July 6, 1943. E. DAVIS 2,323,457

TWO-HAND CONTROL FOR PRESSES

Filed Jan. 5, 1942 4 Sheets-Sheet 1

FIG. 1

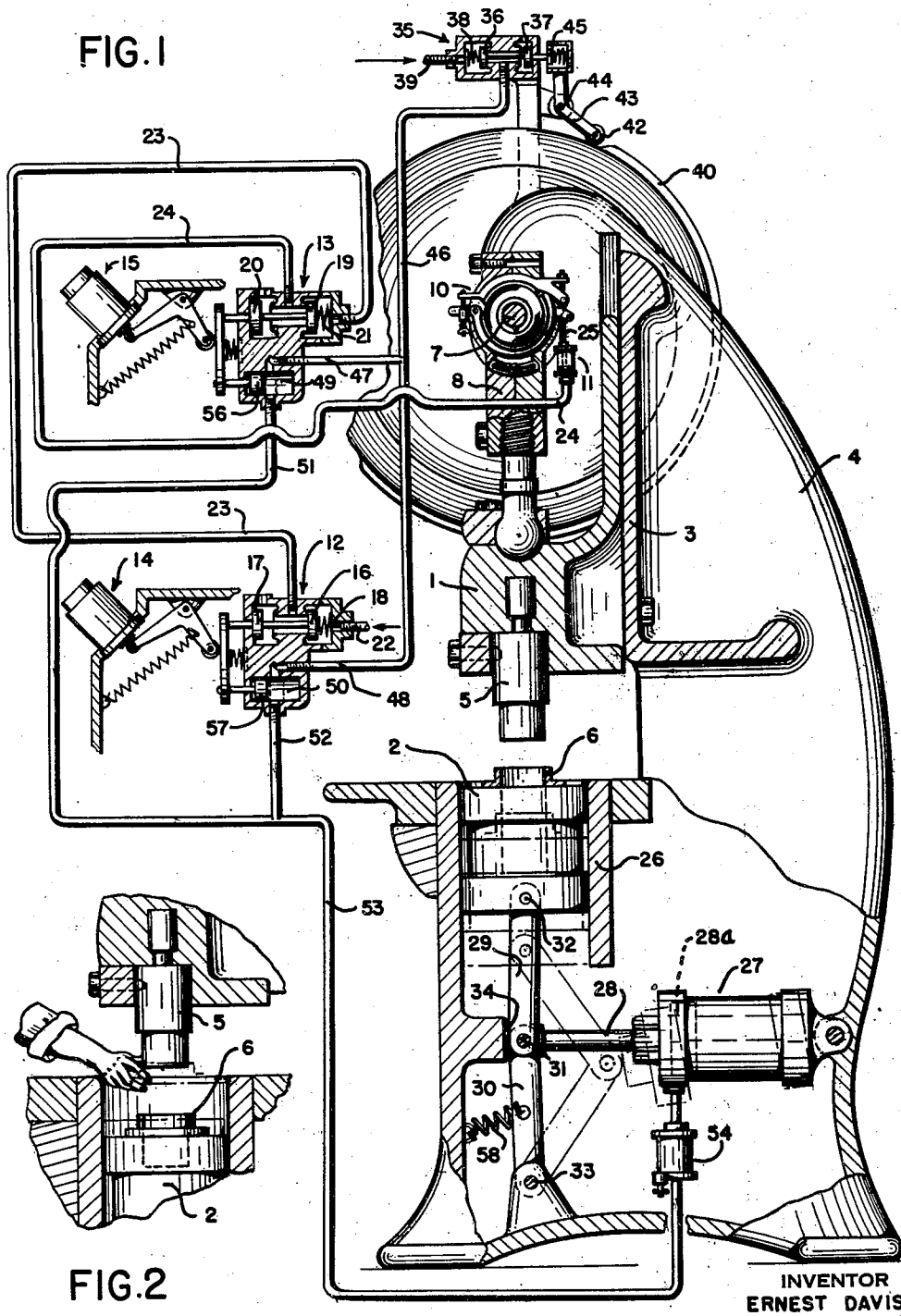


FIG. 2

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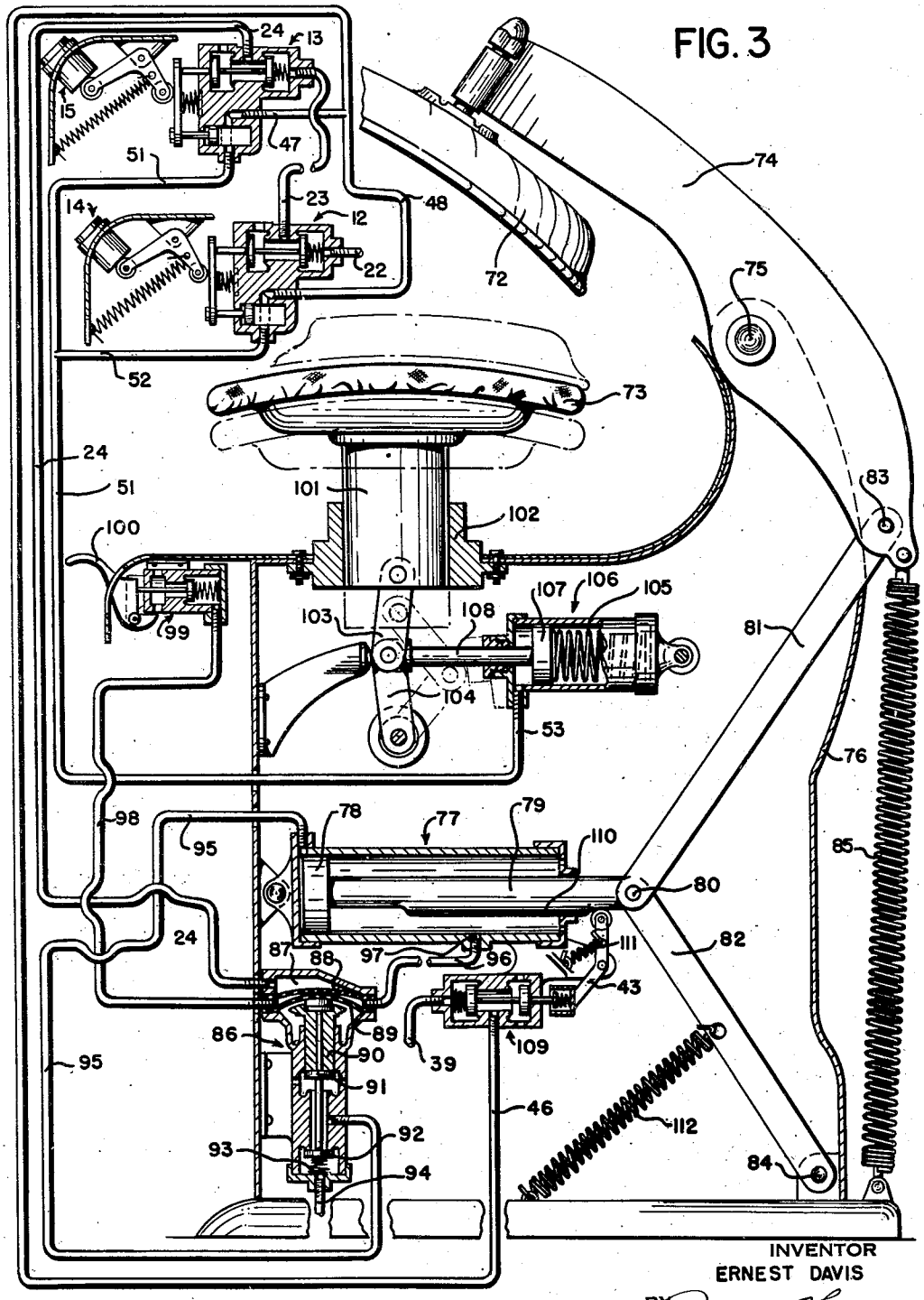
ATTY.

July 6, 1943. E. DAVIS 2,323,457

TWO-HAND CONTROL FOR PRESSES

Filed Jan. 5, 1942 4 Sheets-Sheet 2

FIG. 3



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July 6, 1943. E. DAVIS 2,323,457

TWO-HAND CONTROL FOR PRESSES

Filed Jan. 5, 1942 4 Sheets-Sheet 3

FIG. 4

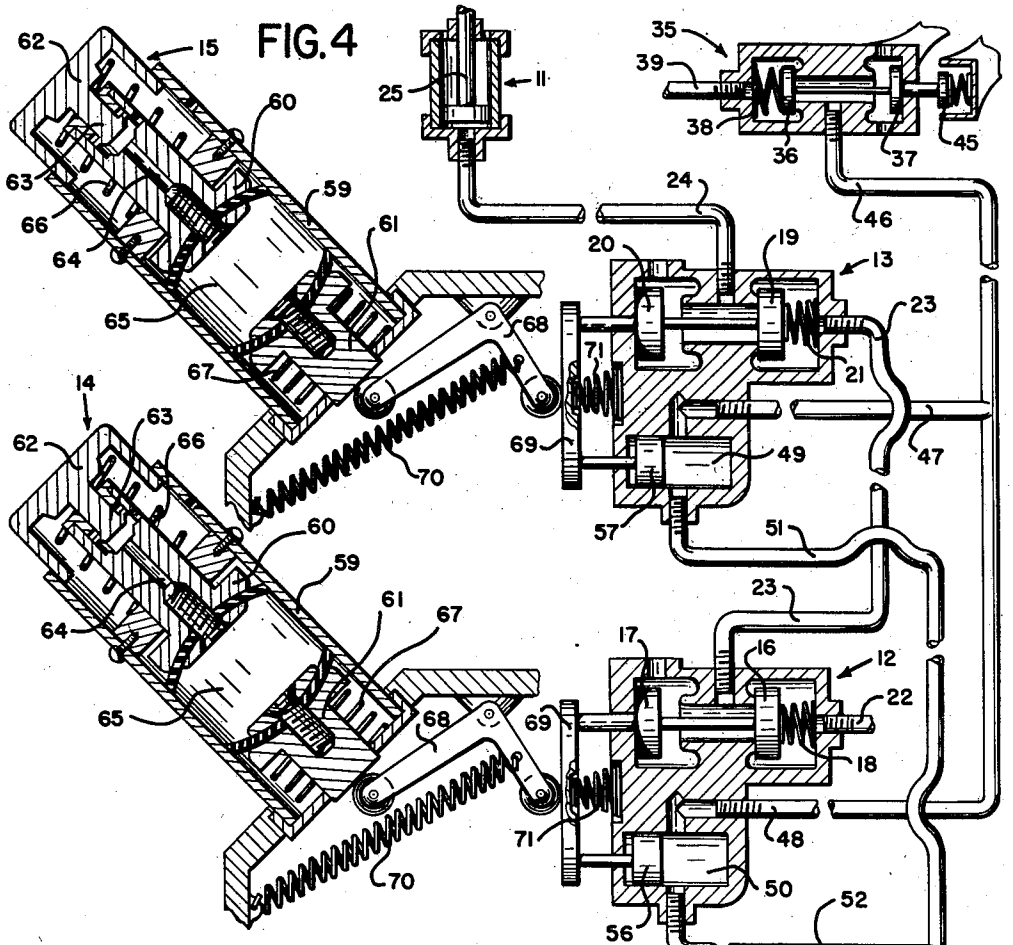
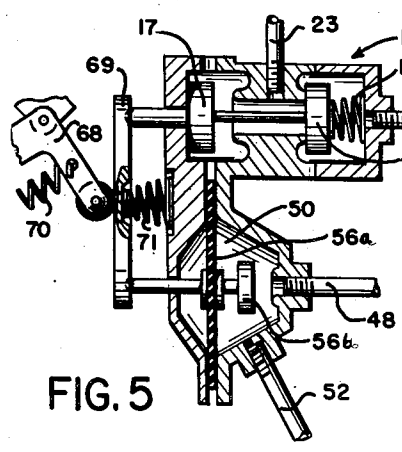


FIG. 5



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July 6, 1943. E. DAVIS 2,323,457

TWO-HAND CONTROL FOR PRESSES

Filed Jan. 5, 1942 4 Sheets-Sheet 4

FIG. 6

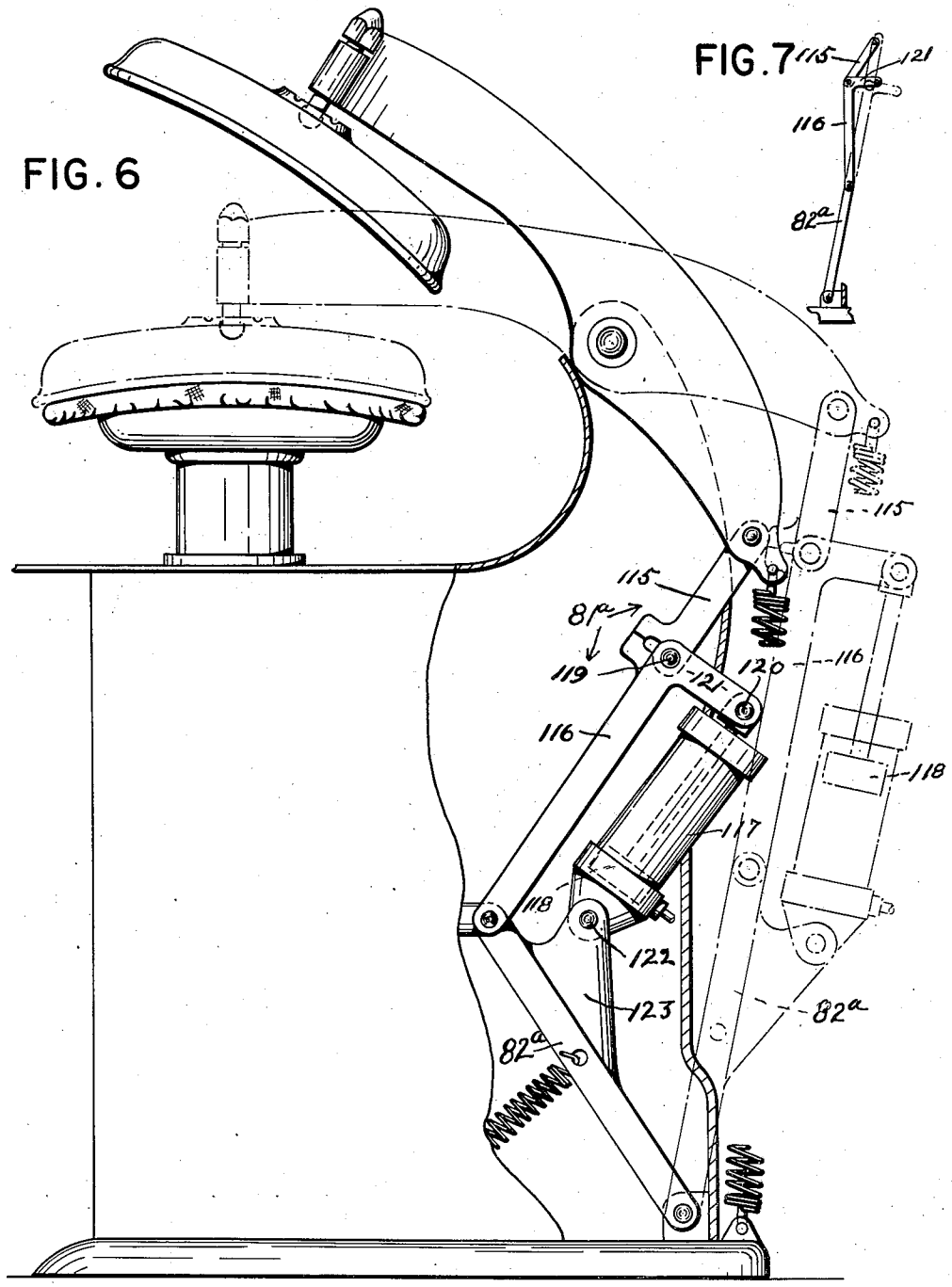


FIG. 7

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Patented July 6, 1943 2,323,457

UNITED STATES PATENT OFFICE

2,323,457

TWO HAND CONTROL FOR PRESSES

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Application January 5, 1942, Serial No. 425,675

12 Claims. (Cl. 192—131)

This invention relates to two hand controls for presses, which include coacting pressing elements, as upper and lower pressing elements, one of which, as the lower pressing element, is stationary in the normal operation of the press, and the other has an operating movement into and out of coaction with the normally stationary element to close and open the press, and has for its object a two hand control mechanism, both of which must be operated to effect the closing of the press, and mechanism operated in conjunction with the two hand control and with the operating movement of the press to effect the retracting of one of the elements relative to the closing movement and during the closing operation, when either of the manuals are released at an intermediate portion of the closing movement of the press, or released before the upper pressing element has moved in its operating movement a predetermined distance toward the lower element, so that the retractable element is retracted out of operative position, unless both manuals are held operated until the press is closed or nearly closed to a safety position, or to such an extent that the operator can not get his hands between said elements or so that both hands must be kept occupied in operating the manuals until the press is closed to safety position.

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 an elevation, partly diagrammatic, of the invention applied to one form of press, as a punch press, in which the cycle of movement is a continuous opening and closing movement without the press remaining in closed position.

Figure 2 is a fragmentary view illustrating the retracting of the lower pressing element in the event the operator releases one of the manuals before the upper element or head coacts with the lower pressing element.

Figure 3 is a view similar to Figure 1 of a press, the press remaining closed for an indefinite period before opening, as a garment and laundry press, such a press having releasable holding means which holds the press closed.

Figure 4 is a diagrammatic view of the power system and control means.

Figure 5 is a detail view illustrating a modified form of the holding means used in the garment and laundry press.

Figure 6 is a side elevation, partly broken away, of a press embodying another modified form in which the retractable element is the one actuated during the closing operation.

Figure 7 is a diagrammatic fragmentary view of the mechanism shown in Figure 6 showing the retracting mechanism as operated.

The invention comprises, generally, independently operable manuals, both of which must be operated jointly or in unison to control the actuation of the power actuating means for closing the press, power means for retracting the retractable element, and means controlled by the release of either manual while the press is closing for energizing the motor of the retracting means for the retractable element.

In Figure 1, the invention is shown as applied to a press in which the movable element or head moves into and out of coaction with the lower pressing element in one operation, without remaining closed, or a machine of the punch press type. In Figures 3 and 6, the invention is shown as applied to a machine, as a garment and laundry press, where the head or movable element remains in closed position for a period of time before being opened, and is opened by operating a release control member either by hand or by a timer. The release member is here shown as operated by hand.

In Figure 1, 1 designates the upper or movable pressing element or head, and 2 the lower retractable pressing element, the head 1 being movable vertically along a suitable guide 3 on the frame 4 of the machine and carrying a die 5 for coacting with the complemental die 6 on the retractable or lower pressing element 2. In machines of the punch press type, the head 1 is actuated by a shaft 7 suitably mounted in the frame of the machine and having an eccentric for actuating a connecting rod 8 which is connected to the head 1. The shaft 7 is connected to and disconnected from a power shaft, not shown, axially alined with the shaft 7 through a clutch device operable to clutch and unclutch the shaft 7 from the power shaft. When clutched thereto, the shaft 7 makes one complete revolution and hence one complete reciprocation of the head 1, and this clutch heretofore has been engaged either by a manual member or lever, or by a foot lever and disengaged automatically at the end of each revolution of the shaft 7, the clutch being thrown in by the operation of a manual or manuals or the operation of a pedal, all as is known by those familiar with punch presses.

In punch press constructions, after the head 1 has been stared or the power has taken hold, by reason of the clutch being engaged, it has not been practical to stop the descent of the head 1, and hence heretofore there has been an interval when the operator might get his fingers caught between the dies, even with a two hand control, after the press starts in motion. This invention relates to a two hand control by which one of the elements shown in Figure 1 as the lower element 2 retracts, as shown in Figure 2, in the event the operator releases either or both hands while the head 1 is on its downward movement.

In the illustrated embodiment of my invention, as shown in Figure 1, 10 designates, generally, the clutch, this may be of any well known construction, and the clutch is operated by a motor 11. As, in this embodiment of the invention, the power for the motor 11 is a fluid under pressure, as compressed air, the motor 11 is a pressure-operated motor, usually of the cylinder and piston type, and the control members of the two hand control are valves. However, the invention is not limited to any particular type of power or motors and control members. The energizing of the motor 11 acts to throw in the clutch, and the clutch is thrown out automatically in the usual manner at the end of one revolution of the shaft 7. 12 and 13 designate the control members or valves of the two hand control system, and 14 and 15 the manuals. The valves 12 and 13 are illustrated as of the combined intake and exhaust type and connected in series in a feed line of a system with the pressure-operated motor 11. The valve 12 includes a normally-closed intake valve head 16 and a normally-open exhaust valve head 17 connected together, so that they act as a unit, the valve being self-returnable to its normal position by a spring 18. The valve 13 is of similar construction, it having a normally-closed intake valve head 19 and a normally-open exhaust valve head 20, and a returning spring 21. Upon operation of the manuals 14, 15, both valves are opened, so that air passes from a feed line 22 through the valve 12 and pipe 23 to the intake end of the valve 13, then through pipe 24 to the cylinder of the motor 11 to actuate the piston therein and through its rod 25 operate the clutch 10 to closed position, so that the shaft 7 is rotated, causing the head 1 to make one complete closing and opening movement or reciprocation.

The retractable element 2 carrying the lower die 6 is mounted to have a vertical movement in a suitable guide 26 in the frame 4 and is normally stationary and retractable or movable vertically by a motor, which, in this embodiment of the invention, is a pressure-operated motor, as a cylinder 27 having a piston 28^a therein. The rod 28 of the piston 28^a is connected to the pressing element 2 through suitable motion transmitting means, which is normally rigid to hold the lower element 2 stationary. This motion transmitting mechanism is here shown as toggle links 29, 30 pivoted together at like ends at 31 and at their outer ends at 32, 33 respectively to the lower pressing element 1 and to the frame 4. These toggle links are normally arranged in a straight locked position, or normally beyond a dead center line passing through the pivots 32, 33 and are shown as abutting against the stop at 34, so as to rigidly support the element 1. When, however, the operator releases one or both manuals 14, before the press head 1 has completed its closing movement, the motor 27 will be energized, the toggle folded into the dotted line position (Figure 1) and the lower pressing element 2 retracted, as shown in Figure 2. The energizing of the motor 27 is also controlled by the control members 12 and 13 operated by the manuals and by a control member operated by the shaft 7, the latter being a valve, because the system is pneumatic.

35 designates a control member operated by the shaft 7. It is shown as a valve of the combined intake and exhaust type having a normally-closed intake valve head 36, an exhaust valve head 37 connected together to act as a unit and a spring 38 returning the valve heads to their normal position. The casing of the valve 35 is connected to a feed line 39 and the valve is operated by the rotation of the shaft 7 by means of a cam 40 here shown as on the periphery of a fly wheel 41 on the shaft 7, the cam coacting with a follower or roller 42 carried by a lever 43 pivoted at 44 between its ends and having one arm thereof thrusting through a spring-pressed head 45 against the combined intake and exhaust valve members including the heads 37 and 38. The cam extends nearly half way around the fly wheel and the follower located normally at one end of the cam. Thus, when the fly wheel 41 starts at the beginning of its revolution, the cam 40 actuates the lever 43 to open the intake head and close the exhaust head of the valve 35 and the air will pass from the pipe 39 through the valve 35 and into the pipe 46. This pipe 46 communicates through branches 47 and 48 with normally open transfer chambers 49 and 50 in the casings of the valves 13 and 12 respectively. The transfer chambers communicate through transfer pipes 51 and 52 with a pipe 53 leading to the intake end of the cylinder 27, this pipe having a pressure-operated valve 54 therein provided with a restricted bleeder exhaust opening 55 for a purpose to be hereinafter referred to. The transfer chambers having normally open piston valves 56 and 57 therein respectively, which are operated to cover the ports in the chambers 49 and 50 from which the pipes 51 and 52 lead, when both manuals are operated, or in other words, these piston valves 56, 57 are operated respectively by the manuals 15 and 14 at the same time the manuals are operating the valves 13 and 12. Thus, upon the operation of the manuals 14 and 15, the pipes 52 and 51 are closed by the piston valves 57 and 56, and hence the air passing through the control valve 35 is cut off from passing to the cylinder 27. If, however, the operator releases either hand from the manual 14 or 15, while the press head 1 is on its closing movement, for instance, suppose the operator releases the manual 14, then the piston valve 57 will be open and the air will pass from the pipe 46 through pipe 48, transfer chamber 50, pipe 52 and pipe 53 through the valve 54, the pressure opening the same, and into the cylinder 27 causing the piston 28^a to move to the left and fold the toggle into the dotted line position, and thus retract the element 2 downwardly, as shown in Figure 2. The same operation takes place if the manual 15 is released, the air passing from the pipe 46 through pipe 47, transfer chamber 49, pipes 51, 53 to the cylinder 27. The cam 40 extends approximately half way around the fly wheel 41, so that at the end of the closing movement the control valve 35 will automatically close. The toggle will straighten under the action of a returning spring 58 and return the element 2 to its normal position, and the piston 28^a

to its starting position. The air exhausts slowly from the cylinder 27 through the bleeder opening 55 of the valve 54, so that the return movement of the element 2 and the toggle is dampened. During this retracting movement of the element 2, the shaft 7 continues to rotate and complete its revolution, and during the last half of its revolution, the intake head of valve 35 closes and the exhaust head opens, so that the air in the pipes 46, 47, 48, transfer chambers 49, 50, pipes 51 and 52 exhausts out through the valve 35 or is not trapped therein.

The manuals 14, 15 may be of any suitable construction, and their construction forms no part of the invention. Each manual 14 or 15 as here illustrated includes a casing or cylinder 59, a piston 60 therein movable toward and from a plunger 61 and a finger-piece 62 guided in the outer end of the cylinder 59, and having a normally open valve 63, which, when the finger-piece is depressed, closes a port 64 extending lengthwise of the stem of the piston 60 and opening into the space 65 between the piston 60 and the plunger 61. The movements of the finger-piece 62 and the plunger 61 are against the action of suitable returning springs 66 and 67. Each plunger 61 thrusts against one arm of a motion transmitting lever 68, the other arm of which thrusts against a cross-head 69 between the stem of the movable valve member of the control valve 12 or 13 and the stem of the piston valve 57 or 56 of the control valve 12 or 13. The motion of the lever 68 is against the action of a returning spring 70. Also, each cross-head 69 is acted upon by a returning spring 71.

In Figure 3, the two hand control mechanism is shown as applied to a press, as a garment or laundry press, in which the pressing elements are of the platen type and the press remains in closed position a period of time after being closed. The actuating mechanism for the press is shown as a reciprocating motor instead of a rotating shaft, as 7. 72 and 73 designate respectively, upper and lower pressing elements, the upper pressing element or head being shown as carried by a lever 74 pivoted between its ends at 75 to a frame 76 of the machine, and as actuated by a cylinder and piston motor, the motion of which is transferred through the reciprocating piston rod and toggle links to the head-carrying lever 74. 77 designates the cylinder; 78 the piston therein having its rod 79 pivoted at 80 to the joint of a toggle consisting of links 81, 82 pivoted at their outer ends respectively at 83 to the rear arm of the head-carrying lever 74 and at 84 to the frame near the base thereof. The cylinder and piston motor is single acting and the opening of the press is effected through a counterspring 85 connected to the rear arm of the head-carrying lever 74 and to the frame.

The flow of motive fluid or air to the cylinder 77 is controlled by a master valve 86 which in turn is controlled by the two hand control valves 12 and 13 operated by the manuals 14, 15 as in the construction shown in Figure 1, but the air, after it passes through the two hand control valves 12, 13, when the manuals are properly operated, passes to a pressure-operated device for opening a master or relay valve 86. As here illustrated, it passes from the pipe 22 through control valve 12, when operated, pipe 23 and through control valve 13, if operated, thence through pipe 24, to the pressure-operated device, this being a diaphragm chamber 87 having a double diaphragm 88, 89 therein for a purpose to be persently described, which acts upon a slide 90 thrusting against the normally open exhaust valve head 91 to close the same when operated and open the normally-closed intake valve head 92 of the master valve 86 this movement being against the action of a returning spring 93. The valve 86 is of the combined intake and exhaust type similar to the valve 12 or 13. The intake end of the master valve 86 is connected by a supply pipe 94. When the air enters the diaphragm chamber 87 through the pipe 24, it thus opens the intake valve head 92 and closes the exhaust valve head 91, permitting the air to pass from the feed line 94 through the valve 86 and pipe 95 to the intake end of the cylinder 77 and actuate the piston therein, to cause the press head 72 to close.

Means is provided to hold the master valve 86 open when the head 72 has closed to a safety position or has come down to nearly in contact with the pressing element 73 or the padding or work thereon. This means embodies the double diaphragm 88, 89, the space between these diaphragms being connected by a pipe 96 to a port 97 in the side of the cylinder 77 and located to be passed by the piston 78, when it has traveled a predetermined distance on its power stroke, so that air can enter from the cylinder to the space between the diaphragms 88, 89 and hold the movable member of the relay valve 86 in its operated position. To open the press, the air is exhausted from the space between the diaphragms 88, 89 permitting the valve 86 to open and the air to exhaust back from the cylinder 77 back through the pipe 95 and the master valve, which is now in normal position, or with its exhaust valve head 91 open and its intake valve head 92 closed. The air is exhausted from between the diaphragms 88, 89 through a pipe 98 leading to a normally-closed, self-closing, manually operable release valve 99 of any suitable construction and having a release or finger lever 100.

The lower pressing element 73 is retractable in the event the operator releases either or both manuals 14 or 15 before the head 72 has closed to a safety position. It is here shown as supported by a vertically slidable pedestal 101 in a suitable guide 102 in the frame, and is supported and retracted by toggle links 103, 104 arranged in substantially the same manner as the toggle links 29, 30 (Figure 1), these toggle links being held in straightened position, as by a spring 105 located in the cylinder 106 and thrusting against the piston 107, the rod 108 of which thrusts against the joint of the toggle links 103, 104. The intake end of the cylinder 106 is connected by a pipe 53 and branches 51, 52 to the piston valve chamber 49, 50 of the manual control valves 15, 14, as in Figure 1.

109 designates the control member similar to the control member 35 (Figure 1) and operated by a moving part of the actuating mechanism, as the reciprocating piston rod 79, to open the control valve 109 while the press is closing, so that if the operator releases either or both manuals 14 or 15 before the press is closed to safety position, the air will pass from the main line 39 through the valve 109 out through the pipe 46 and out through either branch 47 or 48 and through either of the piston valve chambers 49 or 50, whichever happens to be open, and thence through either or both pipes 51, 52 and pipe 53 to the cylinder 106 to actuate the piston therein to fold the toggle consisting of links 103, 104 and retract the lower pressing element 73 downwardly. The piston rod 79 is provided with a

rib or cam 110 which coacts with the follower of the lever 43 which operates the valve member of the valve 109 (Figure 3). However, this cam or rib 110 is of such length that the cam passes or clears the follower during the power stroke of the piston 78, so that when the piston reverses and returns to its normal position, the lever rocks in the opposite direction from that in which it rocks during the power stroke of the piston, and hence does not operate the valve 109 during retrograde or return movement of the piston 78. The lever 43 in Figure 3 is acted upon by a spring 111 but the piston 78 is returned to its starting position during the opening of the press by the action of the counterspring 85. Also, a returning spring 112 acts on the toggle links 81, 82. Thus, wher the press has been operated and the operator removes one or both hands before the press closes, the pressing element 73 will retract downwardly and also the head will immediately open under the action of counterspring 85, the opening movement causing the valve 109 to shift, so that the exhaust head is open and hence the air can exhaust from the cylinder 106 back through the pipe 53, the casings of valves 13, 12, branches 47 or 48, a pipe 46 and out past open exhaust valve head in the valve 109, permitting the spring 105 to react to again straighten the toggle links 103, 104 and elevate the lower pressing element 73 to its normal position. The port 97 in the side of the cylinder 77 is located to be passed about the time the left end of the cam 110 on the piston rod 79 clears the follower on the operating lever 43 for the control valve 109.

In Figure 6, the pressing element, which is retractable relative to the closing movement, when either or both manuals are released before the press closes to a safe position, is the upper pressing element instead of a normally stationary lower pressing element. In the construction here shown, one of the links of the toggle for transmitting the motion to the head-carrying lever 74 is shown as consisting of normally straightened toggle links, which are foldable by a cylinder and piston operating similar to the cylinder and piston 105, 107 (Figure 3). In Figure 6, one of the toggle links corresponding to the toggle links 81, 82 (Figure 3) is composed of toggle links 115, 116 normally arranged in straightened position and operating in this position during the normal operation of the press. The control system is substantially the same as shown in Figure 3. Upon release of either or both manuals before the press head is closed to a safe position, the air passes to a cylinder 117 having a piston 118 therein, the rod of which is connected to the joint 119 of the toggle consisting of links 115, 116. As illustrated, the piston rod is pivoted at 120 to an angular arm 121 rigid with the link 116 and radial with the joint 119 of the toggle links 115, 116. The cylinder 117 is shown as carried by the toggle link 82^a and pivoted at 122 to a bracket 123 on the link 82^a to have an oscillating movement. When air enters the cylinder 117 and either or both manuals are released before the press completes its closing movement, the piston 118 is actuated to fold the toggle links 115, 116 even though the piston 78 in the main cylinder 77 continues its operation. Nevertheless, due to the folding movement of the toggle links 115, 116, the upper press head is retracted. The cylinder 117 and piston 118 are the same as or corresponds to the cylinder and piston 105, 107 (Figure 3).

In the general operation of the form shown in Figure 1, operation of both manuals 14, 15 effects the throwing in of the clutch 10 by permitting air to flow to the cylinder 11 and the shaft 7 goes through one revolution, causing the head 1 and its die 5 to make one complete down and up reciprocation. The rotation of the shaft opens the control valve 35 through the lever 43 to the inlet of air, and if during the downward movement of the head, the operator releases either or both manuals 14, 15, the air flows to the cylinder 27 to actuate the piston therein to fold the toggle links 29, 30, so that the lower element 2 is retracted and the operator can not get his hands or fingers injured between the dies 5, 6. When the shaft 7, however, completes its revolution and the clutch 10 automatically is thrown out, as in any conventional punch press, whereupon the valve 35 closes, in Figure 1, and the pressure within the cylinder 27 leaks out through the bleeder valve 54, permitting the spring 58 to again re-set the toggle links 29, 30. The machine is then ready for the next normal operation.

In the form shown in Figure 3, when the manuals 14, 15 are both properly operated, air enters the cylinder 77 to actuate the piston therein and close the press. The movement of the piston rod 79 opens the valve 35 through the lever 43 and therefore if the operator removes either or both hands from the manuals 14, 15 before the piston passes the port 97, air under pressure will pass from the feed pipe 39 through the valve 35, pipe 46, and one or the other of the piston valve chambers to the cylinder 106 and actuate the piston 107 therein to fold the toggle links 103, 104 and retract or pull downwardly the lower pressing element 73, so that there is no opportunity for the operator to get his hands burned or squeezed between the pressing elements upon the release of either or both hands. The air is free to exhaust from the diaphragm chamber 87 which operates the master valve back through the manual control valve, which has been released, and hence the press will open under the counterspring 85 and also the air will exhaust from the cylinder 106 operating the retracting toggle, back through the released control valves 13, 14 permitting the spring 105 to react and re-set the toggle links 103, 104.

The operation of the construction shown in Figure 6 is the same as that shown in Figure 3, with the exception that the links or sections 115, 116 of the toggle link 81^a of the motion transmitting means between the piston in the main cylinder and the head-carrying lever 74, fold when the operator releases either or both manuals before the press completes its closing movement and in so folding retract the movable press head instead of the normally stationary pressing element.

In any form, the retractile movement is relative to the prime mover and the prime mover continues its operating movement or is not disabled when the operator releases one manual before the press closes. In Figure 1, the retracting movement of the element is relative to the prime mover shaft 7, clutch 10 or the power shaft actuating the shaft 7 through the clutch 10. In Figure 3, the retracting movement of the lower pressing element 73 is relative to the piston prime mover 78. In Figures 6 and 7, the retracting movement of the upper press head is relative to the prime mover piston 78.

What I claim is:

1. In pressing machines which include coact-

ing pressing elements, one of which has a closing and opening movement relatively to the other, and power actuating mechanism for the movable element including a prime mover; the combination of one of said elements being retractable from its normal position relative to and during the closing movement, and means operable independently of the prime mover to retract the retractile element during the closing operation by the prime mover, a two hand control including independently operable manuals, both of which must be operated jointly to control the operation of the actuating mechanism, and means controlled by the release of either manual at an intermediate point in the closing movement of the movable element for operating the retracting means.

2. In pressing machines which include coacting pressing elements, one of which has a closing and opening movement relatively to the other, and power actuating mechanism for the movable element including a prime mover; the combination of one of said elements being retractable from its normal position relative to and during the closing movement, means operable independently of the prime mover to retract the retractile element during the closing operation by the prime mover, a two hand control including independently operable manuals, both of which must be operated jointly to control the operation of the actuating mechanism, and means operated by the actuating means during the closing movement of the movable element and controlled by the release of either manual at an intermediate point in the closing movement of the movable element for operating the retracting means.

3. In pressing machines which include coacting pressing elements, one of which has an opening and closing movement, and power actuating mechanism for the movable element; the combination of one of said elements being retractable relative to, and during, the closing movement, means operable to retract the same, a power control system for the actuating means and the retracting means, a two hand control including a pair of manuals, manually operable control members in the power control system, both of which must be operated by the manuals to control the flow of power to the actuating means, an additional control member in the power control system operated by a movable part actuated by the actuating means during the press closing movement and located to control the flow of power to the retracting means, a power transfer line connected to the additional control member and to the retracting means through the manual control members, the transfer line being effective to transmit power only when either or both manuals are released and the control member operated by the actuating means is so operated, whereby upon the release of either manual when the movable element is in the intermediate stage of its closing movement, the retracting means is energized through the transfer line.

4. The two hand control of claim 3 in which the power control system for the actuating means is a pressure fluid conduit system and the pair of manually operable control members and the additional control member are valves in said control system.

5. In a pressing machine including coacting pressing elements, one of which has a closing and opening movement relatively to the other, and power actuating means for the movable element; the combination of means for retracting one of said elements relative to, and during, the closing movement, a control system including independently operable manuals and control members operated thereby, both of which must be operated jointly to control the operation of the actuating mechanism, and means controlled by the release of either manual and at an intermediate point in the closing movement for operating the retracting means, the retracting means including toggle links normally in straightened position and the means controlled by the release of either manual for operating the retracting means being connected to the toggle to fold the same.

6. A pressing machine including coacting pressing elements, one of which has an opening and closing movement relative to the other, and power actuating mechanism for the movable element, one of said elements being retractable relative to the closing movement, during the closing movement, means operable to retract the same including toggle links normally arranged in straightened position, a control system including independently operable control members, both of which must be operated jointly to control the operation of the actuating mechanism, a pair of manuals for operating the control members and an additional control member operated by the actuating mechanism during the closing movement of the movable element and controlled by the release of either manual at an intermediate point in the closing movement of the movable element for folding the toggle.

7. In a pressing machine, coacting pressing elements, one of which is normally stationary and the other operable to close and open into and out of coaction therewith, and power actuating mechanism for the movable element; the combination of said normally stationary element being retractable from its normal position, means operable to retract the same, a control system, independently operable manuals and control members operable respectively thereby to control the operation of the actuating means, and means controlled by the release of either manual at an intermediate point in the closing movement of the movable element for operating the retracting means.

8. In a pressing machine, coacting pressing elements, one of which is normally stationary and the other operable to close and open into and out of coaction therewith, and power actuating mechanism for the movable element; the combination of said normally stationary element being retractable from its normal position, means operable to retract the same, independently operable manuals and control members operable respectively thereby, to control the operation of the actuating means, and means operated by the actuating means during the closing movement of the movable element and controlled by the release of either manual at an intermediate point in the closing movement of the movable element, for operating the retracting means.

9. In a pressing machine, coacting pressing elements, one of which is normally stationary and the other operable to close and open into and out of coaction therewith, and power actuating mechanism for the movable element; the combination of said normally stationary element being retractable from its normal position, means to retract the same, a power control system for

the actuating means and the retracting means, a pair of manuals and control members operated respectively thereby in the system, both of which manuals must be operated to control the operation of the actuating means, an additional control member in the control system operable by a movable part actuated by the power actuating mechanism during the press closing movement and located to control the flow of power to the retracting means, a power transfer line connected to the additional control member and to the retracting means through the former control member, the transfer line being effective to transfer power only when either or both manuals is released and the control member operated by the actuating means, whereby upon the release of either manual, when the movable element is at an intermediate stage in its closing movement, the power is transferred through the transfer line to the retracting means.

10. In a pressing machine, coacting pressing elements, one of which is normally stationary and the other operable to close and open into and out of coaction therewith, power actuating mechanism for the movable element including a cylinder and piston motor, and motion transmitting means between it and the movable element; the combination of said normally stationary element being retractable from normal position and means to retract the same including a cylinder and piston motor and motion transmitting means between the same and the retractable element, a fluid pressure conduit system to the first motor, a pair of manually operable control valves connected therein and manuals therefor, both of which must be operated at the same time to effect the flow of power to the first motor, a power transfer system for the motor of the retracting means including a normally closed control valve, and means for opening it operable by a movable part of the motion transmitting mechanism during the closing movement, and a pair of normally open valves also operable by the manuals into position to cut off the flow of fluid to the retracting means when both manuals are operated and to permit the flow of power to the retracting means when either manual is released during the closing movement.

11. In a pressing machine, coacting pressing elements, one of which is normally stationary and the other operable to close and open into and out of coaction therewith, power actuating mechanism for the movable element including a cylinder and piston motor, and motion transmitting means between it and the movable element; the combination of said normally stationary element being retractable from normal position, means to retract the same including a cylinder and piston motor, motion transmitting means between the same and the retractable element, a fluid pressure conduit system to the first motor, a pair of manually operable control valves connected therein and manuals therefor, both of which must be operated at the same time to effect the flow of power to the first motor, a power transfer system for the motor of the retracting means including a normally closed control valve, and means for opening it operable by a movable part of the motion transmitting mechanism during the closing movement, and a pair of normally open valves also operable by the manuals into position to cut off the flow of fluid to the retracting means when both manuals are operated and to permit the flow of power to the retracting means when either manual is released during the closing movement, and means operated by the movement of the actuating means for holding the press closed, when the movable element has traveled a predetermined distance toward closed position and for rendering the control member for the retracting means ineffective, and release means for the holding means.

12. In a pressing machine, coacting pressing elements, one of which is normally stationary, and the other operable to close and open into and out of coaction therewith, and power actuating mechanism for the movable element; the combination of said normally stationary element being retractable from its normal position, means operable to retract the same and hold it in normal position including toggle links normally arranged in straightened position, normally idle motor means operable to fold the toggle to retract the normally stationary element, manual means operable to control the operation of the actuating means, and means controlled by the release of the manual means at an intermediate point in the closing movement of the movable element and for controlling the energization of the motor of the retracting means.

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