May 28, 1940. J. M. DEWEY 2,202,483

CONTROL FOR TURRET TYPE PRESSES

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FIG. - 1

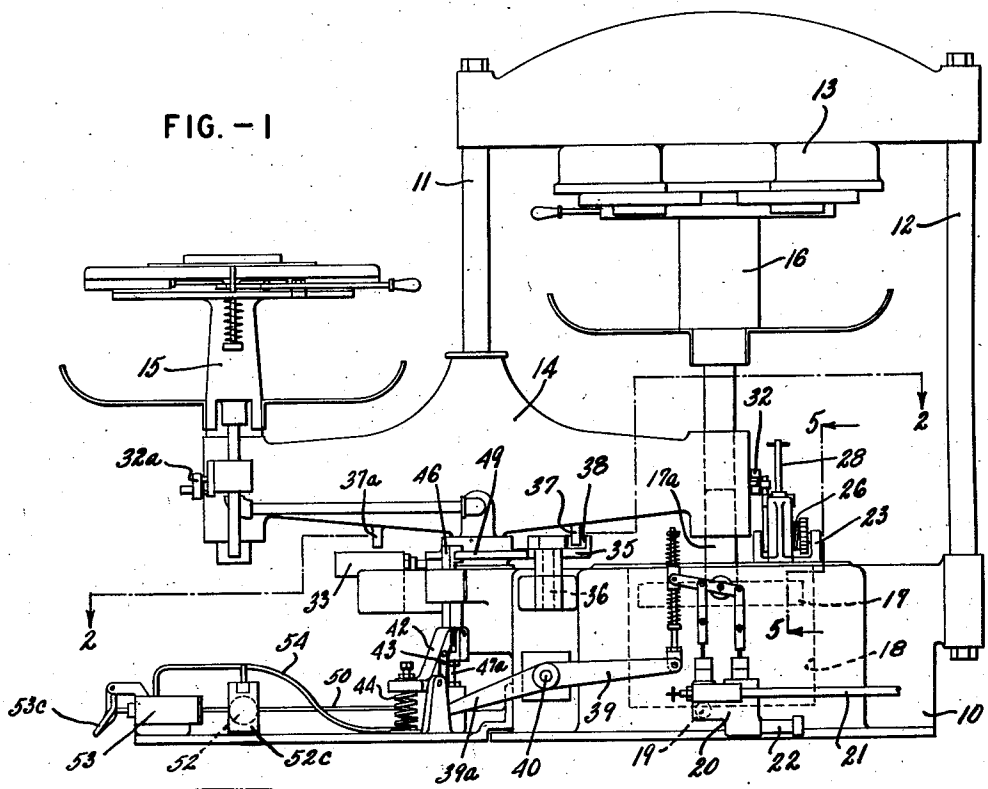


FIG. - 2

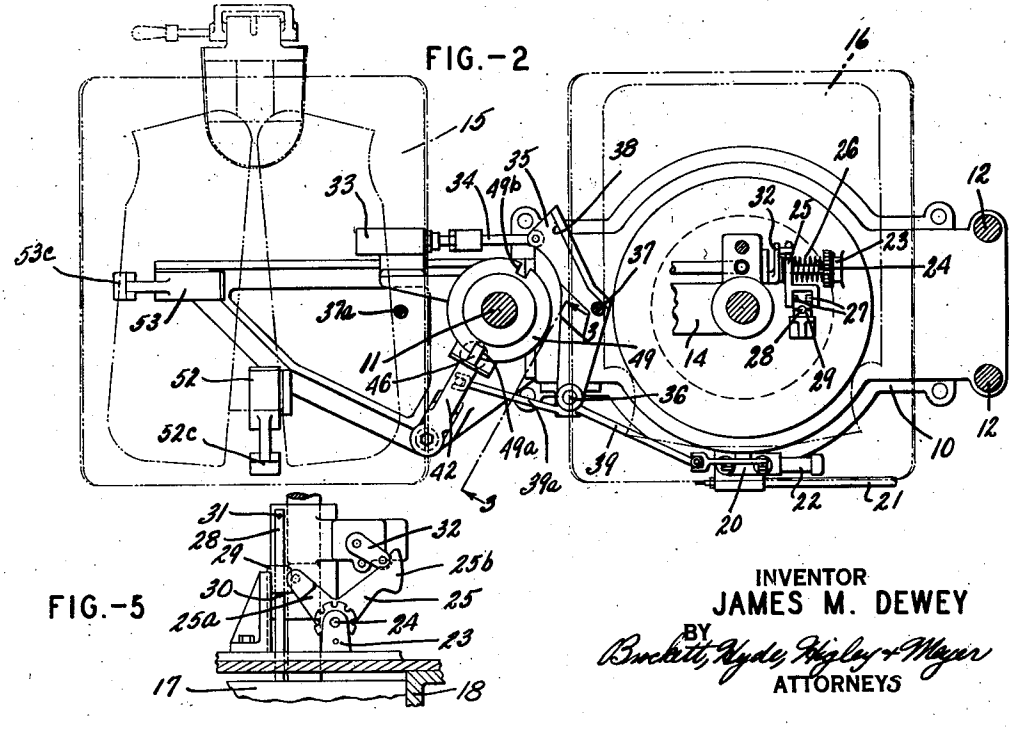


FIG. - 5

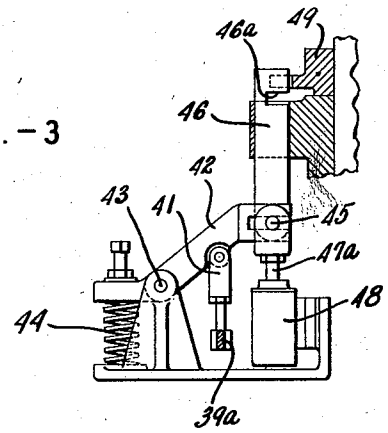
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FIG. - 3



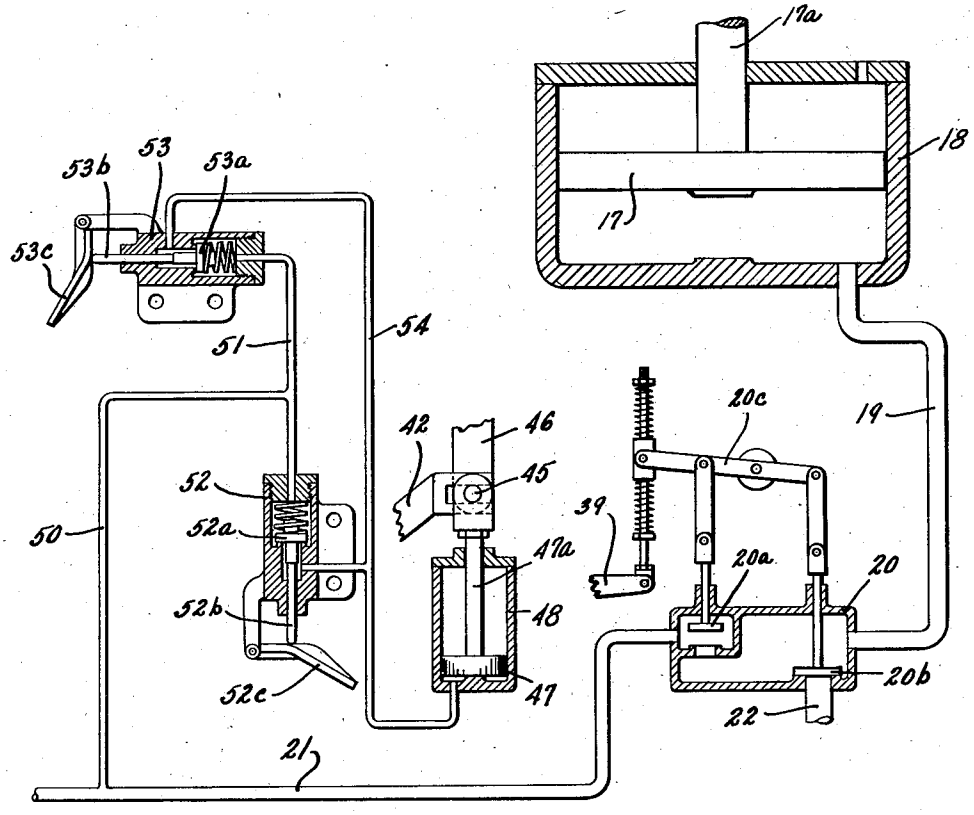


FIG. - 4

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UNITED STATES PATENT OFFICE

2,202,483

CONTROL FOR TURRET TYPE PRESSES

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Application September 19, 1936, Serial No. 101,641

3 Claims. (Cl. 38—22)

This invention relates to improvements in control mechanism for presses.

In presses of the type in which a pressing bed is movable laterally into and out of registration with a pressing head and wherein the operator arranges the work on the bed when it is in its out-of-registration position, the press operating mechanism is often positioned remote from the operator. An object of the present invention is to provide a novel control mechanism in such a press whereby the press operation is caused upon actuation of a servo-motor, the control for which is arranged in a novel manner adjacent the working position of the operator.

My invention is particularly applicable to pressing beds having a work-receiving surface longer than the normal reach of an operator and wherein the operator is required to move about the bed when arranging work thereon. A feature of the present invention is the arrangement of control means for causing press operation accessible to the operator when standing in different positions about the pressing bed while arranging work thereon.

My invention is particularly applicable to the type of pressing machine in which a plurality of pressing beds are alternately moved into and out of registration with and into and out of pressing engagement with a single coacting pressing head. In such a pressing machine my invention provides novel control mechanism for causing movement of the press bed into and out of pressing position, together with novel interlocking means insuring the production of the desired bed movements in proper sequence.

Another feature of my present invention is the provision in a turret press having a rotating frame by which a plurality of beds are alternately placed in pressing position beneath a coacting head of a novel control mechanism for actuating the turret rotating and pressure producing mechanism. My invention also includes indexing mechanism insuring that such bed is in porper position before a pressing operation takes place.

Other novel features will be found in the structural arrangements by which I accomplish the ends pointed out, all of which will more clearly appear in the accompanying drawings as described in the specification and the essential features will be set forth in the claims.

In the drawings, Fig. 1 is a front elevation of a pressing machine embodying my novel control mechanism; Fig. 2 is a sectional plan view taken on the line 2—2 of Fig. 1 and showing the pressing beds in dash-dot lines to indicate their position relative to the structure shown in full lines; Fig. 3 is an enlarged detail view taken on the line 3—3 of Fig. 2; Fig. 4 is a diagrammatic view of the control mechanism; while Fig. 5 is an enlarged view taken on the line 5—5 of Fig. 1 showing a portion of the turret turning mechanism.

I have illustrated my invention as applied to a pressing machine of the type used in the laundry industry and generally referred to as the turret type. A base 10 supports a central column 11 and a pair of side columns 12. These columns at their upper ends support a pressing head 13 in fixed position. Rotatably mounted upon column 11 is a frame 14 having oppositely extending arms supporting beds 15 and 16 respectively, which by frame rotation are alternately moved into and out of registration with the head 13. In the form illustrated the bed 15 is arranged to press the front and a portion of the shoulders of a man's shirt, and the bed 16 is provided with a buck adapted to iron the entire back and a portion of the shoulders and sides of a man's shirt, however, it will be understood that my improved control mechanism is useful in other types of pressing operations. The pressing beds illustrated are long enough to accommodate men's shirts of large size and sufficiently long to press a portion of the shouders of the shirt and such pressing beds are of such length that an operator in arranging work thereon cannot reach both ends of the work-receiving surface at one time and must move about the pressing bed in arranging work thereon. Certain features of my invention are applicable to pressing members of this large size.

Each of the pressing beds has a downwardly extending stem which, when the bed is in registration beneath the pressing head, lies directly over the piston rod 17a connected with a piston 17 which is housed in a cylinder 18 within the base 10. Pressure fluid is supplied to cylinder 18 by way of conduit 19 and a combined inlet and outlet valve mechanism 20. This mechanism comprises an inlet valve 20a and an outlet valve 20b operable by a lever 20c to admit pressure fluid from supply conduit 21 to cylinder 18 or to exhaust the same through the outlet pipe 22.

The mechanism for rotating frame 14 is of the type fully shown and described in Patent No. 1,997,219, granted April 9, 1935, to O. W. Johnson, and will be only briefly described here. A bracket 23 mounted on the base 10 carries a pin 24 which forms a pivot for a bellcrank 25 which is normally biased for movement in a counter-

clockwise direction as viewed in Fig. 5 by a spiral spring 26, one end of which is secured to the bellcrank. The arm 25a of the bellcrank is bifurcated and carries a pair of pins 27. A rod 28 is movable with piston 17 and slidably thereon carries a block 29 which is moved upwardly by pin 30 when piston 17 rises and is moved downwardly by pin 31 when piston 17 falls. When piston 17 moves up block 29 engages pins 27 as shown in Fig. 2 and rotates bellcrank 25 in a clockwise direction as shown in Fig. 5 causing the arm 25b of the bellcrank to first pass by a pawl 32 carried by one of the arms of frame 14 and thereafter the arm 25b rests against the end of pawl 32 in the position shown in Fig. 5. When piston 17 drops sufficiently for pin 31 to engage block 29 and move it below the position shown in Fig. 5, the pins 27 allow the bellcrank 25 to rotate in a clockwise direction, as viewed in Fig. 5, and spring 26 then causes rotation of frame 14 180°, moving one of the beds out of registration and the other into registration with the pressing head. The other arm of frame 14 carries a pawl 32a which coacts with the bellcrank 25 in a manner similar to that just described.

Means is provided for snubbing the frame rotating movement as each bed approaches registering position. This comprises an oil filled check 33 which is connected by a link 34 with a lever 35 pivotally mounted on the frame at 36. Pins 37 and 37a, one on each arm of frame 14, ride against the cam surface 38 as each pressing bed approaches registering position and the resistance of the oil check 33 thus snubs the movement of each bed into registration.

The operating mechanism for the valves in casing 20 comprises a lever 39 pivotally mounted at 40 and having a branch 39a which is pivotally connected by link 41 with a lever 42 which in turn is pivotally mounted on a bracket at 43. Beyond the pivot lever 42 is biased by a compression spring 44 for movement in a clockwise direction as viewed in Fig. 3. The upper end of lever 42 has a slotted connection with pin 45. This pin also forms a pivotal connection between a locking bar 46 and the piston rod 47a of piston 47 which is housed in cylinder 48. The upper end of bar 46 when the bar is in its lower position engages one of the notches 49a or 49b in collar 49 which rotates with the frame 14. When the locking bar engages one of these notches one of the pressing beds is in registration with the pressing head. The bar 46 carries below its upper end a notch 46a which registers with collar 49 when the locking bar is in its upper position thus permitting free rotation of collar 49 and the frame 14.

It will be obvious from the above description that piston 47 is normally held in its lowermost position by spring 44. Pressure fluid is supplied to cylinder 48 to raise piston 47. Fluid is provided for this purpose from supply conduit 21 through conduits 50 and 51 and inlet valves 52 and 53 which are arranged in parallel and normally closed. Either of these valves when operated will supply fluid through conduit 54 to cylinder 48 beneath piston 47 to operate this servomotor. The mechanisms of valve casings 52 and 53 are exactly the same and one description will suffice for both. In casing 52 is a normally closed inlet valve 52a having a stem 52b which is engaged by a pedal 52c. Preferably these control members, namely, pedals 52c and 53c are placed in position to be accessible to the operator when in different working positions about a pressing bed upon which she is working. In the form shown control member 52c is located near one end of the pressing bed and control member 53c is located along one side of the bed. Therefore if the operator is working near the side or the collar end of bed 15 as viewed in Fig. 2, pedal 53c will be used to actuate piston 47, whereas if the operator finishes the lay of the work while standing near the tail end of pressing bed 15 the pedal 52c will be used.

With the pressing bed 16 in the position shown in Fig. 1, spring 44 is holding the arm 39a of lever 39 in its lowermost position, thus holding the valve 20a open and valve 20b closed and a pressing operation is carried on between the pressing members 13 and 16. The operation then proceeds as follows: The operator arranges the lay of the work upon bed 15 and actuates either pedal 52c or 53c. Fluid then flows beneath piston 47 which raises locking bar 46 to register notch 46a with collar 49 thus freeing frame 14 for rotation. Simultaneously by link 41, lever 39 is moved in a clockwise direction (as viewed in Fig. 1) closing valve 20a and opening valve 20b. Fluid is then exhausted beneath piston 17 and the piston and pressing bed 16 drop by the force of gravity. When this press opening movement has proceeded far enough bellcrank 25, which was placed in the position of Fig. 5 at the beginning of the pressing operation, is uncocked and causes frame rotation 180°. It is unnecessary for the operator to hold pedal 52c or pedal 53c in actuated position until frame rotation is completed because the servo-motor 47—48 is arranged to trap fluid beneath piston 47 for a long enough period to permit piston 17 to drop and frame rotation to start. It is sufficient for this purpose to arrange the sliding fit between valve stem 52b and valve casing 52 (or between valve stem 53b and casing 53) not quite tight. Pressure fluid will therefore leak out beneath piston 47 slowly. Once frame rotation has started collar 49 in notch 46a will hold the locking bar 46 in its uppermost position against the bias of spring 44 until one of the notches 49a or 49b again registers with bar 46. At this time bar 46 moves downwardly impelled by spring 44 and valves 20a and 20b are again returned to the position of Fig. 4 to supply motive fluid beneath piston 17 and cause a pressing operation between the registering bed and head.

What I claim is:

1. In a pressing machine, a pressing head, a rotatable frame, a plurality of pressing beds carried by said frame and movable by frame rotation into and out of registering position beneath said head, motor means for causing relative approach and separating movement between said head and a registering bed, means for causing frame rotation, a circular notched collar rigid with said frame, a reciprocable pin adapted to enter said collar notches for locking said frame against rotation in each of its bed-registering positions, said pin having a notch movable by pin-reciprocation into alinement with said collar whereby said collar and frame may rotate free of said pin with said collar in said pin notch, spring means biasing said pin toward locking position, a servo-motor for moving said pin to position with its notch alined with said collar, and means for initating said relative approach movement operable by movement of said pin into locking position.

2. In a pressing machine, a pressing head, a rotatable frame, a plurality of pressing beds car-

ried by said frame and movable by frame rotation into and out of registering position beneath said head, motor means for causing relative approach and separating movement between said head and a registering bed, means operable in response to said relative separating movement for causing frame rotation, means for locking said frame against rotation in each of its bed-registering positions, means biasing said last-named means in locking direction, a servo-motor for unlocking said locking means and for coincidentally initiating said relative separating movement, a pressure fluid supply system for said servo-motor, and said system being adapted to slowly bleed off the servo-motor fluid to hold said locking means unlocked until said separating movement is substantially completed and said frame starts to rotate under the influence of said frame rotating means.

3. In a pressing machine, a pressing head, a rotatable frame, a plurality of pressing beds carried by said frame and movable by frame rotation into and out of registering position beneath said head, motor means for causing relative approach and separating movement between said head and a registering bed, means operable in response to said relative separating movement for causing frame rotation, means for locking said frame against rotation in each of its bed-registering positions, means biasing said last-named means in locking direction, a servo-motor for unlocking said locking means and for coincidentally initiating said relative separating movement, a pressure fluid supply system for said servo-motor, said system being adapted to slowly bleed off the fluid therein to hold said locking means unlocked until said separating movement is substantially completed and said frame starts to rotate under the influence of said frame rotating means, and means for charging said system with pressure fluid including a plurality of actuators located at different stations and operative by momentary actuation of any one of said actuators for charging said servo-motor supply system.

JAMES M. DEWEY.