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METHOD AND APPARATUS FOR PRODUCING GARMENT DUST COVER

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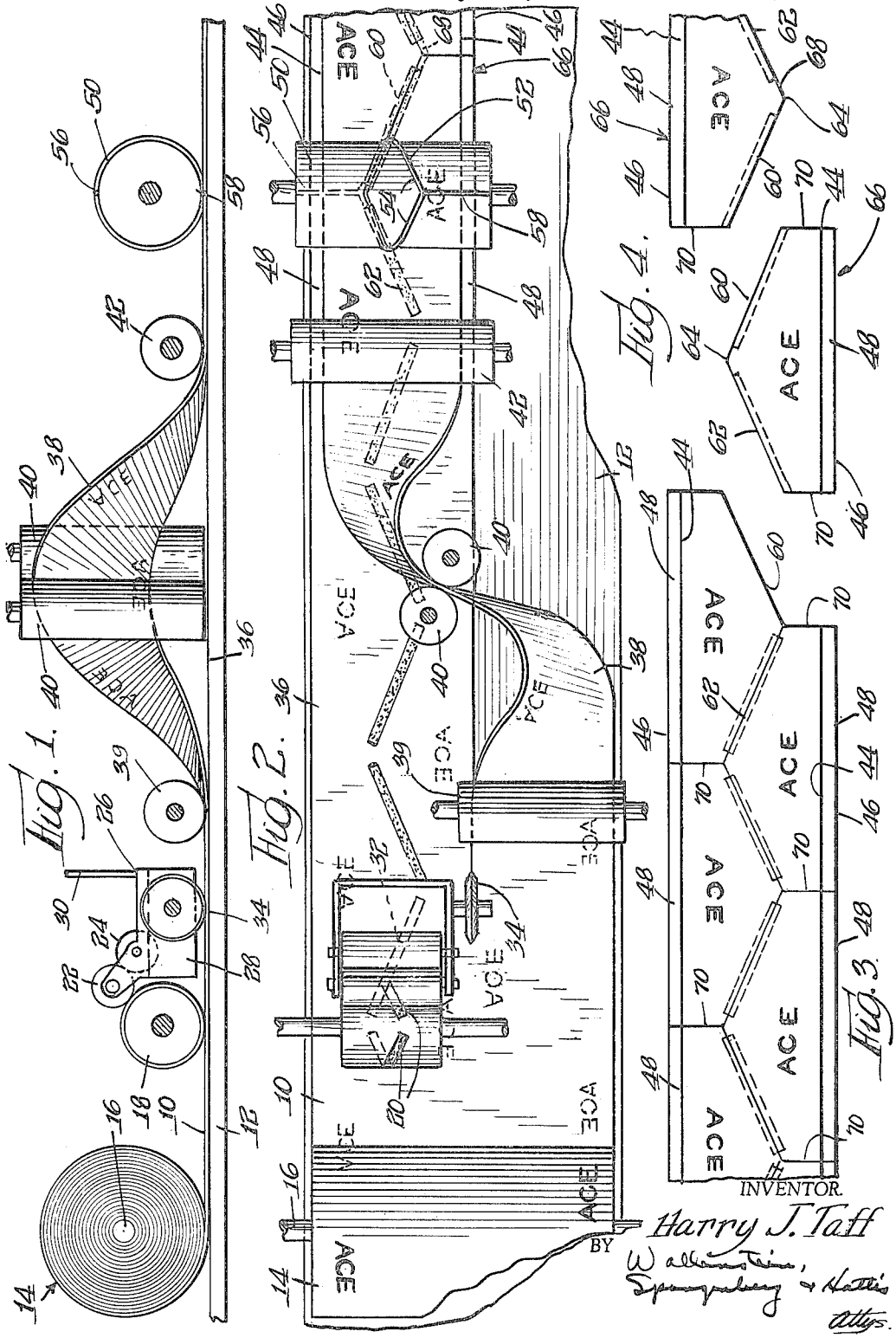


Fig. 1.

Fig. 2.

Fig. 4.

Fig. 3.

INVENTOR.
Harry J. Taff
BY
Wallenstein, Spangenberg & Hattis
Attys.

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METHOD AND APPARATUS FOR PRODUCING GARMENT DUST COVER

Harry J. Taff, Chicago, Ill., assignor to Kwik-Kover Manufacturing Company, Chicago, Ill., a corporation of Illinois

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This invention relates to a method and apparatus for producing dust covers for hanger-suspended garments, especially inexpensive garment dust covers of the type frequently applied by dry cleaning establishments over the upper portions of dresses, suit coats, overcoats, and the like, to protect them from falling dust which would otherwise accumulate on the upwardly facing surfaces of such garments while they are suspended from a hanger.

A garment dust cover produced in accordance with the present invention is characterized by having confronting front and rear panels of a flexible sheet material secured together along oppositely sloping margins which meet at an apex substantially at the center of the cover. An opening, which extends a relatively short distance from the apex of the cover along the oppositely sloping margins thereof, is provided to receive the hook portion of a hanger. The opening is normally of almost negligible width to inhibit the entry of dust into the confines of the cover and, due to the flexibility of the material of which the cover is fabricated, can be expanded readily to receive a hanger hook. To facilitate spreading of the front and rear panels for placement of the cover on a garment suspended from a hanger, the lower free margin of at least one of the panels preferably extends below the lower free margin of the other panel.

In brief, the method of the present invention involves the continuous production of a plurality of garment dust covers of the type hereinabove described and, in its broader aspects, includes placing two strips of a flexible sheet in superimposed relation with respect to one another and securing them together, as by a heat-seal or an adhesive along longitudinally extending areas following a zig-zag pattern which is interrupted at the bends thereof. The zig-zag pattern corresponds to the oppositely sloping margins of two rows of garment covers placed end to end with the apexes of the covers in the two rows facing one another and their sloping margins in mating contact. In the case where an adhesive material is used to secure the strips of material together, the zig-zag pattern of adhesive which is interrupted at the bends in the pattern is most advantageously applied to one side of a strip of flexible sheet material, such as paper unwinding from a roll of such material by moving the unwound portion of the strip against a stationary embossed rotatable roller to which the adhesive in liquid form is applied. The embossment on the roller corresponds to the repeating portion of the zig-zag pattern of the adhesive to be applied to the strip of sheet material. After the adhesive areas have been applied to the moving strip of sheet material, a second similar strip of sheet material is superimposed on the adhesive coated side of the first mentioned strip of sheet material in a manner to be described. The second strip of sheet material can be unwound from a separate roll of such material but most preferably is a strip cut from the roll of strip material from which the adhesive strip is formed as the sheet material is unwound from the common roll. In such case, the sheet material unrolled is slit longitudinally as it comes off the roll, and after the adhesive is applied to one of the separated strips thereof, the other separated strip is folded over and brought into confronting contacting relation with the adhesive coated

side of the coated strip to adhere the strips together. The initially uncoated strip is centered on the adhesive coated strip and is preferably of a lesser or greater width than the coated strip, so that one of the strips extends the same degree beyond both the longitudinal margins of the other.

The final step in the process is the severing of individual dust covers from the secured strips by preferably passing the same beneath or across a cutter roller with blades forming a pattern which corresponds to that of the heat-sealed or adhered areas of the strips, the cutter roller cutting the secured strips along a continuous zig-zag line passing through the center of the zig-zag patterned areas thereon and also along transverse lines extending to the margins of the strips to separate the individual dust covers from one another. The interruptions of the zig-zag pattern at the bends therein leave a hanger receiving opening at the apex of each dust cover, the margins of the opening being co-extensive with oppositely sloping closed margins of the dust cover.

The method and apparatus of the present invention provide extremely efficient, effective and economical means for mass producing garment dust covers of the type described. The end product is obtained in its finished form, ready for immediate shipment and use. The physical facilities needed for the apparatus of this invention place minimum demands on a manufacturer of the dust covers and, in fact, may be of conventional design and construction. The entire operation lends itself particularly suitable to push-button type arrangement requiring only a few personnel.

Other features and advantages of the invention will become apparent upon making reference to the specification to follow, the claims and the drawings therein;

FIG. 1 is a partial diagrammatic view of a production line for producing the garment dust covers in accordance with the method of the present invention illustating an embodiment of the apparatus of this invention for the continuous mass production of such covers;

FIG. 2 is a fragmentary top plan view of the production line illustrated in FIG. 1, showing the various stages of the formation of the covers and significant details of the apparatus of this invention utilized in making the covers;

FIG. 3 is a fragmentary plan view of completed garment dust covers produced in accordance with the method of the present invention after they have passed through the apparatus illustrated in the previously described figures and before they are separated;

FIG. 4 is a partial fragmentary plan view of the completed garment dust covers after they are separated.

In accordance with the preferred practice of the present invention, continuous production of a plurality of short, open-bottom garment dust covers is achieved by feeding a sheet of flexible material onto a continuous conveyor belt which moves the sheet into contact with a series of rollers and cutters each of which performs a preselected and important function in the formation of the covers. Referring to FIGS. 1 and 2 of the drawing, there is shown in somewhat diagrammatic form an embodiment of mechanical apparatus for carrying out the continuous production of the dust covers. A sheet **10** of flexible material is unwound and fed onto an endless or continuous conveyor belt **12** from a roll **14** freely rotatable on a shaft **16** suitably mounted adjacent to the belt **12**. The flexible sheet material desirably is a medium weight paper, but may be cloth, plastic, or the like, and advantageously bears printed identifying indicia or advertising matter on one side thereof which is so oriented thereon that it will appear on either one or both sides, as desired, of the finished dust covers.

As the sheet **10** is unwound from the roll **14** it moves with the belt **12** and passes under a rotating embossed roller **18**. The roller **18** has spaced, oppositely sloping or zig-zag patterned raised portions **20** which are in surface contact with an adhesive transfer roller **22**. The roller **22**, in turn, is in surface contact with a roller **24** which is partially immersed in a container or tank **26** of a liquid adhesive **28**. An adhesive supply conduit **30** is provided to maintain the adhesive **28** in the tank **26** at a substantially predetermined constant level.

As the sheet **10** passes under the embossed roller **18**, the raised zig-zag patterned portions **20** thereof apply longitudinally extending areas **32** of the adhesive **28** to the upper surface, at the center of a section or portion of the sheet **10**, which areas correspond to the zig-zag patterned portions **20** and which, like the portions **20**, are spaced or interrupted at the bends in the zig-zag pattern. The pattern of the adhesive areas **32** on the sheet **10** after it has passed under the roller **18** is clearly illustrated in FIG. 2 of the drawing.

In the preferred embodiment of the apparatus of the present invention, the sheet **10**, either concomitantly with, or following the formation of the adhesive areas **32** thereon, is slit longitudinally by a slitter **34** along a line which corresponds to the inner margin of the adhesive area-bearing section of the sheet **10** and which is spaced appreciably from the adhesive areas **32** to provide an adhesive area carrying section or portion **36** of the sheet **10** having the adhesive areas **32** substantially centrally disposed longitudinally thereof, and a non-adhesive carrying or adhesive free section or portion **38** having a width less than the width of the portion **36**. The portion **38** of the sheet **10** then passes under a tensioning roller **39** and is directed in any manner known in the art through substantially vertically positioned guide rollers **40** which serve to invert the portion **38**. Guide bars (not shown) conveniently may be positioned on either side of the rollers **40** to provide added tension and direction to the travel of the portion **38** of the sheet **10**. After passing between the rollers **40**, the portion **38** is taken up by a roller **42** which superimposes the portion **38** in adhering relation longitudinally and substantially centrally on the ever moving adhesive carrying portion **36**. An effective alternative to inverting and positioning the portion **38** on the portion **36** as described would be to substitute an inverter (not shown) for the guide rollers **40**.

The relationship of the confronting, adhered portions **36** and **38** of the sheet **10** following inversion and placement of the portion **38** on the portion **36** thereof is clearly illustrated in FIG. 3. The portion **38** is adhered to the portion **36** only along the spaced or interrupted zig-zag patterned adhesive areas **32**, and the longitudinal margins **44** of the portion **38** lie within the corresponding margins **46** of the portion **36** to leave longitudinally extending, single-ply edge portions **48** on the portion **36**, the function of which will become clear as the description proceeds.

After passing beneath the roller **42**, the adhesive area carrying portion **36** of the sheet **10** together with the overlying, adhered portion **38** thereof are brought into contact with a cutter roller **50** by the belt **12**. The cutter roller **50** advantageously has a blade or cutting edge **52** consisting of oppositely sloping portions **54** which form a pattern corresponding to the zig-zag patterned raised portions **20** of the embossed roller **18**, but which differ therefrom in that the portions **54** of the roller **50** are connected or continuous whereas the portions **20** of the roller **18** are spaced or interrupted at their terminii or extremities. In addition to the cutting edge **52**, the cutter roller **50** is provided with two transverse blades or cutting edges **56** and **58** which are positioned adjacent each end of the roller **50** in diametrically opposed relation.

As the adhered confronting portions **36** and **38** of the sheet **10** pass under the cutter roller **50**, the blade or

cutting edge **52** thereof cuts through the adhered areas of the portions **36** and **38** along a zig-zag line or path passing through the center of the zig-zag adhesive areas **32** applied by the roller **18**, to form oppositely sloping garment dust cover margins **60** and **62** meeting at an apex **64** substantially at the center of each garment dust cover **66**. In forming the margins **60** and **62**, the cutting edge **52** also forms a hanger-hook receiving opening **68** at the apex **64** of each garment dust cover **66** between the spaced terminii or or extremities of the adhesive areas **32**.

As the cutting edge **52** is forming the oppositely sloping garment dust cover margins **60** and **62**, the transverse cutting edges **56** and **58** alternately are cutting the adhered portions **36** and **38** transversely along substantially the shortest line extending from the apex **64** of each garment dust cover **66** through the longitudinal margins **46** of the portion **36** of the sheet **10** to form the open, opposite sides **70** of each garment dust cover **66**. The various cuts made by the cutting edge **52**, and the transverse cutting edges **56** and **58**, and the finished garment dust covers, are illustrated in FIGS. 2 and 3. The opening **68** at the apex **64** of the cover is of sufficient length to accommodate the hooked neck of conventional garment hangers enabling the cover to be readily placed over or removed from a garment carrying hanger while maintaining its dust protective properties. The edge portion **48** of the cover **66** provides a convenient finger gripping surface to permit the confronting panels to be more easily spread for insertion over a hanger suspended garment.

The use, in accordance with the particularly preferred aspects of the present invention, of a single roll of flexible sheet material to make the garment dust covers has the added significant advantage of permitting the sheet material to be preprinted. This can be accomplished conveniently, for instance, by passing the sheet material of the roll through suitable printing apparatus provided with means for placing and orienting desired printed and decorative matter on one side only of the sheet material and re-rolling it. When the thus pre-printed roll is mounted on the apparatus of this invention, and is slit and inverted as hereinabove described, the printed and decorative matter will be in the proper location on the finished covers and will be properly oriented from the standpoint of readability. This aspect of the invention is clearly illustrated in the drawing, particularly in FIGS. 2 and 3. The word "ACE," in non-inverted and inverted form, is printed in predetermined locations on one side of the flexible sheet material of the roll **14**. When the sheet material is slit and inverted as represented in FIG. 2, the word appears, properly oriented, on both sides of the dust cover **66**.

In utilizing heat-sealing techniques to form the oppositely sloping closed margins of the garment dust covers, a plastic flexible sheet material such as polyethylene can be employed. In accordance with this aspect of the present invention, the embossed roller **18** advantageously is eliminated and replaced by a suitable heat-sealing unit capable of securing superimposed sheets of the plastic material together along longitudinally extending zig-zag patterned areas interrupted at the bends in the pattern. Such a unit, or units, can be positioned between the roller **42** and the cutter roller **50** in the embodiment of the apparatus of this invention illustrated in the drawing.

The method and apparatus of the present invention permits an optimum number of garment dust covers to be made with a minimum number of operations and with the most efficient use of materials. The end product requires no trimming, or other finishing, and is ready for shipment and use as it leaves the production line.

The means employed for mounting and activating the various rollers, cutting edges, and the like, hereinabove described, have not been illustrated or discussed in detail, it being understood that the expedients utilized for these

purposes are known to those skilled in the art to which the present invention is addressed. The foregoing description is given in the light of this understanding and it is intended, therefore, that the knowledge of those skilled in the art in this respect be incorporated and made a part thereof.

It should further be understood that numerous modifications may be made in the preferred form of the invention described above without deviating from the broader aspects of the invention.

What is claimed is:

1. A method of producing open-bottom garment dust covers each of which is insertable over the top of a garment suspended on a hanger having a hooked neck, said method comprising: placing two strips of flexible sheet material in superimposed relation with respect to one another, securing the superimposed strips to each other along a longitudinally extending zig-zag patterned area thereof, said secured area of the strips being interrupted at the bends in the zig-zag pattern to leave unsecured areas having a width at least equal to the width of the hanger hook, cutting the thus secured strips of flexible sheet material longitudinally along a continuous zig-zag line passing through the center line of the said secured zig-zag patterned area to form separated triangular shaped dust covers each with oppositely sloping closed margins and opposite open margins.

2. A method of producing open-bottom garment dust covers each of which is insertable over the top of a garment suspended on a hanger having a hooked neck, said method comprising: placing two strips of flexible sheet material in superimposed relation with respect to one another, securing the superimposed strips to each other along a longitudinally extending zig-zag patterned area thereof, said secured zig-zag patterned area being spaced appreciably from the longitudinal margins of the strips of flexible sheet material, cutting the thus secured strips of flexible sheet material longitudinally along a continuous zig-zag line passing through the center line of the said secured zig-zag patterned area and transversely along lines respectively extending between the bends in the zig-zag cut line to the nearest longitudinal edges of the secured strips to form separated triangular shaped dust covers each with oppositely sloping closed margins meeting at an apex substantially at the center of each dust cover with a hanger neck-receiving opening in the hanger hook receiving end thereof and with opposite open margins.

3. A method of producing open-bottom garment dust covers each of which is insertable over the top of a garment suspended on a hanger having a hooked neck, said method comprising: placing two strips of flexible sheet material in superimposed relation with respect to one another, securing the superimposed strips to each other along a longitudinally extending zig-zag patern area thereof, said secured area of the strips being spaced appreciably from the longitudinal margins of the strips and interrupted at the bends in the zig-zag pattern to leave unsecured areas having a width at least equal to the width of the hanger hook, cutting the thus secured strips of flexible sheet material longitudinally along a continuous zig-zag line passing through the center line of the said secured zig-zag patterned area and transversely along lines respectively extending between the bends in the zig-zag cut line to the nearest longitudinal edges of the secured strips to form separated triangular shaped dust covers each with oppositely sloping closed margins meeting at an apex substantially at the center of each dust cover with a hanger neck-receiving opening in the hanger hook receiving end thereof and with opposite open margins.

4. A method of producing open-bottom garment dust covers each of which is insertable over the top of a garment suspended on a hanger having a hooked neck, said method comprising: placing two strips of flexible sheet material in superimposed relation with respect to each other, one of said strips being centered with respect to the longitudinal margins of the other of said strips and having a width substantially different than that of said other strip, securing the superimposed strips to each other along a longitudinally extending zig-zag patterned area thereof, said secured area of the strips being spaced appreciably from the longitudinal margins of the strips and interrupted at the bends the zig-zag pattern to leave unsecured areas having a width at least equal to the width of the hanger hook, cutting the thus secured strips of flexible sheet material longitudinally along a continuous zig-zag line passing through the center line of the said secured zig-zag patterned area and transversely along lines respectively extending between the bends in the zig-zag cut line to the nearest longitudinal edges of the secured strips to form separated triangular shaped dust covers each with oppositely sloping closed margins meeting at an apex substantially at the center of each dust cover with a hanger neck-receiving opening in the hanger hook receiving end thereof and with opposite open margins.

5. A method of producing short, open-bottom garment dust covers each of which is insertable over the top of a garment suspended on a hanger having a hooked neck, said method comprising: longitudinally slitting a sheet of flexible material into two strips, inverting one of said strips and superimposing it on the other of said strips, securing the superimposed strips to each other along a longitudinally extending zig-zag patterned area thereof, cutting the thus secured strips of flexible sheet material longitudinally along a continuous zig-zag line passing through the center line of the said secured zig-zag patterned area to form separated triangular shaped dust covers each with oppositely sloping closed margins and opposite open margins.

6. A method of producing short, open-bottom garment dust covers each of which is insertable over the top of a garment suspended on a hanger having a hooked neck, said method comprising: longitudinally slitting a sheet of flexible material into two strips of unequal width, inverting the narrower of said strips and superimposing it on the wider strip in a manner such that the longitudinal margins of the narrower strip lie within the longitudinal margins of the wider strip, securing the superimposed strips to each other along a longitudinally extending zig-zag patterned area thereof, said secured area of the strips being centrally disposed with respect to longitudinal margins of the strips and interrupted at the bends in the zig-zag pattern to leave unsecured areas having a width at least equal to the width of the hanger hook, cutting the thus secured portions of flexible sheet material longitudinally along a continuous zig-zag line passing through the center line of the said secured zig-zag patterned area and transversely along lines respectively extending between the bends in the zig-zag cut line to the nearest longitudinal edges of the secured strips of the sheet to form separated triagular shaped dust covers each with oppositely sloping closed margins meeting at an apex substantially at the center of each dust cover with a hanger neck-receiving opening in the hanger hook receiving end thereof and with opposite open margins.

7. A method of producing open-bottom garment dust covers each of which is insertable over the top of a garment suspended on a hanger having a hooked neck, said method comprising: applying a longitudinally extending zig-zag pattern of adhesive interrupted at the bends in the pattern to one side of a strip of flexible sheet material, the interrupted bends in the pattern leaving uncoated sections having a width at least equal to the width of the hanger hook, applying a second strip of flexible sheet material upon the adhesive carrying side of said first strip to adhere the strips together, cutting the thus adhered strips of flexible sheet material longitudinally along a continuous zig-zag line passing through the center line of the zig-zag pattern of adhesive to form separated traigular shaped dust covers each with op-

positely sloping closed margins and opposite open margins.

8. Apparatus for producing short, open-bottom garment dust covers each of which is insertable over the top of a garment suspended on a hanger having a hooked neck, comprising: means for placing two strips of flexible sheet material in superimposed relation with respect to one another, means for securing the superimposed strips to each other along a longitudinally extending zig-zag patterned area thereof, and means for cutting the thus secured strips of flexible sheet longitudinally along a continuous zig-zag line passing through the center line of the zig-zag patterned area and transversely along lines respectively extending between the bends in the zig-zag cut line to the nearest longitudinal edges of the secured strips to form separated triangular shaped dust covers each with oppositely sliping closed margins meeting at an apex substantially at the center of each dust cover and with opposite open margins.

9. Apparatus for producing short, open-bottom garment dust covers each of which is insertable over the top of a garment suspended on a hanger having a hooked neck, comprising: means for applying a longitudinally extending zig-zag pattern of adhesive to one side of a strip of flexible sheet material, means for adhering a second strip of flexible sheet material to the adhesive area carrying side of said first mentioned strip, and means for cutting the thus adhered strips of flexible sheet material longitudinally along a continuous zig-zag line passing through the center line of the zig-zag pattern of adhesive and transversely along lines respectively extending between the bends in the zig-zag cut line to the nearest longitudinal edges of the adhered strips to form separated triangular shaped dust covers each with oppositely sloping closed margins meeting at an apex substantially at the center of each dust cover and with opposite open margins.

10. Apparatus for producing short, open-bottom garment dust covers each of which is insertable over the top of a garment suspended on a wire rod hanger having a hooked neck comprising: means for supporting and moving a sheet of flexible material in a linear path, means rotatably positioned above and adjacent to said first mentioned means for applying a longitudinally extending zig-zag pattern of adhesive interrupted at the bends in the pattern to the center part of a longitudinal section of one side of said sheet, means for longitudinally slitting the sheet along the inner margin of said section to provide an adhesive area carrying portion of said sheet and a non-adhesive carrying portion, means for inverting said non-adhesive carrying portion of the sheet and superimposing it in adhering relation longitudinally on the adhesive carrying portion of the sheet, and means for cutting the thus adhered overlying portions of the flexible sheet material longitudinally along a continuous zig-zag line passing through the center line of the zig-zag pattern of adhesive and transversely along lines respectively extending between the bends in the zig-zag cut line to the nearest longitudinal edges of the adhered portions of the sheet to form separated triangular shaped dust covers each with oppositely sloping closed margins meeting at an apex substantially at the center of each dust cover with a hanger neck-receiving opening in the hanger hook receiving end thereof and with opposite open margins.

11. Apparatus for producing short, open-bottom garment dust covers each of which is insertable over the top of a garment suspended on a wire rod hanger having a hooked neck comprising: a conveyor belt for supporting a sheet of flexible material, a roller positioned above and adjacent to said conveyor belt for applying a longitudinally extending zig-zag pattern of adhesive interrupted at the bends in the patern to the center part of a longitudinal section of one side of said sheet, a cutting edge laterally positioned adjacent said belt for longitudinally slitting said sheet along the inner margin of said section to provide an adhesive area carrying portion of said sheet and a non-adhesive carrying portion having a width less than the width of said adhesive carrying portion, a paid of rollers substantially vertically disposed with relation to said conveyor belt for inverting said non-adhesive carrying portion of said sheet and superimposing it in adhering relation longitudinally and substantially centrally on the adhesive carrying portion thereof, and a roller having cutting edges thereon for cutting the thus adhered overlying portions of the sheet longitudinally along a continuous zig-zag line passing through the center line of the zig-zag pattern of adhesive and transversely along lines respectively extending between the bends in the zig-zag cut line to the nearest longitudinal edges of the adhered portions of the sheet to form separated triangular shaped dust covers each with oppositely sloping closed margins meeting at an apex substantially at the center of each dust cover with a hanger neck-receiving opening in the hanger hook receiving end thereof and with opposite open margins.

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EARL M. BERGERT, *Primary Examiner.*

DOUGLAS J. DRUMMOND, *Examiner.*