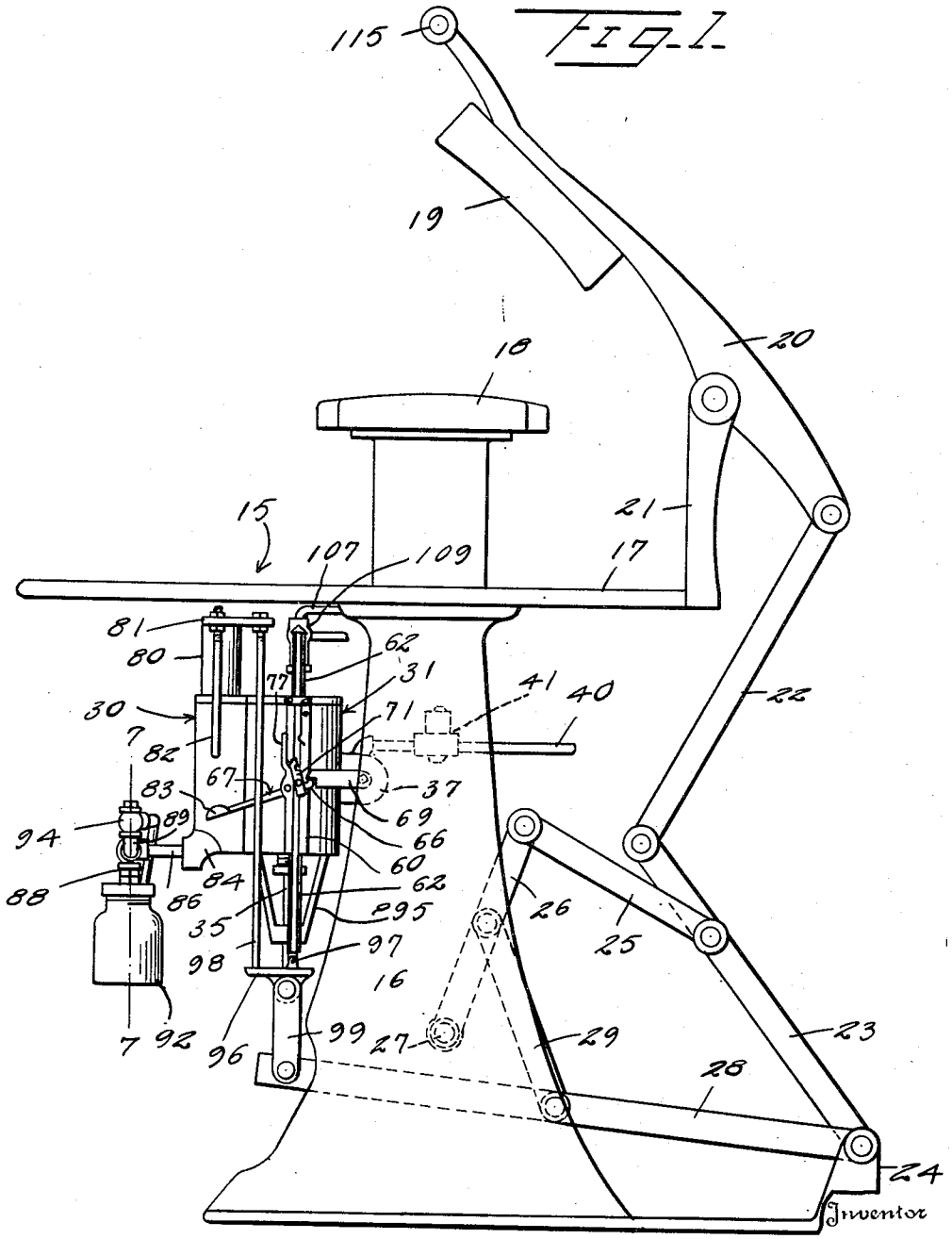
June 20, 1944. W. S. GRAHAM 2,351,956

SEMI-AUTOMATIC OPERATING DEVICE FOR GARMENT PRESSES

Filed April 30, 1942 5 Sheets-Sheet 1

Fig. 1.



Inventor

W. S. Graham

By L. F. Randolph

Attorney

June 20, 1944. W. S. GRAHAM 2,351,956

SEMI-AUTOMATIC OPERATING DEVICE FOR GARMENT PRESSES

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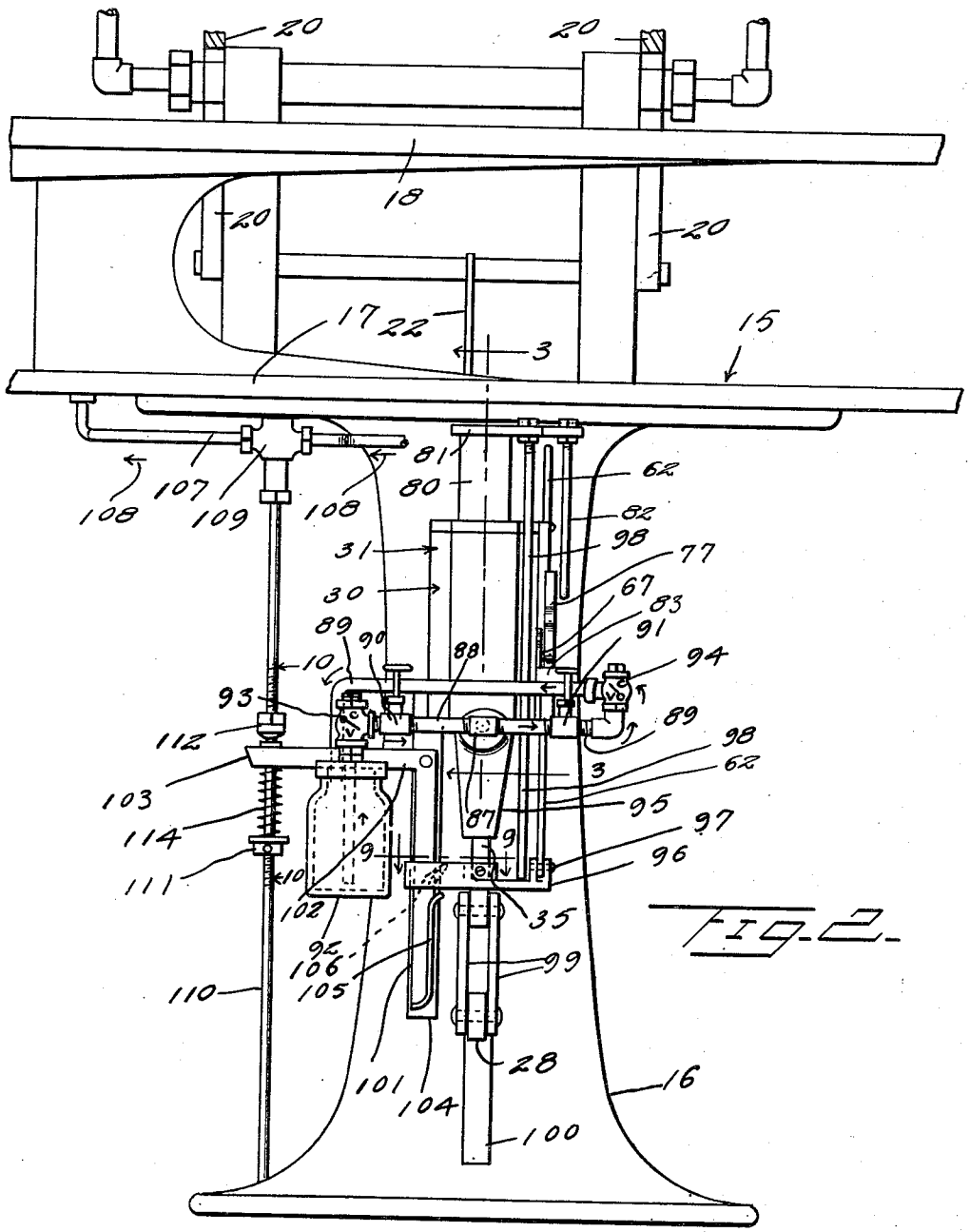


Fig. 2.

Inventor
W. S. Graham
By L. F. Randolph
Attorney

June 20, 1944. W. S. GRAHAM 2,351,956

SEMI-AUTOMATIC OPERATING DEVICE FOR GARMENT PRESSES

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FIG. 3.

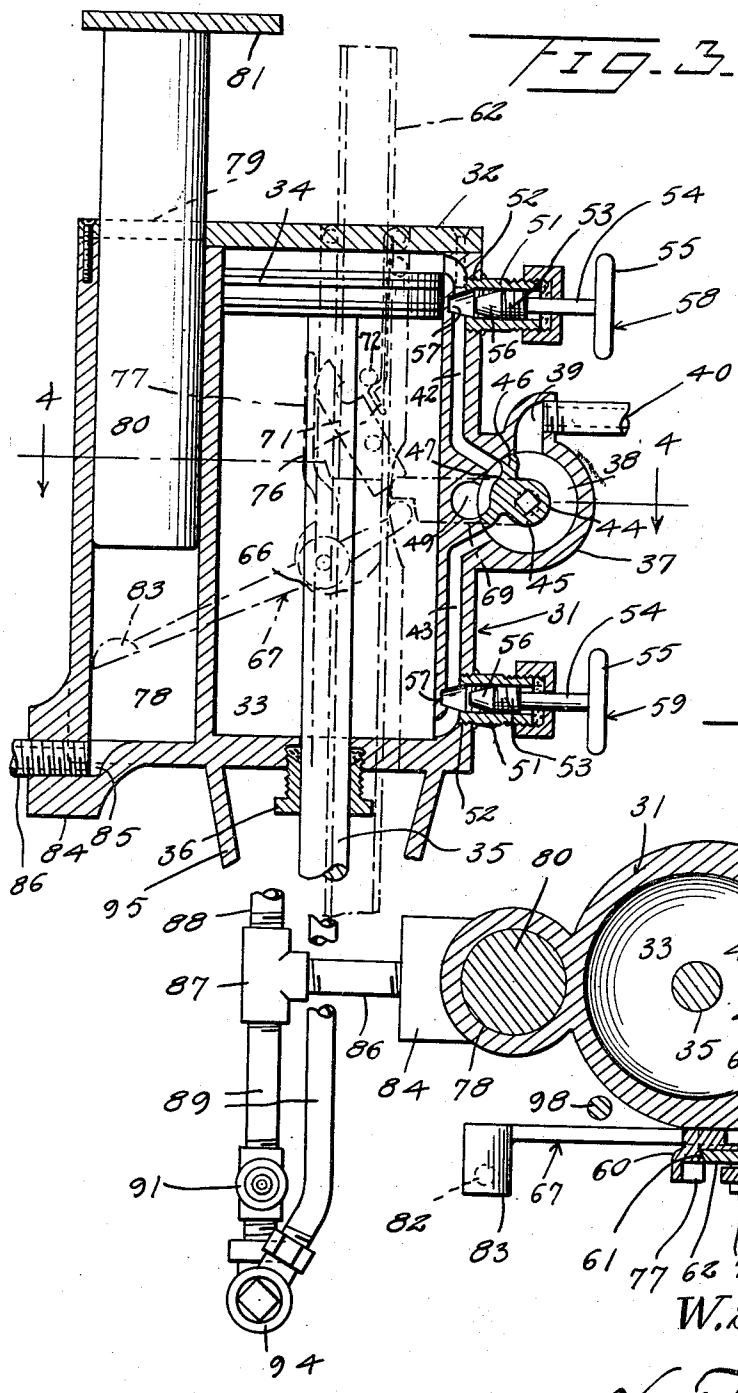


FIG. 4.

Inventor
W. S. Graham

By X. F. Randolph

Attorney

June 20, 1944. W. S. GRAHAM 2,351,956

SEMI-AUTOMATIC OPERATING DEVICE FOR GARMENT PRESSES

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Fig. 5.

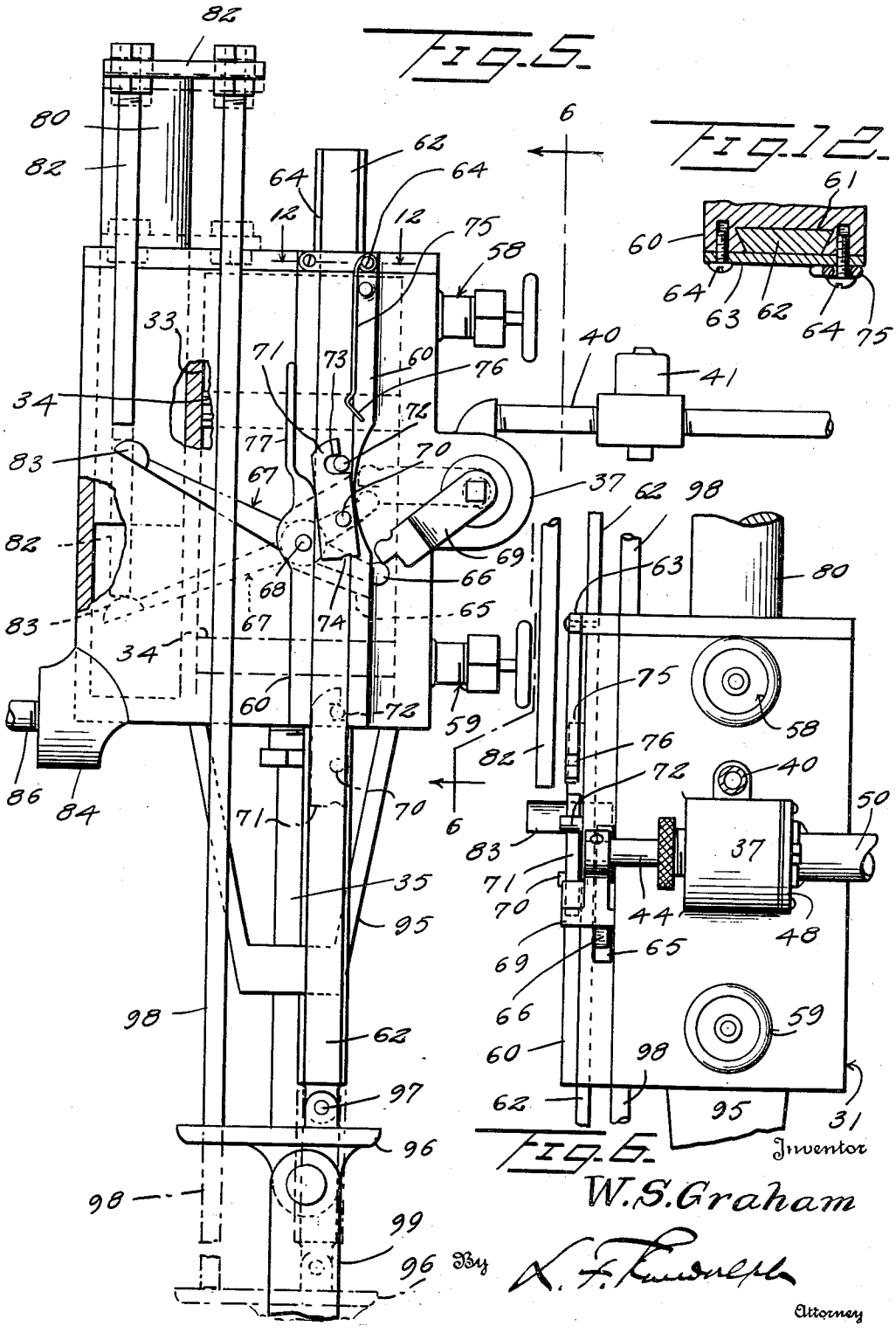


Fig. 12.

Fig. 6.

Inventor

W. S. Graham

By K. F. Randolph

Attorney

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SEMI-AUTOMATIC OPERATING DEVICE FOR GARMENT PRESSES

Filed April 30, 1942 5 Sheets-Sheet 5

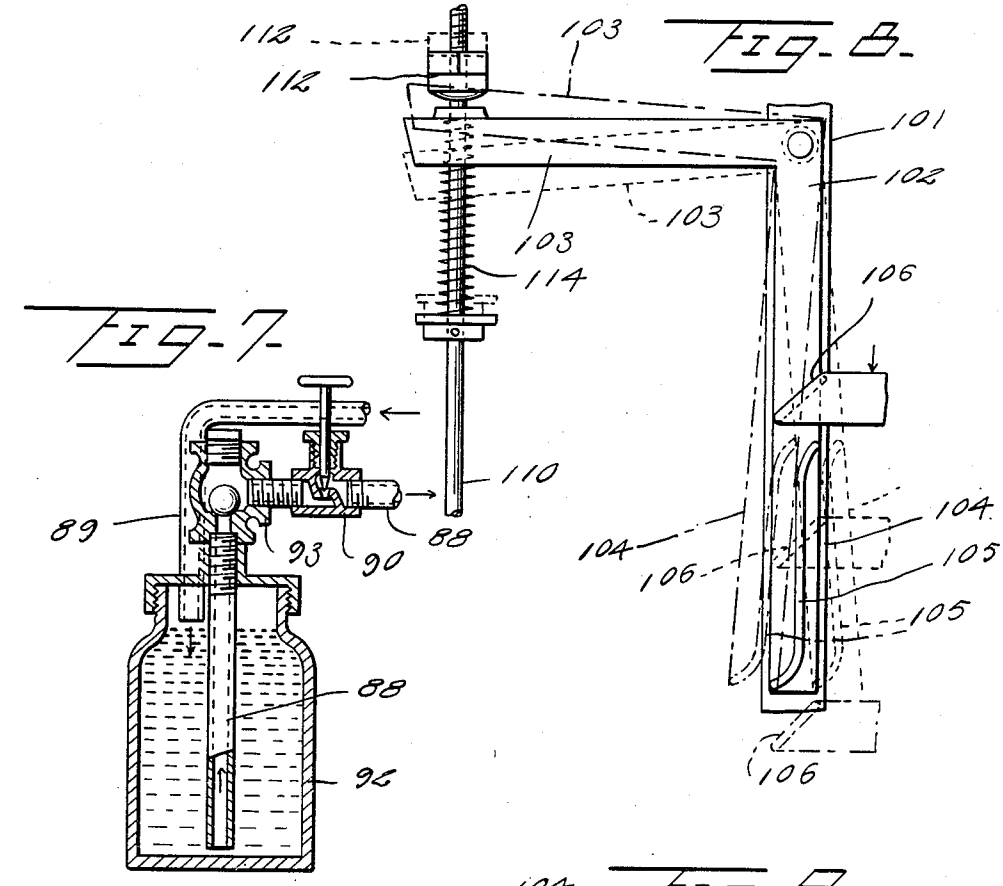


Fig. 8.

Fig. 7.

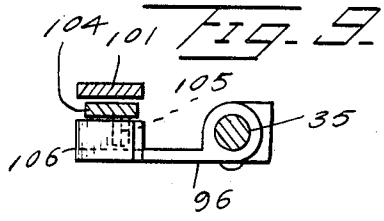


Fig. 9.

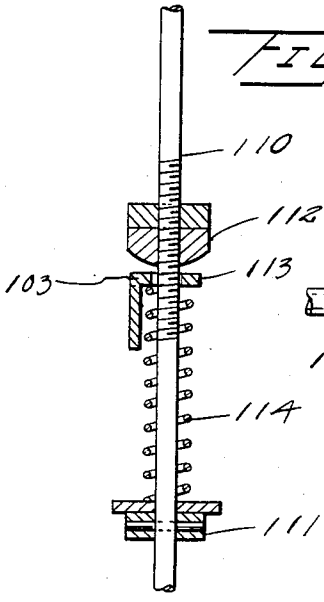


Fig. 10.

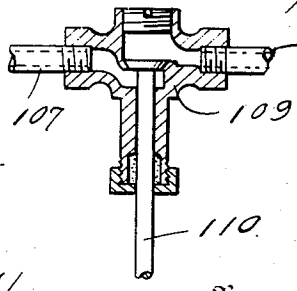


Fig. 11.

Inventor
W. S. Graham
By X. F. Randolph
Attorney

Patented June 20, 1944

2,351,956

UNITED STATES PATENT OFFICE

2,351,956

SEMIAUTOMATIC OPERATING DEVICE FOR GARMENT PRESSES

Wallace Scott Graham, Lancaster, Ohio

Application April 30, 1942, Serial No. 441,177

9 Claims. (Cl. 121—38)

This invention relates to an attachment which is adapted to be applied to all types of manually operated garment presses, and to provide a semi-automatic operator for closing and opening the press head and for maintaining the press head in a closed position for a predetermined period of time.

More particularly, it is an aim of the invention to provide a device by means of which the closing of a press head by a foot pedal and the opening of the press head by an upward pushing movement thereof is dispensed with, and in lieu thereof the operator by the simple expedient of pulling the press head slightly toward a closed position will cause the device, constituting the invention, to be placed in operation thereby for exerting the necessary additional pressure to close and hold the press head closed, and to thereafter return the press head to a fully opened position.

Still a further aim of the invention is to provide manually controlled valves, forming a part of the attachment and by means of which the speed of movement of the press head can be regulated.

A further object of the invention is to provide a manually regulated means for varying the time interval that the press head will be retained in a fully closed position.

Still another object of the invention is to provide means actuated, as the press-head begins to move toward an open position for opening the valve of the suction line of the press in order that the moisture can be removed from the press buck, and the garment mounted thereon.

Other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, which illustrate a preferred embodiment thereof, and wherein:

Figure 1 is a side elevational view of a garment press showing the attachment applied thereto,

Figure 2 is an enlarged fragmentary, front elevational view of the same,

Figure 3 is an enlarged, vertical, sectional view taken substantially along the plane of the line 3—3 of Figure 2,

Figure 4 is a horizontal sectional view taken substantially along the plane as indicated by the line 4—4 of Figure 3,

Figure 5 is an enlarged, fragmentary, side elevational view of a portion of the attachment and showing the parts in full lines in a partly lowered position and in dotted lines in a fully lowered position,

Figure 6 is a vertical sectional view taken substantially along the plane of the line 6—6 of Figure 5,

Figure 7 is an enlarged, vertical sectional view taken substantially along the plane of the line 7—7 of Figure 1,

Figure 8 is an enlarged, fragmentary, front elevational view of a part of the attachment,

Figure 9 is an enlarged, horizontal, sectional view taken substantially along the plane of the line 9—9 of Figure 2,

Figure 10 is a vertical sectional view on an enlarged scale, taken substantially along the plane of the line 10—10 of Figure 2,

Figure 11 is an enlarged, longitudinal, vertical, sectional view of the valve housing which is mounted in the suction line, and

Figure 12 is an enlarged, horizontal sectional view taken substantially along the plane of the line 12—12 of Figure 5.

Referring more particularly to the drawings, wherein like reference characters designate like or corresponding parts throughout the different views, 15 designates generally a conventional garment press and which includes a base 16, a table 17, a press buck 18, and a press head 19 which is mounted in the usual manner by a lever 20 which is pivoted to a standard 21 which rises from the back edge of the table 17. The rear end of the lever 20 is pivotally connected to one end of a link 22 which is pivotally connected at its opposite end to an end of a link 23, the opposite end of which, link 23, is pivotally connected to a bearing standard 24 which rises from the bottom of the base 16. A link 25 is pivoted at one end thereof to the link 23 near its first mentioned, upper end and is pivotally connected at its opposite end to a similar link 26. The opposite end of the link 26 is pivoted at 27 to the base 16. A lever 28 is likewise pivoted at one end thereof to the bearing standard 24 and extends forwardly therefrom relatively to the base 16 and has one end of a link 29 pivoted thereto, intermediate of its ends. The opposite end of the link 29 is pivotally connected to the link 26, intermediate of the ends thereof. It will be readily apparent that the links 25 and 26 combine to form a toggle joint, and the complementary links 22 and 23 likewise combine to form a second toggle joint. The parts previously described constitute parts of a conventional garment press and form no part of the present invention, which will hereinafter be described, but are illustrated and described, merely to better illustrate the application of the invention, and it is to be under-

stood that the invention is not intended to be limited to use with a garment press of the type illustrated but is adapted for use on all types of garment presses, as will hereinafter become readily apparent from the following description of the invention, considered with the accompanying drawings.

The invention, designated generally 30 includes a housing, designated generally 31, which is suitably supported on the base 16. The housing 31, as best seen in Figure 3, is provided with a removable cover 32 and contains a cylinder 33 which is disposed in the rear part thereof and which is provided with closed ends. A piston 34 is slidably mounted in the cylinder 33 and has a piston rod 35 depending therefrom and extending through and slidably disposed in a stuffing box 36 which is mounted in the bottom of the housing 31.

The rear portion of the housing 31 is provided with a rearwardly, projecting portion which forms a valve casing 37 and which is provided with a substantially upright, circular opening 38. The valve casing 37 is provided with a passage 39 which communicates with the opening or bore 38 and which opens outwardly of the upper part thereof and to which is connected a pipe 40. The opposite end of the pipe 40, not shown, is connected to a source of supply of steam, compressed air, or other suitable fluid or liquid under pressure. Disposed in the pipe 40 is a reducing valve 41 of conventional construction and which functions in a conventional manner to limit the pressure of the steam entering into the bore 38 so that the pressure of the steam therein will at all times be uniform. As best seen in Figure 3, the rear wall of the housing 31 is provided with an upwardly extending passage 42, which extends from the opening or bore 38 and which opens into the upper end of the cylinder 33, and a downwardly extending passage 43 is likewise extended from the bore 38 and which opens into the cylinder 33 adjacent its lower end. A valve stem 44 extends horizontally through the bore 38 and is journaled in the valve housing 37. A valve 45 is disposed in the bore 38 and is keyed to the stem 44. Valve 45 has an arcuately shaped head 46 which turnably engages the circular outer wall of the bore 38 and which is of a length circumferentially, of substantially less than 180 degrees. The head 46 is provided with an elongated outwardly opening recess 47 the ends of which are spaced from the ends of said head. As best seen in Figure 4, one side wall of the valve casing 37, designated 48, is removable for applying and removing the valve 45. Said side wall 48 and a portion of the housing 31 are recessed to provide a port 49 forming an exhaust port and which opens into an exhaust pipe 50 which is attached to the outer side of the housing 31 and to the removable wall 48. A valve housing 51 is in threaded engagement with an opening 52 near the top and bottom of the housing 31. Valve housings 51 open into the passage 42 and 43 and are internally threaded to receive valves 53, having valve stems 54 projecting outwardly therefrom and provided with knobs 55. The valves 53 have tapered inner ends 56 which are adapted to seat in recesses 57, when the valves 53 are advanced by being turned in one direction for closing the passages 42 and 43. The upper valve, which controls the passage 42, is designated generally 58, and the lower valve, which controls the passage 43, is designated generally 59.

Housing 31 is provided with an outwardly projecting, perpendicularly disposed extension 60 having an outwardly opening groove 61, which extends from end to end thereof and which is wedge shaped in cross section, as seen in Figure 4. Groove 61 forms a guide for a bar 62 which is slidably mounted therein and which is similarly shaped in cross section. In Figure 12, a plate or bar 63 is disposed across the upper end of the guide groove 61 and is attached to the enlargement 60 by fastenings 64. The enlargement 60, intermediate of its ends, is provided with a transverse slot 65, through which extends one end 66 of a lever 67, which lever is pivotally mounted, near its end 66 by means of a pin 68, which extends through the portion 60. An arm 69 is keyed to one end of the valve stem 44 and extends forwardly therefrom and has its free end disposed above and in the path of movement of lever end 66 so that when said end is swung upwardly the arm 69 will be moved upwardly for turning the valve 45 in a clockwise direction, as seen in Figure 3. A pin 70 projects outwardly from the bar 62 and a detent 71 is pivotally mounted, intermediate of its ends, on the pin 70 for swinging movement relatively to the bar 62. A second pin 72 projects outwardly from the bar 62, above the pin 70. Detent 71, adjacent its upper end, is provided with a laterally opening notch 73 to engage the pin 72 when the detent 71 is disposed longitudinally of the bar 62, as seen in Figure 5. The detent 71 is provided with a notch 74 in its lower end which is adapted to engage the upper side of the free end of the arm 69. A spring latch member 75 is attached to one of the fastenings 64 and depends downwardly therefrom and is provided with a hook 76 at its lower end which is arranged to engage the pin 72, when the bar 62 is moved to a raised position, as seen in dotted lines in Figure 3, for holding said bar in a raised position, and also for engaging the detent 71 to rock it to a position substantially obliquely to the longitudinal axis of the bar 62, for positioning its notch 74 over the free end of the arm 69, as likewise seen in dotted lines in Figure 3. The portion 60 is provided with a longitudinally extending outwardly projecting cam portion 77, as best seen in Figure 5, which is disposed to engage the upper end of the detent 71, as the bar 62 moves downwardly, for swinging the detent 71 from its dotted line position in Figure 3 to the positions as seen in full lines and in dotted lines in Figure 5, for moving the notch end 74 out of engagement with the arm 69 after the arm has been swung downwardly by the detent 71 to its full line position in Figure 5.

The forward, restricted portion of the housing 31 is provided with a cylinder 78 having an upwardly opening upper end formed by an opening 79 in the cover 32. A plunger 80 is slidably disposed in the cylinder 78 and extends outwardly through the opening 79 and is provided with a head 81 at its upper end. A rod 82 is secured at its upper end to the head 81 and extends downwardly therefrom. The other end, 83, of the lever 67 is disposed in the path of movement of the rod 82 so that when the plunger 80 moves downwardly, the lower end of the rod 82 will engage the lever end 83 and swing it downwardly from its full line to its dotted line position of Figure 5, to thus cause the lever 67

to be rocked for raising the arm 69. The housing 31 is provided with an integral extension 84 at the bottom of its forward part which is provided with a bore 85 which communicates with the lower end of the cylinder 78. A pipe 86 has one end disposed in the bore 85 and extends outwardly therefrom.

Referring particularly to Figure 2, the opposite end of the pipe 86 is connected to a T joint 87 intermediate of the ends of said joint. Pipes 88 and 89 are connected at their adjacent ends to the opposite ends of the joint 87. A manual shut-off valve 90 is mounted in pipe 88 and a manual shut-off valve 91 is mounted in pipe 89. The opposite end of the pipe 88 extends downwardly and into a vessel or container 92, which is supported thereby, and terminates adjacent the bottom thereof. Pipe 88 is also provided with a check-valve 93 which opens in a direction away from the vessel 92. The opposite end of the pipe 89 extends into the vessel 92 and pipe 89 is also provided with a check-valve 94 which opens in a direction toward the vessel 92. Vessel 92 is adapted to contain a suitable cushioning liquid, such as oil, glycerine, or water.

When the plunger 80 is moving upwardly it will create a suction in the lower part of the cylinder 78 for drawing the cushioning liquid (Figure 7), from the vessel 92 through the pipe 88 and into the cylinder 78. When the plunger 80 is moving downwardly the fluid will be forced outwardly from the bottom of the cylinder 78 and back into the vessel 92 through the pipe 89, the check-valves 93 and 94 preventing the liquid from flowing in the other direction through the pipes 88 and 89, respectively.

Housing 31 is provided with a depending bearing 95 through the lower end of which the piston rod 35 slidably extends. The piston rod 35 is provided with a crosshead 96 below the bearing 95 and adjacent its lower end. Crosshead 96 is adapted to engage the lower end of the bearing 95 to limit the upward movement of the piston 34. The lower end of the slide bar 62 is pivotally connected at 97 to the crosshead 96 so as to slide with the piston 34. A rod 98 is connected at its upper end to the head 81 and extends downwardly on the outer side of the housing 31 and has its lower end disposed in the path of upward movement of crosshead 96 so that as the crosshead moves upwardly the plunger 80 will be raised and the limit of the upward movement of the plunger is likewise controlled by the crosshead engaging the bearing 95. A pair of links 99 are pivotally connected at their upper ends to the lower end of the piston rod 35, below the crosshead 96 and are pivotally connected at their opposite, lower ends to the forward end of the lever 28 which extends outwardly through the base 16 through a perpendicular slot 100 therein which extends from the rear thereof.

A bar 101 is suitably attached to the forward part of the base 16. An inverted L-shaped lever 102 is pivotally connected at the apex to the bar 101 and has one arm 103 extending laterally therefrom and its other arm 104 depending downwardly. The depending arm 104 is provided on its outer side and adjacent its lower end with an elongated, outwardly projecting flange 105 the upper end of which is curved inwardly, relatively to the base 16, and the lower end of which is curved outwardly. The crosshead 96, as best seen in Figure 9, is provided with an inwardly extending flange 106 which is disposed at an oblique angle to the perpendicular and above the flange 105, for a purpose which will hereinafter be described.

A suction pipe line 107, forming a part of the conventional garment press 15, extends to the press buck 18, at one end thereof, not shown, and has its opposite end connected to suitable suction means not shown, and for creating a suction in the pipe 107 in a direction as indicated by the arrows 108. A valve 109, as best seen in Figures 2 and 11, is interposed in the pipe 107 and is provided with a downwardly extending, slidably mounted valve stem 110. As best seen in Figure 10, a collar 111 is secured to the valve stem 110 and a second collar 112 is adjustably connected to the stem 110, above the collar 111. The free end of the arm 103 is provided with an opening 113 which loosely engages the rod 110, between the collars 111 and 112. An expansion coil spring 114 is mounted on the stem 110 between the collar 111 and the arm 103 to normally hold the lever 102 in its position of Figure 2. As seen in Figure 11, the valve 109 is arranged to open on the upward movement of the stem 110 and to close on the downward movement thereof. As the piston rod 35 moves downwardly the cam element 106 rides over the outer side of the flange 105, which forms a cam for swinging the lever arm 104 to the right or to its dotted line position of Figure 8, and on past the lower end of the flange 105. This causes the arm 103 to swing downwardly thereby compressing the spring 114 so that the arm 103 can move relatively to the stem 110. When the cam element 106 moves beyond the lower end of the flange 105 the spring 114 returns the arm 103 and the lever 102 to its full line position in Figure 8. When the piston rod 35 moves upwardly the cam element 106 engages the opposite, inner side of the flange 105 to swing the arm 104 to the left and the arm 103 upwardly, as seen in the dot-dash lines in Figure 8. This causes the arm 103 to engage the collar 112 to move it upwardly for opening valve 109. After the cam element 106 is moved beyond the upper end of the flange 105 the lever 102 will return by gravity to its normal position of Figure 2 and the valve 109 will close by gravity and also due to the suction in the pipe line 107.

Assuming that the valve 45 is in its position as seen in Figure 3, in which position the piston 34 and plunger 80 will be in their raised positions, the operator of the press by grasping the handle 115 of the presshead 19 and pulling downwardly thereon to move the presshead slightly toward a closed position, will cause the adjacent ends of the links 22 and 23 to swing outwardly and the adjacent ends of the links 25 and 26 to move downwardly thereby causing the forward end of the lever 28 to swing downwardly slightly to move the piston 34 slightly toward a lowered position. This will cause the detent 71 to swing the valve arm 69 downwardly from its dotted line position of Figure 3 to its full line position of Figure 5 thereby moving the valve 45 in a counter-clockwise direction, as seen in Figure 3, so that the passage 42 will be open and the passage 43 closed except for its communication by means of the recess 47 with the exhaust port 49. The steam under pressure will then flow from the bore 38 through the passage 42 into the upper end of the cylinder 33 and above the piston 34 to force the piston 34 downwardly from its position of Figure 3 to its lower, dotted line position of Figure 5. It will be readily obvious that the other parts connected to the

crosshead 96 will be moved downwardly and the forward end of the lever 28 will be swung downwardly for continuing the closing movement of the head 19 to bring it into engagement with a garment, not shown, which is disposed on the press-buck 18 for pressing the garment. As previously explained, after the valve arm 69 has been swung downwardly to rock the end of the lever 67, designated 83, upwardly, the detent 71 will be moved out of engagement with the arm 69 by the cam member 77. As the piston 34 moves downwardly the steam in the lower portion of the cylinder 33 will be exhausted through the passage 43, the recess 47 and the exhaust port 49. The crosshead 96 when moving downwardly moves away from the lower end of the rod 98 and the plunger 80 thereafter moves downwardly by gravity and the speed of its movement is regulated by manual adjustment of the valve 91 so that the plunger 80 will reach a lowermost position at a predetermined time after the piston 34 has reached its lowermost position. During the downward movement of the piston 34 the cam element 106 will ride over the outer side of the flange 105, as previously described, without affecting the position of the valve 109. It will thus be readily apparent that the presshead 19 will be closed and held in a closed position by the piston 34 until the plunger 80 has substantially reached its lowermost position, at which time the rod 82 will contact the elevated lever-end 83 to swing said end downwardly to return the valve 45 to its position of Figure 3, as previously explained. This will expose the passage 43 so that the steam can flow therethrough to the lower end of the cylinder 33 for raising the piston 34. Likewise, as seen in Figure 3, the piston moves upwardly and the steam thereabove will pass outwardly through passage 42, recess 47 and exhaust port 49. As the piston 34 moves upwardly the crosshead 96 will engage the rod 98 to carry the plunger 80 upwardly and to draw fluid from the receptacle 92 into the lower part of the cylinder 78. Furthermore, during the initial upward movement of the piston the lever 102 will be rocked in a clockwise direction, as seen in Figure 8, to open the valve 109, as previously explained, so that the suction in the pipe line 107 will draw the moisture from the garment disposed on the press buck 18. It will be readily apparent that the speed of movement of the piston can be regulated by adjustment of the valves 58 and 59 and to some extent by adjustment of the valve 90. Furthermore, on the upward movement of the piston 34 the forward end of the lever 28 will be raised for returning the links to their positions of Figure 1 thereby to elevate the presshead 19.

From the foregoing it will be apparent that after the initial downward movement of the press head 19 by the manual effort of the operator the pressing operation is carried through automatically and the speed of the operation and the length of time that the press remains closed can be varied at the will of the operator. The cylinder 78, plunger 80, vessel 92 and the pipes connecting the vessel and the cylinder combine to form a dash pot which affords an effective means for controlling the length of time that the press is held in a closed position. Likewise, as previously explained, the attachment 30 automatically operates the suction means which withdraws the steam from the garment after the pressing operation and as the presshead 19 begins its opening movement.

In view of the detailed description of the construction and operation of the various parts, a further description of the attachment 30 is considered unnecessary. Likewise, it will be readily apparent from the preceding description that the attachment 30 can be readily adapted to manually operated presses of all types.

Various modifications and changes are contemplated, and may obviously be resorted to, provided they fall within the spirit and scope of the invention as hereinafter defined by the appended claims, as only a preferred embodiment of the invention has been disclosed.

I claim as my invention:

1. A semi-automatic operating attachment for garment presses, comprising a cylinder, a piston slidably mounted therein and having a depending piston rod connected to the head-closing toggle of a garment press, a supply line for a piston actuating medium having branch passages opening into the ends of the cylinder, a valve interposed in the supply line for controlling the flow of the medium to one or the other of the branch passages, means connected to the piston rod for actuating said valve near the beginning of the downstroke of the piston to position said valve so that the medium will pass to the upper end of the cylinder to force the piston down for closing the presshead, and gravity actuated means for actuating the valve, after the piston has reached the lower end of its stroke, for moving the valve so that the medium will be admitted to the lower end of the cylinder for forcing the piston upwardly to open the press head.

2. An attachment as in claim 1, and an exhaust port for the medium, controlled by the valve, for releasing the medium from the end of the cylinder toward which the piston is moving.

3. An attachment as in claim 1, and means for regulating the speed of movement of the piston to regulate the closing and opening speed of the press head.

4. An attachment as in claim 1, said gravity actuated means being adjustable for varying the interval between the time the piston reaches the lower end of its stroke and the time at which the valve is actuated by said gravity means.

5. An attachment as in claim 1, and a latch element for engaging said first mentioned means, when it is in a fully raised position, for holding the piston in a raised position.

6. An attachment as in claim 1, means for normally regulating the flow of the medium through the branch passages for regulating the speed of movement of the piston, and manually controlled means, forming a part of the gravity means, for regulating the interval between the time the piston reaches its lowermost position and the time when the valve is actuated by the gravity means.

7. An operator for use with garment presses comprising in combination with a press-head toggle of a garment press a cylinder, a piston slidably mounted therein, a piston rod connected to the piston and to said press head toggle, a supply line for steam, a valve for controlling the supply line for admitting steam alternately to the ends of the cylinder to reciprocate the piston, means for actuating the valve just after the piston has begun to move away from one end of the cylinder to admit steam to said end of the cylinder, and means rendered operative through and by the last-mentioned movement of the pis-

ton for actuating the valve after the piston has reached the other end of its movement to admit steam to the opposite end of the cylinder to move the piston in the opposite direction.

8. An operator as in claim 7, said last mentioned means including a dashpot comprising a cylinder and plunger, said plunger being movable by gravity in one direction to actuate the valve, said plunger being actuated by the piston rod for movement in the other direction, and pipes for admitting a liquid to and releasing the liquid from the dashpot cylinder for regulating the speed at which the plunger is moved by gravity.

9. An operator as in claim 7, said first mentioned means including a sliding bar connected to the piston rod, a detent pivotally mounted on the bar, an arm connected to said valve and disposed in the path of the detent, when the piston and bar are moving in the first mentioned direction so that the detent will engage and actuate the valve, and a cam guide to engage the detent to move it out of engagement with the arm after the valve has been actuated thereby.

WALLACE SCOTT GRAHAM.