April 14, 1931. A. R. HOMER 1,800,528

SAFETY DEVICE FOR PUNCH PRESSES OR THE LIKE

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Fig. 1

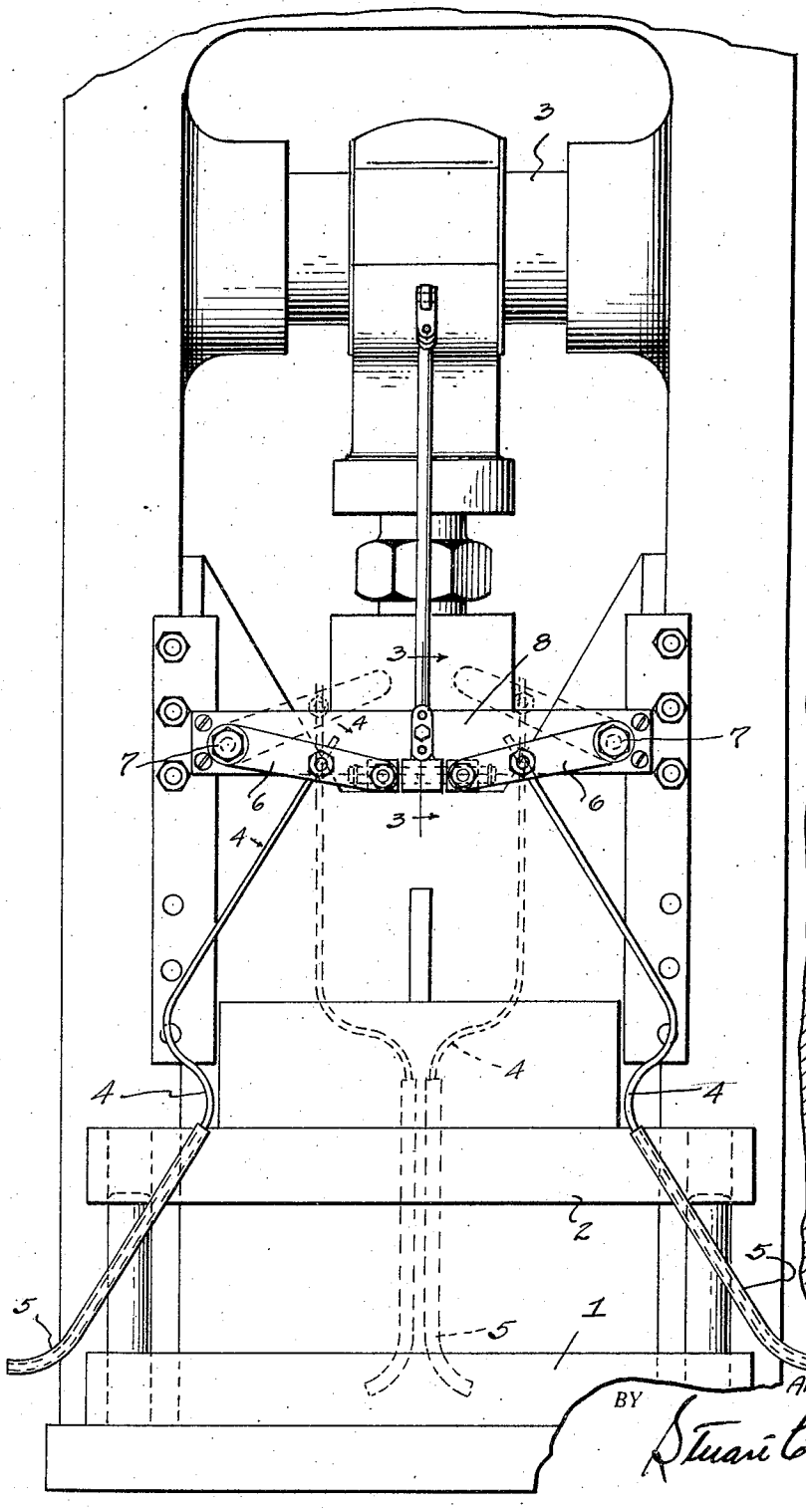
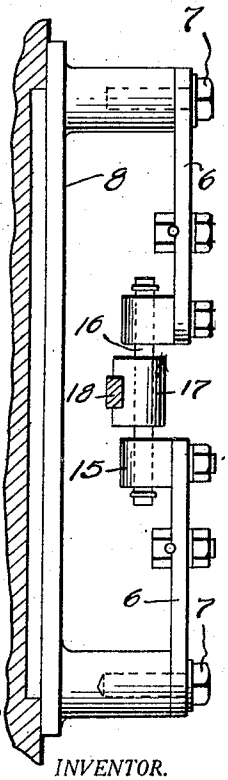


Fig. 6



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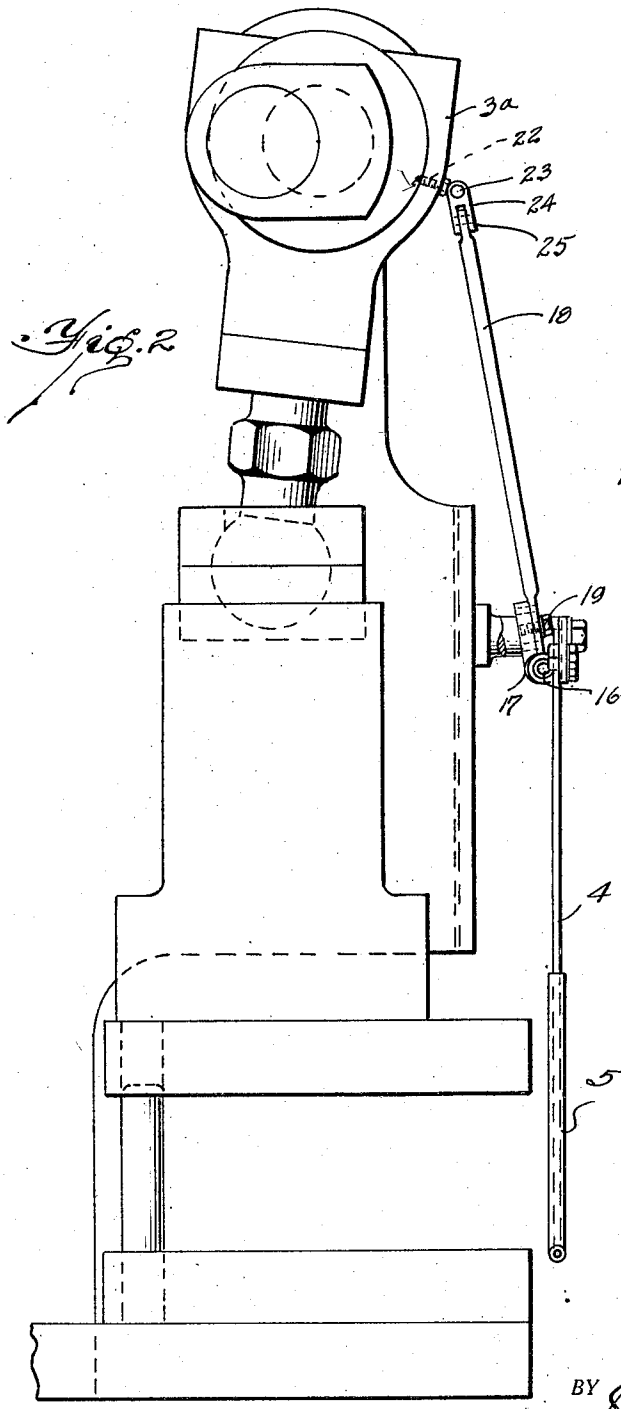


Fig. 2

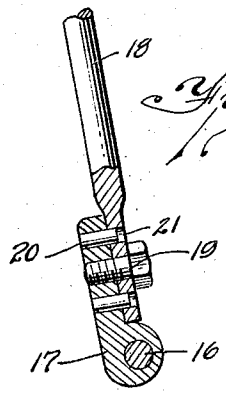


Fig. 3

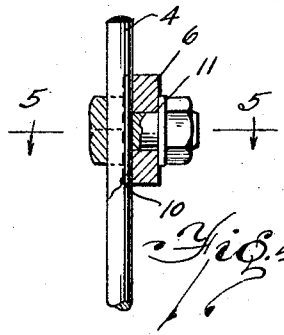


Fig. 4

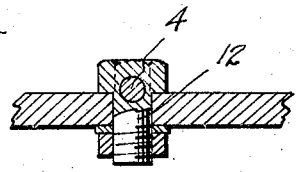


Fig. 5

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UNITED STATES PATENT OFFICE

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SAFETY DEVICE FOR PUNCH PRESSES OR THE LIKE

Application filed September 7, 1928. Serial No. 304,460.

This invention relates to a safety device for punch presses or the like, which is arranged to sweep the arms and hands of an operator out of the way of the press when the same is operating.

The invention has as an object the provision of an improved safety device which can be easily attached to any press, and which while involving a simple structure, is one which possesses a positive and reliable operation for pushing the arms of the operator out from under the rams of the press.

In the accompanying drawings:

Fig. 1 is a front elevational view of a press with the improved safety device of this invention attached thereto.

Fig. 2 is a side elevation of the same.

Fig. 3 is a detail of some of the operable connections, taken on line 3—3 of Fig. 1.

Fig. 4 is a detail view, partly in section, illustrating the manner in which the sweeping arms are attached to the supporting arms therefor.

Fig. 5 is a section taken on line 5—5 of Fig. 4.

Fig. 6 is a detail view illustrating the arrangement of the sweeping arm operating mechanism.

In these drawings a punch press is shown as consisting of a base plate 1, a ram 2 which is operated by a suitable crank 3 through a pitman 3*a*. The base plate and ram will have suitable dies, punches or the like associated therewith in the usual manner.

The arm sweeping devices take the form of a pair of arms 4 suitably shaped as shown which may be provided each with a rubber sleeve 5. There are two rocker arms 6 which are pivoted each at 7 to a stationary part of the press, as by means of suitable plate 8.

With reference to Fig. 4 it will be observed that each rocker arm 6 is provided with a groove 10 in which is arranged to fit one sweeping arm 4. There is a bolt hole 11 through the rocker arm which cuts through the arm at the point of the groove. A bolt 12 extends through the bolt hole 11, and the same is provided with an aperture through which the arm 4 extends, as illustrated in Fig. 5. When the nut on the end of the bolt 12 is tightened the arm 4 is clamped against the groove 10 and held from sliding movement therein. From this construction it will be seen that the arm 4 can not twist as regards the rocker arm 6 by reason of being locked in the groove, and that it cannot slide lengthwise in the groove when the nut on the bolt is tightened. However, when the nut on the bolt is loosened the arm is free to slide in the opening through the bolt 12 for adjustment purposes.

Each arm 6 is provided with a sleeve 15 slidably connected to a cross bolt 16 (Fig. 6). This cross bolt is carried by a head 17 which is connected to an operating arm 18. The manner of connection is illustrated in Fig. 3 and consists of a bolt 19 which connects the two parts together with pins 20 and cooperating apertures 21. This sort of a connection prevents relative turning movement of the arm and head.

The opposite end of arm 18 is connected to a moving part of the press, and for this purpose the pitman 3*a* may be employed. The connection with the pitman advantageously takes the form of an eye bolt 22 having cross pin 23 to which a link 24 is pivoted. This link is in turn pivotally connected with the arm 18, as shown at 25.

In the operation of the press, the rod 18 is reciprocated in accordance with the movements of the pitman and this effects rocking of the arms 6 to and from the full and dotted line positions shown in Fig. 1. In this movement the arm sweeps 4 move to and from the full and dotted line positions. When the ram of the press is in uppermost position the guard device parts take the position shown in dotted lines with the sweeping arms in close proximity and positioned centrally of the working side of the press. When the ram comes down the sweeping arms move to the position illustrated in full lines.

There are times when it is necessary to make certain adjustments in the press of the nature shown, among which is an adjustment to give proper height to the ram, and it is necessary to have free access to the press mechanism for this purpose. Accordingly, the arm 18 may be disconnected from the

head 17 by removing the bolt 19 whereupon the same can be swung out of the way on its pivotal connection with the link 25. The link 25 in effect establishes a universal joint between the pitman and the rod 18 so that the rod can be moved to any position out of the way.

Each time the ram comes down the sweeping arms 14 move outwardly from their central position thus sweeping the hands and arms of the operator out of the way. This is especially advantageous where the ram makes an unexpected repeat operation. When the ram is raised the sweep arms are in close proximity next the center line of the working side of the press and offer very little incumbrance to the operator. The structure as a whole is of simple construction and one which can be applied to any press without requiring modification of the press in any way. Moreover, it has a minimum number of working parts, and indeed, there are no parts which are subject to wear such as would interfere with the operation of the guard device.

At the point where the arm 18 is connected to the pitman there will not be a straight reciprocating movement but there will be a circular movement corresponding to the movement of the crank. This movement is taken care of inasmuch as the head 17 may rock relative to the arms 6 by reason of the connection established by the cross rod 16.

Claims:

1. A safety device for a punch press or the like, comprising a pair of sweep arms, a pair of oppositely disposed rocker arms pivoted to a fixed part of the press, said sweep arms being connected respectively to the rocker arms, a cross rod slidably connected with the ends of the rocker arms, and an operable connection between said cross rod and a movable part of the press, the sweep arms and press being coordinated so that when the ram of the press is in raised position the sweep arms are close together near the center line on one side of the press, and as the ram lowers the sweep arms pivot oppositely outward.

2. A safety device for a punch press or the like, comprising a pair of sweep arms, a pair of oppositely disposed rocker arms pivoted to a fixed part of the press, said sweep arms being connected respectively to the rocker arms, a cross rod slidably connected with the ends of the rocker arms, and an operating arm connected to the cross rod and a moving part of the press, whereby upon operation of the press the rocker arms are moved to actuate the sweep arms, said sweep arms being arranged to sweep the hands and arms of the operator out of the way of the press, the connection between the operating arm and said cross rod being detachable to permit of access to the press for adjusting purposes.

3. A safety device for a punch press or the like, comprising a pair of sweep arms, means movably mounting the sweep arms, each adjacent a side of the press, said press including a crank with a connecting rod thereon for moving the ram, a rod operatively connected to the means for mounting the sweep arms, and a universal joint connection between one end of the rod and a part of the press operating connecting rod.

4. A safety device for a punch press or the like, comprising a pair of sweep arms, means movably mounting the sweep arms, each adjacent a side of the press, said press including a crank with a connecting rod thereon for moving the ram, a rod operatively connected to the means for mounting the sweep arms, and a universal joint connection between one end of the rod and a part of the press operating connecting rod, the connection between the rod and the said means for mounting the sweep arms being detachable to permit the rod to be moved for press adjusting purposes.

In testimony whereof I affix my signature.

ALBERT R. HOMER.