

Sept. 5, 1939.

G. S. BALDWIN ET AL
CONTROL FOR PRESSING MACHINES

2,171,529

Filed Dec. 6, 1937

2 Sheets-Sheet 1

FIG-1

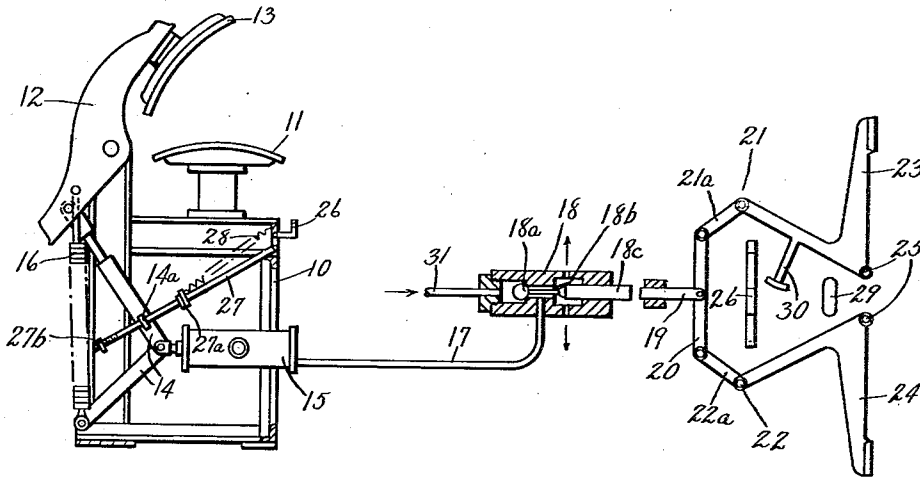


FIG-2

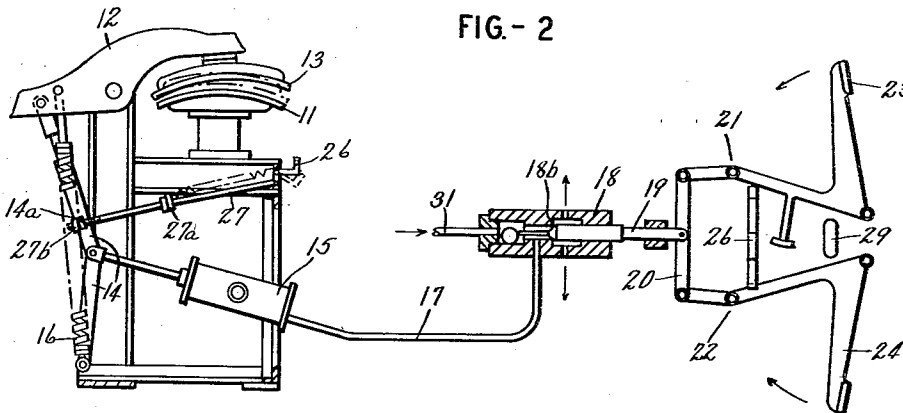
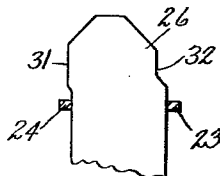


FIG-3



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2 Sheets-Sheet 2

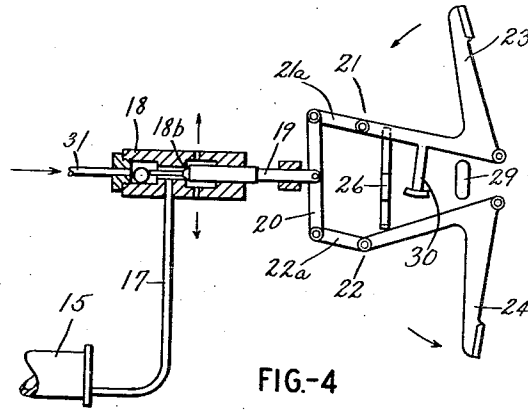


FIG-4

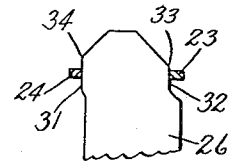


FIG-7

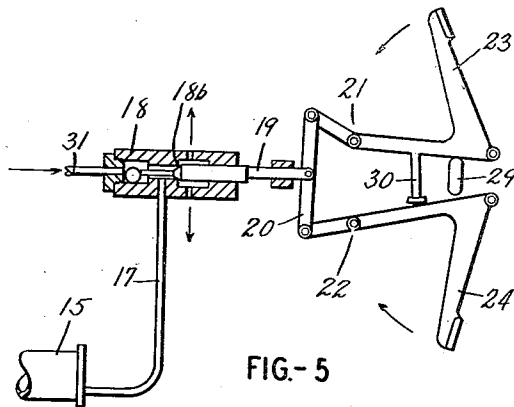


FIG-5

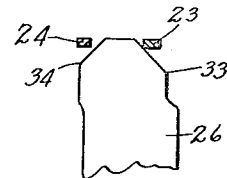


FIG-8

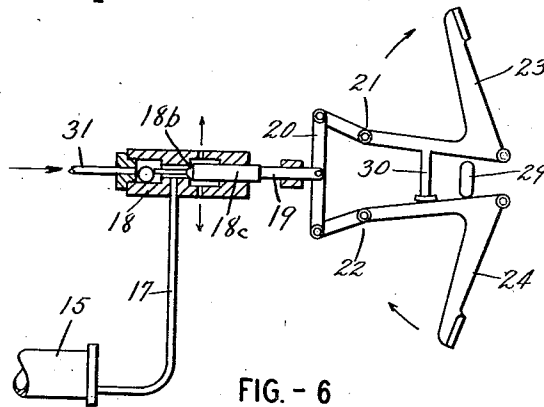


FIG-6

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2,171,529

CONTROL FOR PRESSING MACHINES

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Application December 6, 1937, Serial No. 178,210

6 Claims. (Cl. 192—131)

This invention relates to improvements in control mechanism for pressing machines and more particularly to a control adapted for use with garment and laundry presses.

5 An object of the present invention is a simplified control for the supply valve for a fluid actuated motor which operates the pressing machine. The invention comprises an improved safety two-hand control wherein toggles connected to opposite ends of an equalizer bar are moved simultaneously to actuate the valve to fluid supply position and wherein the parts are so constructed and arranged that a rigid valve rigidly mounted is maintained in an efficient fluid supply position by movement of both toggles over dead-center to a locked position. The invention involves parts so arranged that without any springs or yielding parts whatsoever, the valve is moved to supply position and there maintained to hold the press closed.

Other novel features of our invention will appear from the accompanying specification and drawings and the essential features will be set forth in the claims.

25 In the drawings, Fig. 1 shows an end elevation of a pressing machine with our improved control mechanism shown diagrammatically in corresponding position; Fig. 2 is a similar view showing the press parts in full lines in a safe-closed position and in broken lines in a fully closed position, the control mechanism being shown diagrammatically corresponding to the full line position of the press parts; Fig. 3 is a view in elevation of the stop member with the control manuals in the position of Fig. 2; Figs. 4, 5 and 6 are views of the control mechanism of Fig. 2 in progressive positions as they are moved to finally attain in Fig. 6 the position corresponding to the fully closed position of the press parts; while Figs. 7 and 8 show the position of the manuals relative to the stop means corresponding respectively to the position of the controls in Figs. 4 and 6.

Our invention is illustrated as applied to a pressing machine having a frame 10 supporting a pressing bed 11 and also pivotally supporting a lever 12 on which is mounted a pressing head 13 movable into and out of engagement with the bed 11 by oscillation of lever 12 under the influence of toggle 14 and the cylinder and piston motor 15 connected therewith. A spring 16 normally returns the head to open position.

Fluid is supplied to motor 15 through conduit 17 and valve casing 18. This casing houses a normally closed inlet port 18a which is closed by a ball valve. Exhaust port 18b is normally open

but may be closed by a shoulder on the valve stem 18c. It will be understood that the valve is rigidly mounted on the frame 10 and that there is no give in the parts, that is to say, when the valve is closed the shoulder on 18c firmly engages the exhaust port 18b, there being no necessity for yieldable gaskets or anything of the sort at this point. Valve stem 18c is engageable by a pin 19 pivotally mounted centrally of the equalizer bar 20. Pin 19 is guided on the frame for reciprocating movement. To opposite ends of bar 20 are pivotally connected toggles 21 and 22 respectively. Each toggle comprises a link 21a, 22a and an arm of a bell-crank-like manual 23 and 24. These manuals are pivoted to the frame at 25 and these pivots are fixed relative to valve 18 so that there is no relative movement between the parts.

A stop member 26 is pivotally mounted on the frame and normally lies between the manuals in the position of Fig. 1 under the influence of rod 27 and spring 28. Rod 27 passes through bracket 14a on toggle 14 and carries collars 27a and 27b. The collar 27b is preferably threaded on rod 27 for adjustment, as will later appear. The stop 26 normally prevents movement of the manuals beyond a certain point until the press is safely closed, at which time bracket 14a engages collar 27b and rotates the stop downwardly out of position between the manuals. A fixed stop 29 on the frame limits movement of the manuals in one direction and stop means 30 rigid with one or both of the manuals performs a limiting function as will hereinafter appear. It will be understood that while stop 30 is shown connected with manual 23, part of this strut might be connected with manual 24.

With the parts in the position of Fig. 1, the operator arranges the work on the pressing bed 11 and moves manuals 23 and 24 to the position of Fig. 2. If either manual is moved alone it is sufficient only to take up the gap between pin 19 and valve stem 18c and insufficient to move the valve to fluid supply position. When both manuals are actuated simultaneously, fluid is supplied from conduit 31 through valve casing 18 and conduit 17 to motor 15 so as to cause the press to close. In this condition of the parts if either of the manuals is released its associated toggle will break outwardly permitting the valves in casing 18 to return to fluid cut-off and exhaust position. This is due to the effect of the pressure fluid supply against ball 18a and the shoulder on valve stem 18c.

With the parts in the position of Fig. 2, the ex-

haust valve 18b is held firmly closed and remains closed during the following operations of the manuals. Referring to Figs. 4, 5 and 6, manual 24 is first moved in a direction to break toggle 22 slightly further outwardly sufficient to permit manual 23 to move toggle 21 over dead-center to break inwardly. The total effect observed in Fig. 4 is to tilt the equalizer bar 20 while maintaining the valves in casing 18 in their fluid supply position with the exhaust port fully closed. In other words, the retrograde movement of toggle 22 is compensated for by the advancing movement of toggle 21. In Fig. 5 toggle 21 is broken inwardly sufficient to permit toggle 22 to pass over center to an inwardly breaking position while maintaining the valve parts in casing 18 in the same position as in Fig. 4. The movement of toggle 21 is limited by stop 29. Here the equalizer bar 20 is tilted slightly in the opposite direction but the total advancing effect of toggles 21 and 22 on the pin 19 remains constant. In Fig. 6 both toggles have broken over center inwardly. The inward movement of toggle 22 is limited by stop 29. Now the manuals may be released and the toggles will return to an equalized position with the two toggles breaking inwardly an equal amount and spaced apart properly by the stop means 30. Toggle 21 will move away from stop 29 slightly at this time. The manuals and toggles will remain in the position of Fig. 6 and are positively held there due to the pressure of the fluid supply on the valve parts in casing 18 as previously described because the toggles cannot break over center when under the influence of this pressure. When it is desired to open the press the manuals are returned to the position of Fig. 1 to exhaust motor 15, permitting spring 16 to elevate the head.

The stop means 26 is arranged to guide and compel the proper operation of the manuals as previously described, although it will be understood that their manipulation might be performed without this stop 26. As previously pointed out, the position of stop 26 is controlled by rod 27 and the engagement of collar 27b by the bracket 14a as toggle 14 straightens during the closing of the press. By the proper adjustment of collar 27b, the stop 26 may be moved relative to the manuals through the various positions shown in Figs. 3, 7 and 8. In moving from the position of Figs. 2 and 3 to that of Figs. 4 and 7, manual 24 has been moved to cause toggle 22 to break slightly farther outwardly by the elevated cam portion 31 on stop 26. At the same time manual 23 is guided to break toggle 21 inwardly by the indented cam portion 32. The manual movement illustrated in Fig. 5 is guided by shoulders 33 and 34 respectively on stop 26. Shoulder 33 permits manual 23 to move inwardly before shoulder 34 permits manual 24 to move inwardly. When both manuals reach the position of Figs. 6 and 8, the stop means 26 is entirely withdrawn and is no longer necessary as the stop means 30 controls the final position of the manuals.

It will be noted that the manuals and their associated toggles 21 and 22 are moved from the position of Fig. 2 to the final position of Fig. 6 without at any time permitting an opening of the exhaust valve 18b and yet each of the toggles 21 and 22 has meanwhile passed over a dead-center. All of the parts are rigidly mounted, none of them are yielding and the parts in their final position hold the valve in a firmly closed efficient fluid supply position under the influence solely of the pressure fluid supplied to the motor 15. This

is accomplished by maintaining substantially constant the combined advancing effect of toggles 21 and 22 acting through equalizer bar 20, that is to say, the combined breaking of the toggles is such as to always maintain the exhaust port 18b tightly closed by the shoulder on the valve stem 18b.

What we claim is:

1. In a pressing machine having a frame, having coacting relatively movable pressing members, having fluid actuated power means for causing said relative movement, and having a pressure fluid supply for said power means, control means for said fluid supply comprising rigid valve parts rigidly mounted on said frame, said valve parts being so arranged that said fluid supply normally tends to move said parts to fluid cut-off position, an equalizer bar, a member operatively connected with said bar intermediate its ends for moving said valve parts to fluid supply position, two toggles connected between said bar and said frame, one to each end of said bar and adapted when both are short of central straightened toggle position to hold said valve parts firmly in fluid supply position, manual means for actuating said toggles, stop means for limiting the movement of said toggles beyond central position on one side thereof, and said toggles and equalizing bar and last named member being non-yielding.

2. Control means for a pressing machine as in claim 1, including guide means for compelling toggle operation, from a position with both toggles breaking outwardly and holding said valve parts in fluid supply position, to first break one toggle outwardly as the other toggle is moved over center to position breaking inwardly, then to break said other toggle further inwardly as said one toggle is moved over center to position breaking inwardly, and means to limit the inward breaking of said toggles.

3. Control means for a pressing machine as in claim 1, including guide means for compelling toggle operation, from a position with both toggles breaking to one side of central position and holding said valve parts in fluid supply position, to first break one toggle further to said one side of center as the other toggle is moved over center, then to break said other toggle further to the other side of center as said one toggle is moved over center, and means to limit the combined breaking of said toggles to the other side of center to a position corresponding to efficient fluid supply position of said valve parts.

4. In a pressing machine having a frame, coacting relatively movable pressing members, fluid actuated power means for relatively moving them, and a fluid pressure supply therefor, control means for said supply, comprising valve parts mounted on the frame and having a normal tendency to move to fluid cut-off position, an equalizer bar, operating means for said valve parts actuated thereby, two toggles connected one to each end of said bar, each thereof having means for manually operating it, said toggles being movable toward each other to over-straightened positions, said toggles when in predetermined over-straightened positions being adapted to hold said valve parts in fluid supply position, and stop means movable between said toggles in the direction of toggle movement and forming an abutment between them to limit their relative movement toward each other to said predetermined positions.

5. In a pressing machine having a frame, coacting relatively movable pressing members, fluid

5 actuated power means for relatively moving them,
and a fluid pressure supply therefor, control
means for said supply, comprising valve parts
mounted on the frame and having a normal tend-
ency to move to fluid cut-off position, an equalizer
10 bar, operating means for said valve parts actu-
ated thereby, two toggles connected one to each
end of said bar, each thereof having means for
manually operating it, said valve parts, bar and
toggles being rigidly constructed and mounted
15 whereby predetermined breaking of said toggles
outwardly or inwardly holds said valve parts in
supply position, a stop controlling movement of
said toggles and having surfaces engaging said
toggles to compel sufficient outward breaking of
20 one toggle while the other toggle is moved over
center to break inwardly and to compel sufficient
inward breaking of said other toggle while said
one toggle is moved over center to break inwardly,
and means limiting said toggles to said predeter-
mined inwardly breaking position.

6. In a pressing machine having a frame, hav-
ing coacting relatively movable pressing mem-
bers, having fluid actuated power means for rel-

atively moving said members, and having a pres-
sure fluid supply for said power means, control
means for said supply comprising rigid valve parts
rigidly mounted on said frame and normally in
fluid cut-off position, a rigid equalizer bar having
5 intermediate its ends a rigid operative connection
with said valve parts, two toggles constructed of
rigid links and connected between said bar and
said frame, one to each end of said bar, manual
means for operating said toggles, said toggles
10 having positions short of straightened position
adapted to hold said valve parts firmly in supply
position, stop means removable by movement of
said pressing members to a safe-closed position
for limiting movement of said toggles to said
15 short-of-straightened position, said toggles being
movable toward each other to over-straightened
positions when said stop means is removed, and
stop means limiting the relative approach of said
toggles in over-straightened position to a posi-
20 tion where said valve parts are firmly held in
fluid supply position.

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