D. M. ROBINSON, Jr.

SAFETY DEVICE FOR PRESSES.

APPLICATION FILED FEB. 23, 1921.

1,431,759.

Patented Oct. 10, 1922.

3 SHEETS—SHEET 1.

Fig. 1.

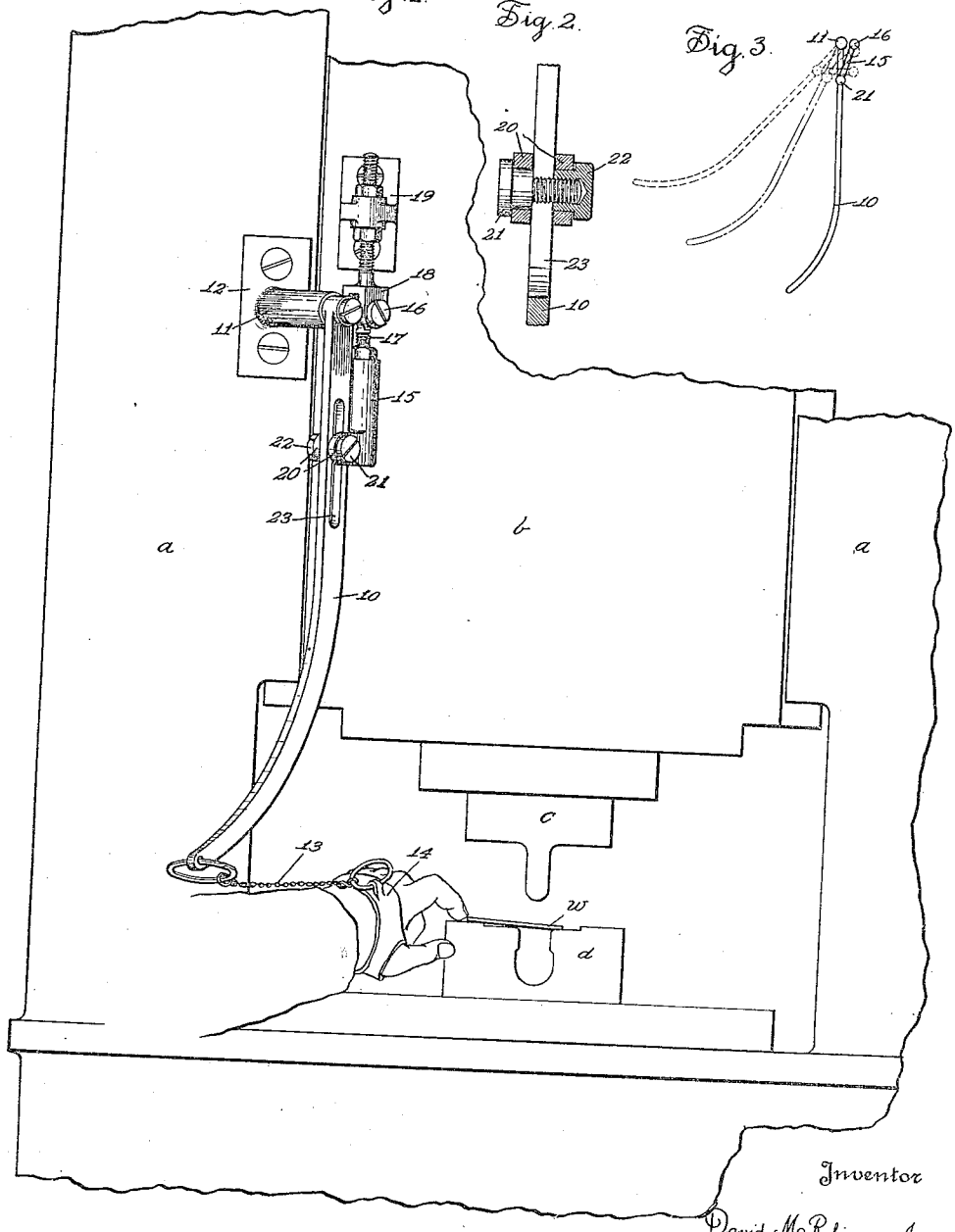


Fig. 2.

Fig. 3.

Inventor

David M. Robinson Jr.

By

H. E. Hart

His Attorney

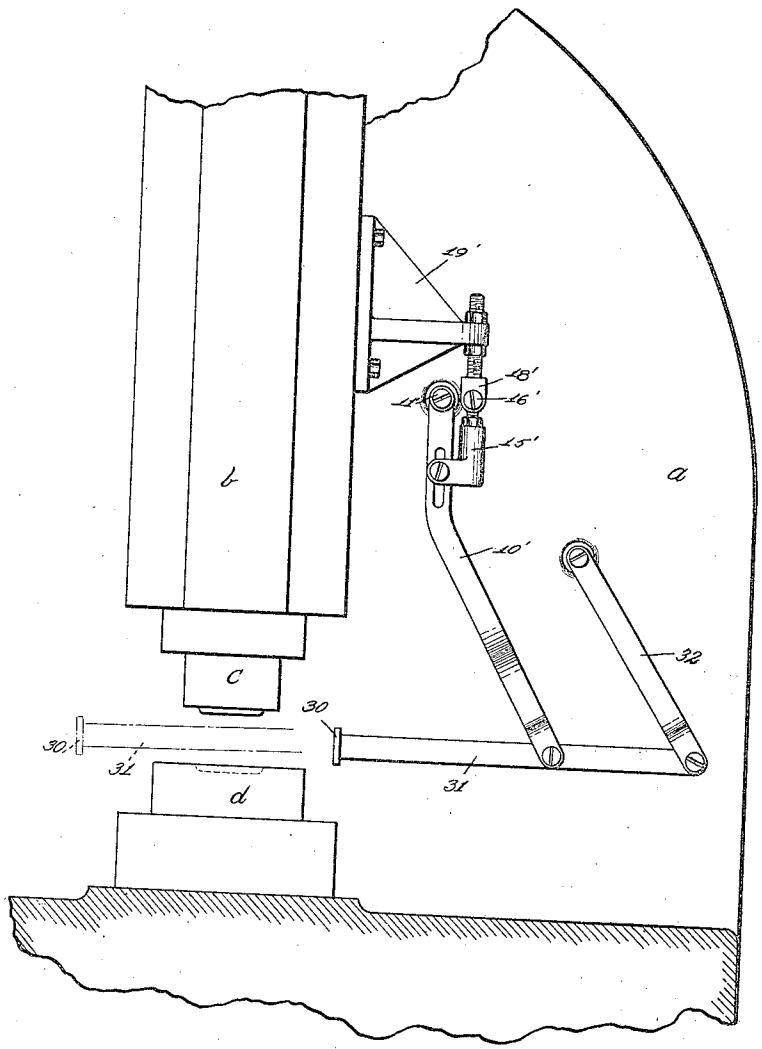
D. M. ROBINSON, JR.
SAFETY DEVICE FOR PRESSES.
APPLICATION FILED FEB. 23, 1921.

1,431,759.

Patented Oct. 10, 1922.

3 SHEETS—SHEET 2.

Fig. 4.



Inventor
David M. Robinson Jr.
By Hubbard
His Attorney

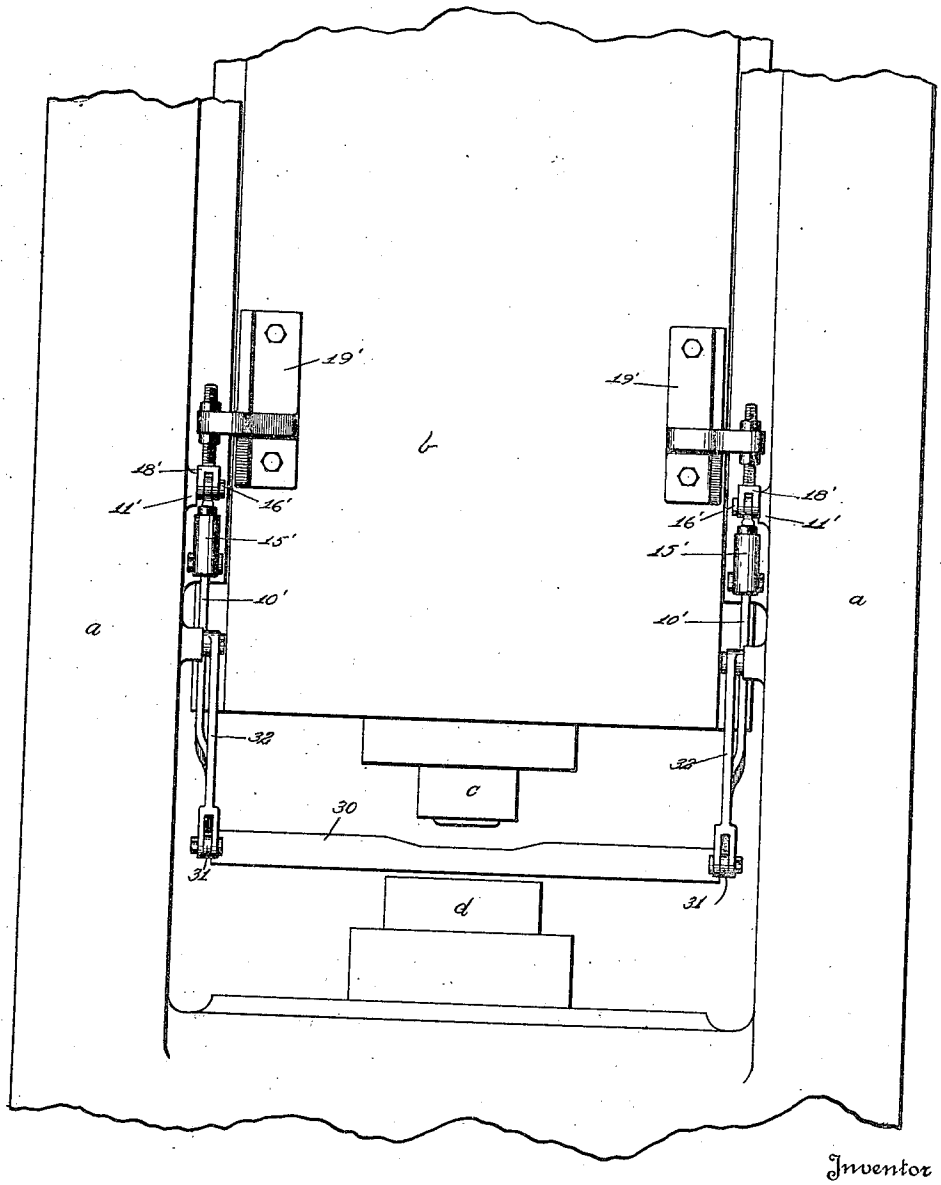
D. M. ROBINSON, JR.
SAFETY DEVICE FOR PRESSES.
APPLICATION FILED FEB. 23, 1921.

1,431,759.

Patented Oct. 10, 1922.

3 SHEETS—SHEET 3.

Fig. 5.



Inventor

David M. Robinson Jr.

By

His Attorney

Patented Oct. 10, 1922. 1,431,759

UNITED STATES PATENT OFFICE.

DAVID M. ROBINSON, JR., OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO THE STANLEY WORKS, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

SAFETY DEVICE FOR PRESSES.

Application filed February 23, 1921. Serial No. 447,009.

To all whom it may concern:

Be it known that I, DAVID M. ROBINSON, Jr., a citizen of the United States, and a resident of New Britain, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in a Safety Device for Presses, of which the following is a specification.

The object of the present invention is to provide a simple and effective safety device for moving the hand or hands of the operator of a stamping or other press out of danger from beneath the descending plunger or ram of the press.

In the accompanying drawing, I have shown two embodiments of my invention, but it is to be understood that the present disclosures are by way of illustration only and are not to be taken as restrictive.

In describing the embodiments of the invention herein selected, conventional terms will be used, but it is to be understood that they are used solely for the purposes of description and they are not to be taken as having any limiting effect.

In the accompanying drawings:—

Fig. 1 is a front view of a portion of a press to which the safety device of the present invention is attached.

Fig. 2 is a sectional view taken through the pivotal connection between the link and lever of the device.

Fig. 3 is a diagrammatic view showing in full lines the safety device of Fig. 1 in its normal position; in dot and dash lines its position upon a very slight initial movement of the plunger on its downward stroke; and in dash lines, the outermost position of the device and which position it takes when the plunger has reached the lowest limit of its travel.

Fig. 4 is a side view, in vertical section, of a press to which is applied another embodiment of the present invention, and

Fig. 5 is a rear elevation thereof.

Referring to the drawings in detail, *a* denotes the side standards of the press; *b*, the plunger slidably mounted in those standards; *c*, *d*, complementary die blocks, and *w* a piece of work being positioned between those blocks. The presses are shown only in part, as the particular construction or type thereof is immaterial.

Referring now to that embodiment shown in Figs. 1 to 3, the safety device includes a lever 10 pivotally connected at its upper end to a stud 11 carried by a bracket 12 secured to the front face of one of the standards *a* of the press. Associated with the lower end of this lever is suitable hand engaging means for moving the hand from beneath the plunger when the latter moves downwardly, this means in the present embodiment being in the form of a harness or strap 14 fitting about the hand of the operator and connected to the lever by a chain 13. The numeral 15 designates generally a link pivotally connected at its opposite ends to the lever 10 and the plunger *b*. The connection between the link 15 and the plunger *b* may be affected through a pivot pin 16 connecting an eye-bolt 17 forming a portion of the link, to a yoke 18, the stem of which is adjustably mounted in a bracket 19 secured to the plunger *b*. The lower end of the link 15 is forked providing a pair of arms 20 straddling the lever 10 and connected thereto by a bolt 21 and a nut 22. As may be clearly seen from Figs. 1 and 2, the bolt 21 extends through a slot 23 in the lever 10 and is locked in adjusted position therein by clamping the lever between the opposing abutments on the bolt and its nut. Preferably, the stud 11 is at such an angle to the front of the machine that the lever moves forwardly and laterally, say at an angle of 45°, to the front plane of the press, this being of advantage in that it leaves the space in front of the die blocks clear for the operator to work in.

The parts of the device are so arranged that the pivot between the link 15 and the plunger *b*, namely, the pin 16, is closely adjacent the pivot 11 of the lever 10, and these two pivots lie in a horizontal plane, that is in a line at right angles to the direction of movement of the plunger, when the latter is in its uppermost position. Furthermore, the length of the link 15 is preferably such that when the plunger has reached the lowest limit of its travel the pivots at the opposite ends of the link 15 lie in a horizontal plane as is shown by the dash line position of Fig. 3. With this arrangement, on the commencement of the downward stroke of the plunger, the lower end of the lever 10 moves outwardly at a rapid rate so that upon a small initial movement of the plunger

the hand of the operator is completely withdrawn out of danger from between the die blocks. As the plunger approaches the downward limit of its travel and then starts to move upwardly the lever is moved quite slowly, thus forming, so to speak, a dwell in the movement of the lever in its outermost position so that the operator, without inconvenience, may use his hands to get ready for the stamping or pressing of the next piece of work. The operator, at all times, has a relatively wide and free range of movement of the hand connected to the safety device.

When the plunger *b* is vertically adjusted to accommodate die blocks of different heights, the yoke 18 is also adjusted on the plunger so that the proper relation between the parts of the safety device will be retained. The object of making the link 15 adjustable and adjustably connecting it to the lever 10 is to adapt the device for use on presses of different throws.

Reference will now be had to that embodiment of the invention shown in Figs. 4 and 5, and wherein the safety device is attached to the back of the press and the hand engaging means is in the form of a bar 30 which moves forwardly between the dies when the plunger is lowered. In these figures, the parts corresponding generally to those illustrated in the first embodiment are indicated by similar reference characters, except that they are primed. The bar 30 is preferably connected at its ends to like mechanisms at each side of the plunger. Each of these mechanisms includes a bracket 19′ connected to and extending rearwardly from the plunger *b*. Adjustably carried by this bracket is the part 18′ to which one end of the link 15′ is connected as at 16′. The lever 10′ is pivoted as at 11′ to the standard *a*. Connected to the lower end of each of the levers 10′ is a rod 31 to the forward end of which the bar 30 is suitably connected. The numeral 32 designates a compensating lever pivotally connected at its opposite ends to the standard *a* and the rear end of the rod 31. These levers serve to retain the bar 30 in substantially the same plane when the mechanism is operated. It will readily be understood that when the plunger is dropped, the bar 30 will move over the face of the die block *d* and push the hands of the operator out of danger.

I claim as my invention:—

1. The combination with a press including a frame part and a plunger part, of a lever pivotally connected to one of said parts, means associated therewith for engagement with the hand of the operator, and a link pivotally connected at its opposite ends to said lever and the other part of said press respectively, the pivotal connection between said lever and the respective press part and the pivotal connection between said link and the respective press part being closely adjacent when the plunger part is in raised position.

2. The combination with a press including a frame and a plunger, of a lever pivotally connected to said frame, means associated therewith for engagement with the hand of the operator, and a link pivotally connected at its opposite ends to said lever and plunger respectively, the pivotal connection between said lever and frame and the pivotal connection between said link and plunger being closely adjacent when the plunger is in raised position.

3. The combination with a press including a frame and a plunger, of a lever pivotally mounted on a stud on said frame, means associated therewith for engagement with the hand of the operator, and a link pivotally connected at its opposite ends to said lever and plunger respectively, said stud and the pivotal connection between said link and plunger being closely adjacent when the plunger is in raised position.

4. The combination with a press including a plunger, of a lever pivotally mounted on a stud on the frame of the press and connected to the hand of the operator, and a link pivotally connected at its opposite ends to said lever and plunger respectively, said stud and the pivotal connection between said link and plunger being closely adjacent and lying substantially in a plane at right angles to the direction of travel of the plunger when the latter is in raised position.

5. The combination with a press including a frame and a plunger of a lever pivotally mounted on a stud on the frame of the press, means connected to the free end of said lever for engagement with the hand of the operator and a link pivotally connected at its opposite ends to said lever and plunger respectively, said stud and the pivotal connection between said link and plunger being closely adjacent and lying substantially in a plane at right angles to the direction of travel of the plunger when the latter is in raised position, said link being of such length that it is substantially horizontally disposed when the plunger is at the lowest limit of its travel.

6. The combination with a press including a frame and a vertically movable plunger, of a lever pivotally connected at one end to said frame and adapted for movement in a vertical plane forwardly and laterally thereof, and an operative connection between said lever and plunger.

7. The combination with a press including a frame and a plunger, of a lever pivotally connected at one end to said frame, means connected to the other end of said lever for engagement with the hand of the operator, a link, means for pivotally connecting one end of said link to said lever, and means adjust-

able on said plunger for pivotally connecting the other end of said link to said plunger.

8. The combination with a press including a frame and plunger of a lever pivotally connected at one end to said frame and at its other end to the hand of the operator, and a link adjustable in length and pivotally and adjustably connected at its opposite ends to said lever and plunger, respectively.

9. The combination with a press including a frame and a vertically movable plunger, of a stud on said frame and inclined at an angle to the front plane of the press, a lever pivoted on said stud and adapted for movement forwardly and laterally to the front plane of the press, and a link pivotally connected at its opposite ends to said lever and the plunger of the press.

10. The combination with a press including a frame and a plunger, of a lever pivotally connected at one end to said frame, means associated with the other of said lever for engagement with the hand of the operator, and a link adjustable in length and pivotally and adjustably connected at its opposite ends to said lever and plunger respectively, the pivotal connection between said lever and frame and the pivotal connection between said link and plunger being closely adjacent when the plunger is in raised position.

DAVID M. ROBINSON, JR.