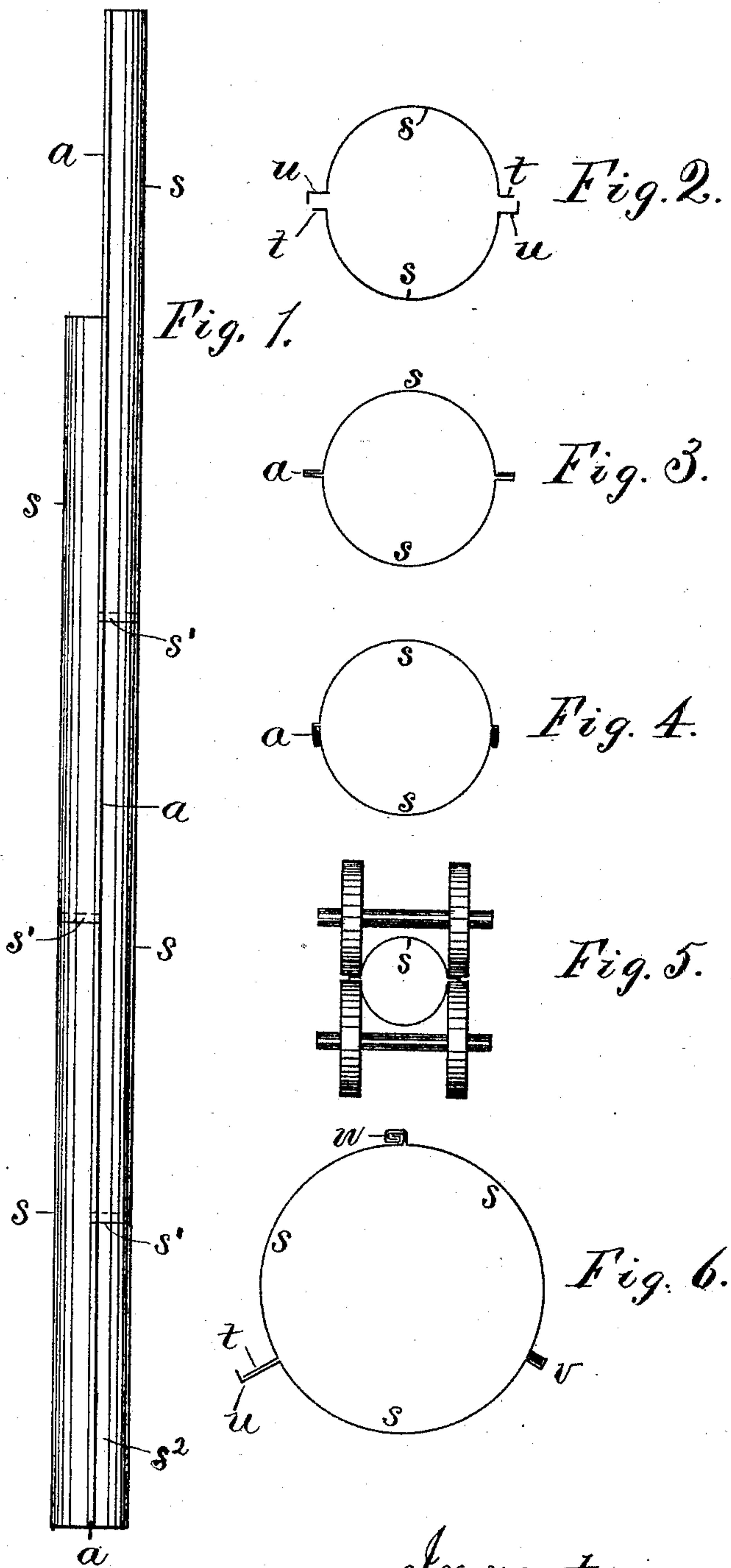


(No Model.)

C. L. HART & T. S. CRANE.  
SHEET METAL PIPE.

No. 434,927.

Patented Aug. 26, 1890.



Attest:  
L. Lee  
J. C. Fischer.

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Crane & Miller, Atty.

# UNITED STATES PATENT OFFICE.

CHARLES L. HART, OF BROOKLYN, NEW YORK, AND THOMAS S. CRANE, OF  
EAST ORANGE, NEW JERSEY.

## SHEET-METAL PIPE.

SPECIFICATION forming part of Letters Patent No. 434,927, dated August 26, 1890.

Application filed August 19, 1889. Serial No. 321,313. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES L. HART and THOMAS S. CRANE, citizens of the United States, residing, respectively, at Brooklyn, Kings county, New York, and East Orange, Essex county, New Jersey, have invented certain new and useful Improvements in Pipe with Longitudinal Seams, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention consists in a sheet-metal pipe composed of longitudinal segmental sections joined by continuous longitudinal seams, and having a series of sections at opposite sides of such seams, the several sections constituting the pipe being lapped at their ends and the joints alternated.

In the annexed drawings, Figure 1 is a side view of a pipe embodying our improvement. Fig. 2 is an end view of the segmental sections constituting the same, flanged in readiness for seaming. Fig. 3 is an end view of the pipe with standing seams; Fig. 4, a similar view of the same with the seams bent down flat. Fig. 5 is an end view of the pipe, with rollers adapted to close the seams; and Fig. 6 is an end view of a pipe formed in three segmental sections, with the seams represented in different stages of manufacture.

In Figs. 1 to 5, inclusive, the pipe is shown formed of longitudinal segmental sections *s*, each extending half-way around the pipe, and the sections being joined together along their edges by the seams *a*. Each of these sections is composed of separate lengths of sheet metal, bent each into the desired shape by means of a cornice-press or analogous machinery, and its end *s'* overlapped upon the preceding length upon the same side of the seam in forming the pipe. The sections are each formed also with a straight longitudinal flange *t* projected from one edge, and with a bent longitudinal flange *u* projected from the opposite edge, in order that the sections on either side of the seams *a* may be made identical in shape, as shown in Fig. 2.

For convenience in referring to the various sections composing the pipe we shall designate those sections upon opposite sides of the

seams and joined together by such seams along their edges as the "opposed sections," and those upon the same side of the seams and having their ends lapped as the "adjacent sections." When the opposed sections are fitted together, it is obvious that the edge of the bent flange *u* may be folded down upon the straight flange *t*, and both together may be bent over to form a double seam. Such seam *a* may be left standing radially, as shown in Fig. 3, or it may be closed down flat upon the pipe, as shown in Fig. 4; but in pipes of such length as our construction is adapted to make it is much easier to manufacture the seam in a standing position, as indicated in Fig. 5, where two pairs of rollers are shown arranged to press upon and close the seams in a radial position. A similar construction is shown in Fig. 6, except that each segmental section extends but one-third of the way around the circumference of the pipe. In this figure, *t* and *u* represent the straight and bent flanges, as in the other figures, and *v* represents a double seam formed from such flanges and projected radially from the pipe, in which position it adds a very considerable degree of stiffness to the pipe; and *w* represents the same double seam folded down upon the pipe, which form of seam may be preferred for certain constructions or locations. It is obvious that with the arrangement of rollers shown in Fig. 5 the seams may be closed upon such a pipe of any length which would be formed by adding sections alternately upon opposite sides of the seams as the preceding portions of the pipe are drawn between the rolls. Where the lapped joints between the adjacent sections are required to be water or air tight, they may be readily soldered if the sections be made of tin, and it will be obvious that the construction affords a means of using tin sheets to great advantage, because a pipe of any required length may be made from such sheets in the most rapid and economical manner. The use of tin is especially advantageous, as it is readily soldered at the lap-joints and is lower in price than sheet-iron at the present time. The pipe formed in this manner is divided longitudinally by two or more continuous seams, and has a series of



segmental sections at opposite sides of such  
seams, the adjacent sections being lapped at  
their ends and their joints alternated upon  
the opposite sides of the seams, by which the  
5 strength of the pipe is preserved even with  
short longitudinal sections. The ends of the  
several adjacent sections in such construction  
would all be overlapped in the same direction,  
and the pipe could therefore be used as a  
10 water-leader or for analogous uses where the  
confined fluid or gas is not under pressure  
and runs past the joints in one direction only.

Having thus set forth the nature of our in-  
vention, what we claim herein is—

15 A sheet-metal pipe composed of longitudi-  
nal segmental sections joined by continuous

longitudinal seams and having a series of  
sections at opposite sides of such seams, the  
several sections constituting the pipe being  
lapped at their ends and the joints alternated, 20  
substantially as herein set forth.

In testimony whereof we have hereunto set  
our hands in the presence of two subscribing  
witnesses.

CHARLES L. HART.

THOS. S. CRANE.

Witnesses as to Charles L. Hart:

A. O. KITTREDGE,

FREDK. M. HILTON.

Witnesses as to T. S. Crane:

L. LEE,

F. C. FISCHER.