

Sept. 9 , 1924.

1,507,949

E. H. ANGIER

ELASTIC PAPER SHEATHING AND METHOD FOR PRODUCING THE SAME

Filed Feb. 24, 1922

2 Sheets-Sheet 1

Fig. 1.

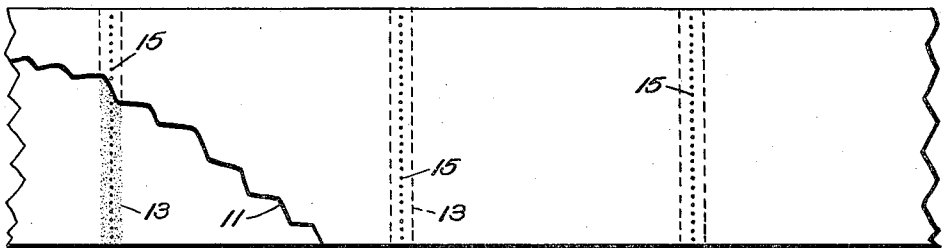


Fig. 2.

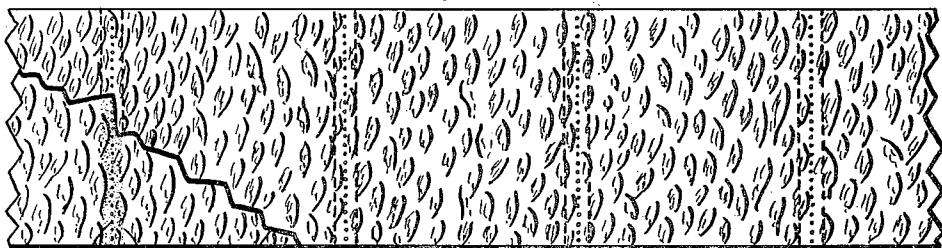


Fig. 4.

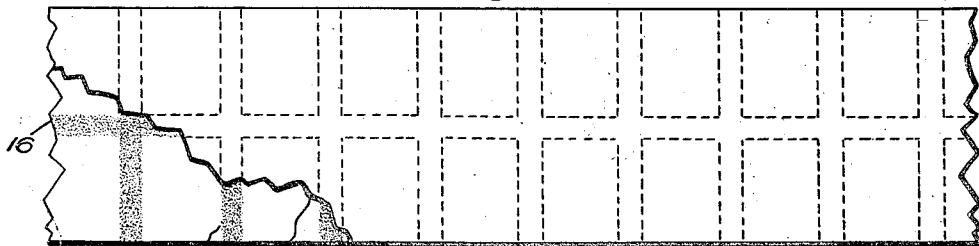
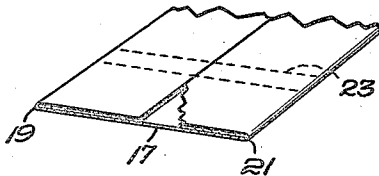
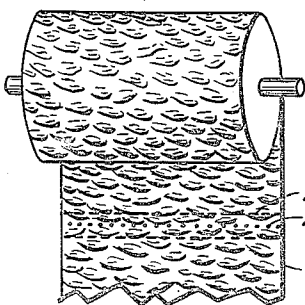
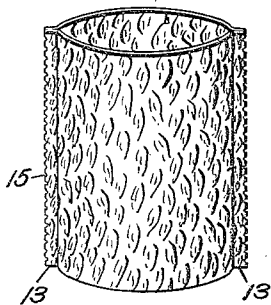


Fig. 3.

Fig. 6.

Fig. 5.



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2 Sheets-Sheet 2

Fig. 7.

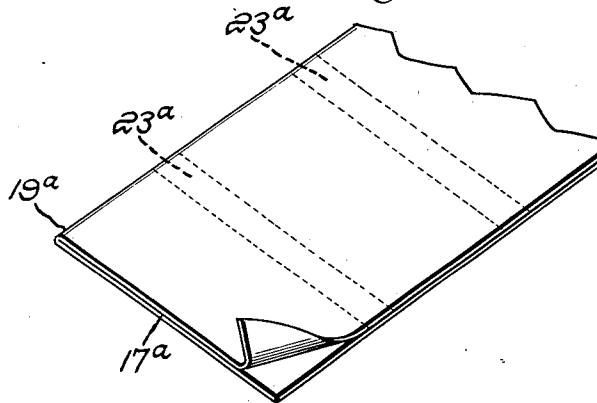


Fig. 8.

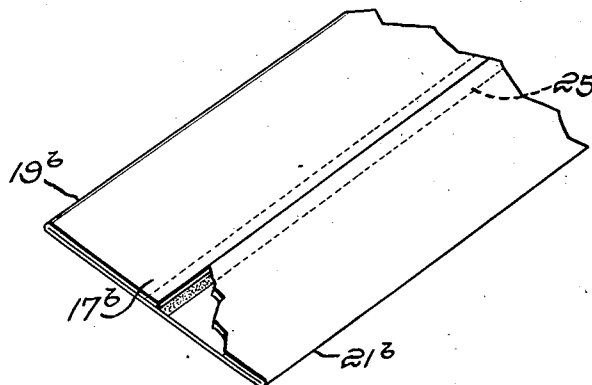
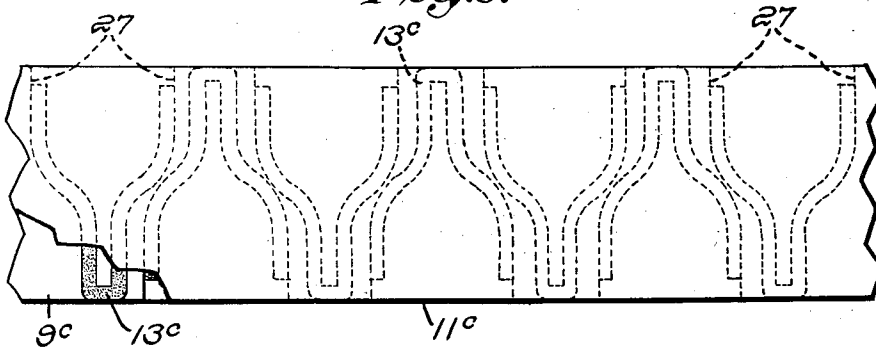


Fig. 9.



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UNITED STATES PATENT OFFICE.

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ELASTIC PAPER SHEATHING AND METHOD FOR PRODUCING THE SAME

Application filed February 24, 1922. Serial No. 538,921.

To all whom it may concern:

Be it known that I, EDWARD H. ANGIER, a citizen of the United States, and a resident of Framingham, county of Middlesex, and State of Massachusetts, have invented an Improvement in Elastic Paper Sheathings and Methods for Producing the Same, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to paper sheathing for the protection of various kinds of goods or articles, such sheathing being useful either as an external covering for the goods or as a lining for a more or less rigid container in which the goods are placed for shipment or storage.

Many articles and many kinds of goods need to be protected from contact with other articles or objects, and for such purposes it is customary to employ paper either as an enclosure in the form of a bag or tube, or as a lining within some container such as a barrel or bucket. For many classes of merchandise it is desirable that the paper shall be elastic, particularly in the direction of the width of the sheath or lining, in order to accommodate itself to the internal shape of the container employed or to the external shape of the article enclosed by the sheath.

The present invention relates to the production of elastic paper sheathings for the purposes above mentioned and the object is to effect such production in a rapid, accurate and economical manner. The invention will best be understood by reference to the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a partly broken fragmentary plan view illustrating an intermediate stage in the production of sheaths in accordance with my invention;

Fig. 2 is a similar view showing a later stage;

Fig. 3 is a perspective view of a sheath constructed as shown in Figs. 1 and 2 and adapted for use as a barrel liner;

Fig. 4 is a view similar to Fig. 1 illustrating of another method of manufacture in accordance with my invention;

Fig. 5 is a fragmentary perspective view illustrating still another method of proceeding;

Fig. 6 is a perspective view of a roll of

sheaths adapted to be cut or torn off one by one as required;

Fig. 7 is a perspective view illustrating a variation of Fig. 5;

Fig. 8 is a similar view showing a further variation; and

Fig. 9 is a view similar to Fig. 4 illustrating a step in the production of sheaths for tennis rackets.

The showing of craping in Figs. 2, 3 and 6 is diagrammatic and much exaggerated in size.

Referring first to Figs. 1, 2 and 3 of the drawings, in constructing a barrel liner I may secure together two long sheets or webs of paper 9 and 11 at intervals by means of transverse stripes 13 of suitable adhesive such as black asphalt, this being conveniently effected by means of suitable mechanism through which the paper is drawn lengthwise from the usual mill rolls. At the same time or afterwards I may if desired provide lines of weakness along the adhesively connected areas as, for instance, by providing the perforations 15. The two sheets 9 and 11 secured together in face to face contact are then subjected as a unit to a craping operation as, for instance, by passing the united sheets through a suitable bath and craping them with roll and doctor in well known fashion to provide crappings running generally transversely of the two united webs. The product of this operation is shown in Fig. 2 which in contrast with Fig. 1 shows how the paper is shortened by the process. It remains, however, capable of stretching out in well known manner with considerable resiliency.

The web may then be divided transversely along the united areas 13, conveniently centrally thereof, and the lines of weakness 15, if present, will permit the segments of the web to be torn off or facilitate the cutting. There is thus produced a flat tube of paper as shown in Fig. 3 consisting of two side portions 9 and 11 united along the edges by adhesive seams. The superposed layers of paper in these seams have been craped as a unit and therefore the crappings of these portions are nested one within the other and the two layers of paper are interlocked in this manner as well as secured by the adhesive joint. The result is a joint of great strength as the adhesive was applied smoothly over the

paper while flat and pressed together since and a mechanical interlock is also provided for. Preferably as shown, the crappings extend along the length of the joint providing for the most efficient interlocking thereof to increase its strength. The paper which comprises the adhesive seam or joint itself is capable of expansion since it partakes of the craping of the rest of the sheet. Consequently a localized strain is not so applied as to start a break in the joint but is distributed throughout the width of the seam and also to laterally adjacent portions thereof.

The article produced as described may be opened out as shown in Fig. 3 for use as a barrel liner. For such use a disc of paper would first be laid in the bottom of the barrel and then a tube placed inside the same. If the barrel is then filled with some pulverant or granular material, such as sugar, the crappings will permit it to expand to the form of the barrel without breaking and provide a lining for the same effectually preventing sifting of the contents between the staves.

The tube shown in Fig. 3 is open at both ends. To form a bag a tube may be produced closed at one end and for such purpose the webs of paper may be united by one or more longitudinal stripes of adhesive connecting the transverse stripes. In Fig. 4 I have shown an arrangement wherein two webs of paper 9^a and 11^a are united by a central longitudinal stripe 16 of adhesive intersecting the transverse stripes 13^a corresponding to the stripes 13 in Figs. 1 and 2. In Fig. 4 the web may be divided centrally of the stripes 13^a and centrally of the stripe 16 providing bags with closed bottoms of a depth equal to half the width of the web. Of course, a variation in the position of the stripe 16 varies the width of the bag formed and in the limiting case the stripe would be applied at one edge of the webs and the bags would be fewer in number but of the full depth of the width of the webs.

In Figs. 1, 2 and 4 the two layers of paper are separate webs but for certain purposes they may be made by folding a single web on itself and the folded edge may be utilized as a marginal portion of the completed sheath. Referring to Fig. 5, I have shown a web of paper 17 having both edge portions folded over on the face providing folded edges 19 and 21 and united by transverse stripes of adhesive 23. Such a web may be craped and divided along the middle where the folded over edges meet and transversely along the stripes 23 providing bags having adhesive seams at the sides and folded at the bottom, these bags being of a height equal to half the width of the folded web. In Fig. 7 a web 17^a is

shown folded down the middle to provide one folded edge 19^a, the two portions of the web being united by transverse stripes of adhesive 23^a. If this web is craped and then cut along the stripes bags of the full width of the folded web are provided. In Fig. 8 is shown a web 17^b with folded edges 19^b and 21^b, as in Fig. 5, and provided with a longitudinal stripe of adhesive 25 down the middle. If this web is cut along the center long tubes having one folded and one adhesively secured edge are provided which may be divided into suitable lengths. This is an example of a folded joint combined with a longitudinal adhesive joint.

In the construction described the adhesive is applied in regular lines and the sheathings produced are correspondingly regular. To protect articles which are irregular in form, for instance, to provide sheathings for umbrellas, guns, tennis rackets, or the like, the adhesive joints and the lines of severance may be more or less irregular corresponding to the proper contour of the desired sheath and a folded edge portion similar to 19 and 21 in Fig. 5 may be utilized in combination with an adhesive suitably applied to a limited area of the paper to define all or a portion of the contour of any desired shape of sheath. In Fig. 9 I show two webs 9^c and 11^c joined by adhesive along areas 13^c which are of suitable contour to provide when the webs are cut, partly along the contours 13^c and partly along lines 27, open ended sheaths each adapted to fit a tennis racket.

In Fig. 6 I have illustrated the craped double web shown in Fig. 2 as rolled up providing a supply from which individual sheaths like that shown in Fig. 3 may be cut off (or if provided with the lines of weakening 15, torn off) as needed.

A particular advantage possessed by my invention is that the amount of paper required to make the bags or sheaths for any specified purpose can be accurately determined beforehand. For instance, when the linings are to be used for barrels and the internal diameters of the barrels at their largest points are known, and the number of barrels to be lined also known, the total length of flat paper required to fill the order can be determined by simply adding to the total of all the internal semi-circumferences enough to slightly exceed the measurement required to allow for the widths of the transverse stripes 13 and any desired residual craping. No matter how much the duplex paper is afterwards shortened by the craping process, each sheath or lining will be capable of stretching to bear against the inner surface of the barrel. If a customer wishes a "twenty per cent stretch" to allow for the bilge of the barrels, this can be allowed for when the paper

is flat and the correct result obtained. For all purposes it is easy to estimate how much paper shall be allowed for those areas which are not adhesively united so that those areas, after craping, will stretch without tearing when applied to final use.

Having described in detail certain illustrative embodiments of my invention in order to indicate the varied operations which may be followed and within the scope thereof, the principles exemplified thereby which I claim as new and desire to secure by Letters Patent I shall express in the following claims.

15 Claims:

1. The method of making elastic bag-shaped articles, consisting in adhesively uniting two layers of paper on transverse lines at spaced intervals, craping the united layers and dividing the product at points intermediate the margins of the adhesively united areas.

2. The method of making elastic bag-shaped articles, consisting in adhesively uniting two layers of paper longitudinally and on transverse lines at spaced intervals, craping the united layers and dividing the product at points intermediate the margins of the adhesively united areas.

3. The method of forming elastic sheaths characterized by adhesively uniting two layers of paper in face to face contact along limited areas corresponding to at least a part of the contour of the sheath, craping the assembly and cutting out the sheaths at least partly along the said areas.

4. The method of making elastic sheaths characterized by folding a layer of paper upon itself and adhesively uniting the folded portions in face to face contact along limited areas defining in cooperation with the folded edge at least part of the contour of the sheet, craping the assembly and cutting out the sheaths at least partly along the said areas.

5. The method of forming elastic bag-shaped articles characterized by folding a layer of paper lengthwise on itself and adhesively uniting the folded portions in face to face contact in spaced transversely extending zones, craping the assembly and dividing the same transversely along said united zones.

6. Two sheets of paper united along a limited area in face to face contact by adhesive and having nesting crappings in said area.

7. The method of securing together paper elements comprising adhesively securing a

limited area thereof in face to face contact and craping as a unit the portions secured together.

8. An elastic sheath comprising side portions of craped paper united at least in part by adhesive seams, the crappings nesting at the seams.

9. An elastic sheath comprising side portions of craped paper united at least in part by adhesive seams, the crappings nesting at the seams and extending substantially longitudinally thereof.

10. An elastic paper sheath in the form of a flat tube having opposed sides joined at the edges by adhesive seams, the whole craped as a unit.

11. As an article of manufacture two webs of paper united in face to face contact at spaced intervals along limited areas, the whole craped as a unit, and providing a supply for dispensing elastic sheaths by severance of the webs along the united areas.

12. The article defined in claim 11 provided with lines of weakening along the united areas to facilitate severance of the sheaths.

13. The method of forming elastic sheaths characterized by uniting two layers of paper in face to face contact along limited areas corresponding to at least a part of the contour of the sheath, craping the assembly, and cutting out the sheaths at least partly by dividing the paper along a line within said areas to provide on a side of the division line a joint or seam for the margin of the article.

14. The method of preparing seamed elastic articles of paper characterized by first forming the seam in plain paper and then craping the paper including the area of said seam.

15. Two sheets of paper united along a limited area in face to face contact and having nesting crappings in said area.

16. The method of securing together paper elements comprising securing a limited area thereof in face to face contact and craping as a unit the portions secured together.

17. An elastic sheath comprising side portions of craped paper united at least in part by areas seamed together, the crappings in said areas nesting.

18. An elastic paper sheath in the form of a flat tube having opposed sides joined at the edges by seamed together areas, the whole craped as a unit.

In testimony whereof, I have signed my name to this specification.

EDWARD H. ANGLIER.