April 6, 1954 S. D. FORBES 2,674,184

BOLT ADJUSTING ATTACHMENT FOR PRINTING PRESSES

Filed July 2, 1951

Fig. 1

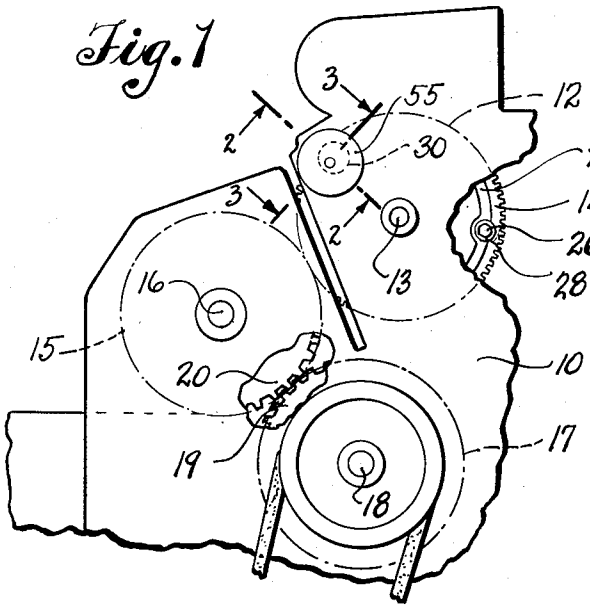


Fig. 4

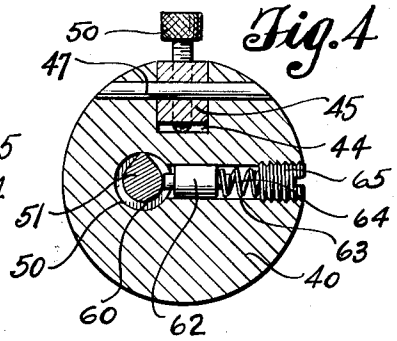


Fig. 5

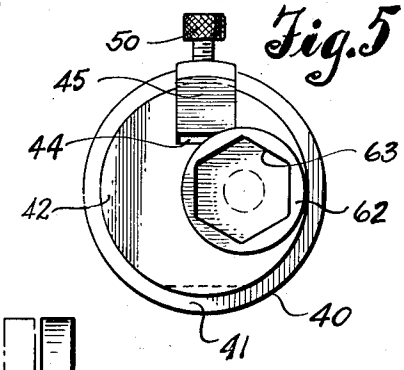


Fig. 2

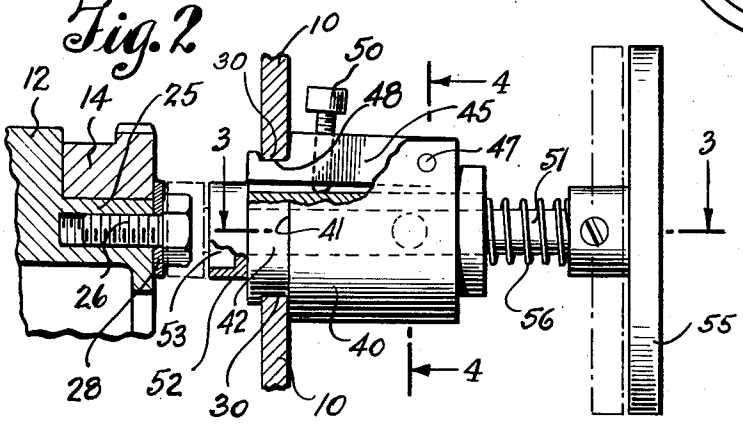
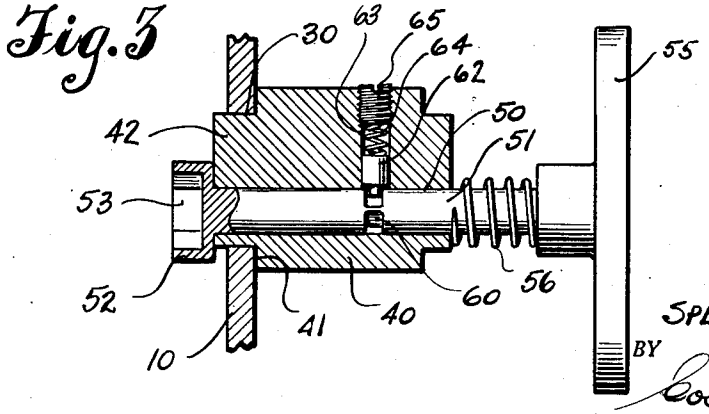


Fig. 3



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BOLT ADJUSTING ATTACHMENT FOR PRINTING PRESSES

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5 Claims. (Cl. 101—248)

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This invention relates to attachments that are applicable to printing presses of the "Multilith" or "Davidson" types, as a means for effecting the ready release of and also the tightening or securement of the plate cylinder lock bolt, as required for the making of plate cylinder adjustments.

For better understanding of the present invention it will be explained that in the use of such printing presses, and especially when multicolor work is being run, it is frequently required that a relative adjustment of the plate cylinder and its driving gear be made in order to effect a desired registration of an impression with matter on the paper sheet, or to effect an up or down adjustment of the imprint on the sheet. To those who are familiar with such printing presses, it is known that the plate cylinder has a driving gear mounted concentrically on one end thereof and this gear is held against relative turning or slippage on the cylinder by a clamp bolt, the head of which is exposed at the end of the cylinder in order that a wrench can be applied thereto. When the bolt is loosened, the gear can be adjusted relative to the cylinder thus to adjust the position of the plate cylinder relative to the blanket cylinder as a means of obtaining desired raising or lowering of the material as printed on the paper sheets with which the blank cylinder contacts.

In view of the above explanatory matter, it has been the principal object of this invention to provide as an attachment device, novel and easily operable means, that may be readily applied and permanently secured to the press in position for ready use as a manual means for holding the plate cylinder against movement during an adjustment and at the same time for loosening the plate cylinder lock bolt in order that an adjustment of its driving gear relative thereto can be made.

It is a further object of the present invention to provide means for the above stated purposes, that can be applied to the press frame without necessitating any change or alteration therein and which, as applied, will in no way interfere with the normal use and mode of operation of the press.

Further objects of the invention reside in the details of construction and in the combination of parts and in their mode of operation as will hereinafter be fully described.

In accomplishing these and other objects of the invention I have provided the improved details of construction, the preferred forms of which

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are illustrated in the accompanying drawings, wherein—

Fig. 1 is a side view of a portion of a "Multilith" or similar type printing press, illustrating the present invention and its place of application relative to the plate cylinder of the press.

Fig. 2 is a side view of the present attachment device, with a part thereof broken away for better illustration, and showing a part of the frame of the press to which it is applied and a part of the plate cylinder and its driving gear as secured in adjustment by a releasable lock bolt.

Fig. 3 is an enlarged sectional view of the present attachment device, taken on the plate of line 3—3 in Fig. 1.

Fig. 4 is a cross-section of the attachment device taken on line 4—4 in Fig. 2.

Fig. 5 is an inner end elevation of the present device.

In Fig. 1 of the drawings, a portion of a vertical side plate of the press for which this attachment is designed for use is designated by numeral 10. Contained within the frame of the press, and adjacent the plate 10, is the plate cylinder 12. This is mounted on a horizontal shaft 13 and is equipped with a driving gear 14 as presently described. Adjacent the plate cylinder, is the blanket cylinder 15, rotatably supported by a horizontal shaft 16, and adjacent thereto is the press cylinder 17, mounted in the frame on a drive shaft 18. It is indicated in Fig. 1 that the plate cylinder is driven in unison with the press and blanket cylinders by a gear train which includes a gear wheel 19 mounted on the shaft 18, a gear wheel 20 fixed on the blanket cylinder shaft 16, and the driving gear 14 of the plate cylinder.

It is shown in Figs. 1 and 2, that the gear 14 is of ring gear type and is fitted rotatably to a flange 25 that is formed concentrically on the end of the plate cylinder. The gear 14 is normally held in place on the flange, and secured against rotation relative to the cylinder, by a lock bolt 26 which has its shank threaded into the flange of the cylinder. A washer 28 is applied about the shank, beneath the bolt head, and this is adapted to be clamped by the bolt against the ring gear as shown in Fig. 2. When the bolt is loosened, the clamping effect of the washer is released and the gear 14 can then be shifted relative to the cylinder in its circumferential direction. When the bolt is again tightened, the washer 28 will be clamped by the bolt head against the gear 14 thus to secure the position of adjustment of the gear on the cylinder.

Formed in the side plate 10 of the frame structure of the machine is a round hole, or opening, designated by the dotted circle 30 in Fig. 1, with which the head of the clamping bolt 26 can be aligned and through which hole a wrench can be applied to engage the bolt head for the adjustment of the bolt. Ordinarily a T-wrench is used for this purpose but the use of such a wrench is not entirely satisfactory due to its difficulty of application, and the inability to hold the cylinder against rotative movement by means of the T-wrench while adjustment of the gear is being made. The inability to thus hold the cylinder often results in damage and delays, as will be understood by those familiar with such presses and manner of making adjustments.

The present attachment is adapted to be readily applied to the plate opening 30 and to be secured permanently therein as an ever ready, easily operated device for the release or tightening of the clamp bolt 26. In its present preferred form of construction, the attachment device comprises a metallic body or block 40, round in cross-section, as seen in Fig. 4, and having its inner end portion diametrically reduced to provide an annular shoulder 41 at the end of the body in a plane perpendicular to the axis of the body and a mounting shank 42 of such diameter as to permit it to be projected through the opening 30 of the frame plate 10 as has been shown in Figs. 2 and 3, thus to seat the annular shoulder flatly against the outer face of plate 10 about the opening 30.

Formed in and along the top side of the block 40, is a channel 44 in which a lever or bar 45 is contained. At its outer end the bar is pivotally secured by a pin 47 passed through the bar and body as best shown in Figs. 2 and 4. Normally the top edge of the bar is flush with the outer surface of the body, and at its inner end the bar is cut down to the extent of the reduction in diameter of the body to produce the shoulder 41 and is also formed in that end with an upwardly opening notch 48 designed to receive the adjacent edge portion of the plate 10 therein, as seen in Fig. 2, to secure the mounting shank of the device in the plate opening.

In order to effect this holding connection between plate 10 and body 40, a set screw 50 is threaded downwardly through the free end of the bar 45 to engage with the base surface of the channel 44. Thus, after the body 40 has been applied to the plate opening, as seen in Figs. 2 and 3, the free end of the bar 45 can be lifted, by a downward threading of the screw 50 while in contact with the bottom of the channel, thus to lift the outer end of the bar 45 and to seat the top edge of the plate opening in the bar notch 48 and to apply such holding pressure that the device will thus be rigidly held in the plate opening.

Formed through the block, or body 40, parallel with its axis and slightly offset therefrom as best shown in Figs. 3 and 5, is a bore or hole 50 in which a shaft 51 is fitted for rotation and longitudinal movement. At its inner end, the shaft 51 is equipped with a head 52 formed with a socket 53 that is adapted to receive the head of the lock bolt therein as has been indicated by the dotted line position of the socketed head in Fig. 2.

At its outer end, the shaft 51 is equipped with a handle in the form of a circular disk 55. Between the outer end of the body 40 and disk 55, a coiled spring 56 is applied about shaft 51 under

compression to urge the shaft outwardly and move the socketed head 52 free and clear of the head of the clamp bolt of the plate cylinder.

To prevent any accidental inward movement of the shaft 51 while the press is in operation, shaft 51 is formed with a circumferentially extending channel 60, shown in Figs. 3 and 4, and is adapted to receive therein the inner end portion of a locking pin 62 that is contained in a radial bore 63 in the block as shown in Fig. 3. The pin is urged inwardly by a coiled spring 64 held by a plug 65 threaded into the outer end of the bore. The base surface of the channel 60 merges at one side of the shaft into the surface of the shaft 51, thus by axially turning the shaft by means of its handle member, the pin 62 can be automatically disengaged therefrom, and then with the shaft 51 aligned with the bolt 26, the shaft can be pushed inwardly and the socketed head 52 engaged with the head of the clamp bolt as required for turning the bolt.

In applying the attachment device to the frame plate 10, the set screw 50 is first adjusted outwardly to permit the bar 45 to be disposed entirely within the body channel 44. Then, the reduced inner end portion 41 of the body is inserted through hole 30 of plate 10, and the body held in place by hand while the plate cylinder is rotated to bring the clamp bolt into alignment with the hole 30. The shaft 51 is then shifted inwardly by inward pressure against handle 55 and the body 40 is turned axially as may be required to align the shaft 51 with the bolt 26 and cause the head of the bolt to be seated in the socket 53 of the shaft head 52, after the head 52 has thus been seated over the head of the clamp bolt, the set screw 50 is turned down, thus to swing the free end of bar 45 outwardly and cause the notch 48 in its outer end portion to receive the edge of the plate at the top of opening 30, therein, as in Fig. 2, to rigidly and securely lock the body 40 in the frame plate 10 for use at any time.

When it is desired to make an adjustment of the plate cylinder, the cylinder is first rotated to position, then the shaft 51 is rotated axially to position to automatically disengage the lock pin 62 therefrom, then the shaft is pressed inwardly against pressure of spring 56 to engage the clamp bolt head 26 with the socketed head 52. Then by turning the handle 55 the bolt 26 can be loosened.

There is an advantage in the use of the present device aside from its use for turning the clamp bolt. This resides in the fact that when the clamp bolt is properly engaged by seating its head in the socket 53 of the shaft head 52, the plate cylinder will be positively held against turning, yet at the same time the bolt can be loosened or tightened. When the clamp bolt is in a loosened condition, a hand wheel not shown but which is fixed to shaft 18, can be turned and thus, through the gear train previously mentioned, the gear 14 will be moved on the plate cylinder to effect the desired relative adjustment of gear and its mounting cylinder. As soon as an adjustment has been completed the handle 55 is released and the spring 56 snaps the head 52 to its disengaged position where it will be locked by the latch pin 62.

Such devices are easy to apply; easy to use, and are always in position for use. The device serves not only to turn the clamp bolt, but also will hold the plate cylinder against rotative movement while an adjustment is being made.

Having thus described my invention, what I claim as new therein and desire to secure by Letters-Patent, is—

1. In a printing press including a frame and a plate cylinder rotatably supported therein and equipped with a plate adjustment securing bolt with exposed head; an attachment device comprising a body equipped with means for its fixed securement to the frame axially parallel with the cylinder and bolt, a shaft mounted in the body for rotary and for opposite longitudinal movements therein, and extended from the opposite ends of the body, the axis of the shaft being eccentric of the body axis to provide for rotative adjustment of the shaft toward or from the axial line of the cylinder by rotative adjustment of the body in the frame opening, a head on one end of the shaft adapted by inward movement of the shaft in the fixed body to be engaged with the bolt head for turning the bolt when the said heads are engaged.

2. A combination of parts as recited in claim 1 wherein the body is secured to the frame by a latch means and the handle member is provided on the outer end of the shaft for effecting its rotation and inward movement to engage its head with the bolt head.

3. A combination of parts as recited in claim 2 wherein a spring means acts against the shaft to normally retain its head disengaged from the bolt head.

4. A combination of parts as recited in claim 1 wherein the shaft is formed with a circumferentially directed channel, a spring pressed lock pin mounted in the body and adapted to seat in said channel to hold the shaft against inward movement, the bottom of the said channel merging into the outer surface of the shaft at one side thereof to provide for an automatic release of the pin by the turning of the shaft.

5. A combination as recited in claim 1 wherein the body is formed with a longitudinal channel along one side, a latch bar contained in said channel and pivoted at one end for inward and outward swinging at its other end, and provided at said other end with a notched portion to project through the plate opening and engage with the frame to secure the body in the opening, and a set screw threaded through the latch bar to move it to and secure it in holding position.

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