

1,020,827.

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SAFETY-GUARD FOR STAMPING-PRESSES.

1,020,827.

Specification of Letters Patent.

Patented Mar. 19, 1912.

Application filed November 10, 1911. Serial No. 659,599.

To all whom it may concern:

Be it known that I, JAMES MELVIN JONES, a citizen of the Dominion of Canada, residing at 22 King William street, in the city of Hamilton, in the county of Wentworth, in the Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Safety-Guards for Stamping-Presses, of which the following is a specification.

This invention relates to safety guards for stamping presses, and it has more particular reference to that type of guard such as is described in the specification of my former U. S. Patent No. 977953, dated March 6th, A. D. 1910.

Guards of the type specifically referred to are provided with rigid and direct connections between the foot lever and the guard operating lever, and between said latter lever and the latch mechanism whereby positive action is insured.

The main object of my present invention is to provide a guard of the class designated characterized by the fact that the continuous rigid and direct connection from the foot lever to the latch only exists during the withdrawal and return of the latch from its normal position, or for the effective movement of the punch or plunger.

A further object of the present improvements is to provide means whereby the guard must be lowered to its preventive position—when once properly adjusted—before the latch operating mechanism can be released.

A still further object of the invention is to provide means whereby the operator's fingers or hands are absolutely prevented from being caught in the machine during the manipulation of the punch or plunger; or, in other words, the hands or fingers must be moved clear of the dies before the upper one can descend.

These and other objects are attained by the mechanism illustrated on the accompanying 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 as applicable to an ordinary stamping press, only such parts being illustrated as

are essential for a clear understanding of the invention. Fig. 2, is a plan of the same.

Like reference numerals designate the same parts in both figures.

According to the form of my invention illustrated, 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.

At the upper end of the bracket 1, 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 for the entire mechanism.

Loosely mounted on the aforesaid spindle 5, is a bearing sleeve 6, having formed integrally therewith a box shaped part 7, which serves as a housing for the main or guard operating lever 8, said lever being laterally adjusted by means of a set screw 9, relative to the axis of the spindle 5. In other words by slackening the set screw 9, the lever 8, may be moved longitudinally of its axis in order to position the guard accurately relative to the front face of the dies, all of which parts are not shown, as they form no part of the present invention.

Forward of the box shaped part 7, and on the lever 8, I mount a sleeve or block 10, which is secured in place by a set screw 11. This said sleeve or block 10, is furnished at its lower part with an obliquely disposed lug 12, to which is pivotally united by a fork 13, the upper end of a more or less vertical connecting-rod 14. The lower end of this rod 14, is coupled to the foot lever or treadle—not shown—in a similar manner to that described in the foregoing referred to patent, and I wish it particularly noted that by forming the lug 12, oblique as set forth, it is made possible—when desired—to bring the centers of movement of the spindle 5, and connecting rod 14, closely together, by reversing the position of said lug to that shown. This feature I have found very important when fitting my safety guards to certain types of presses.

15, is a box-shaped sleeve clamped on the lever 8, by means of a set screw 16, forward of the part 10, and at one side thereof is formed a semi-cylindrical shaped part 17, in which is fitted a spring controlled plunger

18. This plunger 18, serves for a purpose hereafter explained as well as a means for preventing hammering of the guard proper upon the bed of the press, and it is in accordance with the prior patent referred to.

Secured by means of a set screw 19, at or near the front end and on the lever 8, is a box-shaped bracket 20, furnished at one side with a substantially vertical slot 21, in which is clamped by a set screw 22, a depending arm or bar 23 carrying the guard device proper, which is preferably in accordance with my prior Patent No. 1,001,858, dated August 29th, 1911, and need not be here further explained or illustrated.

24, is a further box-shaped sleeve or block clamped by a set screw 25, at or near the opposite, or rear end, of the lever 8, and it is formed at its lower part with an obliquely disposed lug 26, to which is connected a strong tension spring 27, the free end whereof is suitably attached to a convenient part of the press frame. The result of this arrangement of parts is that said spring may be accurately tensioned while at the same time it tends to normally hold the guard and lever 8, in their elevated position, indicated by the dot-and-dash line *a-a*, shown on Fig. 1, and it is so designed to counterbalance the weight of the connected parts.

Loosely mounted on the spindle 5, between the bearing 3, and the sleeve 6, for example, is a second sleeve 28, having formed at its lower side a box shaped part 29, in which is clamped by a set screw 30, an auxiliary or second laterally disposed lever or bar 31, arranged for oscillation up and down in a vertical plane parallel with that traversed by the lever 8, and at a slight distance therefrom.

At or near the rear end of the bar 31, I clamp by a set screw 32, a box sleeve or block 33, provided with a depending lug 34, to which is connected a tension spring 35, attached at its lower end to the press frame. To the extreme front end of the bar 31, I pivotally connect by a pivot pin 36, the forked lower end 37, of a compound connecting rod 38, fastened at its upper end to the releasing latch of the press, said parts being all in accordance with my previous patent above first mentioned.

39, is a further box-sleeve clamped on the bar 31, by a set screw 40, and it is so arranged as to be in line beneath the plunger 18, when the parts occupy the position shown in the drawings, which is that when the guard is lowered and the operator is ready to release the latch and allow the upper die to descend, or perform its effective movement.

It is to be noted that the spring 35, is tensioned to counter-balance the weight of its connected parts and in consequence the

latch can be kept locked while the guard proper and its operating lever 8, may be raised and lowered when desired independent of the regular press parts a very important desideratum when dealing with work necessitating the hands of the operator adjacent the work acted upon. Furthermore it is to be observed that the oscillation of the bar 31, will be regulated by the movement of the latch, that is to say, if the latch has a travel of one-half inch the front end of the lever 31, will be adjusted to have a similar travel.

In the drawings I have indicated the normal position held by the bar 31, and its possible downward depression by the dot-and-dash line *b-b*.

In use and assuming the lever 8, is raised or occupying the position indicated by the line *a-a*, the operator will depress the foot-lever thereby pulling on the connecting-rod 14, and lowering the guard proper in front of the dies till the spring controlled plunger 18, strikes on the box-sleeve 39, carried by the auxiliary bar 31. At this point and assuming the device is accurately adjusted the guard proper will be in its absolute preventive position relative to the dies. A slight further pressure on the foot lever will cause a pull to be exerted on the connecting rod 38, when the latch will be released and the press plunger be left free to perform its effective movement. In other words a rigid and direct connection from the foot lever to the latch is only made possible when the guard proper has been lowered to its said preventive position.

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

Obviously the invention may be readily adapted to any type of stamping press worked or operated by a foot lever release for the latch mechanism, as every part is made adjustable, and I wish it clearly understood that I do not confine myself to the specific arrangement and combination of parts illustrated and described, various alterations in their shape and other arrangements thereof being possible 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 attachment of the character set forth, the combination with a guard carrying member, of 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.

2. In a device of the character described, the combination with a guard carrying member of a latch releasing member, a manually operable member connected to the guard carrying member, and a member carried by the guard carrying member and adapted to engage the latch releasing member only at the termination of the movement of the guard carrying member to protective position, to thereby move the latch carrying member to release the latch.

3. In a device of the character described, the combination with a pivoted latch releasing member of a pivoted guard carrying lever located thereabove and movable independently of the latch releasing lever, and a yieldable contact member carried by the guard carrying lever and arranged to contact with the latch releasing lever at the termination of the downward movement of the guard carrying lever to protective position to thereby depress the latch releasing lever to release the latch.

4. In a device of the character described, the combination with a supporting stud of a guard carrying lever pivotally mounted thereon, a latch releasing lever likewise pivotally mounted upon said stud, a manually operable member engaged with the guard carrying lever, and a spring plunger carried by the guard carrying lever and adapted to contact with the latch releasing lever at the termination of the downward movement of the guard carrying lever to protective position, as and for the purposes set forth.

5. In a device of the character described, the combination with a supporting stud of a spring actuated guard carrying lever pivotally mounted thereon, a latch releasing lever likewise pivotally mounted upon said stud, a manually operable member engaged with the guard carrying lever, and a spring plunger carried by the guard carrying lever and adapted to contact with the latch releasing lever at the termination of the downward movement of the guard carrying lever to protective position, as and for the purposes set forth.

6. In a device of the character described, the combination with a supporting stud of a spring actuated guard carrying lever pivotally mounted thereon, a latch releasing lever likewise pivotally mounted upon said stud, a manually operable member engaged with the guard carrying member, and a spring plunger carried by the guard carrying lever and adapted to contact with the

latch releasing lever at the termination of the downward movement of the guard carrying lever to protective position, as and for the purposes set forth.

7. In a device of the character described, the combination with a supporting stud of a spring actuated guard carrying lever and a spring actuated latch releasing lever pivotally mounted thereon, a latch releasing lever likewise pivotally mounted upon said stud, a manually operable member engaged with the guard carrying lever, and a spring plunger carried by the guard carrying lever and adapted to contact with the latch releasing lever at the termination of the downward movement of the guard carrying lever to protective position, as and for the purposes set forth.

8. In a device of the character described, the combination with a pivotally mounted guard carrying lever, of a spring attached to said lever for balancing the weight of the guard and lever, a latch releasing lever and spring normally tending to hold said latch releasing lever in position to prevent the latch from being released, and means carried by the guard carrying lever for depressing the latch releasing lever against the tension of said spring at the termination of the movement of the guard carrying lever to protective position.

9. In a device of the character described, the combination with a pivotally mounted guard carrying lever, of a spring attached to said lever for balancing the weight of the guard and lever, a latch releasing lever, a spring normally tending to hold said latch releasing lever in position to prevent the latch from being released, and means carried by the guard carrying lever for depressing the latch releasing lever against the tension of said spring at the termination of the movement of the guard carrying lever to protective position, said last named means comprising a spring pressed plunger carried by the guard carrying lever and overlying the latch releasing lever.

10. In a device of the character described, the combination with a pivotally mounted guard carrying lever, of a spring attached to said lever for balancing the weight of the guard and lever, a press releasing member in position to prevent the latch from being released, and means carried by the guard carrying lever for depressing the latch releasing lever against the tension of said spring at the termination of the movement of the guard carrying lever to protective position, said last named means comprising a spring pressed plunger carried by the guard carrying lever and overlying the press releasing member.

11. In a safety guard attachment of the character set forth, the combination with a guard carrying member, of a press re-

- leasing member, and a manually operable member positively connected to the guard carrying member, said guard carrying member directly engaging and actuating the press releasing member at the termination of its movement to protective position and being capable of free movement in a reverse direction with relation to the press releasing member.
12. In a safety guard attachment of the character set forth, the combination with a guard carrying member of a press releasing member, and a stud upon which both of said members are pivotally mounted for swinging movement, there being a lost motion connection between said members.
13. In a safety guard attachment of the character set forth, the combination with a guard carrying member, of a press releasing member and a stud upon which both of said members are pivotally mounted, said guard carrying member being capable of a free and independent preliminary movement to protective position with relation to the press releasing member and engaging and actuating the press releasing member upon continued movement.
14. In a safety guard attachment of the character set forth, the combination with a guard carrying member of a press releasing member, and a stud upon which both of said members are pivotally mounted, said guard carrying member being capable of a free and independent preliminary movement to protective position with relation to the press releasing member and engaging and actuating the press-releasing member upon continued movement, a manually operable member and a rigid connection between the manually operable member and the guard carrying member.
- Signed at Hamilton, Ontario, this 6th, day of November, 1911.
- JAMES MELVIN JONES.
- In the presence of—
ALFRED T. BRATTON,
GERTIE NICHOLSON.

Correction in Letters Patent No. 1,020,827.

It is hereby certified that in Letters Patent No. 1,020,827, granted March 19, 1912, upon the application of James Melvin Jones, of Hamilton, Ontario, Canada, for an improvement in "Safety-Guards for Stamping-Presses," an error appears in the printed specification requiring correction as follows: Page 1, lines 15-16, date of patent, for "March 6th, A. D. 1910" read *December 6th, A. D., 1910*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 16th day of July, A. D., 1912.

[SEAL.]

C. C. BILLINGS,
Acting Commissioner of Patents.

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