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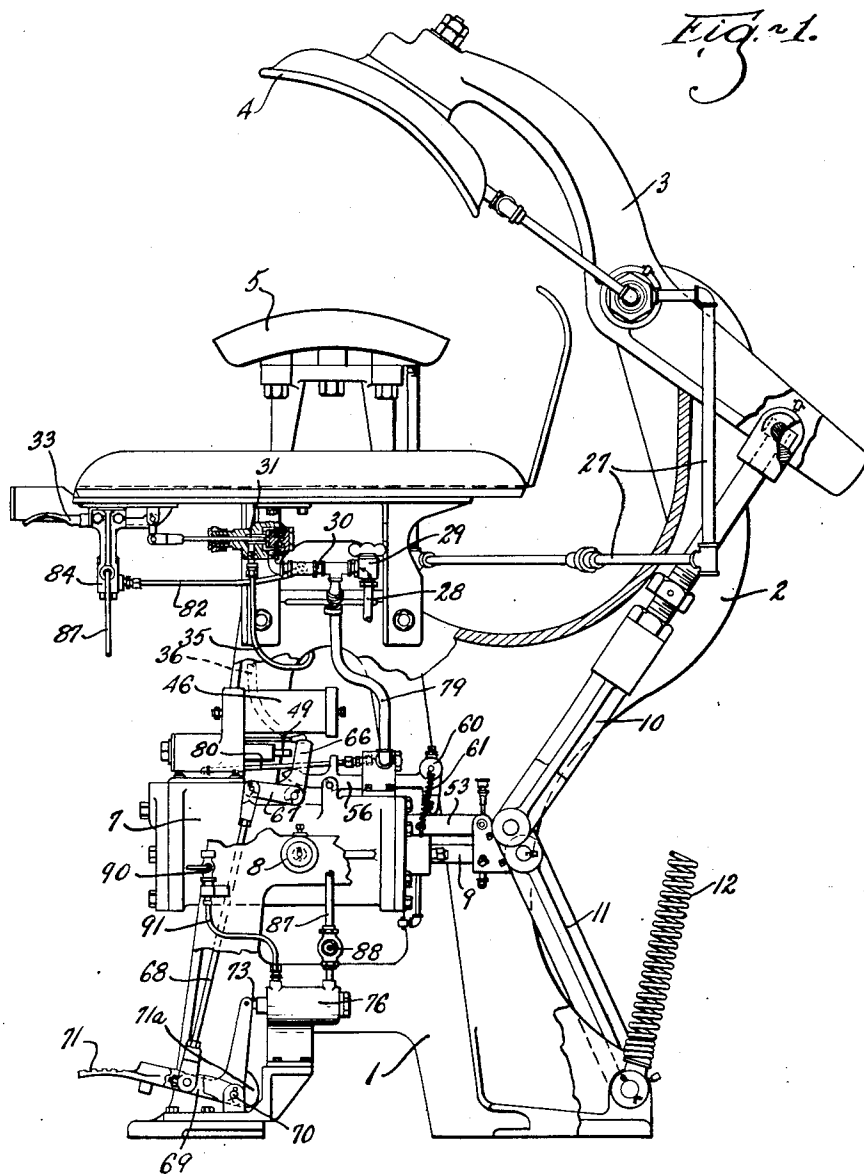
J. P. SINGISER

2,006,751

PRESSING MACHINE

Filed Nov. 10, 1932

4 Sheets-Sheet 1



INVENTOR

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BY

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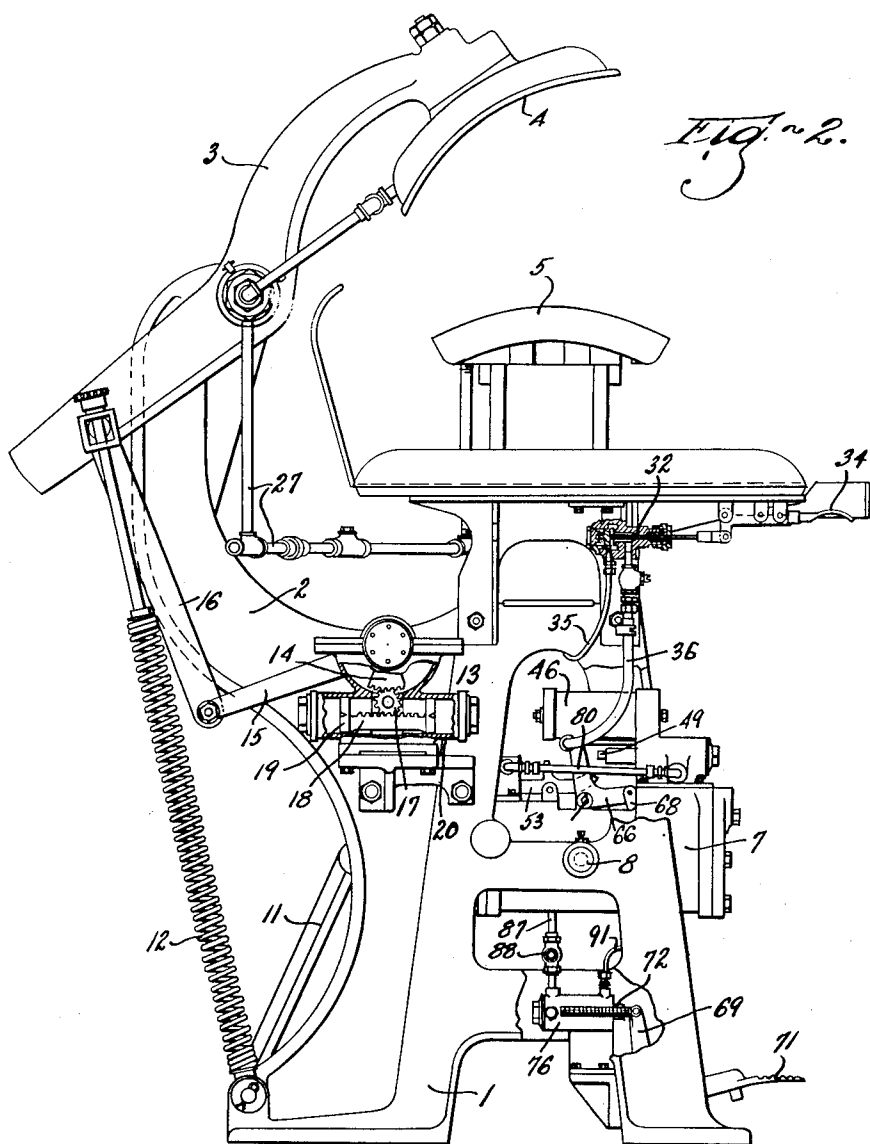
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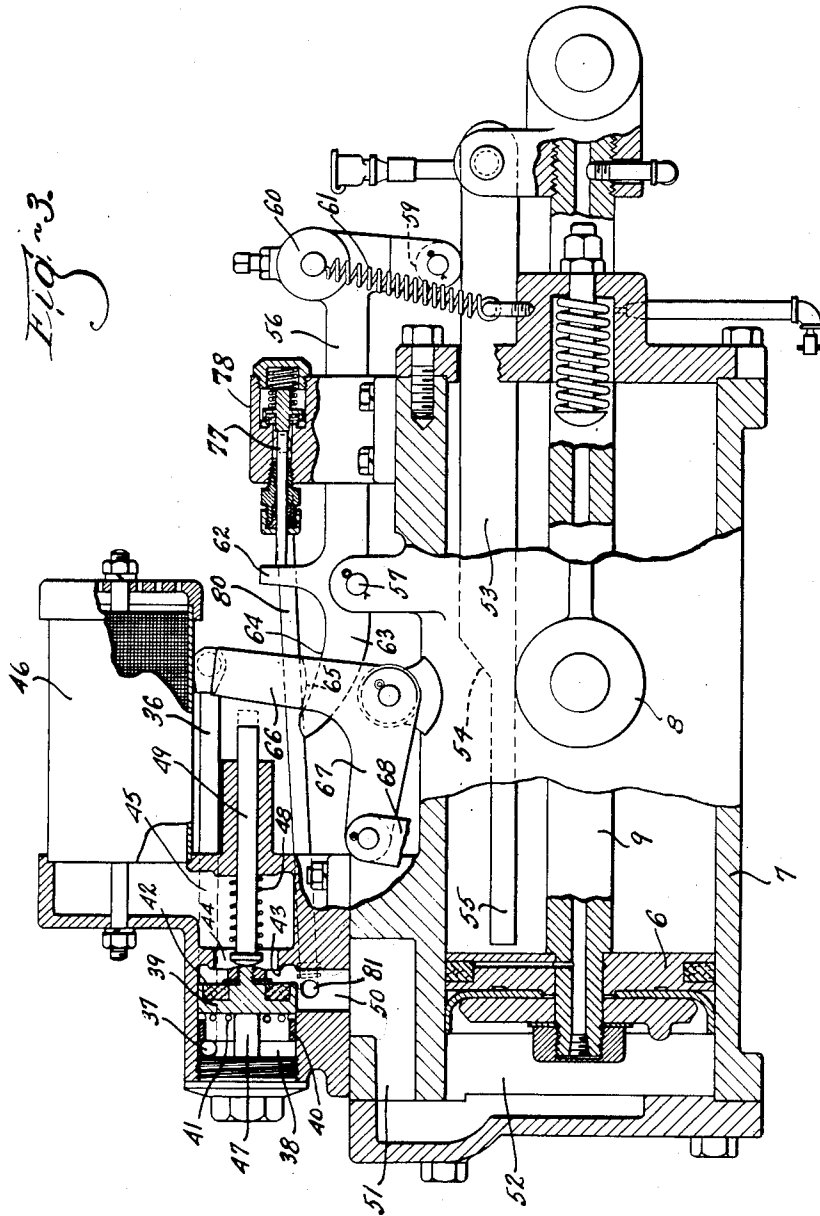
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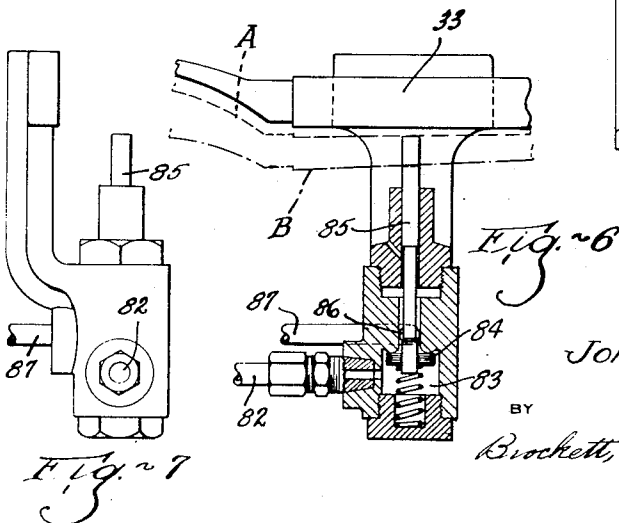
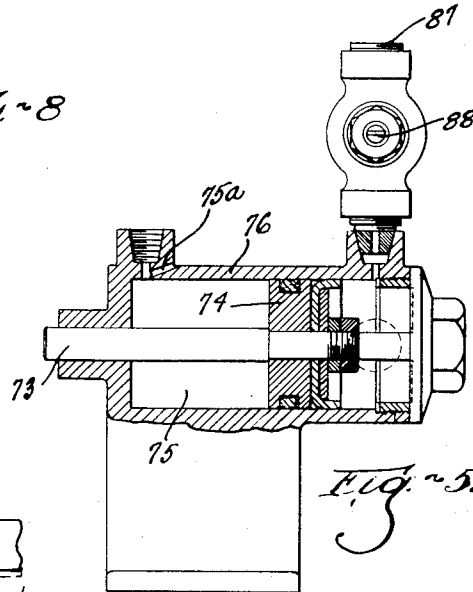
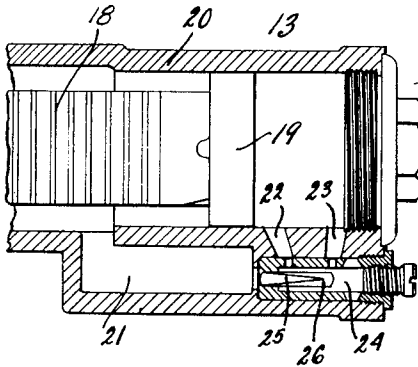
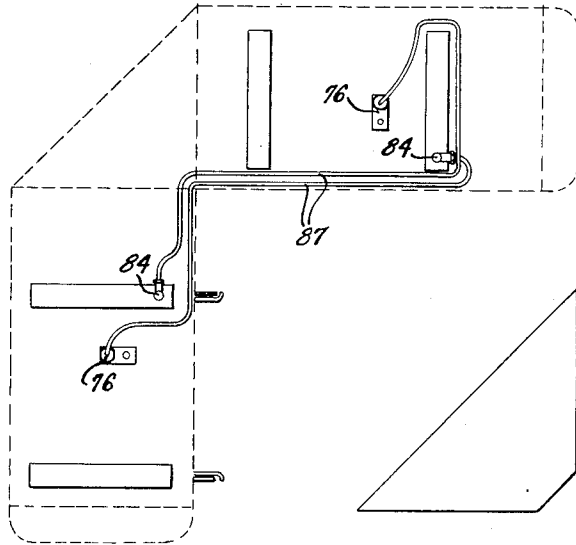
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UNITED STATES PATENT OFFICE

2,006,751

PRESSING MACHINE

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Application November 10, 1932, Serial No. 642,053

10 Claims. (Cl. 68—9)

This invention relates to pressing machines, such as are used for pressing garments, clothing, laundry work or like articles.

One object of the invention is to provide an improved arrangement of such presses in tandem or associated relation, in such manner that two interrelated presses may be operated most efficiently, with a possibility of release of one press by controlling means operated at the other, and the release of each press being accomplished by power means effective upon a treadle which is usable for release purposes when it is desired to operate one press without reference to the other.

A further object of the invention is to improve various details of the press, such as the form and arrangement of the master control valve of piston form and the ports and passages supplying fluid pressure for the final pressure operation, as well as the connection of such master control valve to the releasing devices, all in a manner to simplify and improve the operation, as will more fully appear.

A further object of the invention is to provide improved check means for controlling to and fro motion of the swinging pressing head, in a manner to enable the head to move quickly to its new position, with its motion at first rapid and then retarded, to avoid shock and jar, all by improved mechanism for the purpose.

Further objects of the invention are in part obvious and in part will appear more in detail hereinafter.

In the drawings, which represent one suitable embodiment of the invention, Fig. 1 is a side elevation, looking at the right-hand side of the press, parts being broken out and in section to expose interior parts; Fig. 2 is a similar side elevation taken from the left-hand side of the press; Fig. 3 is a detailed longitudinal sectional elevation, illustrating the main power piston and some of its controlling devices; Fig. 4 is a diagrammatic plan view, illustrating the associated relation between the control devices of two presses in tandem; Fig. 5 is a detailed sectional elevation through the tandem release motor; Fig. 6 is a detailed sectional elevation on the line 6—6, Fig. 7, illustrating the tandem release control valve; Fig. 7 is a side elevation thereof; and Fig. 8 is a detailed sectional elevation illustrating a checking device.

The press shown in the drawings, as to many features, is of ordinary form, so that brief description thereof is sufficient. It embodies a suitable frame 1 on a rear post 2 of which is pivoted a lever 3, the forward arm of which supports a

head or upper pressing member 4 adapted, by swinging motion of the lever, to be moved into pressing engagement with a stationary lower pressing member or bed 5 supported on the frame. Swinging motion of said lever is produced by the effect of a main piston 6, Fig. 3, within a cylinder 7, the cylinder being mounted to swing in the frame on trunnions 8, and the rod 9 of said piston being connected to the knuckle of a pair of upper and lower toggle members 10, 11. Motion of the piston to the right in Fig. 1 straightens the toggles, closes the head against the bed and finally, when the fluid pressure is increased to a proper value, produces final pressure upon the work. Upon release of the fluid pressure, as will appear, the press is opened by the effect of counterweights or the springs 12.

Motion of the head lever to and fro may be regulated or controlled by suitable checking means, such as the means generally indicated at 13 and comprising a gear segment 14 rotatable within a casing and actuated by an arm 15 connected by a link 16 to the rear arm of the head lever. The segment 14 rotates a small pinion 17, the teeth of which are effective upon rack teeth 18 on a double-headed piston 19 travelling to and fro in a cylinder 20. Referring to Fig. 8, either or both ends of the cylinder may be provided with throttling means for controlling the flow of the fluid within the cylinder around the piston head, such as a passage 21 from an intermediate portion of the cylinder to relief ports 22, 23, which at their inner ends open into the cylinder chamber, communication between said ports and the passage 21 being controlled by an adjustable threaded plug 24. The inner end of said plug is bevelled off or grooved as at 25 and its shank has a reduced portion 26. By adjustment of the plug in or out, it may be used more or less like a needle valve to control the size of the opening between the passage 21 and port 22, as well as to more or less lap the opening to the port 23. The first adjustment, the longitudinal adjustment in or out, determines the proper rate of speed for the first and major part of the stroke and the second adjustment, the rotative adjustment with more or less lapping of port 23, determines the rate of speed at the very end of the stroke, and by proper adjustments the head may be permitted to move more or less rapidly to a point near its final position, to be then checked at any rate desirable. This is true of both the opening and closing movements.

Either or both of the pressing members 4, 5, may be heated in any suitable manner, such as steam

supplied thereto through the pipe system conventionally illustrated at 27.

Fluid pressure for actuating the main piston 6 may be supplied from any suitable source and be of any type, such as steam or air. Such fluid pressure is supplied and its effects are controlled as follows:

The main supply of fluid pressure is delivered from any suitable source through a main supply valve (not shown) in pipe 28, which valve is opened when the press is to be operated. From said valve it flows by way of air filter 29 and pipe 30 to two normally closed but manually operable inlet valves which are in series with each other, such valves being indicated at 31, 32. These valves and their operating means are in general of the same form and construction illustrated in my prior patent for a Pressing machine, No. 1,890,341, granted December 6, 1932, to which reference may be had for a more complete description and illustration if necessary or desirable. For the purposes of the present application it is sufficient to say that the right-hand valve 31 is controlled by a manually operable device, such as the lever 33, and the left-hand valve 32 by a similar lever 34. The two valves and their operating levers are located at widely separated points, such as one at the right and one at the left of the press, and said two valves communicate by the pipe 35. When both valves are open, pressure flows from the supply pipe through valve 31, thence through pipe 35 and through valve 32, and finally by way of pipe 36 to a port 37 leading into a chamber 38 in which reciprocates a combined piston and master control valve member 39, shown in Fig. 3. Said piston has a skirt 40 provided with an annular series of perforations 41 on its pressure receiving face. On its opposite face it is provided with yieldable means, such as the packing 42, designed to seat against a valve seat 43 around an opening 44 communicating with a passage 45 leading through a muffler 46 to atmosphere. When fully retracted the piston lies in the position shown in Fig. 3, against the end of a stop pin 47, to which it is held by the pressure of a compression spring 48 surrounding and effective upon a pin 49, and the port 37 is uncovered. In the same position the piston laps the port of a channel 50 communicating by a passage 51 with the chamber 52 within the main cylinder. When pressure flows to the port 37 it enters chamber 38, moves over the piston 39 and finally uncovers the channel 50 and closes the exhaust opening at 44. Pressure consequently flows through channel 50 to the chamber 52 and advances the main piston 6 and consequently moves the head lever 3 to closed position of the press.

The rod 9 of piston 6 has attached thereto a cam member 53, which is in the form of a bar having an inclined cam portion 54 and a reduced end 55. It lies parallel to and moves back and forth with the piston 6 and its piston rod 9. Co-operating with said cam is a lever 56 pivoted at 57 and provided with a roller 59 travelling on the bar 53 and being held thereon by the effect of a counterweight 60 and/or a spring 61. Said lever is provided with a lateral arm 62 and an extension 63 having a curved upper face 64 which cooperates with the shoulder 65 of a bell crank lever 66, the shouldered arm of which lies opposite the end of pin 49 while its other arm 67 is connected by a link 68 to suitable operating means, such as to one arm of a bell crank lever 69, the other arm of which lies opposite to and is held, by a tension spring 72, against a piston rod 73 (see Figs. 2 and

5) connected to a piston 74 travelling within the chamber 75 of a cylinder 76 carried by the frame. Also pivoted at 70 is a treadle 71, the rear upper extension 71a of which lies behind the lever 69.

Arm 62 of lever 56 lies opposite the end of the stem 77 of a normally closed yielding final pressure valve member 78, the supply side of which communicates by a pipe 79, Fig. 1, with any suitable source of pressure, such as the main supply pipe 28. The outlet side of valve 78 communicates by a pipe 80 with a port 81 opening into the chamber 52 at some point between said chamber and the valve 39, such as at a suitable point in the channel 50.

When the press has been closed by simultaneous opening of the two supply valves in series, 31, 32, so that piston valve 39 has moved over to connect the supply port 37 to chamber 52, the rod 53 advances with the piston 6 until finally the roller 59 travels down the cam 54 and swings lever 56 in the clockwise direction Fig. 3, thereby causing arm 62 to open the final pressure valve 78 and permit pressure to flow directly from the source by way of pipe 80 to the port 81, which is now on the supply side of the piston 39. As a result, the pressure originally coming by way of the supply valves 31, 32, is no longer necessary for the production of pressure, but is replaced by the effect of direct pressure coming from the source by way of the final pressure valve. It is possible therefore for the operator to simultaneously close both of the supply valves 31, 32, and, after the press has been closed to a safe position where it is impossible to get the hands or arms between the pressing members, take his hands off from the manual valve control levers 33, 34, and pressure will flow directly from the source by way of the final pressure valve and port 81 to the chamber 52, in which the pressure builds up to the full pressure of the supply and to a value sufficient for producing effective pressing upon the work. The pressure of the supply, coming through port 81 is also effective through the openings 41 on the piston valve 39, holding it to its seat at 43, so that the exhaust opening is held closed. The end of pin 49 lies in the dotted line position, Fig. 3. The parts remain in this condition until release is accomplished in the manner now to be described.

During the closing and final pressure operations, piston 39 has moved the pin 49 to the right in Fig. 3. To release the press the operator depresses the treadle, the rear extension 71a thereof turning the bell crank lever 69 and causing lever 66 to swing counter-clockwise in Fig. 3, first engaging lever 63 at 64 and depressing it to permit the valve 78 to close, and then pushing over the pin 49 to the left, lifting valve 39 from its seat and permitting exhaust of chamber 52 through the opening 44 and muffler. As a result, the head lever is moved to open position and the main piston 6 returns to its initial position shown in Fig. 3.

There is no physical connection between pin 49 and lever 66. The end of the pin simply lies opposite the edge of the lever, as shown in Fig. 3. Therefore, the normal position of lever 66 and foot treadle 69 is as shown in Figs. 3 and 1, in which they are held by the tension spring 72, Fig. 2, and when pin 49 has been moved to the left to crack open the valve 39 it returns to its initial or full open position very suddenly with a quick evacuation of pressure and quick opening of the press, but governed by the checking mechanism before referred to. The final pressure

supply also is delivered to the chamber 52 at a point between said chamber and the valve 39 and therefore enables pressure supply to and evacuation of pressure from said chamber to be accomplished very rapidly.

When two presses are connected in tandem or for conjoint operation, means is provided at each press for controlling the flow of pressure to a motive device at the other press for actuating the releasing device thereof. In the arrangement shown, fluid pressure supply for this purpose comes by way of a pipe 82, Fig. 1, from the main supply pipe 30, the pipe 82 communicating with the chamber 83, Fig. 6, of a normally closed valve 84, beyond which a reduced portion of the valve stem 85 lies in a passage having a port 86 communicating by a pipe 87 with the chamber 75 of the motor cylinder at the other press, and in said chamber is the piston 74, the rod 73 of which is arranged to engage and operate the arm 71 of its foot treadle 69. An adjustable needle valve conventionally shown at 88 controls or limits the pressure admitted to the chamber 75. Chamber 75 is vented through an open port 75a. Rod 85 of the tandem release valve is provided with any suitable actuating means, such as a separate button or lever. A convenient arrangement is to locate the tandem release valve so that the end of its rod 85 lies beneath one of the levers for actuating the supply valves 31, 32, but an extra distance beneath said lever. In other words, said rod may be located, as shown in Fig. 6, beneath the right-hand valve lever 33, which is moved down to the dotted line position at A for simple opening of the supply valve, but which, when release operation is desired, is moved down to a second position B, shown in dot-dash lines Fig. 6, thereby depressing and opening the valve 84.

Each press is closed by simultaneous opening of its two supply valves with an initial closing operation by motion of the main piston 6 as the result of fluid supplied to it from the two supply valves, followed by full final pressure coming directly from the supply by way of the final pressure valve 78. At the first of a pair of presses the right-hand valve control lever 33 is pressed down to its limit at B Fig. 6, and the corresponding tandem release valve 84 is opened, causing pressure to flow from the supply by way of valve 84 to the cylinder chamber 75 at the other press, moving over its piston 74 and by power effect swinging over its bell crank lever 69 and causing release of the mechanism at the other press in the manner before described. The second press then opens and when the operator reaches it the work is exposed ready for removal and replacement by other work. This duly accomplished, the operator closes the second press and before he leaves it depresses to its full extent its right-hand valve lever 33, thereby producing release action at the first press, etc. Either press may be opened at any time by depressing its own treadle 71.

90 indicates an ordinary lubricating cup connected by pipe 91 to the chamber 75, for supplying lubricant to the piston therein.

What I claim is:

1. The combination of a plurality of pressing machines, each of said machines including a pair of cooperating, relatively movable pressing members, power means for effecting such relative movement of said pressing members, control mechanism for said power means including two manually operable machine closing devices operation of which effects engagement of said press-

ing members and an operator operable machine opening device operation of which effects disengagement of said pressing members, and a power actuator for said machine opening device; with means operatively connecting one of the machine closing devices of one machine with the power actuator of a second machine, whereby actuation of the power actuator of said second machine, with consequent operation of the machine opening device and disengagement of the pressing members thereof, can be effected by operation of one of the machine closing devices of said first machine.

2. The combination of a plurality of pressing machines, each of said machines including a pair of cooperating, relatively movable pressing members, power means for effecting such relative movement of said pressing members, control mechanism for said power means including two manually operable machine closing devices operation of which effects engagement of said pressing members and an operator operable machine opening device operation of which effects disengagement of said pressing members, and a power actuator for said operator operable machine opening device; with means operatively connecting one of the machine closing devices of one machine with the power actuator of a second machine, in such a manner that movement to one position of said last mentioned machine closing device operates said device and movement to another position of said last mentioned machine closing device operates the power actuator of said second machine, with consequent operation of the machine opening device of said second machine and disengagement of the pressing members thereof.

3. The combination of a plurality of pressing machines, each of said machines including a pair of cooperating, relatively movable pressing members, power means for effecting such relative movement of said pressing members, control mechanism for said power means including two manually operable machine closing devices operation of which effects engagement of said pressing members and an operator operable machine opening device operation of which effects disengagement of said pressing members, and a fluid pressure actuator for said operator operable machine opening device; with means operatively connecting one of the machine closing devices of one machine with the fluid pressure actuator of a second machine, in such a manner that movement to one position of said last mentioned machine closing device operates said device and movement to another position of said last mentioned machine closing device operates the fluid pressure actuator of said second machine, with consequent operation of the machine opening device of said second machine and disengagement of the pressing members thereof.

4. The combination of a plurality of pressing machines, each of said machines including a pair of cooperating, relatively movable pressing members, power means for effecting such relative movement of said pressing members, control mechanism for said power means including two machine closing devices requiring individual hand operation to effect engagement of said pressing members and a foot operable machine opening device, operation of which effects disengagement of said pressing members, and a power actuator for said foot operable machine opening device; with means operatively connecting one of the machine closing hand operable devices of one machine

with the power actuator of a second machine, whereby actuation of the power actuator of said second machine, with consequent operation of the machine opening device thereof and disengagement of the pressing members thereof, can be effected by operation of one of the manually operable machine closing devices of said first machine.

5. The combination of a plurality of pressing machines, each of said machines including a pair of cooperating, relatively movable pressing members, fluid pressure means for effecting such relative movement of said pressing members, control mechanism for said fluid pressure means including a pair of inlet valves and an outlet valve, an operator operable actuating member for each of said valves, and means for operating the actuating member of said outlet valve; with means operatively connecting one of the inlet valve actuating members of one machine with the means for operating the outlet valve actuating member of a second machine, in such manner that movement to one position of said last mentioned inlet valve actuating member opens said inlet valve and movement to another position of said last mentioned inlet valve actuating member actuates the means for operating the outlet valve actuating member of said second machine to effect opening of said outlet valve of said second machine and disengagement of the pressing members thereof.

6. The combination of a plurality of pressing machines, each of said machines including a pair of cooperating, relatively movable pressing members, fluid pressure means for effecting such relative movement of said pressing members, control mechanism for said fluid pressure means including a pair of inlet valves and an outlet valve, an operator operable actuating member for each of said valves, and a power actuator for the actuating member of said outlet valve; with means operatively connecting one of the inlet valve actuating members of one machine with the power actuator of a second machine, whereby actuation of the power actuator of said second machine, with consequent operation of the outlet valve actuating member thereof and disengagement of the pressing members thereof, can be effected by operation of said last mentioned inlet valve actuating member of said first machine.

7. The combination of a plurality of pressing machines, each of said machines including a pair of cooperating, relatively movable pressing members, power means for effecting such relative movement of said pressing members, control mechanism for said power means including two inlet valves connected in series, an outlet valve, and individual operating means therefor, said parts being so constructed and arranged that operator actuation of both said inlet valve operating means effects engagement of said pressing members and operator actuation of said outlet valve operating means effects disengagement of said pressing members, and a fluid pressure actuator for said outlet valve operating means; with valve means arranged for operation by one of said valve operating means at one machine for controlling the supply of fluid pressure to the fluid pressure actuator of a second machine, whereby actuation of the fluid pressure actuator of said second machine, with consequent disengagement of the pressing members there-

of, can be effected by operation of said valve operating means at said first machine.

8. The combination of a plurality of pressing machines, each of said machines including a pair of cooperating, relatively movable pressing members, power means for effecting such relative movement of said pressing members, control mechanism for said power means including two inlet valves connected in series, an outlet valve, and individual operating means therefor, said parts being so constructed and arranged that operator actuation of both said inlet valve operating means effects engagement of said pressing members and operator actuation of said outlet valve operating means effects disengagement of said pressing members, and a fluid pressure actuator for said outlet valve operating means; with valve means at one machine operatively associated with and actuated by operation of one of the inlet valve operating means of that machine, for controlling the supply of fluid pressure to the fluid pressure actuator of a second machine, whereby actuation of the fluid pressure actuator of said second machine, with consequent disengagement of the pressing members thereof, can be effected by operation of one of said inlet valve operating means of said first machine.

9. The combination of a plurality of pressing machines, each of said machines including a pair of cooperating, relatively movable pressing members, power means for effecting such relative movement of said pressing members, control mechanism for said power means including two inlet valves connected in series, an outlet valve, and individual operating means therefor, said parts being so constructed and arranged that operator actuation of both said inlet valve operating means effects engagement of said pressing members and operator actuation of said outlet valve operating means effects disengagement of said pressing members, and a fluid pressure actuator for said outlet valve operating means; with valve means at one machine operatively associated with and actuated by valve opening operation of one of the inlet valve operating means of that machine, for controlling the supply of fluid pressure to the fluid pressure actuator of a second machine, whereby actuation of the fluid pressure actuator of said second machine, with consequent disengagement of the pressing members thereof, can be effected by operation of one of said inlet valve operating means of said first machine.

10. In a pressing machine, a pair of cooperating, relatively movable pressing members, a piston and cylinder structure for effecting such relative movement of said pressing members, a valve casing having a chamber provided with a fluid pressure inlet and a fluid pressure outlet, fluid pressure conduit means connecting said chamber and said piston and cylinder structure, a skirted valve in said chamber for controlling said outlet and movable to closing position relative thereto by fluid pressure entering said chamber through the inlet thereof, and means for supplying fluid pressure directly to said conduit means after said valve has been moved to such closing position, the skirt of said valve overlying said conduit means when said valve is in closing position and being perforated to permit a sufficient amount of fluid pressure to enter said chamber from said conduit means to maintain said valve in such closing position.

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