This invention relates to an improvement in hosiery inspection forms.

In the manufacture of hosiery, it is common practice to inspect hosiery by placing it on an elongated, expandable form which generally conforms to the shape of the hosiery, and then expanding the form to stretch the hosiery taut to facilitate inspection and to stretch it to the extent that faulty work will appear. In some instances, the inspection device is constructed so that the form carrying the hosiery can be rotated to facilitate the inspection. When the form is expanded and the hosiery made taut, it very often causes runs to develop due to threads or filaments in the hosiery being improperly secured at their ends. Such runs generally develop in the toe or heel seams, or at the seam in the garter band to which the threads or filaments in the body of the hosiery are fixed. In many cases, upon expansion of the inspection form, a run will develop which will extend from the toe up to the very top of the hosiery. In other cases, the run may extend only a few inches from the original position of the free end of the thread or filament. It is general practice in the manufacture of run hosiery to use forms designed to correct runs by means of a "catch-up" machine which reknits the run thread back into its proper position in the hosiery. The length of the run, of course, determines the time required to repair the hosiery. Five or six, or even ten, short runs can be repaired in the time required to repair a single long run. Consequently, it would obviously be desirable to provide a hosiery inspection device which was so constructed that long runs were prevented. The flaws which it is desired to correct, may be observed as readily upon the occurrence of a short run, and a large number of short runs can be corrected in the time required to correct a long run. One of the objects of the present invention is to provide such an improvement in hosiery inspection machines.

More specifically, a further object of the invention is to improve hosiery inspection machines by providing certain areas of the forms which carry the hosiery with a surface which will interrupt a run which has started upon the expansion of the form and prevent it from developing into a long run. As most runs which are developed in the course of inspection originate at the heel, the toe, or the top of the hosiery, according to the present invention, the run stopping areas of the form are provided immediately adjacent to areas at which the heel, the toe, and the top of the hosiery are normally disposed. I have found that a surface having a fine nap, such as that provided by a nylon rug in which the tufts are lightly twisted, or a fine bristle brush, or a soft leather with a high nap, is such that a run originating in a knitted hosiery which at one area is in contact with the nap material, is unable to proceed beyond the point where the run comes in contact with the nap material. It appears that the fine nap, such as provided by the materials mentioned above, protrudes into the spaces between the loops of the knitted material to the extent that it blocks the progress of a run which would otherwise continue up the hosiery. According to the present invention, such a nappy material is positioned within two or three inches of the portions of the hosiery at which runs generally originate, so that any such run will be interrupted when it has proceeded the two or three inches. The nappy material will prevent the run from proceeding further when the form is expanded, and when the form is retracted, to remove the hosiery, the stress which induces the run is thereby removed and only a short run has been developed. This may be corrected in a small fraction of the time which would have been required had the run been allowed to continue the full length of the hosiery.

The manner in which the invention may be applied to conventional hosiery inspection machines is illustrated, by way of example, in the accompanying drawings.

Figure 1 is a side elevational view of an expandable form hosiery inspection machine of the conventional kind, showing one form of the improvement according to the present invention incorporated therein;

Figure 2 is a longitudinal vertical section illustrating one manner in which the improvement according to the present invention may be incorporated into such a hosiery inspection machine; and

Figure 3 is an enlarged vertical sectional view on the line 3-3 of Figure 2.

According to the present invention, the run-stopping material may be simply inlaid into the surface of the inspection form at the proper areas, or it may be carried upon a movable member which is associated with the inspection machine in such a manner that it is retracted slightly beneath the surface of the form when the machine is positioned to receive a stocking for inspection, and so that it will move outwardly into contact with the stocking as the form is expanded at the commencement of the inspection operation. The movable member carrying the run-stopping material is subsequently retracted at the completion of the inspection operation so that it will not interfere with removal of the inspected hosiery. The manner in which the run-stopping material may be mounted on a movable member so as to operate as described will be within the skill of the ordinary worker in this art, but one such arrangement in connection with a conventional hosiery machine is illustrated in the drawings.

Referring to Figure 1, there is shown there a machine comprising an expandable form on which hosiery is positioned for inspection. This form comprises two complementary parts 12 and 14 which in the course of the operation of the machine are first expanded to place the hosiery under tension and thereafter rotated a full turn in order to bring all parts of the hosiery within the view of the machine operator. The details of construction of the inspection machine form no part of the present invention, but the general manner in which it operates is apparent from Figure 2 of the drawings. The sections 12, 14 of the form are supported by sliding connection 16 on the rotatable block which in turn is driven by the motor 20 through the toothed gear 22 formed on the rearward end of the block. The sliding support 16 is such that the sections 12, 14 of the form may be moved away from one another and then being rotated. This movement, which causes the expansion of the form, is produced by the cam 24 which is fixed to the shaft 26 mounted fixedly at 28. The cam 24 bears against blocks 30, 32 which are fixed to sections 12 and 14, respectively, to thus cause the parts to move away from one another and thereby expand the form, upon its rotation. The springs 34 are, at one end, fixed to a collar 36 which encircles the stationary shaft 26 and at their other ends are fixed to the form parts 12 and 14, respectively. These springs tend to draw the form parts 12, 14 to-
gethers into the unexpanded condition in which hosiery is drawn onto and removed from the form. The cam 40, the blocks 42 and the springs 44 function in the same manner as those just described.

The present invention concerns the incorporation into a conventional machine of the kind described above of a run-stopping device, one form of which is indicated generally at 50. This comprises blocks 52 which are slideably supported within recesses in the surfaces of the form parts 12, 14. The outer surfaces of these blocks have fixed to them a run-stopping material having a fine nap such as that provided by nylon rug or a fine bristle brush, or a soft leather with a high nap. This material is indicated at 54. The inner ends of the movable blocks 52 bear against a cam 56 which is attached to the stationary shaft 28 which is disposed centrally of the inspection form. The surface of the cam 56 is such that the blocks 52 are moved outwardly as the form begins its rotation and are returned to the retracted position in which they are shown in Figure 2 as the inspection form completes one rotation. The run-stopping material 54 is thus slightly pressed into the hosiery which has been drawn onto the form of inspection as the form begins its rotation. The run-stopping elements are disposed on the form within a few inches of the parts of the hosiery at which runs generally originate so that any such runs will be interrupted after proceeding two or three inches, when the hosiery has been made taut by the expanding form. The run-stopping material is withdrawn, as described above, at the completion of the rotation of the form so that it will not interfere with withdrawing the inspected hosiery. The blocks 60 carrying the run-stopping material 62, and operated by the cam 64, are similar in construction and function to those described immediately above.

Having thus described my invention, what is claimed as new and desired to be secured by Letters Patent is:

A hosiery inspection machine comprising a transversely expandable form circular in cross-section and having circumferentially extending recesses in its surface, a movable element carrying a nap material positioned within each recess, said movable element normally being positioned in its recess with the nap material beneath the surface of the form, and means operable upon the transverse expansion of said form to move said element in the same transverse direction and position said nap material slightly above the surface of said form.

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