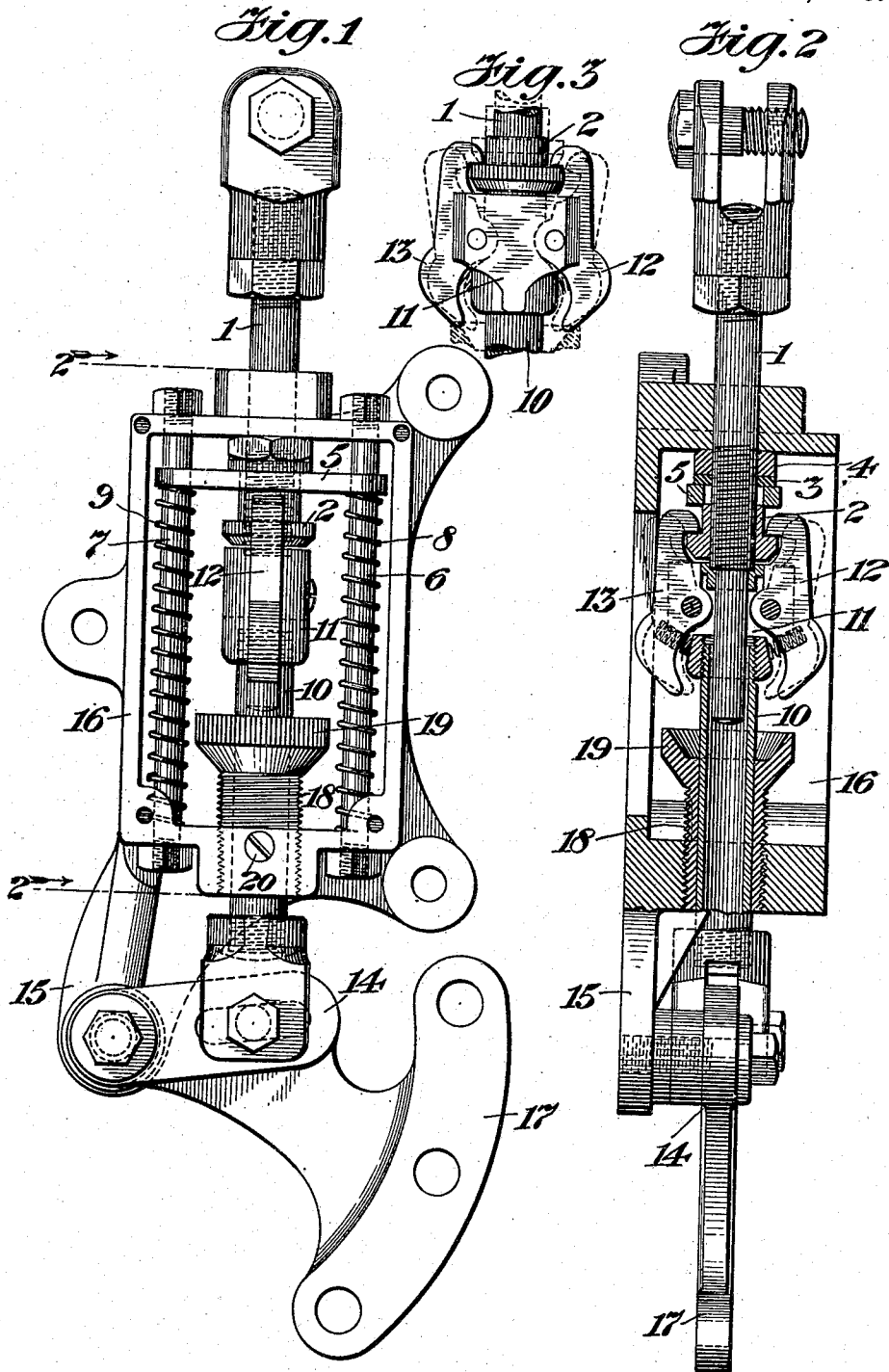


K. J. SMITH.
SAFETY APPLIANCE FOR CLUTCH DEVICES.
APPLICATION FILED AUG. 16, 1907.

937,481.

Patented Oct. 19, 1909.



Witnesses:
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UNITED STATES PATENT OFFICE.

KILIAN J. SMITH, OF NEW YORK, N. Y.

SAFETY APPLIANCE FOR CLUTCH DEVICES.

937,481.

Specification of Letters Patent.

Patented Oct. 19, 1909.

Application filed August 16, 1907. Serial No. 388,843.

To all whom it may concern:

Be it known that I, KILIAN J. SMITH, a citizen of the United States, and resident of the city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Safety Appliances for Clutch Devices, of which the following is a specification.

This invention relates to automatic releasing devices adapted for use with clutch devices as ordinarily used in connection with power presses.

The object of my invention is to provide a simple and efficient device which may be used in connection with clutch mechanisms of various types by a simple change in the connection means without change in the clutch mechanism.

The use and operation of the ordinary clutch mechanism of a power press is well known and need not be explained herein further than to set out the features of operation which are common to all. In such machines a heavy fly-wheel is continually rotating and the punch mechanism is connected thereto by means of a clutch operated by a foot-treadle. When the foot-treadle is pressed the clutch connects the punch mechanism with the rotating fly-wheel and the punch is caused to operate as long as the foot treadle is held down. In a large class of work done upon these power presses only one operation of the punch is required and then the operator raises his foot from the treadle, thus releasing the clutch and stopping the punch. The operator then places the next piece under the punch and the operation is repeated. It is well known that accidents frequently occur in the operation of these presses by reason of the carelessness of the operator in not raising his foot from the treadle at the right time, or from the treadle becoming caught, etc. This not only frequently causes serious injury to the operator through loss of fingers or hand but also may cause much damage to the press and the dies.

The principal object of this invention is to provide a device by means of which such accidents may be prevented and the operation of machinery of this nature rendered safe.

In carrying out my invention I have provided a releasing device of simple construction and positive in its operation which may be used with any of the standard makes of

power presses without changing the mechanism of the press other than to simply connect my device between the foot-treadle and the clutch, which may be done by providing two shorter link connections instead of one long one ordinarily used.

My device is so designed that it may be mounted in any position and when so mounted will operate equally well, as will be seen from the description hereinafter.

In the drawing I have shown a construction which I have found by actual use to be a very efficient form of device for the purpose set out. Various other forms may be found to accomplish the desired results as well but it will be sufficient for the purpose of illustrating the operation of my invention to describe in detail the construction as shown.

In the several views similar parts have been given the same reference character.

Figure 1 is a front elevation, with the cover removed, of a device such as described. Figure 2 is a side elevation of Fig. 1 with the portion between the broken lines 2—2 in section, looking in the direction of the arrows. Fig. 3 is a detail view.

Two movable members are provided, the first comprising a sliding rod 1, having a suitable attachment at the upper end for connecting the same to the clutch mechanism of the press. At the lower portion of the rod 1 is mounted a flanged collar 2, preferably by threading the same thereon as shown. The lower end of the rod 1 extends into a second movable member 10, which will presently be described, to form a guide.

Held between suitable jam-nuts 2, 3 and 4 on the rod 1 is a cross-piece 5 which slides upon guide rods 6 and 7 on either side. Springs 8 and 9 are mounted upon these guide rods and are compressed when the cross piece 5 is moved. These springs tend to keep the first movable member just described in its initial or uppermost position, as shown in Fig. 1.

The second movable member above referred to comprises a tubular rod 10, at the upper end of which is mounted a support 11 upon which are pivotally mounted two latches 12 and 13. These latches are normally held, by means of suitable springs as shown, in engagement with the flanged collar 2, as shown in Fig. 2. In this position any movement of the second member would cause a concurrent movement of the first

member. The lower end of the rod 10 is by means of a suitable connection connected with the lever 14. This lever is pivotally mounted at one end to a projection 15 from the housing 16 and at its opposite end is preferably provided with a segment shaped portion 17 having several points of attachment for the foot-treadle. This segment shaped portion is for the purpose of providing for mounting the device in any position, as it will be seen that at whichever point the foot-treadle is connected the resultant pull upon the lever 14 and the rod 10 will be in the same direction. It will of course be understood that the projection 15 may be changed to the opposite side of the device, thus reversing, the lever 14, without changing the operation thereof.

A releasing member 18 is mounted in the lower portion of the housing 16, preferably by threading the same therein as shown. The upper end of this releasing member 18 is enlarged, as shown at 19, and the inner portion beveled so as to engage the lower ends of the latches 12 and 13 when the same are moved downward. A set screw 20 secures the releasing member in position after the same has been adjusted to the required point with relation to the movable members and the latches 12 and 13.

Assuming the device to be mounted upon a press and the upper rod 1 connected to the clutch mechanism and the lower rod 10 connected to the foot-treadle by the levers 14 and 17, as described, the operation of the same is as follows: Upon pressing the foot-treadle the lower rod 10 will be moved down, carrying the latches 12 and 13 which then engage the collar 2 and so moving the rod 1 down therewith. This operates the clutch to which the rod 1 is connected. Now the releasing members 18—19 having been set so as to engage the latches 12 and 13 just as the said clutch is operated the further movement of the members causes the lower ends of the latches 12 and 13 to be brought together by engaging the beveled portion of the releasing member 19, as shown in the dotted outline in Fig. 3. This movement causes the latches 12 and 13 to release the collar 2 attached to rod 1 and as the downward movement of the rod 1 and cross piece 5 has compressed the springs 8 and 9 the same immediately return the upper movable parts to their initial position, thus releasing the clutch on the press and rendering the same inoperative until the foot-treadle is again raised, causing the latches 12 and 13 to again engage the collar 2, and the operation repeated as before. It will thus be seen that one movement of the foot-treadle down can only cause one operation of the punch, regardless of how long the treadle is held down. This renders it impossible for the operator to keep the punch in operation as

the same is automatically released after one operation and thus accidents are avoided.

The releasing member may be adjusted for any desired movement of the treadle to provide for a quick or a slow release of the clutch, this depending upon the construction of the clutch mechanism and also upon the class of work to be done.

The device is compact and self-contained and by reason of its construction may be applied to any type of press as well as adapted to many other uses when it is desired to automatically release or control a part of the mechanism of a machine.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention designed without departing from the scope thereof, I intend that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative merely of an operative embodiment of my invention and not in a limiting sense.

What I claim is:

1. In a releasing device, in combination, a pair of movable members, a pair of latches pivotally mounted upon one of said members and adapted to engage the other of said members on opposite sides thereof and cause the same to move concurrently therewith, means for releasing said latches from engagement with said second member at a predetermined point in their travel, and means for returning the member so released to its initial position.

2. In a releasing device, in combination, a pair of movable members, a pair of latches carried by one of said members and adapted to simultaneously engage the other of said members on opposite sides thereof and cause the same to move concurrently with said first named member, an adjustable releasing member so positioned with relation to said movable members that when the same have reached a predetermined position in their travel said latches will engage said releasing member and be caused simultaneously to release the movable member held thereby, and means for returning the member so released to its initial position.

3. In a releasing device, in combination, a pair of movable members, a pair of latches carried by one of said members and adapted to simultaneously engage the other of said members on opposite sides thereof and cause the same to move concurrently with said first named member, an adjustable releasing member so positioned with relation to said movable members that when the same have reached a predetermined position in their travel said latches will engage said releasing member and be caused simultaneously to release the movable member held thereby, and a spring compressed by said movement

of said movable members and adapted to return the member released to its initial position.

4. In a releasing device, in combination, 5
a pair of movable members, a support upon which said movable members are mounted, said support also forming a housing inclosing the operative portion of said releasing device, a pair of latches pivotally mounted 10
upon opposite sides of one of said movable members and so positioned that the same will engage the other of said members on opposite sides thereof when said members are both in their initial position and cause said 15
second member to move when said first named member is moved, an adjustable releasing member mounted in said support and so positioned with relation to said movable members that when the same have reached 20
a predetermined point said latches are caused to engage said releasing member and to release said second movable member, and a pair of springs positioned in said support on opposite sides of said movable members 25
adapted to be compressed by the movement of said members and operatively connected to said second movable member so as to return the same to its initial position when released.

30 5. A clutch comprising in its construction a pair of movable members positioned in axial alinement, a pair of latches pivotally mounted on one of said members and adapted to engage the other of said members and

cause the same to move concurrently therewith, a stop so positioned with relation to said latches that the same are engaged thereby at a predetermined point in their travel and caused to release said last named member, and means for returning said member 40
to its initial position when released.

6. In a releasing device, a pair of movable members, means for causing said members to move together, a cross-piece secured to one of said members, a guide-rod upon each side 45
of said member upon which said cross-piece is slidable, means for releasing said members from their interengagement, and springs surrounding said guide rods and bearing against said cross-piece. 50

7. In a releasing device, a pair of movable members, means for causing said members to move together, a cross-piece secured to one of said members, a guide-rod upon each side of said member upon which said cross-piece 55
is slidable, means for releasing said members from their interengagement, springs surrounding said guide rods and bearing against said cross-piece, and means for adjusting the cross-piece relatively to the member which carries it. 60

Signed at the city of New York, in the county of New York, and State of New York this 13th day of Aug. A. D. 1907.

KILIAN J. SMITH.

Witnesses:

LEWIS J. DOOLITTLE,
J. EDWARD GOLDEN.