Sept. 5, 1950 W. F. GAYRING 2,521,511

HEAT CONFINING SYSTEM FOR PRESSING MACHINES

Filed May 18, 1946 3 Sheets-Sheet 1

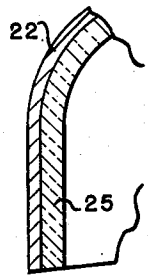


FIG. 4

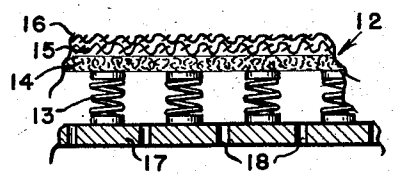


FIG. 5

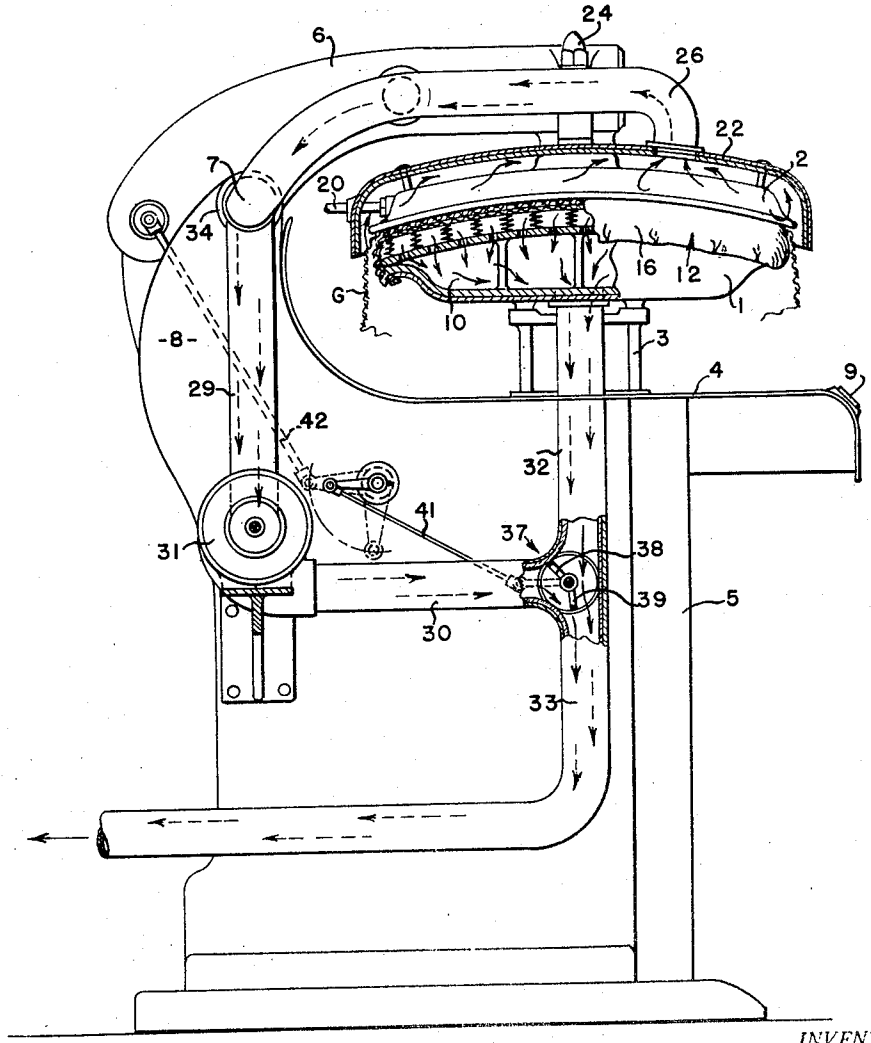
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HEAT CONFINING SYSTEM FOR PRESSING MACHINES

Filed May 18, 1946 3 Sheets-Sheet 2

FIG. 2



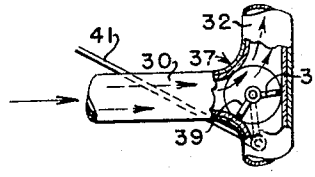


FIG. 6

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Sept. 5, 1950 W. F. GAYRING 2,521,511

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Filed May 18, 1946 3 Sheets-Sheet 3

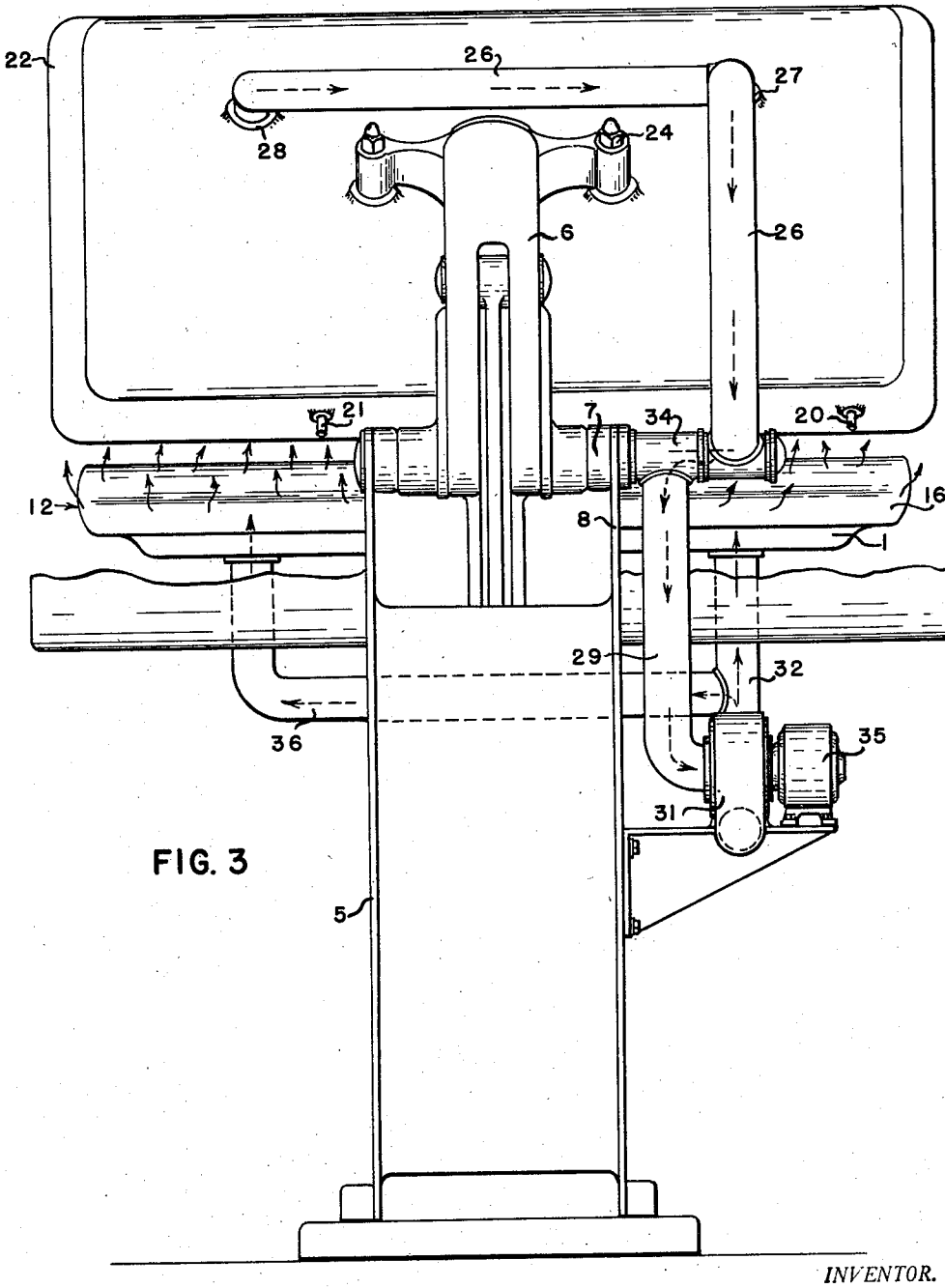


FIG. 3

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UNITED STATES PATENT OFFICE

2,521,511

HEAT CONFINING SYSTEM FOR PRESSING MACHINES

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7 Claims. (Cl. 38—15)

1

This invention relates to garment and laundry, fabric, textile, etc. pressing machines and the like, in which pressing elements are internally heated or provided with internal chambers for receiving a heating medium, usually steam, the chambers of both pressing elements being connected in the steam supply line in series or in multiple. In some presses, only one of the pressing elements is heated. The invention has for its object a heating system for presses of this type, which effects great economy in heating both pressing elements, by conducting a primary heating medium or steam to the chamber of one pressing element only, and collecting and conducting heat radiating from that element, when the press is open, from both elements when the press is closed, and in addition, collecting the heat rising by convection from the other pressing element, when the press is open, in the chamber of the other pressing element, the conduit having a suitable draft creating device, as a blower, therein, for creating an in-draft sufficient only to keep the heated air circulating or in motion and to deflect only slightly the air rising by convection from the lower pressing element into the collecting means, and hence deflect only to a minimum the atmosphere of the room in which the machine is located, which atmosphere may be artificially conditioned. Heretofore in laundry machines, the heat from the machines radiates and escapes into the room in which the machine is located.

Other objects will appear throughout the specification.

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 a side elevation, partly broken away and in section, of one type of conventional pressing machine embodying this invention, parts of the actuating mechanism being omitted.

Figure 2 is a similar elevation, partly broken away and in section, showing the machine closed.

Figure 3 is a rear elevation, partly broken away.

Figure 4 (Sheet 1) is an enlarged fragmentary

2

view, partly in section, of the hood enclosing the upper pressing element.

Figure 5 (Sheet 1) is an enlarged fragmentary view of the lower pressing element and the padding thereon.

Figure 6 (Sheet 2) is a fragmentary view, partly broken away and in section, illustrating the valve which controls the flow of heated air to the lower pressing element in a different position from that shown in Figure 2.

The invention is here shown as embodied in a conventional type of pressing machine embodying upper and lower pressing elements having relative opening and closing movements. As here shown, the upper pressing element is mounted to move toward and from the lower pressing element.

1 designates the lower pressing element, and 2 the upper pressing element or head mounted to have opening and closing movements toward and from the element 1. The lower pressing element 1 is mounted on a suitable pedestal or goose neck 3 which in turn is mounted on the table 4 of a frame 5. The upper pressing element is carried by a yoke lever 6 pivoted at 7 to an upwardly extending bracket 8 rising from the frame in the rear of the lower pressing element 1, this lever being part of the actuating mechanism for the upper pressing element or head 2. The rear arm of the yoke lever is connected through suitable motion transmitting means of any conventional form to a prime mover which may be a pedal or a motor, it usually being a motor, the operation of which is controlled by manuals or push buttons, as 9.

The construction of the operating mechanism forms no part of this invention.

The pressing elements 1 and 2 are provided with internal heating chambers 10 and 11 respectively and also the lower pressing element is provided with a padding 12 on its pressing face. This is shown as including springs 13 and layers of material superimposed on another, as a layer 14 of mineral wool, 15 of flannel, and a cover cloth 16. The mineral wool does not absorb moisture. The flannel does absorb moisture. Both are porous, the mineral wool being porous because of the interstices between its fibers. The construction of the padding is such that the moisture does not soak evenly through the same but the greater

part will collect in the layer 15 of flannel and dried out by the heated air. The top plate 17 of the lower pressing element is perforated, as at 18. The portions of the lower pressing element below the top plate are covered by a sheet 19 of heat insulating material. The upper pressing element 2 or the chamber 11 thereof is connected to a steam supply and circulating line including an inlet pipe 20 and return pipe 21.

The means for collecting heated air or air and vapor from the upper pressing element, when the press is open, from both elements, when the press is closed, and heated air and vapor rising from the lower pressing element 1, when the press is open, includes a hood 22 enclosing and spaced from the upper side and edges of the upper element 2 and having a skirt portion extending slightly beyond the pressing face of the upper element 2. It is provided with an opening through which extends a boss 23 on the upper side of the element 2 and to which the yoke lever is secured, as by screws 24. The hood is provided with a lining 25 of heat insulating material.

The means for conducting heated air currents collected in the hood 22 both when the press is closed and open, consists of a conduit section 26 opening into the hood 22 at spaced apart points at 27 and 28, sections 29 and 30 having draft creating means, as a blower 31, between them, the section 30 being connected to a branch 32 communicating with the chamber 10 of the pressing element 1. The blower is constructed and actuated at such speed as to keep the air current in motion, and also of sufficient force to deflect the air, rising from the lower pressing element, when the press is open, into the hood 22. The sections 26 and 29 of the conduit are connected together by a swivel joint 34 coaxial with the pivotal axis 7 of the yoke lever. The blower is actuated by an electric motor 35. The conduit section 32 also has a branch 36 opening into the chamber 10 of the element 1 at a point spaced from where the section 32 opens into the chamber 10. In operation, the blower 31 circulates the air drawn in through the hood 22 over the heated head 2, through pipes or conduits 26, swivel joint 34, conduit 29, blower 31, pipes 30, 32 to the chamber 10 of the lower pressing element 1, thence through the perforations 18, the pad 16, drying the pad, and passing to the atmosphere where it is again picked up and recirculated. Means, as seen in Fig. 2, may be provided, if desired, for diverting the air current to the outer air instead of recirculating it. In Figure 1, a simple circulating system of heated currents is shown from the hood through pipes 26, 29, 30, 32 and chamber 10 of the lower pressing element back through the hood. In Figure 2, a modified construction is shown whereby the same circulation may take place part of the time as when the press is open, and then when closed the circulating system exhausts out through the pipe 33, creating a vacuum in the chamber of the lower pressing element. Figure 2 is a modification of Figure 1 insofar only as the circulating system is concerned.

If desired, a valve may be located in the circulating system to be operated to a position to create suction so that when the press is open, the steam is evacuated from the lower pressing element and a down draft created to dry the padding on the lower pressing element. This is accomplished as follows: 37 designates a valve or damper located at the T junction of the conduit sections 30, 32 and 33, this having two leaves 38 and 39. The valve is operable into the position shown in Figure 6, so that all of the heated air passing through the conduit passes to the chamber 10 of the lower pressing element 2, and also operable into the position shown in Figure 2, wherein the heated air is directed out through the discharge pipe 33, and in so doing, causes a down draft through the section 32 out of the chamber 10. This causes a draft of heated air through the padding and the perforations 18 in the top plate 17 when the press is closed. During the ironing operation, a damp garment G is placed on the padding 16. The steam generated by the hot head 2 coming in contact with the garment G passes through the padding 16 and is drawn out conduit 32 past valve 37 and out conduit 33. This effects the drying of the padding and the elimination of the moisture. The conduit sections may also be covered with a heat insulating material, as at 40. The heat and steam passed out through the discharge pipe 32 may be re-used in other apparatus, as for example, a heat exchanger.

The valve 37 is preferably operated in synchronism with the opening and closing of the press, it being in position to deflect the heated air into the chamber 10, when the press is open, and into position to discharge into the outer air and draw the heated air and steam from the chamber 10 of the lower element 2, when the press is closed. The valve may be connected to any suitable part of the actuating mechanism, and is here shown, for the purpose of illustration, as connected by a link 41 to a link 42 within the frame 5 to the yoke lever 6.

This press construction is of particular advantage in that but one pressing element is heated with a primary heating medium, as steam, but at the same time, the other pressing element is adequately heated by heat that otherwise goes to waste, that is, (1) heated air from the element which is heated by the primary medium, and (2) the heated air currents rising from the lower element, when it becomes heated, and the press open, and (3) heated air and vapor from both pressing elements, when the press is closed. Also, the heat from the pressing elements 1, 2 is prevented from escaping to the outer air and into the room in which the press is located, and also there is a minimum of drawing of the atmosphere of the room into the circulating system of the press, this being a desideratum where the room in which the press or presses are located is air-conditioned.

What I claim is:

1. In a garment and laundry pressing machine and the like, which includes upper and lower pressing elements having relative opening and closing movements, said elements being formed with internal heating chambers, the upper element being connected to a supply line for a primary heating medium, and means for collecting heated air and vapor from the upper pressing element when the press is open, from both pressing elements when the press is closed and the heated air and vapor rising from the lower pressing element when the press is open, and conducting the heated air and vapor to the chamber of the lower pressing element, including a conduit having draft creating means therein, said conduit having branches leading respectively to the chamber of the lower pressing element and to an outlet and a valve located at the junction of the conduit and its branches and operable into one position to deflect the heated air and vapor

for the most part into the chamber of the lower pressing element and into a second position to deflect the heated air and vapor for the most part through the outlet.

2. In a garment and laundry pressing machine and the like, which includes upper and lower pressing elements having relative opening and closing movements, and actuating mechanism for effecting such movements, said elements being formed with internal heating chambers, the upper element being connected to a supply line for a primary heating medium, and means for collecting heated air and vapor radiating from the upper pressing element when the press is open, from both pressing elements when the press is closed and when the press is open, and conducting the collected heated air and vapors to the chamber of the lower pressing element, including a conduit having draft creating means therein, said conduit having branches leading respectively to the chamber of the lower pressing element and to an outlet, a valve located at the junction of the conduit and its branches and operable in one position to deflect the collected heated air and vapors for the most part into the chamber of the lower pressing element and into a second position to deflect the heated air and vapors for the most part through the outlet, and motion transmitting connections between said valve and a movable part of the press actuating mechanism to operate said valve from either position to the other in synchronism with the opening and closing of the press.

3. In a garment and laundry pressing machine and the like, which includes upper and lower pressing elements having relative opening and closing movements, said elements being formed with internal heating chambers, the upper element being connected in a supply line for a primary heating medium, a hood enclosing the upper side and the edges of the upper pressing element and spaced therefrom, a conduit communicating with said hood and with the chamber of the lower pressing element and having means for drawing thereinto the heated air and vapors from the upper pressing element and from both elements when the press is closed, said hood being located to receive heated air and vapors rising from the lower pressing element when the press is open, whereby the collected heated air and vapors constitute a heating medium for the lower element, and valve means in said conduit operable into position to direct the heated air into the lower pressing element when the press is open and direct it away from the lower pressing element and create an out-draft from the chamber of the lower pressing element when the press is closed.

4. In a garment and laundry pressing machine and the like, which includes upper and lower pressing elements having relative opening and closing movements, and actuating mechanism for effecting said movements, said elements being formed with internal heating chambers, the upper element being connected into a supply line for a primary heating medium, the lower pressing element having perforations through its pressing face and opening into said chamber, and a padding on the pressing face, a hood enclosing the upper side and the edges of the upper pressing element and spaced therefrom, a conduit communicating with the hood and with the chamber of the lower pressing element and having means for drawing thereinto the heated air and vapors from the upper pressing element and heated air and steam from both elements when the press is closed, said hood being located to receive the heated air and vapors from the lower pressing element when the press is open, whereby said heated air and vapors constitute a heating medium for the lower element, valve means in said conduit operable into position to direct the heated air into the lower pressing element when the press is open and direct said heat and steam away from the lower pressing element and create an out-draft from the chamber of the lower pressing element when the press is closed, and operating means for the valve connected to said mechanism to be operated thereby synchronously with the opening and closing of the press.

5. In a garment and laundry pressing machine and the like, which includes upper and lower pressing elements having relative opening and closing movements and actuating mechanism for effecting said movements, said elements being formed with internal heating chambers, the chamber of the upper element only being connected to a supply line for a primary heating medium, a hood enclosing the upper pressing element and spaced from the top and marginal walls thereof and open on the pressing face side of the upper element, a conduit connecting the interior of the hood and the internal heating chamber of the lower pressing element, and means creating a draft into the hood through the open side thereof through the conduit into the heating chamber of the lower pressing element.

6. In a garment and laundry pressing machine and the like, which includes upper and lower pressing elements having relative opening and closing movements and actuating mechanism for effecting said movements, said elements being formed with internal heating chambers, the chamber of the upper element only being connected to a supply line for a primary heating medium, a hood enclosing the upper pressing element and spaced from the top and marginal walls thereof and open on the pressing face side of the upper element, a conduit connecting the interior of the hood and the internal heating chamber of the lower pressing element, said conduit having branches leading respectively to the chamber of the lower pressing element and to an outlet, a valve located at the junction of the conduit and its branches and operable into one position to deflect the mixture of vapor and air passing therethrough for the most part into the heating chamber of the lower pressing element and into a second position to deflect the same, for the most part, through the outlet, and means creating a draft into the hood and conduit through the open side of the conduit.

7. In a garment and laundry pressing machine and the like, which includes upper and lower pressing elements having relative opening and closing movements and actuating mechanism for effecting said movements, said elements being formed with internal heating chambers, the chamber of the upper element only being connected to a supply line for a primary heating medium, a hood enclosing the upper pressing element and spaced from the top and marginal walls thereof and open on the pressing face side of the upper element, a conduit connecting the interior of the hood and the internal heating chamber of the lower pressing element, said conduit having branches leading respectively to the chamber of the lower pressing element and to an outlet, a valve located at the junction of the

conduit and its branches and operable into one position to deflect the mixture of vapor and air passing therethrough for the most part into the heating chamber of the lower pressing element and into a second position to deflect the same, for the most part, through the outlet, and means creating a draft into the hood and conduit through the open side of the conduit, and motion transmitting connections between said valve and a movable part of the press actuating mechanism to operate said valve from either position to the other in synchronism with the opening and closing of the press.

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