H. NOBLE.

SPIRALLY-WOUND SHEET-METAL TUBE.

No. 192,079. Patented June 19, 1877.

Fig. 1.

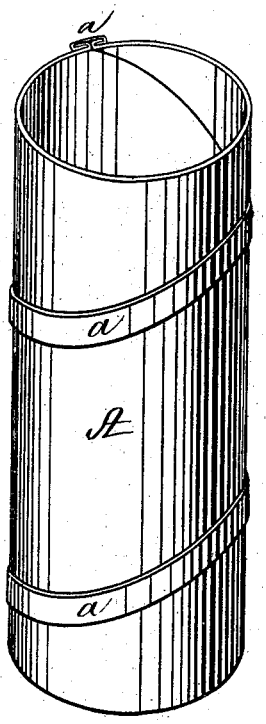


Fig. 2.

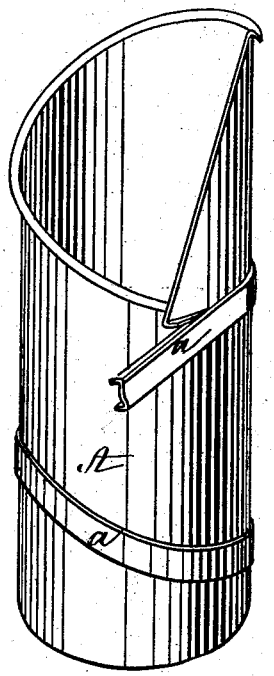


Fig. 3.

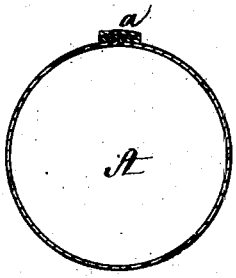


Fig. 4.

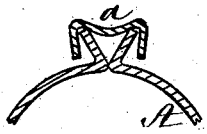


Fig. 5.

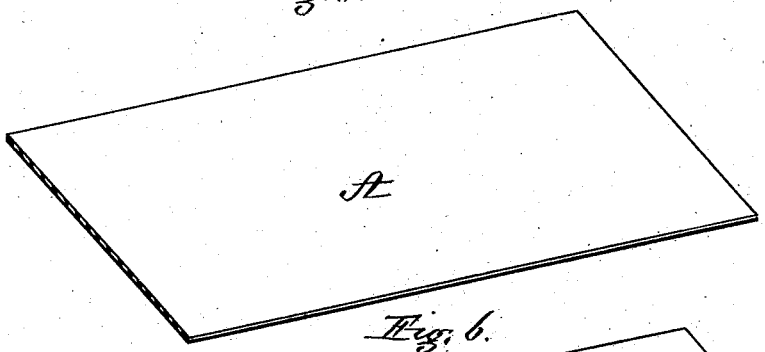
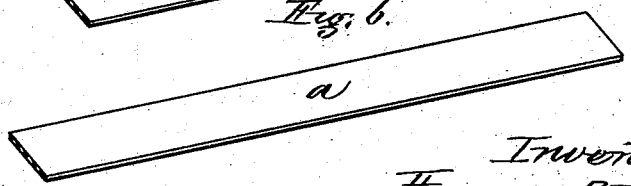


Fig. 6.



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UNITED STATES PATENT OFFICE.

HENRY NOBLE, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN SPIRALLY-WOUND SHEET-METAL TUBES.

Specification forming part of Letters Patent No. **192,079**, dated June 19, 1877; application filed December 4, 1876.

To all whom it may concern:

Be it known that I, HENRY NOBLE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Spirally-Wound Sheet-Metal Pipes or Tubes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a spirally-wound sheet-metal pipe constructed in accordance with my invention. Fig. 2 is a perspective view, representing the manner in which the pipe is formed. Fig. 3 is a transverse section representing the seam or joint finished. Fig. 4 is a section (enlarged) representing the seam or joint previous to its being flattened down or finished. Fig. 5 represents the strip of sheet metal of the desired width from which my improved pipe is formed. Fig. 6 represents the narrow strip of sheet metal employed in re-enforcing the seam of the said pipe.

My invention relates to that class of sheet-metal pipes which are formed by winding the strip spirally around a mandrel; and my invention consists in uniting the edges of the strip, and re-enforcing the seam or joint so formed by means of a separate and independent strip of metal clinched down on the outside of the same, in such a manner as to hold the edges of the strip firmly together, the liability of the separation of the edges and the loosening and opening of the joint incident to this class of pipes, as heretofore constructed, being thereby avoided.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A represents a flat strip of sheet metal, of the required width, and *a* a narrow strip of metal, both of which, as they are fed through a machine adapted for the purpose, are wound spirally around a mandrel or former, during which operation the edges of the strip A are turned up, and the edges of the strip *a* turned down, as seen in Fig. 2, by suitable mechanism, after which the turned edges of the strip *a*, Fig. 6, are directed against and caught over the turned edges of the strip A, simultaneously with their being made to abut against each other, the parts being then in the position seen in Fig. 4.

Suitable pressure devices now act upon the sides of the turned-down edges of the narrow strip *a*, to force them toward and under the turned-up edges of the wide strip A, after which the joint or seam is completed, as seen in Fig. 3, by flattening it down by a pressure-roll or other device, the inside of the joint being at the same time smoothly finished, so as to offer no obstruction.

The above-described joint imparts stiffness and rigidity to the pipe, (which can consequently be made of thinner metal than heretofore,) for the reason that the edges abut squarely against each other, and are held firmly and immovably together by the re-enforcing-strip *a*, whereas this class of pipe, when provided with a joint described in Letters Patent of the United States No. 124,011, especially when made of zinc, is objectionable on account of the liability of the edges of the joint to slip by each other, the effect of which is to loosen and open the joint, causing the pipe to leak.

A sheet-metal pipe constructed in accordance with my invention is particularly applicable for stove-pipes, hot air and water conductors, speaking-tubes, &c., but will be found equally useful for many other purposes; and this pipe may be made ornamental, if desired, by forming it of different kinds of metal of the same or of different widths, or of a strip of one metal with a re-enforcing strip of another metal.

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

1. A spirally-wound sheet-metal pipe in which the seam or joint is re-enforced by a strip of metal, *a*, clinched down thereon, substantially as and for the purpose described.

2. A spirally-wound sheet-metal pipe, constructed with a joint formed by turning and abutting the edges of the metal, and uniting or locking them together by means of a re-enforcing-strip, *a*, substantially as set forth.

Witness my hand this 1st day of December, A. D. 1876.

HENRY NOBLE.

In presence of—
N. W. STEARNS,
W. J. CAMBRIDGE.