

1,060,720.

FIC.1.

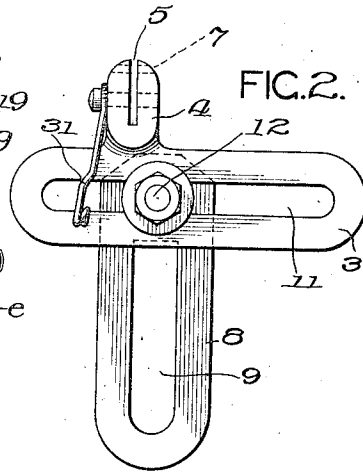
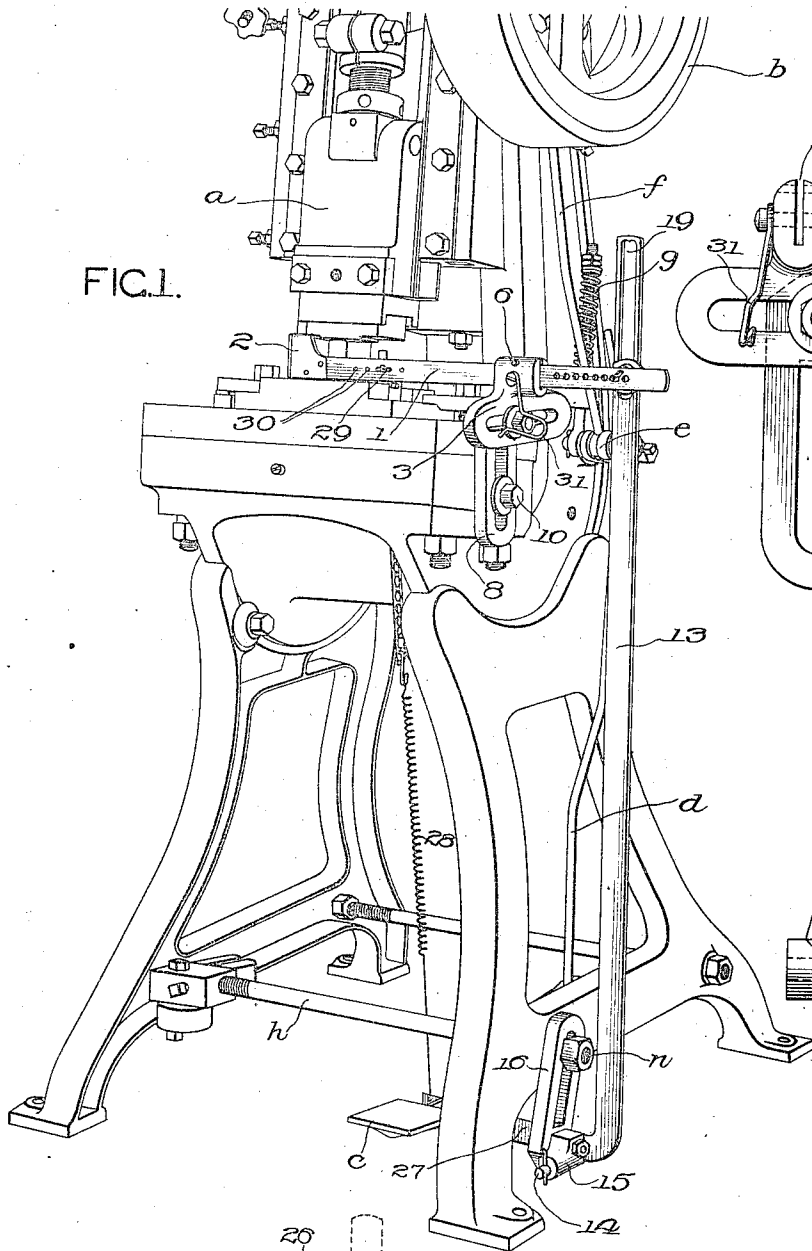


FIG. 2.

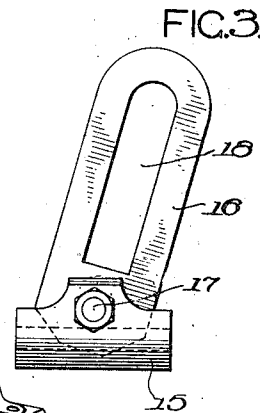


FIG. 3.

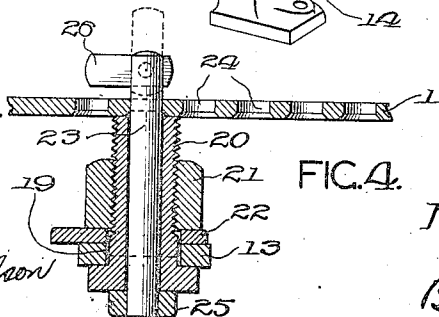


FIG. 4.

Witnesses:

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Att.

UNITED STATES PATENT OFFICE.

KONSTANTINE THULANDER, OF ROCKFORD, ILLINOIS, ASSIGNOR TO NATIONAL LOCK COMPANY, OF ROCKFORD, ILLINOIS, A CORPORATION OF ILLINOIS.

GUARD FOR PUNCH-PRESSES AND SIMILAR DEVICES.

1,060,720.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed June 13, 1912. Serial No. 703,387.

To all whom it may concern:

Be it known that I, KONSTANTINE THULANDER, a subject of the King of Sweden, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Guards for Punch-Presses and Similar Devices, of which the following is a specification.

10 In the operation of punch presses and similar machines it is usually necessary for the operator to manually place the work in position in the press.

It sometimes happens that the machine is placed in operation and the ram or movable element descends before the operator has withdrawn his hand, with resulting injury to the operator. It has been proposed to provide guard devices for preventing such injury, but they have either been inefficient or their application to the machine has involved considerable expense and difficulty.

The objects of my invention are to provide a guard device for punch presses and the like which shall be thoroughly reliable and effective to prevent injury to the operator, which shall be readily attachable to existing machines, which shall be of inexpensive construction, and which shall be quickly withdrawable to provide convenient access to the tools when the latter are to be removed or replaced.

In the accompanying drawings, Figure 1 is a fragmental perspective view of a punch press provided with a guard embodying the features of my invention. Figs. 2 and 3 are detail views of certain elements comprised in the construction. Fig. 4 is a sectional view of certain parts.

40 For the purpose of illustrating the invention, I have shown it as applied to a punch press of common construction, *a* being the vertically-reciprocable ram and *b* the constantly rotating driving wheel or pulley. This wheel is connected to the drive shaft (not shown) of the punch press by means of a clutch (also not shown), said clutch being of such construction that it is automatically thrown out upon the completion of a single revolution of the drive shaft. When it is desired to have the ram descend, the clutch is thrown in by means of a treadle *c* connected to the clutch-controlling device in the usual

manner by means of a link *d*, an arm *e* and a rod *f*. A spring *g* tends to hold the treadle 5. up and the clutch-controlling member in position to throw the clutch out. All of these features are well known in the art and therefore are not illustrated in detail herein.

The guard device comprises a bar 1 60 reciprocable in a substantially horizontal direction in a plane in front of the tools and transversely of the space occupied by the operator's hand when a piece of work is being placed in the press. On the inner end 65 of the bar 1 is placed a plate or guard member 2. The bar 1 is guided for movement, as just described, by means of a guide member 3 comprising a boss 4 having a slot 5 therein through which the bar 1 is slidable. Said slot extends to the upper side of the boss 4 and is closed in any suitable way to prevent the bar 1 from being displaced upwardly out of the slot. Herein I have shown a pin 6 driven into an opening 7 in said boss and 75 overlying the bar 1. The guide member 3 is adjustably connected to the framework of the press by means of a coupling 8 having a vertically elongated slot 9 therein, through which slot passes a cap-screw 10 engaging 80 the press framework. The guide member 3 has a horizontal elongated slot 11 therein, through which extends a cap-screw 12 threaded into an opening in the coupling 8. It will thus be seen that the coupling 8 may 85 be adjusted vertically and tilted, and that the guide member 3 may be adjusted horizontally and tilted, so as to support the bar 1 in the desired position with respect to the tools and work. 90

The bar 1 is reciprocated by means including a lever 13 having fixed thereto a pivot pin 14 which is supported in a bearing 15. Said bearing is adjustably connected to a coupling member 16 by means of a bolt 95 17. The coupling member 16 has an elongated slot 18 therein to receive a member for fastening the coupling to the framework of the press. If desired advantage may be taken of parts commonly present in the 100 press framework. I allude to the brace-rod *h* uniting the side frames of the punch press, the outer ends of said brace-rod being threaded to receive securing nuts. Herein I have shown the coupling member 16 as 105 arranged with the brace-rod *h* extending

through the slot 18, the nut *n* being turned on the threaded end of said brace-rod at the outside of the coupling member so as to clamp the latter to the framework of the press. It will be seen that the bearing 15 may be tilted on the axis of the bolt 17, and that the coupling member 16 may be adjusted vertically and tilted as may be necessary to support the lever 13 in proper relation to the bar 1.

The bar 1 may be connected to the lever 13 in any suitable manner. Herein I have shown the upper end of the lever as having a longitudinal slot 19 therein, a tubular member 20 being secured in adjusted position in said slot by means of a nut 21 and washer 22. Through said tubular member extends a pivot pin 23 adapted to pass through any one of a number of openings 24 provided in the outer end of the bar 1. Said pivot pin has at one end a head 25 and at the other end a pivoted wing 26 adapted to be turned into the position shown in full lines in Fig. 4 to prevent separation of the bar 1 and pivot pin 23, and to be turned into the position shown in dotted lines in said figure to permit of withdrawing the pivot pin from the bar 1 and the tubular member 20 when desired.

The lever 13 has an angular arm 27 underlying the treadle *c*. A spring 28 connected to said arm and to a suitable point in the framework of the press, tends to swing the lever 13 in the direction to withdraw the bar 1 from operative position. It will be seen that by reason of the length of the lever 13, a relatively slight movement of the treadle causes considerable movement of the lever and the bar 1.

The bar 1 may be prevented from moving outwardly farther than is necessary to clear the work, in any suitable way, as by means of a cotter pin or equivalent device 29 placed in any one of the openings 30 in said bar, said pin limiting the outward movement of the bar by contact with the boss 4.

When the machine is to be set up with new tools, the bar 1 may be wholly withdrawn so as to allow free access to the machine. This may be done by withdrawing the pin 6, and swinging the bar 1 upwardly and over until it hangs beside the lever 13. Said lever and the bar 1 may then be held temporarily in place by suitable means, such as a hook 31 pivoted to the boss 4 and adapted to engage over the pivot pin 23.

In practice, when the operator desires to place the press in operation, he depresses the treadle *c*, thereby throwing in the clutch and placing the drive shaft of the machine in rotation. The downward movement of the treadle, however, causes the lever 13 to swing toward the machine, whereby the bar 1 is moved in front of the tools and work so that the operator's hand will have been

pushed out of the path of the ram before the clutch has acted to connect the drive shaft with the pulley 2. It will thus be seen that the guard device acts positively to push the operator's hand away before the ram descends, so as to wholly obviate any possibility of injury to the operator's hand. As will be seen, the movement of the bar 1 is positive and caused directly by the depression of the treadle. If the operator's foot be removed from the treadle *c* before the completion of one revolution of the drive shaft, the clutch will be automatically thrown out in the usual manner to stop the press. As long, however, as the operator's foot remains upon the treadle, the guard will remain in operative position.

I claim as my invention:

1. The combination, with the starting treadle of a punch press or the like, of a lever having one arm arranged to be moved by said treadle; a reciprocatory guard member connected to the other arm of said lever; and means for guiding said guard member.

2. The combination, with the starting treadle of a punch press or the like, of a vertically-extending lever pivoted adjacent to said treadle and having a relatively short arm arranged to be moved by said treadle; and a reciprocatory guard member connected to the upper end of said lever.

3. The combination, with the starting treadle of a punch press or the like, of a vertically-extending lever pivoted adjacent to said treadle and having a relatively short arm underlying said treadle; a spring tending to move said arm upwardly; a reciprocatory guard member connected to the upper end of said lever; and means for guiding said guard member for horizontal movement.

4. The combination of a lever; means for swinging said lever; a guard member pivotally connected to said lever; and a guide for said guard member, said member being withdrawable from said guide and adapted to swing into position alongside said lever.

5. The combination of a vertically-extending lever pivotally supported adjacent to its lower end, of a guard bar pivoted to the upper end of said lever, and a guide for said bar, said bar being withdrawable from the guide and being adapted to swing into position alongside said lever.

6. The combination, with a punch press or the like, of a lever arranged to swing outwardly from the press; a guard member pivotally connected to said lever; a guide for said member, said member being withdrawable from the guide and being adapted to swing into position alongside the lever; and means for confining the lever against outward movement.

7. The combination, with a punch press or the like, of a vertically-extending lever;

a pivot for the lower portion of said lever; a bearing for said pivot; a coupling to which said bearing is adjustably connected; and means for adjustably connecting the coupling to the press.

8. The combination, with a punch press or the like, of a vertically-extending lever; a pivot for the lower portion of said lever; a bearing for said pivot; a coupling to which said bearing is pivotally connected, said coupling having a slot therein; and means extending through said slot for adjustably connecting the coupling to the press.

9. The combination of a guard member; means for moving said guard member in a substantially horizontal direction; a guide for said member; and means for adjustably supporting said guide.

10. The combination of a guard member; means for moving said guard member in a substantially horizontal direction; a guide for said member, said guide having a horizontally elongated slot therein; a coupling member having a vertically elongated slot; means extending through the slot in the guide member for connecting the latter to said coupling member; and means extending through the slot in the coupling member for securing the latter in adjustable position.

11. The combination of a vertically-extending lever; means for swinging said lever; a guard bar pivotally connected to the upper end of said lever; a guide member for said guide bar; and means attached

to said guide member for limiting the movement of said lever.

12. The combination of a lever; means for swinging said lever, said lever having a longitudinal slot therein; a tubular member adjustably secured in said slot; a pivot pin extending through said tubular member; and a guard member engaged by said pin; a head on one end of said pin; and a locking member on the other end of said pin for retaining said guard member in place, said locking member being movable to release said guard member.

13. The combination, with a punch press or the like having a starting treadle, of a vertically-extending lever pivoted adjacent to said treadle and having a relatively short arm underlying said treadle; a guard member pivoted to the upper end of said lever; a guide for said member, adjustably connected to said press, said guard member being reciprocable in a substantially horizontal direction in the movement of the lever, said guide comprising means withdrawable to permit removal of the guard member from said guide, said guard member being adapted to swing upwardly and over into position alongside said lever.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

KONSTANTINE THULANDER.

Witnesses:

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EMIL C. TURNER.