(No Model.)

D. G. PHIPPS.

Hydraulic Pipe.

No. 227,830. Patented May 18, 1880.

fig. 1

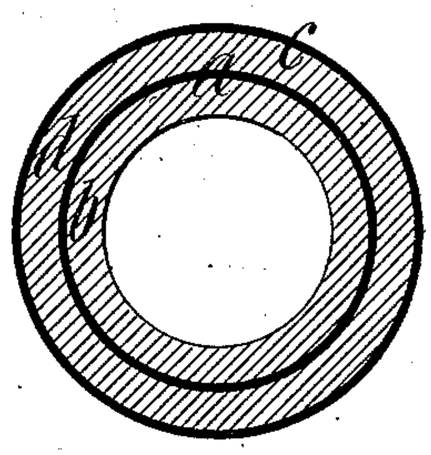
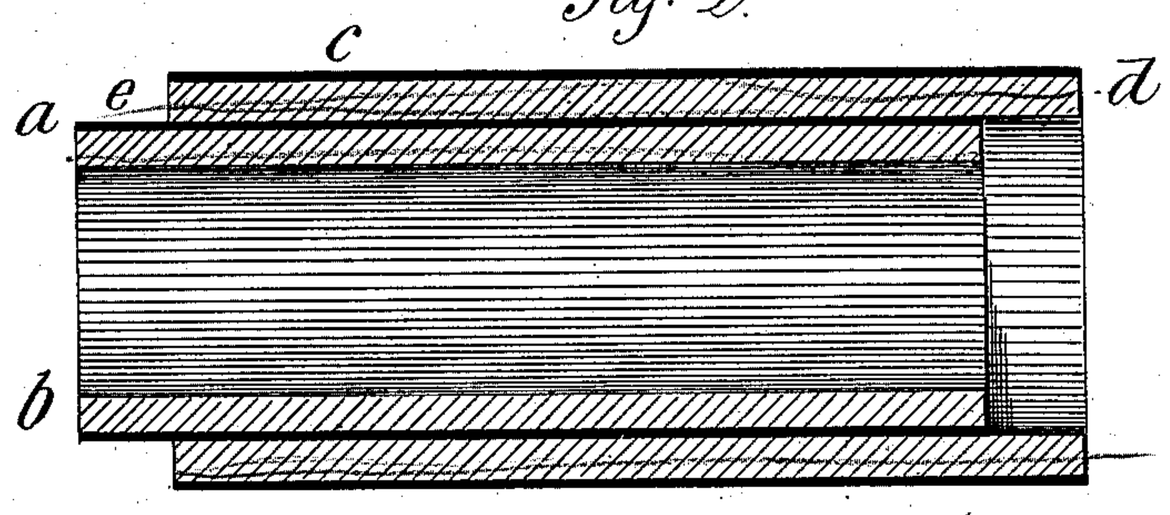


fig. 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

DANIEL G. PHIPPS, OF NEW HAVEN, CONNECTICUT.

HYDRAULIC PIPE.

SPECIFICATION forming part of Letters Patent No. 227,830, dated May 18, 1880.

Application filed March 24, 1880. (No model.)

To all whom it may concern:

Be it known that I, DANIEL G. PHIPPS, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Hydraulic Pipes; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a transverse section of the pipe complete; Fig. 2, a longitudinal section.

This invention relates to an improvement in that class of pipe for hydraulic purposes which is made from a sheet-iron tube lined with a coating of cement.

As usually made, this cement-lined sheet-iron pipe is laid on a bed of cement and then covered so as to completely inclose the iron. This bedding and coating of the iron necessarily requires a very large amount of cement and great skill in laying it, or it will not be properly bedded and covered.

The object of this invention is to simplify the laying of the pipe as well as to reduce the expense of so doing; and it consists in the construction as hereinafter described, and particularly recited in the claims.

a represents the common sheet-iron shell, and *b* the cement lining, made in the usual manner.

Around the sheet-iron shell *a*, I arrange a second similar sheet-iron or other metal shell, *c*, and concentric with it, but of larger diameter than the iron shell *a*, and so as to leave a space between the two. This space *d*, I fill, preferably, with hydraulic cement; or it may be of any other solid material, or material which readily solidifies, and when so solidified the pipe is complete.

At one end the inner shell, *a*, may protrude, as at *e*, Fig. 2, and at the other end set back, so that one section of the pipe will fit into the next to make the joint.

This outer shell and intermediate coating strengthens and sustains the pipe to the fullest extent required, and avoids the usual bedding and coating. It employs a very much less amount of cement, so much as to render the cost of this improved pipe little if any more (when the extra facility with which it may be laid is taken into consideration) than the old construction.

From the foregoing it will be understood that I do not broadly claim a sheet-metal tube or shell lined upon the inside and coated upon the outside, such having been long in use and well known.

I claim—

1. The herein-described hydraulic pipe, consisting of the two concentric metallic shells *a c*, with the cement lining *b* and the intermediate filling, *d*, substantially as described.

2. The herein-described hydraulic pipe, consisting of the two concentric metallic shells *a c*, with the cement lining *b* and the intermediate filling, *d*, the inner shell, *a*, protruding from one end, and the other shell correspondingly overhanging at the other end, substantially as described.

DANIEL G. PHIPPS.

Witnesses:
J. H. SHUMWAY,
JOS. C. EARLE.