July 26, 1966 L. W. KILLEY 3,262,615

APPARATUS FOR FINISHING DRY CLEANING

Filed Oct. 12, 1964

FIG. 1

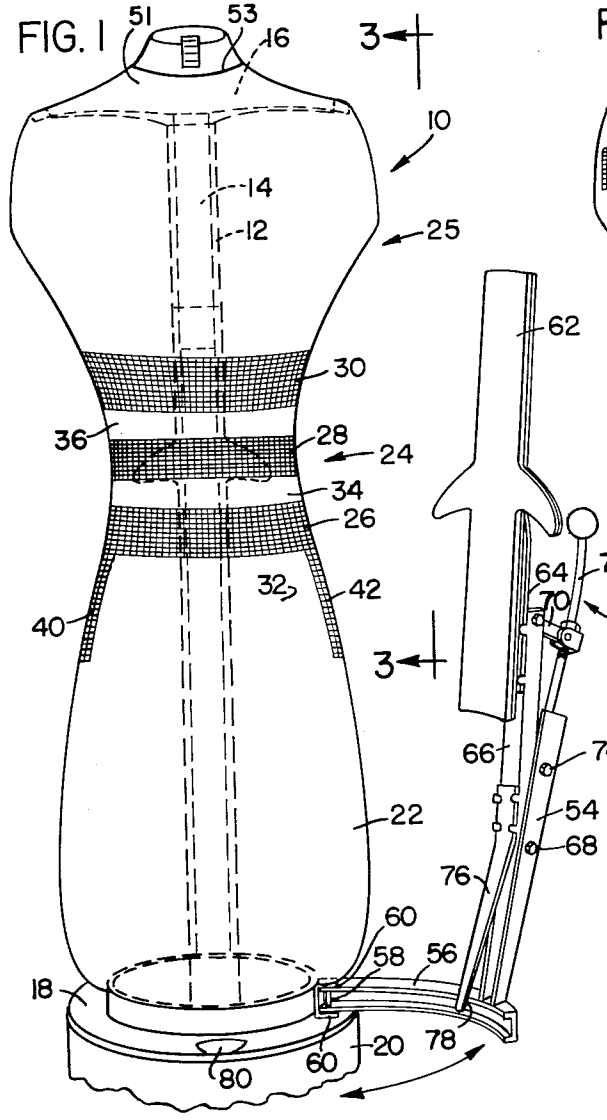


FIG. 2

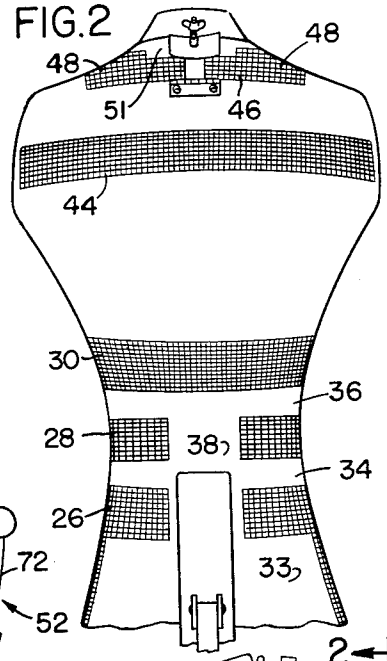


FIG. 3

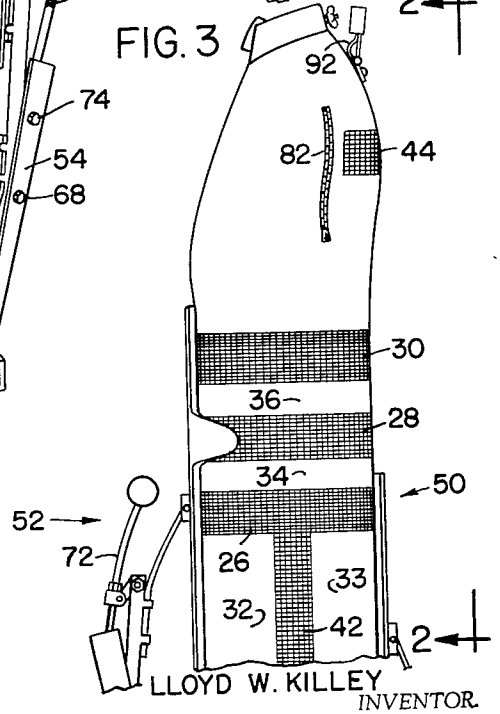
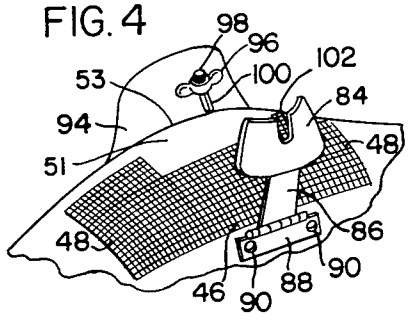


FIG. 4



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APPARATUS FOR FINISHING DRY CLEANING

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The present invention relates generally to garment finishing machines, and more particularly to improved methods and apparatus for finishing garments.

The principal object of the present invention is to provide a method of and apparatus for finishing garments in which a garment to be finished is placed over an inflatable bag and steam is introduced into the bag, the bag being provided with suitable apertures whereby the steam introduced into the bag may escape in sufficient quantities and with sufficient force to inflate the garment held over the form to its natural shape, thereby finishing the garment.

In prior art devices of the type illustrated in the U.S. patent to Petit 2,412,172, issued December 3, 1946, and the more recent U.S. patent to Jackson 2,990,983, issued July 4, 1961, it has been the practice to place a garment over an inflatable bag of relatively non-porous material, such as a closely woven nylon, and to fully distend and inflate the bag as far as possible to cause the garment placed over the bag to become fully distended and placed in intimate contact with the bag.

The prior art devices have not been satisfactory since it has been necessary to provide drawstrings and other devices to suitably control the size to which a bag will balloon when inflated. Thus, if the size were not controllable it would not be possible to use a single bag for all sizes of garments since if the inflatable bag were made of a size large enough to fully distend the largest garment likely to be encountered, it would not be possible to properly finish a smaller garment since the bag would, when inflated, tend to stretch the garment. Conversely, if a small bag were employed, it would obviously not fully distend the larger size garments. While the use of drawstrings has permitted the use of a universal bag, it has had its disadvantages in that the drawstrings cause the material of the bag to form into a plurality of gatherings and such gatherings sometimes cause the garment upon the inflated bag to become wrinkled in a complementary manner.

Another principal disadvantage of the prior art devices is that it is necessary to adjust the various drawstrings for each different size garment to be finished upon the bag, and unless the drawstrings are properly adjusted the garment will not be properly finished, and these adjustments take time which could otherwise be used for the actual finishing of the garment.

Still another disadvantage of the prior art devices is that the material of the bag has been made of a relatively closely woven nylon to retain sufficient quantities of the steam and air within the bag to hold it in a fully inflated semi-rigid condition, it being the theory of operation of the prior art devices that the garment placed upon the bag must be in intimate contact with the bag, and to be, in effect, pressed by the bag. However, the material of the bag has not been sufficiently porous to permit enough steam and entrained moisture to pass through the bag in a reasonable time to finish the garment placed upon the bag and thus it has been necessary for the operator of the finishing machine to use a hand spray gun to place sufficient moisture upon the garment to finish it.

Therefore it is an object of the present invention to provide a new method of and apparatus for finishing dry cleaning which will overcome the disadvantages of the prior art finishing devices.

More particularly, it is an object of the present invention to provide an improved inflatable finishing bag having relatively porous and relatively non-porous portions so arranged and constructed that steam under pressure entering into the bag will distend the bag and will escape through the relatively porous portions in sufficient quantities to fully distend a garment held over the form, the garment being distended to its natural shape and being finished by the escaping steam and entrained moisture.

Another object of the present invention is to provide a garment finishing bag which will, when used in conjunction with a conventional garment finishing machine, cause the garment placed over the bag to become fully distended and finished without the application of moisture from the exterior of the garment.

A further object of the present invention is to provide an inflatable garment finishing bag which can be used for all sizes of garment without adjustment.

A still further object of the present invention is to provide an improved method of finishing garments in which the garment to be finished is caused to be inflated to its natural shape by steam, the steam finishing the garment.

Another object of the present invention is to provide an improved apparatus for finishing the collars of garments placed over the shoulder and neck portion of that frame which normally supports an inflatable garment finishing bag. More particularly, it is an object of the present invention to provide an improved collar finishing device usable in conjunction with an improved inflatable bag that permits the escape of sufficient quantities of steam and entrained moisture to finish the garment without a pressing action from the bag and without the application of moisture to the exterior of the garment being finished, the improved collar form holding the collar of the garment away from the neck portion of the frame which supports the improved finishing bag, thereby permitting the egress of sufficient quantities to finish the collar portion. It should be noted that in the prior art finishing machines it has not been possible to finish collars without a separate touch-up finishing operation.

These and other objects and advantages of the present invention will be apparent to one skilled in the art, after a consideration of the following detailed description taken in conjunction with the accompanying drawings in which a preferred embodiment of the invention is illustrated.

FIG. 1 is a front perspective view of the garment finishing bag built in accordance with the principles of the present invention, the bag being shown mounted on a frame of a generally conventional garment finishing machine.

FIG. 2 is a fragmentary rear view of the bag and improved collar form of the present invention.

FIG. 3 is a side view of the bag and collar form shown in FIG. 2.

FIG. 4 is an enlarged perspective view of the collar form shown in FIGS. 2 and 3.

According to the principles of the present invention, an improved bag, indicated generally at **10**, is disposed over a frame having front and rear backing members, **12** and **14**, respectively, and a shoulder and neck support **16** mounted on the upper ends of the backing members, the support **16** being adjustable in width, as is conventional. The supports **12** and **14** are mounted upon an annular base **18** which is in turn secured to a conventional garment finishing machine of the type disclosed in U.S. Patent No. 2,736,472, issued February 28, 1956, to Nolan C. Jackson, and partially illustrated at **20**.

The bag **10** has a lower skirt portion **22**, a narrow waist portion, indicated generally at **24**, and a chest and

shoulder portion illustrated generally at **25**. Each of waist and skirt portions is sized to be less when inflated than that of the smallest garment to be finished upon the machine. The shoulder portion, however, is made large enough to support the largest garment to be placed upon the finishing machine, but the chest portion narrows down to the waist portion for reasons to be fully set forth below.

The skirt portion of the bag is made entirely of a flexible relatively non-porous material, such as a closely woven nylon fabric customarily found in prior art garment finishing bags.

The waist portion of the bag is formed as a continuation of the skirt portion and is provided with a plurality of areas that permit the relatively free passage of steam and entrained moisture. Thus the waist **24** is provided with a lower generally cylindrical band of webbing or other relatively open fabric **26**, an intermediate cylindrical band of webbing **28**, and an upper generally cylindrical bad of webbing **30**.

The lower band is secured at its lower edge to relatively non-porous front and back fabric portions, **32** and **33**, respectively, these portions being formed as a continuation of the skirt portion **22**. The upper edge of the band **26** is secured to a first intermediate strip of flexible relatively non-porous material **34**. A second intermediate strip is disposed between the intermediate and upper bands, **28** and **30**, respetcively.

The upper band **30** encircles the entire waist portion as can be seen from FIGS. 1 and 2 while the intermediate and lower bands **28** and **26**, respectively, do not entirely encircle the waist, being interrupted in the back by an extension portion **38** of the back portion **33**. The portion **38** extends upwardly to the second band **36** and covers a portion of the rear backing member **14**.

Interconnecting the front and rear relatively non-porous fabrics portions, **32** and **33**, respectively, are right- and lefthand relatively porous bands, **40** and **42**, respectively.

The front of the shoulder and chest portion **25** of the bag **10** is formed entirely of the same relatively non-porous material found in the skirt portion **22**. However, the back of the portion **25** is provided with a wide band of porous material **44** across the shoulders, the band being of substantially the same material as the bands **26**, **28**, **30**, **40**, and **42**. Above the band **44** is another relatively porous band **46** which is located near the neck, there being right- and left-hand web portions **48** which extend slightly forwardly of the band **46**. Thus, a relatively non-porous section **51** disposed in circumscribing relationship to the neck opening **53** is provided proximal the upper end of bag **10**.

Cooperating with the front and rear backing members, **12** and **14**, respectively, are front and rear clamps, **52** and **50**, respectively. The rear clamp is generally conventional and may be of the type illustrated in the aforementioned Petit Patent No. 2,412,172. The front clamp is also of conventional construction, and it is preferably mounted in the manner illustrated in my copending patent application Serial No. 341,048, filed January 29, 1964. To this end the clamp is mounted on a swingable support including an upwardly extending bracket **54** which is fixed to a swingable arm **56** that is pivoted at **58** to a pair of apertured lugs **60** carried by the base **18**. The clamp includes a garment engaging pad **62** which is disposed in a generally vertical position and is adjustably adapted to be forced against a garment placed upon the bag **10**, the pad bearing through the garment against the front backing member **12** for holding the garment in position. The pad is pivoted to a spring arm **64** that at its lower end is removably fixed to a channel arm **66** pivoted at **68** to the rigid arm **54** of the swingable support. The upper end of the channel arm **66** pivotally receives a short link **70**, the other end of which is pivoted to a lever **72**, the lower end of which is pivoted at **74** to the bracket **54**.

In order to lock the arm **56** to the base **18** a detent bar is provided, the bar being rigidly fixed at its upper end to the channel arm **66** in any suitable way. The lower end **78** of the detent bar can be secured behind the detent **80** in the manner more fully set forth in my aforementioned copending application. The clamp pad **62** is held in engagement by placing the pivot between the link **70** and the lever **72** in an over-center position relative to the pivot **74** and the pivot between **70** and the channel arm **66**.

Opposed zippers **82** are provided on either side of the shoulder portion of the bag.

A collar form is mounted on the finishing bag frame over the bag **10**. The collar form includes a curved resiliently flexible collar engaging strip **84** formed preferably of spring stainless steel and mounted on an arm **86** that is pivotally secured to a mounting plate **88** which is in turn secured to the rear backing member **14** by means of screws **90** or other conventional fastener means. The collar form is normally biased outwardly by means of a spring **92** which may be secured to arm **86** and plate **88** respectively.

When the collar form is not to be used, as when finishing sweaters and the like, it is held against the neck portion **94** of the adjustable shoulder support **16** by means of a wing nut **96** on a stud bolt **98** mounted for sliding movement within the slot **100** on the neck portion. To hold the collar form down it is only necessary to dispose the bolt in the slot **102** on the collar form and to hold the form down with the nut **96**.

In operation the garment to be finished is placed over the bag **10**, which is supported on frame **12**, **14**, **16**. If the garment is a man's suit coat, the back vent is held closed by means of the back clamp **50** which is brought to bear against the backing member **14**. The front of the coat is also closed by means of the front pad **62** which is brought to bear against the front backing member, the front flaps of the coat being held together between the pad and the backing member. The adjustable shoulder support is then adjusted to extend the entire width of the coat, and the collar form is released from the wing nut **96** and bears against the collar of the coat by means of the spring **92**. The collar of the coat is thus held slightly away from the bag **10** and the shoulder and neck portion **16**. Steam is then introduced into the bag. The steam is preferably saturated at 40 to 100 pounds boiler pressure and is introduced into the bag at the rate of about 1000 cubic feet per minute. It should be noted that the foregoing figures are not intended as a limitation and that different rates, temperatures, and saturations will be apparent to those skilled in the art. As will also be apparent to those skilled in the art, as the steam is introduced into the bag, it will expand and reduce in temperature. Thus a portion of the saturated steam will condense. The steam entering the bag will initially cause the bag to balloon into the shape illustrated in the drawings. As further steam is introduced into the bag **10**, steam and entrained moisture will escape through the relatively porous portions of the bag. It is a feature of this invention that the steam and entrained moisture will escape in sufficient quantities to distend the garment placed over the form to its natural shape. The shoulder, waist, and skirt portions of the bag help to confine the steam and entrained moisture between the bag and the garment thus assuring that sufficient pressure is exerted upon the garment to extend it outwardly to its natural shape. The steam that escapes through the porous shoulder and neck portions will distend the back of the coat in the vicinity of the porous strips, the steam flowing upwardly under the collar form and also downwardly towards the waist portion **24** of the bag finishing the back of the coat between the waist and the neck. It should be also noted that some of the steam which escapes through the portion **46**, **48** is forced over the shoulders and down between the front of the garment and the front of the bag, and other steam is forced around the side.

The steam being discharged through the portions **26**, **28** and **30** will help fill out the lower portions between the waist and the shoulders and will also cause the lower portion of the coat to become distended to its natural size. The portions **40**, **42** help stabilize a suitcoat as it is being finished by keeping it from fluttering.

Other garments are finished in substantially the same manner set forth above. It should be noted however that because of the relatively narrow waist of the bag **10** that it is necessary to supply more steam in the area to assure that a garment such as a man's coat will become fully distended. It should also be noted that the woven nylon which forms the relatively non-porous portions of the bag strains that moisture which condenses from the steam in the bag, permitting only a small portion of dry steam to pass through the relatively non-porous portions of the bag.

By opening the zipper **82**, it is possible to introduce steam into the sleeves of a garment. Thus, when finishing a coat, the zippers **82** are opened and the sleeves of the coat are finished by the steam and entrained moisture escaping through the zippers **82**, the sleeves being held open upon sticks as is conventional.

In the foregoing description, the terms porous and non-porous mean that when the two materials are combined in a finishing bag that substantially all the steam will escape through the more open porous material while causing the porous and non-porous materials to become distended. The relatively non-porous material may, however, be porous in the absolute sense, as for example permitting the escape of relatively small quantities of dry steam if no porous material was present.

While the preferred structure in which the principles of the present invention have been incorporated is shown and described above, it is to be understood that the invention is not to be limited to the particular details, shown and described above, but that, in fact, widely different means may be employed in the practice of the broader aspects of my invention.

What is claimed is:

1. In a garment finisher, a support, a frame mounted on said support, said frame including an adjustable shoulder and neck portion, a flexible bag carried by said adjustable shoulder and neck portion, said bag being provided with an open fluid inlet at the lower end thereof, said inlet being connected to said support in fluid tight relationship, said bag having a relatively non-porous skirt portion, a waist portion having a plurality of relatively non-porous portions disposed between a plurality of relatively porous portions, and a chest and shoulder portion consisting essentially of non-porous portions having a plurality of relatively porous portions extending across the back, and means to introduce steam into said bag whereby said steam initially expands said bag and subsequently said steam and entrained moisture therein

passes through the relatively porous portions of said bag causing said garment to become distended and finished.

2. In a garment finishing apparatus: a frame having front and rear backing members, an adjustable shoulder and neck portion and an annular base, an inflatable bag disposed over said frame and in substantially fluid tight contact with said annular base, and means to introduce steam into said bag through said annular base, said bag including a shoulder and chest portion, a waist portion, and a skirt portion, said skirt portion being composed essentially of a flexible relatively non-porous material, a plurality of annular bands of relatively porous material encircling said waist and interconnected with annular bands of relatively non-porous material, said shoulder and said chest portion including a substantially non-porous portion having porous portions extending across the back thereof, the parts being so arranged and constructed that steam and moisture entrained therein will escape through said relatively porous portions, inflate said garment, and then flow between said garment and said bag thereby finishing said garment.

3. In a garment finisher, a support, a frame mounted on said support, said frame including an adjustable shoulder portion and a neck portion extending upwardly from the shoulder portion, an upright flexible bag carried by said frame and adapted to receive a garment thereover for finishing the garment by application of fluid thereto, said bag being provided with an open fluid inlet at the lower end thereof, said inlet being connected to said support in fluid tight relationship, said bag having a relatively non-porous skirt portion and relatively porous chest and shoulder portions, said shoulder portion including a relatively non-porous section proximal the uppermost end of said upright bag, said relatively non-porous section including an opening proximal the uppermost end of the bag and adapted to receive the neck portion of said frame therethrough, said relatively non-porous section extending downwardly around said opening in circumscribing relationship thereto for a sufficient distance and in disposition for substantially closing the open neck and chest portion of said garment and retarding egress of fluid from said bag and through said open neck and chest portion of the garment when the latter is in position on the bag.

References Cited by the Examiner

UNITED STATES PATENTS

2,587,745	3/1952	Maurer	223—70
2,679,956	6/1954	Richterkessing	223—70
2,969,897	1/1961	Paris	223—67
2,986,311	5/1961	Stiefel	223—67
2,990,983	7/1961	Jackson	223—67

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