METHOD OF AND APPARATUS FOR FORMING HOSIERY PACKAGE

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16 Claims. (Cl. 53—3)

The present invention relates to improvements in methods and apparatus for forming a hosiery package by which a pair of stockings, such as ankle socks, may be packaged in an attractive and convenient manner for shipment to dealers and for display to prospective customers.

It has been found to be desirable, particularly in connection with the packaging of stockings of the ankle socks type, to place both stockings of a single pair on a form such as a sheet of cardboard on which they are drawn into a taut condition, one within the other, after which the stockings and the cardboard are folded to provide a comparatively short and compact package. The formation of such a package has heretofore been carried on in a two stage operation in which one stocking is first placed in telescoping engagement with the form and the assembly thus formed is then mounted to permit the second stocking to be threaded over the first stocking and the form. The operation has been quite time consuming and costly.

The principal object of the present invention is to provide a novel method by which both stockings of a pair may be quickly mounted on a form at relatively small cost. Another object is to provide improved apparatus which permits both stockings of a pair to be passed successively into telescoping engagement with a supporting form without the necessity of pulling the second stocking over the first one in direct contact therewith.

Still another object of the present invention is to provide novel apparatus comprising a frame having spaced guides forming a socket to receive the form of cardboard or the like, said guides being adapted to receive a first stocking encasing said form, and other guides to receive a second stocking encasing said first stocking and said form, both stockings and said form being adapted to be removed from said guides in telescoping engagement with each other. Other objects relate to various features of construction and arrangement and to details of the method which will appear more fully hereinafter.

The nature of the invention will be understood from the following specification taken with the accompanying drawings in which one embodiment of the improved apparatus and one example of the novel method are illustrated.

In the drawings:
Figure 1 shows a perspective view of the improved apparatus;
Fig. 2 shows a perspective view of the improved hosiery package;
Fig. 3 shows a side elevation of the apparatus illustrated in Fig. 1, looking toward the right as viewed in Fig. 1;
Fig. 4 shows an enlarged sectional view taken on the line 4—4 of Fig. 3;
Fig. 5 shows a plan view of the folding cardboard form on which the stockings are to be placed in the telescoping engagement with the form and with each other;
Fig. 6 shows a side elevation of the apparatus, similar to that of Fig. 1, with an outer guide removed, showing a first stocking being threaded over the inner guides to enclose the cardboard form which is supported in the socket between the inner guides;
Fig. 7 shows an enlarged longitudinal axial section taken on the line 7—7 of Fig. 6 after the first stocking has been threaded over the inner guides and illustrating both outer guides;
Fig. 8 shows an enlarged top plan view of the lower part of the apparatus, taken on the line 8—8 of Fig. 6, showing the mounting of the hosiery supporting guides which permits them to be rotated about the longitudinal axes;
Fig. 9 shows a side elevation of the apparatus, similar to that of Fig. 6, showing a second stocking being threaded over the outer guides and over the inner guides and the cardboard form;
Fig. 10 is an enlarged longitudinal section taken on the line 10—10 of Fig. 9 after the second stocking has been completely threaded onto the outer guides of the frame;
Fig. 11 shows an enlarged transverse section taken on the line 11—11 of Fig. 10;
Fig. 12 shows a longitudinal section through the complete hosiery package, before it has been folded, showing two stockings in telescoping engagement with each other and with the cardboard form;
Fig. 13 shows a side elevation of a modified form of the apparatus with one stocking on the inner guides of the frame which has outer guides formed of transparent plastic material; and,
Fig. 14 shows an enlarged transverse section taken on the line 14—14 of Fig. 13.

The apparatus of the present invention is illustrated in the drawings as comprising a hollow frame 15 and a mirror 16 mounted on a base plate 17 which is secured by screws 18 to a table 19 or other support. The purpose of the mirror is to enable the operator, located at the left of the apparatus, as viewed in Fig. 1, to determine that the stockings are smoothly and properly applied to the guides on the side of the frame which is directed toward the mirror. Both the frame 15 and the mirror are preferably inclined to the vertical at about forty-five degrees to facilitate the operation of threading the stockings onto the frame.

The frame 15 comprises two inner guide members 20 and two outer guide members 21 which are spaced apart at their lower ends by the spacing plates 22 and 23. The spacing plates and the guide plates are secured together by screws 24 and they are clamped between and secured to two side plates 25 between which there is secured, by welding or the like, a block 26, provided with a downwardly extending stem or spindle 27. The spindle 27 is rotatably mounted in a sleeve 28 which is secured to a bracket 29 fixed on the plate 17.

As shown particularly in Figs. 3, 6 and 8, the spindle 27 is provided with a projecting pin 30 which is held normally in engagement with the oppositely disposed notches 28a formed in the upper end of the sleeve 28 by means of a helical coil spring 32. This spring is mounted on the lower end of the spindle 27 between the lower end of the sleeve 28 and a split washer 33 which is seated in a groove 27a formed in the spindle. The spring is under compression and acts normally to hold the pin 30 in engagement with the notches 28a with the frame 15 in its normal position in a vertical plane but it may be further compressed to permit upward movement of the spindle 27 and a rotation of the frame which may be desired to permit the inspection of the reverse side thereof or for other purposes.

The mirror 16 is mounted on a bracket 16a from which there projects a spindle 34 mounted in a sleeve 34a which is secured by a bracket 34b to the base plate 17.

The guides 20 and 21 are in the form of flat plates of the same size and external configuration and are tapered at their outer ends as shown at 20a and 21a to
facilitate their entry into the stockings being mounted thereon and to conform to the shape of the toe portions of the stockings. The guide plates 20 and 21 which are of the same size and which register with each other for the purpose hereinafter described. The guide plates are also provided on their upper edges with registering projections 20c and 21c which are adapted to enter the heel portions of the stockings when they are placed therein as shown in Fig. 2. The outer guide plates 21 are provided just below the toe portions 21a with inwardly projecting dimples 21d which assist in retaining the inner stockings in place on the inner guides 20.

The cardboard form 35 on which the stockings are to be placed has the shape shown in Fig. 7, where the form is illustrated as comprising a flat sheet of substantially the same size as the guides 20 and 21, having a tapered toe portion 35a and a heel projection 35b. This form has a fold line 35c extending transversely thereof at the middle of the heel portion. It is also provided at the end opposite the toe portion with a portion 35d of reduced width.

The form 35 is adapted to be inserted into the slot 36 between the guides 20 from the upper side of the frame with the heel portion 35b directed upwardly. Its lower edge then rests on two stop members 37 which are secured between the lower edges of the guides 20. The end portion 35d of the form then rests upon the spacer 22.

When the cardboard form 35 has been inserted in the slot 36 between the inner guide plates 20 as described above, a stocking 40 is pulled over the inner guide plates 20 as shown in Fig. 6, with its heel portion 40c directed upwardly and it is pulled downwardly until its toe portion 40a is fitted over the toe portions 20a of the guide plates with its heel portion 40c fitting over the heel portions 20c of the guide plates. The first stocking then has the position shown in Figs. 7, 13 and 14 with the form 35 enclosed within it between the two guide plates. A second stocking 41 is then pulled downwardly over the outer guide plates 21, as shown in Fig. 9, with its heel portion 41c directed upwardly, and this operation is continued until the toe portions 21a of the guide plates fit within the toe portions 41a of the stocking. The parts are then in the relative positions shown in Figs. 10 and 11, with the second stocking enclosing the outer guide plates. The operator inspects the side of the assembly which is directed toward him and also views the opposite side in the mirror 16, and if all parts of the stockings are so oriented, both stockings and the form 35 are then removed from the frame 15.

This is accomplished by manually pressing the stockings against the cardboard form 35 through the apertures 20b and 21b of the forms and moving both stockings and the form upwardly in unison until they are entirely disengaged from the frame. The two stockings 40 and 41 and the cardboard will then have the relative positions shown in Fig. 12 with the form 35 enclosed within the inner stocking 40 and with this stocking enclosed within and directly engaged by the outer stocking 41. The telescoping stockings and the form are then folded about the fold line 35c of the form until the two end portions lie parallel to each other as shown in Fig. 2. The ends of the folded portions may then be secured together by a gummed label 44 which may be applied over the folded ends. A paper sleeve 45 may also be applied over the fold. The label and the sleeve may carry printed material giving the size and quality of the like. A folded stocking package is thus quickly formed.

In Figs. 13 and 14 there is shown a modification of the present invention in which the inner guide plates 20x are separated by stop members 37x which support the cardboard form 35x. The inner guide plates may be formed of flat sheet metal with longitudinal slots therein as in the form first described but the outer guide plates 21x, although having the same shape, are somewhat thicker than the guides 21 and are formed of transparent material in Fig. 8, with a flat or the like, so that when a stocking 40x has been placed over the inner forms 20x and the cardboard form, as shown in Fig. 13, this stocking is visible through the outer guide plates so that the operator may determine whether this stocking is free of wrinkles and the like before placing a stocking over the outer guide plates. With either form of the invention, the guide plates are preferably of such sizes that the stockings will be stretched slightly when they are drawn onto the forms.

One form of the improved apparatus and a modification thereof with one example of the method of the present invention have been shown and described by way of illustration but it will be understood that both the apparatus and the method may be modified in various ways without departing from the scope of the appended claims.

I claim:

1. The combination in apparatus for forming a hosiery package, of a frame comprising a pair of spaced guides adapted to receive a hosiery form between them and to enter a stocking enclosing both of said guides, and a second pair of guides located on opposite sides of said first named guides and spaced therefrom, said second named guides being adapted to enter a second stocking enclosing said second named guides and said first named stocking.

2. The combination in apparatus for forming a hosiery package, of a frame comprising a pair of spaced guides adapted to receive a hosiery form between them and to enter a stocking enclosing both of said guides, and a second pair of guides located on opposite sides of said first named guides and spaced therefrom, said second named guides being adapted to enter a second stocking enclosing said second named guides and said first named stocking, said guides having been formed to permit pressure to be exerted on both stockings and said form to effect the withdrawal thereof from said guides.

3. The combination in apparatus for forming a hosiery package, of a frame comprising a pair of spaced guides adapted to receive a hosiery form between them and to enter a stocking enclosing both of said guides, and a second pair of guides located on opposite sides of said first named guides and spaced therefrom, said second named guides being adapted to enter a second stocking enclosing said second named guides and said first named stocking, said guides having been formed to permit pressure to be applied to both stockings and said form to effect the withdrawal thereof in unison from said guides to form a package comprising the telescoping stockings fitted over said form.

4. The combination in apparatus for forming a hosiery package, of a frame comprising a pair of spaced guides adapted to receive a hosiery form between them and to enter a stocking enclosing both of said guides, a second pair of guides located on opposite sides of said first named guides and spaced therefrom, said second named guides being adapted to enter a second stocking enclosing said second named guides and said first named stocking and a mirror located behind said frame.

5. The combination in apparatus for forming a hosiery package, of a frame comprising a pair of spaced guides adapted to receive a hosiery form between them and to enter a stocking enclosing both of said guides, a second pair of guides located on opposite sides of said first named guides and spaced therefrom, said second named guides being adapted to enter a second stocking enclosing said second named guides and said first named stocking, said frame being rotatable about its longitudinal axis.

6. The combination in apparatus for forming a hosiery package, of a frame comprising a pair of spaced guides adapted to receive a hosiery form between them and to
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enter a stocking enclosing both of said guides, and a second pair of guides located on opposite sides of said first named guides and spaces therefrom, said second named guides being adapted to enter a second stocking enclosing said second named guides and said first named stocking, said frame having its longitudinal axis inclined to a vertical plane.

7. The combination in apparatus for forming a hosiery package, of a frame comprising a pair of spaced guides adapted to receive a hosiery form between them and to enter a stocking enclosing both of said guides, a second pair of guides located on opposite sides of said first named guides and spaced therefrom, said second named guides being adapted to enter a second stocking enclosing said second named guides and said first named stocking, and a mirror located behind said frame, said frame and said mirror lying normally in parallel vertical planes and having their longitudinal axes inclined to the vertical in the same inclined plane.

8. The combination in apparatus for forming a hosiery package, of four parallel spaced flat guide members shaped to receive a complete stocking, the two inner guide members being adapted to receive between them a flat hosiery form adapted to enter a stocking drawn over the outer sides of said two inner forms, the two outer guide members being adapted to receive a second stocking drawn over the outer sides thereof, said guide members being provided with elongated slots extending lengthwise thereof to permit pressure to be applied to both stockings and said form to effect the withdrawal thereof in unison from said guide members.

9. The combination in apparatus for forming a hosiery package, of four parallel spaced flat guide members shaped to receive a complete stocking, the two inner guide members being adapted to receive between them a flat hosiery form adapted to enter a stocking drawn over the outer sides of said two inner forms, the two outer guide members being adapted to receive a second stocking drawn over the outer sides thereof, said outer forms being provided with inwardly extending projections adapted to maintain the spaced relation thereof to the stocking in the inner guide members.

10. The combination in apparatus for forming a hosiery package, of a flat guide frame adapted to receive and support in spaced relation a hosiery form and two telescoping spaced stockings, means for mounting said frame for rotation about its longitudinal axis, locking means for normally holding said frame against rotation and in a vertical plane, resilient means for actuating said locking means, and a mirror mounted in a vertical plane parallel to and in registry with said guide frame.

11. The combination in apparatus for forming a hosiery package, of a frame comprising a pair of spaced guides adapted to receive a hosiery form between them and to enter a stocking enclosing both of said guides, and a second pair of guides formed of transparent material and located on opposite sides of said first named guides and spaced therefrom, said second named guides being adapted to enter a second stocking enclosing said second named guides and said first named stocking.

12. The method of forming a hosiery package comprising the steps of supporting a flat form between the inner pair of guides and the form so that the stocking is in intimate contact with the inner pair of guides and envelops both the inner pair of guides and the form, then drawing a second stocking over the outer pair of guides so that said second stocking is in intimate contact with the outer pair of guides and envelopes said first stocking and the form and all of the guides, and then withdrawing both of said stockings and the form in unison and in the same direction from the guides so as to cause said first stocking to envelop only the form and said second stocking to envelop only said first stocking and the form.

13. The method of forming a hosiery package comprising the steps of supporting a flat form between the inner pair of four side-by-side spaced apart forms, drawing a first stocking over the inner pair of guides and the form so that the stocking is in intimate contact with the inner pair of guides and envelopes both the inner pair of guides and the form, then drawing a second stocking over the outer pair of guides so that said second stocking is in intimate contact with the outer pair of guides and envelopes said first stocking and the form and all of the guides, and then simultaneously removing both of said stockings and the form from the guides by pressing the sides of said second stocking against the sides of said first stocking and the sides of said first stocking against the opposite sides of the form and withdrawing both of said stockings and the form in unison from the guides.

References Cited in the file of this patent

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,896,380

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It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 5, line 3, for "spaces" read— spaced —.

Signed and sealed this 26th day of January 1960.

(SEAL)
Attest:
KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents