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SAFETY ATTACHMENT FOR POWER PRESSES.

APPLICATION FILED JULY 21, 1919.

1,357,643. Patented Nov. 2, 1920.

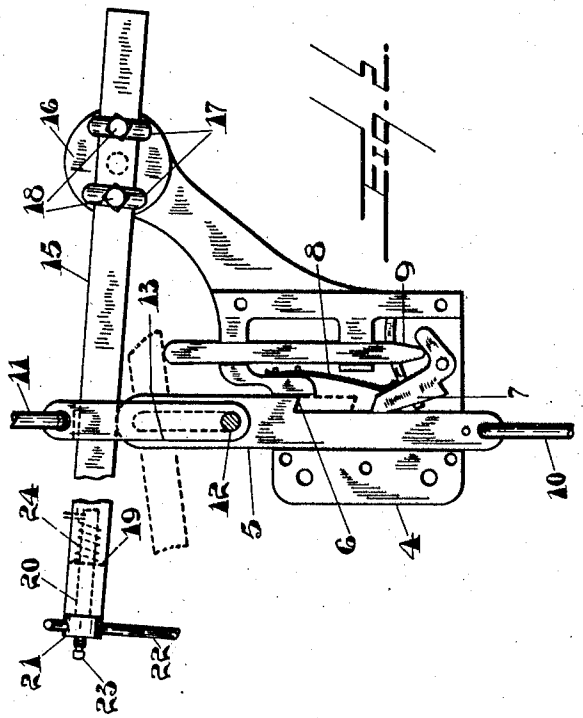


FIG. 2.

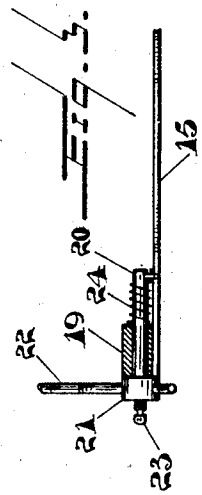


FIG. 4.

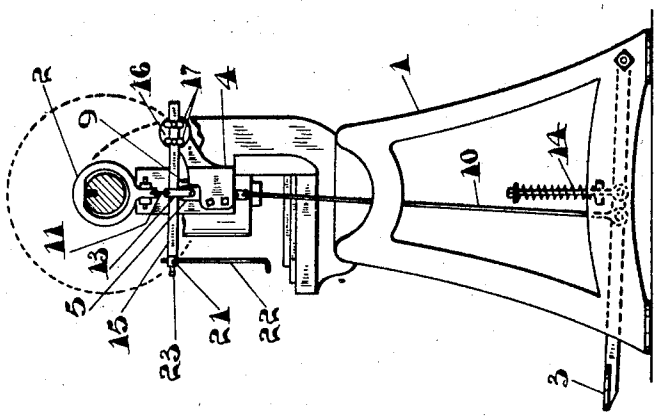


FIG. 1.

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SAFETY ATTACHMENT FOR POWER-PRESSES.

1,357,643. Specification of Letters Patent. Patented Nov. 2, 1920.

Application filed July 21, 1919. Serial No. 312,425.

To all whom it may concern:

Be it known that I, JOHN F. LAWSON, of the town of Oshawa, in the county of Ontario, Province of Ontario, Canada, have invented certain new and useful Improvements in Safety Attachments for Power-Presses, of which the following is a specification.

This invention relates to devices for preventing workmen getting their fingers caught beneath the dies of power presses, and my object is to devise means which will make it impossible for an operator to trip the press while his hand or fingers are in the path of the die or plunger of the press.

I attain my object of the constructions hereinafter described and illustrated in the accompanying drawings in which—

Figure 1 is a side elevation of a press provided with my improved safety device;

Fig. 2 an enlarged side elevation of the safety device with the cover of the slide, lock and trip mechanism removed; and

Fig. 3 a detail showing the connection of the front portion of the guard frame with the rearwardly extending lever arm thereof.

In the drawings like numerals of reference indicate corresponding parts in the different figures.

1 is a press of any ordinary construction provided with the usual clutch 2, by means of which the press is thrown into and out of gear and the foot treadle 3 by which the clutch is controlled. Ordinarily the foot treadle is directly connected with the clutch, but I interpose in the connections the safety device I will now describe.

4 is a casing secured to any convenient part of the press. In this casing is vertically guided a slide 5 provided at one side with the shoulder 6. A catch 7 shaped as a bell crank lever is normally pressed by a spring 8 so that its nose lies in the path of the shoulder 6. On the tail of the catch rests the trip 9 slidable in the casing 4. The lower end of the slide is connected by the connecting rod 10 with the treadle 3. The clutch is connected with the upper end of the slide by means of the connecting rod 11, in which is included a lost motion device.

The preferred arrangement is to form in the upper end of the slide 5 a slot through which passes a pin 12 connecting the links 13 which lie on opposite sides of the slide and to the upper ends of which the connecting rod 11 is connected. On the upper end of the slide rests part of a vertically movable guard frame, which, when the slide is drawn down, is adapted to engage the upper end of the trip 9 and thus move the catch out of the path of the shoulder 6. The guard frame tends to fall by its weight but if for any reason the guard frame is held up, the trip 9 is not moved to release the catch which engages the shoulder 6 and absolutely prevents the further depression of the treadle to cause the operation of the clutch. The preliminary movement of the slide without the clutch being thereby affected, is of course possible by reason of the provision of the lost motion device hereinbefore described in connection with the connecting rod 11. A coil spring 14, connected to the treadle and a suitable part of the frame of the machine, normally holds up the treadle and the guard frame.

The preferred arrangement of the movable guard frame is as shown. A lever arm 15 is pivotally connected with a suitable stationary part such as the casing 4. In the preferred arrangement, the lever arm is connected to a disk 16 pivotally mounted on the rear end of the casing 4. For purposes of adjustment to vary the distance between the forward part of the guard frame and the pivot, the lever arm is slidable in one or more guides 17 formed on the disk, and is secured as adjusted by means of set screws 18. The forward part of the guard frame extends across the front of the press in such a position that if the hand or hands of the operator are in the path of the plunger or die of the press, they will be engaged by the guard frame as the latter moves down as hereinbefore described, thus either serving as a warning to the operator to remove his hand or if the hand is not moved, preventing the operation of the trip 9.

The preferred arrangement is to form a bearing 19 longitudinally of the outer end of the lever arm 15. In this bearing is supported a journal 20 provided at its outer end with a transverse sleeve 21 in which one end of a bent rod 22 is adapted to slide, but which may be secured in any desired position by means of a set screw 23. This bent rod extends downwardly and transversely in front of the press as shown.

The journal 20 extends through the bearing and has a coil spring 24 placed thereon, one end of which engages the journal and the other the lever arm 15. The tension of

this spring is such that the lever arm is readily held up to prevent the operation of the trip by any obstruction under the bent rod 22, while the coil spring provides sufficient resiliency to prevent damage to the operator's hands if the guard frame suddenly descends as may sometimes be the case if the press clutch is worn and accidentally trips.

From the above description it will be seen that with my arrangement the descent of the guard frame gives the operator ample warning to remove his hands from beneath the die, while if his hands are not removed, the guard frame is held up and the tripping of the press prevented.

What I claim as my invention is:—

1. The combination with a power press provided with a clutch whereby the press is put in gear and with a foot treadle for tripping the clutch, of a safety device comprising a slide operatively connected with the treadle; a connection provided with a lost motion device connecting the slide with the clutch; a releasable catch normally adapted to be engaged by a shoulder formed on the slide when the latter has been moved sufficiently to substantially take up the lost motion in its connection with the clutch; a trip for the catch adapted to rock the same to free the slide; a vertically movable guard frame supported on the slide and adapted when lowered to engage the trip and release the catch.

2. Apparatus constructed as set forth in claim 1 in which the guard frame is provided with a rearwardly extending lever arm adapted to engage the trip and a disk is mounted in a suitable bearing, to which disk the lever arm is adjustably connected to vary the distance of the guard frame from the pivot.

3. Apparatus constructed as set forth in claim 1 in which the part of the guard frame which may contact with a careless operator's hand is yieldingly and resiliently connected with the part of the frame adapted to operate the trip.

4. Apparatus constructed as set forth in claim 1 in which the part of the guard frame which is adapted to operate the trip is formed as a pivoted lever arm and the part of the guard frame which may contact with a careless operator's hand is yieldingly and resiliently connected to the lever arm.

5. A guard frame for controlling a safety device for power presses comprising a lever arm pivotally supported on the press toward the rear thereof and extending forwardly at one side; a journal bearing formed longitudinally of the arm at its forward end; a journal fitted in said bearing; a guard frame extending across the front of the machine and secured to said journal; and a spring yieldingly resisting an upward movement of the front of the guard frame relative to the lever arm.

Signed at Oshawa this 7th day of July, 1919.

JOHN F. LAWSON.