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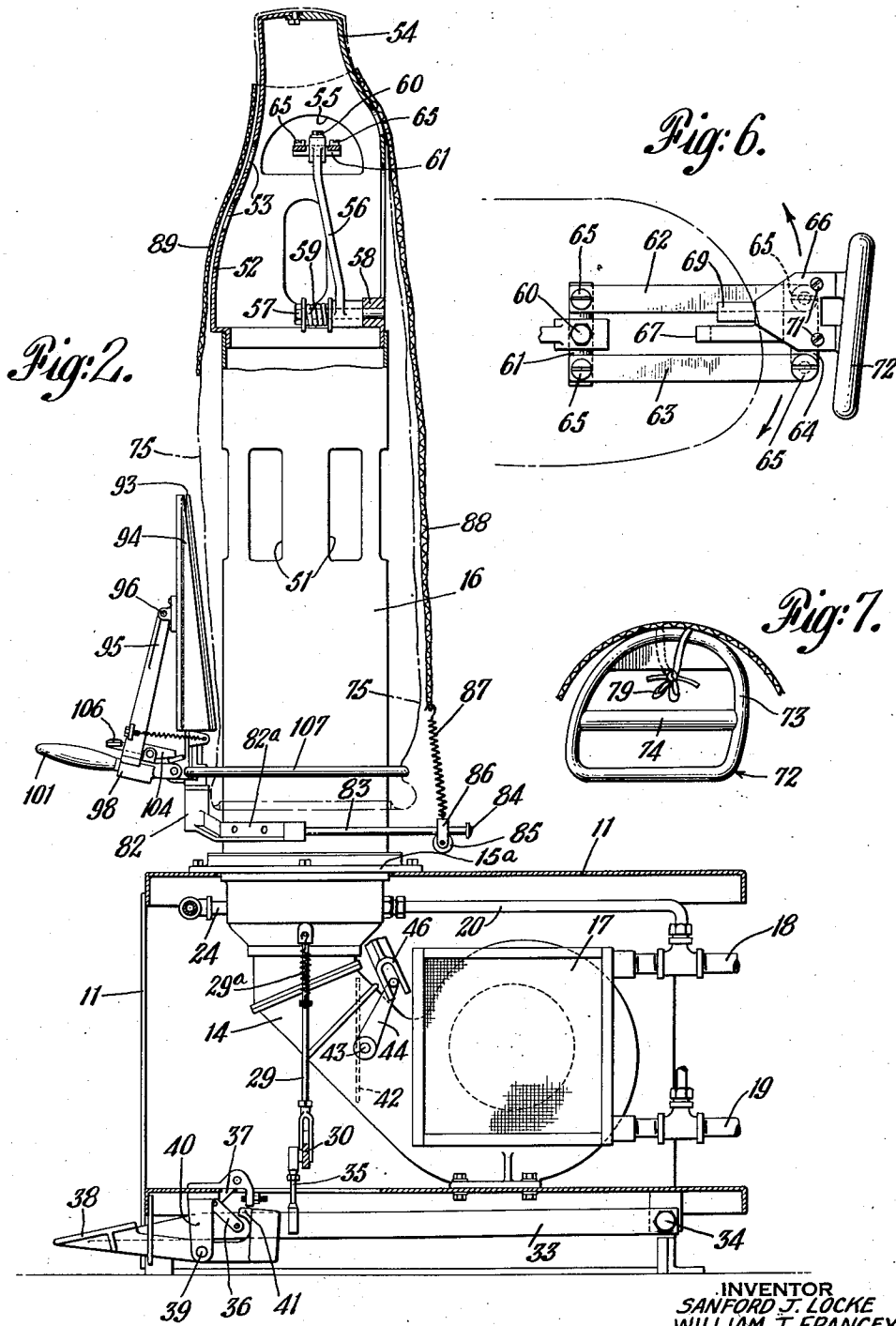
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2,378,565

GARMENT FINISHING APPARATUS

Filed March 7, 1942

4 Sheets-Sheet 2



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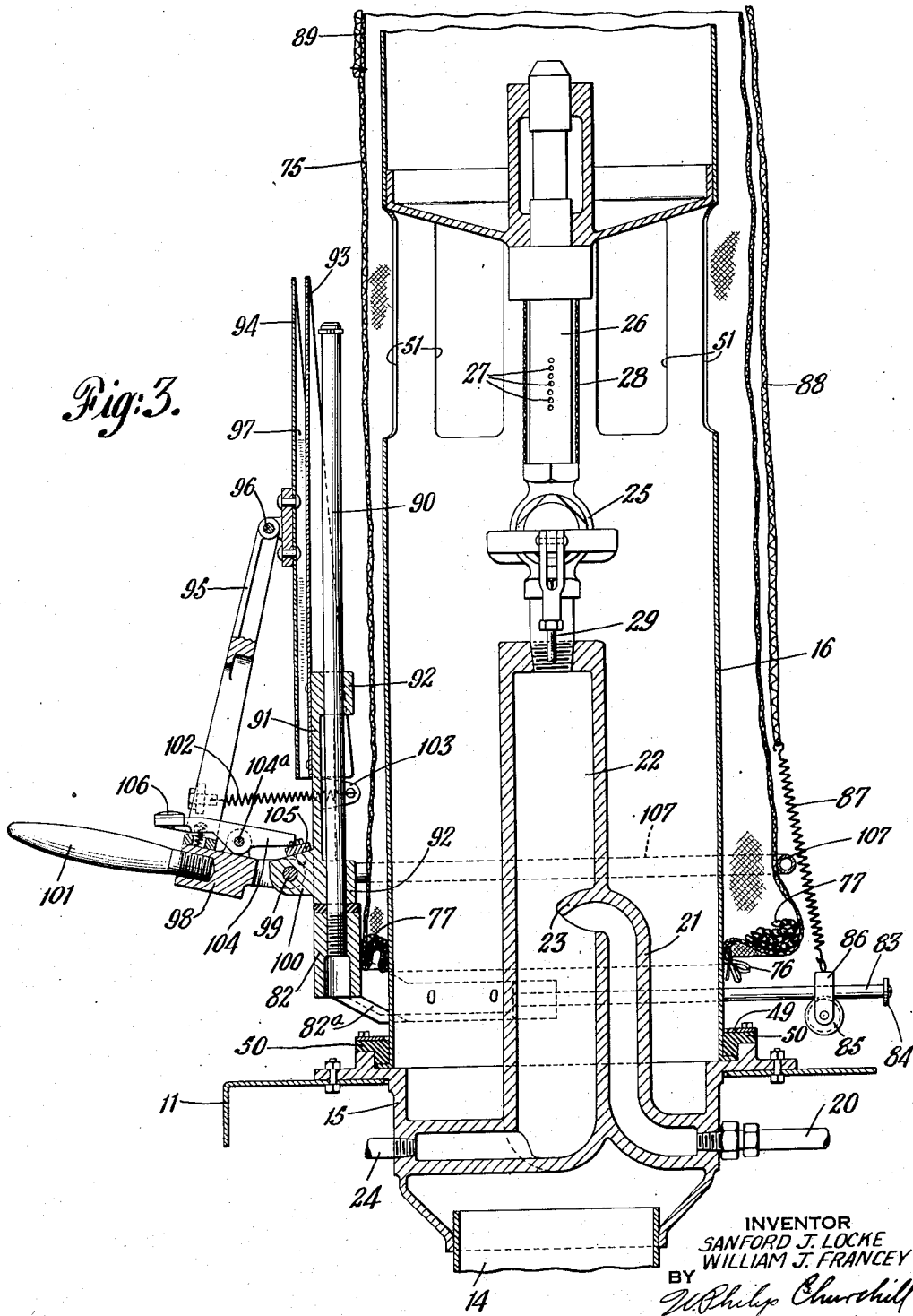
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Fig. 3.



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Fig. 4.

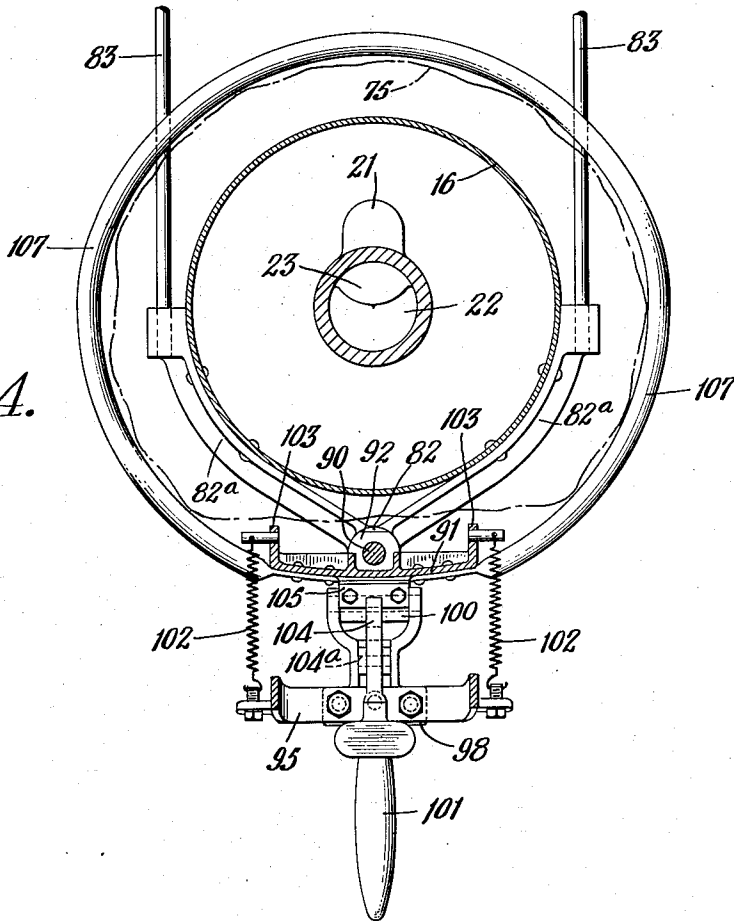
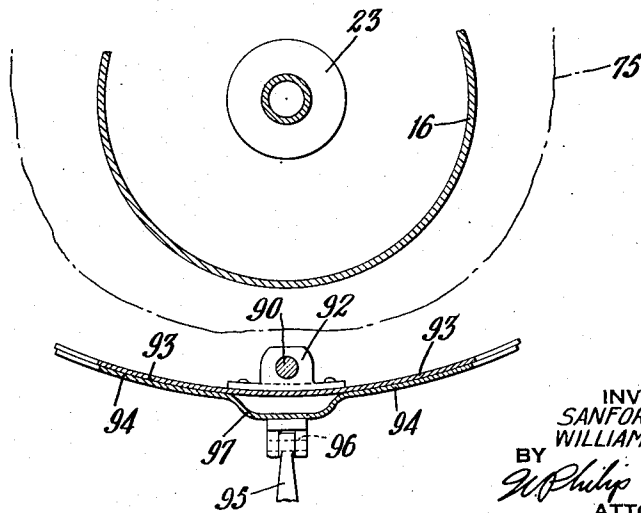


Fig. 5.



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2,378,565

GARMENT FINISHING APPARATUS

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Application March 7, 1942, Serial No. 433,738

15 Claims. (Cl. 223-70)

This invention relates to apparatus for shaping, finishing and otherwise conditioning garments such as coats. More particularly, the invention relates to apparatus comprising a form covered by a relatively porous bag or envelope over which a garment may be placed and held in suitable position while steam and/or hot air or other fluid garment conditioning medium is blown outwardly through the bag and garment.

Garment finishing apparatus of the foregoing type has been proposed heretofore, and this application relates to improvements in such apparatus making it easier for an unskilled operator to finish properly coats and other garments of varying sizes after only a very short period of training. While each garment should be properly treated, it is also very important for the apparatus to be adjustable quickly in various respects to make it suitable for different sizes and shapes of garments. The value of such a machine can depend in large measure on the rate at which garments can be finished by an operator of only average skill, because the apparatus is intended for use in cleaning establishments, large and small, in all types of localities.

One object of this invention is the provision of a garment finishing apparatus of the bag covered type in which an efficient clamp for the front portion of the garment is adjustable vertically to adapt it for coats and other garments of different lengths.

A further object of the invention is the provision of such a clamp in combination with a bag confining means which is simultaneously adjusted automatically to control the shape of the bag near the bottom of the garment.

A further object of the invention is the provision of adjustable shoulder supports which can be easily positioned independently of each other when the garment is subjected to the finishing operations regardless of the size of the garment being treated.

Another object of the invention is the provision of garment finishing apparatus which includes automatically adjustable means separate from the bag for properly positioning and supporting the back of the coat or other garment.

A further object of the invention is the provision of apparatus of the character described in which steam and/or hot air are released within the bag at a point near the lower portion of the garment to provide an improved distribution of treating fluid throughout the garment.

Other objects will be explained and will be apparent from the following description of a pre-

ferred embodiment of the invention illustrated in the accompanying drawings, in which—

Figure 1 is a front elevational view of a garment finishing apparatus with portions in section to illustrate the interior construction.

Figure 2 is a side elevation of the apparatus with portions shown in section.

Figure 3 is a vertical sectional view on an enlarged scale, taken on the line 3-3 of Figure 1.

Figures 4 and 5 are horizontal sectional views of the apparatus, taken on the lines 4-4 and 5-5, respectively, of Figure 1.

Figure 6 is a sectional view showing one of the shoulder supports, taken on the line 6-6 of Figure 1.

Figure 7 is a side elevation of one of the shoulder supports showing the manner in which it is attached to the interior of the bag.

The preferred embodiment of finishing apparatus illustrated in the drawings comprises a frame work 10, covered by a casing 11 made of sheet metal or other suitable material, and supporting inside the casing a blower 12 driven by a motor 13. The outlet of the blower 12 is connected by a duct 14 communicating through the top of the casing 11 with a suitable hollow casting 15 having a supporting flange 15a, and with the interior of a rigid sheet metal form 16 of generally cylindrical shape attached thereto. The inlet side of the blower is connected to a steam radiator 17, which may be of conventional structure for heating the air, and is supplied with steam from the main supply pipe 18. Steam condensing in the radiator 17 is drawn off through the condensate return pipe 19.

Steam is also supplied through a pipe 20 to a conduit 21 inside and integral with the casting 15 that leads into a chamber 22 in the nature of a steam separator. Steam coming into this chamber is directed downwardly into the chamber by the overhanging lip 23, and any moisture or condensate is drawn off from the bottom of the separator by the return pipe 24 which may be connected to the main condensate return pipe 19. A suitable valve 25 is connected to the top of the chamber 22 and regulates the supply of steam to an outlet nozzle 26 provided with a row of perforations 27 and surrounded by a screen 28 for the escape of steam.

The valve 25 is operated by means of a rod 29 pivotally connected at its lower point to one end of an arm 30 and urged upwardly by the spring 29a. The arm 30 is pivotally supported by the frame 10 or a bracket 31 at its other end. Arm 30 and the rod 29 may be pulled down to open

the valve 25 by pressing down the foot pedal 32 carried on the end of rod 33 which is pivotally supported by the frame 10 at its other end 34 and is connected by the short rod 35 to an intermediate point on the arm 30.

As the pedal 32 is pressed down, a pair of pivotally arranged toggle links 36 and 37 connecting rod 33 to the frame 10 are straightened out to lock the pedal in its depressed position. To raise the arm 30 and rod 29, the pedal 32 is depressed pivoting about the pin 39 on bracket 40 and forcing its off-set end piece 41 against the toggle links 36 and 37. This release of the rod 33 from the locking action of toggle links 36 and 37 permits the spring 29a to raise rod 29 and thus close the valve 25.

The flow of warm air driven through the duct 14 by the blower 12 may be controlled by a damper 42 located in the duct 14. This damper may be fixed to a rod 43 extending through the duct 14 and carrying on its outer end a crank 44. The damper may be easily moved by an operator by simply adjusting the position of a pivotally supported lever 45 carrying a bifurcated lower end 46 that engages the crank 44. To prevent the damper from flopping around loosely, a simple friction spring 47 may be interposed between a suitable collar 48 on the rod and the outer surface of the duct 14. The damper will thus remain in any adjusted position. This damper is preferably adjusted so that in the closed position a small amount of air will be passed to keep the bag partially inflated.

The shell 16 forming the body portion of the rigid form may be rotatably secured at its lower end to the casting 15 by means of an annular plate 49 and a suitable gasket 50 of felt or other material bolted to the casting 15. This form 16 is preferably of generally cylindrical shape but is provided with suitable openings 51 through which steam and hot air may be discharged.

The upper portion of this shell 16 preferably supports a second rigid metal shell 52, which is shaped to provide a breast-plate for the form with suitable openings 53 therein, and which terminates at its upper end in the shape of a neck 54. This upper shell 52 has relatively large openings 55 at the sides for the mounting of movable shoulder supports.

These shoulder supports are complementary in structure and shape, so that a description of one of them will suffice for an understanding of their structure and operation. Each support is carried by an arm 56 pivotally supported on a bolt 57 threaded into a lug 58 integral with the lower portion of the shell 52. A friction spring 59 may be interposed between the arm 56 and the head of bolt 57 to prevent the arm 56 from moving back and forth too freely. At its upper end, the arm 56 is fixed by a set screw or bolt 60 to a horizontally disposed bar 61. Bar 61 is connected by means of straps 62, 63 to a second bar 64, the four elements being movable about the bolts 65 in the manner of a parallel ruler.

A bracket 66 is formed integral with the bar 64, and is provided with a depending lug 67 which strikes the plate 68 to limit outward movement of the shoulder piece. Bracket 66 is also provided with a lug 69 adapted to strike against the brace 70 and limit inward movement of the shoulder piece. Brace 70, in addition, limits upward movement of the straps 62 and 63 thus preventing lug 67 from slipping past the plate 68. Fixed to the top of the bracket 66 by means of the bolts 71 is a shoulder piece 72 consisting

of the closed ring 73 in the general shape of an inverted U reinforced by a central cross bar 74 (see Fig. 7). The shoulder piece 72 is fixed in place so that it is inclined in two directions.

The top portion of the shoulder piece is tipped outwardly and the front portion of the shoulder piece is tipped inwardly toward the main portion of the form.

The entire form, consisting of the shell 16, the upper shell 52 and shoulder supports 72, is covered by a bag or envelope 75 made of a suitable fabric such as celanese rayon. Various other fabrics, of course, may be used instead, but it is preferred to employ a fabric having a relatively smooth surface and a fairly close weave.

The upper end of the bag 75 fits over the neck 54, and the body portion of the bag extends downwardly and encases the shell 16. The lower end of the bag, which is open, may be secured by a draw string 76, or other suitable means, into tight engagement with the lower portion of the shell 16. To hold the bag down when steam or hot air is discharged inside of it, weights such as metal chain 77 or other weights may be placed on the lower portion of the bag to hold down the lower edge.

The upper portion of the bag is preferably formed with arm bags 78 which are arranged to cover the shoulder supports, and which are open at their lower ends. These arm bags may be of such a length that they extend approximately to or slightly below the elbow of the ordinary coat. Draw strings may be sewed to the inside of the bag near the shoulders and tied in the form of loose loops 79 about the upper portion of the shoulder pieces 72 (see Fig. 7). This permits the shoulder pieces 72 to adjust themselves to some extent and at the same time serves to keep the bag in proper position with respect to the form. The lower ends of the arm bag or arm pockets may be secured together by draw strings 80 and, if desired, weights 81 may be placed in these arm pockets for easy insertion in the arms of a garment.

Near the bottom of the shell 16, a bracket 82 formed with two arms 82a, is fastened by rivets or bolts to the shell. A pair of rods 83 are screwed into sockets in the ends of the arms 82a and extend in directions parallel to each other and approximately tangent to the shell 16. (See Fig. 4.) These rods 83 are provided with knobs 84 on their outer ends and serve as fixed trolleys for the pulleys 85 and blocks 86. Connected to the blocks 86 are extension coil springs 87 with hooks at their upper ends to engage the lower corners of an apron 88.

This apron 88 is preferably made of relatively rough, heavy material such as canvas or duck, and consists of a strip extending down the back portion of the bag but running over the neck 54 and extending part way down over the breast-plate portion of the shell 52, as illustrated at 89 in Fig. 2. The lower edge of the apron portion 89 may be secured in place by stitching to the bag 75, or may be simply left hanging free, as desired.

The fixed bracket 82 may have a vertical rod 90 fixed thereto by threads or other suitable means, and serves to support in slidable relation an adjustable clamp for the front portion of garments to be finished. This front clamp may include a casting 91 provided with two hollow lugs 92 to slide up and down on the rod 90. A clamping plate 93 is fixed to the upper portion of this casting 91 by rivets or bolts and is of gen-

erally triangular shape in front elevation although curved about a vertical axis.

A movable clamping plate 94 is pivotally supported on the arm 95 by the pin 96 and is of substantially the same shape as plate 93, except that it is provided with a vertical groove 97 centrally located to prevent squeezing the buttons of a coat between the two plates 93 and 94 and permit the clamping of the plates directly on the coat fabric. Arm 95 is forked at its lower end (see Fig. 1) and is bolted to a lever 98. Lever 98 is pivotally supported at its inner end by pin 99 extending through a lug 100 formed on the lower portion of the casting 91. A suitable handle 101 may be provided for moving the lever 98 up and down, and thus closing or opening the clamping plates 93 and 94.

Springs 102 connect the sides of arm 95 to the ears 103 formed integral with the casting 91. These springs tend to pull the arm 95 in towards the body of the apparatus, thus urging plate 94 towards plate 93.

A suitable latch 104 may be pivotally secured by pin 104a to the lever 98 so that when the handle 101 is pressed down, pulling plate 94 away from the form, the end of latch 104, which is pressed down by the compression spring 104b, engages the lug 105 to hold the clamping plates apart. By pressing down on the outer end 106 of latch 104, this engagement is broken however, permitting the springs 102 to pull the clamping plate 94 back into clamping position. The springs 102 should, of course, be adjusted to provide the necessary clamping force between plates 93 and 94.

Attached to the lower portion of the casting 91 are the flattened ends of an annular tube or rod 107. This rod 107 extends around the bottom of the form outside of the bag 75, thus serving to confine the lower portion of the bag and prevent ballooning when steam or hot air is released inside the bag. The casting 91 and parts carried thereby are free to rotate to some extent about the rod 90, but any such rotation is restricted by the annular rod or tube 107.

Referring now to the operation of the device illustrated which is designed particularly for finishing coats. The coat is first placed over the form and bag 75, the arm pockets 78 of the bag being tucked inside the arms of the coat where they drop into place because of the weights 81. The front of the coat is then buttoned or secured in place outside the plate 93, the plate 94 having previously been pulled away from the plate 93 by pressing down on the handle 101 until the latch 104 has engaged the lug 105.

The front portion 89 of the apron 88 serves to provide a reinforced breast-plate over the upper portion of shell 52 to support the coat lapels and fill up the space therebetween.

The handle 101 is now lifted, sliding up the casting 91 on rod 90 and lifting the annular rod 107 and the clamping plates 93 and 94 until the lower edges of the latter are approximately even with the lower edge of the coat. At this point, the latch 106 is depressed and clamping plate 94 is allowed to be pulled forward by springs 102 until the coat is firmly held between the plates 93, 94. Raising the plates 93 and 94 automatically positions the annular rod 107 around the bag a predetermined distance below the lower edge of the coat. The clamping plates also hold the bottom of the coat in place and prevent its being blown outwardly when the bag 75 is inflated.

Hot air is now forced into the shell 16 and thence out through the bag and the fabric of the coat by moving the lever 45 to open the damper 42 in conduit 14. At the same time, or subsequent to this treatment, if desired, steam may be released from the openings 27 inside the shell 16 by pressing down on the pedal 32. The entire bag is, of course, filled like a balloon by either the steam or hot air treatment and thus serves to force the shoulder portions of the bag firmly against the inside of the coat shoulders. By reason of the attached draw strings 79, the shoulder pieces 72 are likewise thrust firmly against the inside of the shoulders, regardless of the size of the coat. These shoulder pieces, by reason of the parallel link arrangement of bars 61 and 64 and their connecting straps 62, 63, can easily be adjusted independently of each other by the operator, either forward or backward, without substantially altering the inclination of the shoulder pieces 72 to the vertical. At the same time, these shoulder pieces swing inwardly or outwardly about the bolts 57 which are located far enough away to avoid changing their angle of inclination substantially as the adjustment takes place.

The back of the coat may be shaped during the hot air treatment by rubbing it gently upwards or pulling it down, as may be required, the coat holding its position in any desired form because of adhesion to the relatively rough surface of the apron 88.

After the garment has been suitably steamed, the pedal 38 may be depressed to raise rod 29 and shut off the steam. If desired, the garment may then be dried by continuing the flow of hot air into the bag. When the garment is properly shaped and finished, both steam and hot air are shut off, handle 101 is pressed down to engage latch 105 and release the clamping plates 93, 94, and the coat is removed from the apparatus. All that is necessary to complete the treatment of the coat is pressing of a crease in the sleeves or otherwise shaping the cuffs of the sleeves, as may be desired.

A particular advantage of a garment finishing apparatus constructed in accordance with our invention is the ease with which the form and clamps are adjusted to condition garments of different sizes and shapes. The shoulder supports easily move inwardly to simplify the procedure of putting on and taking off the garment, but when fluid is released under pressure inside the bag 75, these supports adjust themselves rapidly to the shape and size of the garment. By reason of their independent adjustability, the operator can easily move these supports into the proper position even if the shoulders of the coat are different from each other.

The adjustable clamping plates 93 and 94 are always applied by springs with just the right pressure to hold the coat securely without forming undesired creases in it. When the plates are adjusted to position, moreover, the bag confining rod 107 is automatically adjusted to prevent undue ballooning of the bag just below the lower edge of the coat. If such a device were not provided, the bottom of the coat might be shaped with an objectionable outward flare.

The particular structure of the guide for maintaining the apron 88 under tension that is illustrated in the drawings is not essential, but some form of apron under a slight tension down the back of the form is very desirable for facilitating the shaping of the backs of coats.

We have found that it is very desirable to release the steam inside the bag at a point below the center of the form instead of at a higher level. The steam passing out through the openings 51 rises and quickly becomes distributed uniformly throughout the bag 75.

It will be apparent, of course, that our invention is not restricted to the details and particular structure of apparatus illustrated as a preferred embodiment in the drawings. Various changes may be made in this structure, as will be apparent to those skilled in the art, without sacrificing the advantages described.

The terms and expressions which we have employed are used as terms of description and not of limitation, and we have no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof, but recognize that various modifications are possible within the scope of the invention claimed.

We claim:

1. In apparatus for finishing garments, a form, a flexible porous covering over said form, means for discharging a garment conditioning fluid under pressure inside said covering, and garment supports inside said covering that are movable outwardly under the influence of said fluid under pressure.

2. In apparatus for finishing garments, a form, a flexible porous covering over said form, means for discharging a garment conditioning fluid under pressure inside said covering, and shoulder supports for a garment adjustable in directions toward and away from the form and also frontwards and backwards with respect to the form.

3. In apparatus for finishing garments, a form, a flexible porous covering over said form, means for discharging a garment conditioning fluid under pressure inside said covering, and adjustable shoulder supports secured to said covering so that they are moved outwardly by the discharge of fluid inside said covering.

4. In apparatus for finishing garments, a form, a flexible porous covering over said form, means for discharging a garment conditioning fluid under pressure inside said covering, and shoulder supports pivotally attached to said form and secured to said covering so that they are adjusted by the discharge of fluid inside said covering.

5. In apparatus of the character described, in combination, a garment supporting form having horizontally aligned shoulder portions, a pair of shoulder supports, and means for adjustably securing said supports to said form comprising two relatively long upright arms, means at the lower ends of said arms pivotally mounting them within said form for movement of their upper ends toward and away from each other substantially at the level of said shoulder portions of the form, and means pivotally mounting said shoulder supports at the upper ends of said arms.

6. In apparatus of the character described, in combination, a garment supporting form having horizontally aligned shoulder portions, a pair of relatively long approximately vertical arms pivotally supported at their lower ends upon said form for movement about substantially parallel horizontal axes to rock their upper ends toward and away from the shoulder portions of the form, a member pivotally mounted for movement about a substantially vertical axis at the upper end of each of said arms, a pair of links pivotally supported at their inner ends upon each of said members for parallel movements in substantially

horizontal planes, brackets pivotally connected to said pairs of links at their outer ends and rockable by parallel movements of said links, and shoulder supports secured respectively to said brackets.

7. In apparatus for finishing garments, a form, a flexible porous covering over said form, means for discharging a garment conditioning fluid under pressure inside said covering, a fabric apron outside of and extending down the back of said covering, and means for placing said apron under tension longitudinally.

8. In apparatus for finishing garments, a form, a flexible porous covering over said form, means for discharging a garment conditioning fluid under pressure inside said covering, an apron of fabric having a relatively rough surface extending down the back of said covering, and tensioning means connected to the lower portion of said apron, said tensioning means being free to adjust itself toward or away from the lower portion of the form.

9. Garment finishing apparatus comprising a substantially rigid form, a fabric bag covering said form, means for discharging garment conditioning fluid under pressure inside said bag, and clamping means to hold the lower portion of a garment placed over said bag and form comprising a pair of mutually vertically adjustable and relatively movable plates adapted to clamp between their opposing surfaces lower portions of garments of different lengths, manual means for accomplishing said vertical adjustment and relative movement of said clamping plates, and spring means associated with said manual means for holding the plates both in vertical adjustment and clamping position.

10. Garment finishing apparatus comprising a substantially rigid form, a fabric bag covering said form, means for discharging garment conditioning fluid under pressure inside said bag, and clamping means to hold the lower portion of a garment placed over said bag and form comprising a pair of mutually vertically adjustable and relatively movable plates adapted to clamp between their opposing surfaces lower portions of garments of different lengths, manual means for accomplishing said vertical adjustment and relative movement of said clamping plates, and spring means associated with said manual means for holding the plates both in vertical adjustment and clamping position, said clamping plates being shaped to hold together the lower portion of the front panels of a coat or similar garment placed over said bag and form, and one at least of said plates being shaped to straddle a row of buttons on said garment.

11. Garment finishing apparatus comprising a substantially rigid form, a fabric bag covering said form, means for discharging garment conditioning fluid under pressure inside said bag, garment clamping means adjustable in a vertical direction for garments of different lengths, and bag confining means connected to said clamping means and movable therewith.

12. Garment finishing apparatus comprising a substantially rigid form, a fabric bag covering said form, means for discharging garment conditioning fluid under pressure inside said bag, a vertically adjustable frame supported near the lower portion of said bag and form, garment clamping means supported on said frame, and bag confining means carried by said frame.

13. Garment finishing apparatus comprising a form, a fabric bag covering said form, means for

discharging a garment conditioning fluid under pressure inside said bag, and shoulder supports arranged inside said bag and connected thereto, said supports being adjustable independently of each other in directions forwards, backwards, inwardly and outwardly with respect to said form. 5

14. Garment finishing apparatus comprising a form, a fabric bag covering said form, means for discharging a garment conditioning fluid under pressure inside said bag, a vertically adjustable clamp for the front portion of a garment, and bag confining means connected thereto for vertical adjustment therewith, said confining means being spaced a short distance below the bottom of said 10

clamp to confine the bag automatically at a point just below the lower edge of the garment.

15. Garment finishing apparatus comprising a form, a fabric bag covering said form, means for discharging a garment conditioning fluid under pressure inside said bag, independently adjustable shoulder supports mounted inside the bag, a vertically adjustable clamp for the front portion of the garment, bag confining means below and connected to said clamp, and a fabric apron under tension extending outside down the back portion of said bag.

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