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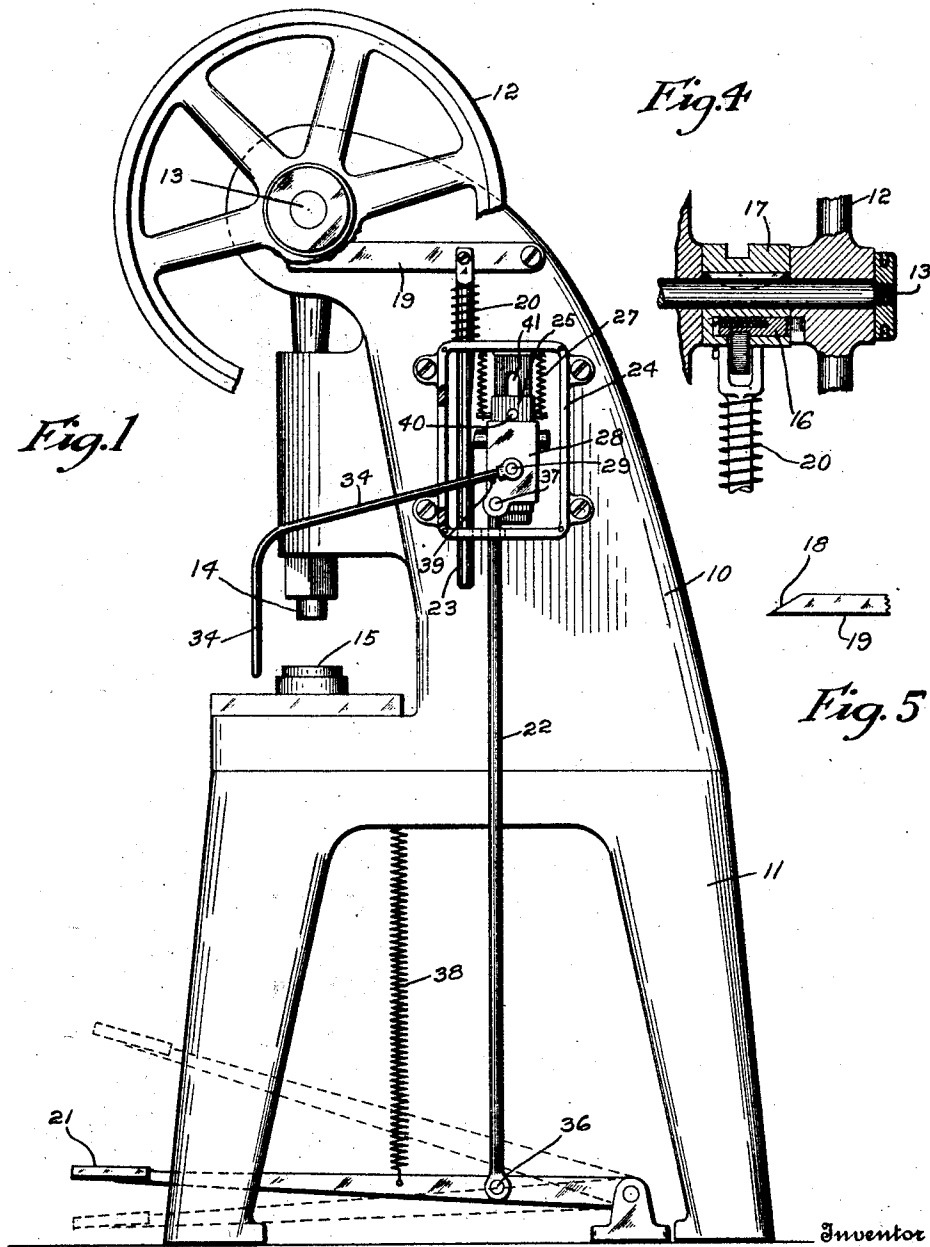
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I. C. LARSON

SAFETY ATTACHMENT FOR POWER PRESSES

Filed July 8, 1921

2 Sheets-Sheet 1



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June 16, 1925.

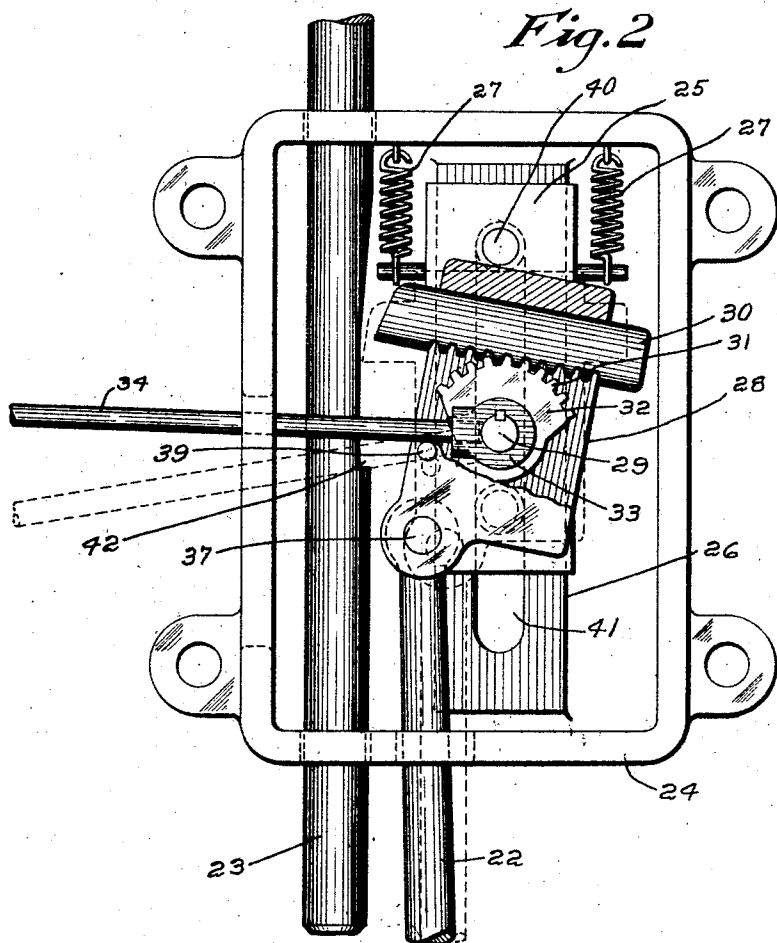
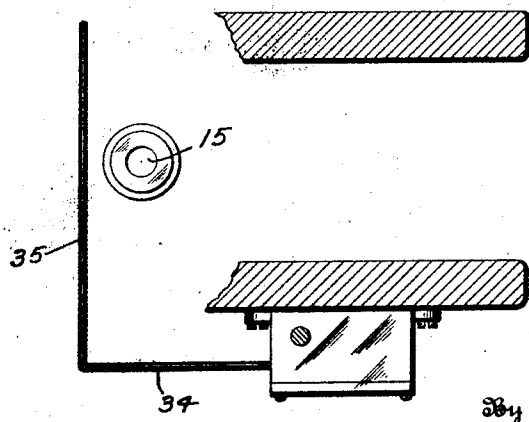
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SAFETY ATTACHMENT FOR POWER PRESSES

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

IVAR C. LARSON, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GEORGE S. COOPER, OF PROVIDENCE, RHODE ISLAND.

SAFETY ATTACHMENT FOR POWER PRESSES.

Application filed July 8, 1921. Serial No. 483,200.

To all whom it may concern:

Be it known that I, IVAR C. LARSON, a subject of the King of Sweden, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Safety Attachments for Power Presses, of which the following is a specification.

This invention relates to a safety attachment for power presses to prevent the work-forming die plunger from descending before the hands of the operator have been removed therefrom to avoid accidents; and the object of the invention is to provide a feeler member for a power press which is arranged to be first moved into the working zone and to render ineffective the starting movement of the parts, if the feeler meets with an obstruction, and if no obstruction is met with by the feeler the connection to the operating parts will be automatically completed and the press will be operated when desired.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings:—

Figure 1 is a side elevation showing my improved safety device as attached to a power press, and the operating mechanism in position to be actuated and release the starting mechanism and permit the plunger to operate.

Figure 2 is a side elevation illustrating the parts in normal or disengaged position.

Figure 3 is a sectional plan view showing the frame and the die and showing my controlling feeler member extending into the work zone.

Figure 4 is a detail illustrating the bolt for connecting the driving pulley to the plunger operating shaft.

Figure 5 is a top view showing the beveled end of the bolt-withdrawing arm.

With reference to the drawings, 10 designates the usual frame of a power press as supported on legs 11. In the upper portion of this frame is mounted the usual driving pulley 12 mounted on the crank shaft 13 which is arranged to operate the plunger 14 to drive it down into the work which is carried by the die 15 in the usual way.

Ordinarily this pulley is connected to this shaft by the usual spring-pressed bolt 16 which is mounted in the hub 17, which latter is keyed to the shaft 13, the bolt being arranged to be automatically withdrawn by engaging the tapered end 18 of the arm 19 to arrest the action of the plunger.

When it is desired to again start the plunger into operation, this arm 19 is withdrawn through a one-piece connecting rod connected to the foot-treadle 21 permitting the spring in the bolt 16 to force it into engagement with the pulley hub, the arm then being released is positioned by the spring 20 when a single revolution is made and the bolt is again presented to the arm to be withdrawn to arrest the plunger while in its raised position.

My invention involves the forming of this connection between this arm 19 and the foot-treadle 21, in two parts as shown at 22 and 23 and interposing a suitable mechanism between these parts for automatically disconnecting them and preventing the plunger from being forced down before the hands of the operator have been removed from the work zone.

To accomplish this in a simple and effective way I have provided a casing 24 adapted to be bolted to the side frame of the press between the arm 19 and the foot treadle 21.

In this casing I have mounted a plate 25 adapted to slide vertically on the guides 26, the same being normally held in raised position by the springs 27. On this plate I have pivotally mounted a member 28 to swing on the pin 29, and in this member is mounted a laterally movable latch 30, the same being provided with teeth on its under side to engage the teeth 31 in the segment 32 also mounted on and keyed to this pivot pin 29. To the outer end of this segment I have fixed a hub 33 and in this hub I have mounted the feeler rod 34 to extend outwardly therefrom through the side of the casing then downwardly and then across as at 35 to cover the work zone and into position to engage the arms of the operator or any other obstruction which may be in the vicinity of the plunger immediately before the plunger is to be called upon to descend.

One end 36 of the lower connecting member 22 is pivoted to the foot lever 21 while its upper end extends through the bottom of the casing and is pivotally connected at

37 to the member 28. The operation of the device is as follows:—

When the foot lever is released the sliding plate 25 moves upwardly under action of the springs 27 and as the downward swing of the feeler rod on its pivot is limited by the stop pin 39 on the member 28 this feeler rod moves upward therewith. After the plate 25 with its member 28 is moved to the top of its stroke, which is limited by the bringing up of the stop pin 40 in the upper end of the slot 41, the spring 38 on the foot lever continues to act causing the member 28 to swing backward on its pivot 29 carrying the feeler into the position illustrated in Figure 2, which raises it completely out of the working zone.

When it is desired to again cause the plunger to descend upon the work the foot of the operator presses down on the lever 21, which movement first causes the member 28 to rotate on its pivot 29 bringing the latch 30 forward into operating position and the feeler part way down and a continued downward movement of this lever 21 causes the latch to engage the notch 42 in the upper rod portion 23 at the same time moving the feeler rod into the position illustrated in Figure 1, to engage any obstruction which may be in the work zone. If no obstruction is encountered a further downward movement of the lever to the lower position shown in dotted lines in this figure, causes the upper connection member 23 to be engaged and moved to withdraw the arm 19 and release the bolt to engage the pulley to drive the plunger downwardly.

If, however, the feeler engages the hands of the operator or meets with any other obstruction in the work zone, it will be raised from engagement with its stop pin 39 and rotate the quadrant through the pivot pin 29 to withdraw the latch 30 from engaging position just before it reaches the notch 42 in its downward motion whereby a continued downward movement of the foot lever will fail to withdraw the arm 19 and the plunger will not descend thus effectually preventing accident to the attendant. It will be seen that by the use of this device it is impossible to operate a machine before the attendant's hands have been entirely removed from the work zone.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. In a power press, a work-shaping plunger, plunger starting mechanism, manually-operable means for controlling the op-

eration of said plunger-starting mechanism, and a feeler member permitted to gravitate into protecting position by the operation of said manual starting means, and means responsive to the contacting of said feeler with an obstruction in the working zone for rendering the operating stroke of said manual means ineffective.

2. In a power press, a work-shaping plunger, starting mechanism therefor, manually operated starting means, a two-part separable connection between said operating means and said starting mechanism, a feeler member, and means for disconnecting the two parts of said separable connection independently of the said manually operated means to render the action of said manual starting means ineffective when said feeler meets an obstruction in the work zone.

3. In a power press, a work-shaping plunger, starting mechanism therefor, manually operated starting means, a two-part separable connection between said operating means and said starting mechanism, a feeler member, and a latch operable independently of said manual means for operatively joining the parts of said connection to render effective the action of said starting means only when said feeler meets with no obstruction in the work zone.

4. In a power press, a work-plunger, a starting mechanism therefor, manually-operable means connected to said starting mechanism through a separable connection, a feeler member, and a latch for completing said connection and movable independently of said manual means for joining the parts of said connection only when no obstruction is encountered in the work zone by said feeler during a working stroke of said operable means.

5. In a power press, a work-plunger, a starting mechanism therefor, manually operable means connected to said starting mechanism through a separable connection, a feeler member, and a segment-operated latch for completing said connection and movable independently of said manual means at any position of the operating stroke into disengaging position by the engaging of said feeler with an obstruction in the work zone to render ineffective the working stroke of the manual means.

6. In a power press, a work-plunger, a starting mechanism therefor, manually-operable means connected to said starting mechanism through a separable connection, a latch for completing said connection, a feeler member connected to said latch, said feeler being movable at any position of said manually operable means during its working stroke to disconnect said latch and render ineffective an operating stroke of said manual means.

7. In a power press, a work-plunger, a

starting mechanism therefor, a foot lever connected to said starting mechanism, a spring-actuated vertically slidable plate, a latch-carrying member movably mounted on said plate, a latch movably mounted in said member, a feeler rod also carried by said member, and means whereby said latch is positioned by said member to render effective the operating movement of said lever when said feeler meets with no obstruction. 15

8. In a power press, a work-plunger, a starting mechanism therefor, a foot lever connected to said starting mechanism, a spring-actuated vertically slidable plate, a latch carrying member movably mounted on said plate, a latch movably mounted on said member, a feeler rod also carried by said member, and means whereby said latch is positioned by said member to render effective the operating movement of said lever and withdrawn from such operative position by the movement of said feeler upon meeting an obstruction in the work zone. 20

In testimony whereof I affix my signature.

IVAR C. LARSON.