

Nov. 6, 1962

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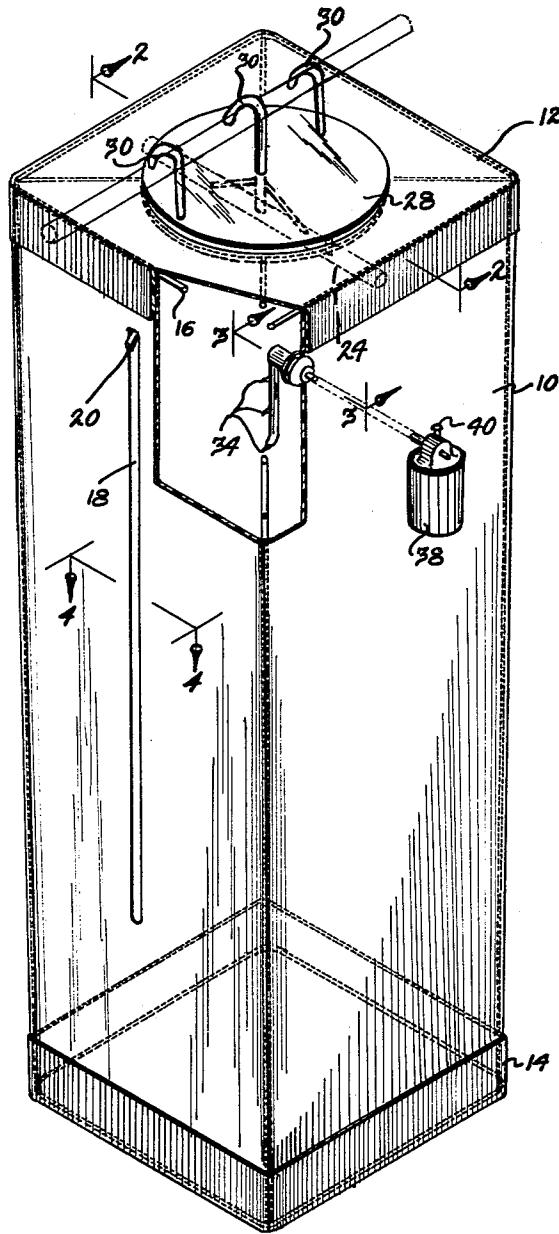
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APPARATUS FOR RENDERING FABRICS ANTISTATIC

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4 Sheets-Sheet 1

Fig-1



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4 Sheets-Sheet 2

Fig 2

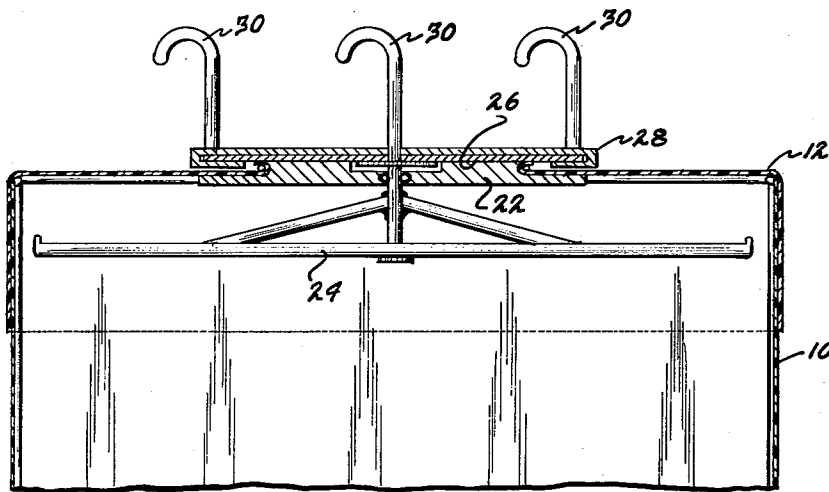


Fig 3

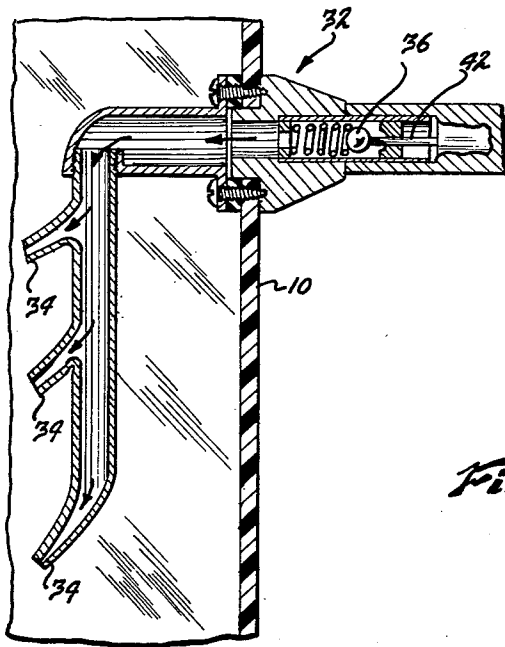


Fig 10

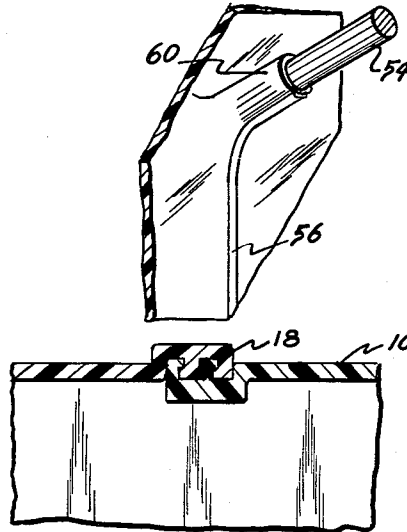


Fig 4

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4 Sheets-Sheet 3

Fig-5

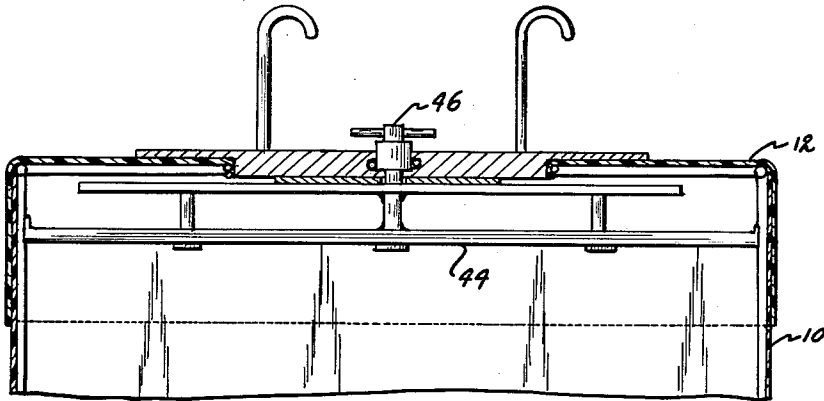


Fig-8

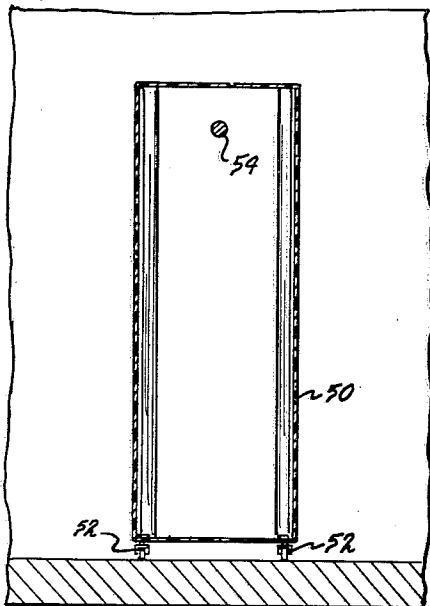
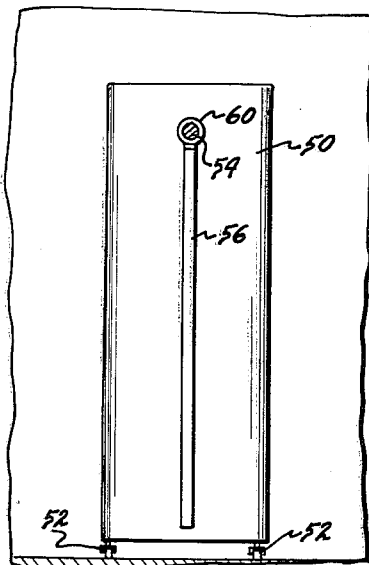


Fig-9



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4 Sheets-Sheet 4

FIG. 6

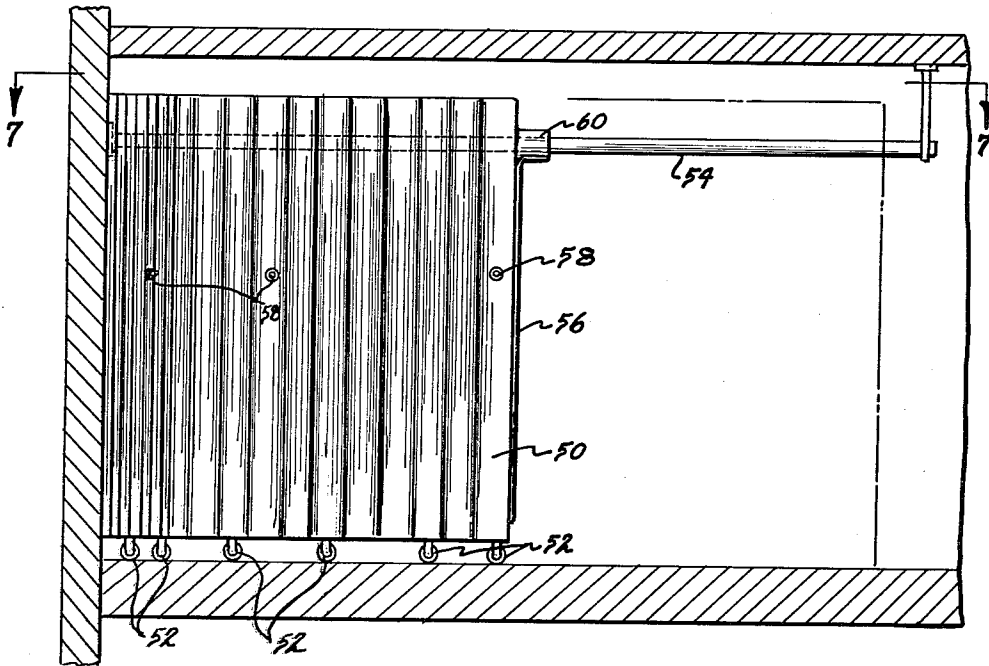
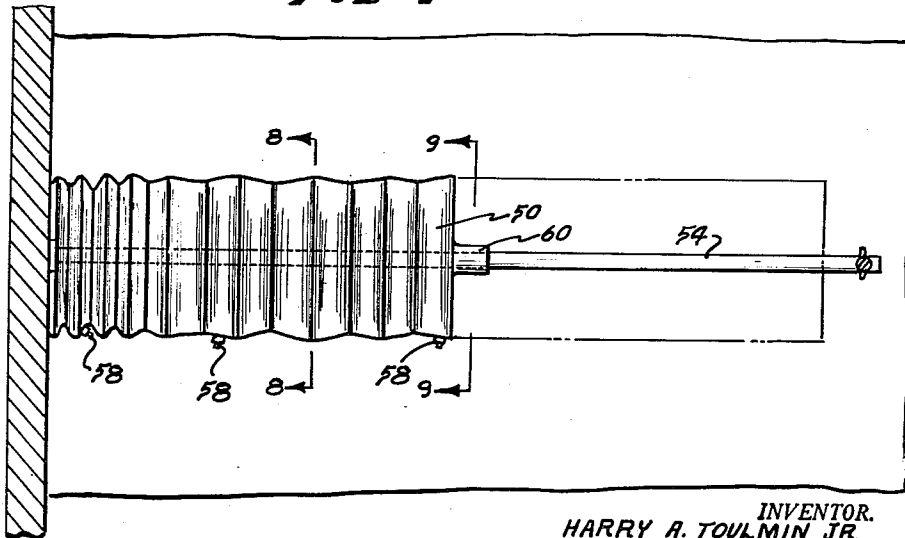


FIG. 7



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1

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**APPARATUS FOR RENDERING FABRICS
ANTISTATIC**

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1 Claim. (Cl. 118—320)

This invention relates to the treatment of textile materials and particularly to a method and apparatus for rendering textile materials anti-static.

Many textile materials are characterized in developing static charges on being worn or when being processed through cleaning and pressing treatments, and the static charges thus developed are objectionable because of the tendency of the material then to pick up and retain lint and dust and for the fabric materials to cling to the wearer's body.

It has been found that such materials can be rendered substantially anti-static during the cleaning process by the inclusion in the cleaning or rinsing baths of an anti-static agent such as one of the quaternary ammonium salts with long fatty acid chains. Ionizable materials could also be employed.

While treatment of this nature is adequate and satisfactory when clothe are being processed through a cleaning establishment, or being washed in a washing machine in the home, it does not provide for rendering fabrics anti-static if they are merely pressed, and, additionally, the anti-static agent will tend to leak off and deteriorate so that clothing that may be left hanging for a period of time may revert to the condition where static charges can be built up thereon.

A particular object of the present invention is the provision of a method and apparatus whereby textile materials, and in particular clothing, can be readily rendered anti-static in the home or in dry cleaning establishments at any time, even after the clothes have been cleaned and pressed, so that the treatment can be effected immediately prior to the wearing of the clothes.

Another object of this invention is the provision of a simple apparatus which at one time serves as a dust cover for textile materials such as clothing and which can also be utilized for rendering the textile materials anti-static.

A still further object of this invention is the provision of an apparatus especially adapted for dry cleaning establishments which will receive a small number of garments or a great many garments and in either case permit ready treatment of the clothes with an anti-static material.

These and other objects and advantages will become more apparent upon reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view of an apparatus according to the present invention especially adapted for domestic use,

FIGURE 2 is a sectional view indicated by line 2—2 on FIGURE 1 showing a swivel arrangement that may be associated with the apparatus,

FIGURE 3 is a sectional view indicated by line 3—3 on FIGURE 1 showing a valve pertaining to the apparatus through which an anti-static agent can be introduced into the inside of the apparatus,

FIGURE 4 is a sectional view indicated by line 4—4 on FIGURE 1 showing a substantially vapor-tight closure in one wall of the apparatus through which clothing can be introduced into the apparatus and removed therefrom,

FIGURE 5 is a view like FIGURE 2 showing a modified arrangement of the swivel,

FIGURE 6 is a side elevational view showing a modi-

2

fied form of the apparatus especially adapted for use in dry cleaning establishments,

FIGURE 7 is a plan sectional view of the apparatus of FIGURE 6 as indicated by line 7—7 on FIGURE 6,

FIGURE 8 is a sectional view indicated by line 8—8 on FIGURE 7,

FIGURE 9 is a sectional view indicated by line 9—9 on FIGURE 7, and

FIGURE 10 is a perspective view showing the manner in which the flexible enclosure of the apparatus of FIGURES 6 through 9 is sealed about the supporting rod thereof.

Referring to the drawings more in detail, FIGURES 1, 2 and 3 show an apparatus in which there is a flexible enclosure consisting of vertical wall portions 10, which may be of transparent plastic material, for example, which vertical side walls 10 form a generally rectangular enclosure closed by a top member 12 and a bottom member 14, which may also be of flexible plastic material, with the side walls 10 and the top and bottom members preferably cemented together.

There may be a wire frame 16 about the upper edges of side walls 10 and a similar frame may be provided at the bottom to maintain the enclosure in the open shape which it has in FIGURE 1. One wall 10 has an elongated slit therein closed by an interlocking closure 18 which may be of the type illustrated in FIGURE 4, consisting of interfitting continuous tongues and grooves adapted for being placed together by upward movement of a slider 20 and for being separated by downward movement of the slider.

The top member 12 of the apparatus is fitted at its center to a disk-like member 22 from which depends one or more bars 24 adapted for receiving the hooks of clothes hangers for supporting textile materials such as garments inside the apparatus.

Member 22 is preferably attached to a top member 26 which is rotatably supported within an uppermost disk 28 and which uppermost disk has attached thereto one or more hook elements 30 so that the apparatus can be suspended from a support bar.

It will be evident, however, that the apparatus can be rotated relative to the upper disk 28. The bar, 24, it will be seen, is arranged to remain stationary as the apparatus rotates.

Located in some suitable position, preferably in one of the side walls of the container, is a valve structure generally indicated at 32 in FIGURE 3. This valve structure is sealed in the wall and internally of the apparatus has a plurality of jets 34. Externally of the apparatus the valve comprises the spring loaded ball check 36. The valve is availed of for permitting the spraying into the inside of the apparatus of an anti-static agent, preferably entrained in a carrier gas such as Freon when the agent is soluble in the Freon.

The material can be supplied from a pressurized container 38 having a manual control valve 40, and the supply into the interior of the apparatus will take place when the can is attached to valve 32 and at which time a pin 42 carried by the nozzle of the can will press ball 36 from its seat. During the supply of the anti-static to the interior of the apparatus, the apparatus may be rotated thus distributing the anti-static about the interior thereof, ensuring a uniform supply to all portions of the fabric articles hanging therein.

It will be evident that the described arrangement provides a ready means whereby clothing and the like may be stored for long periods of time and can be protected from dust, and also can readily be rendered anti-static immediately prior to using. Since the articles are entirely enclosed, the anti-static agent has full opportunity to be most effective, and this arrangement also provides

for economy in the use of the anti-static agent because the minimum amount will treat the fabrics within the apparatus thoroughly.

The FIGURE 5 arrangement is substantially identical with the one already described except that in FIGURE 5 the support bar 44 depends from a post 46 that can be rotated manually which would permit the permanent installation of the apparatus in a space not sufficiently large to permit the entire apparatus to rotate.

FIGURES 6 through 10 disclose a modification of the invention especially adapted for use in dry cleaning establishments or elsewhere where the quantity of clothes to be treated might vary from a few articles to a great many. The present invention is adapted to these circumstances by providing a collapsible enclosure such as the accordion pleated enclosure 50 having supporting rollers 52 and being slidable along a rod 54. Access is had to the interior of the enclosure by way of the closure 56 in the free end wall thereof so that fabric articles can be hunged on bar 54.

A plurality of valves 58 which may be substantially identical with the valve 32 of FIGURE 3, are provided in distributed relation along the closure and these valves are availed of for supplying the carrier gas borne anti-static agent to the interior of the enclosure from pressurized containers, or, in the case of a large installation, from a pumping apparatus designed for that purpose.

In order tightly to close the apparatus of FIGURES 6 through 10 while at the same time permitting easy adjustment thereof, the closure 56 extends up to and along a neck or collar portion 60 formed in the free end wall of the enclosure that surrounds bar 54. Since the apparatus is otherwise gas tight, this provides a ready means for preventing any loss of the anti-static agent from within the apparatus.

It is understood that this invention contemplates the use of any of a number of anti-static agents in addition to the quaternary ammonium salts referred to. These agents in general have the property of forming films that are at least slightly electrically conductive to permit the static charges to bleed off the materials, and such agents include materials that are soluble in carriers such as Freon which vaporizes at atmospheric pressure thus permitting a fine mist of the anti-static agent to be introduced into the enclosure.

In addition to the class of anti-static agents that are soluble or can be intimately admixed with a vaporizable carrier, the quaternary ammonium salts referred to are soluble in water, and a spray arrangement can be arranged by pressurizing the container having an aqueous solution of such material therein with nitrogen gas, and

in which case there would be delivered to the interior of the enclosure a fine mist of water with the anti-static agent entrained therein. Other specific combinations of anti-static agents and carrier vehicles therefor will occur to those skilled in the art.

It will be understood that this invention is susceptible to modification in order to adapt it to different usages and conditions, and accordingly, it is desired to comprehend such modifications within this invention as may fall within the scope of the appended claim.

I claim:

Apparatus for treating textile articles and garments to render the same antistatic comprising a collapsible enclosure for receiving said articles, a top member attached to said enclosure, rotatable disc means secured to said top member and disposed within said enclosure for supporting the article to be treated, bar means carried by said rotatable disc for receiving hooks of clothes hangers for supporting textile garments, said enclosure having an elongated opening in the side wall for introducing said articles, means for closing said opening relatively vapor tight, means comprising a plurality of hooks secured to said enclosure top member for supporting the same, conduit means arranged in the wall of said enclosure and communicating with the interior thereof through which antistatic material is passed into the enclosure, a plurality of jets communicating with said conduit and disposed within said enclosure to distribute the antistatic material over said articles in the enclosure, a spring loaded check valve in said conduit, and means comprising a pressurized container communicating with said conduit for introducing the antistatic material into said enclosure through said plurality of jets.

References Cited in the file of this patent

UNITED STATES PATENTS

1,609,428	Ringel	Dec. 7, 1926
1,610,967	Ringel	Dec. 14, 1926
1,817,536	Spanel	Aug. 4, 1931
2,028,796	Merritt	Jan. 28, 1936
2,107,960	Schuster	Feb. 8, 1938
2,145,027	McGrew	Jan. 24, 1939
2,297,230	Langen	Sept. 29, 1942
2,634,216	Pineles et al.	Apr. 7, 1953
2,639,213	Barth	May 19, 1953
2,728,495	Eaton	Dec. 27, 1955
2,729,576	Trusler	Jan. 3, 1956
2,755,013	Beede	July 17, 1956
2,837,446	Cohen et al.	June 3, 1958