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PRESSING MACHINE

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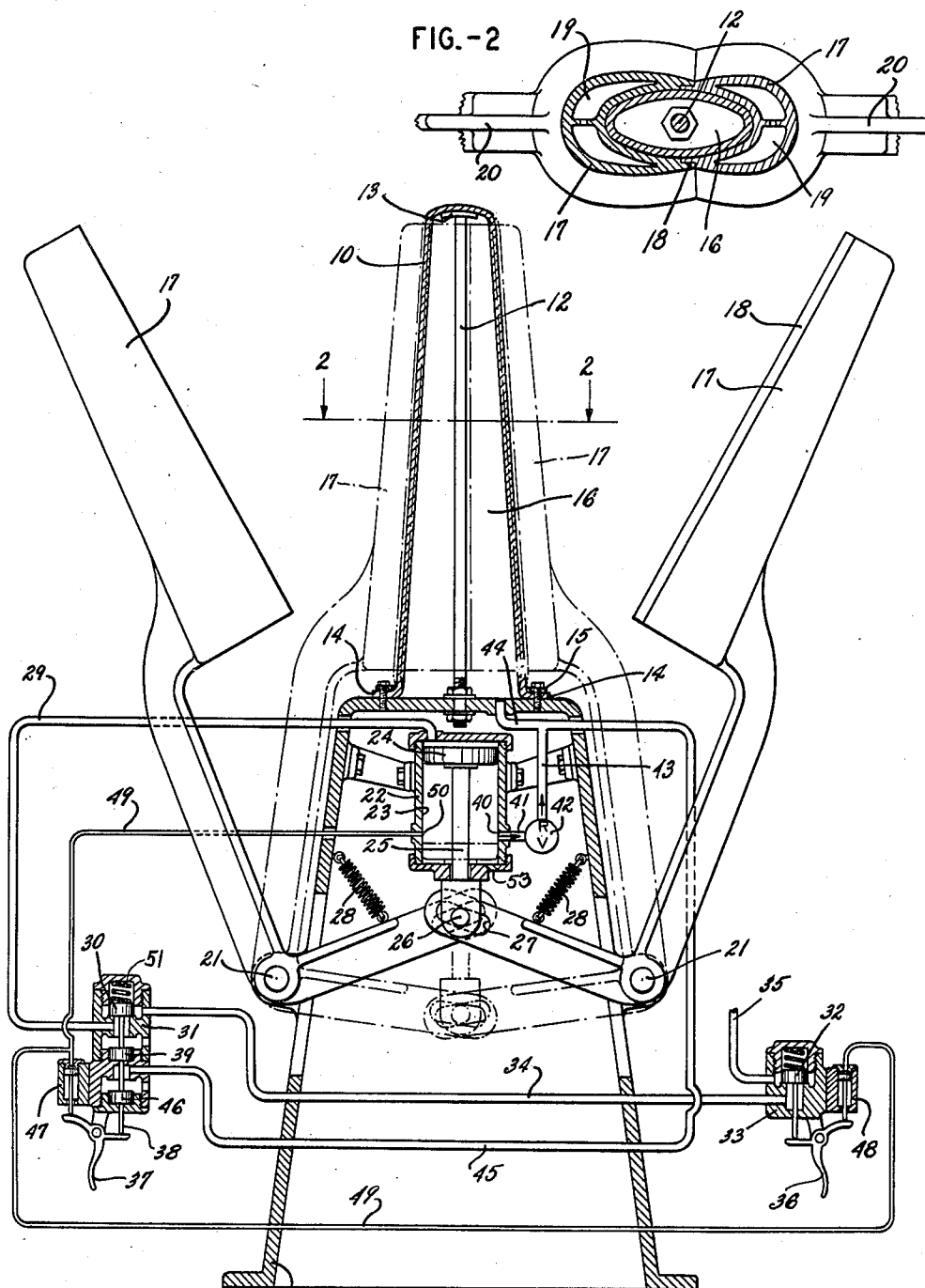


FIG.-1

FIG.-2

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PRESSING MACHINE

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3 Claims. (Cl. 223—57)

This invention relates to a pressing machine for pressing or ironing the tubular portions of articles of wearing apparel, such as sleeves, trouser legs and the like.

An object of the invention is to provide an expansible pressing member which substantially conforms to the inner surface of the tubular garment member to be pressed and a cooperating pressing member or members which usually will be some sort of heated chest means, the machine being arranged to relatively move the members so that the chest means closely surrounds the expansible member and the chest means with a provision for thereafter expanding the inner member so as to press the garment against the chest means to complete an ironing operation.

Another object of the invention is to provide improved power means for placing the chest means in pressing position and for thereafter expanding the inner member to produce the pressing operation.

Another object of the invention is to provide in a pressing machine having a pair of cooperating pressing members, each relatively movable with respect to the other, two-hand control means for moving one member until the press is safely closed and control means actuated automatically thereafter to move the second member into final pressing engagement with the first member. This structure provides very safe control mechanism for a press of this type.

Other objects and advantages will be apparent as the description progresses and the essential features will be summarized in the claims.

In the drawing, Fig. 1 is an elevation partly in section of a sleeve press embodying my invention with parts of the control mechanism shown diagrammatically. In this figure the pressing members are shown in full line in their open position and in broken line in their closed position. While Fig. 2 is a sectional view along the line 2—2 of Fig. 1, showing the pressing members in their closed position.

I have chosen to illustrate my invention as applied to a sleeve pressing machine and to this end the inner or expansible pressing member 10 is shown as an elongated bag tapering toward the top so as to suit it for use with sleeves of various sizes. This inner pressing member is mounted on a base member 11, the mounting shown comprising a vertical rod 12 secured at its lower end to the base and having at its upper end a plate 13 resting against the inner end of

the bag member so as to hold it in its proper position when deflated. The lower edge of the bag is turned outwardly at 14 and secured to the base in a fluid-tight connection as by means of a ring 15 clamped to the base. The bag member 10 may be of pure rubber or of impregnated fabric, it being desirable that whatever material is used the bag shall substantially conform to the inner surface of the tubular garment member being pressed and the bag shall be flexible and slightly expansible. To this end the bag member may be distensible so that upon inflation thereof by admission of pressure fluid to the space 16 in the interior of the bag the longitudinal wall surface of the bag will be distended outwardly substantially equally in all directions. However, the bag member may have a slight degree of slackness therein when inserted within the tubular garment member and upon inflation this slackness may be taken up so as to permit the longitudinal surfaces of the bag to move outwardly.

Pressing chest means suitable to closely surround the inner expansible member is provided and while this may take several forms, I have chosen to illustrate the same as comprising a pair of substantially U-shaped members 17 constructed to conform to the outer surface of the garment member being pressed and arranged to completely surround the longitudinal surfaces of the inner pressing member. As most clearly shown in Fig. 2, the chest members 17 are provided with interlocking flanges 18 at their meeting edges so as to provide a continuous surface for the purpose of avoiding any rough-dried appearance on the garment at this point. The chest members may also have hollow interior chambers 19 to which a heating medium may be supplied. The chest members 17 are mounted on L-shaped levers 20 which are pivotally supported at 21 on the base 11 so that the chest members may be swung from their open position indicated in full lines in Fig. 1 to their closed position indicated in dot-dash lines.

Power means is provided for moving the chest members toward pressing position, the particular means comprising a fluid-actuated motor 22 which has a cylinder 23 in which is mounted a piston 24 whose piston rod 25 carries a pin 26 which engages slots 27 in each of the L-shaped levers 20. Springs 28 connected between the levers 20 and the base 11 bias the chest members 17 toward their open position.

Mechanism for controlling the flow and exhaust of motive fluid to and from the motor 22

and the pressing member 10 is shown diagrammatically in Fig. 1. Fluid under pressure is supplied to cylinder 23 above the piston 24 by a combined flow and exhaust conduit 29 which receives its supply of motive fluid through two inlet valves in series, namely, normally closed inlet valve 30 in valve casing 31 and normally closed inlet valve 32 in valve casing 33, these two casings being connected in series by conduit 34 and casing 33 being connected with a source of fluid supply 35. Valve 32 is actuated by manual 36 and valve 30 is actuated by manual 37 which moves valve stem 38 which not only actuates valve 30 but also actuates normally open exhaust valve 39 which is mounted on valve stem 38 so as to move in unison with valve 30. It will be obvious therefore that actuation of manuals 36 and 37 in unison is necessary to cause a power stroke of piston 24 because if manual 36 is released, the flow of motive fluid ceases, and if manual 37 is released motive fluid is not only cut off but exhaust valve 39 opens and piston 24 will be returned upwardly by the action of springs 28.

The control mechanism is so arranged that the inner pressing member cannot be expanded so as to move its longitudinal surfaces toward the outer pressing member, or chest members 17, until the latter have been moved to safe closed position. To this end the admission of motive fluid to the chamber 16 within the bag 10 is controlled by the movement of piston 24 so as to occur only after the piston has substantially completed a power stroke so as to bring the chest members 17 to their safe closed position in which they closely surround the inner pressing member. The specific mechanism shown comprises a port 40 so located in the wall of cylinder 23 that it is open to pressure fluid only after piston 24 has substantially completed its power stroke. This port communicates by conduit 41, valve 42, conduits 43 and 44 to chamber 16 within the bag member 10. Valve 42 is preferably a reducing valve which may be set for any desired pressure within the bag 10 as it is usually desirable to use a higher pressure in operating the piston 24 than that necessary to expand the bag 10. Chamber 16 is normally in communication by conduits 44 and 45 with a normally open exhaust valve 46 which may conveniently be mounted on valve stem 38 so as to be actuated by manual 37 substantially simultaneously with the actuation of valves 30 and 39 previously described.

Means is provided for maintaining the chest members 17 in position closely surrounding the inner pressing member while a pressing operation is in progress, the particular means comprising small fluid actuated servomotors 47 and 48 which in their operated position contact the manuals 37 and 36 respectively to hold the manuals in their actuated position. The fluid supply for servomotors 47 and 48 is provided by a common conduit 49 which communicates with a port 50 in the wall of cylinder 23 which is uncovered when the piston has substantially completed its power stroke.

The operation of the mechanism starting with the parts in the full line position of Fig 1 is as follows: The operator dresses a sleeve upon the surface of bag 10 and depresses manuals 36 and 37. Normally open exhaust valves 46 and 39 are closed and inlet valves 30 and 32 are opened thus permitting motive fluid to flow through conduit 35, valve 32, conduit 34, valve 30 and conduit 29 to cylinder 23. The piston 24 makes a downward stroke moving levers 20 and chest members 17

to the dot-dash position of Fig. 1. When piston 24 uncovers port 40 pressure fluid flows through conduit 41, reducing valve 42 and conduits 43 and 44 to chamber 16 so as to expand the inner pressing member, moving the longitudinal walls thereof outwardly, thus smoothing any wrinkles in the garment member and pressing the same against the inner surfaces of chest members 17. When piston 24 uncovers port 50 in the wall of cylinder 23 on its downward stroke, fluid is supplied through conduit 49 to servomotors 47 and 48 for retaining the manuals 36 and 37 in their actuated position and the operator may release the manuals. Upon completion of a pressing operation manual 37 may be moved against the action of its holding servomotor 47 whereupon spring 51 closes valve 30 and opens exhaust valves 39 and 46. Motor 22 is exhausted through valve 39 and simultaneously the chamber 16 of the inner pressing member is exhausted through conduits 44 and 45 and valve 46. Thereupon springs 28 move the chest members 17 to open position and a small port 53 in the lower head of cylinder 23 permits servomotors 47 and 48 to exhaust while the piston 24 moves upwardly.

It is thus obvious that I have provided a control mechanism which has application to presses of other types wherein each of a pair of pressing members is relatively movable toward the other. Power means is provided for moving one of the members to a safe closed position and two-hand control means for the power means keeps the hands of the operator occupied until danger of injury is past. In the present disclosure the power means is the motor 22 and the member movable toward safely closed position is the cooperating parts 17 of the chest means. After the pressing members are in safe closed position, means actuated automatically, in this case the uncovering of port 40 by piston 24, moves the inner pressing member toward the outer pressing member into final pressing position.

One additional feature should be noted. With the press closed, the forces exerted in bag 10 tending to move chest members 17 outwardly are balanced by the force above piston 24 tending to move chest members 17 inwardly. In this construction it is obvious that, to increase the pressure per square inch exerted by bag 10, it is necessary to increase the size of piston 24 or to relatively lengthen the lever arm upon which its force acts. Another solution, which will occur to those skilled in the art, is to lock the members 17 in closed position, whereupon the pressure in bag 10 may be increased up to the limit of the structural strength of the parts.

What I claim is:

1. In a pressing machine, an elongated expandable fluid-tight bag, chest means adapted to closely surround the longitudinal surface of said bag, a fluid-actuated cylinder and piston motor having operative connections for positioning said chest means about said bag, a port in said cylinder in communication with the interior of said bag, said port being uncovered when said piston has substantially completed its positioning stroke, and means for supplying pressure fluid to said motor.

2. In a pressing machine, an elongated expandable fluid-tight bag, chest means adapted to completely surround the longitudinal surface of said bag, a cylinder and piston motor, motion transmitting mechanism between said motor and said chest means for placing said chest means in pressing position by operation of said motor, a

port in said cylinder adapted to be uncovered when said motor has substantially completed its chest-positioning operation, conduit means connecting said port and bag, a pressure reducing valve in said conduit means, and means for supplying pressure fluid to said motor.

3. In a pressing machine, an elongated expansible inner pressing member, chest means adapted when in pressing position to completely surround the longitudinal surface of said inner member, fluid actuated power means, motion transmitting mechanism between said power means and chest means for placing said chest means in pressing position by operation of

said power means, said mechanism being adapted to transmit motion in either direction between said chest means and power means, said chest means having a greater effective pressure area acting toward said mechanism than the area of said power means subjected to fluid pressure, means for applying low pressure air to said expansible pressing member, and means for applying air to said power means at a pressure sufficiently higher to at least substantially balance the effect of said low pressure air acting against said chest means.

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