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1,852,921

MANUFACTURE OF FLEXIBLE METALLIC TUBES AND THE LIKE

Filed March 19, 1931

Fig. 1.

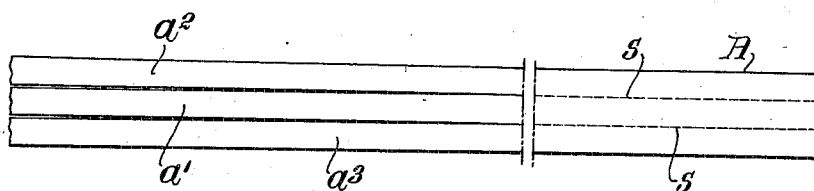


Fig. 2.

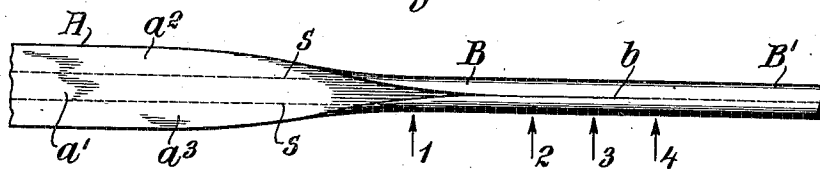


Fig. 3.

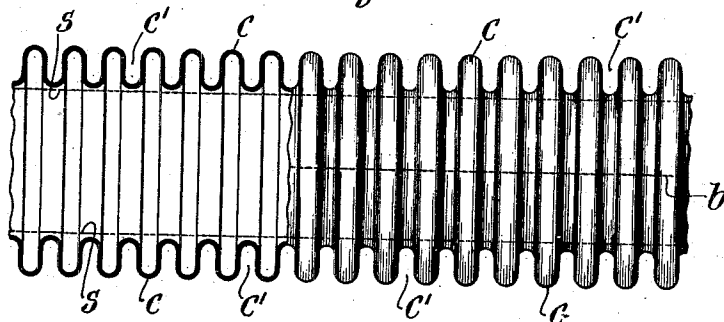
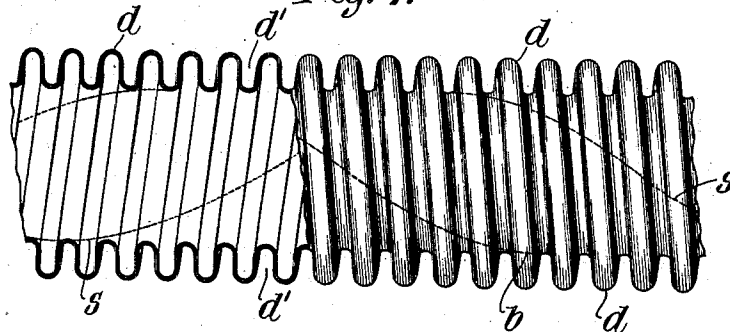


Fig. 4.



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UNITED STATES PATENT OFFICE

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MANUFACTURE OF FLEXIBLE METALLIC TUBES AND THE LIKE

Application filed March 19, 1931, Serial No. 523,870, and in Germany November 16, 1929.

The manufacture of flexible metallic tubes or corrugated tubes by rounding an iron band, welding the longitudinal seam of the tube and shaping the tube wall so as to form
 5 ridges or grooves extending parallel to one another or along a helical line could hitherto be carried out to a width of at the most 75 mm., as band iron of more than about 340 mm. width could not be obtained commercially.
 10 Thus, for instance, for producing a corrugated tube of 75 mm. internal diameter as the blank, tubes of about 100 mm. internal diameter are required. In order to be able to produce such a tube a band having a width
 15 of about 315 mm. is already required. Considerably greater internal diameters can therefore no longer be made even if certain foreign rolling mills should eventually be able to produce bands of up to about 450 mm.
 20 width, which would certainly represent the maximum width capable of being produced. Even then in the most favourable case it would be possible to produce a tube diameter of about 150 mm. or a tube having an internal
 25 diameter of about 115–120 mm., which would not represent any considerable improvement over what has been manufactured hitherto. It is, however, desirable to produce flexible tubes up to at least 300 mm. internal
 30 diameter and even if possible larger tubes, as, more particularly for crude oil, petrol and the like, flexible tubes up to 250 mm. internal diameter are required.

The method of producing flexible metallic
 35 tubes or corrugated tubes forming the subject matter of the present invention again makes use of band iron, in which the band iron is in the first place mounted in a known
 40 manner transversely to its longitudinal direction to form a tube, whereupon the longitudinal seam is closed by butt-welding, the tube being then calibrated and finally the wall of the tube shaped into grooves lying parallel
 45 next to one another or extending helically.

The essential feature of the invention is that, for forming the tube, a band is used which consists of separate bands united along their longitudinal edges by butt-welding so
 50 that bands of any desired width are obtained

as the initial material, and consequently flexible pipes of any desired diameter.

In the accompanying drawings wherein an approved embodiment of the invention is illustrated:

Figs. 1 and 2 are diagrammatic plan views of the first two steps in the manufacture of tubes in accordance with the invention showing the different stages of treatment of the two blanks.

Figs. 3 and 4 are side views partly in section of two forms of finished flexible tubes.

According to Fig. 1 of the accompanying drawings, which represents a constructional example diagrammatically, three separate
 65 iron bands a^1 , a^2 , a^3 of ordinary commercial width are in the first place converted by uniting their longitudinal edges s by autogenous or electric butt-welding into a band A of suitable width. This band A is then converted in accordance with Fig. 2, by means
 70 of a suitable rounding device (rounding channel, profiled rolls) which becomes operative at 1, into the form of a tube B with the seam b , after which it is preliminarily calibrated or sized at 2 (for instance by means
 75 of a draw-plate), the seam is welded at 3 (for instance by means of a welding burner) and finally calibrated or shaped to its finished size at 4 (for instance by means of three pairs
 80 of rolls, disposed one behind the other), thus providing the finished tube B¹, ready for being further dealt with, as already more particularly described in British Patent 294,598
 85 (or my American Patent application, Serial No. 217,985 of February 29, 1928). The tube can then be made flexible by shaping the tube walls into ridges c or grooves c' , lying parallel to one another as shown in Fig. 3, or by
 90 shaping the walls into helically extending ridges d or grooves d' , as shown in Fig. 4, which may be done by any of the known processes.

What I claim is:

1. A method of producing metallic flexible
 95 tubes and corrugated tubes of band iron, consisting in butt-welding a plurality of separate bands together along their longitudinal edges to form a single band, rounding the
 100 band thus obtained transversely to its longi-

tudinal direction to form a tube, closing the seam of the tube by butt-welding, calibrating the tube to its final dimension and shaping the tube walls into grooves lying parallel
5 next to one another around the tube, as and for the purpose set forth.

2. A method of producing metallic flexible tubes and corrugated tubes of band iron, consisting in butt-welding a plurality of separate bands together along their longitudinal
10 edges to form a single band, rounding the band thus obtained transversely to its longitudinal direction to form a tube, closing the seam of the tube by butt-welding, calibrating the tube to its final dimension and shaping
15 the tube walls into grooves extending helically around the tube, as and for the purpose set forth.

20 In testimony whereof I affix my signature.
ALBERT DREYER.

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