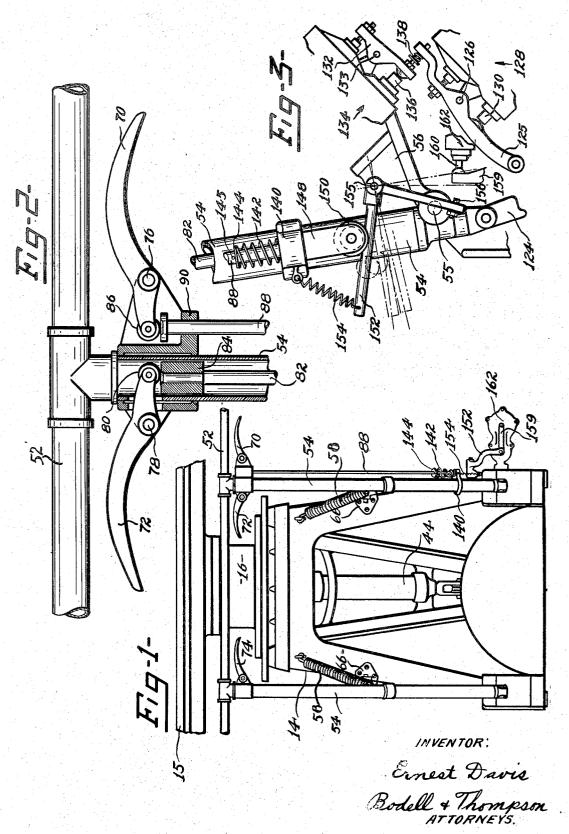
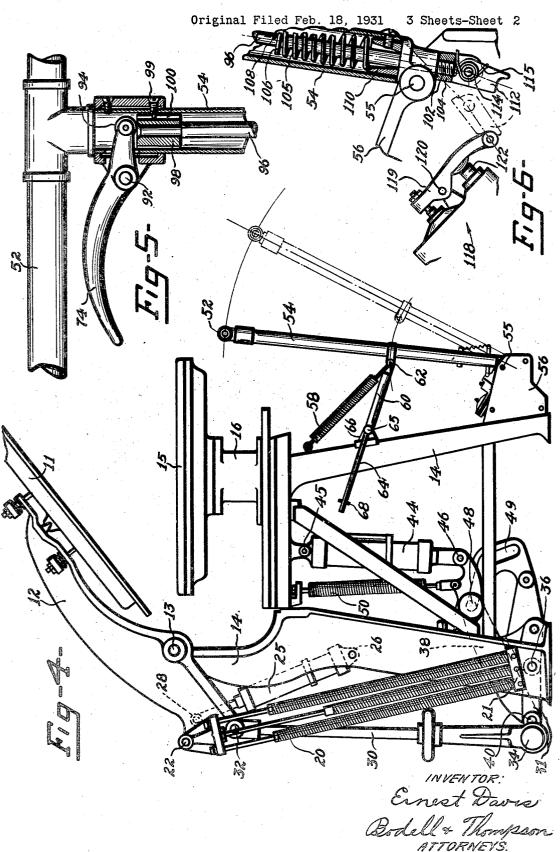
GARMENT OR IRONING PRESS

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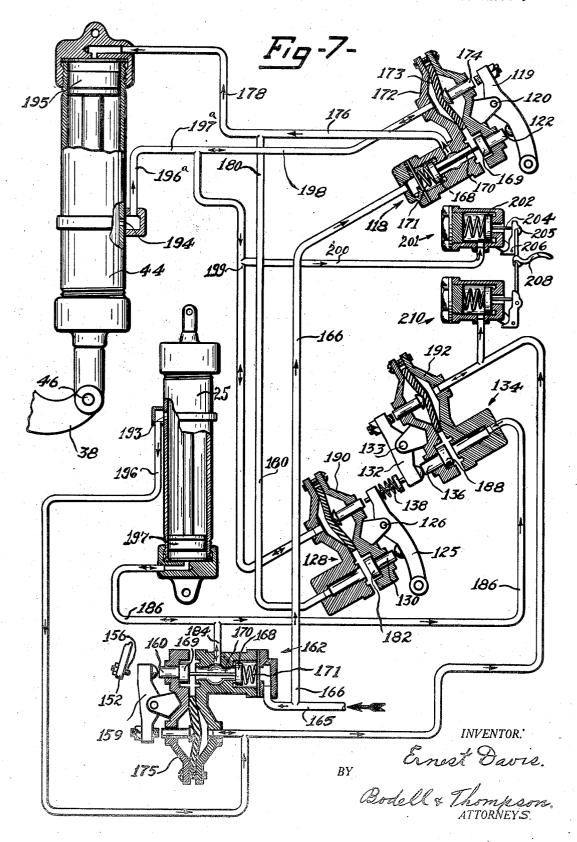


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UNITED STATES PATENT OFFICE

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GARMENT OR IRONING PRESS

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12 Claims. (Cl. 68-9)

This invention relates to pressing machines and particularly to safety control means for garment, laundry or ironing presses.

The principal object of the invention is to provide safety control means for use on large laundry or ironing presses of the type which employ two or more operators.

A more specific object of the invention is to provide a guard rail or bar along the operator side of a pressing machine and to provide control means which are ineffective to close the press until after the guard rail has been moved away from the press and thus require all operators to step back so that it is impossible for any one of the operators to have a hand or arm between the pressing elements or jaws when the press closes.

A further object of the invention is to provide novel two-hand control means for use with a guard rail such as referred to.

A further object of the invention is to improve the mechanism shown in the copending application of Braun and Davis Serial Number 356,797, by providing such operating mechanism with a more effective two-hand control.

Another object is to provide a new and novel two-hand control mechanism for a press having a two-step motor means.

Other objects and advantages 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 in all the views.

Figure 1 is a fragmentary front elevation of a pressing machine to which the invention is applied.

Figure 2 is an enlarged detailed view, partly in section, of a portion of the control mechanism shown in Figure 1.

Figure 3 is an enlarged diagrammatic side elevation of a portion of the control mechanism, 45 part of which is shown in Figure 1.

Figure 4 is a side elevation of the pressing machine shown in Figure 1.

Figure 5 is an enlarged detailed view, partly in section, of the left hand control or manual 50 shown in Figure 1.

Figure 6 is a fragmentary side elevation of the valve operating mechanism, operated by the control or manual shown in Figure 5.

Figure 7 is a schematic view, mostly in section, 55 showing the press operating motors and the

valves for controlling the supply of working fluid to these motors.

The invention is designed primarily for use on pressing machines having an opening and closing movement such as the garment or ironing press illustrated in Figures 1 and 4. Referring particularly to Figure 4 the press includes a movable pressing element, jaw or head 11 carried by a yoke 12 which is pivotally mounted at 13 on a frame 14 of the pressing machine. The pressing lonead 11 moves into and out of pressing contact with a stationary jaw or buck 15 which is supported on a neck 16 mounted on the pressing machine frame 14. The press is normally held in open position as shown in Figure 4 by countersprings 20 which are connected at 21 with the pressing machine frame and at 22 with the yoke 12.

A fluid motor 25 is oscillatably mounted at 26 on the pressing machine frame 14 and is pivotally 20 connected at 28 with the yoke 12. Operation of the fluid motor 25 moves the yoke 12 in a clockwise direction about its pivot 13 to bring the pressing elements or jaws together to close the pressurder light pressure.

Final heavy pressure is applied to the pressing elements through a toggle which includes links 30 and 31. The link 30 is pivotally connected at 32 with the yoke 12 and is pivotally connected at 34 with the link 31. The link 31 is pivotally con- 30 nected at 36 with the pressing machine frame 14 and a link 38 is pivotally connected at 40 with the link 31. As the press closes under influence of the motor 25 the toggle, composed of links 30 and 31, will move toward straightened position. 35 After the press is thus closed under light pressure the link 38 is actuated as a pull link to further straighten the toggle and thus apply final heavy pressure. The link 38 is actuated by a fluid motor 44 which is oscillatively mounted at 45 on the 40 pressing machine frame 14, and which motor is pivotally connected at 46 to the forward end of the link 38. A follower 48, mounted on the link 38, operates in a cam slot 49 to guide the movement of the link 38. A spring 50 returns the 45 link 38 and the motor piston to normal or initial position when the operation of the motor 44 is discontinued. The mechanism thus far described is of conventional form and is not per se a part of the present invention. 50

Guard rail and mounting

A guard rail or bar 52 is provided which, in the embodiment shown herein, extends the entire length of the pressing machine on the opera-

tor side thereof. If the press is of a type which requires an operator to stand at the end of the press the guard rail 52 may also be extended across that end of the press. The guard or guard rail 52 is mounted on supporting arms 54 which are pivotally mounted at 55 on a bracket 56 which is attached to the pressing machine frame 14. Each spring 58 is secured at one end to the pressing machine frame and at the other end with one of the supporting arms 54. These springs 58 normally hold the guard rail 52 and supporting arms 54 in position close to the press as shown in full lines in Figure 4. Guide members 60 are pivotally connected at 62 with each of the supporting arms 54 and these guide members 60 are provided with end portions 64 of reduced cross section which are slidable in bearings 65 which are oscillatively mounted on brackets 66 carried on the pressing machine frame 14. The movement of the supporting arms 54, toward the pressing machine, is limited by the portion of the guide members 60, which is of large cross section, striking against the end of the bearings 65, as shown in Figure 4. The supporting arms 54 may be moved about the pivotal connections 55, to move the guard 52 away from the pressing machine as shown in dot dash lines in Figure 4. This movement of the supporting arms 54 is limited by stop members 68 which are mounted on the guide members 60 and which contact with the end of the bearings 65 when the guard rail 52 reaches its outer limit of travel: The mechanism supporting the guard 52 provides a guard which is movable towards and from the press and any mounting having this function is contemplated.

Mounting of controls on quard

The operator operated means for controlling the operation of the press are preferably mounted on the supporting arms 54. As shown in Figure 1 two control handles 70 and 72 are mounted on the right hand supporting arm 54 and a third control handle 74 is mounted on the left hand supporting arm 54. The mounting of the control handles 70 and 72 is shown in detail in Figure The supporting arm 54 on the right (Figure 1) is formed with a bracket 90 which provides a pivotal mounting 76 for the control handle 70, and a pivotal mounting 78 for the control handle 72. One end of the control handle 72 extends into 50 the hollow interior of the supporting arm 54 and a roller 80 is mounted on this end of the control handle 72. The roller 80 contacts with the upper end of an operating or push rod 82 and a guide piston or bushing 84 is secured to the upper end of the operating rod 82 to hold the same properly centered in the supporting arm 54.

One end of the control handle 70 is provided with a roller 86 which contacts with the upper end of an operating or push rod 88 which is slidably mounted in the bracket 90 formed on the supporting arm 54. From the structure thus far described it will be apparent that movement of the control handle 70 in a counterclockwise direction will cause the operating rod 88 to be moved downwardly, and a movement of the operating handle 72 in a clockwise direction will cause the operating rod 82 to move downwardly. The connections at the lower end of the operating rods 82 and 88 will be described later in connection with the valve operating mechanism.

The control handle or operator actuated means 74 is pivotally mounted at 92 on a bracket formed at the upper end of the left hand supporting arm 54 and one end of the control handle 74 ex-

tends into the hollow interior of the supporting arm 54. The end of the control handle 74 which extends into the supporting arm 54 is provided with a roller 94 which contacts with the upper end of an operating or push rod 96. A guide piston or bushing 98 is formed on the upper end of the operating rod 96 to hold the operating rod 96 properly centered in the supporting arm 54. A set screw 99 is mounted on the supporting arm 54 and extends into a slot 100 which is formed in the guide piston 98. This set screw 99 serves to keep the guide piston 98 and operating rod 96 from turning. Similar means may be used in connection with the guide piston 84 and operating rod 82 previously described.

The control handles 70, 72 and 74 are shown as being carried preferably upon the guard supporting arms 54. It is desirable to have these handles movable with the guard 52 and any mounting for the handles is suitable provided the 20 handles move with the guard. In the broader aspect of the invention, the operator-operated means need not be movable with the guard.

Valve operating mechanism

The valve operating mechanism controlled by the control handle 74 is shown in detail in Figure 6. The supporting arm 54 is pivotally mounted at 55 on the bracket 56 as previously described. The operating or push rod 96 extends 30 down the interior of the supporting arm 54 and through the lower end of the supporting arm 54 as shown in Figure 6. The lower end of the operating rod 96 may be threaded as at 102 for attachment to an end member 104. The operating 35 rod 96 is normally held in raised position, with its end member 104 in contact with the lower end of the supporting arm 54, by a spring 105. This spring 105 is compressed between a washer 106, which abuts against a pin 108 secured to the 40 operating rod 96, and a lower abutment member 110 which is secured within the supporting arm 54 by suitable means such as a screw.

A coupling member 112 is pivotally connected at 114 with the end member 104 and is normally 45 held in the position shown in Figure 6 by a spring 115. Movement of the control handle 74 in a clockwise direction about its pivotal connection 92 will cause the operating rod 96 to move downwardly, against the compression of the spring 50 105 and the coupling member 112 will also move downwardly but this movement will have no effect on the operation of the pressing machine since the coupling member 112 is not in contact with or is separated from the valve operating 55 mechanism. The handle or operator actuated means 74 is, therefore, normally disconnected from operative relation with the valve operating or control mechanism.

The valves operated by the control handle 74 60 are contained in a valve casing 118 and are operated by a rocker arm 119 which is pivotally mounted at 120 on the valve casing 118. These valves are operated through a valve stem 122 when the rocker arm 119 is rocked in a clockwise direc- 65 tion about its pivotal connection 120. Movement of the supporting arm 54 into the dot dash position shown in Figure 4 will cause the coupling member 112 to be moved into the position shown by dot dash lines in Figure 6. Thus move- 70 ment of the guard rail 52 away from the pressing machine brings the coupling member 112 into operative position with respect to the rocker arm 119 or operatively connects the operator actuated means with the control means. With the 75

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coupling member 112 in the position shown in its pivotal connection 155, as indicated in dot dot dash lines in Figure 6 actuation of the control handle 74 will cause the operating rod 93 and coupling member 112 to move downwardly to move the rocker arm 119 in a clockwise direction about its pivotal connection 120 and thus actuate the valve stem 122 to operate the valves in the valve casing 118.

The pivotal connection 114, previously de-10 scribed, is for the purpose of allowing the coupling member 112 to yield away from the rocker arm 119 if it is depressed before moving into the dotted line position. If it were so depressed it would strike against the end of the rocker arm 15 119 and if the spring 115 did not permit this yielding action the mounting of the rocker arm 119 might be broken due to the great leverage that an operator has with the supporting arms

The operating or push rod 82, which is mounted in the right hand supporting arm 54, is provided with a coupling member 124 at its lower end which is of similar construction and operated in a manner similar to that described in con-25 nection with the structure shown in Figure 6. The coupling member 124 operates a rocker arm 125 which is pivotally mounted at 126 on a bracket formed on the valve casing 128. The valve in the valve casing 128 is operated through 30 a valve stem 130 which contacts with the rocker arm 125. The rocker arm 125 also operates a rocker arm 132 which is pivotally mounted at 133 on a valve casing 134. The valve in the valve casing 134 is operated through a valve stem 136. A resilient contact member 138 is provided between the rocker arms 125 and 132 which compensates for the fact that the valves operated through the valve stems 130 and 136 will probably require slightly different amounts of travel before they will seat.

The operating or push rod 88 is slidably mounted in a bracket 140 which is formed near the lower end of the right hand supporting arm 54 and this operating rod 88 is normally held in raised position by a spring 142 which presses at its lower end against the bracket 140 and at its upper end against a washer 144 which is held against upward movement by a pin 145 inserted in the operating rod 88. The operating rod 88 is secured 50 at its lower end to an enlarged end portion 148 which abuts against the bracket 140 to limit upward movement of the operating rod 88. The end portion 148 is provided with a grooved roller 150 which runs on one arm of a bell crank 152. A 55 spring 154 normally holds the bell crank 152 in the position shown in Figure 3. The bell crank 152 is pivotally mounted at 155 on the bracket 56 at a point spaced from the supporting arm pivot 55 and the downwardly extending arm of 60 the bell crank 152 is provided with a contact member 156 which operates against a rocker arm 159 which actuates a valve stem 160 to operate the valves in a valve casing 162. When the supporting arm 54 is in the position shown in Figure 3 downward movement of the operating rod 88 will rock the bell crank or pivoted rod 152 about its fixed pivotal connection 155 and this movement will bring the contact member 156 close to the valve stem 160 but will not be sufficient to 70 move the contact member 156 into contact with the valve stem 160 to operate the valves in the valve casing 162. When the supporting arm 54 is moved about its pivotal connection 55, when the guard rail 52 is moved away from the ma-75 chine, the bell crank 152 will be rocked about

dash lines in Figure 3. This movement of the bell crank or pivoted rod 152 is due to the fact that the pivoted rod or bell crank extends at an angle or tangent to the circular path of movement of the roller 150 and the distance between the centers of the pivotal connections 55 and 155. This position of the pivoted rod 152 enables the operator actuated means and particularly the roller 150 thereof to engage the rod throughout 10 the shifting movement of the movable member The shifting of the movable member 52 is sufficient to bring the contact member 156 substantially into contact with the valve stem 160. Operation of the control handle 70, when the bell 15 crank 152 is in this position, will move the operating rod 88 and roller 150 downwardly to rock the bell crank 152 about its pivotal connection 155 and move the valve stem 160 to operate the valves in the valve casing 162.

Connections between valves and motors

Figure 7 shows the valve casings in section and the connections between the valve casings and the motors. Working fluid is supplied through 25 a fluid supply line 165 which is connected by a branch pipe 166 with the valve casing 118.

The valve casing 118 contains a normally closed intake valve 168 and a normally open exhaust valve 169 which are connected together by a 30 spacer rod 170 so that they operate as a unit. A spring 171 holds the valves 168 and 169 in normal position as shown in Figure 7. The valve stem 122, which is formed on the exhaust valve 169, extends through the end of the valve casing $_{35}$ 118 and is actuated by the rocker arm 119 to operate the valves 168 and 169. The operation of the rocker arm 119 from the control handle 74 has been previously described. The valve casing 118 is provided with a diaphragm chamber 172 which contains a diaphragm 173. A plunger 174 extends through the end of the diaphragm chamber 172 and when pressure is applied behind the diaphragm 173 the plunger 174 will move into contact with the rocker arm 119 to hold the rocker arm 119 in operated position against the compression of the spring 171. The fluid supply line 165 connects with the valve casing 162. valves in the valve casing 162 are identical in construction with those in the valve casing 118 and are designated by the same reference characters. The valve casing 162 is provided with a diaphragm chamber 175 which is identical in construction and operation with the diaphragm chamber 172 of the valve casing 118.

The valve casing 118 is connected, at a point midway between the valves 168 and 169, by pipes 176 and 178, with the fluid motor 44. When the valves in the valve casing 118 are in operated position with the intake valve 168 open and the exhaust valve 169 closed working fluid may flow from the fluid supply line 165, through the pipe 166, around the open intake valve 168, through the valve casing 118, and pipes 176 and 178 to the fluid motor 44.

The pipe 176 is connected by a pipe 180 with the valve casing 128 which contains an exhaust valve 182 and it is necessary that this exhaust valve 182 be closed in order to have sufficient pressure build up in the pipes 176 and 178 to $_{70}$ operate the fluid motor 44.

The exhaust valve 182 is moved into closed position by the rocker arm 125 which is operated from the control handle 72 as previously described. It is necessary therefore, in order to operate the 75

fluid motor 44, that the operator move both of the control handles 72 and 74 into operated position. From the above description it will be apparent that the control handles 72 and 74 may 5 be operated to close the press under heavy pressure in a single step without operating the low pressure motor 25.

A pipe 184 connects the valve casing 162, at a point midway between the valves 168 and 169, with the pipe 186 which connects at one end with the fluid motor 25 and at the other end with the valve casing 134. When the intake valve 168, in the valve casing 162, is moved into open position working fluid from the fluid supply line 65 may 15 flow around the open intake valve 168, through the valve casing 162, and pipes 184 and 186 to the fluid motor 25. In order to have sufficient pressure build up in the pipe 186 to operate the fluid motor 25 it is necessary that the escape of work-20 ing fluid through the valve casing 134 be prevented. The valve casing 134 contains an exhaust valve 188 which may be moved into closed position, to prevent escape of working fluid from the pipe 186, by operation of the rocker arm 132 which contacts with the valve stem 136 formed on the exhaust valve 188. The rocker arm 132 is operated, as previously described, by the control handle 72.

From the above description it is apparent that 30 it is necessary for the operator to actuate both of the control handles 70 and 72 in order to operate the fluid motor 25.

The valve casings 128 and 134 are provided with diaphragm chambers 190 and 192 which operate in the conventional manner, as described in connection with diaphragm chamber 172, to hold their respective valves in operated position.

A port opening 193 is provided in the wall of the cylinder of the fluid motor 25 at a point near one end of the cylinder so that a piston 197, of the fluid motor 25, will uncover this port opening 193 as the piston approaches one end of its stroke at which time the pressing elements will be in contact or substantially in contact. The port opening 193 communicates through pipe 196, and the branch pipes shown in Figure 7, with the diaphragm chambers 175 and 192. Thus the valves which are operated to control the fluid motor 25 will be locked in operated position when the fluid motor 25 has substantially completed its stroke.

A similar port opening 194 is provided in the wall of the fluid motor 44 and is connected by the pipes 196° and 197°, and the branch pipes 198 and 199, with the diaphragm chambers 172 and 190. The fluid motor 44 contains a piston 195 and when this piston 195 uncovers the port opening 194 working fluid will flow through the connecting pipes to the diaphragm chambers 172 and 190 and lock the valves, which control the operation of the fluid motor 44, in operated position

The pressure behind the diaphragms in the diaphragm chambers 172 and 190 is reduced, to permit the respective valves to return to normal position, by permitting the working fluid in the branch pipes 198 and 199 to exhaust through a pipe 200 which connects with a valve casing 201 containing a normally closed exhaust valve 202. The exhaust valve 202 is provided with a valve stem 204 which contacts with an operating arm 205 which is pivotally mounted at 206 and movable against the valve stem 204, to open the valve 202, by a control handle 208.

A similar valve casing 210 is connected with

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the pipes which supply working fluid to the diaphragm chambers 175 and 192.

What I claim is:

1. In a garment pressing machine, in combination, cooperative pressing elements, power operating mechanism therefor including a motor means to close the press under light pressure and to apply heavy pressure to the pressing elements. means for controlling the operation of the power operating mechanism including three manual 10 control devices, a guard movably mounted in front of the pressing machine to move close to and away from the pressing machine, means connecting two of the three manual control devices with the power operating mechanism so as to afford 15 two hand control for closing the pressing machine under light pressure and connecting the third of the three manual control devices to the power operating mechanism for closing the machine under heavy pressure, said connecting means in- 20 cluding means for rendering both the light pressure and heavy pressure control devices ineffective when the guard is in position close to the pressing machine.

2. In a garment pressing machine, in combi- 25 nation, cooperative pressing elements, power operating mechanism therefor including a motor means to close the press to apply heavy pressure to the pressing elements, means for controlling the operation of the power operating mechanism 30 including three manual control devices, a guard movably mounted in front of the pressing machine to move close to and away from the pressing machine, means connecting two of the three manual control devices with the power operating 35 mechanism so as to afford two hand control for closing the pressing machine under light pressure and connecting the third of the three manual control devices to the power operating mechanism for closing the machine under heavy pres- 40 sure, said connecting means including means for rendering both the light pressure and heavy pressure control devices ineffective when the guard is in position close to the pressing machine, said control devices being carried by and movable with 45 the guard.

3. A garment pressing machine, comprising in combination, cooperative pressing elements; power operating mechanism therefor including motor means to close the press under light pressure 50 and to apply heavy pressure to the pressing elements; means for controlling the operation of the power operating mechanism including three manual control devices; a guard movably mounted in front of the pressing machine to move close 55 to or away from the pressing machine; means connecting two of the three manual control devices with the power operating mechanism so as to afford a two-hand control for closing the pressing machine under light pressure, and connecting 60 a different pair of the three manual controls to the power operating mechanism to provide a twohand control for closing the pressing machine under heavy pressure; said connecting means including means for rendering both the light pressure and heavy pressure control devices ineffective when the guard is in position close to the pressing machine.

4. A garment pressing machine, comprising in combination, cooperative pressing elements and 70 operating mechanism therefor including fluid motor means to close the press under light pressure and to apply heavy pressure to the pressing element; devices for controlling the flow of working fluid to the motor means; three operator ac-75

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tuated members for operating the control devices; connections between the first and second of said operator actuated members and the control devices so that operation of said first and second 5 members will control the operating mechanism to close the press under light pressure; and connections between the second and third of said operator actuated members and the control devices so that operation of said second and third 10 members will control the operating mechanism to close the press under heavy pressure.

5. A garment or ironing press comprising, cooperating pressing jaws one of which is movable towards and from the other; operating mecha-15 nism for actuating the movable jaw to open and close the press including, motor means for initially closing the press and for applying heavy pressure between the jaws; control means connected with the motor means including, a pair of normally closed intake valves connected with the motor means and operation of one of which actuates the motor means to initially close the press and operation of the other actuates the motor means to apply pressure between the jaws, and a normally open exhaust valve means connected with the motor means during both the initial and heavy pressure movement of the motor means; and a handle connected with each intake valve and with the exhaust valve means so that two handles must be retained in operated position to actuate the motor means.

6. A garment or ironing press comprising, cooperating pressing jaws one of which is movable towards and from the other; operating mecha-35 nism for actuating the movable jaw to open and close the press including, motor means for initially closing the press and for applying heavy pressure between the jaws; control means connected with the motor means including, a pair of normally closed intake valves connected with the motor means and operation of one of which actuates the motor means to initially close the press and operation of the other actuates the motor means to apply pressure between the jaws. 45 and a normally open exhaust valve means connected with the motor means; holding means retaining each intake valve in closed position after a predetermined extent of movement of its respective motor and retaining the exhaust valve 50 means closed, and a handle connected with each intake valve and with the exhaust valve means so that two handles must be retained in operated position to actuate the motor means.

7. A garment or ironing press comprising, co-55 operating pressing jaws one of which is movable towards and from the other; operating mechanism for actuating the movable jaw to open and close the press including, a pair of motors, control means connected with each motor, a pair of handles connected with one control means both of which must be retained in operated position to actuate one of the motors, a third handle and one of the pair of handles operatively connected with the other control means both of which must be retained in operated position to actuate the other motor.

8. A garment or ironing press comprising, cooperating pressing jaws one of which is movable towards and from the other; operating mechanism for actuating the movable jaw to open and close the press including, a pair of motors, a normally closed intake valve connected with each motor, normally open exhaust valve means con-75 nected with both motors, a handle connected with

each intake valve, and a handle connected with the exhaust valve means, it being necessary for one of the intake valve handles and the exhaust valve means handle to be retained in operated position to actuate either of the motors.

9. A garment or ironing press comprising, cooperating pressing jaws one of which is movable towards and from the other; operating mechanism for actuating the movable jaw to open and close the press including, a pair of motors; control means connected with each motor including. an intake valve and an exhaust valve: a handle connected with each valve of one control means both of which must be retained in operated position to actuate one of the motors, and a second pair of handles operatively connected with each valve of the other control means both of which must be retained in operated position to actuate the other motor, said second pair of manuals including one of the manuals of the first pair.

10. A garment or ironing press comprising, cooperating pressing jaws one of which is movable towards and from the other; operating mechanism for actuating the movable jaw to open and close the press including, a pair of motors; control means connected with each motor including, a normally closed intake valve connected with each motor and normally open exhaust valve means connected with both motors; holding means retaining each intake valve in closed 30 position after a predetermined extent of movement of its respective motor and retaining the exhaust valve means closed, and a handle connected with each intake valve and with the exhaust valve means so that two manuals must be retained in operated position to actuate both of the motors.

11. A garment or ironing press comprising, cooperating pressing jaws one of which is movable towards and from the other; operating mechanism for actuating the movable jaw to open and close the press including, a pair of motors; control means connected with each motor including, a normally closed intake valve and a normally open exhaust valve connected with each motor; holding means retaining each intake and exhaust valve in closed position after a predetermined extent of movement of its respective motor, a handle connected with each intake valve, and a single handle connected with both exhaust valves so that two handles must be retained in operated position to actuate each motor.

12. A garment or ironing press comprising, cooperating pressing jaws one of which is movable towards and from the other; operating mechanism for actuating the movable jaw to open and close the press including, motor means; control means connected with the motor means, a movable member shiftable inwardly towards and outwardly away from the press a distance sufficient to require the operator to step away therefrom. operator actuated means carried by the movable member for operating the control means, and a pivoted rod mounted on a fixed pivot and operatively connecting the operator actuated means and the control means, said pivoted rod being normally disconnected from operative relation with one of said means and the outward shifting of the movable member operatively connecting the operator actuated means with the control means, and said pivoted rod being positioned to be engaged by the operator actuated means throughout the shifting of the movable member.