

UNITED STATES PATENT OFFICE

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PRESSING MACHINE

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This invention relates to pressing machines such as garment and laundry pressing machines and has for its object a particularly simple and efficient pressure element or means for automatically equalizing the pressure throughout the area of the pressing surface and the article being pressed, regardless of the nonuniformity in the thickness of different portions of the article. It further has for its object a pressure element or means by which any portion thereof is easily compressible relatively to the adjacent portions so that if the hand of the operator should be caught between the pressing elements that portion underlying his hand will easily form a depression for the hand and the hand will not be crushed as oftentimes happens in presses having the ordinary padding.

This invention is for use in connection with structure claimed in my copending application Sr. No. 199,857, filed June 18, 1927.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like character designate corresponding parts in all the views.

Figure 1 is a side elevation of one form of pressing machine embodying my invention.

Figure 2 is a detail view of the manual control for the pressing member.

This pressing machine comprises generally, cooperating pressing elements, one of which has a closing and opening movement toward and from the other, means for locking the movable element in its closed position and an expansible pressure member carried by one of said elements and having an expanding movement toward the other element and also having a flexible wall on the side thereof toward the other element, a fluid in said member and operator-controlled means for applying pressure to the fluid.

The pressing machine may be of any suitable form, size and construction, that here shown comprising a movable pressing element or head 1 and a stationary element or a buck 2 carried by a suitable frame 3. The head 1 is here illustrated as carried by a lever

or yoke 4 pivoted between its ends at 5 to a standard 6 rising from the frame.

7 is the expansible pressure member which is usually mounted on a stationary pressing element or buck 2 and expansible vertically or toward the head and having a flexible or yielding wall 8 on its upper side or the side toward the other pressing element. Usually, the pressure element 7 is overlaid with a suitable padding 9. The expansible member is a hollow chamber of metal, rubber or reinforced rubber composition, or any suitable material and flexible top wall. The side walls are here shown as in the form of bellows. The pressure member 7 is filled with a fluid. This fluid is preferably a non-compressible liquid 11 as oil or water.

The means for applying pressure to the fluid or liquid in the pressure member 7 is preferably compressed air although it may be any other power. The liquid is filled into the pad through a pipe 12 having a portion or chamber 13 containing such liquid to the normal height of the liquid in the member 7 and the air pressure is applied to the surface of the liquid in the chamber 13. The pipe 12 is provided with a pressure gage 41. The air is supplied from any suitable source through a feed pipe 14 which is connected to a valve chamber 15 in which the control valve is located, this valve casing 15 having an outlet pipe 16 leading to the upper end of the chamber 13.

The control mechanism includes a two-way valve which is manually operated to open the intake and in the illustrated embodiment of my invention, this two-way valve is a sliding valve comprising an intake valve head 17 in the casing 15, an exhaust valve head 18 connected by a stem 19 to the intake valve head 17 so that the two valve heads act as a unit. The intake valve head is normally closed and the exhaust valve head 18 open, and they are held in their normal position by a spring 19^a and also by an air pressure in the feed pipe. The pipe 16 leads from the valve casing 15 from between the valve heads 17, 18.

The valves are operated by manual means here shown as consisting of a push button 20 acting on one arm of a lever 21, the other arm

22 of which acts through a lever 23 on the stem 24 of the exhaust valve head 18. The function of the lever 23 will be presently described.

5 As thus far described, depression of the button 20 will cause the exhaust valve head to be closed and the intake valve head 17 to be opened so that the air is free to pass from the intake pipe through the valve casing pipe 16
10 to the upper end of the chamber 13 and thus apply pressure to the non-compressible liquid in the pressure member 7.

In order that the operator may not have to hold the button 20 depressed, means is provided for automatically holding the valve heads 17 and 18 into the position in which they are operated and this means consists of a pressure chamber 25 having a diaphragm 26 therein, the chamber on one side of the diaphragm communicating through a passage 27
15 with the valve casing 15 between the valve heads 17, 18. The diaphragm acts through a sliding stem 28 on one arm of the lever 23. As soon as the pressure is built up in the chamber 13, the pressure will pass through the passage 27 and actuate the diaphragm 26 which in turn through the lever 23 acting on the stem 24 holds the exhaust valve 18 closed and the intake valve 17 opened.
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To relieve the air pressure, the air on the pressure side of the diaphragm chamber 25 is released by means of a normally-closed, manually-operable, spring-pressed exhaust valve 29 located in the casing 30 which is
25 connected by a pipe 31 to the pressure side of the chamber 25. This valve 29 is operated by a suitable lever 32. These parts are all mounted on a suitable support 33 carried by the frame 3 of the machine.

40 The head 1 is movable manually or by the operator toward closed position before the button 20 is depressed to apply pressure to the liquid in the member 7, and is provided with a handle by which it can be manually closed
45 and with a lock for holding it in closed position while the pressure is being applied.

34 designates the handle which is a lever pivoted at 35 between its ends, the lever being mounted on the yoke lever 4 and one arm thereof being connected by a link 36 to a pawl 37 pivoted to the rear arm of the lever and coacting with a rack 38 carried by the frame. A spring 39 acts on the handle lever to restore it to its normal position and hence, move the
50 pawl out of engagement with the rack. Also, a spring 40 acts on the rear arm of the yoke lever to elevate the same into the dotted line position, Figure 1. The rack 38 is arc shaped and concentric with the axis 5 of the lever 4
55 and extends through a slot in the rear arm of the lever 4. It is usually pivoted to the frame and floats in the slot in the rear end of the lever 4.

In operation, the operator first takes hold
60 of the handle 34 and pulls downwardly on the

same thus bringing the head 2 down on the work on the buck or the pressure member 7, the spring 39 yielding during such operation and permitting the pawl 37 to ratchet upwardly along the rack teeth. While holding
70 the handle 34 when the head has been pulled down onto the article on the member 7 or the pad 9 thereon, the operator momentarily depresses the button 20 permitting the air to enter the chamber 13 and apply pressure to
75 the liquid within the member 7 and expand the member 7 and thus apply heavy pressure to the article on the member 7 or the padding 9. The upward pressure due to the expansion of the member 7 forces the tooth of the
80 pawl 37 snugly into engagement with the teeth of the rack so that the pawl is frictionally held in engagement against the action of the spring 39. When however, the exhaust lever 32 is operated so that the pressure is relieved in the member 7, this friction between the pawl and the ratchet teeth is relieved and the spring 39 is free to react to return the handle lever 34 to its normal position and hence, to withdraw the pawl 37 from the rack teeth permitting the head to open up under the influence of its spring 40.

Obviously, by the use of a non-compressible fluid or liquid, the pressure will automatically equalize itself throughout the area of the head and the buck and further, if the operator's hand is caught between the pressing elements, it will be pressed into the flexible upper plate of the member 7 or the padding 9 thereon forming its own depression due to displacement of the liquid within the member 7 and hence, the operator's hand can not be injured by the pressure although when the press head is heated, the hand may be burned but not to any serious extent or to the extent it would be in machines heretofore used where the operator's hand can not be withdrawn when once caught between the pressing elements. Also, in pressing garments having double seams and button, etc., the flexible upper plate of the member 7 will conform to the double thicknesses and the buttons and the pressure on the double thicknesses and buttons and the other portions of the garment will be equal, and the pressing will be effected over the entire surface of the article even up to the margins of the double portions and around the circumference of the buttons.

What I claim is:

1. A pressing machine including a buck, a head movable toward and from the buck, to close and open the pressing machine an upwardly expansible member on the buck having a flexible wall on its side toward the head and upwardly extensible side walls, a liquid in said member, means for locking the head in a plurality of substantially closed positions and operator-controlled means for

applying pressure to the liquid in said member.

2. A pressing machine comprising a buck, a head movable toward and from the buck, a lever carrying the head, a handle associated with the head and movable therewith and relatively thereto, a locking member movable with the lever and also relatively thereto by the relative movement of the handle, a fixed locking member coacting with the former locking member and having means for engaging therewith in any one of a plurality of positions of the head.

3. In a pressing machine comprising upper and lower pressing elements, the upper element being movable toward and from the lower element, means for locking the upper element from movement, when the same is in any one of a plurality of contact positions with the lower element dependent upon the thickness of the work and means for applying pressure to the lower element to press the work against the upper element with maximum pressure when in any one of said plurality of positions.

4. In a pressing machine comprising upper and lower pressing elements, the upper element being movable toward and from the lower element, means for locking the upper element from movement, when the same is in any one of a plurality of contact positions with the lower element dependent upon the thickness of the work, said lower element having a hollow expansible pressure member, said member having perpendicular flexible edge walls and means for applying fluid pressure to the interior of the hollow pressure member to expand the edge walls to create pressure between the pressing elements.

In testimony whereof, I have hereunto signed my name, at Syracuse, in the county of Onondaga, and in the State of New York, this 10th day of June, 1927.

ERNEST DAVIS.

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