Feb. 28, 1956 N. C. JACKSON 2,736,471

REVOLVING TYPE GARMENT FINISHER HAVING ADJUSTABLE SHOULDER STRUCTURE

Filed Feb. 15, 1954 3 Sheets-Sheet 1

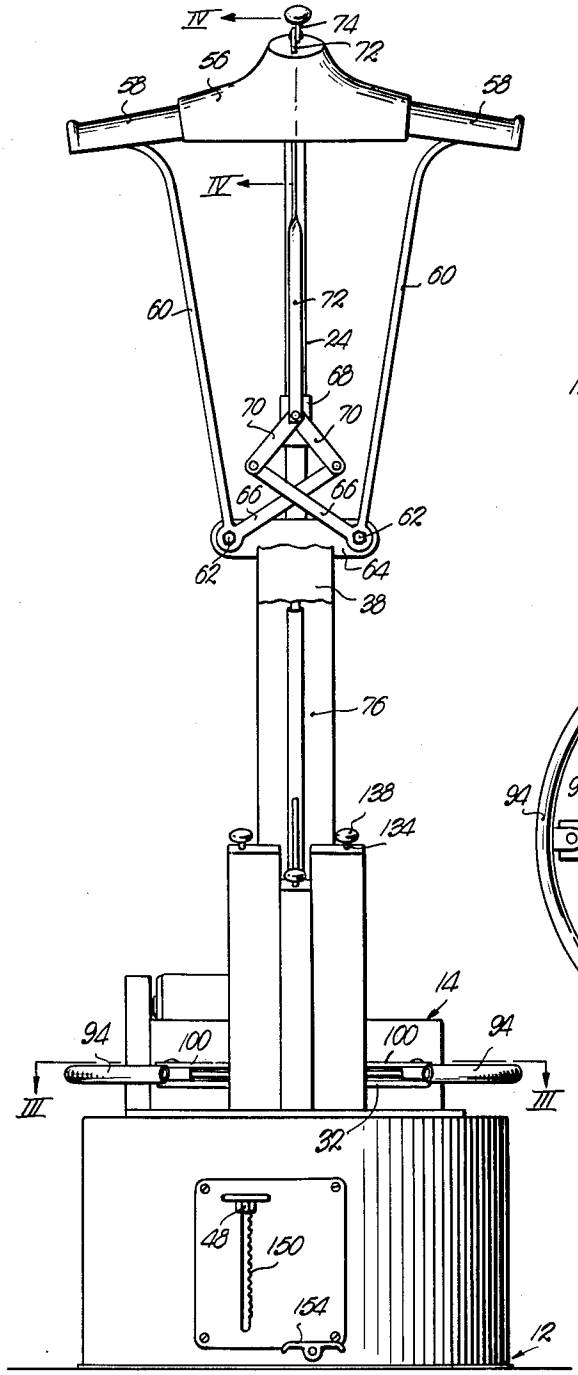


Fig. 1.

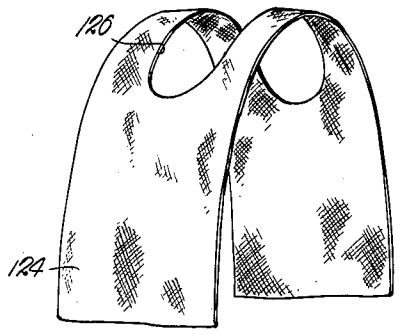


Fig. 10.

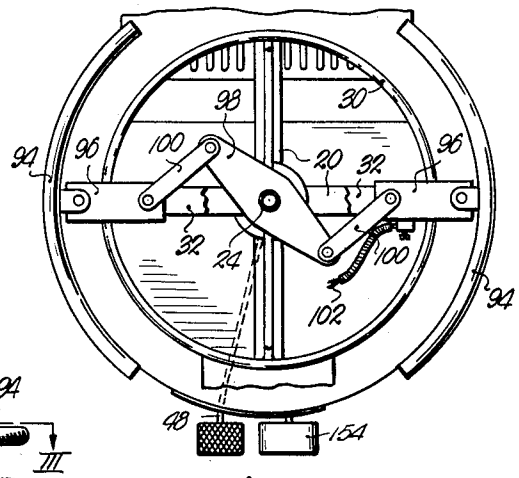


Fig. 3.

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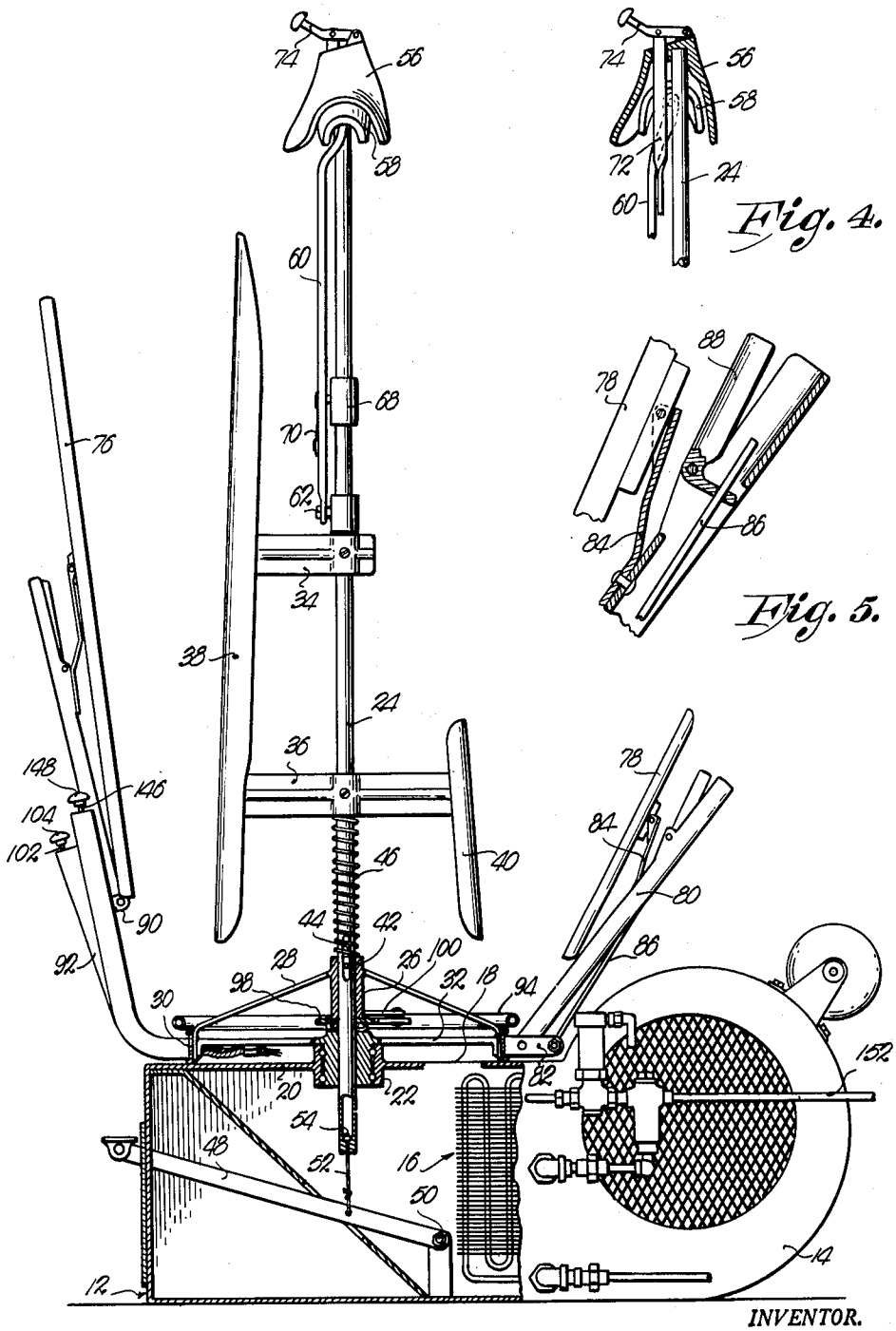


Fig. 2.

Fig. 4.

Fig. 5.

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Filed Feb. 15, 1954 3 Sheets-Sheet 3

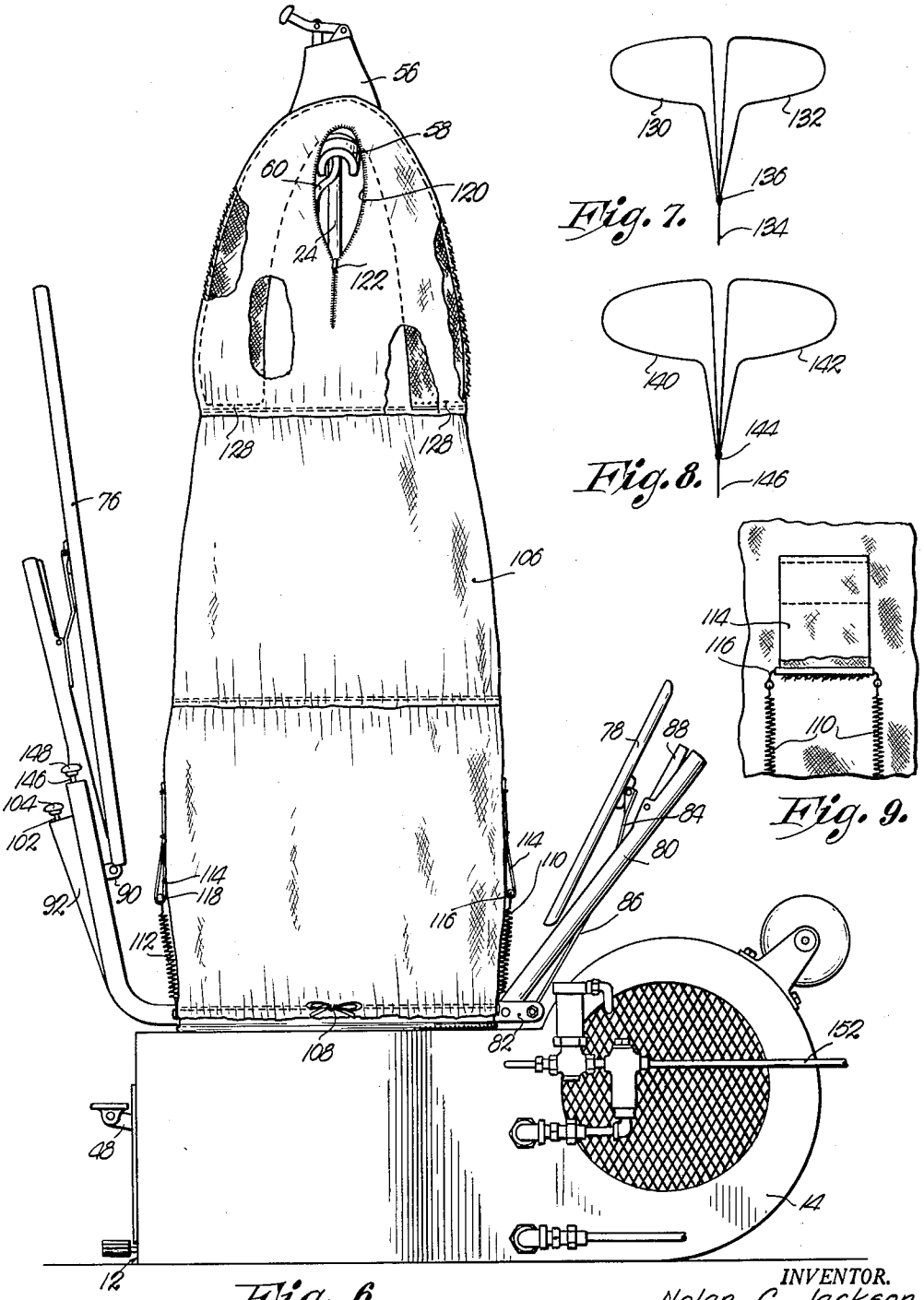


Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

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REVOLVING TYPE GARMENT FINISHER HAVING ADJUSTABLE SHOULDER STRUCTURE

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18 Claims. (Cl. 223—67)

This invention relates to improvements in machines for finishing garments and has for its primary object the inclusion of a relatively large number of extremely important features for attaining new and improved results through employment of a forming bag over which the garment is draped and into which fluid pressure is directed.

It is the most important object of the present invention to provide a garment finishing machine having a skeleton frame upon which a flexible bag is mounted and including readily adjustable structure for predetermining the dimensions of the bag and for maintaining it in a taut condition where desired, all for the purpose of rendering the same universally adapted for garments of various sizes and shapes.

Another important object of the present invention includes the provision of a bag-supporting member for garment finishing machines that is spring biased upwardly to cooperate with additional spring means connected with the bag near the lower extremities thereof in holding the bag longitudinally taut.

Another object of this invention is the provision of readily adjustable means for predetermining the diameter of the inflatable bag at various points along the length thereof.

Other important objects include the way in which the bag is secured at the lowermost end thereof to expansible structure; the manner of clamping the bag against backing strips therewithin; the way in which shoulder devices are provided at the uppermost end of the frame and rendered adjustable so far as length is concerned; the manner of providing a flexible saddle structure supporting the bag at the uppermost end thereof upon the neck element of the frame; and other more minor objects all of which will be made clear as the following specification progresses.

In the drawings:

Figure 1 is a front elevational view of a revolving type garment finisher having adjustable shoulder structure made pursuant to the present invention with the bag entirely removed, parts being broken away for clearness.

Fig. 2 is a side elevational view of the machine as shown in Fig. 1, parts being broken away and in section to reveal details of construction.

Fig. 3 is a fragmentary, transverse, cross-sectional view taken on line III—III of Fig. 1.

Fig. 4 is a fragmentary, detailed, cross-sectional view taken on line IV—IV of Fig. 1.

Fig. 5 is an enlarged, fragmentary, side elevational view of one of the clamp locks, parts being broken away for clearness.

Fig. 6 is a side elevational view similar to Fig. 2 with the inflatable flexible bag operably mounted thereon.

Figs. 7 and 8 are schematic views illustrating the arrangement of the draw-cord means for varying the diameter of the bag.

Fig. 9 is a fragmentary, detailed, elevational view of one of the yieldable retainer means for the bag; and

Fig. 10 is a perspective view of a flexible saddle structure utilized in the bag for suspending the same from the neck element.

The entire machine illustrated in the drawings is preferably supported by a single hollow base broadly designated by the numeral 12 that includes a blower housing 14 with which it communicates directly at one side thereof. The blower within the housing 14 (not shown) is so disposed as to direct currents of air into the base 12 through a suitable apparatus 16 for heating the air prior to escape from the base 12 through outlet opening 18 in the top thereof.

Crossed arms 20 each extending diametrically across the opening 18, support a bearing 22 that in turn receives a vertical rod-like frame member 24 for rotation and vertical reciprocation on its longitudinal axis. Rod 24 is additionally supported by a sleeve 26 that is held in place by a brace 28 secured to an annular band 30 that rests upon the base 12. Brace member 32 disposed diametrically within the band 30 and secured thereto, is attached to the inner race of the bearing 22 and rests upon the outer race thereof.

A pair of spaced brackets 34 and 36 rigidly mounted on the rod 24, support a vertical front backing strip 38 and the bracket 36 additionally supports an upright shorter, rearmost backing strip 40. A pin 42 traversing the rod 24 and the sleeve 26 assures rotation of the rod 24 with the sleeve 26, the brace 28, the cross member 32, the band 30 and the inner race of bearing 22 together as a unit. Pin 42 extends through a slot 44 in the rod 24 permitting reciprocation of the latter relative to the sleeve 26 and rod 24 is yieldably biased upwardly by a spring 46 coiled thereabout between the bracket 36 and the sleeve 26.

A foot lever 48 within the base 12 and extending through the front thereof for accessibility is mounted for swinging movement on a horizontal axis 50 within the base 12 and is attached to the rod 24 by a suitable interconnection 52 having swivel means 54 at the uppermost end thereof within the rod 24.

A hollow neck element 56 is rigidly secured to the rod 24 at the uppermost end thereof and is provided with a pair of opposed shoulder devices 58 rigidly secured to the uppermost ends of arms 60 which are in turn swingably mounted on the rod 24 adjacent the bracket 34 by means of pivot pins 62 in a bracket 64 rigid to the rod 24.

Arms 60 are provided with integral inner extensions 66 that are pivotally connected to a collar 68 vertically reciprocable on the rod 24 through the medium of a pair of links 70. An elongated actuating element 72 extending upwardly through the neck element 56 as shown in Fig. 4, is pivotally connected to the collar 68 and the links 70 at its lowermost end. An operating lever 74 swingably mounted on the neck element 56 thereabove has pivotal connection with the uppermost end of the actuating element 72.

A pair of clamps 76 and 78 are mounted for swinging movement toward and away from the backing strips 38 and 40 respectively. To this end there is provided a lever 80 for the clamping means 78 swingably mounted on a bracket 82 that is rigid to and extends radially from the annular band 30. Clamp 78 is swingably mounted on a leaf spring 84 rigid to the lever 80. A rod 86 pivotally secured to the bracket 82 at its lowermost end extends upwardly through the lever 80 and through an L-shaped fingerpiece 88 swingable on the lever 80 as shown in Fig. 5.

Similar construction is provided for mounting the clamping means 76 except only that the mounting bracket therefor, comparable to bracket 82 and designated by the numeral 90, is secured to an upward extension 92 rigid

to the band 30 and in diametrically opposed relation to the bracket 82.

An expander carried by the rod 24 adjacent the band 30, includes a pair of opposed, arcuate, tubular sections 94 pivotally mounted on slide blocks 96. Blocks 96 are reciprocably mounted on cross-member 32 for rectilinear reciprocation toward and away from each other and are pivotally joined to an elongated plate 98 by a pair of links 100. A flexible cable 102 secured at one end thereof to one of the blocks 96 extends in the base 12 and into the extension 92, the opposite or outermost end of cable 102 being provided with a finger-knob 104. Plate 98 is freely swingable on the rod 24 between sleeve 26 and the bearing 22.

The neck element 56 supports a flexible bag made from fabric or other suitable material and broadly designated by the numeral 106, as shown in Fig. 6, that is manifestly provided with a neck opening not shown, for receiving the upwardly extending portion of the T-shaped neck element 56.

The lowermost open end of the bag 106 surrounds the band 30 and is secured thereto so as to place it in direct communication with the outlet opening 18 of base 12 by suitable fastening means such as a drawstring 108. Since the drawstring 108 serves merely to close the lower end of the bag 106 with respect to the base 12, bag 106 is actually secured or held in place by the arcuate expander sections 94. To this end there is provide a suitable hem (not shown) within the bag 106 adjacent its lowermost edge for receiving the two arcuate sections 94.

Additionally, the lower extremities of the bag 106 are retained by a pair of springs 110 and a second pair of springs 112 secured at the lowermost ends directly to the band 30, bag 106 being split to clear the springs 110 and 112. Means for fastening the springs 110 and 112 to the bag 106 takes the form of loops 114 stitched directly to the bag 106 exteriorly thereof and receiving tie members 116 and 118, the tie member 116 interconnecting springs 110 at the uppermost ends thereof and the tie member 118 similarly joining the springs 112.

Bag 106 is provided with clearance openings 120 for the shoulder devices 58 and which may be closed by slide fasteners 122 when the shoulder devices 58 are retracted and not used.

A U-shaped, flexible saddle structure 124 shown in Figs. 6 and 10, is looped over the neck element 56 within the bag 106 and provided with a clearance opening 126 for the neck element 56. The opposed lowermost ends of the saddle structure 124 are secured directly to the bag 106 by lines of stitching 128.

Take-up means in the nature of drawstring structure as shown in Fig. 7, is provided adjacent the lowermost ends of the saddle structure 124 and similar take-up means as illustrated in Fig. 8, is disposed intermediate the ends of the bag 106 between the loops 114 and the saddle structure 124.

Hems within the bag 106 are provided for each of the two drawstring structures and as shown in Fig. 7 each of two opposed drawstrings 130 and 132 has its two ends connected directly to a pull wire 134 as at 136. The cord 134 extends downwardly in the bag 106 and thence into the extension 92 as shown in Fig. 2, there being a knob 138 on the opposite end of the wire 134 as shown in Fig. 1 for actuating the drawstrings 130 and 132.

Similarly, in Fig. 8 there is shown a pair of opposed drawstrings 140 and 142 connected as at 144 to a pull wire 146 that extends downwardly within the bag 106 and thence as shown in Fig. 2, into the extension 92 terminating in an actuating knob 148. Thus, there are in effect, four hems stitched within the bag 106, one for each of the drawstrings 130, 132, 140 and 142, which hems are open at their ends to clear the ends of the drawstrings for connection with the flexible wires 134 and 146 as the case may be.

When the bag 106 is to be initially placed in position on the neck element 56, completely enclosing the rod 24 and backing strips 38 and 40, lever 48 is first swung downwardly and locked in place by use of a rack 150 as shown in Fig. 1. This retracts the rod 24 downwardly against the action of spring 46 and permits the threading of the arcuate expander sections 94 in the hems provided therefor within the bag 106. The operator may thereupon also easily close the lowermost end of the bag 106 tightly around the band 30 by use of drawstring 108. When the lever 48 is released, spring 46 will shift the rod 24 upwardly and place a spring yieldably biased on the bag 106 by virtue of spring 46 keeping the bag 106 longitudinally taut.

If the shoulder devices 58 are to be used, slide fasteners 122 may be opened and the devices 58 extended through the openings 120 by manipulation of lever 74. Shoulder devices 58 have no connection whatsoever with the neck element 56 and will, therefore, reciprocate freely toward and away from each other as the actuating element 72 is reciprocated to slide the collar 68 on the rod 24. Manifestly, when the collar 68 is moved downwardly, extensions 66 will be swung through the links 70 and the arms 60 will move toward each other to retract the shoulder devices 58. When the lever 74 is moved upwardly to exert a pull on the collars 68, the shoulder devices 58 will be extended through the openings 120.

The garment to be finished is placed on the bag 106 and the latter is adjusted through manipulation of knobs 104, 138 and 148 according to the various diameters of the garment. When the knob 104 is pushed downwardly, the blocks 96 will move apart on the cross-member 32, thereby expanding the bag 106 adjacent its lowermost end. When a pull is exerted upon the knob 138, the wire 134 is pulled to take up the drawstrings 130 and 132, thereby limiting the diameter of the bag 106 adjacent the lower end of saddle structure 124. Similarly, the diameter of the bag 106 adjacent and above the loops 114, may be varied by manipulation of the knob 148.

Steam is directed to the heating element 16 and into the base 12 from a suitable source not shown, by a supply pipe 152 and during the finishing of the garment on the bag 106, hot air and/or steam are directed into the bag 106 in desired sequences by placing the fan within housing 14 in operation and by manipulation of a lever 154 for controlling the steam.

When the bag 106 is inflated by the fluid pressure therewithin and which permeates the bag 106 and passes into the garment thereon, the extent of ballooning of the bag 106 is controlled by the expander sections 94 and by the take-up means shown in Figs. 7 and 8 of the drawings. It is seen that the bag 106 balloons freely between the take-up means shown in Fig. 8 and the expander sections 94, between the two take-up means of Figs. 7 and 8 and between the neck element 56 and the take-up means adjacent the lower end of saddle structure 124.

Longitudinally however, the bag 106 is restricted by its taut condition maintained through the cooperative action of springs 46, 110 and 112. The longitudinal tautness exists only between the loops 114 and the lines of stitching 128 since the springs 46, 110 and 112 hold the saddle structure 124 taut but permit full ballooning of the bag above the lines of stitching 128 limited only by the effective diameter of the bag 106 as determined by take-up means 130—132. Similarly, the bag is permitted to balloon freely below the retainer means which includes springs 110–112 and loops 114.

By virtue of the fact that the garment is held against the bag 106 and the latter is clamped in place against the backing strips 38 and 40 through use of clamping means 76 and 78 the bag 106 will expand into a substantially elliptical-shaped throughout the lengths of the backing strips 38 and 40. In this respect it is to be noted that the saddle structure 124 extends from front to back in alignment with the clamping elements 76 and 78 and that the retainer means which includes springs

110 and 112 are also disposed at the front and at the back of the bag 106.

In addition to all of the foregoing it is not to be overlooked that bag 106 and all of the structure upon which it is mounted, as well as the clamps 76 and 78 are freely rotatable at all times with respect to the base 12 since the clamping means 76 and 78 are mounted upon the band 30 which rotates upon the base 12 with the rotatable rod 24.

Similarly, the arcuate expanders 94 rotate with the band 30 because of the slidable connection between the blocks 96 and the cross-member 32 which is in turn secured to the band 30. Cross-pin 42, while permitting free vertical reciprocation of the rod 24, interconnects the latter with the sleeve 26, thereby assuring simultaneous rotation of these parts with the inner race of bearing 22.

All of the flexible control wires 102, 134 and 146 are secured to the extension 92 and/or the turntable which includes band 30 and parts connected directly thereto. Such rotation of the entire unit, whether or not the garment and bag are clamped in place between the backing strips 38 and 40 and the clamps 76 and 78, does not alter the permissible reciprocation of the rod 24 by means of lever 48, all because of the swivel means 54 that is provided as shown in Fig. 2.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. In a garment finisher, a support; a frame member; means mounting the member for reciprocation on the support; a neck element mounted on the member for reciprocation therewith; an elongated, flexible bag carried by said element; retainer means connected with the support; fastener means joining said retainer means to the bag; resilient means engaging the member for yieldably biasing the member in one direction away from the support to hold the bag longitudinally taut; and an expander mounted on the support and secured to the bag between the fastener means and the support for holding the bag transversely taut.

2. In a garment finisher as set forth in claim 1 wherein is provided a base; and means mounting the support on the base for rotation about the axis of reciprocation of the member.

3. In a garment finisher as set forth in claim 2 wherein is provided means mounted on the base and coupled with said member for moving the latter in the opposite direction against the action of said resilient means.

4. In a garment finisher, a base and an assembly rotatably carried by the base and including a support; an elongated frame member; means connecting the member and the support for rotation together; a neck element mounted on the member; backing strips secured to the member between the neck element and the support; a flexible bag carried by the neck element and enclosing the support, the member, the neck element and the backing strips; means securing the bag to the support; clamping means exteriorly of the bag for each strip respectively; and means mounting the clamping means on the support for swinging movement toward and away from the bag.

5. In a garment finisher as set forth in claim 4 wherein is provided means mounting the frame member on the support for reciprocation on the axis of rotation of the support; and resilient means engaging the support and the member therebetween for yieldably biasing the member toward one end of its path of travel to hold the bag taut between the neck element and the support.

6. In a garment finisher as forth in claim 4 wherein is provided a pair of arms swingable within the bag toward and away from each other; a pair of bag-supporting shoulder devices in the bag adjacent the neck element; means securing the devices to the arms for reciprocation relative to said element and toward and away from each other as the arms are swung; and means mounting the arms on the frame member for rotation therewith.

7. In a garment finisher, a support; a frame member mounted on the support and extending upwardly therefrom; a neck element mounted on the member at the uppermost end thereof; saddle structure on the neck element; a flexible bag carried by the element and enclosing the saddle structure; fastening means attaching the saddle structure to the bag; and spring means near the lowermost end of the bag joining the latter with the support for holding the bag taut below the fastening means.

8. In a garment finisher, a support; a frame member extending upwardly from the support; means mounting the frame member for vertical reciprocation on the support; a neck element mounted on the member at the uppermost end thereof; flexible saddle structure on the neck element; a flexible bag carried by the element and enclosing the saddle structure; fastening means attaching the saddle structure to the bag; resilient means near the lowermost end of the bag joining the latter with the support for holding the bag taut below the fastening means; and spring means engaging the frame member to yieldably bias the same upwardly and maintain the saddle structure taut.

9. In a garment finisher, a support; a frame member; means mounting the member for reciprocation on the support; a neck element mounted on the member for reciprocation therewith; an elongated, flexible bag carried by said element; retainer means interconnecting the bag and the support; resilient means engaging the member for yieldably biasing the member in one direction away from the support to hold the bag longitudinally taut; an expander adjacent the retainer means having a pair of sections secured to the bag; means mounting the sections on the support for movement toward and away from each other transversely of the path of travel of said member; and means coupled with said sections for expanding the same to hold the bag transversely taut.

10. In a garment finisher, a support; a frame member; means mounting the member for reciprocation on the support; a neck element mounted on the member for reciprocation therewith; an elongated, flexible bag carried by said element; retainer means interconnecting the bag and the support; resilient means engaging the member for yieldably biasing the member in one direction away from the support to hold the bag longitudinally taut; take-up means engaging the bag intermediate the ends thereof; and means coupled with said take-up means for varying the size of the take-up means and therefore the bag transversely of the bag at said take-up means.

11. In a garment finisher, a support; an elongated rod extending upwardly from the support; means mounting the rod on the support for reciprocation on its vertical axis; a neck element mounted on the rod at the uppermost end thereof for reciprocation therewith; a flexible bag carried by the neck element and enclosing the rod; means fastening the bag to the support; a spring coiled about the rod and engaging the support and the rod for yieldably biasing the rod upwardly to hold the bag vertically taut; a base; means mounting the support on the base; a lever; means swingably securing the lever to the base; and means coupling the lever with the rod for lowering the latter against the action of the spring when the lever is swung to one end of its path of travel.

12. In a garment finisher, a support; an elongated rod extending upwardly from the support; means mounting the rod on the support for reciprocation on its vertical axis; a neck element mounted on the rod at the uppermost end thereof for reciprocation therewith; a flexible bag carried by the neck element and enclosing the rod; means fastening the bag to the support; a spring coiled about the rod and engaging the support and the rod for yieldably biasing the rod upwardly to hold the bag vertically taut; a base; means mounting the support on the base for rotation about said axis of the rod; a lever; means swingably securing the lever to the base; and

swivel means coupling the lever with the rod for lowering the latter against the action of the spring when the lever is swung to one end of its path of travel.

13. In a garment finisher, a support; an upright frame member mounted on the support; a neck element spaced from the support and mounted on the member at the uppermost end of the latter; a flexible bag carried by the neck element; and resilient means interconnecting the bag and the support and exerting a downward pull on the bag for maintaining the bag taut between the support and the neck element.

14. In a garment finisher, a base, and an assembly rotatably carried by the base, including a support; a flexible bag above the support; a neck element supporting the bag therewithin; at least one backing strip in said bag; and clamping means exteriorly of the bag movable toward and away from the bag, said neck element, said backing strip and said clamping means being carried by the support for rotation therewith relative to the base.

15. In a garment finisher, a base, and an assembly rotatably carried by the base, including a support; a flexible bag above the support; a neck element supporting the bag therewithin; take-up means attached to the bag intermediate the ends thereof for taking up the fullness of the bag to thereby vary the extent of ballooning of the bag when fluid pressure is directed thereinto; and actuating means coupled with said structure for controlling the same, said neck element and said actuating means being carried by the support for rotation therewith relative to the base.

16. In a garment finisher, a support; frame means secured to the support and extending upwardly therefrom; an open bottom bag enclosing the frame means and carried thereby; drawstring structure attached to the bag intermediate the ends thereof for taking up the fullness thereof to thereby vary the extent of ballooning of the bag when fluid pressure is directed thereinto through said open bottom thereof; a tubular element mounted on the support; and cable means attached to said drawstring structure and extending through the tubular element, said cable means having a terminal end accessible to an operator exteriorly of the bag for shifting the cable means within the tubular element to actuate the drawstring structure.

17. In a garment finisher, a support; frame means secured to the support and extending upwardly therefrom; an open bottom bag enclosing the frame means and carried thereby; structure attached to the bag intermediate the ends thereof for taking up the fullness thereof to thereby vary the extent of ballooning of the bag when fluid pressure is directed thereinto through said open bottom thereof, said structure including a hem attached to the bag therewithin and a drawstring within the hem; a tubular element mounted on the support; and cable means attached to said drawstring and extending through the tubular element, said cable means having a terminal end accessible to an operator exteriorly of the bag for shifting the cable means within the tubular element to actuate the drawstring.

18. In a garment finisher, a support; frame means secured to the support and extending upwardly therefrom; an open bottom bag enclosing the frame means and carried thereby; structure attached to the bag intermediate the ends thereof for taking up the fullness thereof to thereby vary the extent of ballooning of the bag when fluid pressure is directed thereinto through said open bottom thereof, said structure including a hem attached to the bag therewithin and a drawstring within the hem; a tubular element mounted on the support and extending outwardly and upwardly therefrom alongside the bag exteriorly thereof; and cable means attached to said drawstring and extending through the tubular element, said cable means having a pull knob on one end thereof above the uppermost end of the tubular element for shifting the cable means within the tubular element to actuate the drawstring.

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