Feb. 19, 1935. E. DAVIS 1,991,598

POSITIVE TWO-HAND CONTROL

Original Filed July 30, 1930 2 Sheets-Sheet 1

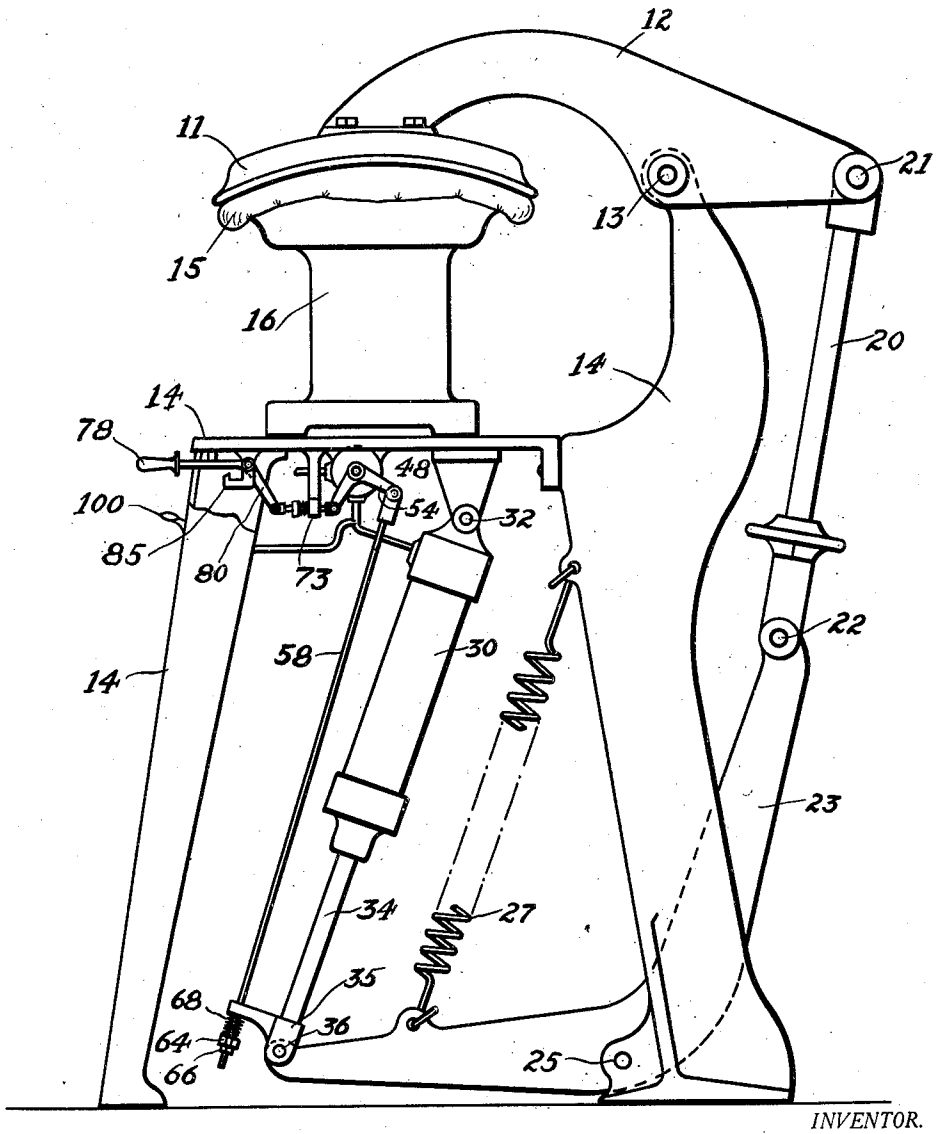


Fig-1-

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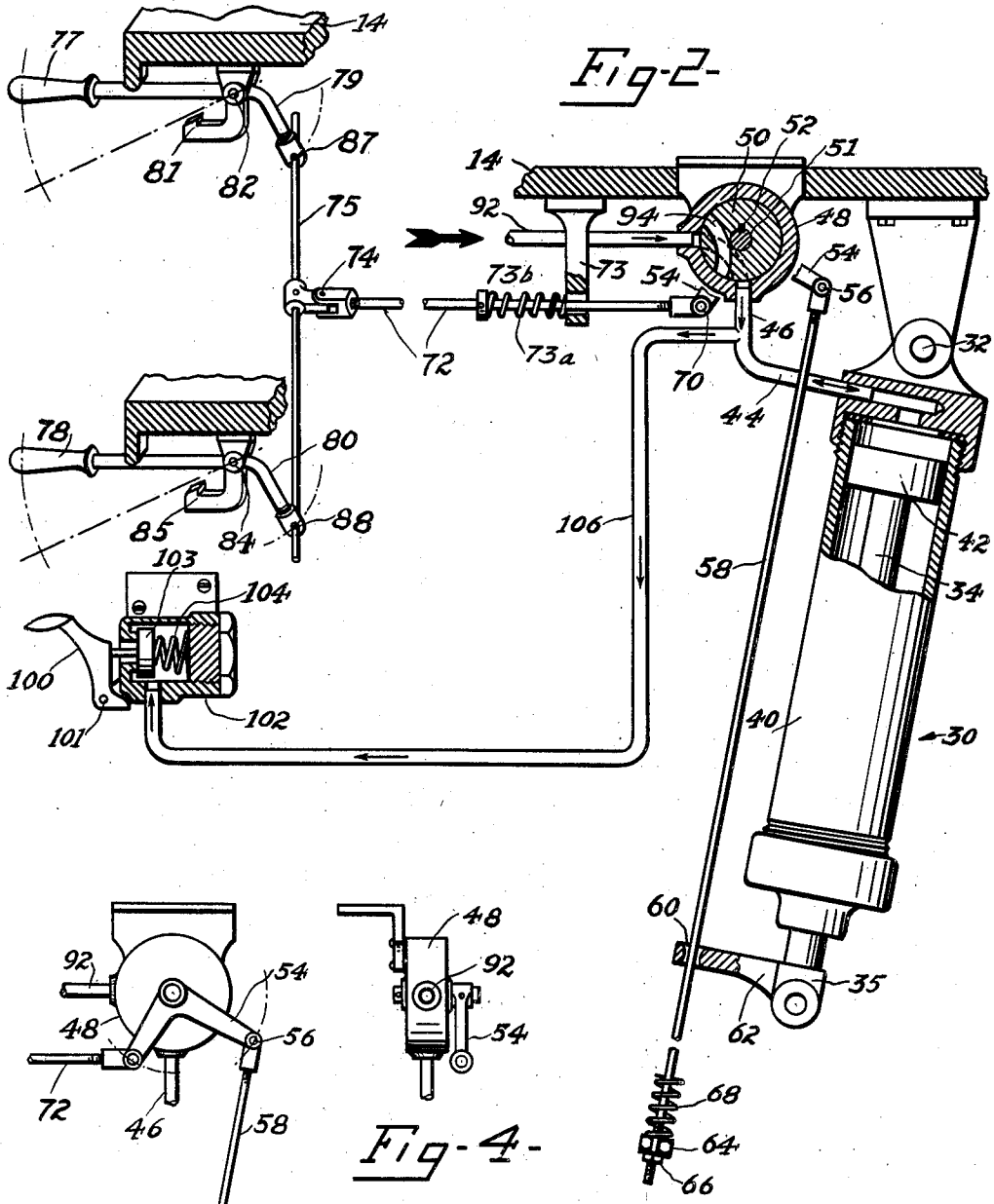


Fig-2-

Fig-3-

Fig-4-

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Patented Feb. 19, 1935 1,991,598

UNITED STATES PATENT OFFICE

1,991,598

POSITIVE TWO-HAND CONTROL

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Application July 30, 1930, Serial No. 471,828
Renewed June 6, 1934

17 Claims. (Cl. 121—38)

This invention relates to pressing machines, such as garment, ironing or laundry presses, and particularly to two-hand control mechanism for such pressing machines.

The principal object of the invention is to devise a control mechanism which will require the operator to use both hands to effect closing of the press, and to hold both hands on the control devices until the pressing elements have come together.

A further object of the invention is to provide a mechanical connection between the press operating mechanism and the valve or manuals controlling the supply of working fluid so that the valve or manuals will be moved to initial position to cut off the supply of working fluid to the motor and prevent the escape of working fluid from the motor after the pressing elements have come together, thus locking the press closed.

Other objects and advantages of the invention will appear and will be pointed out as the description proceeds. 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 characters designate corresponding parts and all the views.

Figure 1 is a side elevation, partly broken away, of a pressing machine to which the invention is applied.

Figure 2 is a schematic view, mostly in section, of the operating motor and the controlling means therefor.

Figure 3 is a side elevation of the working fluid valve shown in Figure 2.

Figure 4 is a front elevation of the valve shown in Figure 3.

My invention is designed primarily for use on garment or ironing presses or pressing machines having an opening and closing movement. With such machines it is desirable, as a safety precaution, to require the operator to use both hands to effect a closing of the press and to require him to hold his hands on the control mechanism until the pressing elements or jaws are substantially together and there is no longer any danger of his getting a hand between the pressing elements. It is desirable that the press should be locked in closed position, and this is ordinarily done by holding the working fluid supply valve open after the press has closed.

The novel means for accomplishing the locking, according to this invention, may be applied to a conventional pressing machine having a pressing head 11, which is secured to a yoke 12, which is mounted at 13 on a pressing machine frame 14. The pressing head 11 is movable into and out of contact with a fixed pressing element or buck 15, supported by a neck 16 which is mounted on the frame 14 of the pressing machine. An operating link 20 is pivoted to the yoke 12 at 21, and is pivoted at 22 to a bell crank 23. The bell crank 23 is pivotally mounted at 25 on the pressing machine frame 14. The upstanding arm of the bell crank 23 and the link 20 form a toggle. A spring 27, which is connected at its upper end to the pressing machine frame 14 and at its lower end to the forwardly extending arm of the bell crank 23 normally holds the toggle broken. A motor, such as the fluid motor 30, is oscillably mounted at 32 to the pressing machine frame 14. A piston rod 34 of the fluid motor 30 is connected at its lower end to a yoke member 35, which is pivotally connected at 36 to the bell crank lever 23. Operation of the fluid motor 30 rocks the bell crank lever 23 counter-clockwise in Figure 1 to straighten the toggle formed by the link 20 and upstanding arm of the bell crank lever 23. This straightening of the toggle moves the yoke 12 to bring the pressing head 11 into contact with the buck 15 to close the press. The mechanism thus far described is of the conventional type, well understood by those skilled in the art, and forms no part per se of the present invention.

The fluid motor 30 is of the single acting type and includes a cylinder 40 containing a piston 42 which is rigidly secured to the piston rod 34. Working fluid is supplied to, and exhausts from, the cylinder 40 through a pipe 44. The pipe 44 is connected by a pipe 46 with a valve casing 48. The valve casing 48 contains preferably a rotary valve 50 which is secured to an operating shaft 51 by suitable means, such as a key 52. The operating shaft 51 extends through the side of the valve casing 48 and is actuated by an operating crank 54. A link 58 is pivotally connected at 56 to the operating crank 54. The link 58 extends through an opening 60 in an arm 62 formed on the yoke 35. An adjustable stop member 64 is mounted on the lower end of the link 58 and held in adjusted position by a nut 66, which is threaded on the end of the link 58. A spring 68 is mounted on the link 58 above the stop member 64.

Operating crank 54 is pivotally connected at 70 to an operating member 72. The operating member 72 has a pivotal connection at 74 preferably to the midpoint of a cross link or whiffletree 75. The operating member 72 passes through a bracket 73, which is connected to the pressing

machine frame 14. A spring 73*a*, mounted on the operating member 72 between the bracket 73 and a shoulder 73*b* of the operating member 72, urges the operating member 72 to the left in Figure 2 so that the valve 50 is normally held in inoperative position. Operator-operated devices, including handles 77 and 78 mounted on bell cranks 79 and 80, are connected at spaced points to the whiffletree 75 for operating the same and the operator-operated devices must both be held in operated position at the same time in order to move the valve 50 far enough to open or effectively open the valve. The whiffletree connection to the valve 50 is such that the movement of one operator-operated device alone is insufficient to effectively operate the valve. The bell crank 79 is pivoted at 82 to the pressing machine frame and a stop bracket 81 limits the movement of the bell crank 79. The bell crank 80 is pivotally connected at 84 to the press machine frame 14 and a stop bracket 85 limits the movement of the bell crank 80. The whiffletree 75 passes through openings 87 and 88 in the ends of the bell cranks 79 and 80, respectively. The whiffletree 75 fits loosely in these openings 87 and 88 and movement of either of the handles 77 and 78, without operating the other handle, will cause the whiffletree to pivot about the opening in the bell crank of the unoperated handle, the pivotal connection 74 not being moved a sufficient distance to turn the rotary valve 50 into operative position.

Working fluid, such as air, is supplied through a fluid supply line 92 to the valve casing 48. The rotary valve 50 is provided with a passage or conduit 94, which may be moved into the dotted line position, shown in Figure 2 to establish connection between the fluid supply line 92 and the pipe 46. When such communication is established, working fluid will flow from the fluid supply line 92 through the conduit 94 in the valve 50, pipe 46 and pipe 44 to the cylinder 40 of the fluid motor 30, to operate the motor to close the press. When the operating mechanism has moved far enough to bring the pressing elements or jaws 11, 15 substantially into contact, the piston 42 and piston rod 34 will have moved down, in Figure 2, until the arm 62 comes into contact with the spring 68. Upon further movement of the arm 62 the valve 50 will be moved back into its initial position by the link 58 which forms a mechanical connection from the arm 62 to the valve operating crank 54. The movement of the valve 50 will force the handles 77 and 78 back into inoperative position and thus signal the operator that the press is locked and that it is no longer necessary for him to keep his hands on the handles. The spring 68 permits some freedom of adjustment of the stop member 64 so that the arm 62 may occupy various positions, when the press is closed, depending on the play in the operating mechanism, on the thickness of the work between the pressing elements, or the degree of depressions of the padding on the buck. The valve 50 when returned to initial inoperative position cuts off the pipe 46 so that working fluid cannot escape from the motor 30 and the press is thus locked closed.

By virtue of the link 58, which thus forms a mechanical connection between the press operating mechanism and the fluid supply valve 50, the press automatically locks itself in closed position. To open the press the operator will actuate a release handle 100 which is pivoted at 101 to a valve casing 102 containing an exhaust valve 103, which is normally held closed by a spring 104. Opening of the exhaust valve 103 permits working fluid to exhaust from the cylinder 40, through the pipe 44, pipe 106, valve casing 102, and around open exhaust valve 103.

Soon after the piston 42 and piston rod 34 begin to move upwardly in the cylinder 40, the arm 62 will move away from the spring 68 and the link 58 will no longer hold the valve 50 in position. The spring 73*a* will hold the parts in position, however, until the handles 77 and 78 are again operated.

From the above description it will be apparent that I have devised a novel two-hand control mechanism for a pressing machine in which the control valve is restored to initial inoperative position during the final closing movement of the press, by means of a mechanical connection between the valve and the press operating mechanism, and the press thus locked closed.

The two-hand control mechanism described is also a positive two-hand control because one of the manuals cannot be tied down in operated position and the press operated by the other manual. This positive two-hand construction results from the two manuals 77 and 78, each having a substantially fixed extent of movement, and the valve or control means 50 requiring the movement of both manuals to move the valve or single control 50 to operative position and restoring means which is actuated by the operating mechanism and connected with the manuals to return each manual through its fixed extent of movement to initial position. The restoring means comprises a restoring member, such as the link 58, which is connected with the manuals 77 and 78 and movable upon actuation of the manuals into a position to be engaged by the operating mechanism or some part thereof such as the bracket 60. Upon the operating mechanism engaging the restoring member 58, the manuals 77 and 78 are returned to initial position.

If one manual should be tied down in an attempt to defeat the two-hand control, upon the press being operated the bracket 60 would engage the spring 68 and force the link 58 downwardly, which movement transmits to the manuals a return movement having an extent equal to or substantially equal to the operative or down movement of the manuals 77, 78. This positive return movement would either break the means used to tie down the manual or, if this tying means is too strong, some other weaker link in the control mechanism would be bent or broken, such as the whiffletree 75. Upon this latter event occurring, the manuals 77, 78 will be incapable of moving the valve 50 to operative position until the bent or broken part is repaired.

In the particular and preferred positive two-hand control mechanism described herein, the restoring means, represented by the bracket 60, and the link 58 are connected to the single control or control means 50 so that the positive return of the manuals 77 and 78 also returns the valve 50 to initial position and pockets a charge of air in the motor 30 to hold the press in closed position. Other holding means for retaining the press in closed position is contemplated in the broader aspect of the invention.

The invention is illustrated in its preferred embodiment, but various changes and modifications may be made without departing from the spirit of the invention, as set forth in the appended claims.

What I claim is:

1. In a garment or laundry pressing machine, in combination, cooperative pressing elements and operating mechanism therefor including a fluid motor means; valve means controlling the flow of working fluid to the motor means; a whiffletree connected at its center to the valve means; operator operated devices at each end of the whiffletree so that operation of both operator-operated devices at the same time will move the center of the whiffletree to operate the valve means to supply working fluid to the motor; means tending to restore the valve means to inoperative position upon release of either or both of the operator-operated devices; and a mechanical connection between the operating mechanism and the valve means for restoring the valve means to inoperative position when the operating mechanism moves into closed-press position.

2. In a garment or laundry pressing machine, in combination, cooperative pressing elements and operating mechanism therefor including a fluid motor means; valve means controlling the flow of working fluid to the motor means; an operating member connected to the valve means; means normally holding the operating member and valve means in inoperative position to cut off the supply of working fluid to the motor; a pair of operator-operated devices and means requiring the operation of both of said operator-operated devices in order to actuate the valve means to move the valve into operative positicn to supply working fluid to the motor; restoring means for moving the valve means into inoperative position upon release of either operator-operated devices; and a mechanical connection between the operating mechanism and the valve means for moving the valve means and the operator-operated devices into inoperative position after operation of the operating mechanism to close the press.

3. In a garment or laundry pressing machine, in combination, cooperative pressing elements and operating mechanism therefor including a fluid motor means; valve means controlling the flow of working fluid to the motor means; an operating member connected to the valve means; means normally holding the operating member and valve means in inoperative position to cut off the supply of working fluid to the motor; a pair of operator-operated devices and means requiring the operation of both of said operator-operated devices in order to actuate the valve means to move the valve into operative position to supply working fluid to the motor; restoring means for moving the valve means into inoperative position upon release of either operator-operated devices; a mechanical connection between the operating mechanism and the valve means for moving the valve means and the operator-operated devices into inoperative position to lock the press closed after operation of the operating mechanism to close the press; and means to release working fluid from the motor and unlock the press.

4. In a garment or laundry pressing machine, in combination, cooperative pressing elements and operating mechanism therefor including a fluid motor means; valve means controlling the flow of working fluid to the motor means; an operating member connected to the valve means; means normally holding the operating member and valve means in inoperative position to cut off the supply of working fluid to the motor; a pair of operator-operated devices; abutment means limiting the movement of each operator-operated device; a whiffletree connected at its ends to the respective operator-operated devices; means connecting the midpoint of the whiffletree to the operating member of the valve means so that operation of both of said operator-operated devices at the same time will move the midpoint of the whiffltree to actuate the valve means to move the valve into operated position to supply working fluid to the motor and return movement of the valve means to initial position will force both of the operator-operated devices to initial inoperative position; a mechanical connection between the operating mechanism and the valve means for moving the valve means into initial inoperative position to cut off the supply of working fluid to the motor while the working fluid in the motor holds the press in closed position; means for releasing the working fluid from the motor and means for operating the operating mechanism to open the press when the working fluid is released from the motor.

5. In a garment or laundry pressing machine, in combination, cooperative pressing elements, operating mechanism therefor including motor means to close the press, and means to open the press upon release of working fluid in the motor means, valve means controlling the supply of working fluid to the motor means, said valve means when in inoperative position retaining the working fluid in the motor means, a pair of manuals operatively connected to the valve means and each manual having a fixed extent of movement, the movement of both manuals being necessary to move the valve means to operative position, means engaged by the press operating mechanism upon closing of the press and connected with the valve means to restore the latter and both manuals to inoperative position thereby retaining the press in closed position and cutting off the supply of working fluid to the motor means, and means to release the working fluid in the motor means to open the press.

6. In a garment or laundry pressing machine, in combination, cooperative pressing elements, operating mechanism therefor including motor means to close the press, and means to open the press upon release of working fluid in the motor means, valve means controlling the supply of working fluid to the motor means, said valve means when in inoperative position retaining the working fluid in the motor means, a pair of manuals operatively connected to the valve means and each manual having a fixed extent of movement, the movement of both manuals being necessary to move the valve means to operative position, means returning the valve means to inoperative position upon return of the manuals to initial position, means engaged by the press operating mechanism upon closing of the press and connected with both manuals to restore the latter to initial position whereby the valve means returns to initial position thereby retaining the press in closed position and cutting off the supply of working fluid to the motor means, and means to release the working fluid in the motor means to open the press.

7. In a garment or laundry pressing machine, in combination, cooperative pressing elements, operating mechanism therefor including motor means to close the press, and means to open the press upon release of working fluid in the motor means, valve means controlling the supply of working fluid to the motor means, said valve means retaining the working fluid in the motor

means when returned to initial position, a pair of operator-operated means operatively connected to the valve means and to each other whereby both operator-operated means must be operated in order to actuate the valve means, means engaged by the press operating mechanism upon closing of the press and connected with the valve means to restore the latter to inoperative position thereby retaining the press in closed position and cutting off the supply of working fluid to the motor means, and means to release the working fluid in the motor means to open the press.

8. In a garment or laundry pressing machine, in combination, cooperative pressing elements, operating mechanism therefor including motor means to close the press, and means to open the press upon release of working fluid in the motor means, valve means controlling the supply of working fluid to the motor means, said valve means retaining the working fluid in the motor means when returned to initial position, a pair of operator-operated means operatively connected to the valve means and to each other whereby both operator-operated means must be operated in order to actuate the valve means, means returning the valve means to inoperative position upon return of the operator-operated means to initial position, means engaged by the press operating mechanism upon closing of the press and connected with the pair of operator-operated means to restore the latter to initial position whereby the valve means returns to inoperative position thereby retaining the press in closed position and cutting off the supply of working fluid to the motor means, and means to release the working fluid in the motor means to open the press.

9. In a garment or ironing press, in combination, cooperating pressing jaws, operating mechanism therefor including motor means to close the press, a single control connected to a source of power and to the motor means to actuate the latter, the single control having a predetermined extent of movement necessary to bring it to operative position, a pair of manuals connected to the single control and each having a fixed extent of movement, the combined movement of both manuals being necessary to move the single control to operative position, and means operated by the operating mechanism and connected with the manuals to return each manual to initial position through its fixed extent of movement.

10. In a garment or ironing press, in combination, cooperating pressing jaws, operating mechanism therefor including motor means to close the press, a single control connected to a source of power and to the motor means to actuate the latter, a pair of manuals each having a fixed extent of movement, the manuals being connected together and to the single control by a single connecting means whereby the combined movement of both manuals is necessary to move the single control to operative position, and means moved by the operating mechanism a distance proportional to the combined movement of the manuals and connected to the single connecting means to positively return each manual to its initial position through its fixed extent of movement.

11. In a garment or ironing press, in combination, cooperating pressing jaws, operating mechanism therefor including motor means to close the press, control means connected to a source of power and to the motor means to actuate the latter, a pair of manuals connected to the control means and each having a fixed extent of movement, the combined movement of each manual being necessary to move the control means to operative position, and a restoring member connected with the manuals and movable thereby into a position to be engaged by the operating mechanism upon actuation of each manual to return the manuals to initial position.

12. In a garment or ironing press, in combination, cooperating pressing jaws, operating mechanism therefor including motor means to close the press, a single control connected to a source of power and to the motor means to actuate the latter, a pair of manuals connected to the single control and each having a fixed extent of movement, the combined movement of both manuals being necessary to move the single control to operative position, and a restoring member connected with the single control and hence connected with the manuals, the restoring member being movable into a position to be engaged by the operating mechanism upon actuation of each manual to return the manuals and single control to initial position.

13. A garment or ironing press, in combination, cooperating pressing jaws and operating mechanism therefor including a fluid motor means; valve means controlling the flow of working fluid to the motor means; a whiffletree connected with the valve means; operator-operated devices connected at spaced points to the whiffletree so that the operator-operated devices must be held in operated position at the same time in order to operate the valve means far enough to effectively supply working fluid to the motor means; means tending to restore the valve means to inoperative position upon release of either or both of the operator-operated devices; and means operated upon a predetermined extent of movement of the operating mechanism for restoring the valve means to inoperative position.

14. A garment or ironing press, in combination, cooperating pressing jaws and operating mechanism therefor including a fluid motor means; valve means controlling the flow of working fluid to the motor means; a whiffletree connected with the valve means; operator-operated devices connected at spaced points to the whiffletree so that the operator-operated devices must be held in operated position at the same time in order to operate the valve means far enough to supply working fluid to the motor means; means tending to restore the valve means to inoperative position upon release of either or both of the operator-operated devices; and link means engaged by the operating mechanism upon a predetermined extent of movement thereof and connected with the valve means for restoring the valve means to inoperative position.

15. A garment or ironing press, in combination, cooperating pressing jaws and operating mechanism therefor including a fluid motor means; valve means controlling the flow of working fluid to the motor means; a whiffletree connected with the valve means; operator-operated devices connected at spaced points to the whiffletree so that the operator-operated devices must be held in operated position at the same time in order to operate the valve means far enough to supply working fluid to the motor means; means tending to restore the valve means to inoperative position upon release of either or both of the operator-operated devices; and link means engaged by the operating mechanism upon a pre-

determined extent of movement thereof and connected with the operator-operated devices for restoring the same to initial position.

16. A garment or ironing press, in combination, cooperating pressing jaws and operating mechanism therefor including a fluid motor means; valve means controlling the flow of working fluid to the motor means; a whiffletree connected with the valve means; operator-operated devices connected at spaced points to the whiffletree so that the operator-operated devices must be held in operated position at the same time in order to operate the valve means far enough to supply working fluid to the motor means; means tending to restore the valve means to inoperative position upon release of either or both of the operator-operated devices; and means operated upon a predetermined extent of movement of the operating mechanism and connected with the valve means and the operator-operated devices for restoring the same to inoperative position.

17. A garment or ironing press, in combination, cooperating pressing jaws and operating mechanism therefor including a fluid motor means; an intake valve controlling the flow of working fluid to the motor means and normally in position to prevent flow to or from the motor means; a whiffletree connected with the valve; operator-operated devices connected at spaced points to the whiffletree so that the operator-operated devices must be held in operated position at the same time in order to operate the valve far enough to supply working fluid to the motor means; means tending to restore the valve to inoperative position upon release of either or both of the operator-operated devices; link means operated upon a predetermined extent of movement of the operating mechanism for restoring the valve to inoperative position and pocketing fluid in the motor means and for returning the operator-operated devices to initial position; and means to release the fluid from the motor means.

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