(No Model.)

E. LEVAVASSEUR.

METAL TUBE.

No. 330,910. Patented Nov. 24, 1885.

Fig. 1

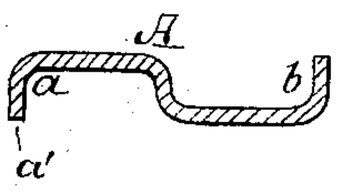


Fig. 2

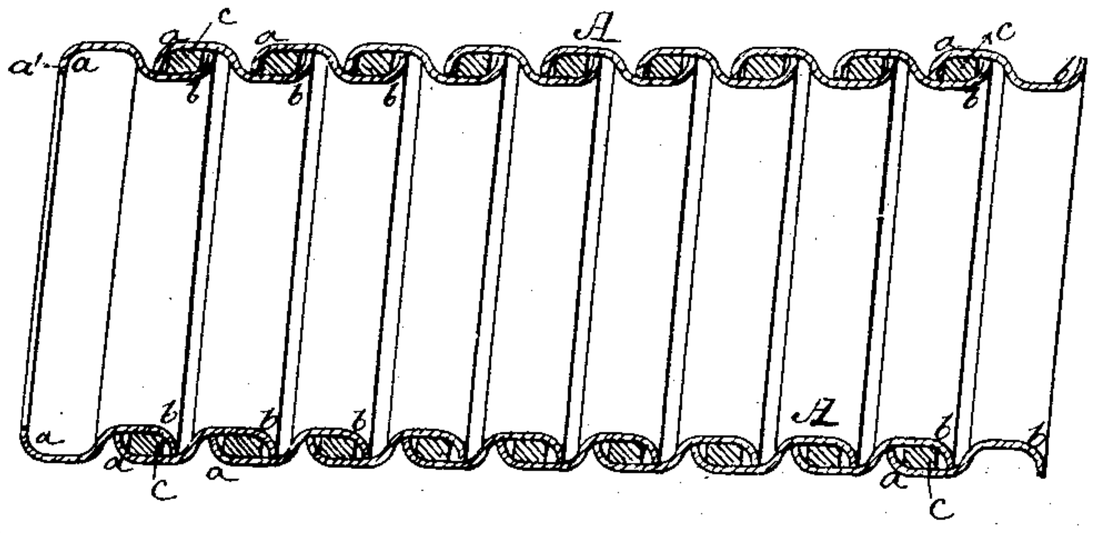


Fig. 3

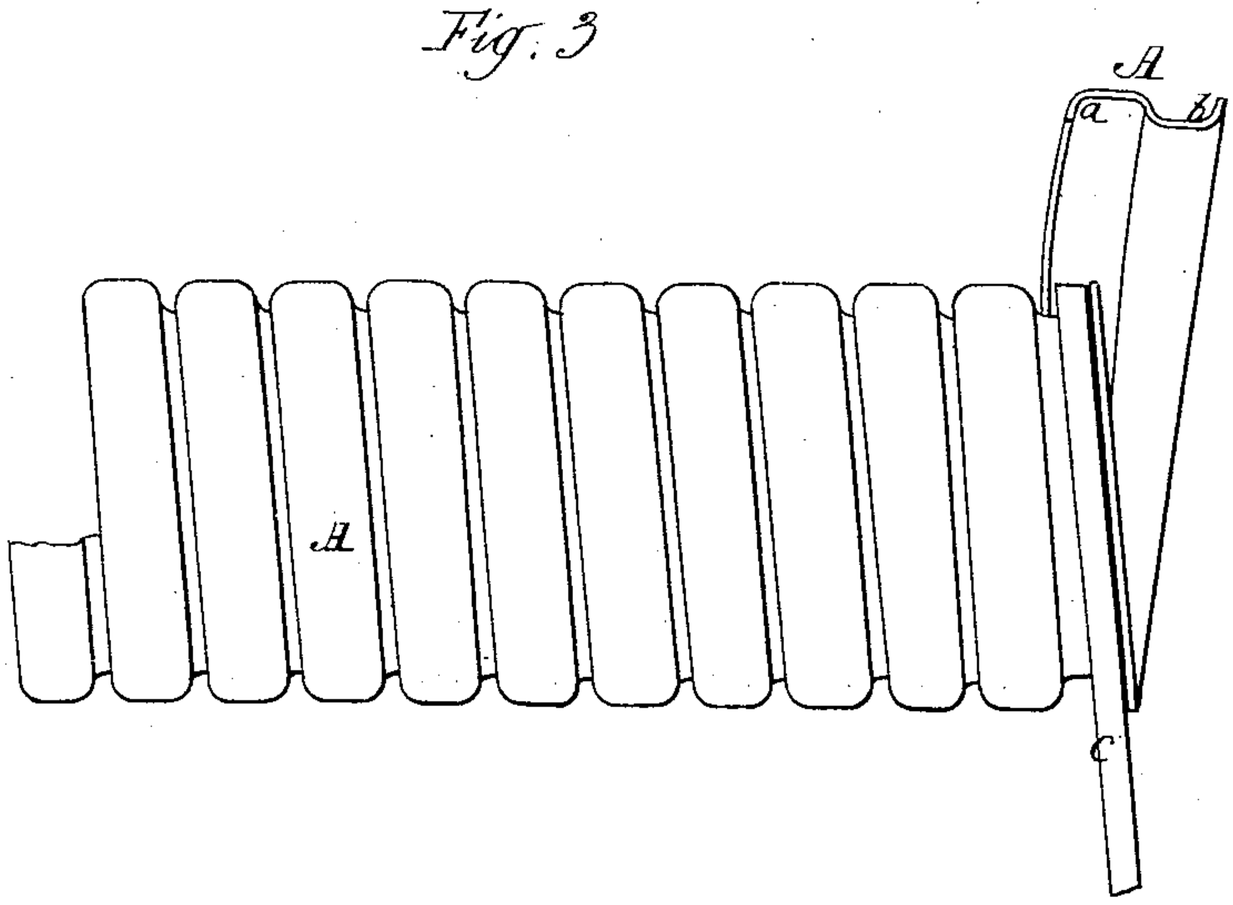
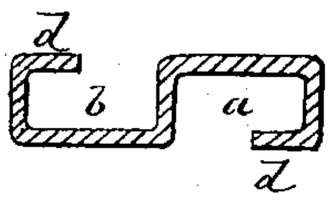


Fig. 4



INVENTOR:

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UNITED STATES PATENT OFFICE.

EUGÈNE LEVAVASSEUR, OF PARIS, FRANCE, ASSIGNOR OF ONE-HALF TO HENRI WITZENMANN, OF SAME PLACE.

METAL TUBE.

SPECIFICATION forming part of Letters Patent No. 330,910, dated November 24, 1885.

Application filed September 10, 1885. Serial No. 176,689. (No model.)

To all whom it may concern:

Be it known that I, EUGÈNE LEVAVASSEUR, a citizen of the French Republic, residing in Paris, France, have invented a certain new and useful Improvement in Metal Tubes, of which the following is a specification.

The object of my invention is the production of tubes or pipes of sheet metal, which shall have a certain amount of flexibility, whereby they are adapted to take the place of rubber tubes for certain uses, such as hose for sprinkling, as pump-tubes, &c.

My improved tube has greater strength than corresponding tubes of rubber.

My invention consists of a tube made by winding spirally a strip of metal, the convolutions of which are suitably connected together, and the spiral joint of which is rendered tight by the interposition of any suitable packing which will allow for a slight movement of the convolutions at their joints, in order to impart to the tube the desired degree of flexibility.

I make the metal strip in the form of a double gutter, the two gutters or channels being relatively reversed, so that the edge or flange of one gutter fits into the other gutter as the strip is wound, a packing-strip being wound simultaneously and confined between the two interlocking gutters.

The accompanying drawings represent my improved tube in its preferred construction.

Figure 1 is an enlarged cross-section of the metal strip. Fig. 2 is a longitudinal mid-section of the tube. Fig. 3 is an elevation of the tube, showing the winding of the strip and packing; and Fig. 4 is a cross-section of a modified form of metal strip.

The metal strip A (shown in Fig. 1) is rolled from metal sheet or plate to the cross-section shown, forming two gutters or channels, *a b*, directed to opposite sides, the channel *a* having its concavity turned toward the interior, and the channel *b* having its concavity turned toward the exterior, of the destined tube. This strip is wound in a helix, the flange or edge *a'* of the channel *a* entering the channel *b*, as shown in Fig. 2, whereby each two adjoining convolutions of the helices are confined together.

As the channel *b* is much wider than the thickness of the edge *a'*, the latter may move along in the channel from the side thereof at the center of the strip toward the outer edge thereof, thus rendering the tube made by the helical strip somewhat flexible. At the same time that the strip A is wound a packing-strip, *c*, of any soft material, preferably india-rubber, is also wound, as shown in Fig. 3, being directed into the channel *b* and confined therein by the channel *a*. This strip, being thus imprisoned between the two channels and their flanges, forms a tight joint, while it is sufficiently yielding to permit the slight flexure of the tube, as already described.

The metal strip may be formed with turned-in or re-entering flanges *d d*, as shown in Fig. 4, in such manner that the rubber packing is confined, as in a chamber, by the interlocking of these flanges.

The strip A may be of any suitable metal—such as steel or brass—or of any other practicable material. Its construction may be varied or modified in many ways without departing from the spirit of my invention.

The packing-strip *c* may be made of twine, gum, or any suitable yielding substance, if only it be sufficiently durable and capable of resisting the action of the liquids to be passed through the tube.

I claim as my invention—

1. A tube consisting of a strip of metal wound helically, with its convolutions connected flexibly together and packed at the joint with a yielding packing, substantially as set forth.

2. A tube consisting of a strip of metal formed with two channels relatively reversed and wound helically, thereby interlocking the two channels, in combination with a flexible packing-strip confined in the space between said interlocking channels and making tight the joint between the adjoining convolutions of the metal strip, while permitting sufficient play to render the tube flexible, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EUGÈNE LEVAVASSEUR.

Witnesses:

HEINRICH WITZENMANN,

AMAND RITTER.