Jan. 9, 1951 C. S. POWELL ET AL 2,537,700

PNEUMATIC PRESSURE PRESSING MACHINE

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Fig. 1

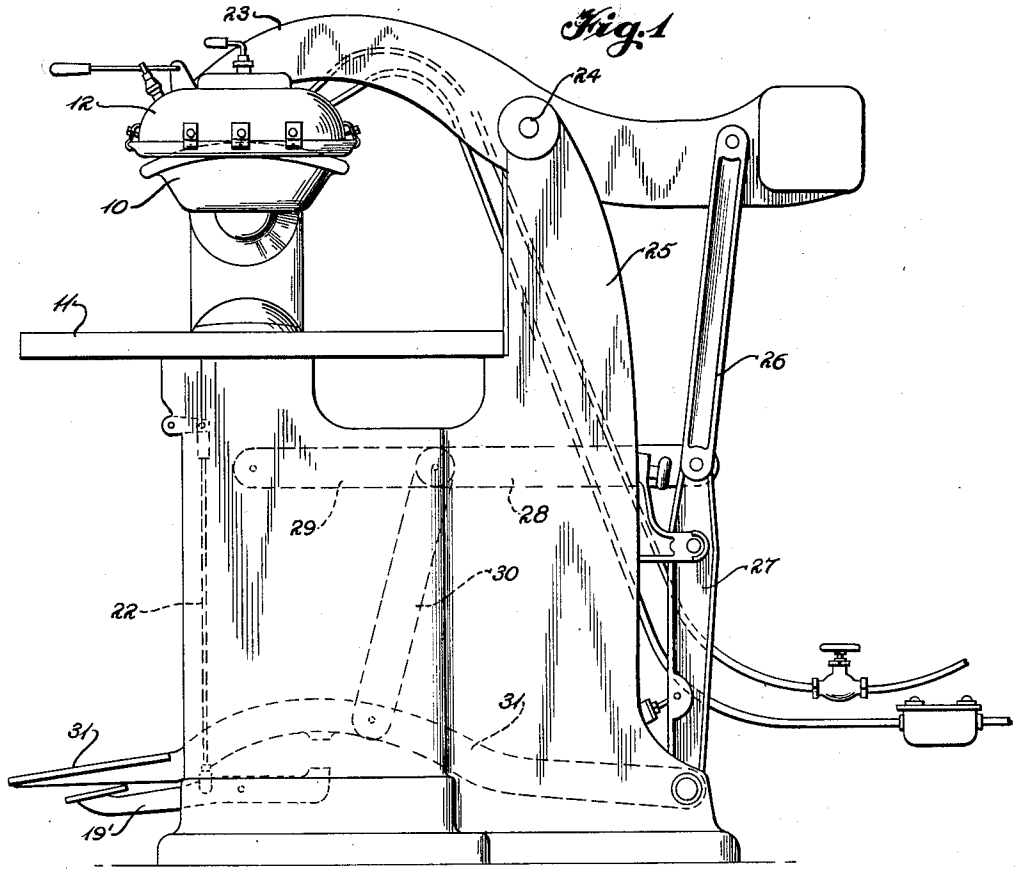


Fig. 3

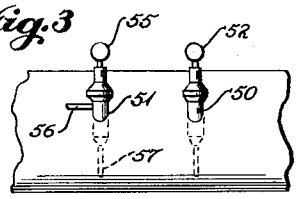


Fig. 2

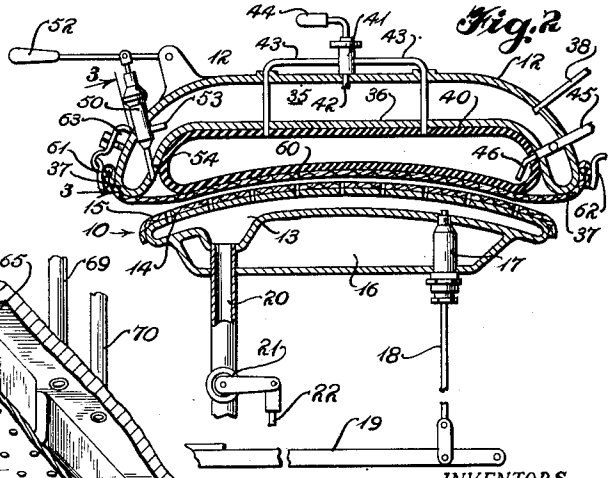
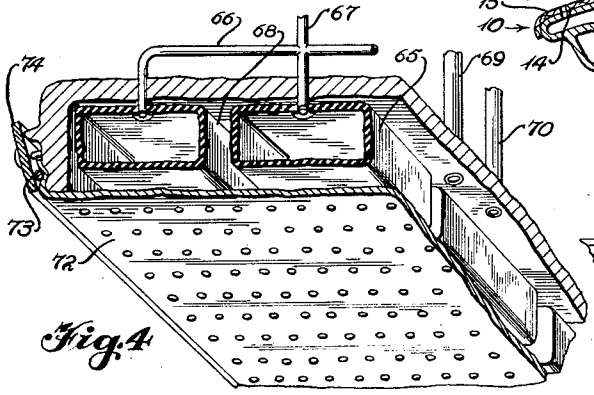


Fig. 4



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PNEUMATIC PRESSURE PRESSING MACHINE

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16 Claims. (Cl. 38—16)

1

The present invention relates to a garment pressing apparatus, of the type employed in tailoring shops, cleaning and pressing establishments, clothing manufacturing concerns and the like, for pressing men's and women's outer garments.

A primary object of the invention is to provide an improved apparatus for effectively applying uniform pressing pressure to the garment, as distinguished from conventional machines wherein the degree of pressure applied varies widely throughout different portions of the garment, depending upon the thickness of the material at different points.

Another object of the invention is to provide, in combination with the means for applying uniform pressure, improved means for heating, moistening, and drying the garment, before, during, and after the pressing operation.

Another object of the invention is to provide improved means for subjecting the garment to the influence of steam, to moisten and soften the fibers of the fabric, thereby to condition them for shaping or forming, under the influence of heat and pressure, applied uniformly to the garment surface.

Another object of the invention is to provide improved means for causing a flow of drying air through the garment, after the pressing operation, to remove the moisture and thereby to dry and set the garment in the pressed condition.

Other and further objects and advantages of the invention will be apparent from a consideration of the following description of the specific embodiment, shown diagrammatically for purposes of illustration in the accompanying drawings and described below.

In the drawings:

Figure 1 is a somewhat schematic or diagrammatic view, in side elevation of an apparatus embodying the invention;

Figure 2 is a cross-section through the head and buck with the press in closed position;

Figure 3 is a fragmentary front elevation of the press head; and

Figure 4 is a fragmentary isometric section view of a modified press head employing a plurality of pressure applying cells.

Referring to the drawings, a heated buck 10 of substantially conventional design may be mounted upon a table 11, below an upwardly swingable head 12. The buck has a hollow interior 13, bounded by a perforated cover plate 14, upon which may be secured the usual padding and a pervious, fabric covering 15, as is well understood in the art. The buck pad may be constructed in accordance with the disclosure of the copending application of Reiss et al., Serial No. 740,766, filed April 11, 1947, now Patent Number 2,490,981, issued December 12, 1949, and reference made to that application for a description of a preferred arrangement of parts. The buck may be of any suitable shape or contour, depending upon the use to which the apparatus is to be put, and includes a steam heating jacket space 16, supplied with steam independently of the other steam connections hereinafter described.

2

The interior space 13 of the buck may be supplied with steam by a valve 17 connected by a link 18 to a pedal 19, so that a garment placed on the buck may be steamed and moistened, by the flow of steam through the perforated plate 14 and the pervious cover 15.

The space 13 in the buck is also in communication through a pipe 20 with a source of vacuum under the control of a valve 21 connected by a link 22 to a suitable pedal 19'. Atmospheric air thus may be drawn through a pressed garment on the buck to remove moisture therefrom, to dry and set the fibers.

The press head 12 may be mounted on the forward end of a weighted lever arm 23, pivoted at 24 to the machine frame 25 and connected by toggle links 26, 27, 28, and 29 and a drag link 30 to an operating pedal 31. Since arrangements of this kind are well understood and are in wide use at the present time on presses of the Hoffman type, they need not be further described.

The press head 12 has an interior closed steam space 35, defined by a bottom wall 36 having a concave undersurface, bounded by downwardly extending marginal portions 37. Steam may be delivered to the space 35 at substantially constant, controlled pressure, from a suitable source by a pipe 38. Within the concavity below the wall 36, there is disposed a flexible, distensible, impervious sack 40, of rubber, rubber and fabric or any other suitable material. A valve 41 having an inlet 42 communicating with the interior space 35 is arranged to deliver steam through branch pipes 43 to the interior of the sack 40, the valve being controlled by a handle 44 or the like. A pipe 45, extending through the head and connected to a flexible rubber tube section 46 in communication with the interior of the sack 40 leads through a steam trap 46 for the removal of condensate.

The head 12 may carry steam and air valves 50 and 51. The steam valve, under the control of an operating handle 52, is adapted to deliver steam from the hollow space 35, through an intake conduit 53 and a discharge pipe 54 to the concavity

below the head, exteriorly of the sack 40. Similarly, the air valve 51, under control of an operating handle 55 receives air from any suitable source through pipe 56 and delivers the same through a discharge pipe 57 to the space below the head, exteriorly of the sack 40.

A pervious cover 60 of flexible material having a beaded edge 61 may be clamped around the lower margin 37 of the head, by means of a strap 62 and suitable clamps 63. The cover 60 is preferably fitted upon the lower surface of the head with a substantial amount of slack, to permit the sack 40 to apply high pressing pressure through the cover to a garment on the buck.

In the operation of this form of the invention, a garment to be pressed is laid upon the buck cover 15 and smoothed in the usual manner. If desired, the garment may be lightly steamed by pressing the pedal 19 and opening the buck steam valve 17, after which it may be further smoothed and made ready for pressing. Then, the head 12 is lowered by the operator, and the toggle system is locked to maintain the head in the lowered position. It will be understood that, at this time, the sack 40 is not inflated, but is at least partially collapsed. If further steaming of the garment is desired, which is usually the case, the handle 52 of valve 50 is manipulated to deliver steam from the space 35 to the concavity in the head, exteriorly of the sack 40. This steam, diffused throughout the entire area of the lower surface of the head, flows through the pervious cover 60 into contact with and through the garment, to moisten and soften the garment. Valve 41 may now be manipulated by handle 44, to deliver steam from the hollow interior 35 of the head to the interior of the sack 40, whereupon the sack is inflated and pressing pressure is applied through the cover 60, evenly to the garment, throughout the entire surface thereof. At the conclusion of the pressing operation, air may be delivered to the space above the head cover 60, exteriorly of the sack, and a vacuum may be drawn through the buck by manipulating the vacuum valve 21. This flow of air through the garment removes moisture therefrom and sets the garment in the pressed condition. If desired, the air valve 50 associated with the head may be eliminated and the suction line connected to the buck relied upon exclusively, to draw atmospheric air through the garment to perform the drying function.

Instead of using steam as the fluid pressure medium, compressed air may be delivered to the interior of the sack 40 from any suitable source, through a valve, controlled in any desired manner.

In the form of the invention shown in Figure 4, a plurality of independent sacks or cells 65 are employed, instead of a single sack, as in the first form. The several sacks are interconnected by a common header 66 in communication with a supply pipe 67 for the delivery to the cells of fluid under pressure, either air or steam. Similarly, the space 68 between and surrounding the cells may be supplied with steam and air or either steam or air by valve-controlled pipes 69 and 70.

The concave space 68, below the several sacks 65 may be closed by a perforated or pervious cover 72 of any suitable flexible material. The cover may be clamped in place by a marginal cord or cable 73 and a strap 74.

The operation of this form of the invention is substantially the same as previously described.

In both cases, the garment is moistened by the delivery of steam to the head, in the space surrounding the inflatable member or members and/or steam delivered to the space below the perforated top plate of the buck. After moistening, the sack or sacks are inflated by fluid under pressure (steam or air) and pressure is applied to the garment through the cover on the undersurface of the head. After a suitable pressing time, the supply of fluid under pressure is cut off. While the head is still in its lowered position, the valve 51 may be opened to deliver drying air to the concavity in the head, exteriorly of the sack or sacks. This air flows through the pervious cover of the head, through the garment, through the pervious cover on the buck, and into the chamber therebelow. The vacuum valve may be opened to facilitate this flow of air. Even though the sack or sacks are deflated at this time, so as not to apply pressing pressure to the garment, the pervious cover of the head will be held firmly upon the garment, to maintain the latter smoothly on the buck, by the flow of air from the head through the cover.

After the head has been raised, the vacuum valve may again be opened, to connect the hollow interior of the buck to the source of vacuum, thereby to draw atmospheric air through the garment, for final drying.

It must be understood that the showing in the accompanying drawings is largely diagrammatic and is made for purposes of illustration and not by way of limitation. For instance, valves of any suitable type may be substituted for those shown, and may be mounted wherever desired, and operated by any suitable means, known to the art. Moreover, other means for raising, lowering, and locking the head may be substituted.

The apparatus described above includes means associated with both the head and the buck for subjecting the garment to steam for moistening and to air for drying. It should be understood, however, that these fluid delivery arrangements may be associated with either the buck or the head, or one with each only. In other words, steam may be applied to the garment from either the head or buck, or from both as described above. Similarly, air may be delivered to the garment from the head or suction through the buck may be relied upon exclusively.

Hence, it should be understood that the invention is not limited to the details of construction shown in the drawings and described above, but includes all modifications coming within the scope of the appended claims and equivalent constructions.

We claim:

1. A pressing apparatus comprising a buck member and a head member mounted for relative movement into juxtaposed relation for pressing a garment therebetween, a pervious cover on the operative face of one member, a cover of flexible material constituting the operative face of the other member, a substantially impervious, distensible element directly behind the last mentioned cover, means for delivering fluid under pressure behind said element to distend the same and thereby apply pressing pressure from the element through the last mentioned cover, evenly to the garment and means causing fluid to flow through said pervious cover and into the garment.

2. A pressing apparatus comprising a buck member and a head member mounted for rela-

tive movement into juxtaposed relation for pressing a garment therebetween, a flexible, pervious cover on the operative face of one member, a flexible, substantially impervious, distensible element behind said cover, means for delivering fluid under pressure behind said element to distend the same and thereby apply pressing pressure to the cover and the garment, and means for delivering fluid through said cover for contact with the garment.

3. A pressing apparatus comprising a buck member and a head member mounted for relative movement into juxtaposed relation for pressing a garment therebetween, a flexible, pervious cover on the operative face of one member, a flexible substantially impervious, distensible element behind said cover, means for delivering fluid under pressure behind said element to distend the same and thereby apply pressing pressure to the cover and the garment, and means for delivering steam through said cover and the garment positioned between said members, to moisten the garment and to condition the same for pressing.

4. A pressing apparatus comprising a buck member and a head member mounted for relative movement into juxtaposed relation for pressing a garment therebetween, a flexible, pervious cover on the operative face of one member, a flexible, substantially impervious, distensible element behind said cover, means for delivering fluid under pressure behind said element to distend the same and thereby apply pressing pressure to the cover and the garment, means for delivering steam through said cover to moisten a garment positioned between said members, and means for causing air to flow through the garment and through at least one of the members to dry the garment.

5. A pressing apparatus comprising a buck member and a head member mounted for relative movement into juxtaposed relation for pressing a garment therebetween, a flexible pervious cover on the operative face of one member, a flexible, substantially impervious, distensible element behind said cover, means for delivering fluid under pressure behind said element to distend the same and thereby apply pressing pressure to the cover and the garment, means for delivering steam through said cover to moisten a garment positioned between said members, a source of vacuum, and connections causing atmospheric air to flow through the garment and one of said members to the source, to dry a garment positioned adjacent the last mentioned member.

6. A pressing apparatus comprising a buck member and a head member, mounted for relative movement into juxtaposed relation for pressing a garment therebetween, a pervious cover of flexible material on the operative face of one member, a pervious operative surface on the other member, a plurality of air passages associated with said other member communicating with said pervious operative surface thereof, means for delivering steam through the pervious surface of one member, a flexible substantially impervious distensible element behind said cover, means for delivering fluid under pressure behind said element to distend the same and thereby apply pressing pressure through said cover to said garment, and means for delivering air to the space behind said cover for flow through the cover and the garment and the pervious surface of said other member to dry the garment.

7. A pressing apparatus comprising a buck member and a head member mounted for relative movement into juxtaposed relation for pressing a garment therebetween, a pervious cover of flexible material on the operative face of one member, a pervious surface on the other member, a flexible substantially impervious distensible element behind said cover, means for delivering fluid under pressure behind said element to distend the same and thereby apply pressing pressure through said cover to said garment, and means for alternately delivering steam and air to the space behind said cover for flow through the cover to moisten and dry a garment respectively.

8. A pressing apparatus comprising a buck member and a head member mounted for relative movement into juxtaposed relation for pressing a garment therebetween, a pervious cover of flexible material on the operative face of one member, a pervious surface on the other member, a flexible, substantially impervious distensible member behind said cover, means for delivering fluid under pressure behind said element to distend the same and thereby apply pressing pressure to said garment, means for alternately delivering steam and air to the space behind said cover for flow through the cover to moisten and dry a garment respectively, and means associated with the other member for alternately delivering steam through the pervious surface thereof and connecting the same to a source of vacuum.

9. A pressing apparatus comprising a buck member and a head member mounted for relative movement into juxtaposed relation for pressing a garment therebetween, one of said members having a concavity behind its operative face, a pervious cover of flexible material closing said concavity, a flexible, expansible sack in the concavity behind the cover, means for delivery fluid under pressure to the sack to expand the same and thereby apply pressing pressure to the cover and the garment and means for delivering steam to the concavity exteriorly of the sack for flow through the cover and the garment to moisten the latter.

10. A pressing apparatus comprising a buck member and a head member mounted for relative movement into juxtaposed relation for pressing a garment therebetween, one of said members having a concavity behind its operative face, a pervious cover of flexible material closing said concavity, a flexible, expansible sack in the concavity behind the cover, means for delivering fluid under pressure to the sack to expand the same and thereby apply pressing pressure to the cover and the garment and means for delivering air to the concavity exteriorly of the sack for flow through the cover and the garment, to dry the latter.

11. A pressing apparatus comprising a buck member and a head member mounted for relative movement into juxtaposed relation for pressing a garment therebetween, one of said members having a concavity behind its operative face, a pervious cover of flexible material closing said concavity, a flexible, expansible sack in the concavity behind the cover, means for delivering fluid under pressure to the sack to expand the same and thereby apply pressing pressure to the cover and the garment and means for alternately delivering steam and air to the concavity exteriorly of the sack for flow through the cover to moisten and to dry the garment, respectively.

12. A pressing apparatus comprising a buck member and a head member mounted for rela-

tive movement into juxtaposed relation for pressing a garment therebetween, one of said members being shaped to provide a concavity behind its operative surface, a pervious cover of flexible material constituting said surface and closing the concavity, a plurality of independent sacks of flexible material in said concavity, means for introducing fluid under pressure into said sacks to cause the same to expand, fill the concavity and apply pressing pressure to the cover and the garment, and means for delivering air and steam to the concavity exteriorly of said sacks for flow through the cover to make contact with the garment.

13. A pressing apparatus comprising a buck, a head mounted for downward movement into a fixed position, juxtaposed with respect to the buck, said head having a downwardly facing concavity formed therein, a pervious cover of flexible material on the lower surface of the head closing the concavity, a plurality of substantially closed individual cells or sacks of flexible material in the concavity behind the cover, means connecting interiors of the cells to a source of fluid under pressure, whereby fluid may be delivered to the cells to expand the same to fill the concavity and apply pressing pressure to the cover and a garment positioned on the buck, and means for delivering steam to the concavity exteriorly of the cells for flow through the cover into contact with a garment on the buck, a vacuum source, and means connecting the pervious surface of the buck to said source.

14. A pressing apparatus comprising a buck, a head mounted for downward movement into a fixed position, juxtaposed with respect to the buck, said head having a downwardly facing concavity formed therein, a pervious cover of flexible material on the lower surface of the head closing the concavity, a plurality of substantially closed individual cells or sacks of flexible material in the concavity behind the cover, means connecting interiors of the cells to a source of fluid under pressure, whereby fluid may be delivered to the cells to expand the same to fill the concavity and apply pressing pressure to the cover and a garment positioned on the buck, and means for delivering steam and air alternately to the concavity exteriorly of the cells for flow through the cover into contact with a garment on the buck, a vacuum source, and means connecting the pervious surface of the buck to said source.

15. A pressing apparatus comprising a buck, a

head mounted for downward movement into a fixed position, juxtaposed with respect to the buck, said head having a downwardly facing concavity formed therein, a pervious cover of flexible material on the lower surface of the head closing the concavity, a plurality of substantially closed individual cells or sacks of flexible material in the concavity behind the cover, means connecting interiors of the cells to a source of fluid under pressure, whereby fluid may be delivered to the cells to expand the same to fill the concavity and apply pressing pressure to the cover and a garment positioned on the buck, and means for delivering steam to the concavity exteriorly of the cells for flow through the cover into contact with a garment on the buck, said buck having a pervious upper surface, a vacuum source, and means connecting the pervious surface of the buck to said source.

16. A pressing apparatus comprising a buck, a head mounted for downward movement into a fixed position, juxtaposed with respect to the buck, said head having a downwardly facing concavity formed therein, a pervious cover of flexible material on the lower surface of the head closing the concavity, a plurality of substantially closed individual cells or sacks of flexible material in the concavity behind the cover, means connecting interiors of the cells to a source of fluid under pressure, whereby fluid may be delivered to the cells to expand the same to fill the concavity and apply pressing pressure to the cover and a garment positioned on the buck, and means for delivering steam to the concavity exteriorly of the cells for flow through the cover into contact with a garment on the buck, said buck having a pervious upper surface, a source of steam, a vacuum source, and means connecting the pervious surface of the buck to said sources alternately.

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