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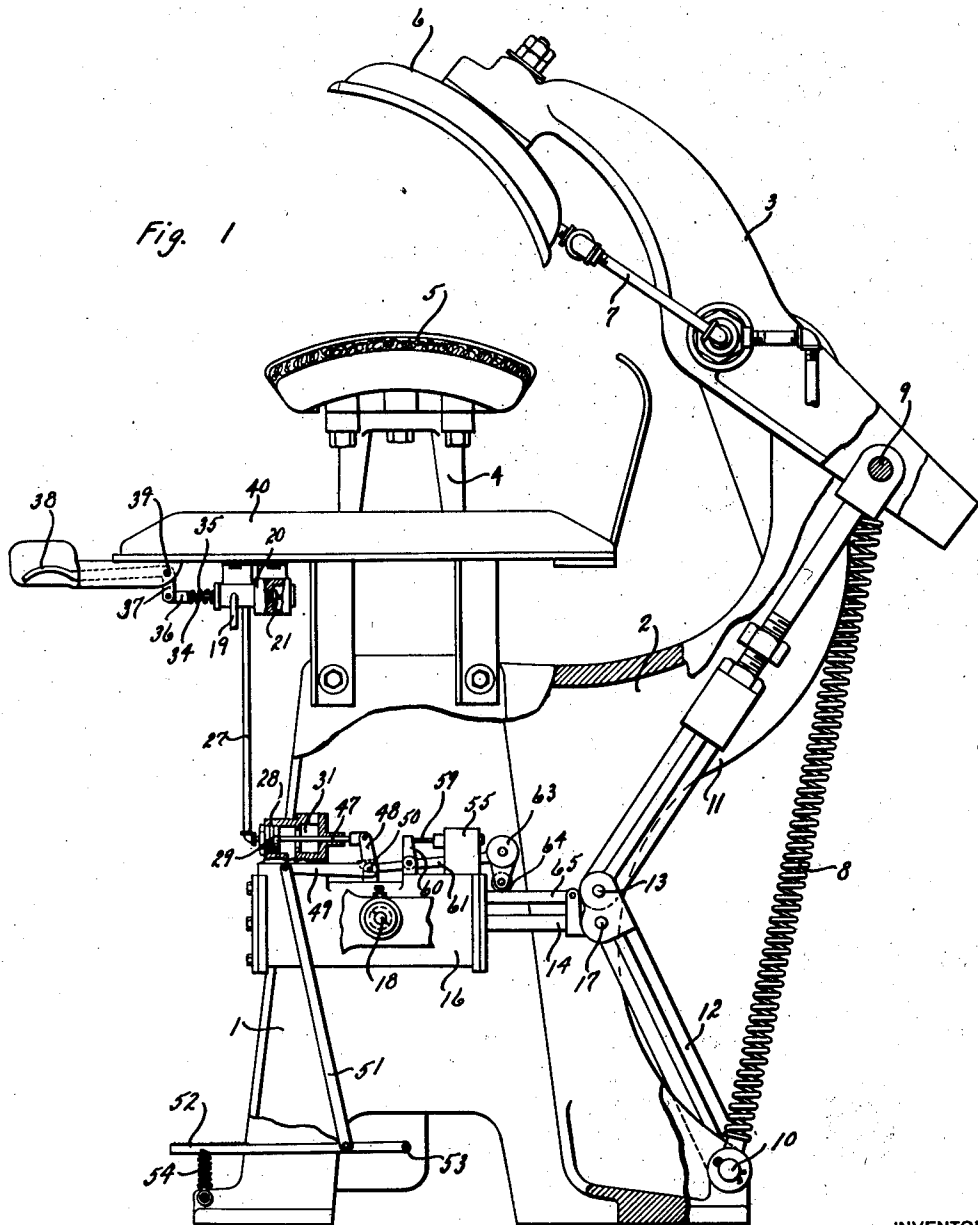
J. P. SINGISER

1,890,341

PRESSING MACHINE

Filed April 18, 1930

3 Sheets-Sheet 1



INVENTOR

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BY

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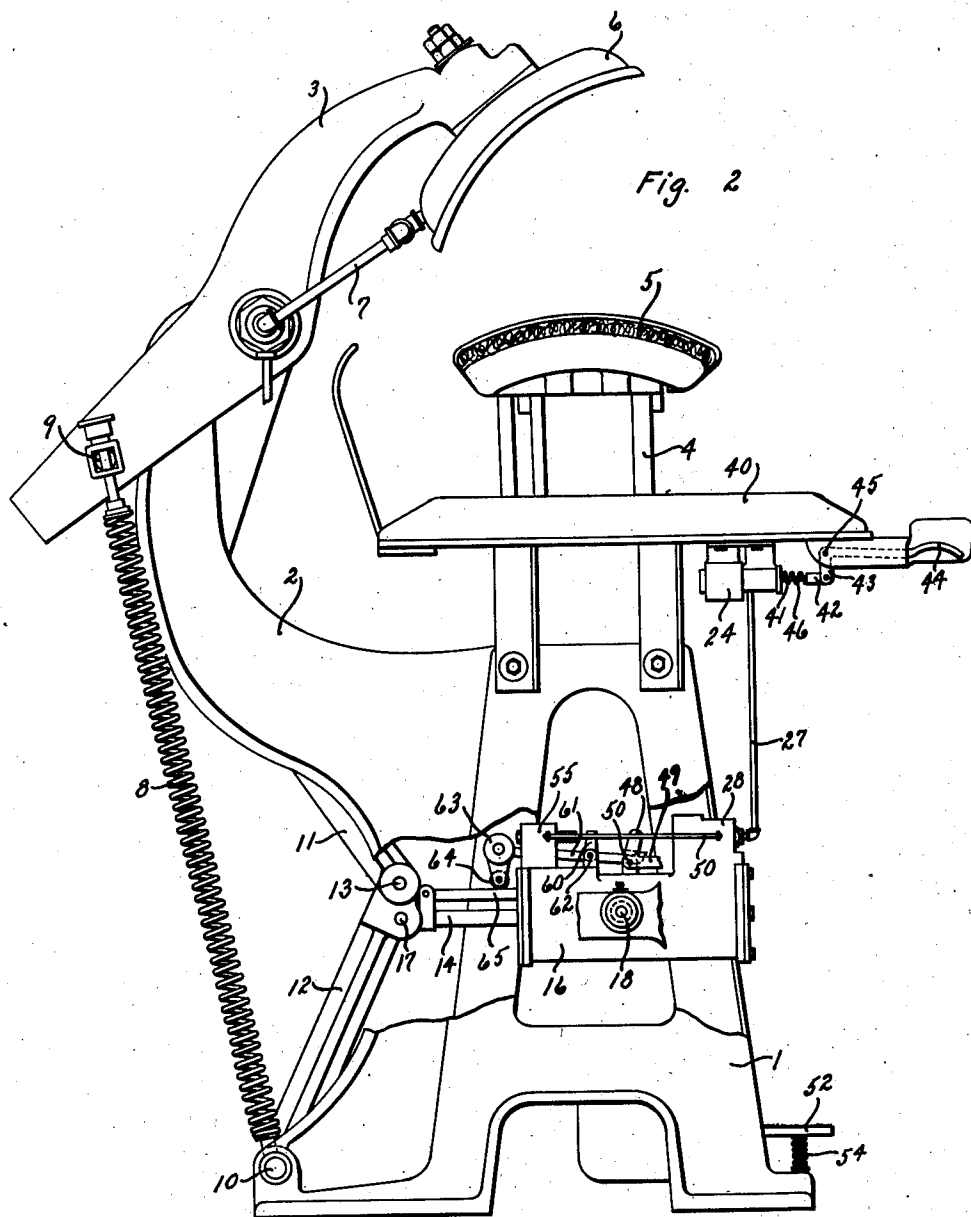
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3 Sheets-Sheet 2



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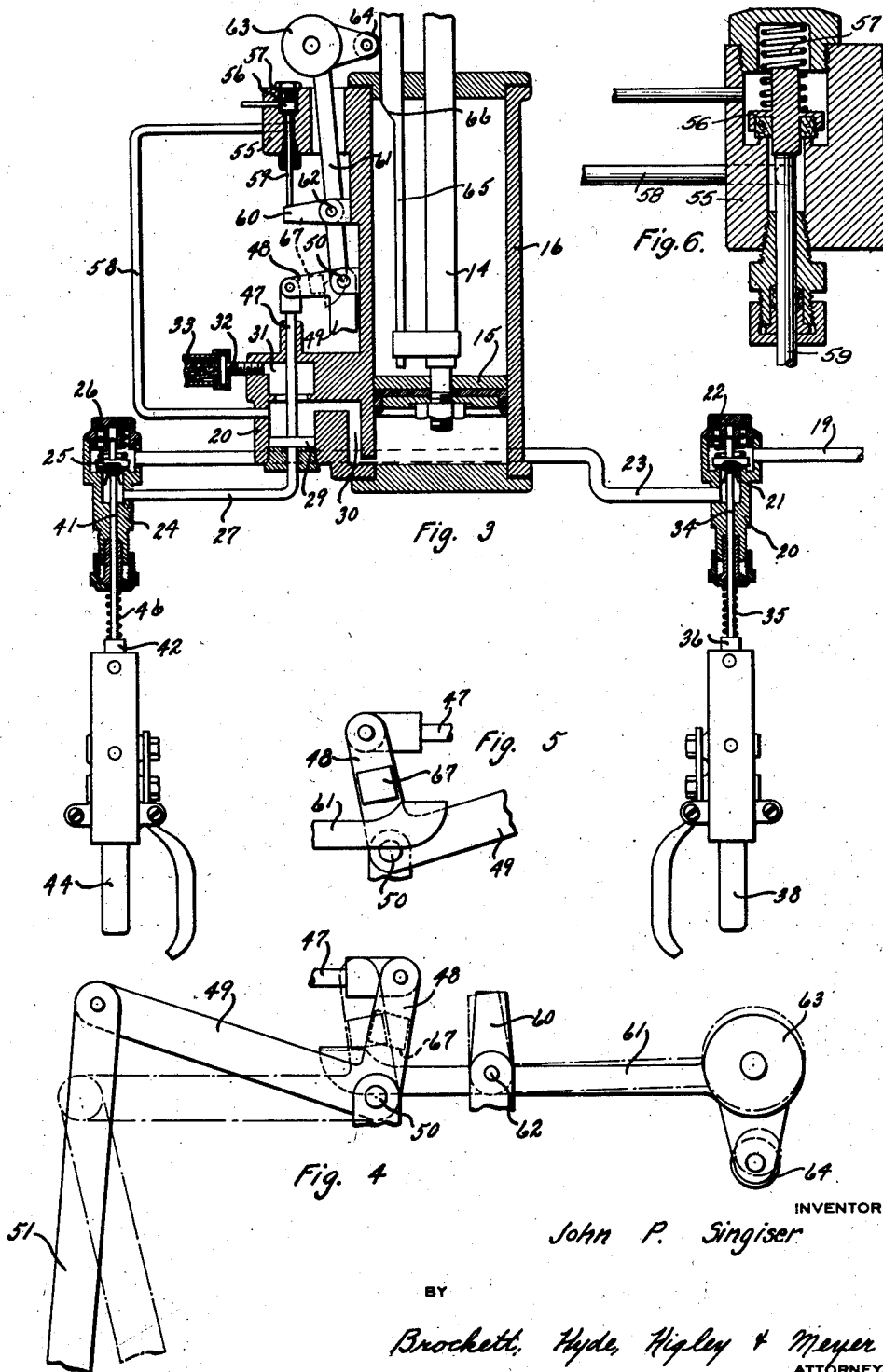
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3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

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PRESSING MACHINE

Application filed April 18, 1930. Serial No. 445,339.

My invention relates to pressing machines and, particularly, to apparatus for controlling the operation thereof.

A pressing machine of the type shown and hereinafter referred to includes a padded buck upon which the work is laid and a headed pressing or ironing member movable into engagement with the buck to exert pressure thereon for pressing the work upon the buck. Various safety arrangements have been devised and used to prevent injury to the operator from initiating the closing of the press while still having the hands upon the buck. Some of these safety devices have embodied the so-called two hand control whereby use of both hands is required to cause closing of the press.

One object of my invention is to provide a two hand control whereby it is necessary for both hands to be used in initiating the closure of the press, one hand, when used alone, having no effect thereon.

Another object of my invention is to provide means for applying pressure and holding the press in closed position after it has been moved thereto, while, at the same time, permitting the operator to release the controls necessarily operated to initiate closing of the press.

Still another object of my invention is to provide a press wherein means are provided for initially closing the press by actuation of a power means, together with means for further actuating the same power means to bring about effective garment pressing pressure between the pressing members after the means for causing initial closing of the press is no longer effective due to release of the control means for causing initial closing of the press.

A further object of my invention is to provide a means for causing opening of the press that is independent of the controls for initiating the closing thereof.

Various other objects of my invention may be seen in the following detailed description and one embodiment thereof may be seen in the accompanying drawings wherein similar characters of reference designate corresponding parts, and wherein:

Fig. 1 is an elevational view showing the right hand side of a pressing machine embodying my invention.

Fig. 2 is a view similar to Fig. 1 but showing the left hand side of the machine.

Fig. 3 is a sectional diagrammatic view showing the operating means for the press.

Fig. 4 is a detailed elevation of the system of levers for controlling the length of time the pressing members are held in closed position or the opening of the press.

Fig. 5 is a detailed view of a part of the control means shown in Fig. 4 but viewing it from the opposite side.

Fig. 6 is a sectional view of the valve for controlling the supply of a supplemental fluid pressure to the operating means for the press.

Referring to the drawings, particularly Figs. 1 and 2 thereof, the type of press preferably employed comprises a frame member 1 having an upwardly extending portion 2 on which is pivotally mounted a head lever or pressure arm 3. A pedestal 4 on the frame 1 supports a lower pressing member or buck 5 that is covered by the usual padding and the head lever or pressure arm 3 carries an upper pressing member 6 to which heat is supplied by steam pipes 7. Springs 8 are connected at their upper ends by means of the swivel block and pin arrangement 9 to one end of the head lever or pressure arm 3, and at their lower ends to the machine frame as at 10. Such springs tend to maintain the head lever or pressure arm 3 in the positions shown in Figs. 1 and 2 and to move the head lever to such position. That is, the springs tend to maintain the pressing members 5 and 6 in separated relation, the distance of separation being such as to permit convenient access to the lower pressing member or buck 5 for the arrangement of the work to be placed thereon.

The means for moving the upper pressing member 6 into engagement with the lower pressing member or buck 5 against the resistance of the springs 8 consists of a fluid pressure operated mechanism adapted to move the head lever or pressure arm 3 through the medium of a toggle mechanism

comprising an upper link member 11 having one end thereof pivotally connected to the head lever or pressure arm 3 and a lower link member 12 having one of its ends pivotally connected to the frame 1, the free ends of the link members 11 and 12 being pivotally connected together as at 13.

The rearward end of a piston rod 14, connected to a piston 15 in a cylinder 16 at one of its ends, is pivotally connected as at 17 to the lower link member 12 a short distance below the pivotal connection 13 between the free ends of the link members 11, 12 that obviously form a toggle mechanism. The purpose of connecting the piston rod 14 at such point is to permit an increased separation between the pressing members 5 and 6 by a shorter throw of the piston and piston rod. The cylinder 16 is mounted on pins 18 and is free to oscillate about such pins.

What has thus far been described is old and well known in the art.

Fluid pressure means embodying either steam or air may be employed for moving the piston 15 in one direction in the cylinder 16 to effect engagement of the pressing members 5 and 6. As shown in Figs. 1 and 3, the means for supplying fluid pressure to the cylinder 16 embodies a main supply pipe 19 which may lead from a suitable source of supply (not shown) and into the supply side of a casing 20 containing a valve 21 which controls the flow of fluid through the casing and is normally held against its seat to prevent flow of fluid by means of a spring 22 bearing against the upper surface of the valve 21. A conduit 23 that may or may not be flexible connects the discharge side of the valve casing 20 to the supply side of a casing 24, substantially the same as the valve casing hereinbefore described, containing a valve 25 normally held against its seat to prevent passage of fluid pressure through the casing by means of a spring 26 bearing against the upper surface of the valve.

The discharge side of the valve casing 24 is connected by means of a conduit 27 to a cylinder 28 containing a combined piston and valve member 29 and such cylinder is connected adjacent its uppermost end to the cylinder 16 by means of a passageway or conduit 30. As shown, when in inoperative position, the space between the larger surface of the piston 15 and the corresponding surface of the cylinder 16 is normally connected by way of the passage or conduit 30 and the passage or conduit 31 with an exhaust conduit 32 embodying a muffler 33, the exhaust conduit being of such size and nature that the pressure between the larger surface of the piston 15 and the corresponding surface of the cylinder 16 may exhaust to the atmosphere with such speed as to permit an exceptionally quick separation of the pressing members by action of the springs 8.

A means for moving the valve 21 away from its seat so that fluid pressure may flow past the valve and through the conduit 23 to the casing 24 embodies a pin 34 that extends within the casing 20 and bears against the under-surface of the valve 21. Such pin is normally held in its retracted position by means of a spring 35 disposed around the pin and having one end thereof abutting against the lower end of the casing and its opposite end abutting against a clevis arrangement 36 rigidly connected to the outermost end of the pin 34. Such clevis arrangement is, in turn, pivotally connected to a downwardly depending post 37 of an operating handle 38 which is pivotally mounted as at 39 to the under side of a work supporting table 40. With this arrangement, depression of the hand lever 38 will cause the pin 34 to be moved inwardly into the casing against the resistance of the spring 35 and the spring 22 to move the valve 21 from its seat, the operating handle 38 being returned to its normal position when relieved of depressing force by the action of such springs in the opposite direction.

Likewise, the means for moving the valve 25 from its seat consists of a pin 41 extending within the case 24 and abutting against the under-surface of the valve 25, the lower end of the pin 41 being rigidly connected to a clevis arrangement 42 which is, in turn, pivotally connected to a depending portion 43 that is integral with a hand lever 44 pivotally connected as at 45 to the under side of the work supporting table 40. Further, this pin 41 is surrounded by a spring 46 disposed between the lower end of the cylinder 24 and the clevis 42 and normally tending to maintain the pin 41 in its retracted position and the hand lever 44 in its normal inoperative position. The operation of this valve is the same as the operation of the valve 21, depression of the hand lever 44 causing forward movement of the pin 41 to move the valve from its seat, the spring 26 tending to return the valve 25 to its seat and, with the aid of the spring 46 tending to return the operating handle 44 to its normal inoperative position.

When both supply valves 21, 25 are opened, as described, pressure flows through pipe 27 to the chamber in cylinder 28, advancing the valve 29 to a position where it closes exhaust to the chamber 31 and permits pressure to flow through the passage 30 to the chamber of the main pressure piston 15, causing the same to move over and close the press. If the hand operators for valves 21 and 25 are immediately released, said valves close and the pressure supplied to the main piston chamber would quickly dissipate past the piston and valves and reduce to a value permitting valve 29 to return and the press to open, unless some means is provided for avoiding such operation.

In accordance with my invention and as

later described, means have been provided for producing pressure between the pressing members 5 and 6 after they have been brought into engagement and the means for bringing the members into engagement has become ineffective, such pressure continuing until released by manually operated mechanism separate and apart from the mechanism for controlling the initial closing of the press. As shown in Fig. 3, the extreme outer end of a piston rod 47 which forms part of the piston 29 is pivotally connected to an arm 48 which forms an integral part of a link 49 pivoted as at 50 to an ear on the cylinder 16 by any suitable form of relatively loose connection to compensate for arcuate movement of the arm 48. A link 51 is pivotally connected to the opposite end of the link 49 and the lower end of this latter link is, in turn, pivotally connected to a foot treadle 52 that is pivotally mounted on the frame of the machine as at 53.

The outer end of the foot treadle 52 is normally maintained in its lowermost position by a tension spring 54 which, through the parts just described, tends to maintain the piston 29 in its rearwardmost position in the cylinder 28, as shown in Fig. 1. With this construction, after the piston 29 has been moved to its forwardmost position to admit fluid pressure to the larger surface of the piston 15 and move the piston forwardly to close the press and the foot treadle 52 has been moved upwardly through the link connections heretofore described, pressure will be supplied to and maintained between the larger surface of the piston 15 and the corresponding surface of the cylinder 16 until the foot treadle 52 is depressed, which will move the piston 29 rearwardly to the position shown in Fig. 3, whereupon the fluid pressure between the larger surface of the piston 15 and the corresponding surface of the cylinder 16 may exhaust to the atmosphere through the conduit 30 and muffler 33. Then, the pressing members may be separated by action of the springs 8 since no resistance to the rearward movement of the piston is present. Thus, a means is provided whereby the pressing members may be initially brought into engagement and then moved to exert pressing pressure and maintained in such pressing position irrespective of whether or not the control means is released and the supply of pressure from the normal control means to the piston is cut off by closure of the valves 21 and 25.

Also, in accordance with my invention, means have been provided for providing a supply of fluid pressure to the larger surface of the piston 15 after the piston has been moved forwardly sufficiently to move the pressing members 5 and 6 into engagement and the original supply has been cut off. Such supplemental fluid pressure insures that

pressing pressure will be exerted on the goods being pressed by the pressing members by the actuation of the same power means effective to cause initial closure of the press. This means for supplying supplemental fluid pressure to the cylinder 16 embodies a valve casing 55 containing a valve 56 which is normally held against its seat and in closed position by a spring 57. Fluid pressure flows to the supply side of the valve casing from any desired source and in any desired manner and, when the valve is open, such fluid pressure flows from the delivery side of the valve casing to the cylinder 28 by way of a conduit 58.

The means for moving the valve 56 to open position embodies a valve stem 59 that bears against but is not attached to the valve 56, the stem having one end thereof bearing against an arm 60 that forms an integral part of a lever 61 and extends laterally therefrom. Such lever 61 is pivotally connected to the cylinder 16 as at 62 and provided on one of its ends with a weight element 63 and a roller 64, which roller is adapted to ride on a guide 65 that is rigidly attached to and reciprocates with the piston rod of the piston 15.

In the operation of this part of the apparatus, it will be seen in Figs. 1 and 2 that the lever 61 is disposed horizontally, whereby the weight element 63 tends to cause the roller 64 to ride on and follow the guide 65, which guide is provided with a cutaway portion 66 extending from a point within its length to one end thereof. Thus, as the piston 15 is moved forwardly in the manner hereinbefore described, the lever 61 will assume a horizontal position upon the roller 64, dropping into and following the cutaway portion 66 of the guide 65 and the arm 60 will be moved towards the valve casing 55 which will move the valve stem 59 into the casing and raise the valve 56 from its seat to permit fluid pressure to flow through the conduit 58, cylinder 28 and conduit 30 to the cylinder 16. This supplemental fluid pressure will cause the desired pressing pressure or "squeeze" between the pressing members by moving the piston 15 farther forwardly. Such supplemental fluid pressure may be in conjunction with the fluid pressure effective to cause initial closing of the press by holding the control handles in their depressed position and the valves 21 and 25 open or such pressure may be effective alone, the control handles being released and the valves 21 and 25 being closed by action of the springs 22 and 26.

The rearwardmost end of the lever 61 normally lies under a lug or extension 67 on the arm 48 that forms a part of the link 49. However, when the piston 29 is in its forwardmost position, the lug or extension 67 is moved away from the end of the lever 61 as

shown in Fig. 5. When the foot treadle 52 is depressed, the lug or extension 67 engages the end of the lever 61 to move the lever about its pivot 62 to the position shown in Figs. 1, 2 and 3, whereupon the spring 57 will be effective to close the valve 56 simultaneously with movement of the piston 29 rearwardly to permit the fluid pressure between the larger surface of the piston 15 and the corresponding surface of the cylinder 16 to exhaust to the atmosphere, to permit the piston to be moved rearwardly by the springs 8 and the pressing members separated by the action of the same springs.

Referring to the drawings and the preceding description, it will be seen that I have provided a device embodying numerous novel and advantageous features. For instance, I have provided a device wherein it is necessary that both hands of the operator be simultaneously employed to cause initial closing or engagement of the pressing members. Together with this, I have provided a mechanism of such nature that when the pressing members are closed and final pressure is applied from the separate source, such final pressure will persist irrespective of whether or not the control means are released and the supply of fluid pressure effective to cause such initial engagement of the pressing members is cut off. Means are also provided for releasing the pressure on the motor means so that the pressing members may be moved out of engagement, this means being separate and apart from the control means for causing initial engagement of the pressing members.

Another advantageous feature of my invention resides in the fact that I have provided means for further actuating the same motor or power means after the control means are operated to cause initial engagement of the pressing members and then released, to bring about the desired pressing pressure between the pressing members which is highly desirable in a machine of this type. Such means for bringing about the desired pressing pressure is made effective automatically by actuation of the motor or power means to bring about initial closing of the press. However, the means for releasing the pressure between the pressing members is separate and apart from the control means for closing initial engagement of the pressing members. By my invention, a pressing device is provided wherein simultaneous operation of the controlling means is necessary in order to bring about initial engagement of the pressing members but such control means may be released after the pressing members have been brought into initial engagement. Then, the desired pressing pressure will be exerted by the pressing members automatically, such final pressing pressure being effective until released by control means separate and apart from the means for controlling the initial

engagement of the pressing members. Still another advantageous feature resides in the fact that I have provided a quick-acting pressing machine wherein the pressing members may be quickly brought into engagement and quickly separated.

I claim:

1. A garment press, comprising relatively movable pressing members, press closing mechanism including a cylinder and piston type operating motor, said cylinder being in communication with a valve chamber and normally with an exhaust port leading therefrom, a normally open valve in said chamber, a fluid supply line leading to said valve chamber and provided with normally closed controlling valves connected in series, said valves being adapted when both are opened to permit flow of fluid pressure to said valve chamber for actuating the valve therein to close the exhaust port and cause operation of the piston to close the press, and a final pressure fluid supply line leading to said valve chamber, a normally closed valve in said final pressure supply line, and means for opening said last named valve by and in timed relation with movement of the press closing mechanism, to supply fluid pressure to said cylinder when the press has been closed.

2. A garment press comprising, relatively movable pressing members, press closing mechanism including a cylinder and piston type operating motor, said cylinder being in communication with a valve chamber and normally with an exhaust port leading therefrom, a valve in said chamber, a fluid supply line leading to said valve chamber and provided with normally closed controlling valves connected in series, said valves being adapted when both are opened to permit flow of fluid pressure to said valve chamber for moving the valve therein to close the exhaust port and cause operation of the motor piston to cause closure of the press, and another valve controlled fluid supply line leading to said valve chamber, a normally closed valve in said supply line, means for opening said last named valve by and in timed relation with movement of the press closing mechanism to supply fluid pressure to the motor cylinder after the press is closed, and operator-operated means for closing said valves to cut off the supply of fluid pressure to said cylinder and place said cylinder in communication with the exhaust port.

3. A garment press, comprising relatively movable pressing members, a cylinder and piston type operating motor therefor, said cylinder being in communication with a valve chamber and normally with an exhaust port leading therefrom, a valve in said chamber, a fluid supply line leading to said valve chamber and under the control of normally closed valves connected in series in said supply line, said valves being adapted

when opened to permit flow of fluid pressure to said valve chamber for moving the valve therein to close the exhaust port and open communication between the fluid supply line and said cylinder, whereby the piston of the motor means may be actuated to cause closure of the press, another fluid supply line leading to said valve chamber, a normally closed valve in said supply line, and mechanism interconnecting said last named valve and said operating motor, whereby said valve is opened by and in timed relation with movement of the operating motor.

In testimony whereof I hereby affix my signature.

JOHN P. SINGISER.