No. 768,107. PATENTED AUG. 23, 1904.

W. E. WILLIAMS.

SPIRALLY WOUND TUBE.

APPLICATION FILED FEB. 5, 1903.

NO MODEL.

Fig. 1.

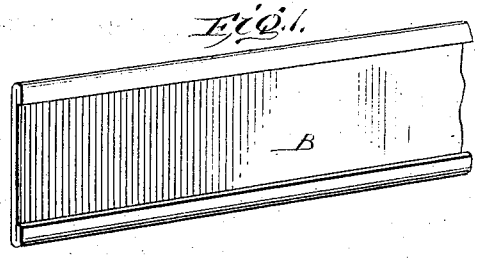


Fig. 2.

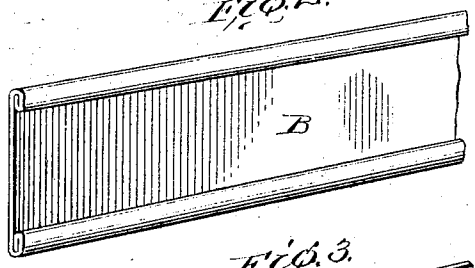


Fig. 3.

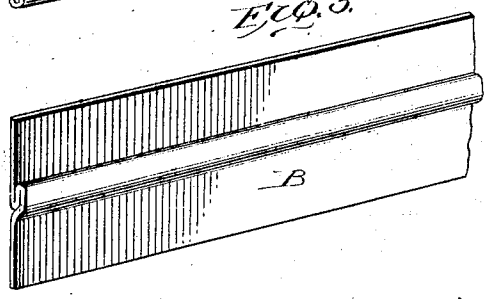


Fig. 4.

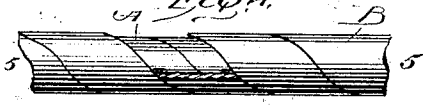


Fig. 5.

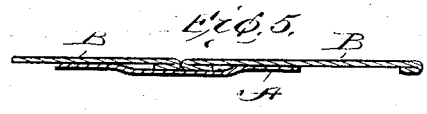


Fig. 6.

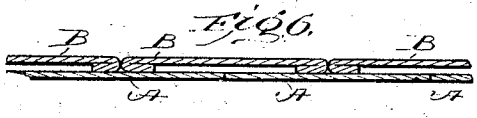


Fig. 7.

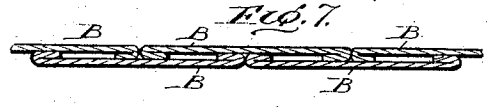
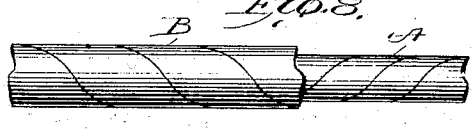


Fig. 8.



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No. 768,107. Patented August 23, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM ERASTUS WILLIAMS, OF CHICAGO, ILLINOIS.

SPIRALLY-WOUND TUBE.

SPECIFICATION forming part of Letters Patent No. 768,107, dated August 23, 1904.

Application filed February 5, 1903. Serial No. 141,952. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ERASTUS WILLIAMS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Spirally-Wound Tubes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to tubes consisting of a plurality of layers of spirally-wound strips of sheet material having some degree of rigidity, the joints of each layer being out of registry with the joints of contiguous layers. Tubes of this class are employed for many purposes, and it is in all cases important that they be inexpensive, while for certain uses it is essential that they be light and also strong. Such tubes are often made by winding a plane strip spirally in such manner as to form a tube in which the lateral edges of the strip closely abut, and then winding a second strip about this tube in such manner as to break joints with the first, or sometimes winding the second strip as an oppositely-inclined spiral. Upon the tube thus formed other layers are sometimes wound in like manner to obtain greater strength.

The object of this invention is to produce a tube that for given strength shall be both cheaper and lighter than tubes of the kind described. This end is attained by providing one or more of the constituent strips with longitudinal stiffening-ribs, preferably formed by suitably folding the strip either centrally or marginally.

The accompanying drawings illustrate embodiments of my invention.

Figures 1, 2, and 3 show differently-folded strips; Fig. 4, a side view of a portion of a completed tube; Fig. 5, a section on the line 5 5, Fig. 4; and Figs. 6, 7, 8, slightly modified constructions.

To form the tube of Figs. 4 and 5, a plane strip A is wound spirally with its edges abutting, and upon the thin foundation-tube thus formed is wound a second strip B, whose lateral margins have been folded over once, as shown in Fig. 1, the meeting faces of the two strips being cemented together with glue or other agent and the two strips breaking joints. As shown in Fig. 5, the inner strip is pressed outward and cemented to the enveloping strip between the ribs formed by the marginal inwardly-turned portions of the latter, while in Fig. 6 it is shown as not thus pressed outward.

In Fig. 7, which is a section analogous to that shown in Fig. 5, the tube is made up of two strips, both of which have their margins folded inwardly, the two being so wound that all the ribs lie between the bodies of the two strips.

Fig. 8 is a view analogous to that shown in Fig. 4; but here the inner and outer strips are oppositely wound, or the two spirals are right and left hand, respectively. In the strip shown in Fig. 1 the thickness of the strip is simply doubled by folding the edge; but by further folding it may be increased in thickness to any desired extent.

Fig. 2 shows the strip folded to give a triple thickness, and Fig. 3 shows a like thickness obtained by folding the strip centrally instead of marginally. Obviously any of these strips may be used to form the tubes of Figs. 4, 5, 6, 7, 8.

When the strips are not too wide and are provided with thick ribs, the tube forms an excellent shipping-case for bottles or other fragile articles, and where the ribs are less thick the tube, being made large and cut in suitable lengths, is very useful for forming light and strong cartons for various kinds of merchandise.

What I claim is—

1. A tube made up of spirally-wound superposed strips one of which is provided with a longitudinally-extending rib.

2. In a tube of the class described, a strip wound into tubular form and inclosed by a second strip similarly wound with its joints out of registry with those of the first strip, one of said strips being provided with a longitudinal rib.

3. In a tube of the class described, a strip wound into tubular form and enveloped by a second similarly-wound strip having its edges

out of registry with those of the first, one of said strips being folded to form a longitudinal stiffening-rib.

4. In a tube of the class described, a strip wound into tubular form and enveloped by a second similarly-wound strip breaking joints with the first, one of said strips having its lateral margins folded over to form longitudinal ribs.

5. In a tube of the class described, a strip wound spirally into tubular form and closely enveloped by a second strip similarly wound with its edges out of registry with those of the first strip, both of said strips having longitudinal ribs.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM ERASTUS WILLIAMS.

Witnesses:
J. W. WRAITH,
FRED LAW.