

Dec. 5, 1967

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3,356,271

GARMENT STRETCHING AND SHAPING FORM

Filed June 13, 1966

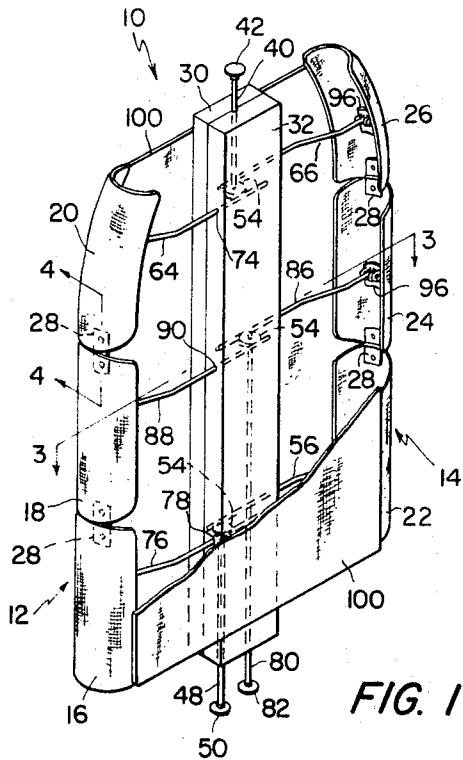


FIG. 1

FIG. 4

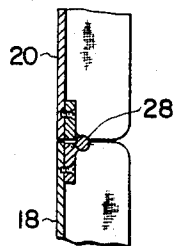
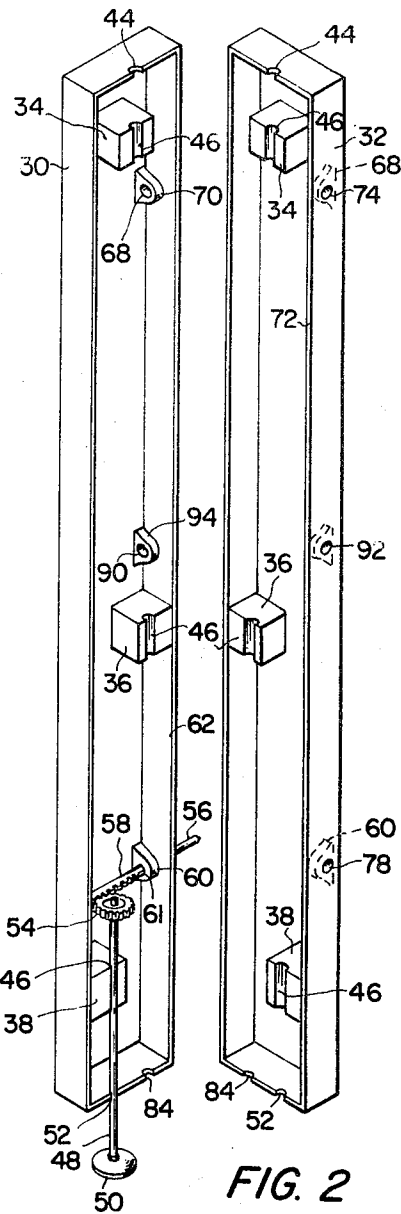


FIG. 2

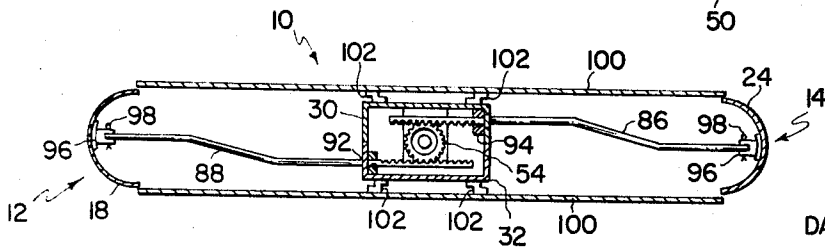


FIG. 3

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GARMENT STRETCHING AND SHAPING FORM

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Filed June 13, 1966, Ser. No. 557,179

7 Claims. (Cl. 223—66)

This invention relates to an apparatus for use in the dry cleaning of garments and, more particularly, to an apparatus to be used as a form to stretch and accurately restore or shape a garment to a desired contour and size.

When a garment is cleaned as by washing or dry cleaning, its fibers ordinarily tend to shrink and change in size. Since not all of the fibers of a garment shrink or change in size evenly, it frequently happens that the cleaned garment acquires a shape or size different from that before it was cleaned. This problem is further increased when the garment is improperly cleaned. Therefore, when a garment is brought to a cleaner it is usually measured so that it may be restored to its original size and shape after it is cleaned. However, great difficulty has been experienced in restoring such garments to their original size and shape.

The desideratum of the invention is to provide an apparatus that may be used to restore and properly reshape a garment to its original form and size without damaging or affecting the fibers of the garment.

Another object and feature of the invention is to provide an apparatus that is simply constructed and which includes a plurality of relative movable continuous sides, each of which is separated and individually articulated for adjustment relative to the other by a novel actuator mechanism of inexpensive construction.

Still another object is to provide a garment stretching and shaping form that is made of sturdy yet porous material so that even while the garment is supported on the form its fibers may be subjected to steam that will cause the same to yield and permit the accurate, precise stretching and shaping of the garment.

Other and further objects of this invention reside in the structures and arrangements hereinafter more fully described with reference to the accompanying drawings in which:

FIG. 1 is a perspective view of an apparatus for stretching and forming a garment constructed according to the invention and with parts thereof broken away;

FIG. 2 is an enlarged perspective view of the interior of the actuator;

FIG. 3 is a cross-section of FIG. 1 taken substantially along lines 3—3, and

FIG. 4 is a cross-section of FIG. 1 taken along lines 4—4.

Referring now to the drawings, the apparatus there shown for stretching and forming a garment is generally identified in FIGS. 1 and 3 by the numeral 10. The apparatus 10 includes a pair of transversely spaced oppositely disposed sides generally identified by the numerals 12 and 14. Each of the sides 12 and 14 are longitudinally disposed and extend for the full length of the apparatus 10.

Each of the sides 12 and 14 is a mirror-hand duplicate of the other and includes a plurality of individual forming elements. Thus, on the side 12 there is included forming elements 16, 18 and 20 while the forming elements 22, 24 and 26 comprise the opposite side 14. The elements 16, 18 and 20, like the elements 22, 24 and 26 are arranged coextensively with each other and are adapted to be made to articulate individually and relative to each other. As the description proceeds, it will be recognized that although only three individual forming elements comprise each of the sides 12 and 14, these are

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intended for illustrative purposes only. It will be clear to those skilled in the art that each of the sides of the apparatus 10 may comprise any convenient number of separately articulated and relatively movable forming elements.

Each of the forming elements on the respective sides 12 and 14 are connected together for relative movement and adjustment by a hinge 28. Because of the arrangement of the hinges 28, the adjacent forming elements are connected together in their coextensive arrangement and are permitted movement relative to each other such that each forming element can be separately articulated. However, by virtue of the hinge connection 28, the adjacent connected forming elements are prevented from separating, one from the other, therefore, preventing undesired pivoting of such forming elements beyond predetermined bounds as will become apparent during the description of this invention.

Although the forming elements on each of the sides 12 and 14 are transversely spaced from each other, they are also related to each other in horizontal planar alignment. Thus, the forming elements 16 and 22 of each of the sides provide a set of horizontally aligned forming elements. In the same manner, the forming element 18 on the one side 12 is aligned with the element 24 on the other side 14 as is the forming element 20 horizontally aligned with the element 26. By this manner of arrangement, it is possible to properly shape a garment along corresponding sides by manipulation of the corresponding sets of horizontally aligned forming elements.

Each of the forming elements is preferably constructed of a rigid yet porous material that permits the exudation of particles of steam through the pores thereof. The lowermost set of forming elements 16 and 22 and the intermediate set of elements 18 and 24 each have a curved cross-section in a horizontal plane with the terminating edges thereof facing transversely inward toward the corresponding forming elements on the oppositely disposed side. The uppermost ones of the individual forming elements 20 and 26 also have their terminating edges curved transversely upward toward each other. However, they have a compound curve whereby their upper portions are curved inward along their lengths from the longitudinal extent or alignment of their respective sides so that if the longitudinal curvature of the elements 20 and 26 were extended they would meet at a point.

In order to facilitate the actuation and movement of each of the forming elements individually, the apparatus 10 includes a housing which is formed in two parts 30 and 32. The two part housing 30 and 32 when closed defines an elongated rectangular member as shown in FIG. 1 that continues for at least the longitudinal extent of each of the sides 12 and 14 and is positioned within the transverse space between such sides. The two part housing 30 and 32 comprises a plurality of longitudinally spaced bearing blocks 34, 36 and 38. Inasmuch as the parts 30 and 32 of the housing are mirror hand images of each other, the description of one of the parts should suffice for the other.

The two upper blocks 34 form bearings and serve as guide holders for a selectively operable manually controlled rod 40 having a hand manipulated knob 42 which extends upward and out of the housing 30, 32 through a two part hole 44 defined therein. When the two part housing is closed, the blocks 34 on each part abut each other and each is provided with a semi-circular bearing surface 46 in which the rod 40 rotates and is guided. When the two semi-circular guide bearing surfaces 46 enclose the rod 40, the rod is retained in proper position for external manual operation.

The lower end of the two part housing 30, 32 including the bearing blocks 38 also contain semi-circular guide or

bearing surfaces 46 which mount a selectively operable rod 48 that has a manually rotatable knob 50. The rod 48 extends down and out of the housing through a suitable opening formed by two semi-circular holes 52. The construction of the rod 48 as shown in the lower part of the housing is a substantial duplicate of the rod 40 shown in FIG. 1 and adapted to be mounted within the upper part of the housing supported by the bearing blocks 34.

The rod 48 has at its end opposite the knob 40 a pinion 54 that is enclosed within the housing when the parts 30 and 32 are closed. The pinion 54 is adapted to engage an actuator means or bar 56 that has rack shaped teeth 58 provided on its surface mounted within the housing. The pinion 54 is adapted to cooperatively engage with the rack teeth 58 to cause the actuator means 56 to move transversely further out of and into the housing a distance corresponding to the degree of selective rotation of the rod 48 at the knob 50.

The actuator bar or means 56 is guided for transverse movement in a boss 60 that is formed on an adjacent wall 62 of the one part 30 of the housing. The boss 60 has an aperture 61 through which the actuator bar is guided for such movement. The operation of the rod 48 as well as the rack and pinion engagement 54 and 58 described above is also applicable to the rod 40 shown in FIG. 1. In this case, the rod 40, having a pinion 54, engages with rack teeth (not shown) defined along a length of oppositely disposed transversely extending actuator bars 64 and 66.

The bar 66 is adapted to be mounted in the aperture 68 of the upper boss 70 defined adjacent the wall 62. However, the oppositely disposed actuator bar 64 is also mounted in a similar boss on the wall 72 of the part 32 of the housing so that it extends outward therefrom through a like aperture 74. In the case of the lower operator rod 48, the second actuator means or bar 76 (FIG. 1) extends outward from the wall 72 of the part 32 of the housing through an aperture 78. It is guided for transverse movement into and out of the housing by a boss formed on the inside of the wall 72 in the same manner as illustrated by the boss 60.

A further selectively operable control rod 80 having a manually engageable knob 82 is provided to extend into the housing through complementary semi-circular openings 84 provided in the lower walls of each of the two part housing 30, 32. The rod 80 extends upward into the housing and is bearingly mounted in position by the blocks 36 each having the semi-circular bearing surfaces 46. The upper end of the rod 80, like that of the rod 48, has a pinion 54 mounted thereon. The pinion 54 is adapted to engage with rack teeth defined on the actuator means or bars 86 and 88, in the same manner as the engagement between the pinion and racks 54 and 58 previously described. The actuator rods 86 and 88 extend transversely outward from the housing 30, 32 through the respective apertures 90 and 92 formed in bosses 94 in the manner previously described.

Each set of horizontally aligned forming elements of the sides 12 and 14, respectively, is adapted to be articulated and moved conjointly as a result of the operation of their respective sets of actuator bars. Thus, in the present disclosure the lower set of forming elements 16 and 22 is adapted to be actuated and moved by the respective actuator bars 76 and 56 moving conjointly because of the selective manipulation of their operator 48 at knob 50. The intermediate set of forming elements 18 and 24 is adapted to be articulated individually and relative to the next adjacent forming elements on their respective sides by the actuator bars 88 and 86, respectively, by virtue of the operation of rod 80 at its knob 82. In like manner, the uppermost set of forming elements 20 and 26 is individually actuated by the actuator bars 64 and 66, respectively, in response to the selective manual rotation of the rod 40 at the knob 42.

However, during the individual articulation of the separate forming elements relative to each other the forming

elements on each of the sides 12 and 14 of the apparatus will be held and connected together so that they are limited from undesired extreme movements. This is accomplished by the hinging connection 28 made between adjacent ends of the forming elements on each of the sides. Actually the forming elements on each of the sides are suspended and supported from the housing 30, 32 by their respective actuator bars. Yet, each forming element is connected to its respective actuator bar by a yoke 96 fastened to the interior surface of its respective forming element and connected for pivotal movement relative to its respective actuator bar by a pin 98 as is shown more clearly in FIG. 3.

The forming elements defining the respective sides 12 and 14 of the apparatus 10 are arranged coextensively with each other so that they define a substantially continuous smoothly curved wall, despite their individual movement or articulation on their respective sides. The inward curvature of the forming elements toward the opposite sides obviates the presence of sharp edges that may tend to catch and damage the fibers of a garment placed over the apparatus.

The apparatus 10 is further provided with substantially rigid but porous closure face members 100 formed along opposite faces of the apparatus. The closure face members 100 extend transversely from one side 12 of the apparatus to the other side 14 and lengthwise for the full length of each of the sides. These closure members 100 fully close off and provide smooth faces for the space formed between the transversely disposed sides 12 and 14 as a consequence, they define porous supports for the adjacent surfaces of a garment positioned thereover. The closure face members 100 are retained in position with respect to the housing 30, 32 by Z-shaped brackets 102. The closure face members 100, being substantially rigid and porous as well, like that of the forming elements on each of the sides 12 and 14, provide a non-yielding and therefore a non-wrinkling support for a garment which may be placed thereof.

Because of the porous nature of the forming elements and closure members, it is now possible to subject the interior, or exterior or both, of the apparatus 10 to a stream of steam. The porosity of the forming elements of the sides 12 and 14, and the face members 100, permit the particles of steam to exude through the pores of the surface supporting the garment thereon so the steam moves between the fibers of the garment to completely subject the inner and outer surfaces of the garment to the stream of steam so that the fiber will yield to be shaped. As the fibers yield to the particles of steam and as they stretch, the knobs 42, 50 and 82 may be selectively manipulated to restore the garment to its exact shape and form it had before the garment was cleaned.

Understandably, each of the forming elements of the respective sides 12 and 14 may be manipulated individually and selectively. In this way any one set of forming elements may be transversely spaced from each other a predetermined distance equal to the size it is desired to form the garment positioned thereon without interfering with the transverse spacing of any other set of forming elements. However, during the selective manipulation of the sets of forming elements, it will be realized that because each one of the forming elements is connected to the next adjacent forming element on its respective side, it forms a smooth contour with such next adjacent element. Hence, when the garment positioned on the apparatus 10 is subjected to a stream of steam, it does not acquire an irregular or abrupt contour, but rather, acquires a smooth flowing contour resulting from the flowing and smooth connection of the forming elements with each other on each of the sides of the apparatus.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a preferred embodiment thereof, it will be understood that various omissions and substitu-

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tions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art, without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the claims appended hereto.

I claim:

1. An apparatus for stretching and forming a garment comprising a pair of transversely spaced oppositely disposed longitudinal extending sides,

each of said sides defining a substantially continuous outer wall including a plurality of interconnected individual forming elements arranged coextensively with each other and being relatively movable,

means retaining said individual forming elements and their coextensive arrangement and connecting the same together for relative movement,

actuator means connected with and supporting a respective one of said forming elements of each of said sides and to actuate their respective forming elements for relative movement,

selectively operable means cooperable with selected ones of said actuator means to cause the same to actuate their respective forming elements, said individual forming elements each having a substantially rigid porous surface through which particles of steam may exude, each of said individual forming elements having a curved cross-section in a horizontal plane with the terminating edges of the curve of the forming elements of each of said sides facing inward toward the forming elements of the oppositely disposed side, a member closing the transverse space between said sides and extending for the lengths of said sides, each of said individual forming elements on one of said pair of longitudinal extending sides being aligned horizontally with a respective one of an individual forming element of the other of said pair of sides, a plurality of said selectively operable means, each one of said selectively operable means cooperating with a plurality of said actuator means to cause said horizontally aligned forming elements on each of said sides to articulate and move relative to the other forming elements of their respective sides.

2. An apparatus as in claim 1, the uppermost one of said individual forming elements of each of said sides being curved inward from the longitudinal extent of its respective side.

3. An apparatus for stretching and forming a garment comprising a pair of transversely spaced oppositely disposed longitudinal extending sides,

each of said sides defining a substantially continuous outer wall including a plurality of interconnected individual forming elements arranged coextensively with each other and being relatively movable,

means retaining said individual forming elements and their coextensive arrangement and connecting the same together for relative movement,

actuator means connected with and supporting a respective one of said forming elements of each of said sides and to actuate their respective forming elements for relative movement,

selectively operable means cooperable with selected ones of said actuator means to cause the same to actuate their respective forming elements,

said individual forming elements each having a substantially rigid porous surface through which particles of steam may exude,

a substantially rigid porous closure face extending

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transversely from one of said pair of sides to the other and extending lengthwise for the length of said sides to cover the length and width of the transverse space between said sides.

4. In an apparatus for stretching and forming a garment

a housing,

a plurality of actuators each projecting outward from said housing,

a plurality of selectively operable means projecting outward from said housing and cooperable with respective ones of said plurality of actuators within said housing to actuate the same,

a plurality of substantially rigid, porous forming elements each of which is movable connected with and supported on and actuated by a respective one of said actuators projecting outward from said housing,

certain ones of said forming elements being arranged in coextensive relationship on one side of said housing for movement relative to each other and certain others of said forming elements being arranged in coextensive relationship on another transversely spaced opposite side of said housing for movement relative to each other whereby selective operation of any one of said plurality of operable means causes a corresponding movement of at least one of said forming elements individually relative to the others of said plurality of said forming elements.

5. An apparatus as in claim 4,

certain ones of said plurality of actuators projecting from one side of said housing and certain others projecting from an opposite side of said housing to actuate certain corresponding ones of said forming elements on opposite sides of said housing simultaneously as a set.

means pivotally connecting each of said actuators with a respective one of said forming elements on their respective sides of said housing,

means pivotally connecting together said forming elements in coextensive relationship.

6. An apparatus as in claim 5,

a substantially rigid porous face member supported on said housing extending transversely between said transversely spaced forming elements on opposite sides of said housing and extending for the coextensive length of said forming elements.

7. An apparatus as in claim 5,

said actuators being movable to project further out of and into said housing to adjust the relative position of its respective forming element away from or toward the housing,

each of said operable means being connected simultaneously with a set of actuators projecting from opposite sides of said housing to move the same,

said connections being a rack and pinion, and bearing means in said housing to support said operable means for operation in said housing and said actuators for projection into and from said housing.

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