

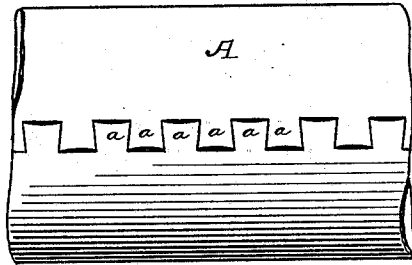
(No Model.)

F. A. WILMOT.  
SHEET METAL TUBE.

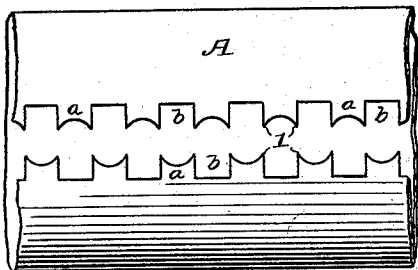
No. 578,800.

Patented Mar. 16, 1897.

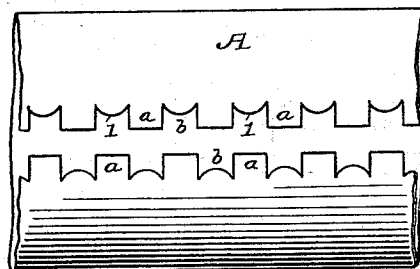
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES

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# UNITED STATES PATENT OFFICE.

FRANK A. WILMOT, OF BRIDGEPORT, CONNECTICUT.

## SHEET-METAL TUBE.

SPECIFICATION forming part of Letters Patent No. 578,800, dated March 16, 1897.

Application filed June 8, 1896. Serial No. 594,647. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK A. WILMOT, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Sheet-Metal Tubes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the class of metal tubes which are formed by curving a blank of sheet metal the meeting edges of which are provided with interlocking projections and recesses; and the object of my invention is to produce a tube of this class which may be made of clock-spring metal, shall be so constructed that the cost of production is reduced to the minimum, and in which the projections and recesses will interlock readily, and when once interlocked and the final circumferential compression has been given to the blank will not unlock, the tube being left smooth both inside and out.

With these ends in view I have devised the novel tube, of which the following description, in connection with the accompanying drawings, is a specification, letters and numbers being used to designate the several parts.

Figure 1 is a view illustrating the completed tube, the projections and recesses having been interlocked and clenched. Fig. 2 is a view showing the edges of the blank curved toward each other and in position to be interlocked; and Fig. 3 is a view corresponding with Fig. 2, except as hereinafter described.

In manufacturing my novel tubes I make the blanks of slightly-greater width than is necessary and make the projections small enough relatively to the recesses so that they will pass directly into the recesses without the necessity of placing the projections over the recesses and then forcing them down into the recesses. The objection to tubes of this class as heretofore made has been that the resiliency of the metal frequently causes the edges of the blank to separate more or less, so as to open the seam. This was especially true when metal known as "clock-spring" metal was used.

In my novel tubes I wholly overcome the

objection of separation at the seam by so shaping the ends of the projections and recesses that when the final circumferential compression is given to the blank and the projections are driven endwise into the recesses metal of the projections will be displaced laterally and caused to clench in the recesses in such a manner as to effectually prevent the edges from separating.

My novel tubing is especially valuable in the manufacture of bicycle-frames, as I am enabled to use thin spring metal and produce light stiff tubing which will not separate at the seam either before or after brazing. This is an important feature, as the solder at the seam frequently becomes softened in brazing the tubes to the connections in the manufacture of bicycle-frames, and in tubing of this class as ordinarily made will cause separation of the edges of the seam.

Another important feature of my novel tubing is that it is smooth both inside and outside, so that in brazing tubes to the connections the connections may be either brazed to the inside or the outside of the tubes.

A denotes a blank the edges of which are provided with alternate projections *a* and recesses *b*. The novel feature of my invention is that I provide either at the bases of a portion or all of the recesses, or at the ends of a portion or all of the projections, or both at the bases of the recesses and at the ends of the projections lugs 1, the action of which when the projections have been forced into the recesses and the final circumferential compression is given to the blank is to press the metal out sidewise and cause a portion or all of the side walls of the projections and recesses to engage firmly through lateral displacement of the metal of the lugs or the projections or both.

In Figs. 1 and 2 I have illustrated a form in which the ends of the projections *a* are concaved and form pointed lugs 1, while the bases of the recesses are straight. In Fig. 3 I have illustrated a form in which the bases of the recesses are curved to form rounded lugs 1, and in this form the ends of the projections *a* are straight.

Having thus described my invention, I claim—

1. A tube formed from a blank of sheet

metal having upon its edges interlocking projections and recesses, the meeting edges of said projections and recesses differing from each other in outline so that when the blank  
5 is compressed circumferentially metal is displaced sidewise to clench the edges firmly together, the said differences in the outline of the edges comprising curved and substantially straight edges.

10 2. A tube formed from a blank of sheet metal having upon its edges interlocking projections and recesses having substantially

straight sides, the ends of the projections being concaved and the bottoms of the recesses being substantially straight, so that when the  
15 blank is compressed circumferentially metal is displaced sidewise to clench the edges firmly together.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK A. WILMOT.

Witnesses:

A. M. WOOSTER,  
S. V. RICHARDSON.