

Aug. 29, 1939.

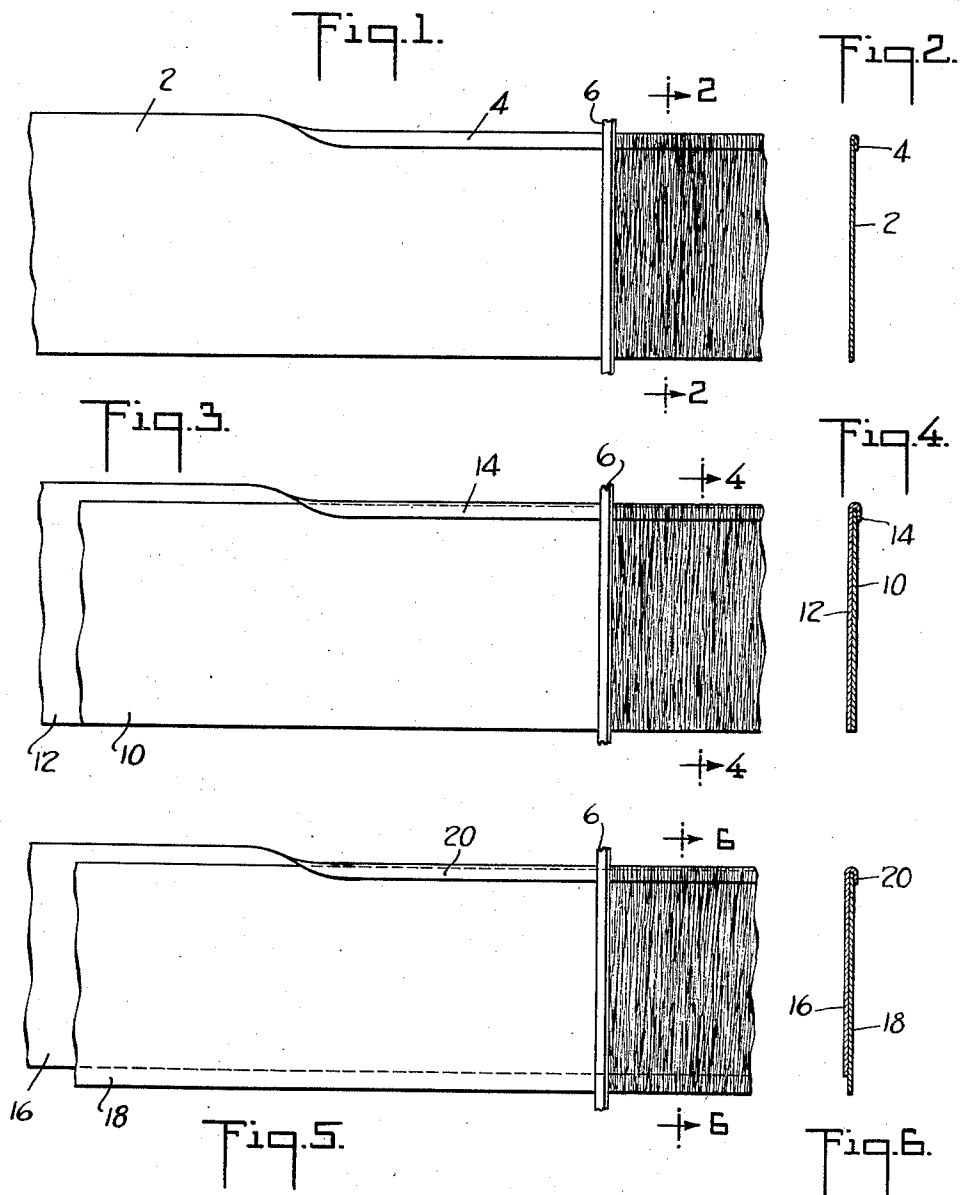
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2,170,945

CRINKLED PAPER TUBE AND METHOD OF FORMING SAME

Filed May 6, 1937

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 7.



Fig. 8.

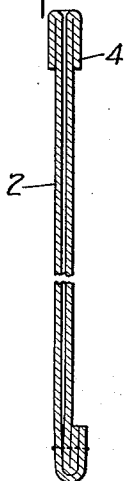


Fig. 9.

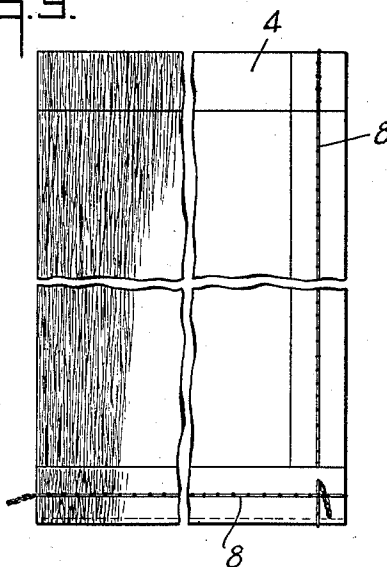


Fig. 10.

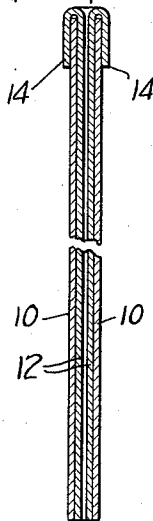


Fig. 11.

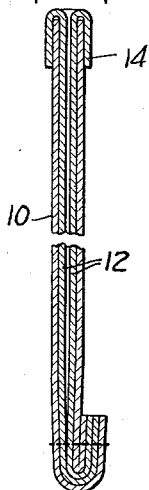


Fig. 12.

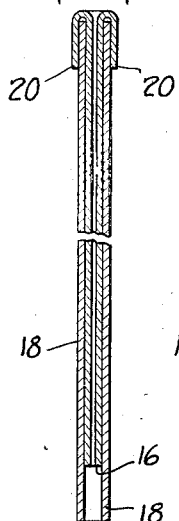


Fig. 13.

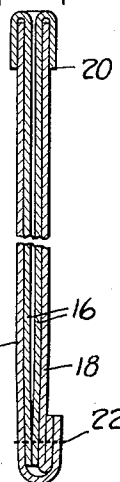


Fig. 14.

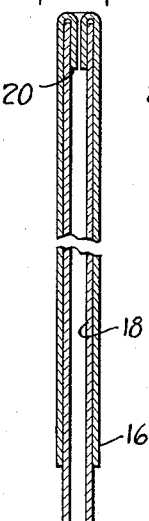


Fig. 15.

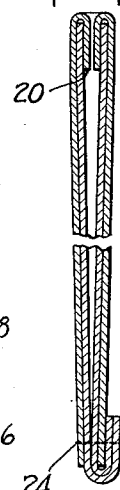


Fig. 16.

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CRINKLED PAPER TUBE AND METHOD OF FORMING SAME

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Application May 6, 1937, Serial No. 141,071

6 Claims. (Cl. 93—35)

The present invention relates to crinkled paper bags, bag tubes, and linings for containers, and further relates to a method of making such articles.

5 Bags and linings of the character indicated are commonly made of a sheet of crinkled paper of one or more layers or plies, that is folded over on a line extending in the general direction of the crinkles in the paper with the margins of its longitudinal edges and the edges of one end folded over and sewed, the other end of the bag or lining being left open. Owing to the crinkles in the paper, rough edges are presented about the open end of the bag or lining which easily become torn, and in the case of multi-ply bags and linings they are liable to become separated which is objectionable.

One of the objects of the present invention is to provide articles of the character indicated of novel and improved construction that overcomes the disadvantages above described.

Another object of the invention is to provide a novel and improved method of making such articles.

Referring to the drawings,

25 Figure 1 is a plan view of a strip of paper from which my improved bag, lining or tube may be formed, the strip being shown as acted upon by a crinkling device;

30 Fig. 2 is a transverse section taken on the line 2—2 of Fig. 1;

Fig. 3 is a view corresponding to Fig. 1, but showing a two-ply strip of paper;

35 Fig. 4 is a transverse section taken on the line 4—4 of Fig. 3;

Fig. 5 is a view similar to Fig. 3 but with the plies arranged differently from what is shown in Fig. 3;

40 Fig. 6 is a section taken on the line 6—6 of Fig. 5;

Fig. 7 is a longitudinal sectional view on an enlarged scale of a tube formed from a sheet of crinkled paper cut from the strip illustrated in Fig. 1;

45 Fig. 8 is a similar view of a completed bag or lining;

Fig. 9 is a side view of the completed bag or lining;

50 Fig. 10 is a view corresponding to Fig. 7 of a tube formed from a sheet cut from a two-ply strip corresponding to the strip illustrated in Fig. 3;

Fig. 11 is a longitudinal sectional view of a bag or lining made from the tube illustrated in 55 Fig. 10;

Fig. 12 is a longitudinal sectional view of a tube made from a multi-ply strip corresponding to Fig. 5;

Fig. 13 is a longitudinal sectional view of a bag or lining made from the tube of Fig. 12;

Fig. 14 is a longitudinal sectional view of a tube made from a sheet cut from the strip illustrated in Fig. 5, but showing a modified form from that illustrated in Fig. 12;

Fig. 15 is a longitudinal sectional view of a bag or lining made from the tube of Fig. 14; and

Fig. 16 is a longitudinal sectional view of a tube of a slightly modified construction from that shown in the other figures.

15 In forming my improved bag or lining as illustrated in Figs. 8 and 9, a paper strip 2 is fed longitudinally and as it is being fed the margin 4 of one edge thereof is folded over as illustrated in Fig. 1. The strip with the margin thus folded over is then passed through a suitable crinkling device which may comprise a doctor blade 6. This crinkling operation crinkles the paper strip with the crinkles extending transversely thereof and across the folded margin 4. Preparatory to the strip reaching the crinkling device it may be moistened as customary and the folding over of the edge may be done either while the strip is dry or moistened, depending upon the nature of the paper.

It has been found by thus folding over the edge of the paper strip and thereafter crinkling the strip that the crinkles in the folded over edge interengage with the underlying crinkles in the body of the strip in such a way as to firmly retain the folded edge against the body of the strip.

35 After the strip leaves the crinkling device it may be cut into lengths to form sheets from which the bags or linings may be made. The bag or lining illustrated in Fig. 9 may be formed from the sheet in the usual manner by folding the sheet on a line extending in the general direction of the crinkles in the paper. Then folding over the longitudinal edges and the edges at one end of the tube thus formed and sewing these folded edges together by means of a line of stitches 8 to complete the line bag or lining.

40 With the bag or lining thus formed, the folded over edge 4 is arranged at the open end or mouth of the bag or lining and is firmly held in position against the body of the bag or lining by the inter-engagement of the crinkles thereof with the crinkles in the underlying portion of the lining as above described. The folded over edge 4 is preferably on the outside of the bag or lining but in some instances it may be desired to have it 55

arranged on the inside of the bag or lining. With this construction it will be apparent that the folded over margin 4 serves as an effective reinforcing collar for the open end of the bag and does away with the objectionable rough edge heretofore present in this type of bag or lining.

In forming a composite strip to form the tube and bag or lining illustrated in Figs. 10 and 11, two paper strips 10 and 12, Fig. 3, are arranged one above the other with the strip 12 on the underside and with one of its longitudinal edges projecting beyond the corresponding longitudinal edge of the strip 10, the other longitudinal edges of the strips being substantially one over the other. The composite or two-ply strip thus formed is fed longitudinally and as it is being fed the projecting edge portion 14 of the strip 12 is folded over upon the upper side of the strip 10, the fold occurring on a line adjacent the longitudinal edge of the strip 10. The composite strip with the folded edge portion 14 is then acted upon by the crinkling device comprising the doctor blades 6 and the two strips crinkled together with the crinkles extending transversely thereof and across the folded edge portion 14. With the two strips thus crinkled together they are firmly held by the inter-engaging crinkles and by the folded edge portion 14 during the subsequent bag forming operations.

The tube illustrated in Fig. 10 and the bag or lining illustrated in Fig. 11 may be formed from sheets cut from this composite strip in the same manner as the bag or lining illustrated in Fig. 9 is formed as above described. In the bag or lining formed from this composite strip, the folded over margin 14 provides a reinforcing collar at the open end thereof and the two plies are firmly held together at said open end.

In forming the composite strip illustrated in Fig. 5, two paper strips 16 and 18 of equal width are arranged one upon the other with the longitudinal edges of the two strips spaced apart as shown. The two strips are fed longitudinally and as they are fed, the projecting edge portion 20 of one strip is folded over the adjacent edge of the other strip. The composite strip is then passed through the crinkling device comprising the doctor blade 6. In forming the tube illustrated in Fig. 12 from a sheet cut from this composite strip, the sheet is folded over so as to position the folded over edge portion 20 on the outer side of the tube to form a collar for the open end of the tube, this resulting in the outer layer 18 of the tube projecting a distance below the inner layer 16. The bottom of the tube may be closed by folding over the lower projecting edges of the outer layer 18 and securing them by means of stitches on a line 22 (Fig. 13), thus forming a secure bottom seam.

In the tube illustrated in Fig. 14, the composite sheet is folded so as to position the folded over edge portion 20 on the inside, which results in the lower ends of the inner layer 18 projecting a distance below the lower ends of the outer layer 16. With this arrangement the seam may be formed by folding over the lower projecting ends of the inner layer 18 and securing them by stitches on the line 24 (Fig. 15).

In the tube illustrated in Fig. 16, both the upper and lower end thereof have their ends folded over against the outer sides of the tube, thus reinforcing both ends of the tube. This tube is particularly adapted for forming tubular coverings for bananas and other articles.

As will be evident to those skilled in the art, my invention permits various modifications without departing from the spirit thereof or the scope of the appended claims.

What I claim is:

1. In a tube of the class described made of crinkled paper with at least one of its ends open and with the crinkles extending longitudinally of the tube, the improvement which comprises the open end of the tube having its edge folded over against the body of the tube with the crinkles in the folded over edge corresponding to and inter-engaging with the crinkles in the underlying portion of the tube body, said folded longitudinal edge portion being of narrow width.

2. A structure according to claim 1 in which the crinkled paper consists of at least two sheets crinkled together, and the folded edge consists of one of the edges of the inner sheet which is folded over the edge of the outer sheet.

3. The method of forming a tube of the class described which comprises feeding a strip longitudinally and while the strip is being fed folding over at least one of the edges of the strip and crinkling the strip with the crinkles extending transversely thereof and across said folded edge portion, cutting off lengths of the strip and folding each length to position its longitudinal edges together to form a tube having at least one end open and having said folded edge portion arranged at said open end, the crinkles extending longitudinally of the tube.

4. The method of forming a composite strip of the class described which comprises arranging two strips of paper in superposed relation with at least one of the longitudinal edges of one of the strips projecting a distance beyond the corresponding edge of the other strip, folding said projecting edge over against the other strip and crinkling the two strips together, the crinkles extending transversely of the strips across said folded edge portion.

5. The method corresponding to claim 4 which includes the additional steps of cutting lengths from the composite strip and forming each length into a bag tube having at least one end open and with said folded edge portion arranged at said open end.

6. The method of forming a tube of the class described which comprises feeding a strip longitudinally and while the strip is being fed folding over at least one of the edges of the strip, and crinkling the strip with the crinkles extending transversely thereof and across said folded edge portion, cutting off lengths of the strip, forming a tube by folding each length on a line transversely thereof so as to position the end edges of the strip together, and securing said edges together to form the completed tube.

EDWIN D. GREENE.

CERTIFICATE OF CORRECTION.

Patent No. 2,170,945.

August 29, 1939.

EDWIN D. GREENE.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, second column, line 47, claim 4, before the word "across" insert and; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 26th day of September, A. D. 1939.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.