March 6, 1934 E. DAVIS 1,950,136

GARMENT OR IRONING PRESS

Filed July 27, 1929 2 Sheets-Sheet 1

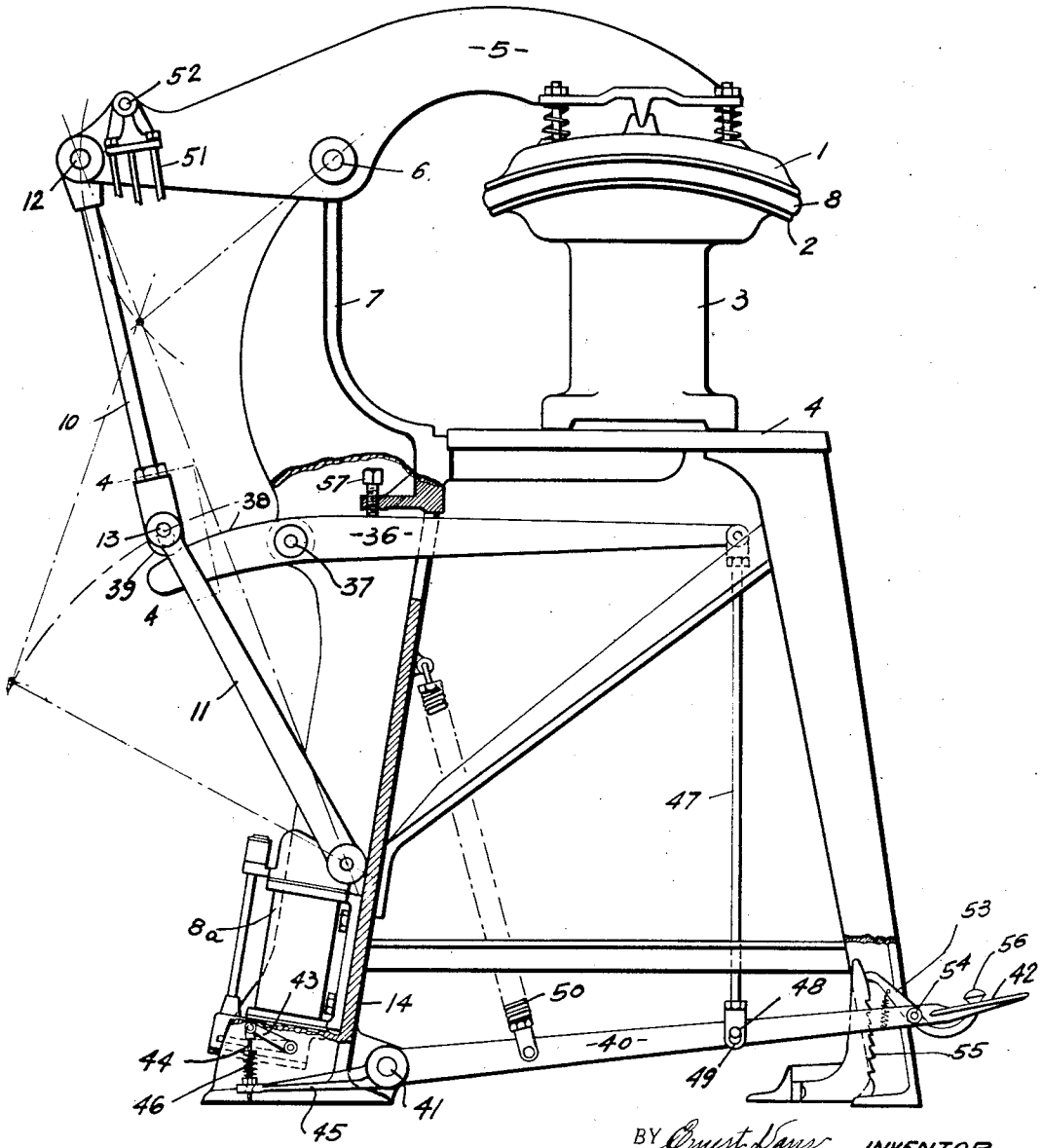


Fig. 1.

BY Ernest Davis INVENTOR.

Bodell & Thompson ATTORNEYS

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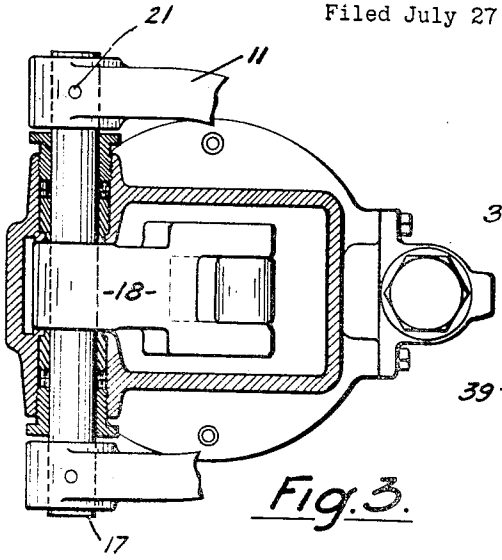


Fig. 3.

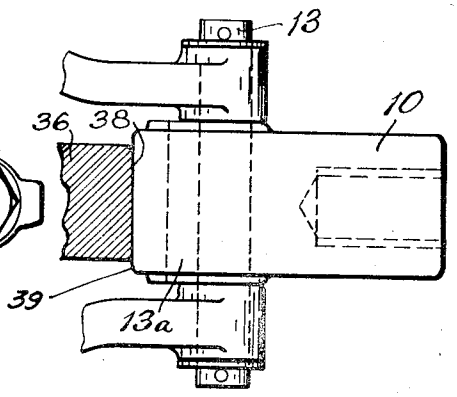


Fig. 4.

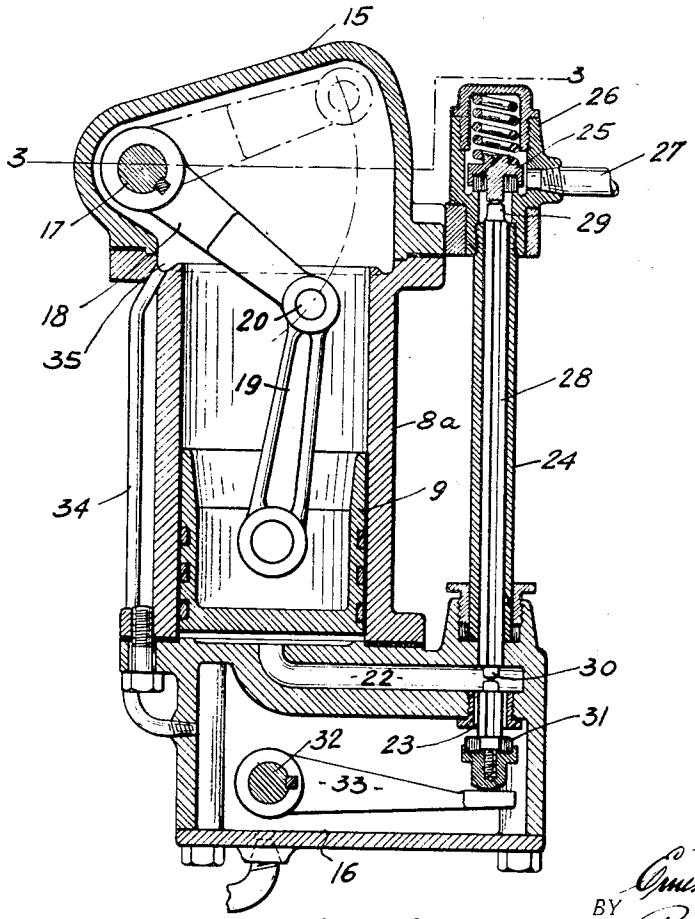


Fig. 2.

INVENTOR.

BY Ernest Davis
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ATTORNEYS.

Patented Mar. 6, 1934

1,950,136

UNITED STATES PATENT OFFICE

1,950,136

GARMENT OR IRONING PRESS

Ernest Davis, Syracuse, N. Y., assignor to The Prosperity Company, Inc., Syracuse, N. Y., a corporation of New York

Application July 27, 1929, Serial No. 381,602

16 Claims. (Cl. 68—9)

This invention relates to pressing machines, as garment and laundry presses, and has for its object a particularly simple and efficient means by which the press is closed by power and thereafter finally closed into heavy pressure position an amount determined by the operator. It further has for its object a particularly simple and efficient actuating mechanism including a steam operated motor having embodied therein a simple means by which the water of condensation is drained from the motor without leaking to the outside thereof.

This 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 represent corresponding parts in all the views.

Fig. 1 is a side elevation, partly broken away of a machine embodying my invention. Fig. 2 is a sectional view through the motor for closing the press. Fig. 3 is a fragmentary sectional view on line 3—3, Fig. 2. Fig. 4 is an enlarged fragmentary sectional view approximately on line 4—4, Fig. 1.

This invention comprises means for successively closing the press from wide open to closed position and boosting the pressure applied by the closing means and a common operating member for controlling the operation of the press closing means and the boosting means, the press closing means being preferably power operated and the boosting means being operated by pressure applied by the operator.

In pressing machines which are operated by foot power it is more fatiguing to the operator to bring the press from wide open to closed position than it is to apply the heavy pressure, particularly as a comparatively long throw of the operating lever or treadle is required to close the press. Very little throw of the treadle is required to apply heavy pressure between the press jaws and, because of the great leverage provided, the final pressure effort is not fatiguing to the operator. It is the long throw of the pedal necessary to close the press that is the cause of the fatigue. This invention relates to means for eliminating the long throw of the lever and hence the fatigue of the operator. As here shown my invention is embodied in a conventional type of garment or laundry press including cooperating pressing elements or jaws one of which is movable toward and from the other, as a movable jaw or head 1 movable toward and from a stationary jaw or buck 2. The buck is mounted on a suitable bolster or bracket 3 which in turn is mounted on a supporting frame or table 4. The head 1 is carried by the usual frame lever 5 pivoted between its ends at 6 to a standard 7 rising from the back leg of the frame. The buck is usually covered with a compressible padding 8.

In the illustrated embodiment of my invention, the power means for closing the press is a fluid operated motor, having a cylinder 8^a and a piston 9 movable therein, the piston being connected to the movable jaw or head 1 through suitable motion transmitting connections including the lever 5 and also including a toggle between the piston and the rear arm of the frame lever 5.

The links 10 and 11 form the toggle, the links 10 being pivoted at its upper end at 12 to the rear arm of the frame lever 5 and being pivoted at 13 to the upper end of the link 11. The lower end of the link 11 is connected to the piston as will be hereinafter described. The pivot 13 at the joint of the toggle extends through a lengthwise slot 13^a in the lower end of the link 10, so that the link 10 can be boosted relatively to the link 11 to apply heavy pressure between the press jaws. The link 11 is formed of two arms mounted upon pivot pin 13 (see Fig. 4).

The cylinder 8^a is usually a steam cylinder connected in the steam system of the machine. It will be understood that one or both of the pressing elements or jaws of pressing machines are formed with steam chambers for heating them and also, in some presses, with means for projecting steam jets through the garment being pressed and that the steam is supplied from a boiler usually separate from the machine, although the steam may be supplied from any suitable source. Insofar as this invention is concerned in some of its aspects, the motive fluid may be steam or air or any other fluid, or the motor may be an electric motor. It is preferably however, a steam operated motor connected in the steam system of the machine. As a steam cylinder is employed, the cylinder and associated parts are constructed so as to prevent the leakage of water and steam to the outside of the cylinder, and the connections operated by the piston and the means for operating the control valves of the cylinder so constructed as to avoid leakage of water.

To this end the cylinder is mounted preferably in upright position. It is located within the lower end of the rear leg 14 of the machine, this being channel shaped in cross section. The upper end of the cylinder is provided with a housing 15 and

the lower end with a drain chamber 16. A portion of the motion transmitting mechanism between the piston 9 and the toggle link 11 is mounted in the housing 15, this portion comprising a rock shaft 17 journaled in the housing with its ends extending outside thereof, a rock arm 18 mounted on the rock shaft within the housing and a connecting rod 19 between the piston and said arm 18. The connecting rod 19 is pivoted at 20 to the arm 18. The lower ends of the double link 11 are mounted on the outer ends of the shaft 17 and are keyed thereto as at 21 to rock therewith. A wall of the drain chamber 16 forms the head of the cylinder and this wall is formed with an inlet port 22 for the cylinder, this port 22 having an outlet 23 into the drain chamber. An intake pipe 24 is mounted on the drain chamber and opens into the intake port 22 in alignment with the outlet 23. The intake pipe 24 extends lengthwise of the cylinder 8^a and has a control valve 25 therein, the valve being housed within the casing 26. The casing is connected to a source of steam, as the boiler through a pipe 27. A floating rod 28 extends lengthwise of the pipe 24 and thrusts at 29 against the valve 25 and at 30 against a normally open outlet valve 31 in the outlet 23.

The valves are operated by mechanism, a portion of which is located in the chamber 16, this portion comprising a rock shaft 32 journaled in the casing 16 and having a rock arm 33 arranged to thrust against the outlet valve 31. A drain pipe 34 connects a channel 35 around the upper end of the cylinder and the drain chamber 16. The drain chamber also has a suitable outlet pipe 35. The operation of the shaft 32 in the manner hereinafter described closes the outlet valve 31 and opens the intake valve 25 permitting steam to pass from the pipe 37 through the pipe 34, port 22 into the cylinder 8 to actuate the piston therein. The piston 9 through connecting rod 19, arm 18 and the rock shaft 17 straightens the toggle into any one of a plurality of straightened or nearly straightened positions and preliminarily closes the press. Any water in the steam drains from the housing 15 through the pipe 34 to the chamber 16, and also when the press is open any water that may condense in the cylinder 8^a or the pipe 24 drains through the outlet 23 into the chamber 16, thus the cylinder and associated parts are water tight.

The booster mechanism as here illustrated comprises a forwardly and rearwardly extending booster member or pry lever 36 pivoted at 37 to the rear leg of the frame, the forward arm is longer than the rear arm which has a curved face 38 of about the same curvature as the arc of movement of the joint 13 of the toggle, and when the toggle straightens, the lower end surface 39 of the link 10 rides along or up said face 38, before the booster lever 36 is actuated.

The means for successively controlling the operation of the motor and the booster lever comprises an operating lever or treadle 40 pivoted at 41 to the face of the rear leg 14 and having a foot plate 42 at its front end. The connections between the lever 40 and the control means for the motor or the valve 25, in addition to the rock shaft 33, rod 28 and valve 31, comprise a rock arm 43 mounted on the end of the rock shaft 32 which projects outside of the drain chamber 16, and a link 44 connecting the rock arm 43 and the rear arm 45 of the lever 40. The motion of the arm 45 is transferred to the link 44 through a compression spring 46 in order to permit movement of the lever 40 after the valve 25 is opened or in order to permit the successive operation of the valve 25 and the lever 36. The lever 40 is also connected to the booster lever 46 through a link 47 having a lost motion connection which permits the valve 25 to be opened and hence the toggle to be straightened in advance of the boosting operation. As here illustrated, this lost motion is provided by a pin-and-slot connection between the link and the lever 40. 48 is the pin on the lever 40, and 49 is the slot at the lower end of the link 47.

The movement of the lever 40 is against the action of a spring 50 which returns the lever to its initial position. The piston 9 is single acting and the press is opened up when released as will be presently described, as by counter-springs, here shown connected to rods 51 which in turn are connected at 52 to the rear arm of the head carrying lever 5.

The press is locked in its closed position by a latch lever 53 pivoted at 54 to the lever 40 and coacting at one end with a stationary rack 55 on the frame and having its other end provided with a head 56 arranged adjacent the foot plate 42. The initial position of the booster lever 36 is determined by a set screw 57.

In operation the operator after arranging the work on the buck 2, depresses the lever 40 slightly or sufficiently to open the valve 25 whereupon the piston 9 on its upward stroke rocks the shaft 17 to move the toggle from folded toward straightened position and thus bring the lower end of the link 10 over the face 38 of the booster lever 36. The latch will then latch in one of the teeth in the rack 55 and no further pressure, if desired, will be delivered. During the initial depression of the lever 40, the lost motion in the pin-and-slot connection 48 and 49 is taken up.

Upon further depression of the lever 40 by pressing down on the foot plate 42, the booster lever 36 is operated varying degrees, depending on amount of movement given the lever 40, thus thrusting the link 10 upwardly relatively to the link 11 and applying heavy pressure between the press jaws 1 and 2. The pin-and-slot connection 13^a between the two toggle links 10, 11 at the joint of the toggle permits the relative movement between the links. The latch 53 takes hold of any one of the teeth in the rack 55 depending upon the distance the lever 40 is depressed and thus holds the press under heavy pressure. To open the press the operator with his foot presses on both the pedal 42 and the head 56 of the latch or only on the head 56, thus depressing the lever 40 slightly to permit the latch to withdraw from its engagement with the rack teeth 55, whereupon the press head opens up under the reaction of the counter-springs and the lever is restored to its starting position by its spring 50. Also the intake valve 25 is closed and the outlet valve 35 opened under the reaction of the spring of the intake valve 25.

What I claim is:

1. In a pressing machine, cooperating pressing elements, one of which is movable toward and from the other, motor means, connections between the motor means and the movable element to close the press, control means for the motor, a booster member for applying heavy pressure to the movable element after the press has closed, an operating lever, connections between the operating lever and the control means for the motor, and connections between the operating lever and the booster member including means whereby said

lever operates the control means and the booster member successively.

2. In a pressing machine, cooperating pressing elements, one of which is movable toward and from the other, a cylinder, a piston movable in the cylinder, actuating connections between the piston and the movable element, a valve for controlling the flow of motive fluid to and from the cylinder, a booster member for applying heavy pressure to the movable element after the press has been closed by the cylinder and piston and the actuating connections operated thereby, and an operating lever common to the booster member and said valve.

3. In a pressing machine, cooperating pressing elements, one of which is movable toward and from the other, a cylinder, a piston movable in the cylinder, actuating connections between the piston and the movable element, a valve for controlling the flow of motive fluid to and from the cylinder, a booster member for applying heavy pressure to the movable element after the press has been closed by the cylinder and the piston and actuating connections operated thereby, and an operating lever common to the booster member and said valve, the booster member cooperating with the connections between the piston and the movable element.

4. In a pressing machine, cooperating pressing elements, one of which is movable toward and from the other, a cylinder, a piston movable in the cylinder, actuating connections between the piston and the movable element, a booster member for applying heavy pressure to the movable element after the press has been closed by the cylinder and piston and the actuating connections operated thereby, an operating lever, a valve, connections between the operating lever and the valve, and connections between the operating lever and the booster member, said last named connections including a lost motion connection whereby the valve is opened in advance of the operation of the booster member.

5. In a pressing machine cooperating pressing elements, one of which is movable toward and from the other, a motor, a motion transmitting means between the motor and the movable element, including a toggle, a control means for the motor, a booster lever arranged to coact with the toggle when the toggle is in straightened position, an operating lever, connections between the operating lever and the control means for the motor, and connections between the operating lever and the booster lever, including a lost motion connection.

6. In a pressing machine, cooperating pressing elements, one of which is movable toward and from the other, means for actuating the movable element, including an actuator, control means therefor, and a toggle connecting the actuator and the movable element, a booster lever coacting with the toggle when the toggle is in substantially straightened position, means for controlling the operation of the actuator and the booster lever including a pedal, connections between said pedal and actuator control means, and connections between the pedal and the booster lever, said last mentioned connections having lost motion so that the actuator is operated in advance of the booster lever.

7. In a pressing machine, cooperating pressing elements, one of which is movable toward and from the other, means for actuating the movable element to close the press comprising a cylinder, a piston movable in the cylinder, a housing mounted on one end of the cylinder, a rock shaft mounted in the housing and extending to the outside thereof, connections between the outer end of the rock shaft and the movable element, a rock arm mounted on the rock shaft within the housing, a connecting rod between the piston and the rock arm, a head mounted on the other end of the cylinder and formed with an intake port leading into the cylinder and also with a drain chamber, the intake port having an outlet into the drain chamber, and an intake conduit having a control valve therein connected to said port, a drain valve for said outlet, a rock shaft mounted in the drain chamber and acting when operated to close the drain valve and connection between the two valves whereby the control valve is opened when the drain valve is closed and vice versa, and means connected to the last mentioned rock valve for operating the same.

8. In a pressing machine cooperating pressing elements, one of which is movable toward and from the other, means for actuating the movable element to close the press comprising a vertically disposed cylinder, a piston movable in the cylinder, a housing mounted on the top of the cylinder, a rock shaft mounted in the housing and extending to the outside thereof, connections between the outer end of the rock shaft and the movable element, means connected with the connections to return the latter and the piston to initial position, a rock arm mounted on the rock shaft within the housing and a connecting rod between the piston and rock arm.

9. In a pressing machine, cooperating pressing elements, one of which is movable toward and from the other, means for actuating the movable element to close the press comprising a cylinder, a piston movable in the cylinder, a housing mounted on one end of the cylinder, a rock shaft mounted in the housing and extending to the outside thereof, connections between the outer end of the rock shaft and the movable element, a rock arm mounted on the rock shaft within the housing, a connecting rod between the piston and rock arm, a head mounted on the other end of the cylinder and formed with an intake port leading into the cylinder and also with a drain cylinder, the intake port having an outlet into the drain chamber, a conduit having a control valve therein communicating with the port, a drain valve for said outlet, a rock shaft mounted in the drain chamber and acting when operated to close the drain valve and connections between the two valves whereby the control valve is opened when the drain valve is closed and vice versa, means connected to the last mentioned rock shaft for operating the same, and a drain pipe connecting the housing at the upper end of the cylinder and the drain chamber.

10. In a pressing machine, cooperating pressing elements, one of which is movable toward and from the other, means for actuating the movable element including a cylinder, a piston movable therein, and connections between the piston and the movable element, a water tight housing inclosing a portion of said connections adjacent one end of the cylinder, a drain chamber on the other end of the cylinder, the other end of the cylinder being provided with an intake port having an outlet into the drain chamber, an intake pipe communicating with said port, a normally closed spring pressed valve in the intake pipe and a normally open outlet valve in said outlet, means for operating the valves including a mem-

ber housed within the drain chamber, and a drain pipe connecting said housing and said chamber.

11. In a pressing machine, cooperating pressing elements, one of which is movable toward and from the other, mechanism for actuating the movable element to close the press comprising, a motor, and motion transmitting connections between the motor and the movable element, booster means to apply heavy pressure to the movable element independently of the motor means after the press has been closed by the motor means, means for controlling the closing of the press by the motor means, means including a single operating member for operating the controlling means and the booster means successively, and means for locking the press closed and under heavy pressure.

12. In a pressing machine, cooperating pressing elements, one of which is movable toward and from the other, mechanism for actuating the movable element to close the press comprising, a motor, and motion transmitting connections between the motor and the movable element, booster means to apply heavy pressure to the movable element after it has been closed by the motor means, means for controlling the closing of the press by the motor means, means including a single operating member for operating the controlling means and the booster means successively, and means for locking the operating member in its position assumed when the press is closed by the power means.

13. In a pressing machine cooperating pressing elements one of which is movable toward and from the other, mechanism for actuating the movable element to close the press comprising, a motor, and motion transmitting connections between the motor and the movable element, booster means to apply heavy pressure to the movable element after it has been closed by the motor means, means for controlling the closing of the press by the motor means, means including a single operating member for operating the controlling means and the booster means successively, means for locking the operating member in its position assumed when the press is closed by the power means and for locking the booster means in its operated position, said locking means being common to the controlling means and the booster means.

14. In a pressing machine cooperating pressing elements one of which is movable toward and from the other, mechanism for actuating the movable element to close the press comprising, a motor, and motion transmitting connections between the motor and the movable element, booster means to apply heavy pressure to the movable element after it has been closed by the motor means, means for controlling the closing of the press by the motor means, means including a single operating member for operating the controlling means and the booster means successively, and means for locking the press closed and under heavy pressure, said locking means including a part carried by the operating member and movable relatively thereto, and means cooperating with said part to lock the press closed.

15. A garment or laundry pressing machine including in combination cooperative pressing jaws, one of which is movable toward and from the other; mechanism to operate the movable jaw to close the press including, a motor, and motion transmitting connections between the motor and the movable jaw; booster means including, an operator operated pry-bar coacting with said motion transmitting connections to apply heavy pressure to the movable jaw after the press has been closed by the motor; means to control the closing of the press by the motor; a common foot operated member for operating the motor control means and the booster means successively; and means for locking said member in operated position.

16. A garment or ironing press comprising a frame, cooperative pressing jaws one of which is movable with respect to the other to open and close the press, actuating mechanism for the movable pressing jaw including an extendible toggle, a booster lever pivoted between its ends on the frame, means for closing the press and moving the toggle into substantially straightened position with a portion thereof overlying one end of the booster lever, means for applying power to the other end of the booster lever for rocking the same about its frame pivot to thrust endwise the portion of the toggle overlying the lever to boost one of the links of the toggle and apply heavy pressure to the pressing jaws.

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