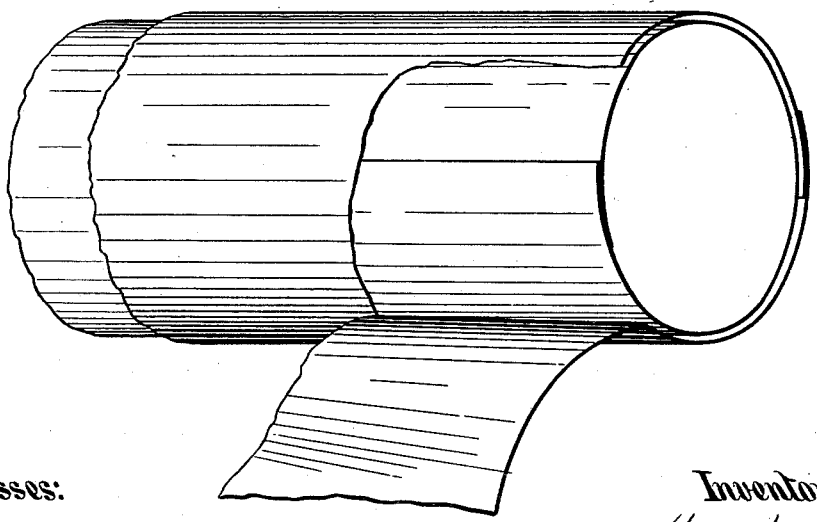
H. M. BOIES.

Compound Flexible Paper-Tubing.

No. 168,367. Patented Oct. 5, 1875.

Fig. 1.

Fig. 2.



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HENRY M. BOIES, OF SCRANTON, PENNSYLVANIA.

IMPROVEMENT IN COMPOUND FLEXIBLE PAPER TUBINGS.

Specification forming part of Letters Patent No. **168,367**, dated October 5, 1875; application filed July 10, 1875.

To all whom it may concern:

Be it known that I, H. M. BOIES, of Scranton, Pennsylvania, have invented a certain Improvement in Compound Flexible Paper Tubing, of which the following is a specification:

My improvement relates to flexible tubing formed from strips of paper or other flexible material; and it consists in forming such tubing of two or more thicknesses, either of two or more webs of paper, or of cloth, or of both paper and cloth.

In tubing constructed of a single thickness of material, and especially in tubing constructed of paper, it sometimes happens that there are defects or fine holes in the web, which admit moisture to the material contained within the tube. By using two or more thicknesses of material, the article contained in the tubing is protected against the admission of moisture in this way, excepting in the extremely improbable case that two defects in the two thicknesses of material coincide in location.

It will be seen that my compound tubing is composed of a nest of flexible tubes, and that the diameter of each outer tube exceeds the diameter of the next inner tube by the thickness of the web of which it is composed only.

By my mode of construction, flexibility and strength are both secured in the highest degree. Incidental advantages arising from this mode of construction are, that all of the tubes composing the nest of tubing may be coated with water-proof material, if it be desired, or a coating of water-proofing may be applied to either one of the tubes. An additional advantage is, that the lap-joints, which extend longitudinally, and add materially to the strength of the tubing, may be arranged upon alternate sides of the flattened tubes, if desired. Thus, a structure composed of two tubes may have two longitudinal lap-joints—the one on one side of the inner flattened tube, and the other on the other side of the outer flattened tube. If three or more tubes are used to compose the nest of tubes, the positions of the lap-joints may be still further varied, so as to make the laps constitute a series of longitudinal ribs evenly distributed in the perimeter of the compound tube.

The accompanying drawings are as follows: Figure 1 is a cross-section of my flattened tubing, composed of two thicknesses of material, and showing the lap-edges upon opposite sides. Fig. 2 is a perspective view of the tubing as it appears when distended for the purpose of being filled, but having a portion of the outer thickness of material turned off at one end, in order to exhibit the two thicknesses of material.

In constructing my compound tubing, the inner tube is first formed from a strip of paper by folding the edges and pasting and lapping them longitudinally. A second tube is then formed in the same way over the first one, and a third tube over the second, and so on, according to the number of tubes which it is desired shall compose the nest of tubes.

I claim as my invention—

As a new article of manufacture, continuous flexible tubing composed of two or more single tubes of variable diameter, arranged loosely one within the other, each tube being made from a strip of flexible material, substantially as described.

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