

(No Model.)

A. H. McILVAIN.
HYDRAULIC PIPE.

No. 459,227.

Patented Sept. 8, 1891.

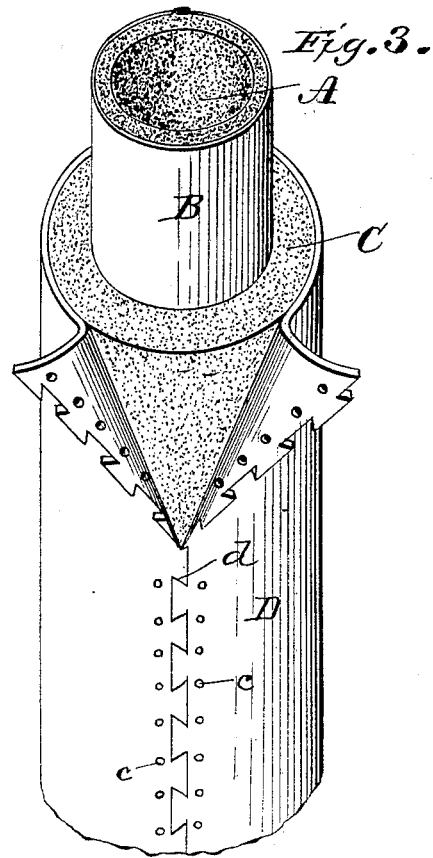
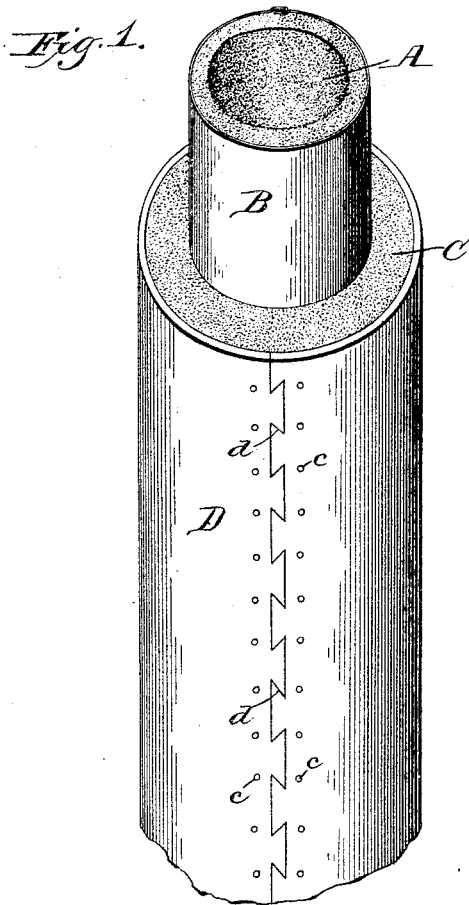
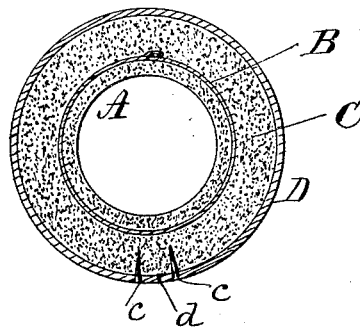


Fig. 2.



WITNESSES:
F. L. Curquand
James H. Jones

INVENTOR:
Alfred H. McIlvain
James Daggert & Co.
Attorneys

UNITED STATES PATENT OFFICE.

ALFRED H. MCILVAIN, OF PHILADELPHIA, PENNSYLVANIA.

HYDRAULIC PIPE.

SPECIFICATION forming part of Letters Patent No. 459,227, dated September 8, 1891.

Application filed May 8, 1891. Serial No. 392,062. (No model.)

To all whom it may concern:

Be it known that I, ALFRED H. MCILVAIN, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Hydraulic Pipe; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of a section of my improved hydraulic pipe. Fig. 2 is a cross-section of the same, and Fig. 3 is a perspective view of the pipe with a portion of its outer covering loosened and turned down at two corners.

Like letters of reference denote corresponding parts in all the figures.

This invention relates to pipe for hydraulic and other purposes of that type which consists practically of two concentric pipes of cement or similar material, each incased in a jacket and one inserted within the other, so as to form a compound pipe, so to speak; and my improvement consists in the peculiar construction of the outside pipe-jacket, as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings, the letter A designates the inside pipe or conduit proper, which is made of hydraulic cement or its equivalent, and surrounded by a casing or jacket B of sheet iron or other suitable metal. Around this metallic jacket is molded a concentric pipe C, also of cement or some similar material, and this outside pipe is incased in a jacket D, composed of one or more thicknesses of paper, felt, vulcanized fiber, or some other similar flexible substance which is not affected to any appreciable extent by either heat or cold. This exterior jacket or covering D has its meeting edges dovetailed, as shown at *d*, so that the dovetails along one edge will interlock with the dovetails along the other edge, as illustrated in Fig. 1. In this manner the outside jacket is not only made very strong and durable, but it is formed without any projecting seam or rib, being perfectly smooth and cylindrical and with a close

and perfect joint. If desired, two or more rows of rivets *c* may be driven through the outside jacket into the cement C while the same is yet in a plastic state, so as to firmly unite the cement pipe C to its jacket or casing D.

In practice I prefer to coat the inside jacket B with a thin layer of coal-tar, paint, or varnish for the twofold purpose of preserving it from rust and causing the better adhesion to it of the cement, which does not adhere well to smooth sheet-iron. Similarly, the outside jacket or envelope D is coated or painted with a layer of some suitable varnish or composition which is impervious to water, or the material from which this outside jacket or envelope is made may be impregnated with asphalt, coal-tar, or some similar protective composition.

I am aware that it is not new to construct a hydraulic pipe consisting of two concentric metallic shells with an inside cement lining and intermediate solid filling, as described and claimed in the patent to Daniel G. Phipps, No. 227,830, dated May 18, 1880; but I have found by experience that the alternate expansion and contraction of the outside sheet-metal pipe due to heat in summer and frost in winter will soon crack and disintegrate the intermediate filling, causing it to crumble, and thus sooner or later rendering it useless. This I effectually avoid by making this outside jacket or casing of some elastic material which is not affected by changes in the temperature, thereby adding greatly to the life and efficiency of the pipe.

Having thus described my improvement, I claim and desire to secure by Letters Patent of the United States—

1. As an improvement in hydraulic pipe, the herein-described compound pipe comprising the inside cement pipe or conduit A, having metallic jacket B, in combination with the outside casing-pipe C, of cement or similar material, having a jacket D of one or more layers of paper, felt, or analogous material not appreciably affected by changes in the temperature, substantially as and for the purpose shown and set forth.
2. In a compound pipe of the described construction, the outside water-proof jacket or

envelope D, of paper, vulcanized fiber, or its equivalent, having dovetailed interlocking edges *d*, substantially as and for the purpose shown and set forth.

- 5 3. In a compound pipe of the described construction, the combination, with the exterior casing-pipe C, of the impervious jacket D, of paper, vulcanized fiber, or its equivalent, having dovetailed interlocking edges *d* and provided with rivets *c*, projecting through the

jacket into the casing-pipe, substantially as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

ALFRED H. McILVAIN.

Witnesses:

JNO. W. BOILEAU,
W. G. ROLTS.