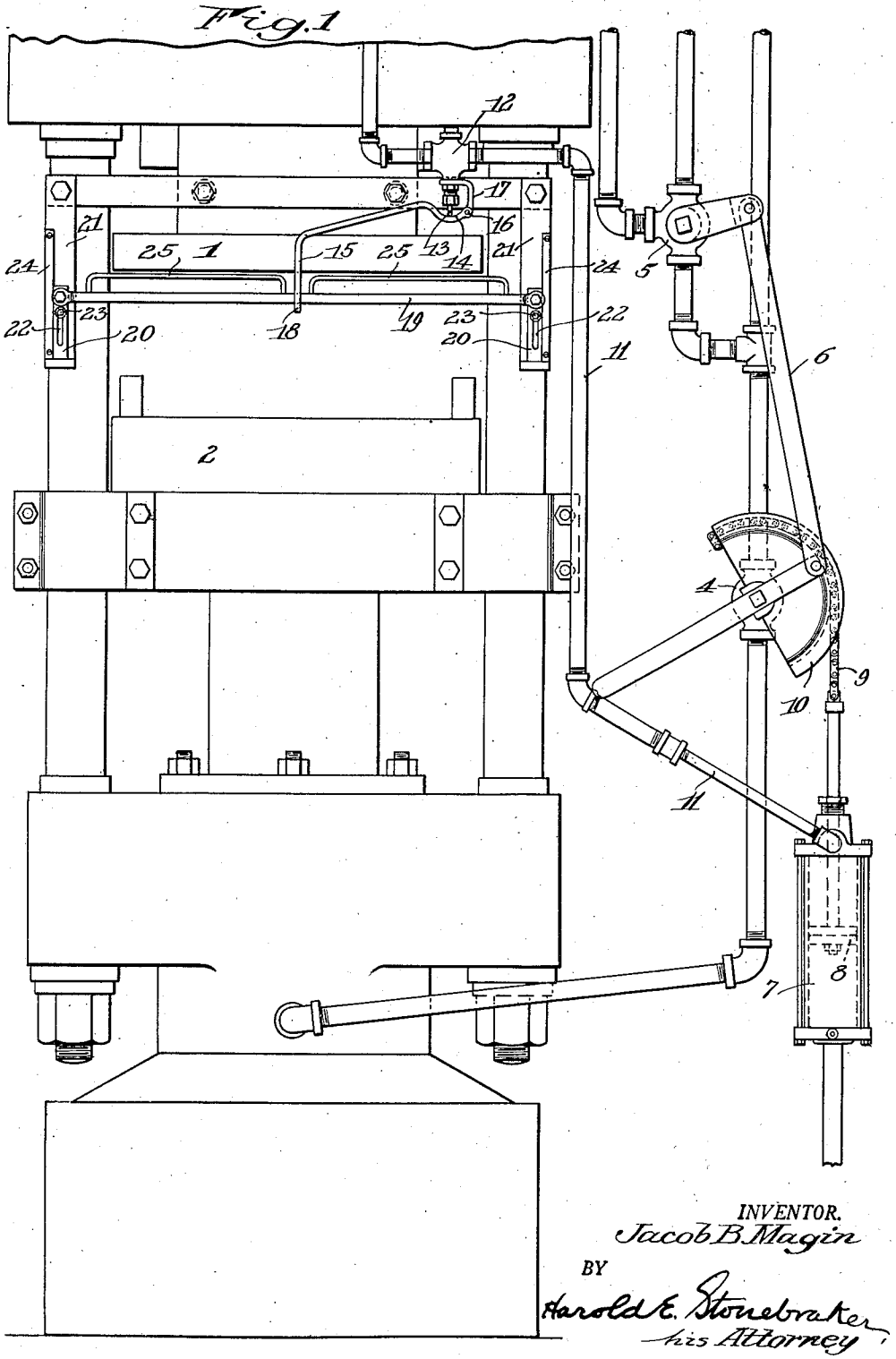
Aug. 14, 1945. J. B. MAGIN 2,382,494

PRESS GUARD

Filed July 7, 1944 2 Sheets-Sheet 1

Fig. 1



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2 Sheets-Sheet 2

Fig. 4

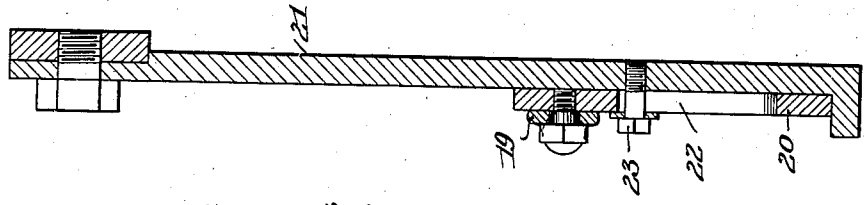


Fig. 2

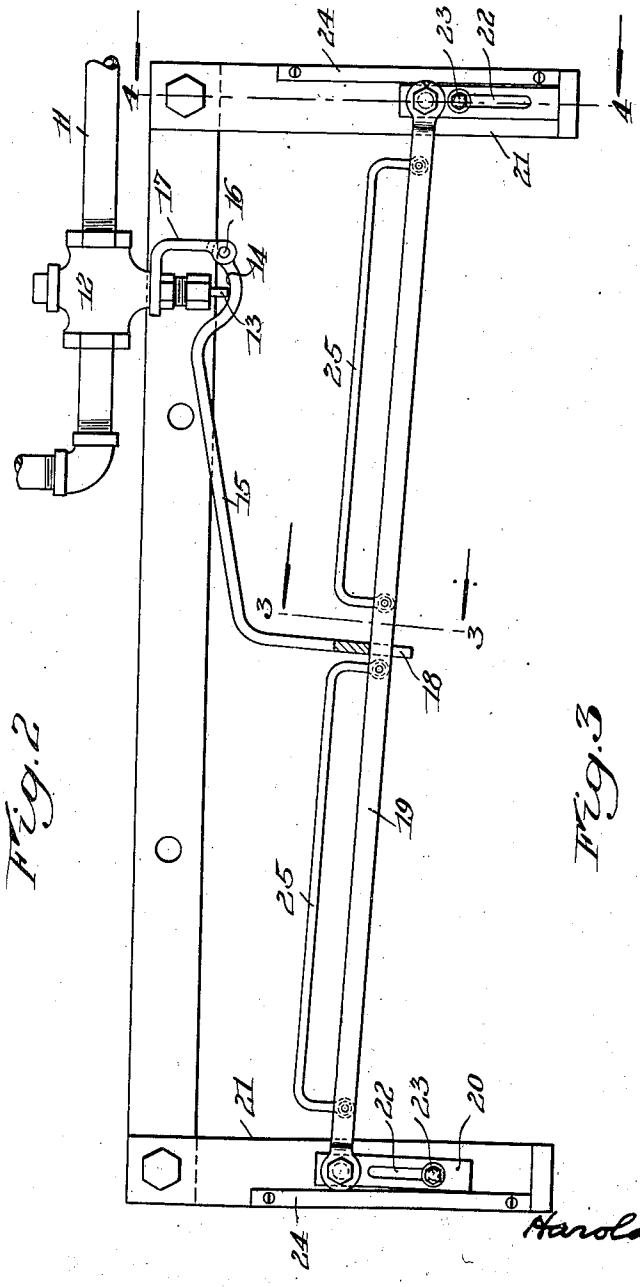
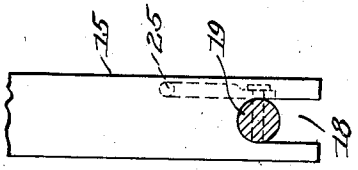


Fig. 3



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UNITED STATES PATENT OFFICE

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PRESS GUARD

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Application July 7, 1944, Serial No. 543,930

7 Claims. (Cl. 192—134)

This invention relates to a press guard with particular reference to the type of hydraulic press in which a bed slowly moves upwardly into engagement with a stationary platen for compressing and hardening plastic products, and it has for its purpose to afford a simple and highly efficient mechanism that effectually prevents injury if an operator inadvertently places a hand between the stationary platen and movable bed when the latter is ascending.

A more particular object of the invention is to afford a simple arrangement of parts that do not interfere with the normal operation or efficiency of the machine, and which when the conditions arise operate instantly to reverse upward travel of the bed and cause it to move downwardly to its initial inoperative position remote from the stationary platen.

A further purpose of the invention is to provide a structure that can be easily applied to existing machines without necessitating reorganization of the press or its hydraulic mechanism, and which protects an operator effectively against accident.

Another object of the invention is to afford mechanism that will quickly effect reverse movement of the bed by engagement at any point longitudinally of the bed, so that no matter whether the operator's hand is inserted centrally of the bed or at one end thereof, the device insures the necessary control and reverse movement of the bed, as quickly and effectively from either end as at the longitudinal center thereof.

Still an additional purpose of the invention is to afford a mechanism consisting of few parts and which can be economically produced and readily installed.

To these and other ends, the invention consists in the construction and arrangement of parts that will appear clearly from the following description when read in conjunction with the accompanying drawings, the novel features being pointed out in the claims following the specification.

In the drawings:

Fig. 1 is a view in front elevation showing a preferred embodiment of the invention as applied to a hydraulic press of conventional form;

Fig. 2 is an enlarged front elevation of the invention, showing the guard rail in elevated position;

Fig. 3 is a vertical sectional view on the line 3—3 of Fig. 2, and

Fig. 4 is a vertical sectional view on the line 4—4 of Fig. 1.

Referring more particularly to the drawings in which like reference numerals refer to the same parts throughout the several views, 1 designates the stationary platen of a conventional type of hydraulic press, while 2 is the movable bed which occupies its lowermost position when idle, and is movable slowly upwardly into engagement with the stationary platen when an operation is to be performed upon articles supported on the bed.

Such upward and downward travel of the movable bed is effected in a conventional way from cylinders and pistons at the top and bottom of the machine by suitable valve means including valves 4 and 5 connected by the link 6 and operable through a suitable hand lever to govern the flow of water to the cylinders at the bottom and top of the mechanism for moving the bed upwardly or downwardly, and in order to carry out the purposes of the invention, means are provided for quickly operating said valve means automatically to reverse movement of the upwardly traveling bed, when the guard rail is moved.

This is preferably accomplished by a compressed air cylinder 7 within which travels a piston 8 connected by means of a chain 9 and segment 10 to the valve 4. The cylinder 7 has connected thereto a compressed air line 11 within which is located a control valve indicated diagrammatically at 12, and normally closed, the valve 12 being opened when the guard rail is actuated to permit air pressure to pass to the cylinder 7 and operate the valve means and reverse movement of the bed.

To effect this, the valve 12 includes a projecting portion 13 which engages the cam surface 14 of an actuator or lever 15 which is movably supported and preferably pivotally mounted at 16 on a stationary support 17. The actuator 15 extends downwardly and is provided at its lower end with a forked portion 18 that straddles and is slidable longitudinally on the guard rail 19, so that as the guard rail is lifted, the actuator 15 is correspondingly elevated and tilted on its pivot 16 to move the control valve while at the same time the forked lower end of the actuator 15 can slide endwise of the guard rail 19 to permit the action described.

The guard rail 19 is positioned horizontally and movable in a vertical direction either bodily or to a greater extent at one end than at the other,

and to permit such irregular movement, the ends of the guard rail 19 are pivotally connected to vertically slidable supporting members or plates 20 which engage stationary supports 21. Each slidable plate 20 includes a slot 22 that is guided on a stationary pin 23 carried by the support 21, while the outer edge of the movable plate 20 rests against a guide or stationary flange 24.

In this way, a certain lost motion is permitted between the two ends of the guard rail, and while each supporting plate 20 is guided vertically, it is freely movable in a vertical direction and with it one end of the guard rail 19. Since the actuator 15 is slidably movable endwise of the guard rail 19, it will be seen that the guard rail can easily be lifted by engaging it at the center, at either end, or at any point therebetween, and regardless of where the guard rail is contacted by the operator, it moves upwardly and carries with it the actuator 15 to operate the control valve in the air line 11 and move the valve means to reverse movement of the bed instantly and carry the latter down to its inoperative position away from the stationary platen.

The guard rail 19 is preferably located somewhat below the stationary platen 1 and forwardly thereof, and in order to prevent an operator from inserting a hand or fingers between the guard rail and the stationary platen 1, supplemental guarding elements or fences are provided in the form of wire frames 25 located on opposite sides of the actuator 15 and fixedly attached to the guard rail 19. The wire frames 25 occupy substantially the greater part of the area between the guard rail 19 and the stationary platen 1 and are effective to prevent an operator from inserting his hand immediately under the stationary platen.

In operation, if during the upward travel of the movable bed 2 an operator inadvertently positions his hand over the bed to adjust work or for some other reason, as the bed travels upwardly, the operator's hand strikes the guard rail 19, moving the latter upwardly and with it the actuator 15, which swings on its pivot and actuates the control valve 12. When the latter is opened, air pressure is released into cylinder 7 and immediately causes operation of the valve means which reverses travel of the bed 2 instantaneously, stopping its upward travel and causing it to move downwardly to its initial position, where it remains until the operator again actuates the valve means to elevate the bed.

While the invention has been described with reference to the details of construction herein shown, it is not confined to the precise arrangement described, and the application is intended to cover such modifications and departures as may come within the intent of the improvement or the scope of the following claims.

I claim:

1. In a hydraulic press of the type including a bed which moves upwardly into engagement with a stationary platen and returns to initial position during each cycle and valve mechanism controlling the movement of water for operating the bed upwardly and downwardly, guard mechanism comprising a compressed air cylinder operatively connected to said valve means for operating it, a compressed air line connected with said cylinder, a compressed air valve in said air line normally in closed position, a horizontally positioned guard rail which is stationary during the normal operation of the bed, an actuator movable into engagement with said compressed air valve to move the latter to open position and having its lower end slidably engaging said guard rail, and vertically movable supporting members pivotally connected to the ends of the guard rail permitting greater movement of one end of the guard rail than the other.

2. In a hydraulic press of the type including a bed which moves upwardly into engagement with a stationary platen and returns to initial position during each cycle and valve mechanism controlling the movement of water for operating the bed upwardly and downwardly, guard mechanism comprising a compressed air cylinder operatively connected to said valve means for operating it, a compressed air line connected with said cylinder, a compressed air valve in said air line normally in closed position, a horizontally positioned guard rail which is stationary during the normal operation of the bed, a pivoted actuator movable into engagement with said compressed air valve to move the latter to open position and having a forked lower end slidably engaging said guard rail, vertically movable supporting plates pivotally connected to the ends of the guard rail permitting greater movement of one end of the guard rail than the other, said supporting plates having slots therein, guides for said plates, and pins carried by said guides and engaging said slots.

3. In a hydraulic press of the type including a vertically movable bed which moves upwardly into engagement with a stationary platen and returns to initial position during each cycle and valve means governing the movement of water for operating the bed upwardly and downwardly, guard mechanism comprising a horizontally positioned guard rail which is stationary during the normal operation of the bed and located forwardly of said movable bed and beneath the limit of its upward travel, an actuator operatively associated with and moved by said guard rail, a control valve positioned for engagement and operation by said actuator, a compressed air line in which said control valve is located, a cylinder communicating with said compressed air line, and a piston in said cylinder connected to the aforesaid valve means whereby the latter is operated and the direction of movement of the bed is reversed when said guard rail is engaged and moved upwardly.

4. In a hydraulic press of the type including a vertically movable bed which moves upwardly into engagement with a stationary platen and returns to initial position during each cycle and valve means governing the movement of water for operating the bed upwardly and downwardly, guard mechanism comprising a horizontally positioned guard rail which is stationary during the normal operation of the bed and located forwardly of said movable bed and beneath the limit of its upward travel, a pivoted lever having its lower end operatively associated with said guard rail and actuated thereby, a control valve in the path of movement of the upper end of said lever and positively operated thereby, a compressed air line in which said control valve is located, a cylinder communicating with said compressed air line, and a piston in said cylinder connected to the aforesaid valve means whereby the latter is operated and the direction of movement of the bed is reversed when said guard rail is engaged and moved upwardly.

5. In a hydraulic press of the type including a vertically movable bed which moves upwardly into engagement with a stationary platen and

returns to initial position during each cycle and valve means governing the movement of water for operating the bed upwardly and downwardly, guard mechanism comprising a horizontally positioned guard rail which is stationary during the normal operation of the bed and located forwardly of said movable bed and beneath the limit of its upward travel, an actuator operatively associated with and moved by said guard rail, vertically movable supporting members pivotally connected to the ends of the guard rail permitting greater movement of one end of the guard rail than the other, a control valve positioned for engagement and operation by said actuator, a compressed air line in which said control valve is located, a cylinder communicating with said compressed air line, and a piston in said cylinder connected to the aforesaid valve means whereby the latter is operated and the direction of movement of the bed is reversed when said guard rail is engaged and moved upwardly.

6. In a hydraulic press of the type including a vertically movable bed which moves upwardly into engagement with a stationary platen and returns to initial position during each cycle and valve means governing the movement of water for operating the bed upwardly and downwardly, guard mechanism comprising a horizontally positioned guard rail which is stationary during the normal operation of the bed and located forwardly of said movable bed and beneath the limit of its upward travel, a pivoted lever having its lower end operatively associated with said guard rail and actuated thereby, vertically movable supporting members pivotally connected to the ends of the guard rail permitting greater movement of one end of the guard rail than the other, a control valve in the path of movement of the upper end of said lever and positively operated thereby, a compressed air line in which said control valve is located, a cylinder communicating with said compressed air line, and a piston in said cylinder connected to the aforesaid valve means whereby the latter is operated and the direction of movement of the bed is reversed when said guard rail is engaged and moved upwardly.

7. In a hydraulic press of the type including a vertically movable bed which moves upwardly into engagement with a stationary platen and returns to initial position during each cycle and valve means governing the movement of water for operating the bed upwardly and downwardly, guard mechanism comprising a horizontally positioned guard rail which is stationary during the normal operation of the bed and located forwardly of said movable bed and beneath the limit of its upward travel, a pivoted lever having a forked lower end slidably engaging said guard rail at its central portion, vertically movable supporting plates pivotally connected to the ends of the guard rail permitting greater movement of one end of the guard rail than the other, said supporting plates having slots therein, guides for said plates, pins carried by said guides and engaging said slots, a control valve in the path of movement of said lever and positively operated thereby, a compressed air line in which said control valve is located, a cylinder communicating with said compressed air line, and a piston in said cylinder connected to the aforesaid valve means whereby the latter is operated and the direction of movement of the bed is reversed when said guard rail is engaged and moved upwardly.

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