Henry M. Stow

Impt in Water & Gas Combination Pipe.

110,399

PATENTED DEC 20 1870

Fig. 1.

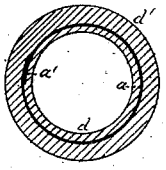


Fig. 2.

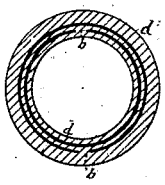
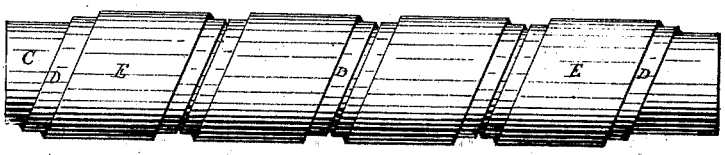


Fig. 3.



Witnesses.
Chas L. Loomis
Jos L. Loomis

Henry M. Stow
Inventor
By J. L. Loomis
Attorney

United States Patent Office.

HENRY M. STOW, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 110,399, dated December 20, 1870.

IMPROVEMENT IN PIPES AND TUBES FOR WATER AND GAS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, HENRY M. STOW, of San Francisco, in the county of San Francisco and State of California, have invented a new and useful Improvement in Pipes for Conducting Water and Gas; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and the letters of reference marked thereon.

The object of this invention is to produce a pipe for conducting water or gas, either under or above ground or through water, that will be not only cheaper and more durable than metal pipe, but that will, when used as a water-pipe, protect the water therein from freezing.

The nature of my invention consists in constructing a pipe of sheet-iron or other suitable metal, paper or paper-pulp, and pitch, all combined together, as herein described.

In the accompanying drawing—

Figure 1 represents a cross-section of one modification of my combination-pipe;

Figure 2, a cross-section of another modification of the same; and

Figure 3, a longitudinal elevation of another modification of the same, in an unfinished state, on the mandrel around which it is formed.

In the modification shown in fig. 1 the metal portion of the pipe consists of a sheet-iron tube, *a*, the edges of which lap, as shown at *a'*.

The sheet metal of which this tube is composed is coated on both sides, or on the inner side only, with common single roofing-paper, *d*, thoroughly saturated with pitch, and applied while hot.

This sheet is first bent around a mandrel into the form of a tube, and is then wrapped to any desired thickness with English double roofing-paper, *d'*, thoroughly saturated and covered with pitch, and also applied in a hot state. The outside may then be covered with another coating of pitch if deemed expedient.

The modification shown in fig. 2 is constructed precisely as above described, except that there are two concentric sheet-metal tubes employed, the edges of the metal not necessarily lapping, and these tubes are so placed, one within the other, that the joints or seams will come on opposite sides of the compound pipe, as shown at *b b*, fig. 2.

I prefer to wrap the inner tube with a coating of pitched paper before inserting it in the outer tube. When the two tubes are thus placed, one within the other, they are to be wrapped with double roofing-paper saturated with pitch, as above described.

In the modification shown in fig. 3 single roofing-paper thoroughly saturated and covered with pitch, and having cemented to one side a corresponding strip of sheet metal of a little less width, is wound spirally around a mandrel, the pitched paper inward, as shown in fig. 3.

The whole is then thoroughly coated over with hot pitch, which fills all the crevices between the edges of the spiral strip of paper, so that no water from the inside of the pipe can ever come in contact with the sheet metal.

In fig. 3—

C is the mandrel;

D, the strip of pitched paper; and

E, the strip of sheet metal cemented thereto, and both wound spirally around the mandrel.

In this condition the partially-formed pipe is ready to receive a coating of hot pitch and then to be wrapped with double-roofing pitched paper, as above described.

In each modification it will be seen that the metal, inside and outside, is completely covered with paper and pitch, so that no water can come in contact with it. The inner surface of the sheet metal, however, may be covered with a thick coating of pitch only, without paper.

I do not limit myself to the particular kinds of paper above mentioned, as other kinds of coarse thick paper may answer the purpose, or paper-pulp, wool, or flax, saturated with pitch, may be applied without being first formed into sheets.

In constructing my pipe I use coal-tar pitch, pine-pitch, or rosin-pitch, but do not limit myself thereto, as other kinds of pitch may answer the same purpose.

Connecting joints may be formed by inserting the end of one pipe into the end of another, the ends being suitably shaped for that purpose; or by inserting a short metal pipe, coated with pitch or pitch and paper, into both, and then surrounding the joint with a metal sleeve coated in like manner; or other known methods of forming connecting joints in pipes may be adopted; but in all cases the metal used in forming such joints must be completely protected from contact with water by means of pitch or pitched paper.

Instead of a spiral strip of sheet metal the pipe may be wound spirally with two or more layers of wire, pitched paper being interposed between the layers, and the outer layer covered therewith, as above described.

The compound material of which the pipe is mainly composed, being a very slow conductor, protects the water in the pipe from the effects of frost.

For very cold climates or exposed situations the thickness of the outer coating of paper and pitch may be increased to any desired degree, to render the pro-

tection against frost perfect, or a coating of pitch and sawdust may be added to increase the thickness.

I have proved by experiment that a pipe made according to the modification shown in fig. 3 of three-fourths of an inch caliber and five-sixteenths of an inch thick will withstand a pressure of five hundred pounds to the square inch. The strength of the pipe may be increased indefinitely by applying two or more spiral strips of metal, interposing pitched paper between them.

I am aware that pipes have been made by winding wooden hoops spirally and lining the pipe so formed with tarred paper, and therefore I do not claim a pipe so constructed; but

What I do claim is—

A pipe composed of sheet metal or wire, and paper and pitch, substantially as herein described.

HENRY M. STOW.

Witnesses:
CHAS. L. COOMBS,
EDM. F. BROWN.