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(No Model.)

H. W. HAYDEN.

METAL TUBE.

No. 388,867. Patented Sept. 4, 1888.

Fig. 1.

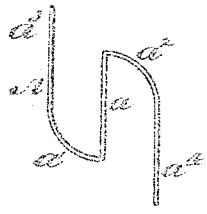


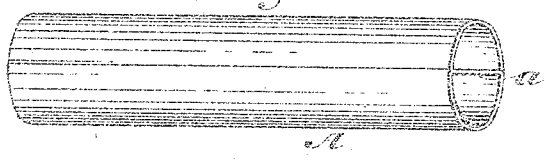
Fig. 2.





Fig. 3.

Fig. 4.



Witnesses.
James D. Cromwell,
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Inventor
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UNITED STATES PATENT OFFICE.

HIRAM W. HAYDEN, OF WATERBURY, CONNECTICUT, ASSIGNOR TO HOLMES, BOOTH & HAYDENS, OF NEW YORK, N. Y.

METAL TUBE

SPECIFICATION forming part of Letters Patent No. 388,867, dated September 4, 1888.

Application filed June 12, 1888. Serial No. 276,874. (No model.)

To all whom it may concern:

Be it known that I, HIRAM W. HAYDEN, of Waterbury, in the county of New Haven and State of Connecticut, have invented a certain new and useful Improvement in Tubing, of which the following is a specification.

This improvement relates particularly to tubing of that kind which has two ducts or compartments.

I will describe tubing embodying my improvement, and then point out the various novel features in the claims.

In the accompanying drawings, Figure 1 is an end view of a piece of metal as the same appears at one stage in the manufacture of my tubing. Fig. 2 is an end view of a piece of the tubing completed. Fig. 3 is an end view of tubing of different proportions. Fig. 4 is a perspective view of a piece of tubing corresponding with that illustrated in Fig. 2.

Similar letters of reference designate corresponding parts in all the figures.

A designates a strip of metal—such, for instance, as brass—of which the tubing is formed. This strip of metal is first bent transversely by means of a die, a pair of rolls, or other suitable appliances into the shape in which it is shown in Fig. 1. It will be seen by reference to this figure that there is a middle portion, *a*, of the strip of a width equal to the diameter of the tubing which is to be manufactured and that this middle portion is left unbent. From this middle portion the side portions of the strip are bent. These side portions are bent in arcs $a' a^2$, which correspond with the curvature of the tubing and are quadrants of the circle of the tubing. The lateral extremities $a^3 a^4$ of the strip extend tangentially from these quadrant-arcs in reverse directions and so as to be parallel with the middle portion, *a*, of the strip. The tangential portions $a^3 a^4$ are of such length as that they can be bent to continue the circle of which the arcs $a' a^2$ form parts. The bending of these tangential portions $a^3 a^4$, which complete the circle, may be effected by drawing the strip lengthwise through a round hole or by means of a die. The edges of the strip after this final bending shall have been completed will be united to the central portion, *a*, of the strip by brazing, soldering, or in any other suitable manner. The tubing thus made will be cylindrical and divided into two equal parts, as may be understood by reference to Figs. 2 and 4. If the portion *a* is located nearer one of the side edges than the other, it will not be in the position of the diameter of the completed tubing, but off to one side, and will divide the tubing into two ducts or compartments of unequal size, as may be understood by reference to Fig. 3.

It is not essential that the tubing made in the manner described shall be cylindrical. It may, if preferred, be made of oval or other shape.

It will be seen that in tubing constructed as described the joint between the edges of the strip out of which the tubing is made and the portions of the strip contiguous to these edges will not afford any opportunity for leakage from one compartment or duct into the other.

This tubing is admirably adapted for use in gas-fixtures fitted with burners for gas, and with electric lights or lamps, because the wires for the electric lamp may pass through one duct or compartment and the gas may pass through the other duct or compartment without any danger of leakage of gas from its duct or compartment into the other.

The small tubing made upon this principle may be bent in any direction to fit it for use in chandeliers or other articles. Large tubing may be bent in the direction of the flat side of the central portion forming the partition between the ducts or compartments, but not readily edgewise of said partition.

This tubing is extremely simple and cheap and obviates that objection which arises from the liability of leakage from one duct or compartment to another duct or compartment of tubing.

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

1. As a new article of manufacture, tubing formed of a single strip of metal with a partition extending through it, substantially as specified.

2. As a new article of manufacture, tubing formed of a singe strip of metal with a partition inside of the tubing and joints outside of the partition, substantially as specified.

3. As a new article of manufacture, tubing formed of a single strip of metal having the side portions bent from a middle or intermediate portion in reverse directions back to the middle or intermediate portion and joined thereto, substantially as specified.

HIRAM W. HAYDEN.

Witnesses:
C. F. MERRIMAN,
CLIFFORD J. HACKETT.