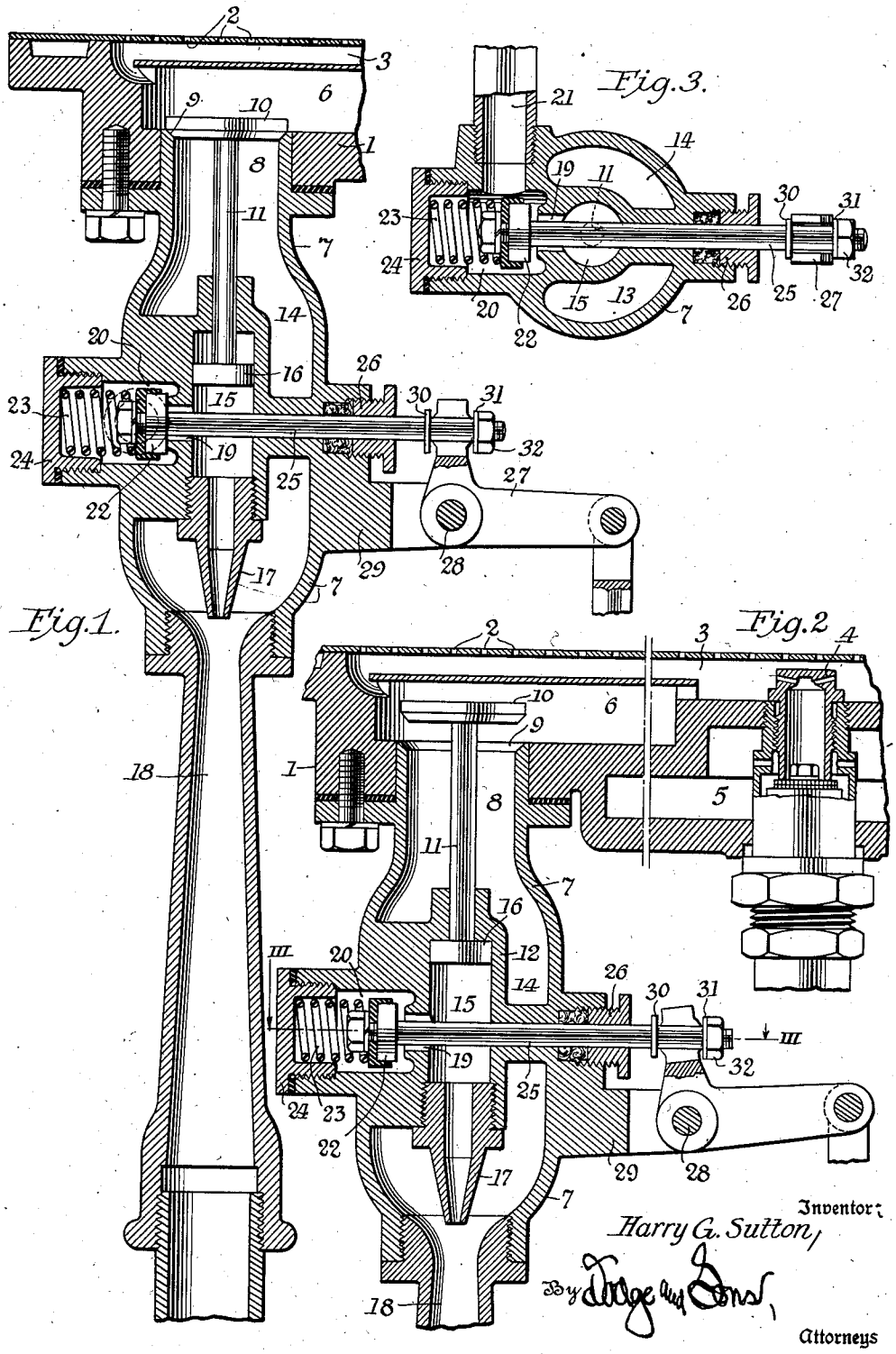
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DRYING MEANS FOR GARMENT PRESSES AND THE LIKE

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DRYING MEANS FOR GARMENT PRESSES AND THE LIKE

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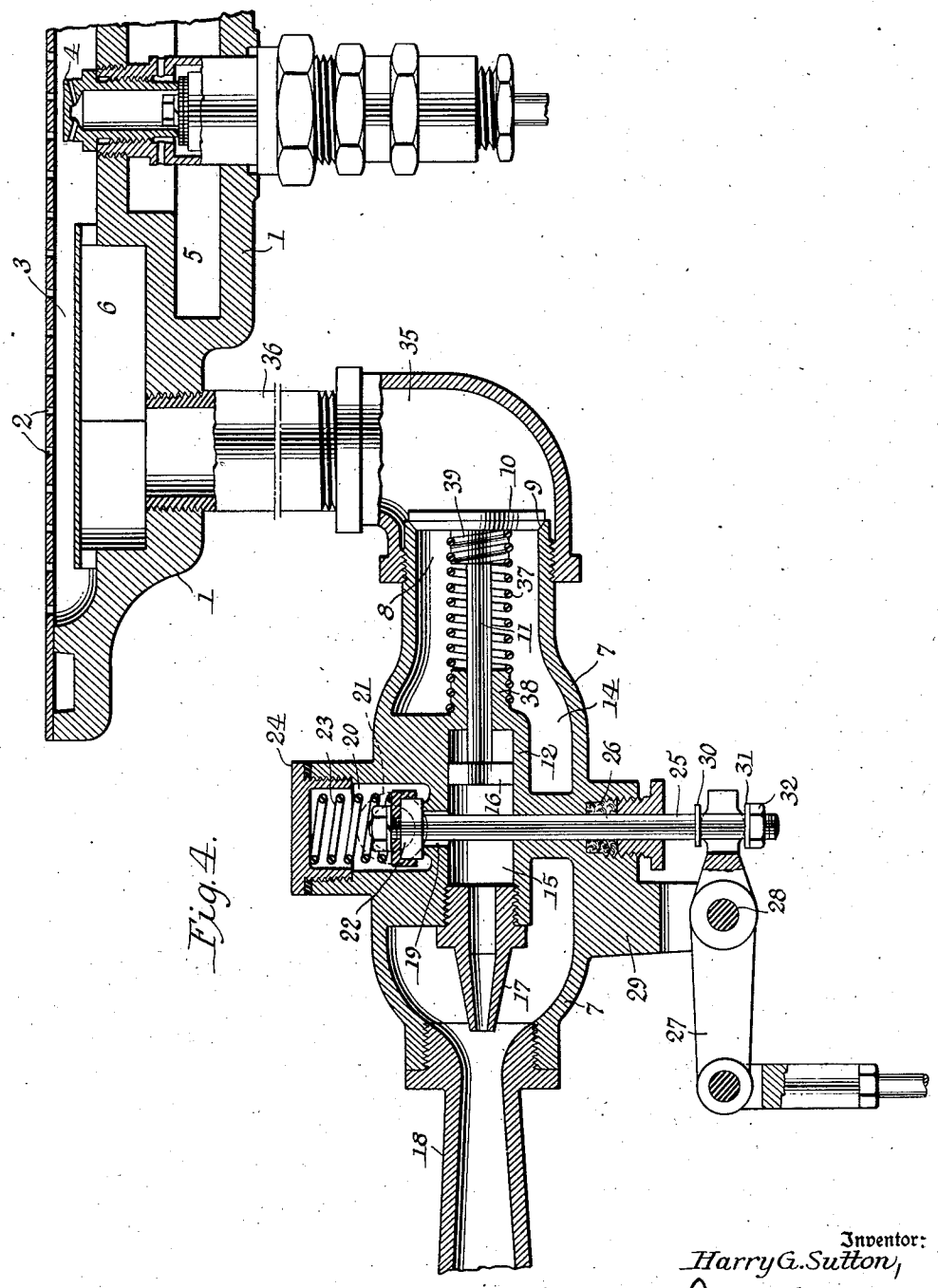


Fig. 4.

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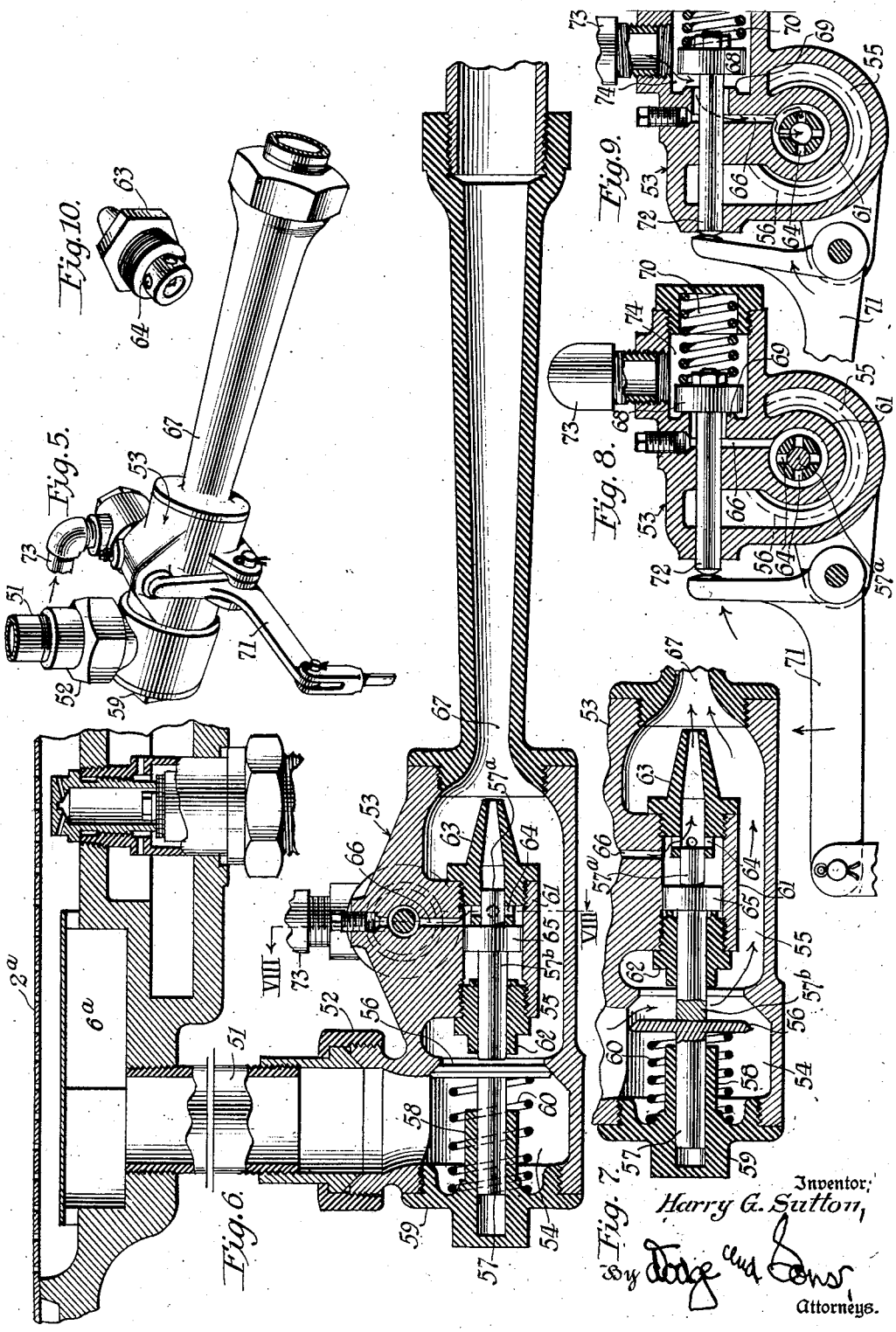
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Jan. 22, 1935. H. G. SUTTON 1,988,635

DRYING MEANS FOR GARMENT PRESSES AND THE LIKE

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1,988,635

DRYING MEANS FOR GARMENT PRESSES AND THE LIKE

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Application January 17, 1934, Serial No. 707,026

11 Claims. (Cl. 230—95)

This invention pertains to garment pressing machines or elements and relates more particularly to that type wherein suction means is employed to dry and set the goods or garment, as well as the padding if the latter be employed on the garment supporting element.

The invention has for its primary object the provision of means whereby fluid under pressure employed to create suction (or exhaust) through the pressing element, and the goods imposed thereon, is likewise utilized to automatically open a normally closed valve controlling the exhaust line.

The invention is susceptible of various embodiments and in the annexed drawings several of these are shown.

In said drawings,—

Figure 1 is a vertical sectional view of a portion of a pressing element, the exhaust line, its control valve, one form of allied exhausting means,—the operator controlled valve for admitting fluid under pressure being shown as closed;

Fig. 2, a view similar to Figure 1, the exhaust valve being shown in its open position and there also being illustrated means for supplying steam for heating and spraying purposes;

Fig. 3, a horizontal sectional view on the line III—III of Fig. 2;

Fig. 4, a vertical sectional view of a modified structure wherein the control valve for the exhaust is drawn to its seat through the action of a spring and the actuating means lies at right angles to that illustrated in Figures 1 and 2;

Fig. 5, a perspective view of a modified form of structure embodying the invention;

Fig. 6, a vertical sectional view thereof;

Fig. 7, a detailed sectional view showing the exhaust valve as open;

Fig. 8, a transverse vertical cross section on the line VIII—VIII of Fig. 6, with the pressure inlet valve closed;

Fig. 9, a like view of the same parts with the valve open; and

Fig. 10, a perspective view of the jet nozzle.

The invention is applicable to various pressing structures, as for instance garment and laundry presses, ironing boards, and the like. It is shown, however, in connection with the usual buck of a garment or laundry pressing machine.

Referring to the structure shown in Figures 1 to 3, inclusive, 1 denotes the buck provided with an upper perforate pressing face 2 overlying a chamber 3 into which steam may be introduced through a nozzle 4 from the usual live steam heating chamber 5.

An exhaust chamber 6 is provided in conjunction with the buck or pressing element 1, said chamber being in communication with the chamber 3 and connected with the exhaust line and mechanism. Said mechanism may be said to comprise generally a casting or housing in which the means for opening the normally closed exhaust valve, the inlet valve for the fluid pressure to open the exhaust valve, and the jet nozzle to create the vacuum or suction, are located. Said casting or housing is denoted generally by 7. It may be said to comprise a shell provided with an upward extension or nipple 8 projecting into an opening formed in the member 1. At its upper end said member 8 is fashioned to provide a valve seat 9 upon which rests a valve 10 to normally cut off the exhaust chamber from the element 8. The parts are then in the position shown in Figure 1.

Valve 10 is carried by the upper end of a valve stem 11, which latter passes through a bore or guide-opening formed in the upper portion of a member 12 which extends inwardly from one side of the casting 7 but is spaced therefrom to afford passages 13 and 14 thereabout (Fig. 3) which extend to the lower portion of the housing 7.

Within the member 12 there is formed a cylinder 15 and a piston 16 attached to the lower end of the valve stem 11 works in the upper portion of said cylinder. In the lower end of the member 12 there is mounted a jet nozzle 17 which stands in alignment with a Venturi tube 18 secured to the lower end of the casting or housing 7.

Fluid under pressure is designed to be admitted into the cylinder 15 below the piston 16 and consequently above the nozzle 17. To this end there is provided a lateral opening 19 extending into the cylinder 15, said opening communicating with a chamber 20 to which fluid under pressure is introduced in any suitable manner, as through a supply pipe 21 (Figure 3).

A valve 22 normally closes the opening 19 and is held to its seat by a spring 23 interposed between the valve and a cap piece 24 secured in the outer wall of chamber 20.

A valve stem 25 connected to the valve 22, extends freely through the opening 19, laterally through the cylinder 15 below and free of interference with the piston 16, and through a stuffing box 26. The stem at its outer end passes between the upwardly extending fingers of the bifurcated arm of a bell-crank lever 27 fulcrumed at 28 upon an extension 29 formed as a part of the casting 7.

The valve stem 25 carries a pair of washers 30 and 31 between which the fingers of the elbow lever 27 extend. These parts are held in place by a nut 32 screwed upon the outer threaded end of the valve stem. The elbow lever 27 may be rocked counter-clockwise through any suitable means (not shown) to unseat the valve 22 and allow fluid under pressure to enter the cylinder 15.

Such fluid, acting upon the under face of the piston 16, will force the same upwardly and through stem 11, raise valve 10 from its seat. At the same time, fluid under pressure passing out of the nozzle 17 and into the Venturi tube 18 will produce suction through the member 7 and the passages therein, withdrawing air and vapors from the chamber 6, and likewise from the chamber 3, and through the openings of the pressing plate 2, thereby drying the goods imposed upon said plate or drying the padding and goods which may overlie such plate. So long as the valve remains open or unseated and fluid pressure is supplied to the cylinder 15 the valve 10 will remain off its seat and fluid under pressure passing outwardly of the nozzle 17 will continue to produce the desired and necessary suction.

When the operator releases the operative mechanism that controls the position of the bell-crank 27, spring 23 will move the valve 22 to its seat, thereby cutting off further supply of fluid under pressure to the cylinder 15 and, as a consequence, interrupting suction through the housing 7. Valve 10 will then gravitate to its closed position so as to cut off the exhaust line or passage, preventing any waste of steam which might otherwise occur when a steaming action is to be effected through the utilization of the nozzle 4. It will thus be seen that by simply removing the valve 22 from its seat, the normally closed valve 10, which controls the exhaust line, will be raised and suction through the apparatus immediately started. Conversely, when the valve 22 is closed, either through the positive actuation of the bell-crank 27 or through the action of the spring 23, the valve 10 will automatically seat itself and the suction effect will be likewise stopped.

With some installations it may not be convenient to have the Venturi tube extend downwardly as shown in Figures 1 and 2, and in Figure 4 there is shown an arrangement whereby the same mechanism as heretofore described, with one possible exception, may be utilized. In said figure, similar parts are lettered the same as in the preceding figures. It is to be noted, however, that the housing or casting 7, instead of being connected directly into the lower portion of the pressing member 1, is connected thereto through suitable fittings as 35 and 36 and that the housing extends horizontally rather than vertically. As a consequence, valve 10, which normally cuts off the exhaust line, will not gravitate to its seat. To overcome this a tension spring 37 is employed. One end of the spring is threaded upon a hub 38 formed as a part of member 12 and the opposite end is secured to a hub 39 formed integral with the valve 10. It will therefore be seen that the spring at all times tends to draw the valve to its seat and to close off the exhaust line leading from the pressing member 1. When, however, valve 22 is moved from its seat to admit steam or other fluid under pressure into the cylinder 15, it will act upon the piston 16 and, through the rod 11, move valve 10 from its seat further stressing the spring 37.

As with the foregoing construction, fluid under pressure passing from the nozzle 17 will set up suction through the exhaust line and the housing 7. Immediately the supply of fluid under pressure is interrupted, valve 10 is drawn to its seat, and nozzle 17 ceases to function.

The cylinder 15, and the piston 16 working therein, are in effect a fluid pressure motor which serves to move the valve 10 from its seat when fluid pressure is admitted to the cylinder.

A further modification is shown in Figures 5 to 10, inclusive. In this instance, the exhaust chamber denoted by 6^a is connected by a pipe or nipple 51 through a coupling 52 to a casing denoted generally by 53. The casing, as will be best seen upon reference to Figures 6 and 7, is hollow and is provided at its outer end and into which the pipe 51 opens, with a chamber 54 closed off from the second chambered portion 55 of the casing by a normally closed valve 56. Said valve is mounted upon a stem 57, one end whereof is seated within a bearing 58 formed as an integral portion of a closure nut or cap 59. A spring 60 interposed between the valve and the cap serves to normally seat the valve and shut off the flow of fluid from passage 54 to 55.

Formed integrally with the member 53 and located in the chamber 55 is a cylindrical shaped member 61, closed at its rear by a screw plug 62, while in its forward end there is mounted a jet nozzle 63. The inner end of the nozzle is reduced in diameter so as to be spaced away from the inner walls of the cylindrical member 61, and is provided with a series of openings 64 extending laterally through such reduced end.

Extending forwardly of piston 65 and into the rear portion of nozzle 63, is a stem or rod 57^a which acts as a valve with reference to ports or openings 64.

Extending rearwardly from the piston and passing through plug 62 is a stem or rod 57^b, the rod being of such length that the end thereof stops just short of contact with valve 56 when said valve is closed and the piston is in its foremost position, as in Fig. 6, at which time ports 64 are likewise closed. The parts 57^a, 57^b and the piston 65 will preferably be formed integrally.

Fluid under pressure is admitted into the cylinder through the inlet opening or passage 66, and, acting on the piston, forces the piston to the left from the posititon shown in Fig. 6, to that shown in Fig. 7. Rod or stem 57^b will of course contact valve 56 and open the same, and spring 60 will be placed under compression.

In so moving, the forward end of the stem 57^a comes to the position shown in Figure 7, clearing the inner ends of the openings 64 and permitting the fluid under pressure to pass outwardly through the jet nozzle 63 and into a Venturi tube 67. In this manner, suction is created in the chamber 6^a and through the perforate support 2^a overlying the same.

Control of the fluid under pressure to the passage 66 is effected by a valve 68 (see Figures 8 and 9), normally pressed to its seat 69, which communicates with the passage 66, by a spring 70. The valve through the action of the spring is, as just noted, normally closed but may be readily opened through the operation of a bell-crank 71 operating upon the outwardly extending end 72 of the valve stem. Any suitable means may be employed for opening the valve 68. Fluid under pressure, usually steam, is introduced through a pipe 73 into a chamber 74 which is normally closed by the valve 68.

In the main, the operation of the present structure is similar to that previously described. The later discussed form is, however, advantageous.

It will be noted that the valve stem 57ª extends forward of the piston 65, and that the stem is guided throughout its travel. By reason of the presence of this forward extension, it becomes necessary to provide the openings 64 so that when the vent valve 56 is partially or completely opened, a suction is set up by the steam or fluid under pressure rushing through these openings into the nozzle.

Of course, one must realize that the further purpose of the valve stem 57ª of the piston 65 is to cushion the vent valve when said valve returns to its seat, so that this element creates no noise. Furthermore, it will be seen that the distance between the rear end of the member 57ᵇ and the adjacent face of the vent valve 56, is less than the distance it is necessary that the stem 57ª should travel before the end of said stem 57ª opens the ports 64. By this arrangement, the vent valve is off its seat before any suction can be created in the conduit or pipe 51 from the chamber 6ª, thus preventing any resistance to the opening of the vent valve 56 especially through the action of fluid pressure upon the piston 65. This is particularly so when operating at low pressures.

The forward end of the stem 57ª working in a cylindrical bore produced in the inner end of the nozzle 63 forms in effect a valve for the passages or openings 64.

The cylinder 61, the piston 65 and the allied elements may be termed a unitary fluid pressure actuated motor means which functions to move the valve which is associated with the chamber to be evacuated from its seat, and likewise to control the admission and cut-off of fluid under pressure to and from the jet nozzle.

From the foregoing, it will be noted that under all the modifications heretofore described, the exhaust valve is moved from its seat through the action of fluid under pressure, and that simultaneously therewith, a jet action is produced through a nozzle.

While steam has been spoken of as the medium employed to produce the jet, it will be appreciated that other fluid medium under pressure may be utilized.

The term "garment pressing machine" as employed in the foregoing description, is to be construed generically and is intended to include any and all structures to which the mechanism may be applicable.

This application is a continuation in part of my application filed June 10th, 1931, Serial No. 543,498, and later abandoned.

What is claimed is:

1. Exhausting means comprising in combination an exhaust conduit; a valve normally closing said conduit; fluid pressure actuated means for opening said valve; a valve controlling the passage of fluid pressure to said fluid pressure actuated means; and jet producing means opening into the fluid pressure space of the pressure actuated means aforesaid, and producing a jet of fluid under pressure in a direction through the conduit away from the valve which normally closes the conduit.

2. Exhausting means comprising in combination an exhaust conduit; a cylinder located within the conduit, there being a space between the interior wall of the conduit and the external wall of the cylinder; a valve closing one end of said conduit; a piston located within the cylinder; a stem cooperating with the piston and the valve; a nozzle extending from that end of the cylinder opposite the stem; and a valve controlling the flow of fluid under pressure into the cylinder.

3. Exhausting means comprising in combination an exhaust conduit; a cylinder mounted within the conduit, there being a space between the interior wall of the conduit and the external wall of the cylinder; a nozzle mounted in one end of the cylinder, said nozzle having a series of openings formed at the inner end thereof and normally opening into the cylinder; a piston mounted in the cylinder; a stem carried by the piston and extending to each side thereof, the forward portion of said stem extending into the nozzle and closing the openings aforesaid when the piston is in its forward position; a valve normally closing the exhaust conduit; a spring acting to seat the valve; and means for controlling the admission of fluid under pressure at the forward end of the cylinder and forward of the piston.

4. Exhausting means comprising in combination a conduit leading from a chamber to be exhausted; a jet nozzle; a cylinder mounted within said conduit in spaced relation, in part at least, to the surrounding walls of the structure; a piston located therein; a valve for closing the conduit; a conduit for introducing fluid under pressure into said cylinder; a valve for closing the inlet of fluid under pressure to the cylinder; and a piston mounted within the cylinder cooperating with the first-named valve to open the same under the action of fluid pressure upon the piston.

5. Exhausting means comprising in combination a chamber to be evacuated; a pipe extending therefrom; a valve opening inwardly toward said pipe and normally closing communication between said chamber and pipe; means acting to hold the valve in its closed position; a cylinder; a piston mounted therein; a rod extending from one end of the cylinder and toward said valve; a jet nozzle opening into the opposite end of the cylinder; means for admitting fluid under pressure into the cylinder and against that surface of the piston which faces the nozzle; means controlled by the movement of the piston for admitting the fluid under pressure to the nozzle; and a Venturi tube into which the nozzle discharges, said tube communicating with a chamber which surrounds the piston in part at least, and said chamber likewise communicating with the pipe aforesaid when the valve is unseated.

6. Exhausting means comprising in combination a chamber to be evacuated; a conduit extending therefrom and terminating in a hollow member; a valve normally closing said conduit against the outflow of fluid therethrough; a cylinder mounted within the hollow member and standing in spaced relation to the inner walls thereof, in part at least; a piston mounted within the cylinder; a jet nozzle at the forward end of the cylinder, said nozzle being provided at its inner end with a reduced portion having at least one opening formed therein communicating with the interior of the cylinder; a rod connected to the piston and extending at its forward end into the adjacent end of the nozzle and serving when the piston is moved outwardly to close the opening aforesaid; a rod extending from the opposite face of the piston in line with the valve; and means for admitting fluid under pressure to

the forward end of the cylinder whereby the piston will be moved rearwardly, the valve unseated by the second named rod, and the opening formed in the reduced portion of the nozzle uncovered, thereby permitting such fluid to pass outwardly from the nozzle.

7. Exhausting means comprising in combination a chamber to be evacuated; a conduit extending therefrom; a hollow member in communication with said conduit; a valve normally closing the chamber from said conduit; a cylinder located within the hollow chamber and spaced from the inner walls thereof in part at least; a nozzle mounted in the forward end of the cylinder, said nozzle being provided with an inwardly extending reduced portion having at least one opening formed therein and communicating with the interior of the cylinder; a piston mounted within the cylinder; a piston rod extending from each side of said piston, the forward end of the rod acting with the reduced portion of the nozzle as a valve for closing the opening in the reduced portion when the first-mentioned valve is seated; and means for introducing fluid under pressure into the cylinder forward of the piston.

8. A structure as set forth in claim 7, wherein the rear end of the rod is guided in its movements and a spring is employed to seat the first-named valve.

9. In combination with a chamber to be evacuated, a valve normally closing said chamber against evacuation; a jet nozzle for creating a flow from the chamber to be evacuated; and unitary fluid pressure actuated motor means for moving the valve from its seat and likewise admitting fluid under pressure to the nozzle.

10. A structure as set forth in claim 9, wherein the valve which closes the chamber against evacuation is opened by the motor in advance of the admission of fluid under pressure to the nozzle.

11. Exhausting means comprising in combination a chamber to be exhausted and having an exhaust opening; a valve; a spring for normally closing said valve; a cylinder; a jet nozzle extending therefrom, said nozzle having at least one port open to the interior of the cylinder; a piston in the cylinder; a reciprocating valve carried by the piston, said valve extending into the nozzle and controlling the opening and closing of the port aforesaid; and a stem extending from the piston toward the exhaust valve, said stem being spaced therefrom when the valve is closed and the reciprocating valve having an amplitude of movement before uncovering the port such that the stem will normally open the exhaust valve prior to the opening of the port.

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