M. A. POSSONS.

SAFETY DEVICE FOR PRESSES.

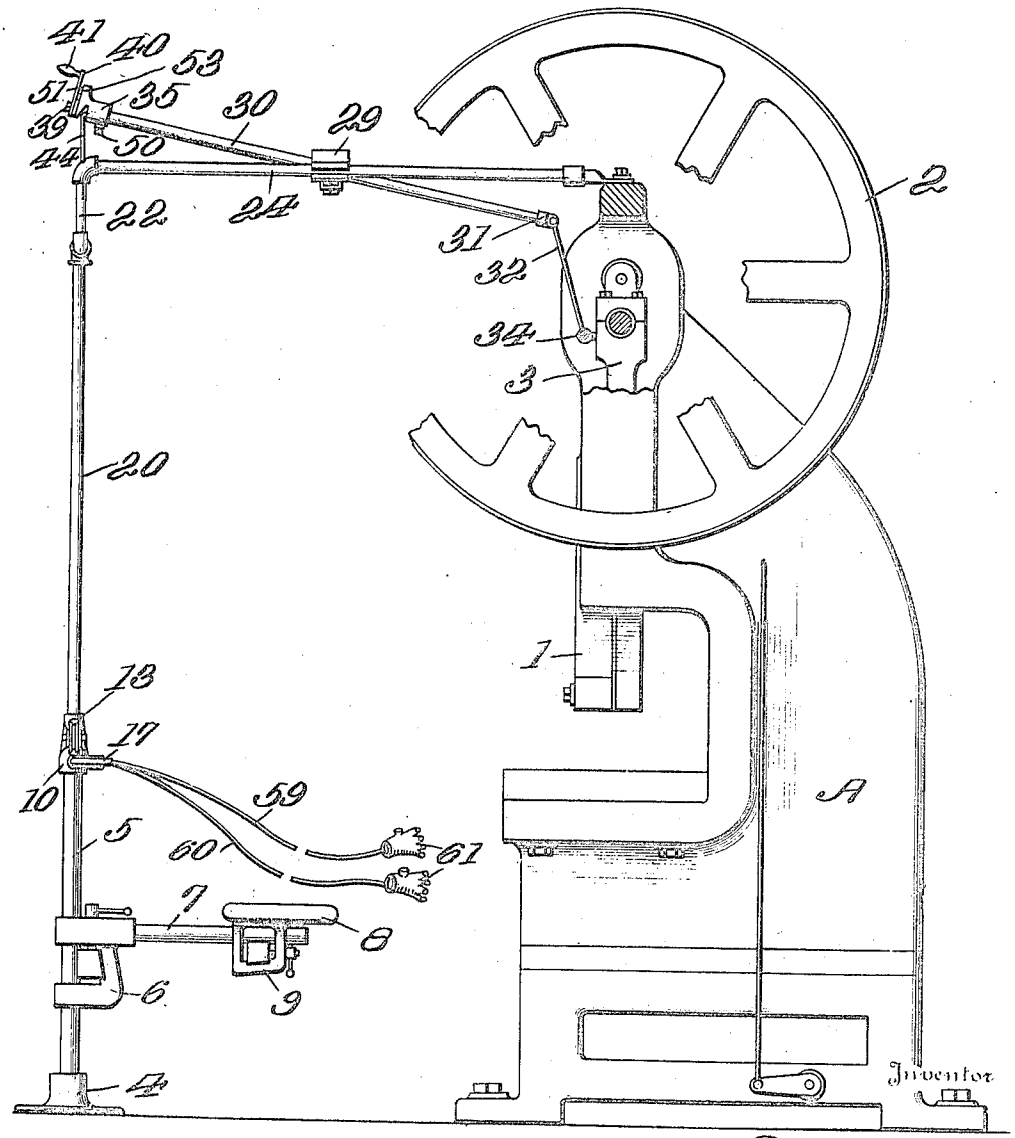
APPLICATION FILED JUNE 27, 1921.

1,417,346.

Patented May 23, 1922.

3 SHEETS—SHEET 1.

Fig. 1.



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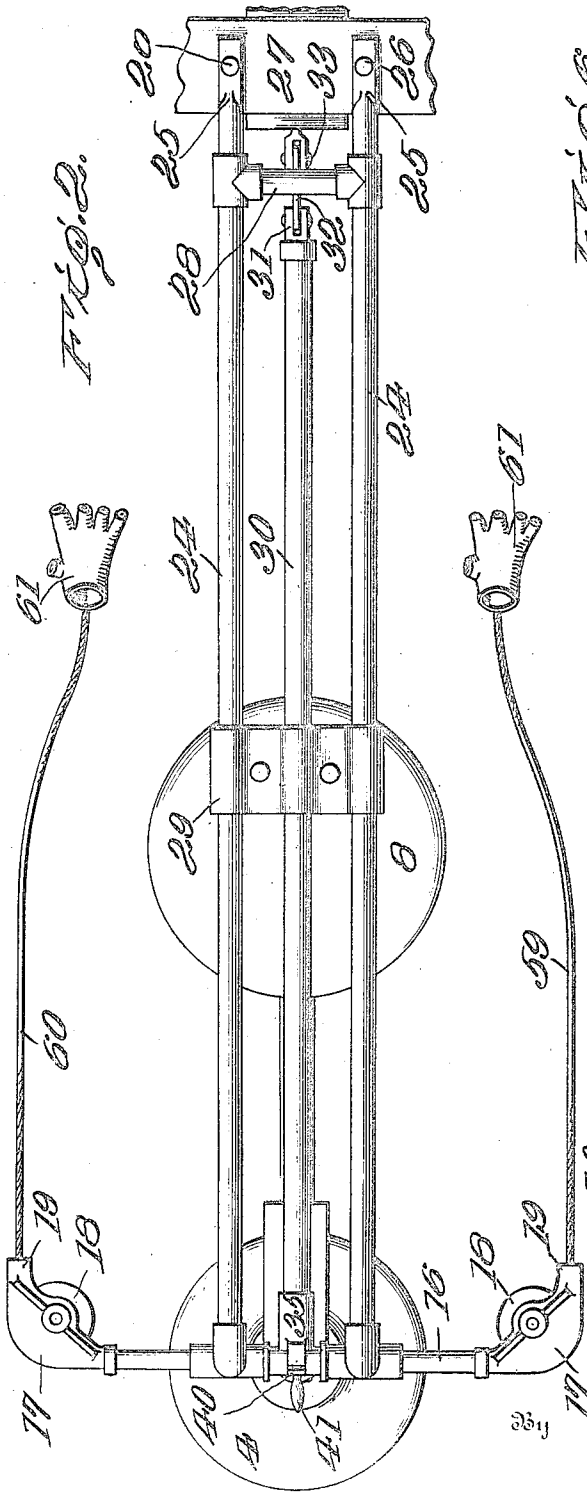


Fig. 2.

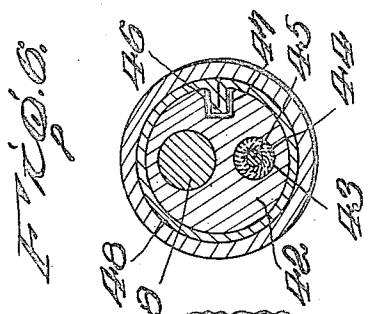


Fig. 3.

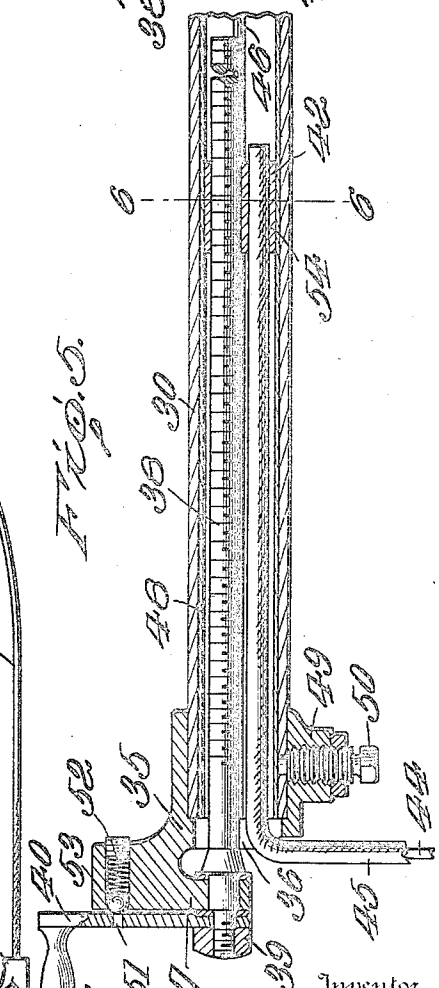


Fig. 4.

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3 SHEETS—SHEET 3.

FIG. 3.

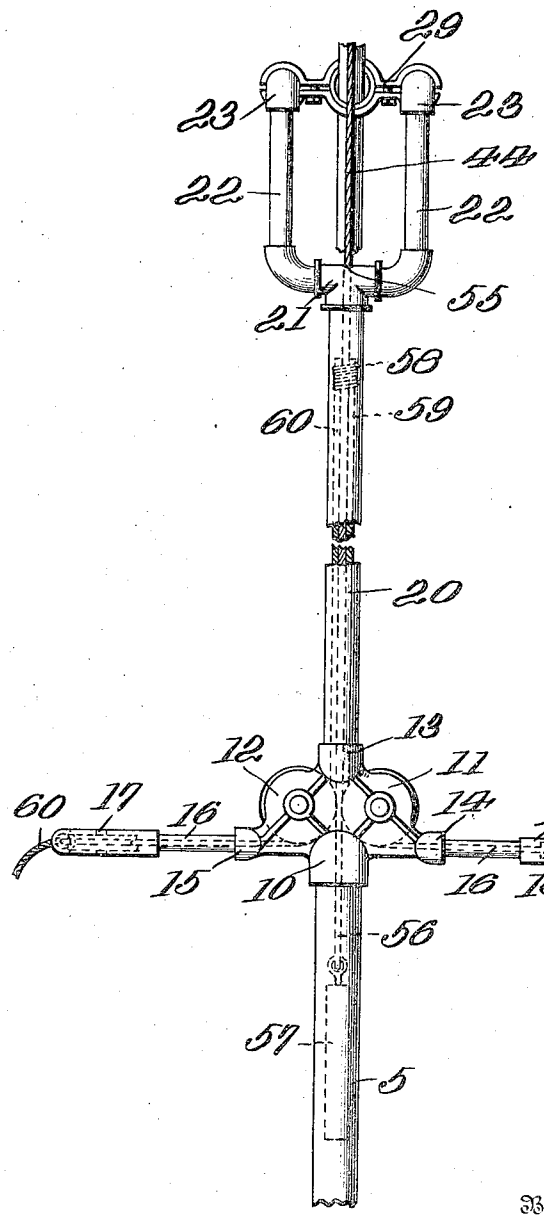
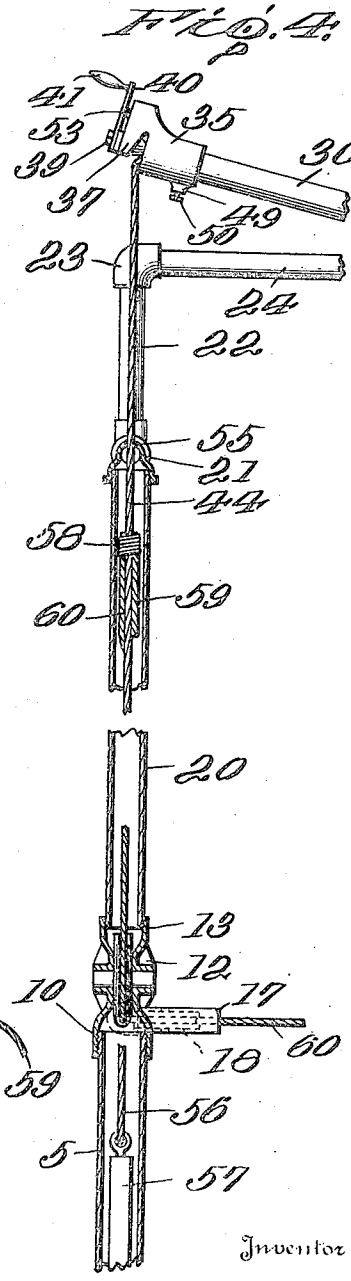


FIG. 4.



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UNITED STATES PATENT OFFICE.

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SAFETY DEVICE FOR PRESSES.

1,417,346. Specification of Letters Patent. Patented May 23, 1922.

Application filed June 27, 1921. Serial No. 480,901.

To all whom it may concern:

Be it known that I, MINARD A. POSSONS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Safety Devices for Presses, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in safety devices for presses, and more particularly to a device applicable to a punch or die press, although the invention is not limited to a press designed to do any particular work, whereby a positive means is insured to the hands of the operator to prevent injury to them from the reciprocating or moving punch or die and at the same time allow sufficient movement of the hands of the operator to properly handle his work and to reach the material which he is feeding to or working in the machine.

The object of my invention is to provide a safety device for presses, or the like, whereby the element of danger to the hands of the operator is eliminated.

Another object of my invention is to provide a safety device for presses, or the like, which eliminates the element of danger to the hands of the operator of the machine and which is so constructed as to be applicable to machines of this nature as known in the art and found on the market.

A further object of my invention is to provide the hands of the operator of a press, or the like, with a safety appliance which is cheap of manufacture, efficient in use and easy of application, and which will insure a positive means of preventing injury to the hands and at the same time allow sufficient movement of the hands to properly operate the machine and handle the material being worked upon.

Other and further objects and advantages of my improved invention will appear in the following specification and attached drawings, in which

Figure 1 is a side elevation of a punch press equipped with my improved safety device.

Fig. 2 is a top plan view of my improved safety device.

Fig. 3 is a view in front elevation, showing the arrangement of the cable from the point where it is attached to the gloves worn by the operator to the point where the cable is attached to the rocker arms.

Fig. 4 is a side view of Fig. 3, taken in longitudinal vertical section, the outer end of the rocker arm being shown in full lines.

Fig. 5 is a sectional view of the outer end of the rocker arm, showing the manner of attaching the cable in the arm and means carried by the arm for adjusting the take-up on the cable.

Fig. 6 is a transverse section taken on the line 6—6 of Fig. 5.

To those skilled in the art, it is well-known in the operation of punch presses, die presses, or others of like character, the hands of the operator of the machine are in great danger of being mutilated by being caught between the co-acting moving and stationary members of the machine.

To overcome these dangers, I have devised a safety device, the description of which follows and reference is made to the drawings wherein similar parts are designated throughout the description by like reference numerals.

Referring now to the drawings, A represents a conventional form of punch press carrying the usual reciprocating punch 1, and provided, as is general, with a fly-wheel 2. The reciprocatory movement of the punch 1, is provided for by the crank-arm 3, to which it is attached.

Situated in front of the press is a floor-flange 4, into which is suitably fastened by screw-threads, or the like, a vertical, lower, hollow cylindrical column 5, which carries the adjustable seat bracket 6 which in turn carries the horizontal seat support 7, upon the end of which is the adjustable seat 8, upon which the operator of the press sits. Through the medium of the adjustable seat bracket 6, the height of the seat from the floor can be fixed as desired, and through the medium of the adjustable means 9, carried by the seat, the seat can be adjusted hori-

zontally upon its support 7, for bringing the seat nearer to or carrying the seat from the press. By this arrangement, together with the adjustable means hereinafter to be described, my safety device can be used by operators of different sizes or heights.

Mounted upon the upper end of the lower column 5 is a housing 10, having mounted therein in a vertical plane, two sheaves 11 and 12, and the housing is further provided with open ends 13, 14 and 15. Suitably fitted into the openings 14 and 15 of the housing 10 and extending at right angles to the vertical column 5, are two hollow cylindrical members 16, provided at their outer ends with housings 17, in which are mounted in a horizontal plane the sheaves 18, while the housings 17 have open ends 19, which extend inwardly at right angles to the member 16.

To perform an extension of the lower column 5, I have suitably mounted in the open end 13 of the housing 10, an upper column 20, which terminates at its top in a T-joint 21. Carried in the T-joint are two vertically upwardly extending parallel members 22, in separated parallel relation, as clearly shown in Fig. 3, which I have termed the yoke, and extending inwardly at right-angles from the top ends 23 of the yoke, are two members 24, which I have termed arch members, whose inner ends 25 are suitably fastened or bolted, as shown at 26, to the top of the press 27. To brace and strengthen the parallel arch-members 24, I have provided a cross-member 28, as shown in Fig. 2.

Pivotally mounted within the saddle 29, which is carried upon the arch-members 24, is a rocker-arm 30, constructed to rock in the saddle and between the parallel arch-members. The rocker-arm 30 is hollow, as clearly shown in Fig. 5, and its inner end is provided with a pivotal connection 31, with a connecting rod 32, the opposite end of which is pivotally connected to the crank 3 of the press, as at 34, which clearly appears in Fig. 1 of the drawing.

The outer end of the rocker-arm 30 carries a casting 35, provided with an open end 36. The casting 35 is provided with a downwardly extending portion 37, which extends to a point in front of, but separated from the open end 36 of the casting. Rotatably mounted in the portion 37 of the casting 35 is an adjusting screw 38, which extends through the open end 36 of the casting and into the hollow rocker-arm 30. The outer end of the adjusting screw 38 protrudes beyond the face of the portion 37 of the casting and is suitably fastened as shown at 39 to a crank 40 which is provided with a handle 41 for rotating the screw 38.

A circular nut 42 is penetrated in its upper portion by the screw 38 and screw-threadedly carried thereon, while its lower portion is provided with an opening 43 wherein a steel cable 44 with a rope or other like covering 45 is fastened. The nut 42 is further provided throughout its length with a groove or slot 46, wherein the inwardly crimped or bent ends 47 of the sleeve 48, which extends the entire length of the adjusting screw 38 fit and prevent the nut 42 from rotating within the sleeve 48 or upon the adjusting screw 38.

The casting 35 is further provided with a raised portion 49, through which extends a set screw 50, for locking the casting to the rocker-arm, as appears in Fig. 5. As also shown in Fig. 5, the crank 40 is provided with an opening 51, in which is resiliently held by means of the spring 52, a ball or detent 53 for holding the crank and the adjusting screw 38 from possible rotation after the adjusting means is once set.

The cable 44, which has its one end 54 fastened in the nut 42, as described, leads outwardly through the hollow rocker arm and the open end 36 of the casting 35, and then downwardly between the parallel members 22 of the yoke and into the upper column 20, through the opening 55 in the T-joint 21. The rope ends at a point in the lower column 5, well below the housing 10, as shown at 56, and has a weight 57 attached thereto to keep the slack out of the cable.

At a point 58, situated in the upper column 20, there are two cables or ropes 59 and 60, attached by suitable means to the cable 44. These cables extend downwardly through the upper column 20 and into the housing 10, where they separate and the cable 59 leads around the sheave 11 and the cable 60 around the sheave 12. The cables then lead through the horizontal members 16, around the sheaves 18 and outwardly through the open ends 19 of the housing 17.

To the ends of the cables 59 and 60 are attached fingerless gloves 61, which gloves are worn by the operator of the machine.

The operation of the device is as follows: The operator of the machine first adjusts the seat 8, both vertically and horizontally, to place himself in the proper position relative to the machine A. He then places his hands in the fingerless gloves 61 and then starts the machine in operation. As the crank 3 and punch 1 of the machine descend, the outer end of the rocker arm 30 is raised through the medium of its connection 32 to the crank 3, and its pivotal mounting in the saddle 29. As the outer end of the rocker arm 30 ascends, the cable 44 and the cables 59 and 60 are drawn taut and upwardly through the upper column 20, with the result that the hands of the operator, which are in the gloves 61, are drawn away from the press, and when the punch 1 has reached its contact with the platen or bed of the press, the hands of the operator are drawn

entirely away from the press and out of possible engagement therewith.

It will be readily seen and understood that this device can be adjusted to any type of machine and any size of operator. As applied to a press having a long stroke, tne saddle 29 would be at about the position on the arch-member 24, as shown in Fig. 1, while if the press be of a short stroke, it would be necessary then to slide the adjustable saddle inwardly towards the press and thereby make a greater throw of the outer end of the rocker-arm and thus a greater throw of the cable 44.

The adjustment of the clearance, which is required for the operator's hands in connection with the punch or dies of the machine, is easily and readily adjusted by turning the crank 51 on the end of the rocker-arm, which will either shorten or lengthen the cable by carrying the nut 42 inwardly or outwardly in the hollow rocker-arm.

From the foregoing, it will be readily seen that I have provided a device which affords a positive means of drawing the hands of an operator of a punch or die press, or a machine of like character, from contact with the machine at the time the die or punch is in pressed relation with the platen or bed of the press and thereby insure the operator's hands from injury.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A safety device for presses or the like, comprising a rocker-arm pivotally supported in front of and in separated relation to the press and above an operator thereof, one end of the rocker-arm in operative connection with the press and the other end of the rocker-arm in operative connection with the press operator, whereby at a predetermined time the hands of the operator are withdrawn from engagement with the press.

2. A safety device for presses or the like, comprising a rocker-arm pivotally supported in front of and in separated relation to the press and above an operator thereof, one end of the rocker-arm in operative connection with the crank arm of the press, an operative connection between the opposite end of the rocker-arm and the hands of the press operator, whereby the hand of the operator is withdrawn from engagement with the press at a predetermined time.

3. A safety device for presses or the like, comprising a rocker-arm pivotally supported in front of and in separated relation to the press and above an operator thereof, one end of the rocker-arm operatively connected to the crank arm of the press, its opposite end adapted for operative connection with the hands of the press operator through the medium of a cable, whereby when the connection is made with the hands of the operator his hands will be withdrawn from engagement with the press at a predetermined time.

4. A safety device for presses or the like, comprising a vertical column, arch-members having their outer ends in communication with the vertical column by means of a yoke and their inner ends fastened to the top of the press, a rocker-arm pivotally mounted upon the arch-members, the inner end of the rocker-arm connected to the crank of the press, the outer end of the rocker-arm adapted to operative connection with the operator of the press, whereby the hands of the operator are withdrawn from the press as the press crank descends.

5. A safety device for presses or the like, comprising an upper and lower hollow vertical column, an adjustable seat carried by the lower column, a yoke carried by the upper column, arch members connecting the yoke to the top of the press, a rocker-arm pivotally mounted on the arch-members, one end of the rocker-arm operatively connected with the press and its opposite end provided with operative connection to the operator, for the purpose described.

6. A safety device for presses or the like, comprising an upper and lower vertical hollow column, a yoke carried by the upper column, arch-members connecting the yoke to the top of the press, a horizontally adjustable saddle carried by the arch-members, a hollow rocker-arm carried by the saddle and adapted to rock therein, a connection between one end of the rocker-arm and the crank of the press, a cable connected to the opposite end of the rocker-arm and extending downwardly through the upper column, and outwardly therefrom at a point adjacent its connection to the lower column, the outwardly extending ends of the cable carrying means for connection with the hands of an operator of the press and an adjusting means carried by the rocker-arm to vary the length of the cable, for the purpose described.

7. A safety device for presses or the like, comprising a rocker-arm having one end pivotally connected to the crank of the press, a cable carried by its opposite end and adapted for connection to the operator of the press, and an adjusting means carried by the rocker-arm to vary the length of the cable, whereby the hands of the operator are removed from the press at a predetermined time.

8. A safety device for presses or the like, comprising a rocker-arm in operative connection with the crank of a press, the rocker-arm provided with an adjusting means, a cable having one end connected to the adjusting means and its opposite end adapted for connection with an operator of the press, whereby through the medium of the adjust-

ing means the length of the cable can be varied, for the purpose described.

9. A safety device for presses or the like, comprising a rocker-arm having one end in operative connection to the crank of the press, the opposite end of the rocker-arm provided with an adjusting means, and a cable having one end fastened to the said adjusting means and its opposite end adapted for connection with on operator of the press, for the purpose described.

10. A safety device for presses or the like, comprising a vertically hollow column composed of an upper and a lower section, a yoke carried by the upper section, arch members connecting the yoke to the press, a rocker-arm mounted between the arch members, one end of the rocker-arm in connection with the crank of the press, the opposite end of the rocker-arm provided with a cable extending downwardly through the upper column section and outwardly therefrom at a point near its connection with the lower column section, and means carried by the upwardly extending ends of the cable for connection with an operator of the press, for the purpose described.

11. A safety device for presses, or the like, comprising a rocker-arm in operative connection with the crank arm of the press, an operative connection between the outer end of the rocker-arm and an operator of the press, the rocker-arm adjustable to control the throw of its outer end, and an adjusting means carried by the outer end of the rocker-arm for adjusting the connection between it and the press operator, for the purpose described.

12. A safety device for presses or the like, comprising a rocker-arm, horizontally adjustable in relation to the press, the inner end of the rocker-arm in operative connection with the crank arm of the press, the outer end of the rocker arm carrying an adjusting means, a cable carried by the adjusting means and adapted for connection with an operator of the press, and adjusting means carried by the outer end of the rocker-arm adjustable within the arm for adjusting the length of the cable, for the purpose described.

13. In a safety device for presses or the like, means at the rear of the operator of the press, operatively connected with a rocker-arm in operative connection with a reciprocating part of the press, said means extending in front of the operator and carrying means operatively attached to the hands of the operator for the purpose described.

14. In a safety device for presses or the like, means at the rear of a press operator operatively connected with a rocker-arm in operative connection with a reciprocating part of the press, said operative connection with the press being made above the operator, and said means extending in front of the operator, and operatively attached to the operator's hands for the purpose described.

15. In a safety device for presses or the like, means in operative connection with the press and an operator thereof for drawing the hands of the operator out of engagement with the press at a predetermined time, said means having one end in operative connection with the press above the operator and its other end extending downwardly behind and past the operator for the purpose described.

16. In a safety device for presses or the like, means at the rear of an operator of the press in operative connection with a reciprocating part of the press through the medium of a rocker-arm above the operator, said means carrying two parts extending at each side of the operator to a point in front of him, and said forwardly extending parts attached to the operator's hands for the purpose described.

17. In a safety device for presses or the like, a vertical standard in front of the press, a transverse member in connection with the press and the vertical standard, and means carried by the transverse member having one end in operative connection with a moving part of the press and its other end attached to the hands of the operator of the press for the purpose described.

18. In a device such as set forth in claim 17, the said means carried by the vertical standard and adjustable vertically and horizontally in respect thereto.

19. In a device such as set forth in claim 1, an adjusting device carried by the rocker-arm for the purpose of adjusting the connection between it and the hands of the operator.

20. In a device such as set forth in claim 1, a hollow rocker-arm carrying therein an adjusting device for the purpose of adjusting the connection between the rocker-arm and the hands of the operator.

21. A safety device for presses or the like, comprising a rocker-arm above an operator of the press, one end of the rocker arm operatively connected with the crank-arm of the press, its opposite end adapted for operative connection with the hands of the press operator through the medium of a cable, and an adjusting means carried by the rocker-arm and connected to the cable, whereby the cable length can be adjusted for the purpose of withdrawing the hands of the operator from engagement with the press at predetermined time.

22. In a safety device for presses or the like, a vertical standard, a transverse connection between the vertical standard and the press, a rocker-arm mounted on the

transverse connection, one end of the rocker-arm in operative connection with a movable part of the press, a cable extending from the opposite end of the rocker-arm downwardly through the vertical standard and outwardly past an operator of the press, the end of the cable attached to the hands of the press operator, and an adjusting means carried by the rocker-arm for adjusting the length of the cable.

In testimony whereof I hereunto affix my signature.

MINARD A. POSSONS.