

No. 726,894.

PATENTED MAY 5, 1903.

A. W. FERRES.
PAPER MAILING TUBE.
APPLICATION FILED FEB. 4, 1901.

NO MODEL.

2 SHEETS—SHEET 1.

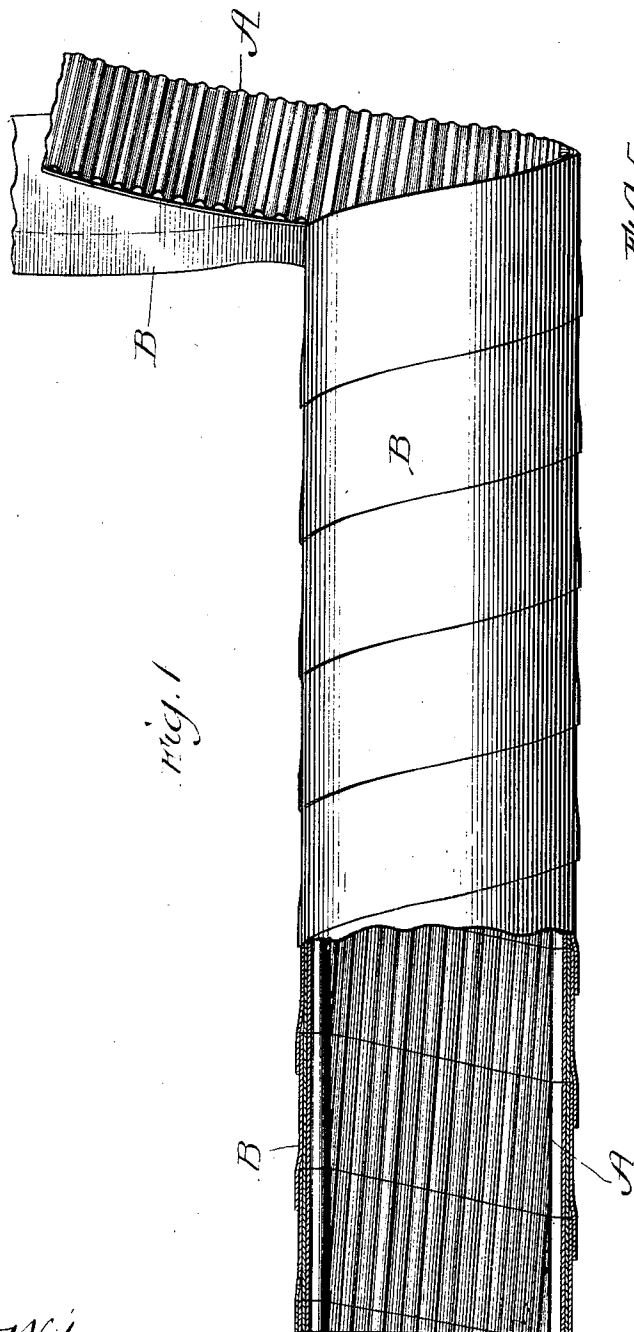


Fig. 1

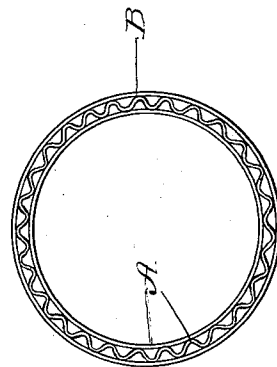


Fig. 5

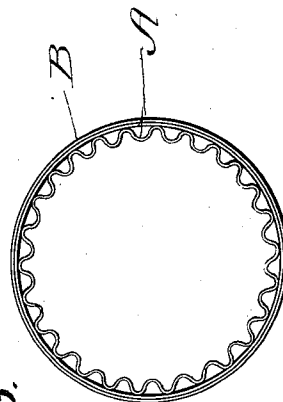


Fig. 3

Witnesses:

Harold G. Bennett
John C. Probstman,

Inventor:

Andie W. Ferres
By Edward Reeta
his Attorney

No. 726,894.

PATENTED MAY 5, 1903.

A. W. FERRES.
PAPER MAILING TUBE.
APPLICATION FILED FEB. 4, 1901.

NO MODEL.

2 SHEETS—SHEET 2.

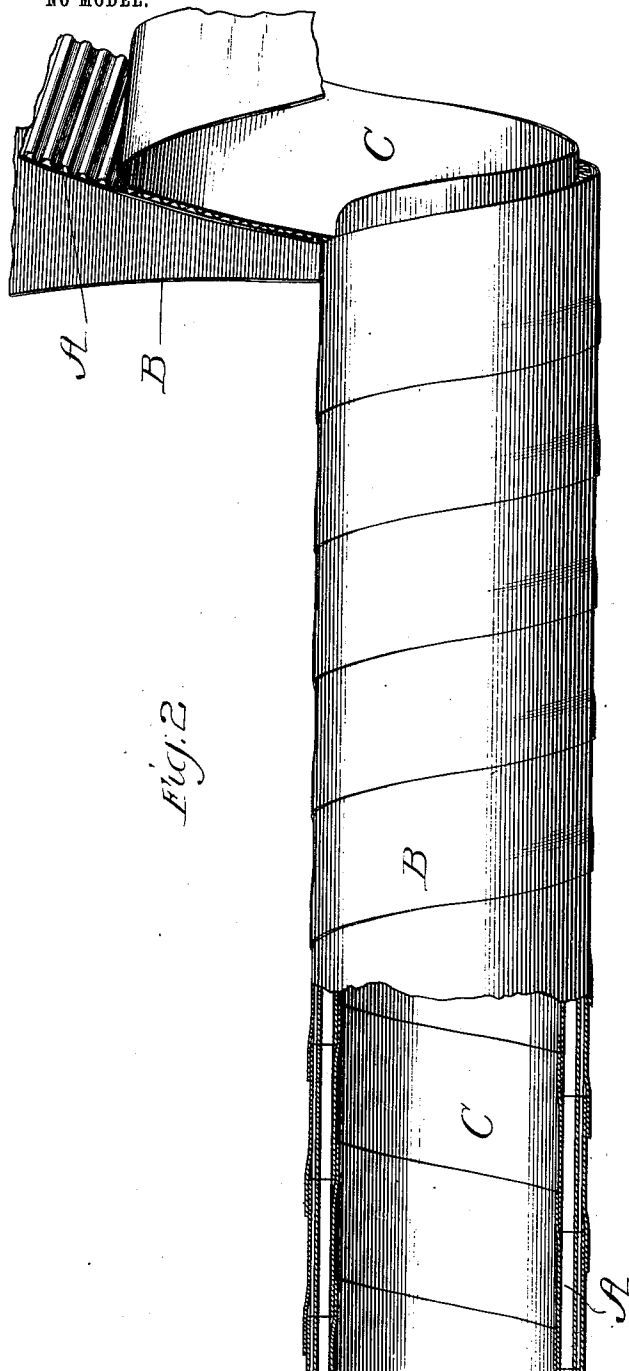


Fig. 2

Fig. 6

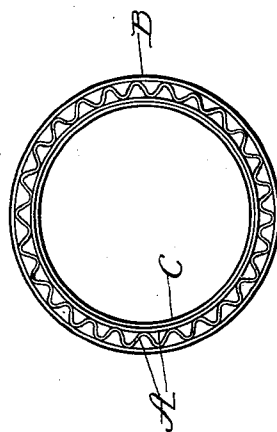
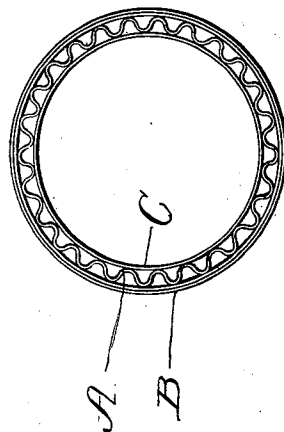


Fig. 4



Witnesses:

W. A. D. Bennett.
John H. Dinkelman.

Inventor:

Alvin W. Ferris
By Edward R. Reta
his Atty.

UNITED STATES PATENT OFFICE.

AINSLIE W. FERRES, OF ANDERSON, INDIANA, ASSIGNOR TO THE J. W. SEFTON MANUFACTURING COMPANY, OF ANDERSON, INDIANA, A CORPORATION OF INDIANA.

PAPER MAILING-TUBE.

SPECIFICATION forming part of Letters Patent No. 726,894, dated May 5, 1903.

Application filed February 4, 1901. Serial No. 45,956. (No model.)

To all whom it may concern:

Be it known that I, AINSLIE W. FERRES, a citizen of the United States, residing at Anderson, in the county of Madison, in the State of Indiana, have invented a certain new and useful Improvement in Paper Mailing-Tubes, of which the following is a description, reference being had to the accompanying drawings, forming a part of this specification.

My invention has for its object the production of a paper mailing-tube which shall be much lighter in proportion to its size and rigidity or strength than those heretofore used and which shall likewise be much cheaper to manufacture. I accomplish this result by forming said tube from a spirally-wound strip of corrugated paper reinforced and strengthened and bound together by a strip of facing-paper spirally wound around and pasted to the outer surface of the spirally-wound corrugated strip, the two spirally-wound strips of paper breaking joints and the edges of the outer strip preferably overlapping each other, so as to bind the corrugated strip together and securely maintain the whole in tubular form. Furthermore, in the completed tube the corrugations run spirally, thereby affording great strength and rigidity.

In the accompanying drawings, Figure 1 shows one of my improved mailing-tubes with its left-hand end in section, its middle portion in elevation, and its right-hand end partially unwound to show the separate strips of paper of which the tube is formed; and Fig. 2, a corresponding view showing a tube having a spiral strip of facing and binding paper applied to both the interior and exterior surfaces of the spiral strip of corrugated paper, thereby forming a tube having a smoother interior and of greater strength and rigidity than the tube shown in Fig. 1. Figs. 3 and 4 are cross-sections of Figs. 1 and 2, respectively, and Figs. 5 and 6 cross-sections of modifications.

In Fig. 1, A represents a spiral strip of corrugated paper which is what is commonly known as "single-faced" corrugated paper—i. e., corrugated paper having a facing-sheet pasted to only one of its sides, leaving its corrugations exposed upon its opposite side.

This strip is preferably about one inch in width—that is, its width is less than the length of the completed tube—the strip being spirally wound around a suitable mandrel, with the longitudinal edges of the strip abuttings snugly against each other, but not overlapping. The outer facing and binding strip of paper B of any suitable character is preferably somewhat wider than the strip of corrugated paper, so that its edges may overlap each other some considerable distance. Paste is applied to its inner surface, and it is spirally wound around the spiral strip of corrugated paper upon the mandrel and firmly pressed or rolled upon the latter strip, so as to securely adhere thereto. Its overlapping edges break joints with the abutting edges of the spiral corrugated strip, so that the facing and binding strip serves to firmly secure the corrugated strip in tubular form.

In the practical manufacture of these tubes in quantities the two strips of paper are fed to and wound upon the mandrel and pasted one upon the other and forced along the mandrel and dried in the operation by suitable machinery, so that a continuous tube is formed upon and delivered from the mandrel and afterward cut into separate tubes of the desired length; but as this machinery constitutes an independent invention it is not necessary to describe it here.

In the tube of Figs. 1 and 3 the corrugations of the inner strip of paper are exposed upon the interior of the completed tube, thereby presenting a rough surface, with occasional slight projections and obstructions at the abutting edges of the strip. A tube having a smoother and more finished interior may be formed by winding the strip of corrugated paper A upon the mandrel with its corrugations facing outward and applying the facing and binding strip B directly to the corrugated surface of the strip A, as indicated in Fig. 5. Even this, however, would leave the spiral joint between the abutting edges of the strip A exposed upon the inner surface of the tube, and to form a still more finished and perfect tube and also to give greater strength and rigidity to it I provide the tube of Fig. 2 with an inner facing and binding strip C, as well

as the outer facing and binding strip B of Fig. 1. In Fig. 2 the inner strip C is spirally wound upon the mandrel, with paste applied to its outer surface and with its edges overlapping each other, so as to be securely pasted together. The strip of single-faced corrugated paper A is wound upon this inner facing and binding strip C, with its corrugations facing either inward, as indicated in Fig. 4, or outward, as indicated in Fig. 6, and pressed against the outer pasted surface of said inner strip, and the outer facing and binding strip B, with paste applied to its inner surface, is wound around the corrugated strip, as in Fig. 1.

In the practical manufacture of the tubes of Figs. 2, 4, and 6 in quantities the three strips of paper will be delivered to and wound around the mandrel and pasted together and forced along the same and dried by suitable machinery, as in the case of the tube of Figs. 1, 3, and 5.

As indicated in the drawings, the corrugations run straight across or at right angles to the longitudinal edges of the strip, which is comparatively narrow and made of considerable length—two hundred and fifty feet, more or less, in actual practice. When such strip is then wound spirally on the mandrel in the manner hereinbefore explained, the corrugations will extend spirally from end to end of the completed tube and at an angle to the axis or length of the tube, with the result that increased strength and rigidity will be obtained.

Each tube, as will be understood, is composed of a single thickness of single-faced corrugated paper, together with a single strip of facing and binding paper in Figs. 1, 3, and 5 and two strips of such paper in Figs. 2, 4, and 6. The tubes are therefore very much lighter than corresponding tubes of similar thickness formed of solid strips or sheets of paper wound about a mandrel and pasted together and are likewise very much cheaper to manufacture. My novel tubes of given size and strength may therefore not only be produced more cheaply, but may be sent

through the mails with less postage than the solid tubes now in general use.

Having thus fully described my invention, I claim—

1. The herein-described tube composed of a spirally-wound strip of corrugated paper whose corrugations are formed at right angles to the longitudinal edges of the strip and, in the completed tube, extend spirally thereof from end to end and at an angle to the axis or length of the tube; substantially as described.

2. The herein-described tube composed of a strip of corrugated paper whose corrugations are formed at right angles to the longitudinal edges of the strip, which strip is spirally wound with its corrugations extending at an angle to the axis or length of the completed tube, and a facing and binding strip of paper wound exteriorly of the corrugated paper and pasted thereto; substantially as described.

3. The herein-described mailing-tube, composed of a spirally-wound strip of facing and binding paper, a strip of corrugated paper spirally wound upon said facing and binding paper and pasted thereto, the edges of said strips of corrugated paper abutting, and a second strip of facing and binding paper spirally wound upon the exterior of the corrugated paper and pasted thereto, the edges of such facing-strip overlapping, the corrugations of the completed tube extending spirally thereof from end to end, substantially as described.

4. The herein-described mailing-tube composed of a spirally-wound strip whose width is less than the length of the completed tube and whose corrugations extend spirally of the tube from end to end and at an angle to the longitudinal axis thereof, the longitudinal edges of the strip abutting each other in the completed tube; substantially as described.

AINSLIE W. FERRES.

Witnesses:

CRESSA C. MAHAN,
W. H. FAIRCHILD.