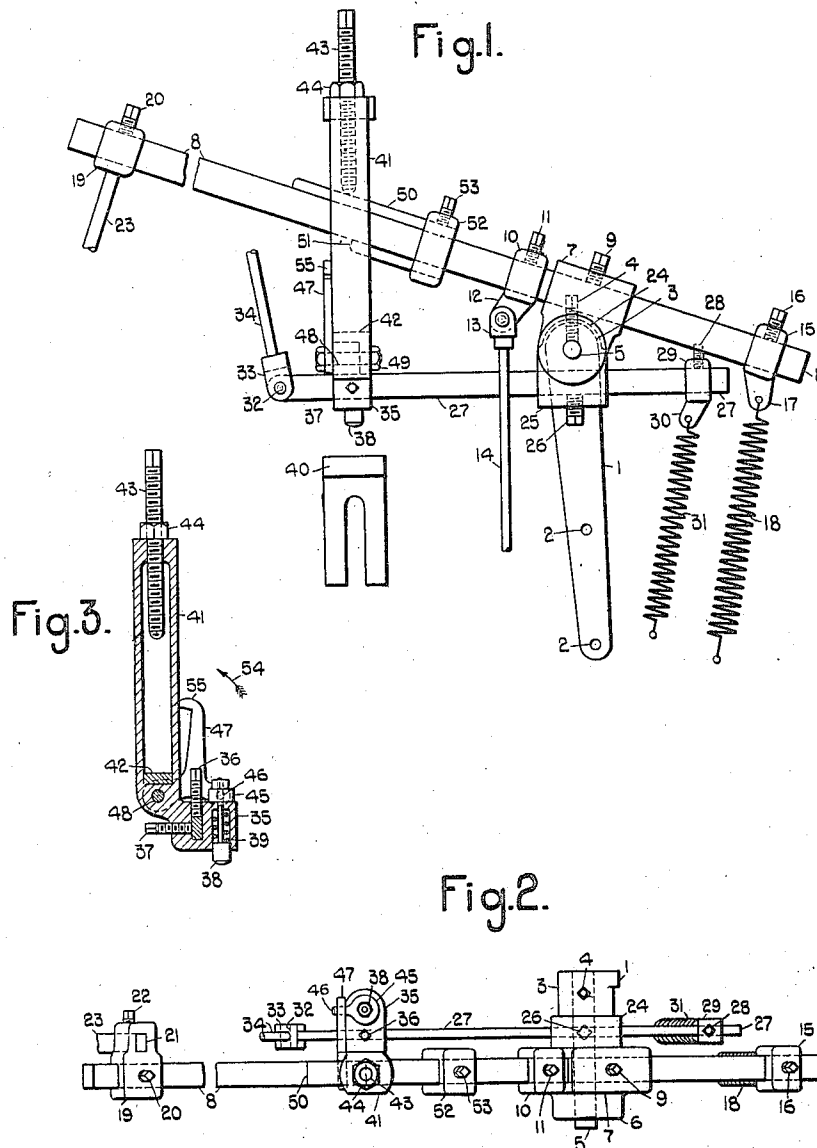


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SAFETY GUARD FOR STAMPING AND OTHER PRESSES.
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UNITED STATES PATENT OFFICE.

JAMES MELVIN JONES, OF HAMILTON, ONTARIO, CANADA.

SAFETY-GUARD FOR STAMPING AND OTHER PRESSES.

1,042,445.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES MELVIN JONES, a citizen of the Dominion of Canada, residing at 150 Dundurn street, in the city of Hamilton, in the county of Wentworth, in the Province of Ontario, Dominion of Canada, have invented a certain new and useful Safety-Guard for Stamping and other Presses, of which the following is a specification.

This invention relates to safety guards for stamping and other presses for preventing injury to the hands of the operator, and it has more particular reference to that type of device described in the specification of my former U. S. Patent No. 1020827, dated March 19th, 1912.

Safety guards of the type referred to comprise a guard carrying member, a manually operable member connected to the guard carrying member and a latch releasing member, said guard carrying member being independently movable with relation to the latch releasing member, until the guard is moved substantially to its protective position, additional movement of the guard carrying member serving to actuate the latch releasing member.

The main object of my present invention is to provide a simple and effective means whereby the guard is positively prevented from lifting away from its protective position should the latch not be returned to its locked position.

Another object of the invention is to provide means whereby the full tension of the springs returning the guard carrying member and the latch releasing member are exerted to retain the latch in its locked position when the device is at rest.

These and other objects are attained by the mechanism illustrated on the accompanying sheet of drawings and the novel features whereof are particularly pointed out by the appended claims.

In the drawings, Figure 1, is a side elevation of my improved safety guard attachment and as applicable for fitment on an ordinary power driven stamping press, only such parts being illustrated as are essential for a full understanding of the invention. Fig. 2, is a plan of the same. Fig. 3, is a vertical section through the buffer device and its appurtenant parts as hereinafter fully described.

Like reference characters designate the same parts in the several figures.

1, is a bracket for attachment to the side of the press frame by means of set screws or bolts passed through the holes 2, 2; and at the upper end of the bracket 1,—for example—I form a bearing 3, in which is securely fixed by a set screw 4, one end of a horizontally disposed spindle 5, which serves as the fulcrum and support for the entire device. Loosely mounted on the aforesaid spindle 5, is a bearing sleeve 6, provided with a box-shaped part 7, which serves as a housing for the guard carrying member or lever 8, said lever being adapted for longitudinal adjustment relative to the spindle 5, and fixture *in situ*, by means of a set screw 9. In other words, by slackening the set screw 9, the lever may be moved longitudinally of its axis in order to position the guard accurately relative to the front face of the dies, which are not shown as they form no part of the present invention.

Forward of the box shaped part 7, and on the lever 8, is mounted a sleeve or block 10, which is fixed in its properly adjusted position by a set screw 11, and this said sleeve or block 10, is provided at its lower end with an obliquely arranged lug 12, to which is hingedly connected by a fork 13, the upper end of a connecting rod 14. The lower end of the connecting rod 14, is coupled to the foot lever or treadle—not shown—in a similar manner to that described in my former U. S. Patent No. 977953, dated December 6th, A. D. 1910, and I wish it particularly noted that by forming the lug 12, obliquely as set forth, provision is made—when desired—to bring the centers of movement of the spindle 5, and connecting rod 14, closely together, by reversing the direction of said lug to that shown.

15, is a box-shaped sleeve or block clamped by means of a set screw 16, at or near the rear end of the lever 8, and it is also provided at its lower side with an obliquely disposed lug 17, to which is connected a strong tension spring 18, the free end whereof is conveniently attached by any appropriate means to the side of the press frame. Thus it will be seen that the spring 18, normally holds the guard carrying lever 8, in its elevated position—as shown—and it is designed to counterbalance the weight thereof. At or near the opposite or for-

ward end of the lever 8, is mounted a further box-shaped bracket 19, secured in adjusted position by means of a set screw 20, and at one side thereof is a substantially vertical slot 21, in which is clamped by a set screw 22, a depending arm or bar 23, carrying at its lower end the guard or protective device proper, and which may be of any appropriate shape or pattern according to requirements.

Loosely mounted on the spindle 5, between the bearing 3, and the sleeve 6,—for example—is a second sleeve 24, having formed at its lower side a box-shaped part 25, in which is clamped by a set screw 26, an auxiliary lever or latch-releasing member 27, arranged for vertical oscillation in a plane parallel with that traversed by the lever 8, and at a slight distance therefrom. At or near the rear end of the lever 27, is clamped by a set screw 28, a box-shaped sleeve or block 29, provided with an obliquely turned depending lug 30, to which is connected a tension spring 31, attached at its lower end to the side of the press frame. To the extreme front end of the lever 27, is pivotally connected by a pin 32, the forked lower end 33, of a compound connecting rod 34, secured at its upper end to the releasing latch of the press.

35, is a block sleeve clamped on the lever 27, by set screws 36, 37,—see Fig. 3—forward of the sleeve 10, aforesaid, and at one side thereof is provided a semi-cylindrical shaped part in which is fitted a plunger 38, under the control of a compression spring 39. This plunger 38, is adapted to contact with a bumper stop 40, Fig. 1, on the side of the press frame and serves as a means for preventing hammering of the guard or protective device upon the bed of the press, and also for a purpose hereafter explained. On the side of the block sleeve 35, remote from the semi-cylindrical part I form an upwardly projecting slotted extension or yoke 41, through which is adapted to travel or rise and fall the aforesaid lever 8. This slotted extension or yoke 41, is preferably notched out at its lower part and fitted with a hardened steel angle inset 42, for the purpose hereafter explained. The upper end of the yoke 41, is threaded to receive an axial adjusting screw 43, which limits the upward lift of the guard carrying lever 8, and it also serves for another purpose hereafter explained.

44, is a lock-nut for securing the screw 43, in its adjusted position.

On the upper end of the plunger 38, I thread a collar 45, furnished on its circumferential surface with a laterally projecting pin 46, fitting into a hole provided for its reception in an ear or extension of a latch 47, pivoted on a headed pin 48, passed through a bore on the heel of the yoke 41,

and threaded through the depending limb of the aforesaid angle inset 42. Thus it will be seen that while the headed pin 48, serves as a pivot for the latch 47, it also holds the angle inset 42, securely in position. 49,—Fig. 1—is a lock nut for firmly locking the parts 42, and 47, together.

50, 51, are hardened steel strips disposed on the upper and lower edges of the lever 8, and they are held in position by a box-shaped sleeve 52, and set screw 53; and their purpose is to prevent damage to said lever 8, by the rapid hammering of the lower end of the screw 43, and the inset 42, thereagainst. This feature I have found of great importance and a great saving in the life of the lever 8.

In use and assuming the operator depresses the foot lever or treadle thereby exerting a downward pull on the connecting-rod 14, the guard proper will be lowered in front of the dies till the strip 51, on the underside of the lever 8, contacts with the inset 42. At this point if the device is accurately adjusted the guard proper will be in its preventive position relative to the dies. Further downward pressure on the foot lever or treadle will couple the levers 8, and 27, together through the medium of the block sleeve 35, when a pull will be exerted on the connecting-rod 34, and the latch will be released, whereupon the press plunger will be left free to descend or perform its effective movement. Actual release of the latch will only take place—if the device is properly adjusted—when the lower end of the spring controlled plunger 38, contacts with the bumper stop 40, and it is to be particularly noted that I always limit the travel or up and down oscillatory movement of the lever 27, with reference to said bumper stop to a length in excess of the travel of the latch. For example if the latch has a half inch travel the movement of the lever 27, with relation to the bumper stop 40, will be in excess thereof in order that the spring controlled plunger 38, may effectively perform its function of a shock absorber and for the purpose now to be explained, and immediately the lower end of the plunger 38, contacts with the bumper stop 40, and is thereby upwardly projected it will be clearly seen that the latch 47, will be moved on its pivot 48, in the direction of the arrow 54, shown on Fig. 3; or in other words, the nose 55, of said latch will be projected over the upper face or edge of the top strip 50. Immediately the operator removes the downward pressure of his foot on the treadle the latch releasing lever 27, and guard carrying lever 8, will be returned under the action of the springs 31, 18, respectively. Should, however, the latch stick or fail to instantly return from some unforeseen eventuality, to its normal or locked po-

sition, it will be readily seen that the latch nose 55, will remain over and in contact with the upper edge of the strip 50, and guard carrying lever 8, whereby the guard proper is held in its preventive position or unable to rise and the operator is instantly warned of danger and cannot handle further stock on the dies till said danger is removed or remedied. Under normal conditions the guard carrying lever 8, will be instantly raised under the action of the tension spring 18, until the strip 50, contacts with the lower end of the adjusting screw 43, when—as above set forth—the action of said spring will be added or coupled to that of the spring 31, and assist in firmly forcing the latch into its locking position to stop the further descent of the plunger until the foot lever is again depressed. This feature I have found of great importance and value as it counteracts any liability to accidents consequent upon the wear and tear of the latch nose in rapidly operating machines.

From the foregoing description it will be seen that by my invention I have effected very great and important improvements in safety guards of the type specified, while in no way affecting their simplicity of construction.

Obviously the details of construction as well as the arrangement and combinations of the various parts may be variously modified without in any way departing from the spirit and scope of the invention and it is intended to include all such within the present application.

Having thus described my device and its advantages, what I claim as novel and desire to secure by Letters Patent, is:—

1. In a safety guard of the character described, the combination with a guard carrying member, of a latch releasing member, said guard carrying member having a lost motion connection with the latch releasing member, but engaging and acting against said latch releasing member, at its limit of movement in both directions.

2. In a press guard of the character described, the combination with a guard carrying member, of a latch releasing member, means for actuating said guard carrying member in one direction and manually operable means for actuating the guard carrying member in the opposite direction, said guard carrying member having a limited independent movement with relation to the latch releasing member, but engaging and acting upon said latch releasing member at the limit of such independent movement in both directions.

3. In a press guard of the character described, the combination with a guard carrying member, of a latch releasing member, a manually operable member for moving the guard carrying member to protective po-

sition, spring means resisting such movement of the guard carrying member to protective position, and a latch releasing member, said guard carrying member having a limited lost motion engagement with the latch releasing member, but engaging and acting upon said latch releasing member at each of its limits of movement.

4. In a device of the character described, the combination with a guard carrying member, of a latch releasing member and a yoke carried by the latch releasing member through which the guard carrying member passes, said guard carrying member acting upon the latch releasing member at each of its limits of movement.

5. In a device of the character described, the combination with a guard carrying member, of a latch releasing member and a yoke carried by the latch releasing member through which the guard carrying member passes, said guard carrying member acting upon the latch releasing member at each of its limits of movement, and spring means tending to move the guard carrying lever out of protective position.

6. In a press guard of the character described, the combination with a guard carrying member, of a latch releasing member, said guard carrying member engaging and actuating said latch releasing member at the limit of its movement to protective position, and means for locking the guard carrying member into engagement with the latch releasing member until the latch releasing member has returned to a position to latch the press mechanism against operation.

7. In a device of the character described, the combination with a guard carrying member, of a latch releasing member, spring means tending to move the guard carrying member to unprotective position, manually operable means for moving the guard carrying member to protective position against the tension of said spring, spring means for moving the latch releasing member to a position to hold the press mechanism against action, said guard carrying member engaging the press releasing member and actuating the same at the limit of movement of said guard carrying member to protective position, and means for locking the guard carrying member into engagement with the latch releasing member until the latch releasing member moves sufficiently to latch the press mechanism against operation.

8. In a press guard of the character described, the combination with a pivoted spring actuated guard carrying lever, of a pivoted spring actuated latch controlling lever, a yoke carried by the latch controlling lever and through which the guard carrying lever passes, said guard carrying lever engaging and acting upon said yoke at its limit of movement in both directions.

9. In a press guard of the character described, the combination with a pivoted spring actuated guard carrying lever, of a pivoted spring actuated latch controlling lever, a yoke carried by the latch controlling lever and through which the guard carrying lever passes, said guard carrying lever engaging and actuating upon said yoke at its limit of movement in both directions, and an adjustable member forming a part of said yoke and with which said guard carrying lever contacts.

10. In a device of the character described, the combination with a pivoted guard carrying lever, of a pivoted latch releasing lever, spring means actuating both of said levers in one direction, manually operable means for actuating the guard carrying lever against the tension of its spring means, said guard carrying lever in turn engaging and actuating the latch releasing lever against the tension of its actuating spring, a catch carried by the latch releasing lever, a fixed member carried by the press frame and actuating means for said latch adapted to contact with said fixed member when the latch releasing lever is moved, said catch at such time engaging and holding the guard carrying lever in protected position.

11. In a press guard of the character described, the combination with a support, of a guard carrying lever pivoted upon said support, a press controlling lever likewise pivoted upon said support, spring means normally tending to move the press controlling lever to hold the press against action, spring means normally tending to move the guard carrying lever to unprotected position, a yoke carried by the press controlling member through which the guard carrying lever passes, a catch pivoted upon said yoke, a spring pressed plunger for actuating said catch and a stop member with which said plunger contacts when the press controlling lever reaches its downward limit of movement the contact of said plunger with said stop moving said catch to hold the guard carrying lever in protected position until the press controlling lever moves upward sufficiently to release said catch.

12. In a device of the character described, the combination with a guard carrying lever, of a press controlling lever and a yoke

carried by the press controlling lever and through which the guard carrying lever passes.

13. In a device of the character described, the combination with a guard carrying lever, of a press controlling lever and a closed yoke carried by one of said levers and through which the other of said levers passes.

14. In a device of the character described, the combination with a guard carrying lever, of a press controlling lever, a closed yoke carried by one of said levers and through which the other of said levers passes, and an adjustable member carried by said yoke and with which the lever that passes through said yoke contacts.

15. In a device of the character described, the combination with a guard carrying lever, of a press controlling lever, a yoke carried by the press controlling lever and through which the guard carrying lever passes, a catch, a wearing insert seated in said yoke, a pivot member passing through said insert and through said catch, said guard carrying member passing through said yoke, and a spring pressed plunger carried by said yoke and arranged to actuate said catch.

16. In a device of the character described, the combination with a guard carrying member, of a press controlling lever, springs for actuating said levers, a manually operable member for actuating the guard carrying lever against the tension of its spring, a yoke carried by the press controlling lever through which the guard carrying lever passes, a vertically adjustable member carried by and forming a part of said yoke and with which the guard carrying lever contacts, a latch mounted upon said yoke, a spring pressed plunger engaged with said latch and a stop member for actuating said plunger to hold the latch in position to engage the guard carrying lever during the time that the latch is in position to release the press.

Signed at Hamilton, Ontario, Canada, this 15th day of June, 1912.

JAMES MELVIN JONES.

In the presence of—

GERTIE NICHOLSON,

ALFORD T. BRATTON.