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PRESS CONTROL

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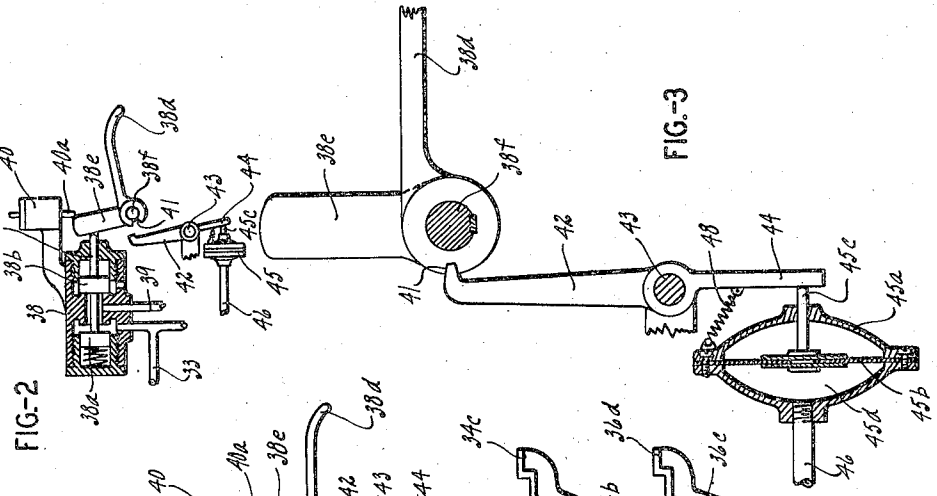


FIG.-3

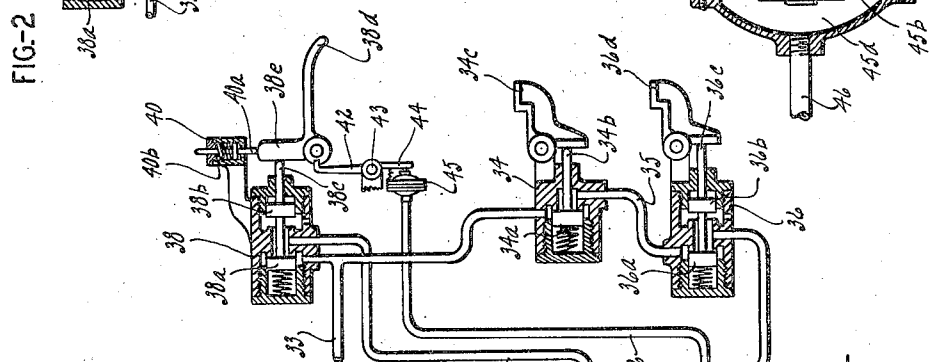


FIG.-2

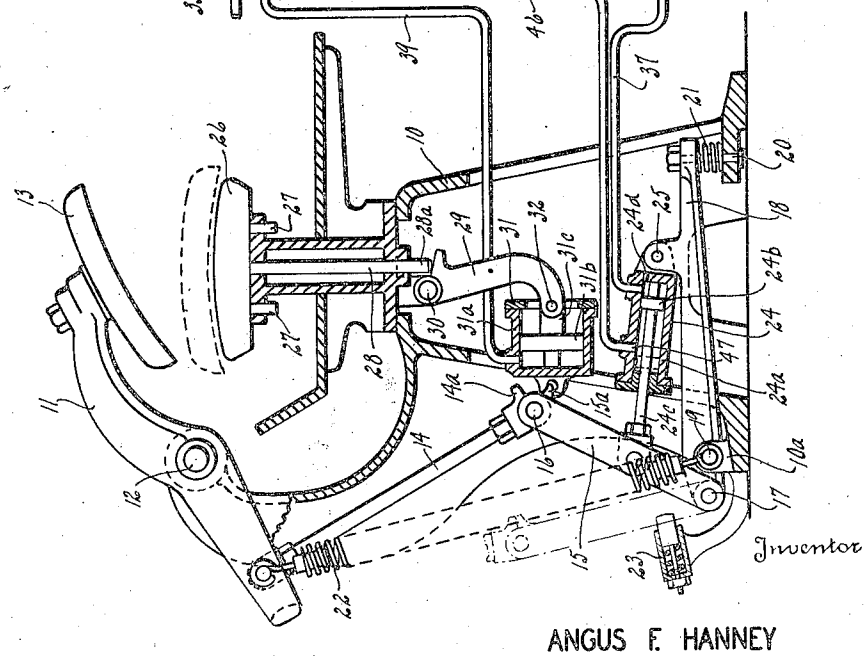


FIG.-1

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PRESS CONTROL

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6 Claims. (Cl. 68—9)

This invention relates to a pressing machine and more particularly to a machine of the type used in laundry and garment work.

An object of the present invention is to provide an improved control mechanism for a power operated pressing machine of the type described and more particularly a control which protects the operator from injury while closing the press and which does so in a very positive manner.

The novel features of my improved control mechanism will be more clearly understood from the accompanying specification when taken in connection with the drawing and the essential features will be summarized in the claims.

In the drawing Fig. 1 is an end elevation partly in section showing a pressing machine embodying my invention with the control mechanism shown diagrammatically; Fig. 2 is a view of a portion of the control mechanism of Fig. 1 showing the parts in a different position; while Fig. 3 is a view of a portion of the mechanism of Fig. 1 enlarged to show the construction more clearly.

I have illustrated my invention as applied to a pressing machine in which the head and bed pressing members are each movable toward the other. In the machine shown upon a frame 10 is mounted a head lever 11 pivoted to the frame at 12 and carrying at its forward end a pressing head 13 which may be heated if desired in any well known manner. Connected between the rear end of the head lever and the frame is a pair of toggle links 14, 15 pivotally connected together at 16 and pivoted at 17 to the frame or to a member secured to the frame. In the specific embodiment shown the pivotal connection 17 is with a lever 18 which is pivotally supported at 19 on a frame bracket 10a. The forward end of the lever 18 is yieldingly connected with the frame by means of a bolt 20 and a spring 21 which biases the lever in a counterclockwise direction. A spring 22 connected between the rear end of the head lever and the frame normally biases the pressing head toward its open position as shown in full lines in Fig. 1. A spring pressed snubber device 23 is supported on a bracket at the rear of the frame in position to be engaged by the link 15 as the same moves into and beyond straightened position as shown in broken lines in Fig. 1. A pair of shoulders 14a and 15a on the respective toggle links limits the rearward movement of the toggle.

For moving the head from open position to a point adjacent the pressing bed I provide a motor 24 which comprises a cylinder 24a pivotally mounted at 25 on a portion of the lever 18. Within the cylinder is a piston 24b whose rod 24c is pivotally connected to the link 15. The cylinder is provided with a vent 24d at its forward end for a purpose later described.

On a portion of the frame is mounted a pressing bed 26 arranged for limited vertical movement and guided during such movement by pins 27 which fit in suitable bores on the frame. A pressure pin 28 depends below the bed with its lower end 28a in position to be engaged by a lever 29 which in turn is pivotally mounted at 30 on a bracket of the frame. This lever is actuated by a motor 31 comprising a cylinder 31a having a piston 31b whose rod 31c is pivotally connected at 32 to the lever 29.

Fluid supply means for motors 24 and 31 is provided and arranged in such a manner that it is first necessary to move the pressing head 13 from open position, shown in full lines in Fig. 1, to a position adjacent the bed, such as that shown in broken lines in Fig. 1. Thereafter the pressing bed 26 is raised into engagement with the head 13. The toggle links are so arranged that upon movement of the pressing head from the full line position to the broken line position in Fig. 1, the toggle links move from the full line position to the broken line position there shown, thus forming a strut which resists the vertical upward thrust of the bed.

The control mechanism shown comprises spaced safety manuals for controlling the flow of motive fluid to motor 24 and a manual for controlling the flow of fluid to motor 31 with an arrangement whereby this last manual cannot be operated until motor 24 has placed the head in such close proximity to the bed that the operator cannot place a hand between the pressing members. To this end a supply conduit 33 is connected through valve casing 34, conduit 35, valve casing 36 and conduit 37 to the forward end of cylinder 24a. Casing 34 houses a normally closed inlet valve 34a whose stem 34b is actuated by a manual 34c. Casing 36 houses a normally closed inlet valve 36a and a normally open outlet valve 36b both mounted on a common stem 36c and actuated by a manual 36d. The manuals 36d and 34c are spaced apart adjacent the operator's position in front of the press in a manner to require a hand of the operator on each manual and actuated simultaneously to operate motor 24.

The supply of motive fluid to motor 31 is by way of conduit 33, valve casing 38 and conduit 39. Valve casing 38 contains a normally closed inlet valve and a normally open outlet valve which are similar to those already described in casing 36 and the parts have been similarly

marked. The manual 38d for actuating the valves in casing 38 has an upstanding arm 38e by which the manual is held in operated position by the action of a detent mechanism 40. This detent mechanism comprises a dog 40a biased downwardly by a spring 40b. When the manual 38d is pulled upwardly to the position of Fig. 2 the dog 40a lies in front of the arm 38e so that the spring in casing 38 cannot return the valves therein to their normal position. Manual 38d is pivotally mounted at 38f on a portion of the frame. The manual has a notch 41 which is engaged by a dog 42 when the manual is in the position of Fig. 1 and this dog normally prevents actuation of the manual. The dog 42 rotates about a pivot 43 on the frame and rigid with the dog is an arm 44 which extends downwardly in position to be actuated by a small servo motor 45. This servo motor may be of any desired form but as shown comprises a casing 45a which houses a diaphragm 45b to which is connected a rod 45c extending out the forward end of the casing in position to engage the arm 44. Fluid is admitted to the chamber 45d rearwardly of the diaphragm by way of a conduit 46 which is in communication with a port 47 in cylinder 24a in a position to be uncovered by piston 24b toward the end of its stroke. A spring 48 biases the dog 42 toward latching position.

The operation of the device will now be apparent. With the parts in the position shown in full lines in Fig. 1, the operator arranges the work upon the bed 26 and depresses manuals 34c and 36d. This supplies motive fluid to motor 24 whose piston makes a stroke rearwardly or to the left as seen in Fig. 1 until the piston occupies the broken line position there shown. This moves the toggle links to their beyond straightened position as shown in broken lines which coincides with the movement of the head to the broken line position there shown. If the manuals 34c and 36d or either of them is released at this point the press will open. If manual 36d is released fluid is exhausted through the valve 36b, while if 34c is released fluid will be exhausted through the vent 24d. If, however, the operator desires to continue the closing movement of the press after the parts have reached the broken line position of Fig. 1, the manual 38d is then pulled upwardly which is rendered possible by fluid from cylinder 24a passing through conduit 46 and actuating the servo motor 45 in a manner to rotate the dog 42 in a counterclockwise direction which moves the dog out of the notch 41. Upon actuation of manual 38d fluid is admitted to motor 31 which raises the bed into pressure engagement with the head. The manual is held in this position by the detent mechanism 40 and the operator may then release the manuals and the press will remain closed. Manual 38d is preferably located close to one of the manuals 34c or 36d and preferably in position to be grasped by the hand of the operator without releasing either of the manuals 34c or 36d. To open the press manual 38d is moved downwardly against the action of the detent mechanism which permits the valves in casing 38 to return to the position of Fig. 1, thus exhausting fluid from motor 31 whereupon the snubber mechanism 23 gives an initial kick to the toggle links starting them toward broken position which movement is then completed by spring 22.

It is thus apparent that I have provided connecting mechanism between motor 24 and the control mechanism for motor 31 so that the control member 38d cannot be operated until motor 24 has completed a predetermined movement sufficient to move the head to safe position adjacent the bed.

It will be understood that means is provided for preventing a building up of pressure against the rear face of piston 24b. Preferably I make rod 24c fit loosely in the rear cylinder head, although a small vent might be provided. This insures that chamber 45d will be normally at atmospheric pressure.

Without my improved control mechanism, including the blocking mechanism 42 for manual 38d, it would be possible to actuate manual 38d when the toggle links were in partly straightened position. If this should occur, the force exerted by motor 31 acting through the head lever against the toggle might snap the links indeterminately either side of straight line position with possible injury to the press or to the operator. With the improved mechanism here disclosed the toggle links must be in the strut-forming position of Fig. 1 before motor 31 is actuated by manual 38d.

What I claim is:

1. In a pressing machine, a pair of coacting pressing members, mechanism for moving one of said members into position adjacent the other, said mechanism being constructed and arranged so that said one member when in said position resists pressure against it, a motor for moving said mechanism to place said one member in said position, control means for said motor, motor means for moving the pressing surface of said other member against said one member in said adjacent position, a control member for said motor means, means normally disabling said control member, power means for enabling the operation of said control member, and power supply means for said power means and operable by operation of said motor sufficient to place said one member in said adjacent position.

2. In a pressing machine, coacting head and bed pressing members, mechanism for moving said head member into position adjacent said bed member, said mechanism being constructed and arranged so that said head member when in said position resists pressure against it, a fluid actuated motor for moving said mechanism to place said head member in said position, control means for said motor, motor means for moving the pressing surface of said bed member against said head member in its adjacent position, a control member for said motor means, means normally preventing effective operation of said control member, a servo-motor for enabling effective operation of said control member, a fluid supply conduit for said servo-motor, and means for admitting fluid to said conduit by movement of said fluid actuated motor sufficient to place said head member in said adjacent position.

3. In a pressing machine, coacting head and bed pressing members, mechanism for moving said head member into position adjacent said bed member, said mechanism being constructed and arranged so that said head member when in said position resists pressure against it, a fluid actuated motor for moving said mechanism to place said head member in said position, control means for said motor, fluid actuated means for moving the pressing surface of said bed member against said head member in its adjacent position, fluid supply means for said last named

means including a valve, a manual for actuating said valve to fluid supply position, a blocking member normally preventing fluid supply movement of said manual, a servo-motor for moving said blocking member out of blocking position, a fluid supply conduit for said servo-motor, and means for admitting fluid to said conduit by movement of said fluid actuated motor sufficient to place said head member in said adjacent position.

4. In a pressing machine, coacting pressing members comprising a head and bed, mechanism for moving said head into position adjacent said bed, said mechanism including members adapted to be placed in strut-forming position by movement of said head into said adjacent position whereby to resist pressure against said head, means biasing said members out of strut-forming position, a fluid actuated motor for moving said head into said adjacent position, control means for said motor including spaced safety manuals, fluid actuated means for moving the pressing surface of said bed against said head in its adjacent position, fluid supply means for said last named means including a valve, a manual for actuating said valve to fluid supply position, a blocking member normally preventing fluid supply movement of said manual, a servo-motor for moving said blocking member out of blocking position, a fluid supply conduit for said servo-motor, and means for admitting fluid to said conduit by movement of said fluid actuated motor sufficient to place said head in said adjacent position.

5. In a pressing machine, a frame, a pressing bed vertically movable in said frame, a fluid actuated motor for moving said bed, fluid supply means for said motor including a valve and a manual for opening said valve, a pressing head, mechanism for moving said head into and for holding said head in position adjacent said bed, said mechanism including toggle links movable from broken position into and beyond straightened position, means biasing said links toward broken position, a fluid actuated motor for moving said links to beyond-straightened position, fluid supply means for said toggle moving motor including spaced safety control members, a blocking member normally preventing fluid supply movement of said bed moving motor control manual, a servo-motor for moving said blocking member out of blocking position, a fluid supply conduit for said servo-motor, and means for admitting fluid to said conduit by movement of said toggle moving motor sufficient to place said head in said adjacent position.

6. In a pressing machine, a pair of coacting pressing members, mechanism for moving one of said members into position adjacent the other, said mechanism being constructed and arranged so that said one member when in said position resists pressure against it, a motor for moving said mechanism to place said one member in said position, control means for said motor, fluid actuated means for moving the pressing surface of said other member against said one member in said adjacent position, a control member for said fluid actuated means, means normally disabling said control member, means for enabling the operation of said control member, and means for actuating said last-named means and operable by operation of said motor sufficient to place said one member in said adjacent position.

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