July 6, 1937. E. H. ANGIER 2,086,179

WRAPPING

Filed Dec. 16, 1933

Fig. 1.

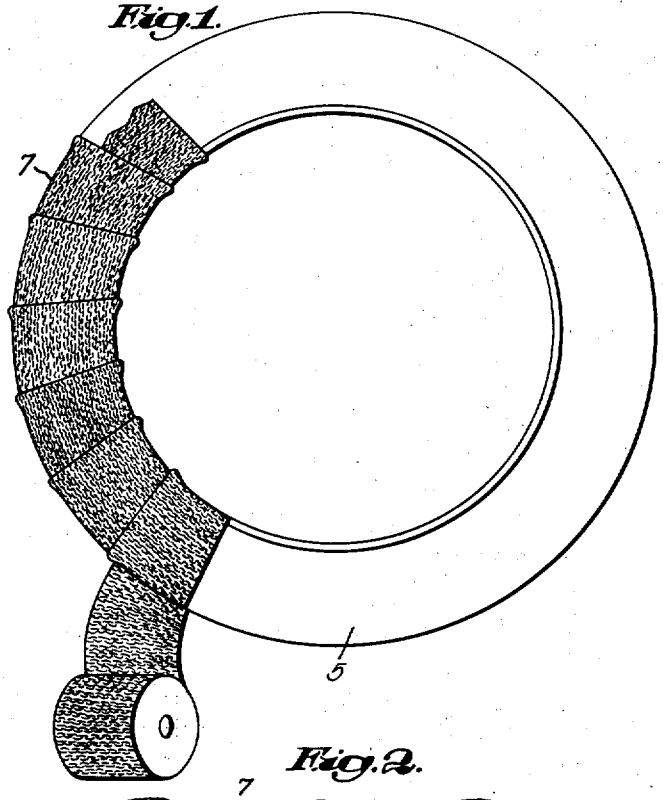


Fig. 2.

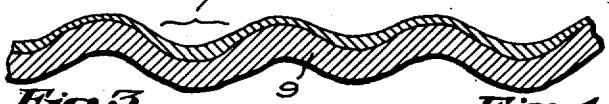


Fig. 3.

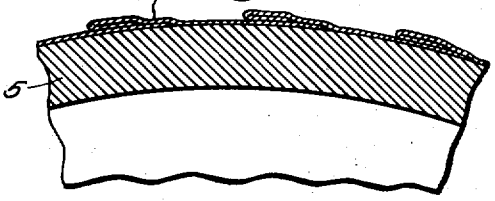
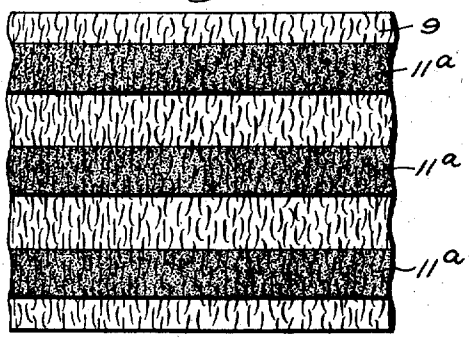


Fig. 4.



Inventor:
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Att'ys

Patented July 6, 1937 2,086,179

UNITED STATES PATENT OFFICE

2,086,179

WRAPPING

Edward H. Angier, Framingham, Mass., assignor to Edward H. Angier, Framingham, Mass., as trustee under agreement and declaration of trust dated July 23, 1931, designated as Angier Laboratories

Application December 16, 1933, Serial No. 702,785

2 Claims. (Cl. 206—46)

In my Patent No. 1,282,167, Oct. 22, 1918, I have described wrapping articles with a strip of craped paper helically applied under tension and by virtue of the craping differentially expansible and resilient. By the latter word I mean that the crapings which were partially stretched out either in the application of the wrapping or in response to shocks to which the wrapped article is submitted in use tended to regain their original form, thus maintaining the strip in tight binding engagement with the wrapped article. Packages as described in that patent have been extensively utilized more particularly in connection with wire coils, vehicle tires and coils of garden hose. The resiliency of craped paper, however, is limited in that it may be stretched out under fairly moderate strains in such a manner that the immediate resilient reaction will be relatively slight. That is, when drawn flat or nearly so, it will not at once snap back completely to its original form, although it will contract somewhat and the tendency to contract persists and the wrapping about an article will gradually draw tighter. When the craped paper wrapping is wet, it tends to loosen. The original crapings being made by molding the fibers of the paper to form while wet, the process may be to a certain extent reversed and the paper tend to revert to its original uncraped form.

I have discovered that a greatly improved wrapping is made possible by coating the craped paper with elastic rubber. For this purpose I may utilize a light coating conveniently applied to one face only of the paper. This may be effected, for example, as described in my copending patent application, Serial No. 707,498, by flowing a suspension of gum rubber with a vulcanizing agent on the paper during the process of craping, or it may be subsequently applied as by means of spraying or the like. It will be understood that the coating does not drown or conceal the craping but is in the form of a light film following the roughnesses of the craping and may indeed be thicker in the valleys of the craping than at the crests.

My invention will be more fully understood by reference to the following description taken in connection with the accompanying drawing, wherein:—

Fig. 1 is a side elevation of an annular article partially wrapped with a helically applied strip in accordance with my invention;

Fig. 2 is a longitudinal section of the wrapping strip on a much enlarged scale;

Fig. 3 is an enlarged fragmentary section taken circumferentially of the outer periphery of the wrapped article; and

Fig. 4 is a fragmentary plan view of a modified form of wrapping strip.

In all these figures it will be understood that the disclosure is diagrammatic, particularly as regards the proportion of the parts, and that the showing of the crapings, particularly in Figs. 1 and 4, is symbolic rather than realistic.

Referring to the drawing, and more particularly to Figs. 1 and 2 thereof, I have there shown a tire 5 partially wrapped with a relatively narrow wrapping strip 7 wound thereabout in a series of overlapping, helical turns or spires. This strip 7 may be supplied, as indicated in Fig. 1, in the form of a roll adapted to be utilized in wrapping machines of usual construction such, for example, as that shown in the patent to Wheildon 1,439,387, Dec. 19, 1922, various types of such machines being in general use. A wrapper thus supplied in the form of a narrow strip of a length appropriate to be coiled up into a supply roll is commonly referred to as of indefinite length to distinguish from mere sheets of paper or the like, the dimensions of which are not markedly different. It will be understood that the helical wrapping, as disclosed in Fig. 1, is continued until the article is completely covered.

The strip 7, as best seen in Fig. 2, embodies a craped paper base 9, preferably of a suitable grade of kraft paper and having a considerable percentage of stretch, to one side of which may be applied a thin coating 11 of vulcanized rubber. The wrapping 7 is applied to the article 5 under tension, as described in my previous patent referred to, differentially expanding the crapings to cause the wrapping smoothly to fit the article, their tendency to collapse also causing the wrapping to hug the article. Herein, however, this hugging action is not dependent upon the inherent characteristics of the craped paper but is in considerable part supplied by the resilient coating 11 which stretches with the paper as the crapings are extended and tends to collapse such crapings back to their original form, thus drawing the strip into particularly close gripping relation to the article. While I prefer to provide the coating 11 over the entire face of the strip, it need not be completely uniform, and in particular, as indicated in Fig. 2, the coating may be permitted to assume a greater thickness in the valleys of the craping. The

most substantial body of rubber is thus disposed between the sides of these valleys, binding them together to extend as they are drawn apart and to resiliently collapse to draw the crapings back toward their original form.

A rubber-coated craped paper strip as described is commercially adaptable for wrapping purposes, particularly since the base strip 9 may be relatively light and weak. The resiliency is such that when a strip is stretched out and released, it will snap back immediately approximately to its originally craped form, the speed and extent of the reaction being comparable to that of an ordinary rubber band. In fact when the strip is coated on one side, the reaction is such that if so stretched out and released the strip will roll up on itself with the coated side inward.

In some instances to effect an economy of rubber I may utilize a strip as shown in Fig. 4 comprising the craped paper base 9 to which the rubber coating 11a is applied in the form of longitudinally extending, relatively narrow strips.

In the wrapping described the very large differential expansion of the craped paper is preserved, permitting a ready fitting of the wrapping to the article, notably in the case of annular articles, while the greatly increased resiliency binds the article very closely and takes up the shocks of handling without danger of breakage. Notably when the rubber coating is complete, the wrapping is water-resisting as a whole and there is no danger of the grip of the wrapping relaxing under dampness.

A rubberized coating of the kind described has a substantial frictional grip. While I prefer for reasons of economy to coat but one side of the strip, I may, as best indicated in Fig. 3, fold over one edge of the strip 7 so that the coated edge of this folded over portion will contact with the coated edge of the underying spire of the wrapping. The adjacent turns of the wrapping are then held firmly together and will not become displaced in use so as to expose the article. In the wrapping of tires at the present time the turns of the wrapping are frequently sealed together and this is rendered unnecessary by the construction described. I am aware that in the case of ordinary wrapping strips it has been customary to fold over one edge of the strip in applying it in order to reinforce the same, but in the construction described, while a similar result is effected, a new and additional result is obtained on account of the frictional grip which the adjacent turns of the wrapping strip take one on another.

The frictional quality of the coated wrapping has various other advantages. For instance, in shipping wrapped tires in quantity it has hitherto been found that the movement of the tires during transportation caused one to rub against the other and wore the wrappings unduly. Thus in carload lots of tires, instead of piling up the tires in uniform piles like stacks of coins, they were staggered in an attempt to minimize this rubbing action. The frictional grip of the tire wrapped as herein described on another tire similarly wrapped or on a supporting surface will permit such uniform piling of the tires without objectionable movement of one relative to another with a corresponding saving of space.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive; reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim:—

1. A wrapping in the form of a narrow band of indefinite length to be helically wound about a commodity to form an enclosure therefor and comprising a craped paper base of the kraft type having rubber adherent thereto in narrow spaced strips longitudinally of the band, which rubber is extensible with the crapings and effective resiliently to return them approximately to their original position on release of the extending stress.

2. A package comprising an article and a covering therefor comprising closely drawn overlapping turns of helically applied strip, said strip comprising a craped paper base the crapings of which are at least partially extended and having a coating of rubber adherent to one side thereof and stretched with the extended crapings thereby resiliently tending to collapse said crapings to unextended form and thereby contracting the turns of the strip about the article, said strip having a folded over edge portion, the coated face of which is opposed to the coated face of an adjacent turn of the strip.

EDWARD H. ANGIER.

CERTIFICATE OF CORRECTION.

Patent No. 2,086,179. July 6, 1937.

EDWARD H. ANGIER.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 22, and second column, line 33, claim 1, for the word "strips" read stripes; 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 31st day of August, A. D. 1937.

(Seal)

Leslie Frazer
Acting Commissioner of Patents.

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