

May 14, 1940.

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2,200,606

GARMENT FINISHING, REFINISHING, AND RESHAPING MACHINE

Filed June 28, 1938

5 Sheets-Sheet 1

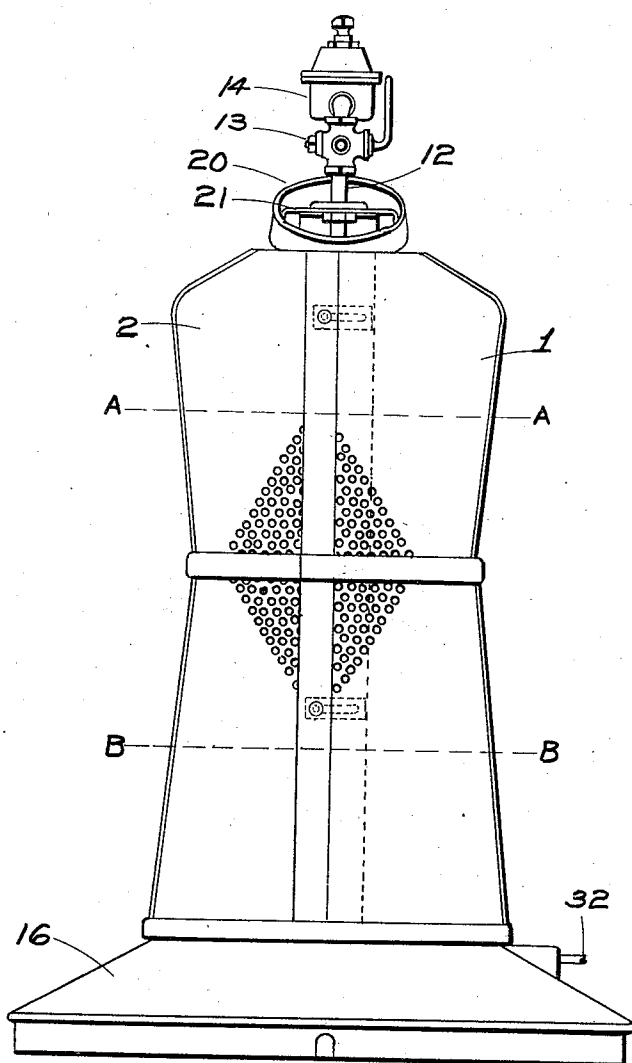


FIG. 1.

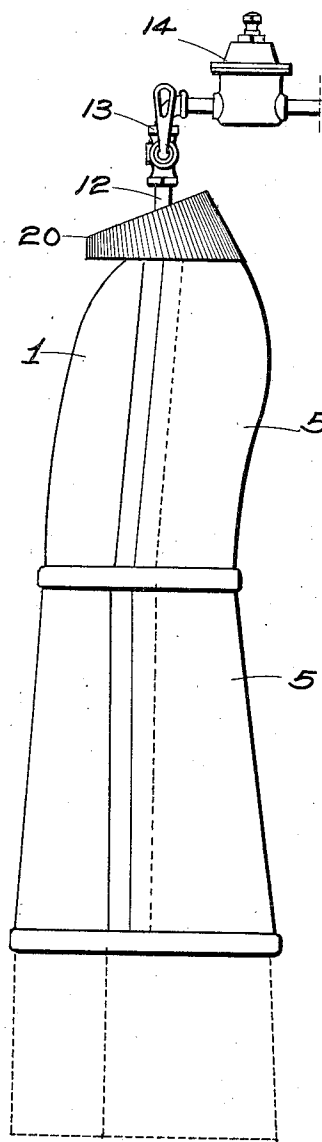
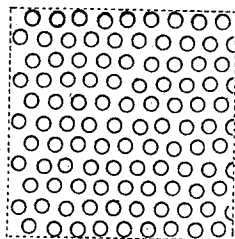


FIG. 2.

FIG. 3.



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5 Sheets-Sheet 2

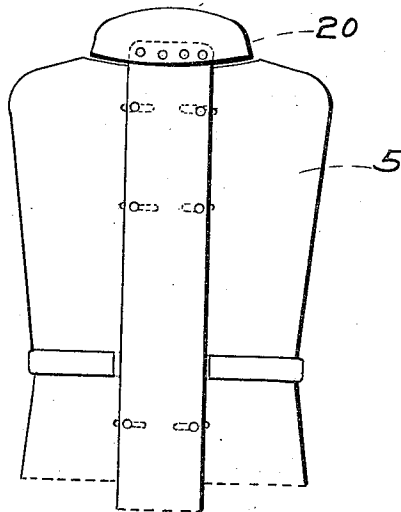


FIG. 4.

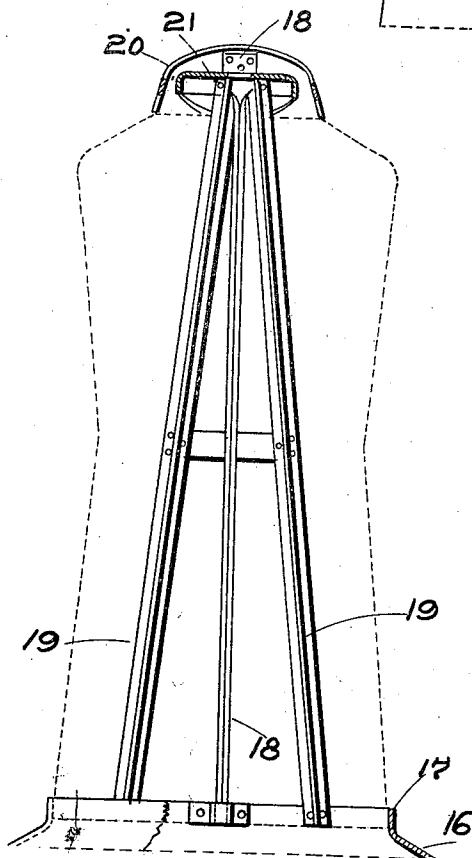


FIG. 5.

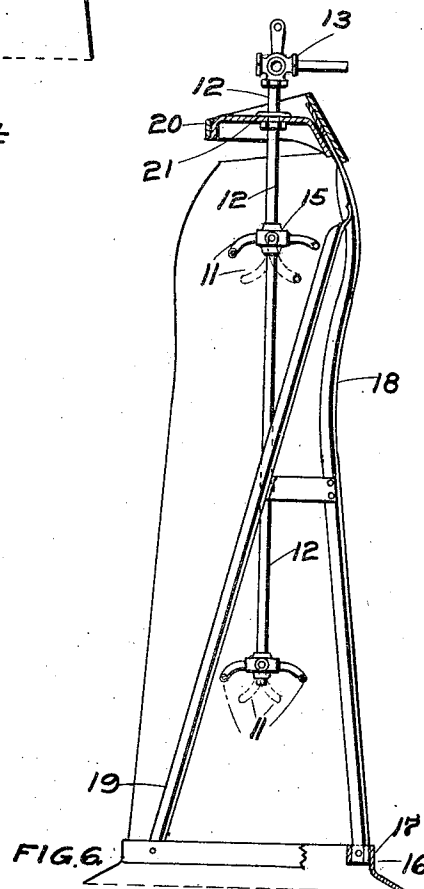


FIG. 6.

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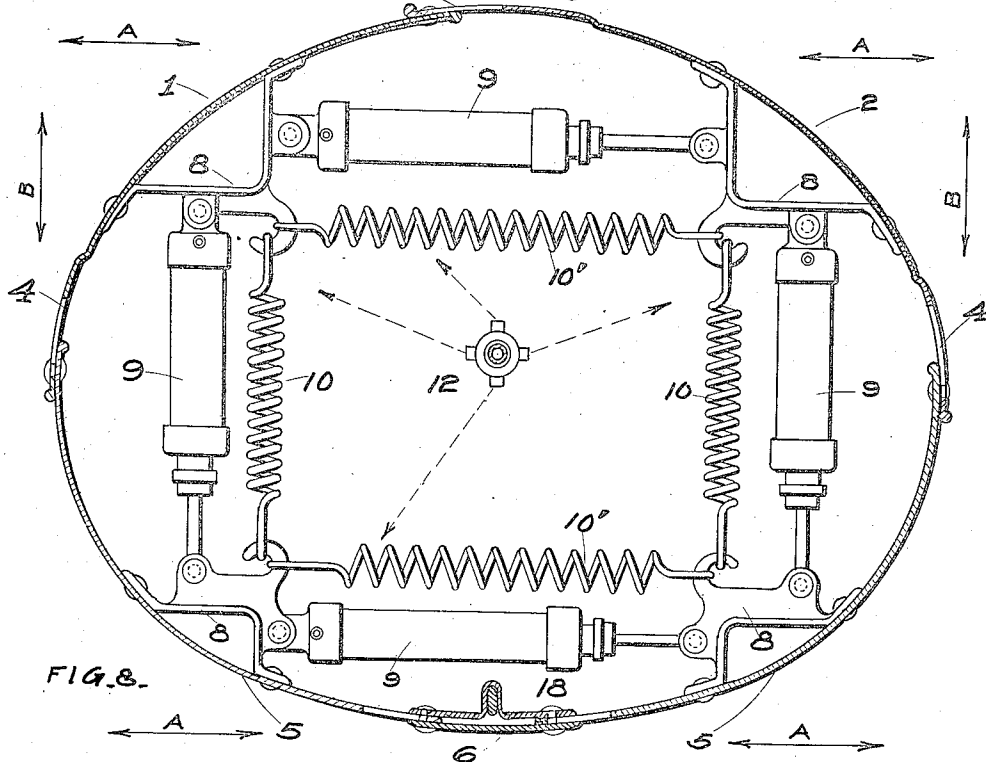
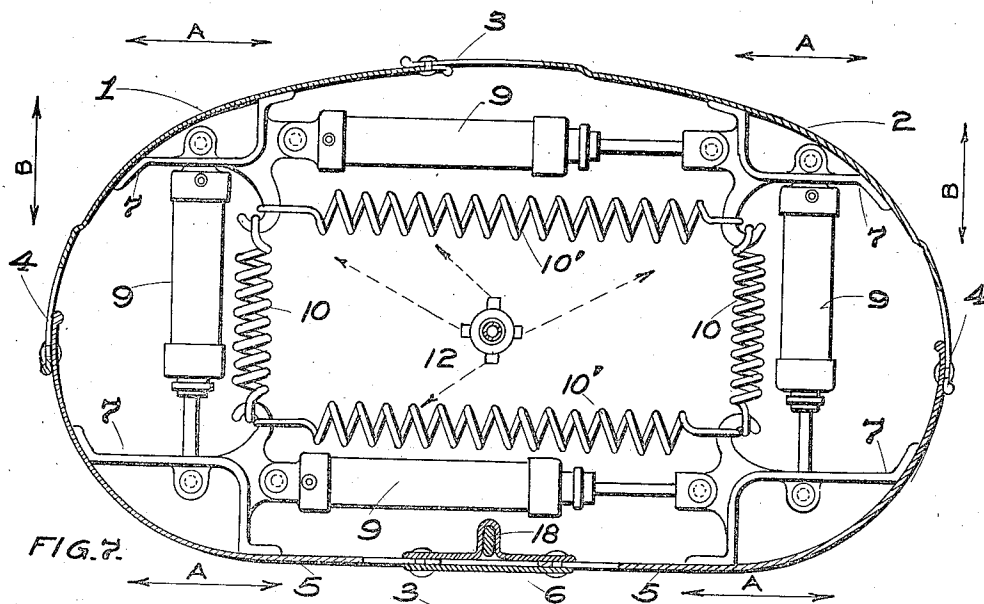
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5 Sheets-Sheet 4

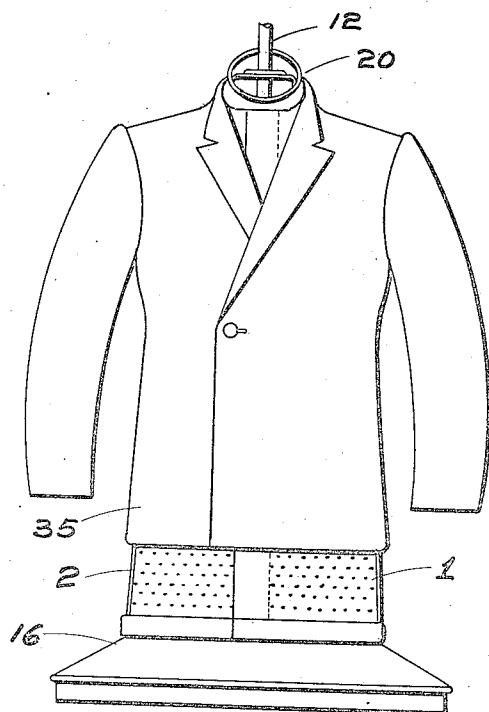


FIG. 9.

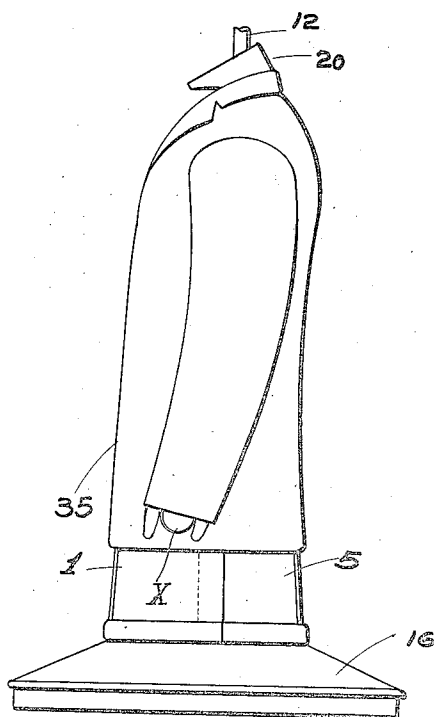


FIG. 10.

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5 Sheets-Sheet 5

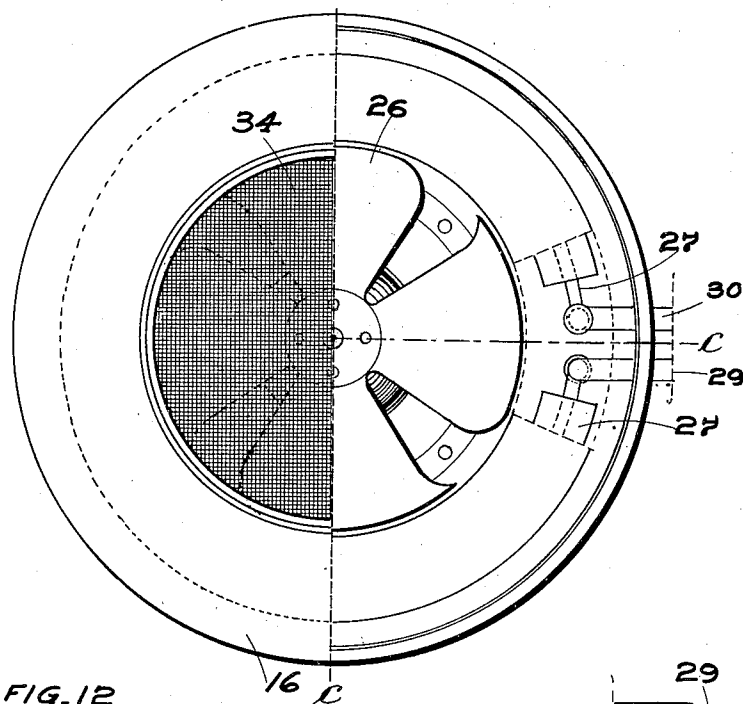


FIG. 12.

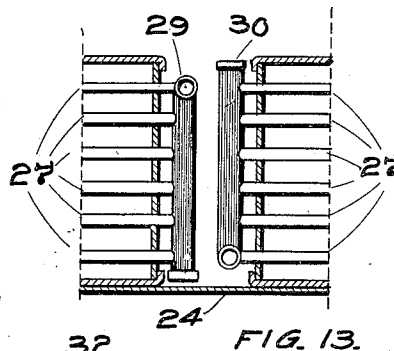


FIG. 13.

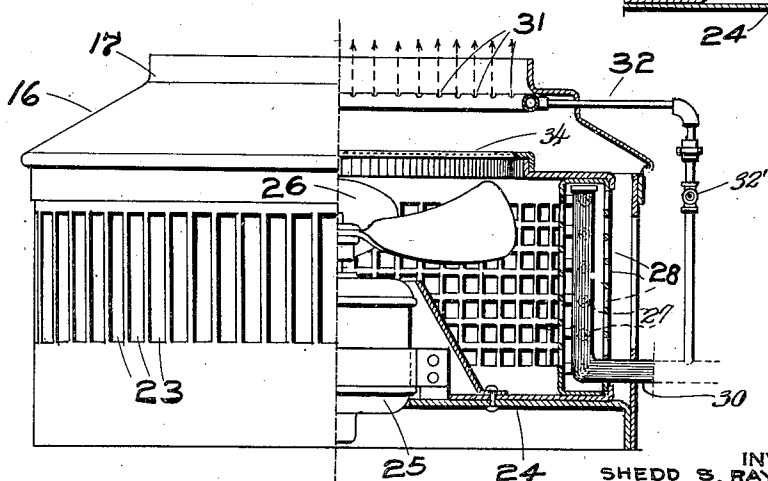


FIG. 11.

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GARMENT FINISHING, REFINISHING, AND
RESHAPING MACHINEShedd S. Raymond and Horace M. Montgomery,
Oil City, Pa.

Application June 28, 1938, Serial No. 216,268

9 Claims. (Cl. 223—70)

This invention relates to a garment finishing and reshaping machine which is adapted to be used in conditioning new articles of wearing apparel for the market, or processing and re-conditioning articles of wearing apparel which have been worn and are in need of being renewed in form and general condition. It is well adapted for use by manufacturing tailors in preparing their product for market, in the respect of imparting a factory finish thereto.

The machine may be used with utmost facility in the processing and reshaping of men's coats, vests, jackets and similar garments, also women's garments of a similar character, as well as those of children; with this particular object in view the organization is provided with a form having the general shape of the upper portion of the human figure, which may be termed the "trunk", inasmuch as this word is defined in Webster's dictionary as "the body of a man apart from the head and limbs". This portion of our organization is adapted to impart the proper shape and outline to a garment, and is generally referred to herein as the "form". It is a sheet metal structure, the sections of which are usually, uniformly perforated throughout, but the perforations are in some cases omitted.

The construction of our improved organization and the method of using same are clearly illustrated in the accompanying drawings in which:

Fig. 1 is a front view of the form upon which garments are placed for processing, conditioning or reconditioning.

Fig. 2 is a side elevation of Fig. 1.

Fig. 3 is intended to be illustrative of a certain type of metal which is uniformly perforated and is used throughout the construction of said form, in a majority of cases.

Fig. 4 is a back view of the upper portion of said form.

Fig. 5 is an elevation of the front side of the vertically-extending mast or supporting structure of the form.

Fig. 6 is a side view of Fig. 5.

Fig. 7 is a section of Fig. 1 in proximity to the line A—A.

Fig. 8 is a section of Fig. 1 in proximity to the line B—B.

Fig. 9 is a front elevation of the form with a coat in processing position thereon.

Fig. 10 is a side elevation of Fig. 9.

Fig. 11 is an elevation of one form of base upon which our improved garment finishing, reshaping and general processing organization is

mounted and is supplied with the requisite heat, air-blast and steam supply. The righthand side of this figure is shown in quarter section on the line C—C of Fig. 12.

Fig. 12 is a plan view of Fig. 11 shown in half section, as indicated by the dotted line.

Fig. 13 is an elevation of a portion of the steam-piping shown in the adjacent side of Fig. 11, also shown in plan view in Fig. 12.

The construction shown in the drawings consists of the form shown in Figs. 1 and 2, which are a front and a side elevation respectively, and in the Fig. 1 view the form is shown as being mounted upon a cover, to be later explained.

This form consists of four perforated, sheet metal sections each of which extends the full height or length of the form; the way in which these sections are divided and expansively joined together is clearly shown in Figs. 7 and 8. This form is open at the bottom.

By reference to said Figs. 7 and 8, it is pointed out that the sections, which are here designated as 1 and 2, are the front sections and are joined together at 3, 3 so as to have relatively, laterally or circumferentially expansive movement, as indicated by the arrows A; said sections 1 and 2 are also joined at 4, 4, to the rear sections 5, 5, whereby they are adapted to have fore-and-aft movement relatively thereto.

The rear sections 5, 5, also extend the full length or height of the form and are so joined together at the point 6 as to have relatively lateral sliding movement at this point, but in respect to these rear sections no fore-and-aft sliding movement takes place because of the way in which they are joined to the spine 18 at the rear as will presently appear; the relatively sliding movement at this point is indicated by the double-pointed arrows A—A.

In these figures of the drawings, the arrows A and B when placed adjacent sections as 1 and 2, indicate that said sections are adapted to have both a lateral or sideways and a fore-and-aft movement, but the sections adjacent which but one arrow is placed, have movement only in the directions indicated by the double points of the arrow, as "A".

The expansile and retractile movements of the form sections are provided for and are caused by the following elements and their respective functions:

To each of the sections, and at two vertically-spaced points thereof, as for example at or near the section lines A—A and B—B, of Fig. 1, are firmly attached a set of four fixtures consisting

of four members to each set, as indicated by the reference numerals 7, 7, 7 and 8, 8, 8, 8; these fixtures are firmly secured, each to one section of the form, and internally thereof.

- 5 To each of these fixtures is attached two pneumatic cylinders or their respective piston rods; two of these pneumatic devices, of each set, extend laterally of the form, and the other two extend fore-and-aft thereof. Each of these fixtures is engaged by two retractile, or tension springs; each of said cylinders is designated by the numeral 9 and each of said springs is indicated by the number 10 or 10'.

- 15 This pneumatic, and tension spring equipment, is adapted to cause the expansile and retractile movements respectively of the sections of the form. For the purpose of actuating the pistons, air piping, as indicated by the numerals 11 and 12, in Figs. 6, 7 and 8, is provided, this piping being supplied by a three-way cock 13 for the admittance of air to the pistons, and the exhaust of same therefrom; an air pressure regulator 14 (see Figs. 1 and 2) is also interposed in said pipe 12; the arrows within Figs. 7 and 8 are intended to indicate flexible piping extending from each of the fixtures, to the piston port to which the arrow points. By means of said pressure regulator, the degree of air pressure within the cylinders 9 may be regulated as required and by this means the outward stress of the sections of the form upon the fabric of the garment may be varied to suit any kind of fabric of which the garment may be composed, ranging from heavy wool to sheer silk; said regulation may also serve to stretch a shrunken garment and straighten the fibers of the fabric into their original condition, which latter function is necessary in order to smooth a wrinkled garment.

- 35 The admittance of air into the pistons will cause the forward sections to expand both laterally and forwardly, as indicated by both sets of arrows A and B; it will cause the rearward sections to move laterally as indicated by the arrows A.

- 45 By turning the cock 13 to the exhaust position, the tension of the springs will return the sections to their retracted positions. From the foregoing description and reference to Figs. 7 and 8 of the drawings, it will be readily understood that each set of said expansion and retraction organizations are substantially identical in construction and operation; and that each set comprises four pneumatically-operated expansion organizations in the form of cylinders, pistons and piston-rods and four tension-spring, retracting devices; there being two sets of said organizations within said form, extending transversely thereof, at or about the positions indicated by the dotted lines A-A and B-B of Fig. 1; that each of these organizations is a direct-connected, straight-line-operating, organization and that each set thereof is disposed transversely to the longitudinal axis of the form.

- 65 In the operation of the machine as when conditioning a garment, it is desirable to have the lateral expansion precede the forward expansion; this function is attained by using a spring 10' of less tensile strength in resistance to the lateral expansion, than the springs 10 used in opposition to the fore-and-aft expansion.

- 70 The base structure 16 is equipped and adapted to discharge air, either heated or cold—together with steam if desired—upwardly into the interior of the form, and said base equipment and its mode of operation are substantially as follows:

The form is open at the bottom and the lower edges of the sections 1, 2, extend into close proximity to the upper surface of said cover, but upon account of the fact that the form is rigidly attached to said cover through a rigid union of the lower end of the spine 18 to flange 17, and that the rear sections 5 are, in turn so attached to said spine as to cause them to have fore-and-aft rigidity, said rear sections are adapted to have only lateral movement, in the circumferential adjustability of the sections of the form; the form is wholly supported by said spine and inclined struts 19 extending between the upper part of spine 18 and base 16.

Referring to Fig. 11 of the drawings it is there illustrated that the said base 16 is a cylindrical member having openings 23 in its vertically-disposed circumferential walls; it is supplied with a bottom 24 upon which an electric motor 25 is mounted with its shaft extending vertically; upon the upper end of said shaft a fan 26 is operably mounted; this fan is adapted to cause and direct a current of air upwardly into the form, thereabove, as indicated by the arrows in Fig. 11.

A heating unit is mounted within said base, which comprises a coil of steam pipes 27, a portion of which coil is shown in Fig. 13; this heating unit is indicated as being enclosed in a casing consisting of the perforated walls 28, which are thus adapted for the free passage of air there-through to the fan. In said Fig. 13, the steam inlet of the heating coil is indicated as 29 and the outlet is indicated as 30.

For the purpose of admitting steam directly into the interior of and at the bottom of the form, a perforated steam pipe 31 is placed in the upper portion of said cover, or elsewhere as desired, with its perforations directed upwardly; this pipe may have any suitable source of steam supply, but it is here shown as being connected by means of a supply pipe 32 to either of the pipes 29 or 30.

Said steam-pipe 31 encircles the top opening of the cover 16 at a point adjacent the flange 17 and as the jets of steam issue from the perforations in said pipe, an encircling wall of steam is formed in the lower portion of the form and extends therefrom upwardly, and as the air passes upwardly from the fan through this wall of steam, it thereby becomes saturated; the quantity of steam may be regulated by means of a valve 32' in the steam-pipe 32, and in this manner the degree of saturation of air entering the form may be regulated at will, and as desired, to suit the immediate conditions of the garment in respect to the required initial steps of treating the same.

Care is taken that the air which enters the form shall be as free as possible from dust, lint, or other objectionable contamination. This is accomplished by providing that the air which is taken into the base shall enter at a distance above the floor, hence the perforations or slots 23 in the base do not extend into proximity to the floor, and their lower ends are spaced upwardly from the floor; as an additional precautionary measure in this respect, the upper opening of the heating chamber is covered with a fine-mesh wire screen 34, which is preferably about 60 mesh. This screen is readily removable for the purpose of cleaning.

An additional function of said screen is the equal distribution and diffusion of the air throughout the whole interior of the form, whereby a uniformity of air or steam density and pressure is caused to be distributed and exerted upon

all portions of the interior walls of the form and the garment being operated upon.

The method of operating our improved garment finishing and reshaping machine is substantially as follows:

When all the sections of the form are in their retractile position, the garment, such as a coat, as shown in Figs. 9 and 10, is placed—dressed—upon the form in either a wet or dry condition, the form is then expanded until it fills the coat to the proper form, thus reshaping same, and smoothing all wrinkles therefrom; stretchers as x may be placed in the lower end of the sleeves if desired; when the coat has become expanded and thus reshaped to a smooth condition, heated air is passed through the perforations of the shell of the form and through the fabric of the garment; when dry, the coat or other garment as the case may be is removed from the form, and any supplementary finishing that may be needed can be readily applied in the usual manner. The form is also open at the top beneath the collar 20 and supporting inverted dish-shaped member 21.

In the finishing of ladies' garments, such as coats and jackets, especially when the items of finish are to be the reshaping of the garment, and the improvement of the fabric thereof, the process may be accomplished by placing the garment upon the form, expanding the form therein to smooth out all wrinkles, passing steam through the fabric to restore it to its original condition, such as a nappy condition if the fabric is velvet, then turning off the steam and passing heated air through the garment until it is dry.

In a garment which has been wet-cleaned, the garment in its wet condition may be placed upon the form, and if it is a coat 35, Figs. 9 and 10, vest, or similar article, it should be buttoned; the form is then expanded and reshaped therein until all wrinkles are smoothed out; heated air is then passed through the form and the garment until the garment is dry, whereupon it will be found to be properly shaped and at every point where the fabric is in contact with the metal of the form it will have a finish equal to the most expert hand pressing.

In an extended course of experimental development of this machine, and research work incidental thereto, it has been discovered that, when a wet coat or other like garment is reshaped and reconditioned, a non-perforated form, which, in all other respects answers to the present description, will render excellent service. In the case where such a form is employed, the garment is dressed upon the form in the usual manner, the form is then expanded into the garment so that the garment closely conforms to the form, thus reshaping it; whereupon a stream of heated air is directed through the form and passes out of the top thereof adjacent the collar. The metal of the form thus becomes evenly heated throughout, and on account of the close conformity of the fabric to and contact with the outer surface of the metal, the garment becomes reshaped and re-finished; in this case the garment remains upon the form until it is dry.

It will be readily understood from the foregoing specification, and the drawings to which they relate, that this machine is applicable to refining, reshaping of new garments, dry-cleaned or wet-cleaned garments.

We claim the following:

1. In a garment finishing and reshaping machine, a form consisting of a metallic shell hav-

ing substantially the form and outlines of the human trunk, said form being open at the bottom and composed of sheet metal which is perforated, divided into vertically extending, relatively-circumferentially expansible sections; pneumatic pistons arranged to cause the expansile movement of said sections; tensile springs arranged in opposition to the expansile function of said pistons, whereby the retractile movement of said sections is caused upon the release of air from said pistons, said pistons and said springs being straight-line-operative members connected to and supported by said sections only.

2. In a garment finishing and reshaping machine, a form consisting of a hollow sectional, metallic shell, having substantially the form and outlines of the human trunk and open at the bottom, the metal of said shell being perforated, the sections of said shell extending vertically and adapted to have relatively, circumferentially expansible movement, pneumatic pistons adapted to cause the expansile movement of said sections, means supplying compressed air to said pistons, and the release of same therefrom, tension means operating in opposition to the expansile action of said pistons whereby the retractile movement of said sections is caused upon the release of air from said pistons, said piston members and said tension members being arranged in straight-line-operative relation to said sections, said members being connected to and supported by said sections only and disposed transversely to the longitudinal axis of the form.

3. In a garment finishing and reshaping machine, a form consisting of a hollow sectional, metallic shell, having substantially the form and outlines of the human trunk and open at the bottom, the metal of said shell being perforated, the sections of said shell extending vertically and adapted to have relatively, circumferentially expansible movement, pneumatic pistons adapted to cause the expansile movement of said sections, means supplying compressed air to said pistons, and the release of same therefrom, tension means operating in opposition to the expansile action of said pistons whereby the retractile movement of said sections is caused upon the release of air from said pistons, a supporting structure consisting of a cylindrical base having perforated circumferential outer walls adapted for the free passage of air therethrough into the interior of said base, the lowermost limit of said perforations being spaced above the floor for the purpose specified, a cover for said base having a central opening therethrough surrounded by an upwardly-extending annular flange, there being a bottom wall or floor in said base, a heating coil within said base in spaced relation to said outer wall, a vertically-disposed motor positioned centrally in said base and carried by the floor thereof, the shaft of said motor extending vertically; a horizontally disposed fan secured to the upper end of said shaft adapted to draw air into said base in impinging relation to said heating coil and to discharge the same through said cover-opening, a screen interposed in the path of said discharged air in its passage from said fan through said cover-opening, the bottom opening of said form being arranged in registry with the upper, flanged opening of said cover, whereby the heated air delivered by said base is caused to pass through said form.

4. In a garment finishing and reshaping machine, a form consisting of a hollow sectional, metallic shell, having substantially the form and

outlines of the human trunk and open at the bottom, the metal of said shell being perforated, the sections of said shell extending vertically and adapted to have relatively, circumferentially ex-

5 pansible movement, pneumatic pistons adapted to cause the expansile movement of said sections, means supplying compressed air to said pistons, and the release of same therefrom, tension means operating in opposition to the expansile action

10 of said pistons whereby the retractile movement of said sections is caused upon the release of air from said pistons, a supporting structure consisting of a cylindrical base having circumferential outer, vertically-disposed walls, the upper

15 portion of which walls are perforated and adapted for the free passage of air therethrough at a point spaced upwardly from the floor into the interior of said base, a cover for said base having a central opening therethrough surrounded by a

20 vertically-disposed flange, means positioned adjacent said cover-opening adapted to discharge jets of live steam upwardly therethrough into said form, there being a floor in said base, a heating coil within said base spaced in proximity

25 to said outer wall, a motor mounted centrally within said base with its shaft extending vertically, a horizontally-disposed fan secured to the upper end of said shaft adapted to draw air into said base and in its passage to have impinging

30 contact with said heating coil, and to discharge heated air into said form through the opening of said cover, the bottom opening of said form being arranged in registry with the upper flanged opening of said cover whereby the heated air and live

35 steam supplied from said base are adapted to be directed into said form.

5. In a garment finishing apparatus, a plurality of pairs of sections, an expansible power device connected at opposite ends thereof respectively to

40 adjacent sections of each pair for expanding each pair, and a spring device connected at opposite ends thereof respectively to adjacent sections of each pair and arranged to bias the connected sections towards each other.

6. In a garment finishing apparatus, a plurality of sections connected in series to provide a complementary form, the sections of each adjacent pair being connected to each other loosely to permit expansion of each pair, an expansible

5 power device connected at opposite ends thereof respectively to adjacent sections of each pair for expanding each pair, and a spring device connected at opposite ends thereof respectively to adjacent sections of each pair and arranged to bias the connected sections towards each other.

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7. In a device as set forth in claim 6, wherein the springs are positioned to provide a pair thereof extending laterally of the form and another pair extending in a fore-and-aft direction, said

15 first-named pair being weaker than said other pair to permit greater expansion of the sections transversely of the form.

8. In a garment finishing apparatus, a plurality of sections connected in series to provide a

20 complementary form, the sections of each adjacent pair being connected to each other loosely to permit expansion of each pair, a plurality of piston-and-cylinder means severally having their pistons and cylinders attached at opposite ends

25 thereof respectively to adjacent sections of each pair for expanding each pair, and a plurality of spring devices respectively disposed in substantially parallel relation to the corresponding piston-and-cylinder means and connected at their

30 opposite ends respectively to adjacent sections of each pair and arranged to bias the connected sections towards each other.

9. In a device as set forth in claim 8, wherein the springs are positioned to provide a pair thereof extending laterally of the form and another pair extending in a fore-and-aft direction, said

35 first-named pair being weaker than said other pair to permit greater expansion of the sections transversely of the form.

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