Oct. 12, 1948. C. H. HARTMAN 2,451,165

SEALING OF CLOSURES FOR GUSSETED PAPER BAGS

Filed April 27, 1946

Fig. 1

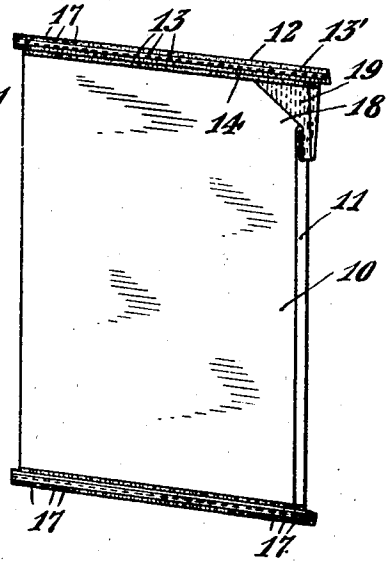


Fig. 3

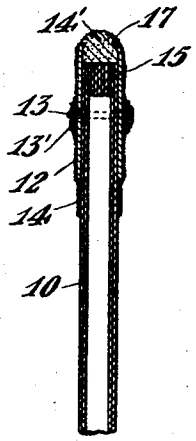
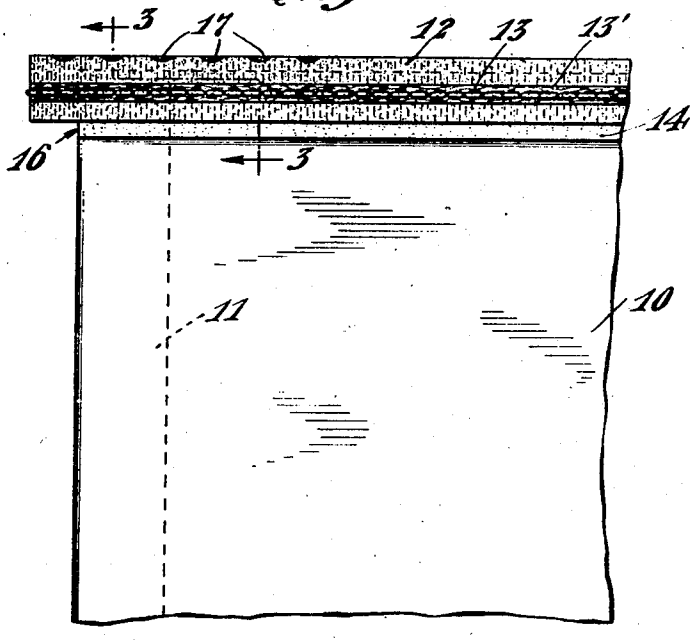


Fig. 2



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SEALING OF CLOSURES FOR GUSSETED PAPER BAGS

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1 Claim. (Cl. 229—62)

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This invention relates to the manufacture of paper bags and is more particularly adapted for the manufacture of multiwall gusseted bags of the general type which are closed by folded paper reinforcing strips sewn in position astride the bag ends.

In cases where it is desired to seal such bags against the entrance of air-borne moisture, it has been the practice to dip the end of the bag into a body of hot wax which will harden to form a coating covering the closure strip and extending down onto the bag walls adjacent thereto, so as to seal the edges of the strip with respect to the bag, some of the wax also at the same time entering the needle holes at the line of stitching and acting to seal same against entrance of moisture. However, in the case of gusseted bags, this method of sealing has often proved ineffective against the entrance of air-borne moisture through the crevices at the gusset folds, thence around the end edges at the gusset and into the bag. For convenience in manufacturing, and for strength and good appearance of the finish product, it is desirable to use a reinforcing strip which is folded over astride the end of the bag, but this appears to effectively prevent the dipping wax from entering in around the gussets to a sufficient extent to provide the desired sealing effect at the gusset areas.

In accordance with the present invention, this difficulty is overcome in a simple way by perforating the reinforcing strip along its fold line at one or more points adjacent the gusset areas so that upon dipping the bag end, the wax will enter through the perforations in sufficient amount to contact and cover the end edges of the gusset areas and effectively seal the same with respect to the closure means. In this way the bag, although constructed with the usual forms of gusseted tubes, reinforcing strips, stitching and waxing, a tight waterproof seal is provided clear across the end of the bag including the gusset areas and despite the large number of layers of paper which occur at these areas in a multiwall bag and which, as folded, have heretofore left small unsealed creases or crevices.

In the drawings, which illustrate a preferred form of the invention, Fig. 1 is a perspective view of a bag of one type to which the invention may be applied; Fig. 2 is an enlarged side elevational view of a corner portion of such bag, and Fig. 3 is an enlarged sectional view taken substantially along line 3—3 of Fig. 2.

The bag shown in Fig. 1 may comprise a normally flattened multiwall tubular body portion

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10 formed with gussets as at 11 along each side. The end closure for the bag as shown comprises a reinforcing strip 12 folded longitudinally and sewn in position astride the bag end, as by a line of stitching 13 which may be accompanied by the usual filter cord means 13'. As is common practice, this reinforcing strip may preferably be formed of flexible creped paper.

After the reinforcing strip is sewn in place, thus closing the end of the bag, the bag end is dipped in a suitable hot waxy material which will solidify and form a coating as at 14 covering the reinforcing strip on both sides and preferably extending beyond the edges of the strip onto the bag walls per se, as shown in Fig. 2, in order to seal the latter with respect to the edges of the reinforcing strip. At the same time it will be apparent that the wax has opportunity to cover the line of stitching and enter into and seal the needle holes to the extent necessary.

However, as indicated at 15, in Fig. 3, at the gusset areas there will be a large number of layers of paper. In the case of a multiwall bag having three plies, for example, there will be a total of twelve superposed layers at this point, all secured between the two sides of the reinforcing strip, and at the gusset fold lines of these layers there will necessarily occur a number of small crevices or apertures which, if not sealed, will permit moisture to enter the gusset in the direction indicated by the arrow at 16 in Fig. 2, and pass up around and over the top edges of the paper and down into the bag. Heretofore the dipping wax did not obtain access to these apertures or crevices and accordingly same would oftentimes render the wax-dipping procedure more or less ineffective for the desired purposes. While it would be possible to use two paper reinforcing strips, one on each side of the bag, thus leaving the upper bag edges exposed to the dipping wax, yet for convenience in manufacture as well as for improved appearance and added strength in the finished bag, it has been found highly desirable to use a folded-over reinforcing strip astride the end of the bag. Yet this effectively prevents the dipping wax from entering into sealing contact with the gusset end edges. It has been found that this difficulty may be readily overcome in accordance with the invention by perforating the fold line of the reinforcing strip 12 at one or more points, and preferably a series of points, as at 17 adjacent each gusset end. As appears in Fig. 3, with such perforations the dipping wax may readily enter under the fold line of the reinforcing strip and form such a substantial body

of hardened wax as at 14', in contact with the upper end edges of the paper at the gusset areas, as to securely seal these with respect to the reinforcing strip.

It will be apparent that the strip 12, although perforated to allow the hot wax to readily enter, is of such form as to adequately protect the adjacent edge portions of the bag walls and the mass of wax thereon and therebetween against disruption of the seal or displacement.

The same procedure may be followed for sealing the gusset areas at both the bottom and top ends of the bag. If desired, the bag may be of a type which has a valve at one of the top corners as shown at 18 in Fig. 1. Preferably the valve should be one which has a "tuck-in" type of sleeve 19 or other means for sealing the valve. If a tuck-in type of sleeve is used, and is folded over twice as it is tucked in, moisture will be effectively prevented from entering. If desired, other means and methods may be used for sealing the sleeve.

The wax used in dipping the end closures of the bag in accordance with the invention may preferably comprise a high melting point, amorphous wax having substantial strength and flexibility after cooling. For example, among other available waxes, one which is known under the trade name of "Micro-Cream" (Quaker States Oil Co.) has proved satisfactory.

What is claimed as new and desired to be secured by Letters Patent is:

In a paper bag formed with a flattened multiwall gusseted tubular body portion, end closure means comprising a longitudinally folded paper strip of generally U-shaped cross section extending from side-to-side of the bag and positioned astride the end edges thereof, a line of stitches passing through said strip and said end edges as embraced thereby, and extending the length of said strip and securing same in place, and a coating of waxy material covering said strip and stitching, the fold line of said strip at points adjacent the gusset areas being perforated at spaced points, some of said waxy material extending through said perforations into contact with and substantially completely covering said end edge portions of the gusset areas and tightly sealing same with respect to each other and said closure means, the perforated strip protecting said edge portions and the waxy material thereon against disruption of the seal.

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