

J. F. C. RIDER.
Water-Pipe.

No. 215,481.

Patented May 20, 1879.

Fig. 1.

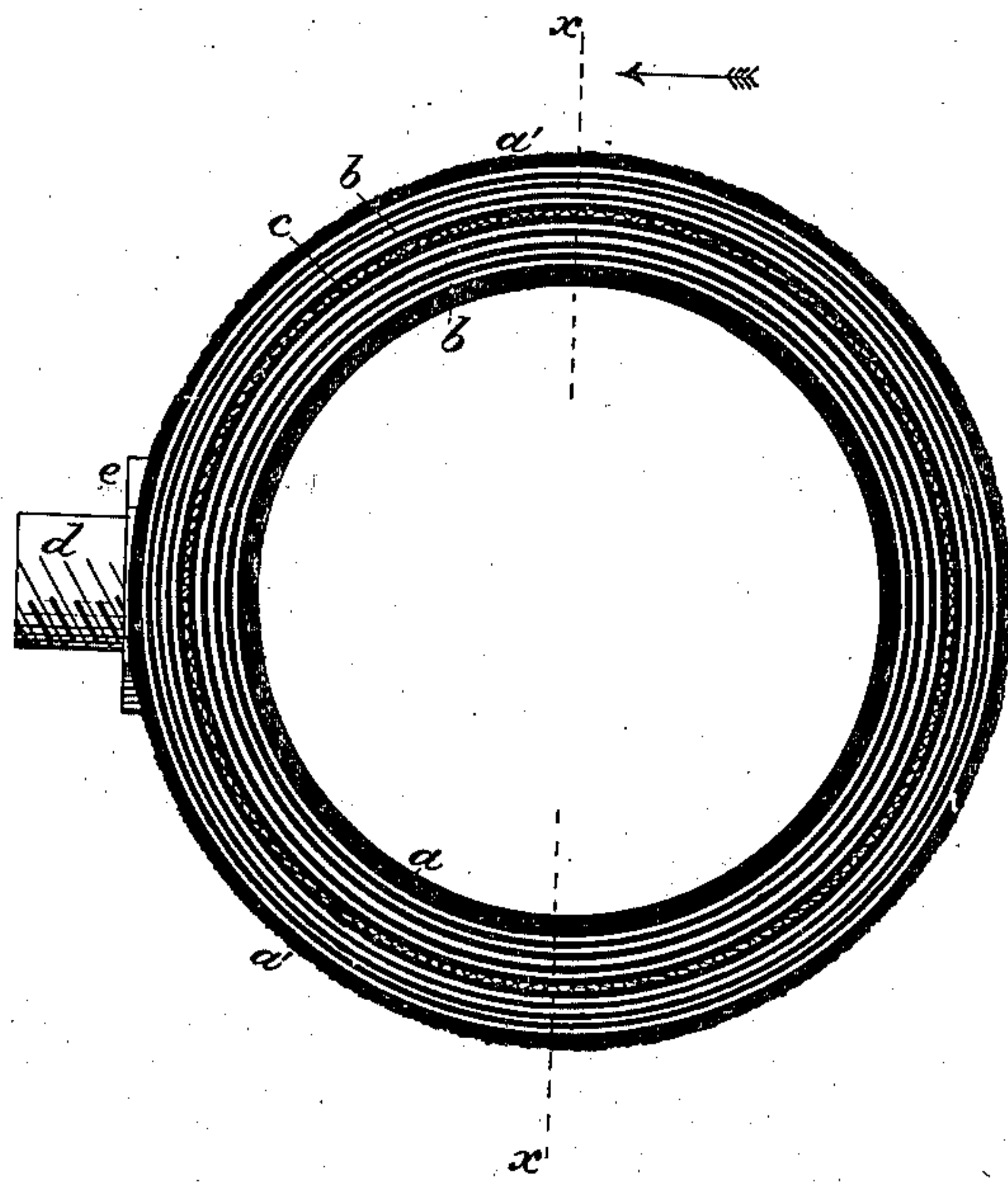


Fig. 2.

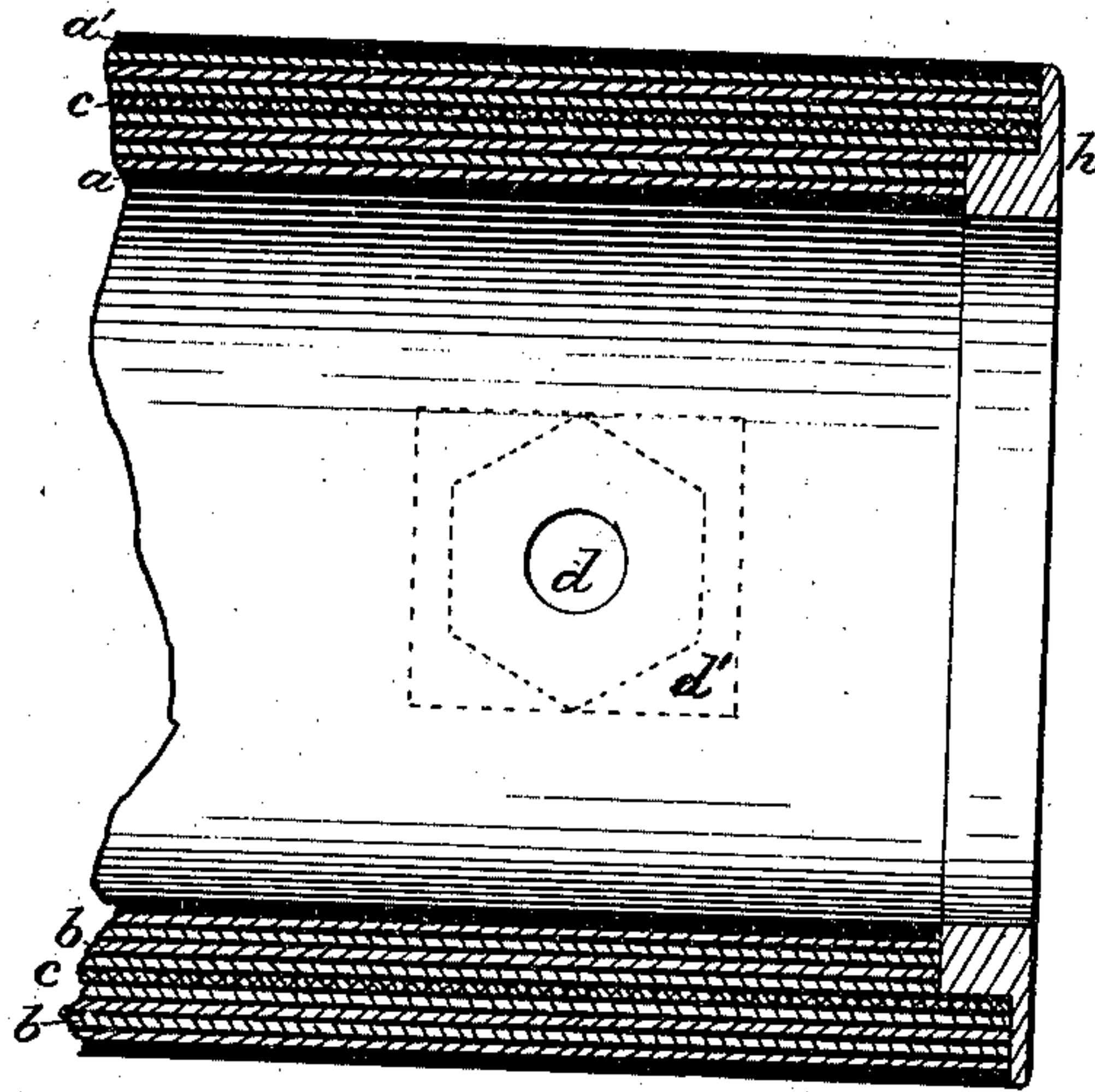
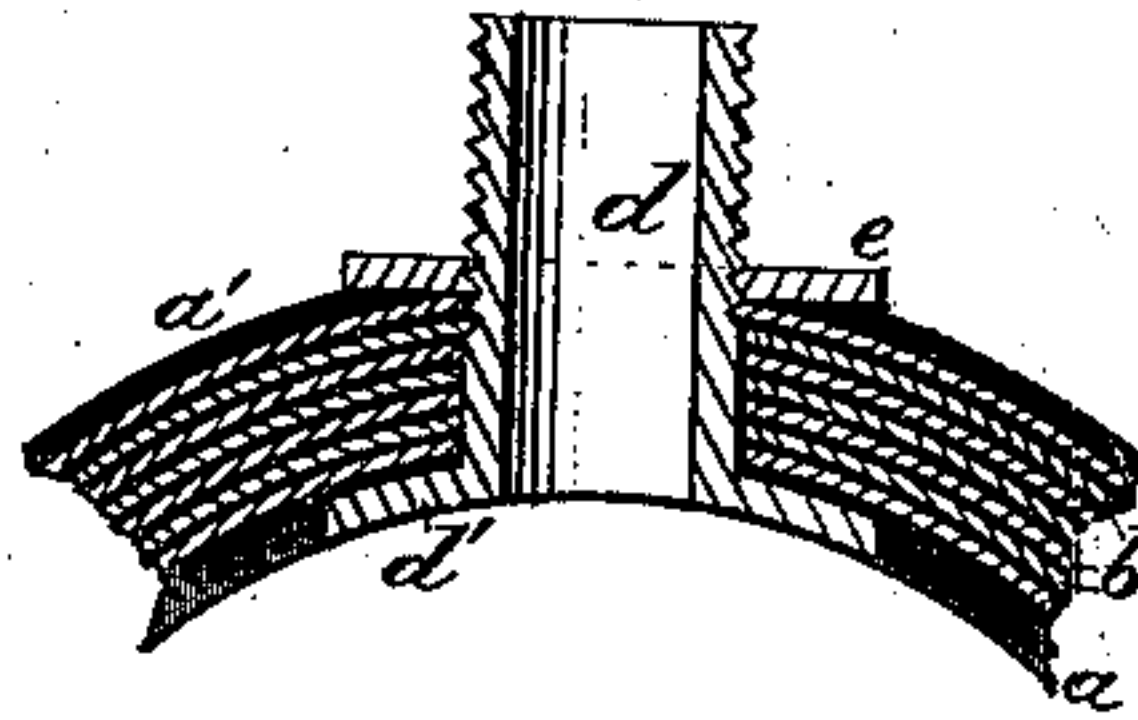


Fig. 3.



Attest:
H. H. Schott.
D. P. Cowl

Inventor:
John F. C. Rider
John C. Tashner
attys.

UNITED STATES PATENT OFFICE.

JOHN F. C. RIDER, OF SOUTH NEW MARKET, NEW HAMPSHIRE, ASSIGNOR
TO HELEN A. RIDER, OF SAME PLACE.

IMPROVEMENT IN WATER-PIPES.

Specification forming part of Letters Patent No. 215,481, dated May 20, 1879; application filed
October 9, 1878.

To all whom it may concern:

Be it known that I, JOHN F. C. RIDER, of South New Market, in the county of Rockingham and State of New Hampshire, have invented certain new and useful Improvements in Water-Pipes; 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, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of pipes used principally in hydraulic engineering for the conveyance of water, the object being to furnish the trade with a pipe that shall possess the qualities of great strength, durability, and cheapness; and these qualities are secured by combining in a certain manner layers of paper or other fibrous material with layers of sheet metal and asphaltum, as will be hereinafter fully described.

In the accompanying drawings, Figure 1 is a transverse section through the pipe, showing the arrangement of the different layers of material from which it is constructed. Fig. 2 shows a longitudinal section of a portion of the pipe on the line *x x* of Fig. 1. Fig. 3 is a section of a portion of the pipe through a tap, showing the manner of its insertion.

In constructing these pipes a strip or strips of strong paper or fibrous woven fabric, of such length or lengths as may be required to make the pipe of the desired size, is treated by immersion in fluid asphalt, and is then coiled under pressure around a mandrel of the same diameter as the base of the intended pipe until of sufficient thickness to withstand any pressure to which it is intended the finished pipe shall be subjected.

When the pipe is large, and there would be danger of its losing proper form from outside pressure, a sheet of metal, plain or corrugated, may be interposed between the layers of the material passing around the pipe in one or more coils, so as to impart to the fabric the required stiffness, care being taken to always have one or more layers of the fibrous material and asphalt within, and also without, the sheet-

metal coil, so as to fully protect the latter from oxidation and retain the same in position while the pipe is being manufactured. Then coat the pipe with a thick layer of asphaltum and it is ready for use.

Referring to the drawings, *a* represents the inner lining or coat of asphaltum, *a'* representing a similar coating which covers and protects the outside of the pipe. *b b* are the layers of paper, or equivalent material, which form the body and give strength to the pipe to withstand the internal pressure of fluids. The sheet-metal layer *c* is used, as heretofore stated, for the purpose of enabling the pipe to withstand pressure from without when its size would render such protection necessary.

At different points in the length of the pipe the service-taps *d* may be inserted. These taps are provided with a flange, *d'*, at their inner end, which has a curvature corresponding to that of the inside of the pipe, and is embedded in the inner layer of asphaltum, which serves as a lining.

A screw-thread is formed upon the outside of the tap, and a nut, *e*, screwed firmly down upon the outside layer of the pipe, thus holding the tap securely in place. The screw-thread upon the tap serves not only as a means of securing it in place, but also to make the connection with the service-pipes, and receives a cap which closes the aperture when it is not required for other uses. The end-protecting rings *h* may be applied to the pipe during the process of manufacture, or after it is otherwise finished. They assist in retaining the pipe in shape and prevent injury in handling; but in pipe of small diameter their use may be dispensed with.

Pipes made of layers of wood and asphaltum have been used; but they have been found objectionable, as the wood possesses strength only in one direction—that is, lengthwise of its fiber—but splits readily when the strain is across it, thus weakening the structure, and making it difficult to insert taps or form other openings in the pipe without serious injury.

Pipes have also been made wholly of layers of sheet metal and asphaltum; but these are objectionable, as their first cost is great, and the metal layers, when exposed by the inser-

tion of a tap or the accidental removal of a portion of the asphaltum covering, quickly corrodes and destroys the pipe.

The advantages of my method of construction are that the sheet metal, when used, is fully protected, and the paper composing the principal portion of the body is a material of even strength in all directions, with very little elasticity, thus avoiding the danger of stretching under pressure, so as to crack the asphaltum coverings. These pipes will also be found very useful for the conveyance of compressed air or other fluids. Their lightness, compared with metal pipes of equal strength, render their use in mines and other places where the handling must be done in a confined space of great advantage.

Having thus described my invention, I

claim as new, and desire to secure by Letters Patent, the following:

1. A pipe composed of coils or layers of paper embedded as asphaltum, and having an interposed layer of sheet metal, substantially as and for the purposes set forth.

2. A pipe composed of layers of paper, or its equivalent, embedded in asphaltum, in combination with the end-protector *h*, as and for the purpose specified.

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

JOHN F. C. RIDER.

Witnesses:

RUFUS SANBORN,
ALBERT FIELD.