Aug. 11, 1936. E. SCHUESSLER 2,050,546

NONREPEAT ATTACHMENT FOR PUNCH PRESSES AND THE LIKE

Filed Jan. 22, 1935

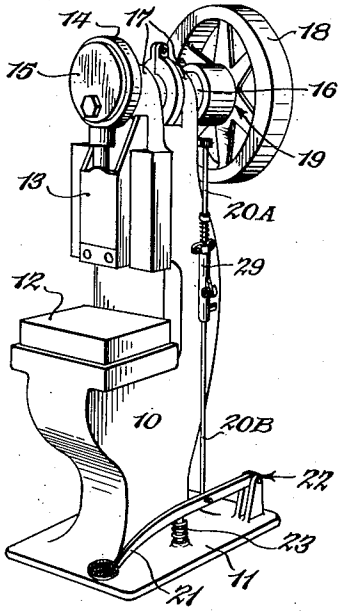


Fig. 1.

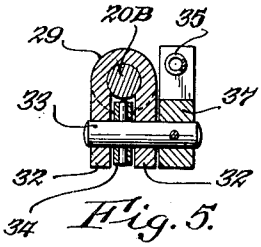


Fig. 5.

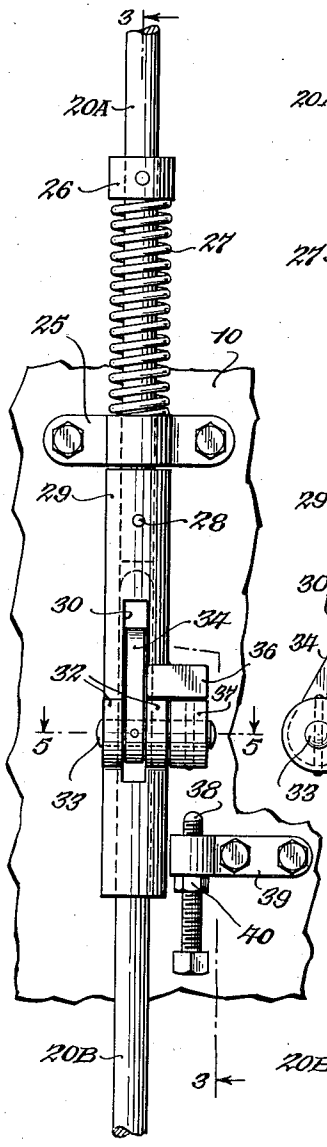


Fig. 2.

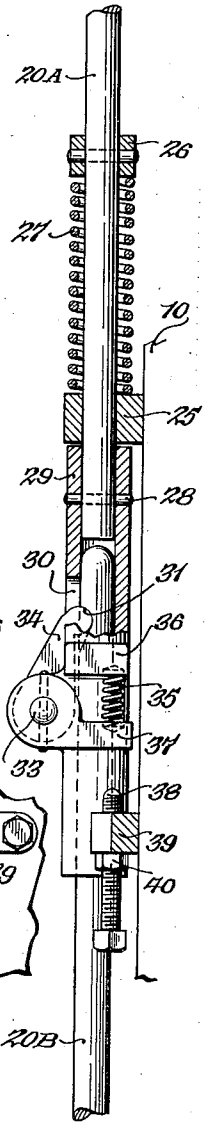


Fig. 3.

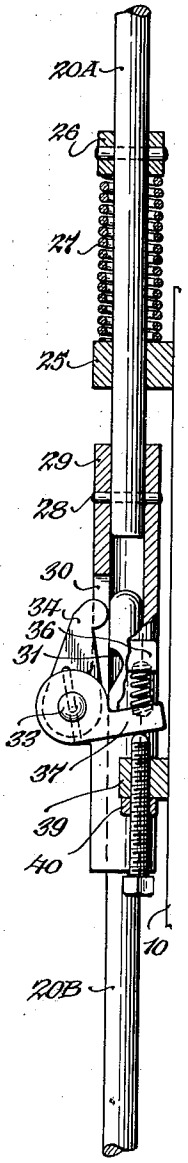


Fig. 4.

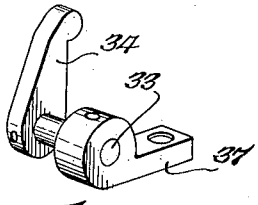


Fig. 6.

Inventor

Emil Schuessler

By Popp and Popp

Attorneys

Patented Aug. 11, 1936

2,050,546

UNITED STATES PATENT OFFICE

2,050,546

NONREPEAT ATTACHMENT FOR PUNCH PRESSES AND THE LIKE

Emil Schuessler, Buffalo, N. Y.

Application January 22, 1935, Serial No. 2,903

4 Claims. (Cl. 192—82)

This invention relates to a non-repeat attachment for punch presses and the like and more particularly to such an attachment which is adapted to be provided on punch presses which are unequipped with a non-repeat clutch so that after the attachment is in operation the operator upon depressing the treadle will effect but a single operation of the punch press after which he must deliberately release the treadle before he can again operate the press. By this means the press is much safer to operate inasmuch as there can be no unexpected operation of the press with the possible injury to the operator.

The principal object of the present invention is to provide an attachment which is simple and inexpensive in construction and can be easily applied to any type of punch press or like machine so as to increase the factor of safety.

Another purpose of the present invention is to provide such an attachment which is entirely reliable in its operation and in which there is no danger of a failure of the attachment, such failures being doubly dangerous as they are entirely unexpected.

A further aim of the present invention is to provide such an attachment which is conveniently adjustable and is compact in construction and is also located out of the work zone so as to not interfere in any way with the normal use of the press and also is so located as to not interfere with the adjustment or repair of any other parts of the press.

Another aim is to provide such an attachment which will operate efficiently and will not get out of adjustment or require repair for a long period of time.

In the accompanying drawing:

Fig. 1 is a perspective view of a punch press showing my non-repeat attachment applied thereto.

Fig. 2 is a vertical, side elevation of my attachment showing it applied to the punch press shown in Fig. 1.

Fig. 3 is a vertical section, taken generally on line 3—3, Fig. 2.

Fig. 4 is a view similar to Fig. 3 showing another position of the parts.

Fig. 5 is a cross section, taken on line 5—5, Fig. 2.

Fig. 6 is a perspective view of the pawl or detent forming a part of the attachment.

The attachment made in accordance with my invention can be applied to punch presses or like machines of any form and is shown in Fig. 1 as applied to a punch press comprising a frame 10 mounted on a base 11 and carrying a bed 12 on which the work is placed. The work is operated upon by tools carried by a slide 13 which is reciprocated by an eccentric 14 around an eccentric 15. The eccentric 15 is mounted on a main horizontal drive shaft 16, this shaft being journalled in bearings 17 formed in the upper part of the frame 10. A pulley 18 is loosely mounted on the drive shaft 16 and is thrown into and out of engagement with the drive shaft by a clutch indicated generally at 19. This clutch is operated by a rod which, for the purposes of the present invention, is cut into two sections 20^a and 20^b. The lower end of this rod is connected to a treadle 21 which is pivoted at its rear end to the base 11 of the frame, as indicated at 22. The treadle 21 is normally held elevated by a spring 23.

With the punch press shown, when not equipped with the non-repeat attachment forming my invention, the operator steps upon the treadle 21 thereby drawing the rod 20^a, 20^b downwardly, which movement of the rod closes the clutch so that the rotating pulley couples with the main drive shaft 16 and rotates the eccentric 15 so as to reciprocate the slide 13. In the absence of provision to prevent it the slide 13 will, of course, continue to reciprocate as long as the operator keeps the treadle depressed. In the event that the operator does not remove his foot from the treadle in time a second reciprocation may be unexpected and an injury of serious nature may result. It is to guard against such injuries that the present invention is intended and the attachment embodying the present invention is interposed between the two sections 20^a and 20^b of the treadle rod so as to prevent a repeated operation of the press until the operator deliberately releases and again depresses the treadle.

As previously stated the shipper rod, with which all presses of this character are equipped, is cut into two sections, 20^a and 20^b, and my attachment is interposed between these two sections. The attachment includes a bracket 25 which is bolted to the side of the frame 10 so as to guide the lower end of the upper section 20^a. Above this bracket a collar 26 is secured to the section 20^a and a helical compression spring 27 is interposed between the collar 26 and the bracket 25 so that the upper section 20^a of the shipper rod is yieldingly held in an elevated position in which position the clutch 19 is open so that the pulley 18 rotates freely on the drive shaft 16.

Secured to the lower end of the upper section 20^a below the bracket 25 by means of a pin 28 or in any other suitable manner is a sleeve 29 which extends downwardly and at all times encases the upper end of the lower shipper rod section 20^b. At one side the sleeve 29 is formed to provide a vertical slot 30 which slot registers with a notch 31 provided in the upper end of the lower section 20^b. On opposite sides of the slot 30 outwardly extending ears 32 are provided on the sleeve 29, these ears carrying a pin 33. A dog or pawl 34 is pinned or otherwise fastened to the pin 33 and is located between the ears 32 so as to extend through the

slot 30 and be engageable with the notch 31 in the upper end of the lower section 20b of the shipper rod. This dog is normally urged against the side of the lower section 20b of the shipper rod by a small helical compression spring 35 which bears at its upper end against a lug 36 formed integrally with the sleeve 29 and at its lower end against a tailpiece or finger 37 which is fixedly secured to one end of the pin 33, as best illustrated in Figs. 5 and 6.

As the shipper rod sections 20a and 20b are moved downwardly in closing the clutch the tailpiece or finger 37 engages a vertical stop screw 38 which is carried by a bracket 39, this bracket being suitably secured to the side of the punch press frame 10, as best illustrated in Fig. 2. The usual lock nut 40 is provided for holding the stop screw 38 in any vertically adjusted position.

In applying the attachment the shipper rod is cut into the two sections 20a and 20b and holes are drilled for securing the brackets 25 and 39 in place. The upper shipper rod section is then drilled to receive the pins of the collar 26 and the sleeve 29, the lower shipper rod section notched and the attachment is then set up in the manner described.

In operation, when the operator presses on the treadle 21 the lower shipper rod section 20b is moved downwardly. Inasmuch as the dog 34 is held in engagement with the notch 31 by the spring 35 this downward movement is transmitted through this dog to the sleeve 29 and as this sleeve is pinned to the upper shipper rod section 20a this section is likewise moved downwardly and the clutch is closed so as to effect one complete reciprocation of the slide 13. As the operator continues the downward movement of the treadle 21 the tailpiece or finger 37 engages the upper end of the adjustable stop screw 38 which causes this finger 37 and the pin 33 to rotate and throw the dog 34 out of engagement with the notch 31. As soon as this occurs the spring 27, reacting against the collar 26 forces the upper shipper rod section 20a upwardly so as to disengage the clutch when one revolution of the shaft 16 is completed, the clutches used with punch presses being of the type which insure complete revolutions of the drive shaft so that the slide 13 is always brought back to a normal elevated position. Any further downward movement of the treadle 21 is inoperative and the entire press is, of course, rendered inoperative for a repeated reciprocation of the slide 13 until the treadle is released whereupon the spring 23 elevates the treadle 21 and lower shipper rod section 20b so as to effect a re-engagement of the pawl 34 and notch 31 preparatory to another operation of the punch press.

From the foregoing it will be seen that the present invention provides a very simple and efficient attachment which can be readily applied to punch presses of any standard form and which positively insures against automatic repeating operation of the punch press thereby rendering the punch press more safe in operation. It will also be appreciated that the attachment is capable of substantial modification within the scope of the appended claims and in particular can be reversed so as to operate in conjunction with a shipper rod which is pushed to close the clutch in contradistinction to the pull rod shown.

I claim as my invention:

1. A non-repeat attachment adapted to be interposed between two sections of the clutch operating rod of a punch press or the like, comprising a sleeve surrounding the opposing ends of both of said sections and forming a guide for one, a pin connecting said sleeve with the other section, a collar pinned to the section pinned to said sleeve, a latch carried by said sleeve and operating through a slot in said sleeve to engage a notch in said unpinned section to compel said sections to move in unison, a stationary guide for the section pinned to said collar, a spring interposed between said collar and guide and working in opposition to said latch to effect relative movement of said sections when said latch is released and stop means for releasing said latch in response to movement of said sections in unison.

2. A non-repeat attachment adapted to be interposed between two sections of the clutch operating rod of a punch press or the like, comprising a sleeve surrounding the opposing ends of both of said sections and forming a guide for one and attached to the other rod section, a collar attached to that section which is attached to said sleeve, a latch carried by said sleeve and operating through a slot in said sleeve to engage a notch in said unattached section to compel said sections to move in unison, a stationary guide for the section attached to said sleeve, a spring interposed between said collar and guide and working in opposition to said latch to effect relative movement of said sections when said latch is released, and stop means for releasing said latch in response to movement of said sections in unison.

3. A non-repeat attachment adapted to be interposed between two coaxial sections of the clutch operated rod of a punch press or the like, comprising a sleeve surrounding the opposing ends of both of said sections and forming a guide for one and attached to the other section, an ear projecting laterally outward from said sleeve, a latch pivotally secured to said ear and operating through a slot in said sleeve to engage a notch in one side of said unattached section to compel said sections to move in unison, a spring arranged externally of said sleeve and interposed between said sleeve and one side of said latch and holding said latch in said notch, a main spring working in opposition to said latch to effect relative movement of said sections when said latch is released and stop means engaging the other side of said latch to release said latch in response to movement of said sections in unison.

4. A non-repeat attachment adapted to be interposed between two coaxial sections of the clutch operating rod of a punch press or the like, comprising a sleeve surrounding the opposing ends of both of said sections and forming a guide for one and attached to the other section, an ear projecting laterally outward from said sleeve, an L-shaped latch pivoted at its center to said ear and having one end operating through a slot in said sleeve to engage a notch in one side of said unattached section to compel said sections to move in unison, a second ear projecting outwardly from said sleeve, a spring interposed between the other end of said latch and said last mentioned ear and having its axis disposed parallel with said sections and holding said latch in said notch, a main spring working in opposition to said latch to effect relative movement of said sections when said latch is released and stop means engaging that end of said latch which engages said first spring to release said latch in response to movement of said sections in unison.

EMIL SCHUESSLER.