line spread pawl *H* has remained under arm *G*, as it always does for justified composition. When pawl *C* is moved from under rest *B* during first justification, therefore, the line spread pawl *H*, banking under arm *G*, holds pawl *C* down out of engagement with the rack. Since the locking teeth cannot engage, lever *A* is free to move to the right sufficiently so that the cam *O* will not block the rise of the vise justification block. The block will rise high enough, therefore, to push the spacebands upward until the right vise jaw is moved back against its stop screw, thereby justifying the line to the full vise jaw measure.

line was moved against the left vise jaw by the rack and the right jaw. It should be noted that pawl *H* is always under arm *G* when justified lines are being set. The movement previously mentioned in connection with the rack and pawl is very slight, because justified lines are usually only 1 to 3 ems shorter than the distance between the vise jaws. The range of engagement provided for pawl *H* and arm *G* is sufficient to cover all justified work.

When the justification block rises for first justification, pawl *C* is tripped but is held out of engagement with the rack by arm *G* and pawl *H*. Since there is no obstruction to the upward movement of the vise justification block, therefore, the spacebands are pushed upward consecutively from left to right, causing the matrix line to justify to the full length until the right vise jaw is pushed back against its stop screw. It should be noted that the angular stroke of the vise justification block is opposite to that of the non-quadding block. This change was made because the slack in the line occurs at the right, due to the movement of the right vise jaw after the delivery of the line.

During second justification, the vise justification parts rise with the justification block straight, pushing the spacebands upward from right to left. This is accomplished by an actuating finger *R*, a brace *T* and a cam arrangement shown at *Y*. Finger *R* forces brace *T* to the left, straightening the justification block through the cam and pin device shown at *Y*.

When setting fully justified composition, it is possible, as stated previously, to send in a quadded line without changing the setting of the line spread lever. The quadding of the line, as always, is controlled by the position of pawl *H* with respect to arm *G*. If the line is short by more than the amount indicated on the line spread scale, pawl *H* is carried past arm *G* when the line is delivered. During first justification, therefore, when pawl *C* is released from rest *B*, the pawl rises immediately and engages the teeth of the rack. The line, therefore, is quadded automatically because it was shorter by more than the amount indicated on the line spread scale.

Justification and Quadding Adjustments

Most of the parts of the justification and quadding mechanism are fixed in position and require no adjustment. The following parts mentioned below are the only ones which may require setting from time to time. Proper adjustment of these parts is very essential to the efficient operation of the machine.

Vise Closing Connecting Rod Adjusting Screw. Directly after the cast, roll *F*, Fig. 111, depresses pawl *C* through latch *D* so that the pawl can return to normal position under rest *B*. The pawl, of course, must lock under the rest so that it will not interfere with the movement of the rack while the line is being delivered to the vise jaws. The latching of the pawl under the rest is controlled by an adjusting screw *D*, Fig. 103, on the vise closing connecting rod. With the machine at transfer position, the screw should be turned until the pawl slips under the rest with about 1/64″ clearance. Tighten the lock nuts securely when the setting is obtained.

Vise Jaw Rack Pawl Lever Latch Block. Block *E*, Fig. 111, is adjustable with respect to latch *D*. The block must be set so that latch *D* locks over it at the same

time that pawl *C* disengages from block *B*. In addition, latch D must have sufficient bite on block *E* to prevent movement in the line of matrices while the slug is being withdrawn. The amount of this bite will vary with the length of the lines, but under no conditions should the engagement be less than 1/16". To set the block, send in a short line composed of ETAOIN and observe the bite of latch *D* on block *E*. Next, send in the same line plus a thin space and observe the bite again. Continue this until the original line plus six thin spaces has been tried. The setting of the block will be correct when the smallest amount of bite is 1/16". The latch spring *S* must have sufficient tension to hold latch *D* tightly on block *E* during the breakaway. A load of 15 to 17 pounds should stretch the spring to 4½" between the loops. The result of a weak spring will be similar to a poor adjustment of block *E* in that the characters on the slug may be slurred during the breakaway.

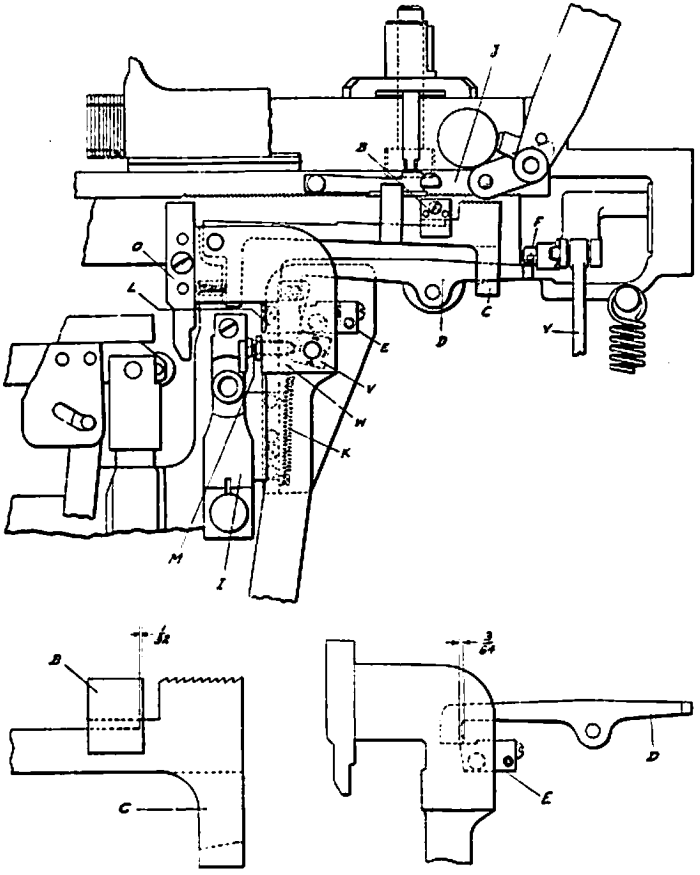

Fig. 112. The Improved Wedge Locking Device applied to the quadding and centering device. The wedge lock consists principally of a wedge *W* and a block *V*, which hold the matrix line more firmly between the vise jaws when the slug is being withdrawn from the matrix line. This prevents slurring of the type characters on the slug.

The functions of the latch arrangement described above have been incorporated in an improved wedge lock device on the latest quadding machines. This new device is described below.

Improved Wedge Locking Device

The improved wedge lock was developed to hold the matrix line more firmly between the vise jaws when the slug is being withdrawn from the matrices. The device is shown in Fig. 112. The wedge lock consists chiefly of a wedge *W* and a block *V*. During the breakaway, pawl *C* is engaged with rack *J* and wedge *W* is held tightly between extension *L* and block *V* by spring *K*. This wedging action holds the rack and related parts firmly in position, preventing movement of the vise jaws or the matrices when the mold is withdrawing the slug.

Block *V* is provided with four surfaces, which are at increasing distances from the pivot of the block. Surface *1* is nearest the pivot and surface *4* is furthest away. The surfaces of the block increase in increments of .005". In applying the block, it may be necessary to try each of the four surfaces. The surface which should be left facing wedge *W* is the one which will insure a positive wedging action when pawl *C* is engaged with rack *J* and various lengths of lines are held between the vise jaws. The best way to test the setting is to send over a short line, such as ETAOIN, and observe the position of wedge *W* with respect to block *V*. Then send over the same line plus a thin space and observe again. Continue this until the original line plus six thin spaces has been tried. The correct surface of block *V* will be in position if the wedging action is present in all tests. *Latch D must not touch block E,* otherwise the holding action of wedge *W* will be defeated.

Adjustments. With the machine in normal position, disconnect the vise closing connecting rod *Y* from the vise closing lever. Be careful not to lose the small roller in the link. The object of disconnecting the link is to raise roll *F* so that latch *D* will rest on block *E* and pawl *C* will engage block *B,* as illustrated. Adjust screw *M* until pawl *C* engages block *B* by 1/32", as illustrated. Also, block *E* should be set to provide 3/64" rest for latch *D,* as indicated in the detail drawing. The purpose of these adjustments is to insure engagement of pawl *C* with rack *J* before latch *D* drops off block *E*.

A cam shoe (S-386) is added to the justification cam to permit pawl *C* to engage rack *J* before the spacebands are driven upward at first justification.

The wedge locking device is applied to the justified quadding attachment and the two settings outlined above are made in the same way. All other adjustments of the quadding and centering device and the justified quadding attachment are made as described.

Removal of Parts and Maintenance

The vise mechanism for the quadding and centering device can be removed with speed and convenience because all of the parts are either doweled in position or located positively by other means. There is no need to disturb any of the adjustments in the process of removal due to the accessibility of the parts. Many of the mechanisms are assemblies in themselves and can be removed from the machine as units.

Right-hand Vise Jaw Rack. The removal of right vise jaw rack *1*, Fig. 102, consists simply in following a definite procedure for disengaging the vise jaws from the rack. Open the vise frame. Place the operating lever *4* on *flush left* position, set the vise indicator scale on 30 ems, make sure that the left vise jaw is against its stop, then place the operating lever on *flush right* position. Depress the vise jaw release lever *33* and pull rack *1* to the left until the left vise jaw meets the right jaw. Change the operating lever to *flush left* position. This releases the right vise jaw from the rack and the rack can now be removed by sliding it out to the left. The inside of the vise cap and the rack can be cleaned and lubricated with powdered graphite when the rack has been removed. To replace the rack, reverse the procedure of removal.

The Vise Mechanism. To remove the complete mechanism from the vise cap, first remove the rack as outlined above. Remove the left vise jaw support overlapping the top of lever *A*. Remove the assembled vise jaw rack gear and line spread device and the left vise locking handle. Take out the wing pin at the bottom of the vise closing link, being careful not to lose the small roller in the slotted track of the link. After the three screws holding the vise closing bracket are removed, the assembled vise closing attachment, vise jaws and other parts can be removed from the vise cap. Reverse the procedure of removal to assemble the parts.

Maintenance. The Intertype quadding and centering device, as indicated in the foregoing description, is designed on the simplest and most rugged principles of construction. Complicated constructions have been avoided to insure trouble-free operation of parts. Like all fine mechanisms, however, the efficiency with which the quadding and centering device operates will depend to a great extent upon the care and maintenance which the parts receive in service. Some of the maintenance procedure has been indicated already. In addition, the vise frame parts requiring lubrication are indicated in Fig. 111 with the type of lubricant to be used. If the quadding and centering device is cleaned periodically and lubricated as directed, it will operate with maximum efficiency in service.

The Justified Quadding Attachment

The universal Intertype autospacer (quadding and centering device) can be equipped with a device known as the justified quadding attachment. This attachment increases the range of work possible with the autospacer without affecting its original features. With the justified quadding attachment, it is possible to set fully justified lines automatically with uniform indentions up to 15 ems on the right of the line. Indentions of any length on the left of the line are obtained as usual by means of the vise adjusting knob. The original features of the autospacer are still present. Lines can be justified to full measure, quadded to the left or to the right and centered by means of the operating lever.

From the operator's viewpoint, the chief differences between the ordinary autospacer and the new type with the justified quadding attachment are the operating lever *A*, Fig. 113, the knob *B* and the two scales *D* and *E*. Lever *A* controls the engagement and disengagement of the justified quadding device. When the lever is moved to the left, the justified quadding attachment is placed in oper-

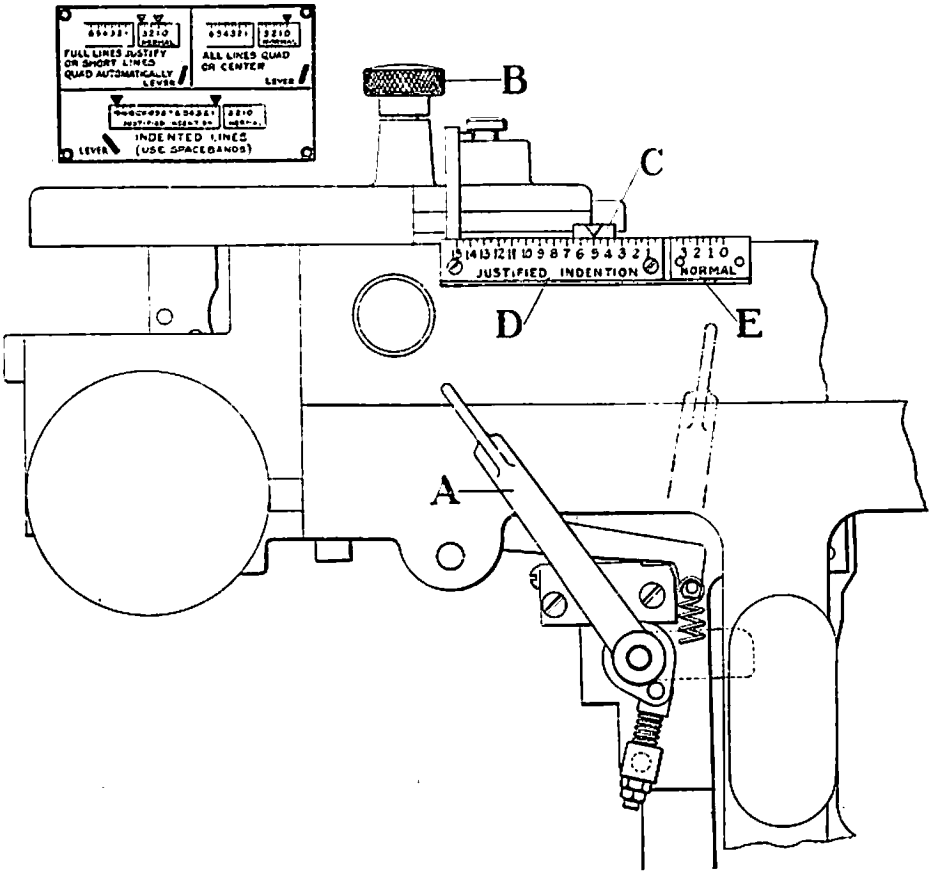

Fig. 113. Front View of the Justified Quadding Attachment, showing the simple operating mechanism. The instruction plate shown in the illustration is mounted on top of the device. The plate shows in picture form the position of the pointer *C* with respect to the two scales *D* and *E* and the positions of the lever *A* for different kinds of composition.

ation. When the lever is moved to the right, the attachment is disengaged from operation and the quadding and centering device is ready to be used for ordinary quadding and centering of lines of various lengths and also for setting fully justified composition. The knob *B* controls the movement of pointer *C* along the justified indention scale *D* and the normal scale *E*. The pointer is moved by lifting knob *B* slightly and turning it in the desired direction. When the knob is dropped, the pointer is locked in position.

The Normal Scale corresponds exactly in function to the line spread scale used on the ordinary quadding and centering device. When the pointer *C* is on the normal scale *E* and operating lever *A* is to the right, the autospacer functions in every respect as described on the preceding pages. In setting ordinary composition having full justified lines, pointer *C* is moved to the normal scale and set for the desired amount of expansion. Operating lever *A*, of course, is swung to

the right under the normal scale. As on the ordinary autospacer, full lines with spacebands will justify and short lines will quad automatically. To quad or center all lines, simply set the pointer on zero and move the operating lever to the right the same as for full lines.

Use of the Justified Quadding Attachment. As stated previously, the justified quadding attachment makes it possible to set fully justified lines with indentions in half-em increments up to 15 ems on the right and indentions of any length on the left. The indentions on each side of the line are controlled separately. Indentions on the right of the line are set by lifting knob *B*, Fig. 113, and turning the knob until pointer *C* registers with the desired setting on the justified indention scale. Indentions on the left of the line are obtained as usual by moving in the left vise jaw by means of the vise adjusting knob. Since the left and right indentions are controlled separately, it is possible to locate the type line in any desired position on the face of the slug. For example, suppose that a 20-em line is to be set on a 30-em slug with a 7-em indention on the right and a 3-em indention on the left. In this case, pointer *C* should be set on 7, operating lever *A* should be moved to the left and the left vise jaw should be moved in until the vise indicator rod em scale is set on 27 ems. The assembler slide, as usual, is set for the length of the line, which in this case is 20 ems.

After the length of the line has been determined and the indention settings have been made, matrix lines are assembled in the same manner as on a regular machine. Since the lines are expected to justify to a predetermined length, provision must be made for the expansion of the spacebands. *The assembled lines should be slightly shorter than the measure being set.* Lines which are three picas short of the measure will justify if there is a sufficient number of spacebands for the required expansion. Lines short by more than three picas will quad out automatically if there are at least three spacebands in the line. As a general rule, all lines must contain at least two spacebands of ordinary thickness in order for the machine to cast.

Correct Adjustment of the Assembler Slide Finger is highly important on a machine equipped with the justified quadding attachment. When setting lines with indentions on the right, the distance between the vise jaws is greater than the length of the line being set. Since the right vise jaw does not move until the line of matrices has been positioned between the vise jaws, it is possible to send overset lines in to the casting mechanism without stalling the machine. Consequently, an overset line will cast and since the line is already longer than the desired measure, the indention on the right of the overset line will be less than that on the other slugs. The adjustment of the assembler slide finger should therefore be checked periodically to insure accuracy at all times. The finger should be set slightly short to offset the wearing of the assembler star wheel.

Mechanism of the Justified Quadding Attachment

The basic operating mechanism of the justified quadding attachment consists of the vise jaw rack pawl lever cam *R*, Fig. 114, the vise jaw rack pawl rest *PQ*, the line spread pawl *H* and the line spread and indention pawl gage *G*. Cam *R* is pinned to a shaft on the front end of which is fastened the operating lever *A*,