METHOD OF SECURING A DRASTRING TO A FLEXIBLE BAG

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INVENTOR.

DALE A. DREISBACH

ATTORNEY
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Dale A. Dreisbach, Akron, Ohio

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This invention relates to bags and in particular relates to a method of securing a drawstring to a flexible bag.

In the past, drawstrings have been secured to flexible cloth bags or pouches by folding over the bag at the area adjacent the opening, inserting the drawstring, and stitching the free end of the fold to the exterior of the bag. This method has been generally employed in the manufacture of bags for cigarette tobacco.

With the advent of the plastic film bag, this method was originally employed, an elastic stitching thread being used to sew the end of the fold to the exterior of the bag. Because this type of drawstring attachment did not provide the requisite strength required in larger type bags, manufacturers soon replaced the stitching with a heat sealing operation, in which the end of the fold was sealed to the exterior of the bag. However, as in the case of all "fold-over" type of construction, the insertion of the drawstring within the fold was a cumbersome process with the end result that the product was relatively expensive. Further disadvantage was evident in that the double strength produced by the sealing operation was not provided at the most strategic point, namely, at the opening of the bag.

It is therefore one object of this invention to provide a method of securing a drawstring to a flexible bag which will result in the production of a relatively inexpensive bag with drawstringing.

It is a further object of this invention to provide a method for securing a drawstring to a flexible plastic bag wherein the resultant product will be characterized by exceptional strength in the area where said drawstring is secured.

It is a still further object of this invention to provide a method of securing a drawstring to a flexible plastic bag wherein a grasping tab of reinforcing nature is provided in conjunction with said drawstring.

These and other objects of the invention will become more apparent upon consideration of the drawings taken in the light of the following brief specification.

Of the drawings:

Figure 1 is a semi-diagrammatic view of a machine which could be used to perform the method of this invention.

Figure 2 is an illustration of a bag made by the method of this invention, the same being shown in opened position.

Figure 3 is a view similar to Figure 2, but showing the bag in closed position.

Figure 4 is a section taken on the line 4—4 of Figure 2.

Figure 5 is a similar view to Figure 4 but showing a modified form of the invention.

Referring now to the drawings for a description of the newly discovered method as accomplished on the machinery diagrammatically set forth in Figure 1, the operator first determines that a requisite amount of plastic tape 10 and drawstring material 11 is provided on the spools 12 and 13, respectively. Having ascertained this, the operator then threads the drawstring material 11 through pegs 14, 14 on the guide means 15 and similarly threads the plastic tape material 10 through pegs 16, 16 on the guide means 15, the alignment of the plastic tape 10 and the drawstring 11 being such that the same are in the same vertical plane as a sealing wheel 20 and a bag supporting means 21.

With the supply of plastic tape 10 and drawstring material 11 in proper order, the operator next turns on the switch (not shown) for the rotating sealing wheel 20, which action causes the same simultaneously to begin clockwise rotation and become heated. Having waited a sufficient time until the sealing wheel 20 has taken on the requisite temperature necessary for sealing, the operator next positions the open end of a plastic bag 26 around the bag supporting means 21 which includes wheel members 22 and 23, having their axes spaced at a variable distance by virtue of a spring 24 operable upon a pivoted support 25, thereby permitting a varying number of bag openings to be accommodated on the same bag supporting means 21.

With the bag 26 thus positioned around the wheels 22 and 23 as just described, the operator next draws a length of tape 10 and drawstring 11 from the guide means 15 and positions these members so that the same are in aligned relationship with the edge portion of the bag 26 when the same is positioned on wheels 22, 23, so as to be adjacent the sealing wheel 20; it being understood that a space for this purpose will exist, in view of the lever 27 being moved to the left of Figure 1 as a result of the force afforded by the spring 29. It is preferable that a small excess of tape 10 and drawstring 11 be provided below the point of tangential contact of bag 26 with tape 10. In this manner, when the lever 27 is moved to the right of Figure 1 to cause the bag 26 to be shifted into contact with the rotating wheel 20, a free tab, defined by drawstring 11 and tape 10 will be provided. The film portion of this tab is not sealed to the bag 26 as a result of the initial contact between wheel 20 and bag 26.

As long as such contact is made between said wheel 20 and the bag 26, it is manifest that the wheel 20 will in effect, drive the wheel 22 to cause other edge portions of the bag 26 to be rotated into sealing contact with said wheel 20, whereupon additional tape 10 and drawstring 11 will be applied to form a drawstring for the bag 26.

When it is desired to terminate the application of such tape 10 and drawstring 11 to the bag 26, it is merely necessary to release the handle 27, at which time the spring 29 will operate to move the wheel 22 out of its driven contact with sealing wheel 20. It is preferred that such driven contact continue, however, until the previously mentioned free tab end has been passed against the wheel 20 so as to adhere to a second tab element, defined by tape 10 and drawstring 11 that have advanced around the bag 26. In this manner, the two tabs, when adhered together, define a grasping tab 30 of reinforced nature that operates to alleviate the strain involved in closing the drawstring.

It can thus be seen that the provision of a method wherein a drawstring is aligned along one face of a plastic tape and subsequently enclosed between said tape and the exterior of a bag by virtue of the heat-sealing of the edges of said tape to the exterior of said bag, will result in an economically produced drawstring type bag of sturdy construction.

In Figure 5 there is illustrated a modified form of the invention wherein a second tape member 40 is added for the purpose of providing additional strength. This additional tape 40 could either be added before the sealing operation in which the drawstring is enclosed, or the previously described operation could be expanded to cover the alignment of the drawstring 11 between the tape
members 10 and 40 in which case the remainder of said operation would be identical.
While not specifically shown, it is also possible to modify this invention by varying the type of drawstring material or the thickness of the tape applied. For example, the drawstring could be flat to accommodate institutional advertising. By the same token, the tape could be provided with institutional advertising on one face thereof. For the purpose of reinforcing the drawstring, it is to be understood that the tape member could be of considerably heavier gauge material than the bag itself in which case additional strength would be obtained adjacent the bag opening.

It similarly follows that the above method could be employed in conjunction with flexible bags made of different material.

Other modifications may be resorted to without deviating from the spirit thereof or the scope of the appended claims.

What is claimed is:

1. A method of equipping a plastic bag with a drawstring, comprising the steps of aligning said drawstring along one face of a plastic tape member; positioning at least one portion of said aligned drawstring and plastic tape in contact with a selected area of said plastic bag; securing the opposed edge portions of said plastic tape member to said plastic bag adjacent the opening thereof, by application of heat to said plastic bag, whereby said drawstring is movably retained between the exterior of said bag and said tape, such securing of said edge portions being progressive, whereby said drawstring and said plastic tape aligned therewith are progressively attached to said bag as a unit.

2. The method of claim 1, further characterized by the fact that the longitudinal end portions of said tape are heat sealed together and extend freely from the balance of said plastic tape that is secured to said plastic bag, whereby a grasping tab is provided.

3. A method of securing a drawstring to a selected area of a flexible bag, comprising the steps of aligning said drawstring with respect to a flexible retaining strip; progressively advancing the longitudinal edge portion of said retaining strip into contact with said selected area, progressively heat sealing said longitudinal opposed edge portions of said advancing retaining strip to said selected area whereby said drawstring is enclosed between said retaining strip.

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