

(No Model.)

N. W. HARTMAN.
SHEET METAL TUBE.

No. 556,819.

Patented Mar. 24, 1896.

FIG. 1.

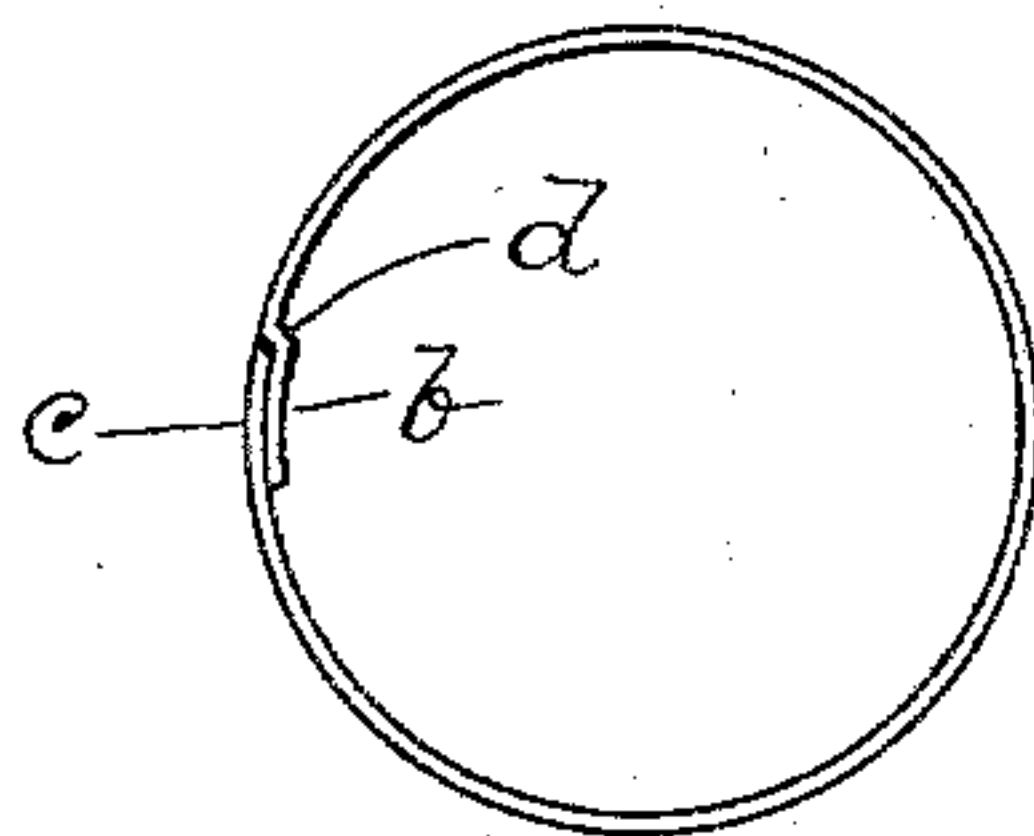


FIG. 2.

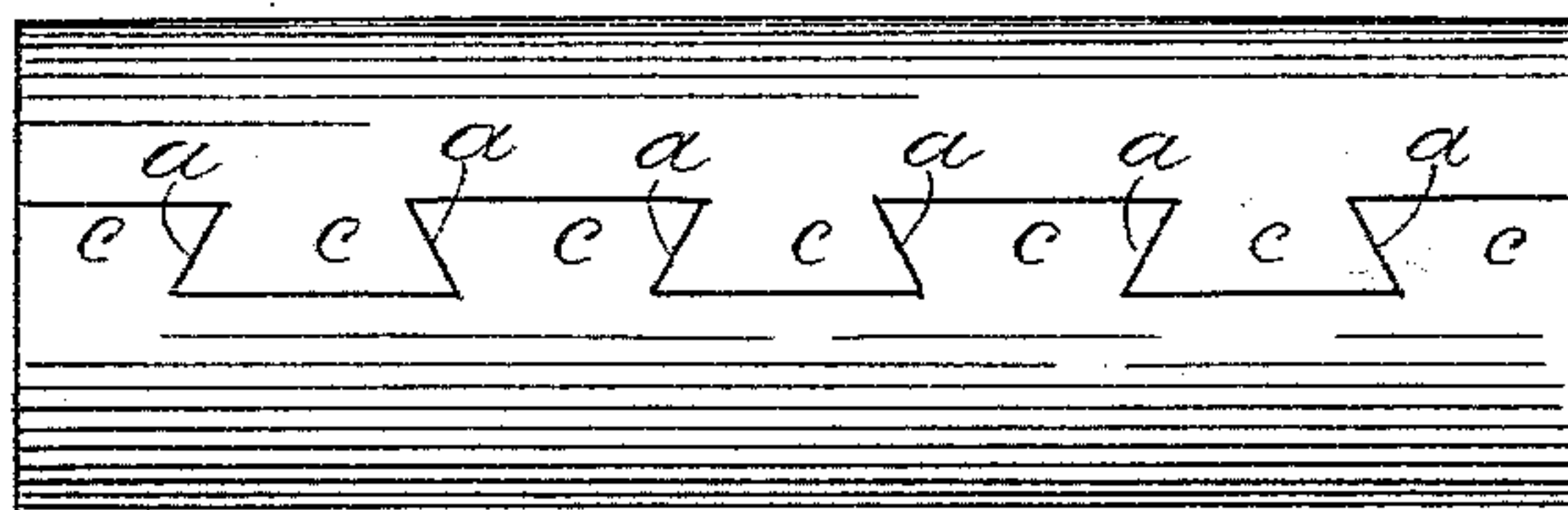
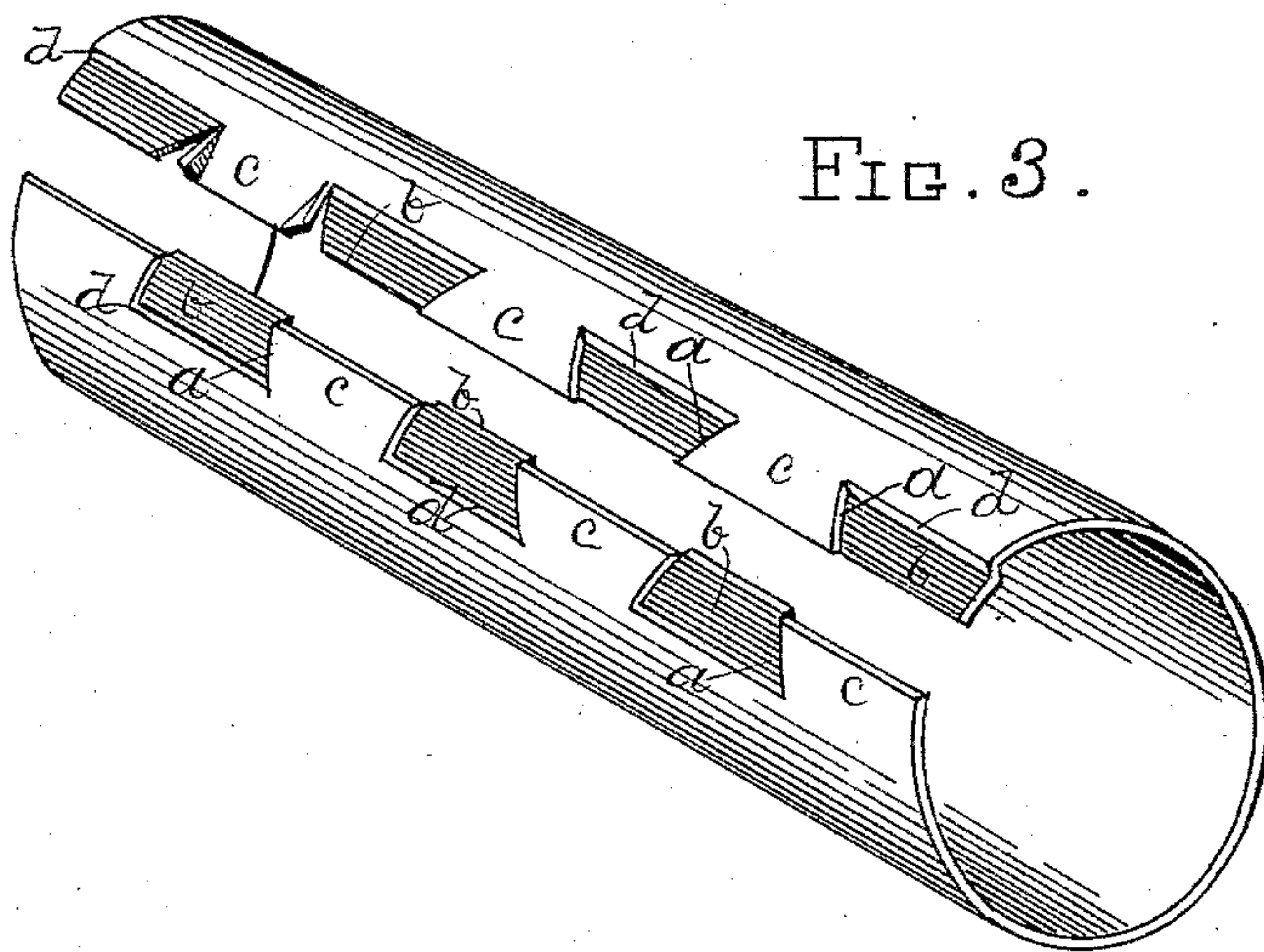


FIG. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

NOBLE W. HARTMAN, OF TOLEDO, OHIO.

SHEET-METAL TUBE.

SPECIFICATION forming part of Letters Patent No. 556,819, dated March 24, 1896.

Application filed August 31, 1895. Serial No. 561,086. (No model.)

To all whom it may concern:

Be it known that I, NOBLE W. HARTMAN, a citizen of the United States, residing at Toledo, Lucas county, Ohio, have invented certain new and useful Improvements in Sheet-Metal Tubes, of which the following is a specification.

My invention relates to and its object is to provide a sheet-metal tube in which the seam or joint shall be exceedingly strong and which shall not break the evenness and smoothness of the exterior curved surface. I attain this object by means of the construction hereinafter described and shown and illustrated in the accompanying drawings, made part hereof, in which—

Figure 1 is an end view of my tube; Fig. 2, a side elevation of the same, showing the exterior of my joint or seam; and Fig. 3, a perspective view of my tube in process of construction.

My tubes, which may be best described by detailing the method of constructing them, are formed of strips or ribbons of sheet metal of the length of the tube to be formed, in width the circumference of the tube plus the depth of one of the flaps hereinafter referred to, and of any desired thickness.

A series of short equidistant cuts *a* is made in each edge of the strip of metal from the margin inwardly, the cuts being alternately inclined at opposite angles to the margin, thus forming upon each margin of the blank a series of flaps which flare alternately inwardly, as at *b*, and outwardly, as at *c*, and which only requires the removal of the inwardly-flaring flaps to present the appearance of ordinary dovetail mortises and tenons. The inwardly-flaring flaps *b* are formed exactly opposite the flaps *c* on the opposite margin of the blank, and these flaps *b* are now depressed or countersunk toward the side of the blank which is to form the interior of the tube the depth of the thickness of the blank. A shoulder, as at *d*, is by this operation formed to extend between the inner angles of the flaps *b*. The two edges of the strip or blank are now brought together so that they overlap each other, thus bringing the blank into tubular form. Each flap *c* on both margins of the blank should now fall into, ex-

actly coincide with, and fit the recess formed for it by countersinking the opposing flap, *b*, as above described.

In bringing the two sets of flaps *b* and *c* into proper relation with each other it will be found convenient to turn outwardly the corners of the flaps *c*, as shown in one of the flaps of Fig. 3, so that the long side of these flaps may be slipped edgewise into the short side of the recess formed by countersinking the flaps *b*. This being done, the upturned corners of the flaps *c* are smoothed down. The adjacent edges and sides of the interlocking and overlapping flaps are now brazed or otherwise suitably secured together. It will be found, however, that after the flaps *b* and *c* have been placed in proper relation to each other the tube is very strong without brazing or other treatment, since the flaring sides of flap *c*, fitting the receding sides of the countersunk recess *b*, prevent separation in the direction of the circumference of the tube, while the alternate overlapping and underlapping of the dovetail flaps prevent radial displacement. This manner of assembling the two sets of flaps, it will be seen, brings all of the flaps *c* into the same curved plane with the body of the tube, while the flaps *b* occupy a curved plane just inside the tube, thus forming integrally with the tube a row of dovetail joints superimposed upon a smooth row of flaps *b*, which is found to serve well as a foundation in brazing or soldering my seam or joint.

I have for convenience described the making of my tube as a series of operations; but it will be understood that in practice by the use of suitable dies, presses and other machinery the cutting, bending and interlocking of parts are practically but a single operation.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A strip or ribbon of sheet metal having its two edges brought together, and overlapped to form a tube, a series of coincident dovetail flaps on each of said two overlapping edges, and an inwardly-projecting shoulder on one of each pair of said opposing flaps whereby such flap is depressed or countersunk, to form a recess for the reception of the

other of said flaps, substantially as and for the purpose specified.

2. As an article of manufacture, a sheet-metal tube having its seam or joint formed
5 of two rows of interlocking, dovetail flaps, one of said rows being disposed in the curved plane of said tube, the other row being dis-

posed within said tube, substantially as and for the purpose specified.

NOBLE W. HARTMAN.

In presence of—

WM. A. MILLS,
A. HALL.