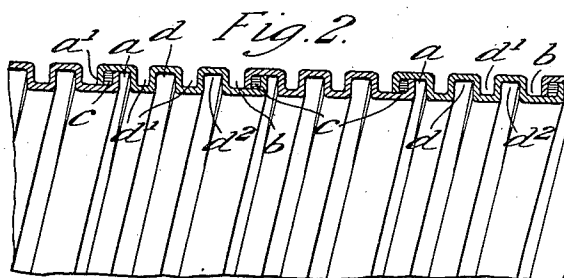
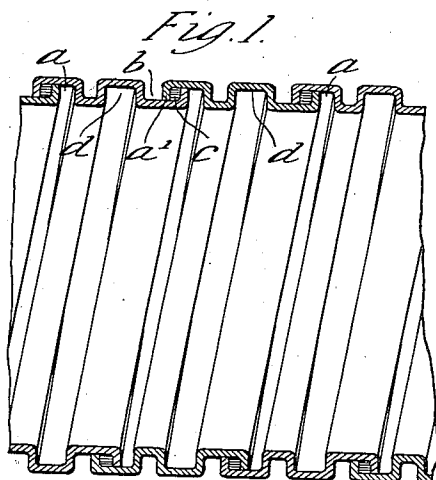


W. BERRYMAN & A. REDGRAVE.
 FLEXIBLE METALLIC TUBING.
 APPLICATION FILED DEC. 24, 1910.

1,064,432.

Patented June 10, 1913



WITNESSES

Jesse B. Heller
 Wm Conway

INVENTORS

Wm Berryman
 Arthur Redgrave
 by Baker, Payson & Carnochan,
 their Attys

UNITED STATES PATENT OFFICE.

WILLIAM BERRYMAN AND ARTHUR REDGRAVE, OF PENDERS END, ENGLAND, AS-
SIGNORS TO THE UNITED FLEXIBLE METALLIC TUBING COMPANY LIMITED, OF
PENDERS END, ENGLAND.

FLEXIBLE METALLIC TUBING.

1,064,432.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed December 24, 1910. Serial No. 599,211.

To all whom it may concern:

Be it known that we, WILLIAM BERRYMAN, engineer, and ARTHUR REDGRAVE, engineer, both subjects of the King of Great Britain, both residing at The United Flexible Metallic Tubing Company Limited, Penders End, in the county of Middlesex, England, have jointly invented certain new and useful Improvements in Flexible Metallic Tubing, of which the following is a specification.

Flexible metallic tubing is manufactured by helically coiling a strip of metal corrugated in various forms but in such a manner that the successive convolutions, when coiled, interlock with each other forming a continuous tube. To render such tubing proof against leakage it is usual to insert packing at that part of the strip of metal where the joining edges of the strip overlap.

The present invention relates to improvements in flexible metallic tubing of the above interlocked character, whereby the manufacture is rendered more expeditious and the cost is considerably lessened while at the same time the tube is as strong as tube made in the ordinary way.

It consists in corrugating the strip prior to or in the course of the coiling of the tube in such a manner that when coiled there are one or more additional channeled convolutions provided between the actual convolutions the edges of which serve to interlock the coiled strip, in forming the additional convolutions of a shape similar to that of the interlocking convolutions, and in parallelism therewith.

In the accompanying drawings Figure 1 is a sectional view of the spirally wound tube showing one such additional convolution and Fig. 2 a similar view showing a plurality of such additional convolutions.

Hitherto such tubing has been manufactured from a strip of metal corrugated so that it consists of two channels *a* and *b* turned in opposite directions, the one channel *a* having its convex side toward the exterior of the tube and the other channel *b* having its concave side toward the exterior. This strip being spirally wound, the outer edge *a'* of the next convolution is laid in the channel *b*. A strip or band *c* of packing material such as india rubber is also wound at the same time with the strip, the said packing being inclosed between the two ad-

jacent overlapping edges of the metal strip, thus forming a tight joint, while at the same time giving a certain flexibility to the tube.

The present invention consists in so corrugating the strip, that in addition to the interlocking convolutions there are one or more additional channeled convolutions such as one *d* (Fig. 1) or two outer convolutions *d*, *d*² and two inner convolutions *d'* (Fig. 2) or there may be more. It will be seen that the greater width of strip employed causes a greater length of tube to be formed with each coiling, thus expediting the manufacture while the intermediate corrugations preserve the strength. In addition to this, packing is necessary only at greater distances apart, thus lessening the quantity required, so that the cost of manufacture is considerably reduced.

Although the invention is shown as applied to one particular formation of strip for coiling a tube, it is equally applicable to many other formations of strips used for manufacturing flexible metallic tubing in which the coils are interlocked.

Having thus described the nature of the said invention and the best means we know of carrying the same into practical effect, we claim:—

1. A flexible metal tubing consisting of a metal strip helically coiled to form a series of convolutions, said strip having an inwardly directed channel formed on one edge, and an outwardly directed and similarly shaped channel on the other edge parallel with the first channel, so that the channeled edges of two adjoining convolutions of the strip interlock, each convolution also having an inwardly directed channel and an outwardly directed channel between the interlocking channels and parallel therewith, and a packing strip seated in the interlocking channels; substantially as described.

2. A flexible metallic tubing, consisting of a metal strip helically coiled to form a series of convolutions, said strip having an inwardly directed channel formed on one edge, and an outwardly directed and similarly shaped channel on the other edge parallel with the first channel, so that the channeled edges of two adjoining convolutions of the strip interlock, each convolution also having a plurality of inwardly directed

channels and a plurality of outwardly directed channels of similar shape to the interlocking channels and parallel therewith, the last mentioned channels being located
5 between the interlocking channels, and a packing strip seated in the interlocking channels; substantially as described.

In testimony whereof we have signed our

names to this specification in the presence of two subscribing witnesses.

WILLIAM BERRYMAN.
ARTHUR REDGRAVE.

Witnesses:

JOSEPH MILLARD,
WALTER J. SKERTEN.