

Sept. 22, 1936.

W. COLCLOUGH

2,055,250

FOOT POWER PRESS

Filed Nov. 29, 1935

2 Sheets-Sheet 1

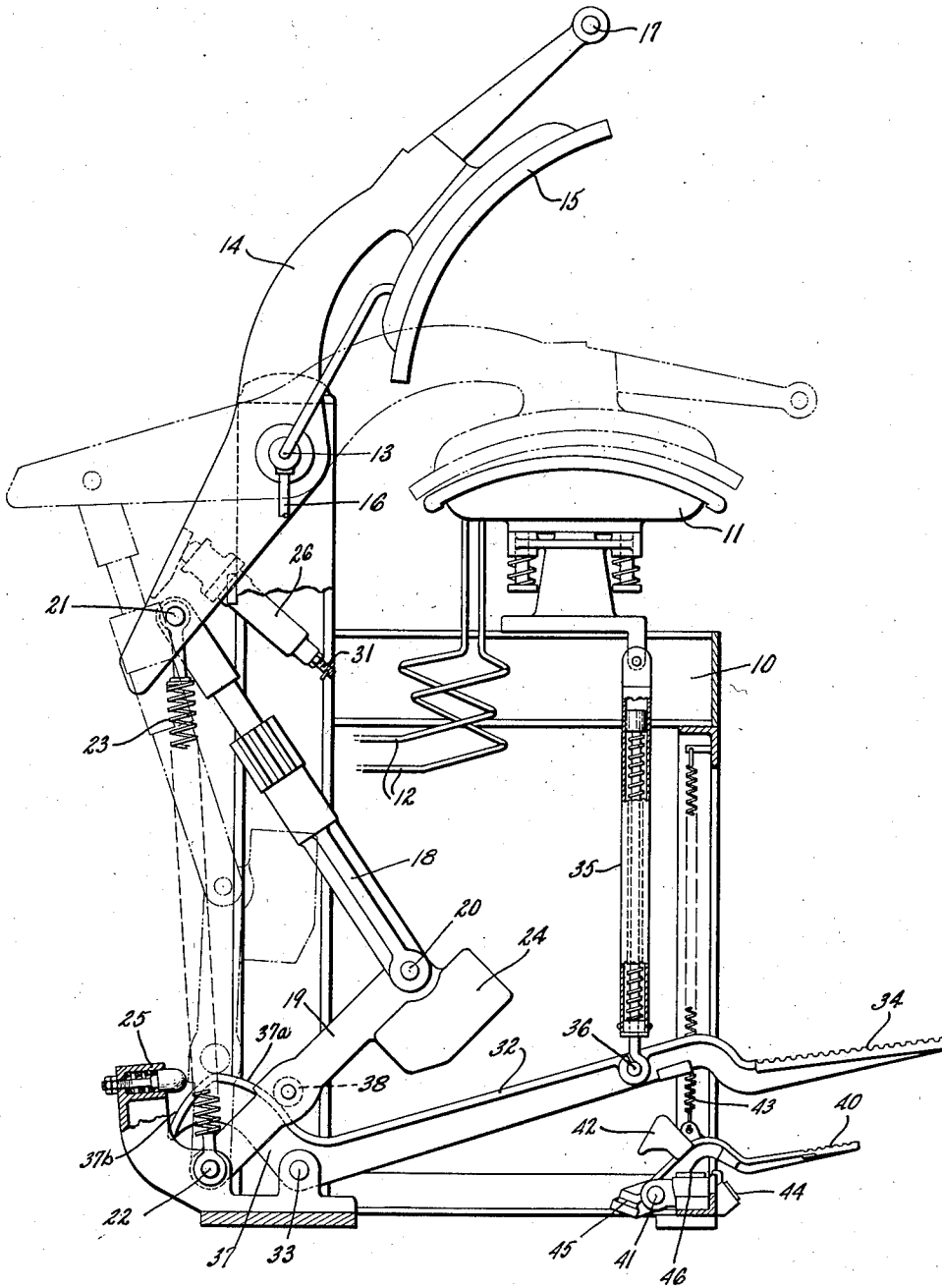


FIG. - 1

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2 Sheets-Sheet 2

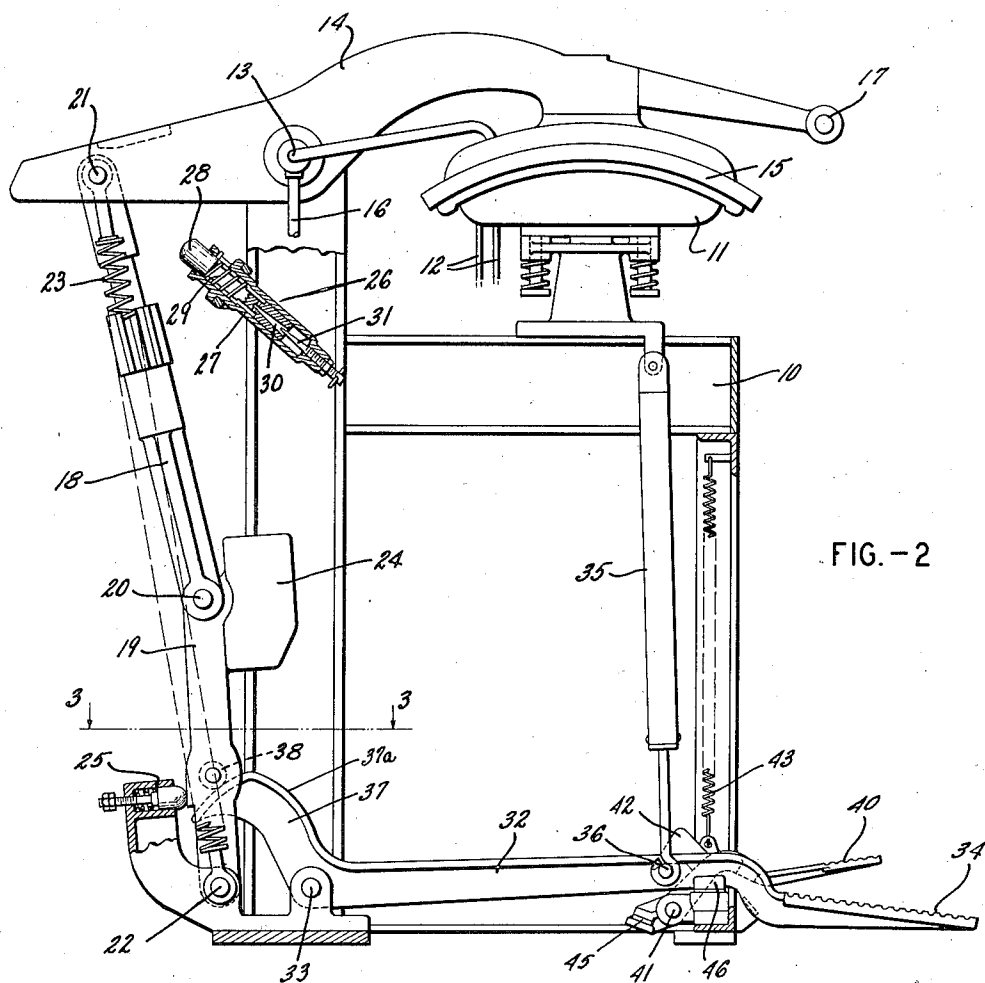


FIG. -2

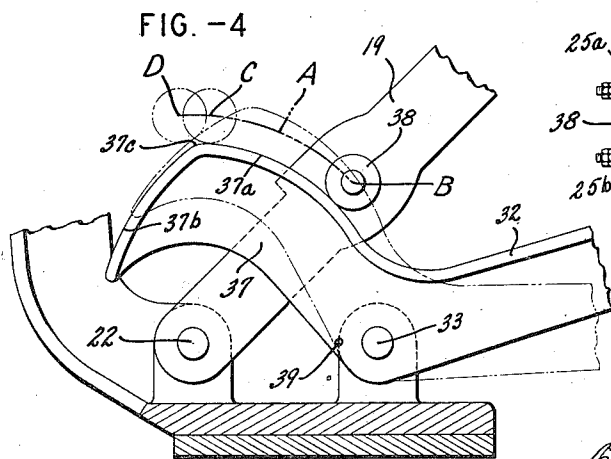


FIG. -4

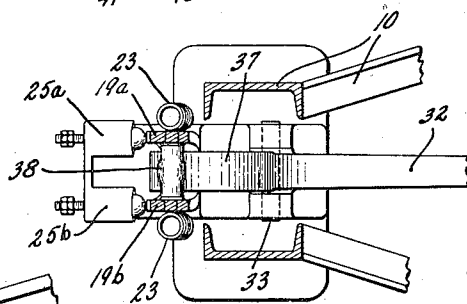


FIG. -3

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FOOT POWER PRESS

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2 Claims. (Cl. 38—36)

This invention relates to a pressing machine and more particularly to improved operating mechanism for a machine of the type generally used in pressing fabrics and garments.

My invention relates to a pressing machine operated by the physical effort of the operator. My improved operating mechanism provides a pair of coacting pressing members with manual provision for moving the members to safe closed position where there is no longer danger of the operator injuring a hand between the approaching members and foot power operated mechanism for completing the press-closing operation.

A feature of my invention is the provision in a machine of the type above described of an arrangement between the application of power by the operator's foot and the mechanism connected with the movable pressing member so that the operator is unable to apply power by foot until the press is safely closed.

My improved operating mechanism provides a novel cam connection between a foot power operated lever and a toggle for moving a pressing head into pressing position with a coacting bed. The arrangement of this cam is such as to prevent power movement of a foot operated lever while the movable head of a pressing machine is traveling from its wide open position to a safe closed position and an effective connection between the cam and the head moving mechanism operative upon movement of the pressing head to safe closed position and actuation of the foot operated lever.

Other objects and advantages of the present invention reside in the arrangement of the press operating parts to carry out the above described applications and the advantages will be pointed out as the description proceeds. The essential features of my invention are set forth in the appended claims.

In the drawings, Fig. 1 is an end elevation of a pressing machine embodying my invention and showing in full lines a pressing head in open position and in broken lines the head in safe closed position adjacent the bed; Fig. 2 is a view similar to Fig. 1 showing the pressing members in closed position; Fig. 3 is a partial sectional view along the line 3—3 of Fig. 2; while Fig. 4 is an enlarged detail of a portion of the press operating mechanism shown in Figs. 1 and 2.

In operating a pressing machine by hand and foot power it is possible for an operator to partially close the press by hand and thereafter apply a heavy pressure through a foot operated lever while inadvertently entering a hand be-

tween the approaching pressing members for the purpose of straightening out an article being pressed. In such a case if the hand is caught between the pressing members by the power foot operated mechanism the hand may be severely injured. My present invention provides a mechanism for preventing such an accident.

In the form shown, on a frame 10 is suitably mounted a pressing bed 11 which may be heated if desired by a heating fluid supplied through the pipe connections 12. Upon the upper rear portion of the frame is pivotally mounted at 13 a two-armed head lever 14 which carries on its forward arm a pressing head 15 for movement into and out of coacting position with the pressing bed. The head may be heated by suitable fluid through the conduit means 16 if desired. Suitable means is provided for moving the head from open position shown in full lines in Fig. 1 to safe closed position shown in broken lines in the same view and in the present instance this takes the form of a handle 17 extending forwardly from the head in a position to be grasped by the operator.

Other head moving mechanism comprises a pressure strut 18 and a link member 19 pivotally connected together at 20 to form a forwardly-breaking toggle having an upper pivot connection 21 with the rear arm of the head lever and a lower pivot connection 22 with the lower rear portion of the frame. A spring 23 and a counterweight 24 bias the toggle forwardly in broken position as shown in full lines in Fig. 1 so as to normally maintain the head in open position. The forwardly-breaking toggle takes less floor space than one breaking rearwardly. The biasing devices 23 and 24 preferably only slightly overbalance the weight of the pressing head and the associated moving parts so that but a slight effort on the part of the operator is necessary to move the head from full line position to broken line position as shown in Fig. 1.

A snubber device 25 serves to cushion the movement of the toggle into straightened position and is also adapted to provide an initial kick of the toggle toward broken position upon press opening if necessary. Another snubber mechanism indicated generally at 26 is adapted to cushion the opening movement of the press head. This snubber mechanism comprises a casing 27 suitably mounted on the frame and carrying a plunger 28 reciprocable in the casing and biased in extended position by the spring 29. The lower end of plunger 28 is provided with a conical opening 30 as shown in section in Fig. 2 and an ad-

justable needle 31 is positioned in the lower end of the casing to coact with the opening 30 to progressively retard the inward or downward movement of plunger 28 under the influence of the opening press head. Preferably the lower end of casing 27 is sufficiently filled with a suitable liquid to aid in the cushioning effect.

For applying power to the press head through the toggle 18-19 I provide a power lever 32 pivotally mounted on the frame at 33 which is a point on the frame forward of the lower toggle pivot 22. The power lever has an arm extending forwardly to a point 34 where the operator may apply power by foot. A biasing device 35 connected to the foot power lever at 36 normally maintains the power lever in its elevated position.

I provide a novel connection between the power lever and the link member 19 which comprises cam and follower members, one rigid with the foot power lever and the other mounted on the link member 19. In the present instance the power lever has an arm forming an operating member 37 and extending rearwardly from the point 33. This operating member has a cam dwell portion 37a which forms an arc about the pivot point 22 when the power lever is in its normal or elevated position as shown in Fig. 4. A follower 38 is rotatably mounted upon the link member 19 spaced from pivot 22 and in a position to travel substantially in contact with the cam dwell portion 37a while the link member 19 moves from the position shown in full lines in Fig. 1 to the position shown in broken lines therein. During this movement of member 19 the center of follower 38 traverses the path marked A in Fig. 4 and the follower moves from the position marked B to the position marked C. It will be noted that during this movement the member 19 extends radially with respect to the dwell portion 37a so that depression of power lever 32 is directly resisted and prevented by the engagement between surface portion 37a and follower 38.

The operating member 37 is provided with a cam power portion 37b which is arranged to apply power to the follower 38 in a toggle straightening direction after the follower has passed the point C as already described in Fig. 4 and upon depression of the lever 32. To this end I have formed the cam portion 37b as a smooth extension of the portion 37a, the two surfaces meeting at the point 37c. The cam power portion 37b in the form shown is in the shape of an arc about a point 39 slightly to the rear of point 33. It results from this arrangement that when the follower 38 has slightly passed the position indicated at C in Fig. 4 which corresponds to safe-closed position of the pressing head, the cam portion 37b is in position to cooperate with the follower upon clockwise movement of lever 32. Such coaction between cam portion 37b and follower 38 moves the link member 19 rearwardly and applies a straightening effect to the nearly-straightened toggle 18-19 to apply a powerful pressure between the pressing head and bed and carries these pressing members into the position of Fig. 2. At this time the follower 38 occupies the position indicated at D in Fig. 4 and the lever 32 is in the position indicated by broken lines in Fig. 4.

Means is provided for holding the power lever 32 locked in its depressed position to hold the press closed as long as desired. This latching means comprises a lever 40 pivotally mounted on the frame at 41 and carrying a latch 42 which is adapted to engage a lateral extension of pin

36 on lever 32 to hold the lever depressed. A spring 43 normally biases lever 40 toward its elevated position as shown in Fig. 1 and upon depression of lever 32 pin 36 cams latch 42 forward until pin 36 reaches the position of Fig. 2 at which time spring 43 returns the latch 42 to a position over pin 36 and the parts remain latched. To release the latch lever 40 is moved in a clockwise direction by the operator.

A convenient arrangement of the operating member 37 and the follower 38 is shown in Fig. 3 where the link member 19 is bifurcated as shown at 19a and 19b with the follower 38 having its opposite ends rotatably supported in these portions of the link member. The cam 37 is then adapted to lie between the portions 19a and 19b to coact with the follower 38 as shown in Fig. 3. In the construction shown the snubber device 25 has two portions 25a and 25b, respectively, adapted to coact with the bifurcated link portions.

I provide live rubber cushions 44 and 45 to limit the movement of lever 40 at the opposite ends of its travel and another live rubber cushion 46 for cushioning the downward movement of lever 32.

The operation of the device will be clear from the above description and briefly recited is as follows: With the parts in the full line position of Fig. 1 the operator arranges the lay of the work upon bed 11, grasps the handle 17 and moves the head to the position shown in broken lines in Fig. 1. During this movement of the pressing head the operator may have a foot upon the power lever portion 34 if desired but depression of the lever is impossible because of the restraining action between follower 38 and cam portion 37a already described. Upon the parts reaching the position shown in broken lines in Fig. 1 or shortly thereafter, depression of pedal 34 is possible and may be felt by the operator through a light pressure of the foot on the power lever. Thereafter depression of lever 32 causes cam portion 37b to move the toggle toward straightened position to completely close and latch the press as shown in Fig. 2. Unlatching of the press is accomplished by depression of lever 40 and the biasing means 23 and 24 will then open the press.

I find with the above described construction that it is possible for the operator to stand upon the lever 32 and close the press by a pull upon the handle 17. This is possible because of the novel arrangement of the cam surface 37a when the lever 32 is in its elevated position relative to the path of travel of follower 38.

It results from the construction shown and described that the operator cannot crush a hand between the pressing members by inadvertently depressing the foot operated lever while trying to give a last minute touch to the work on the bed. The foot lever cannot be operated until the follower 38 passes the point C in Fig. 4 and at that time the head is so close to the bed that the operator will have removed her hand.

What I claim is:

1. In a pressing machine, a frame, a pressing bed mounted thereon, a two armed head lever pivotally mounted in the frame and carrying a pressing head on its forward arm, a pressure strut pivotally connected with the rear arm of said head lever, a link member pivoted to said strut and having a lower pivot connection with the lower rear portion of the frame, said pressure strut and link member being arranged to form a toggle which breaks forwardly, a power lever pivotally mounted on the frame forward of said

lower pivot connection, said power lever having one arm extending forwardly and adapted for foot operation and normally lying in an elevated position and a second arm forming an operating member and extending rearwardly, and cooperating abutment means on one of said members and cam means on the other of said members arranged to hold said power lever against substantial movement while said head moves from open to safe-closed position and thereafter to cause movement of said toggle toward straightened position by depression of the forward arm of said power lever.

2. In a pressing machine, a frame, a pressing bed mounted thereon, a two armed head lever pivotally mounted in the frame and carrying a pressing head on its forward arm, a pressure strut pivotally connected with the rear arm of said head lever, a link member pivoted to said strut and having a lower pivot connection with the lower rear portion of the frame, said pressure strut and link member being arranged to form a toggle which breaks forwardly, a power lever

pivotally mounted on the frame forward of said lower pivot connection, said power lever having one arm extending forwardly and adapted for foot operation and normally lying in an elevated position and a second arm forming an operating member and extending rearwardly, said operating member having a cam dwell portion extending in an arc about said lower pivot connection when said power lever is in elevated position, a follower on said link member spaced from said lower pivot connection, said follower traveling along said cam dwell portion as said head moves from open to safe-closed position to thereby prevent depression of said power lever, said operating member also having a cam power portion effective upon said follower to produce a straightening effect on said toggle upon depression of said power lever, and said cam power portion and said follower being arranged to enter operative relationship only upon movement of said toggle to safe-closed position of said head.

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