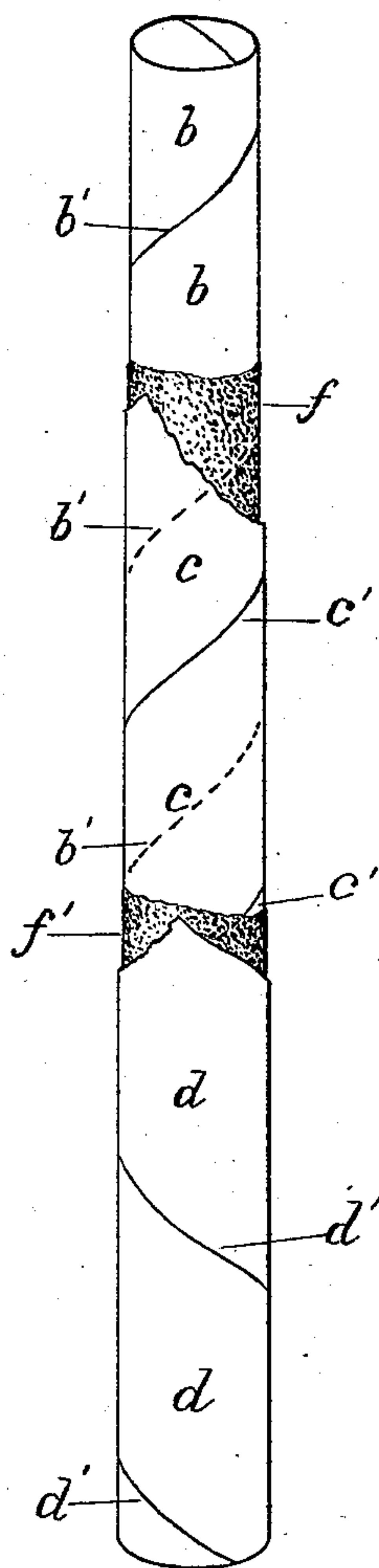


(No Model.)

D. J. MACPHERSON.
WATER OR GAS PIPE.

No. 534,564.

Patented Feb. 19, 1895.



Witnesses,

Edward Groenendyke
J. M. Gilroy

Inventor,

David J. Macpherson

UNITED STATES PATENT OFFICE.

DAVID J. MACPHERSON, OF PASADENA, CALIFORNIA.

WATER OR GAS PIPE.

SPECIFICATION forming part of Letters Patent No. 534,564, dated February 19, 1895.

Application filed October 19, 1893. Serial No. 488,594. (No model.)

To all whom it may concern:

Be it known that I, DAVID J. MACPHERSON, a citizen of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented a new and useful Water or Gas Pipe, of which the following is a specification, reference being made to the accompanying drawing.

My invention consists in a pipe made or manufactured by winding several layers of sheet metal (usually iron) spirally about each other with a layer or coating of adhesive, waterproof substance (usually bitumen in some of its forms) between the layers of metal.

In the drawing *b* represents the first or inside layer, formed by winding spirally (evidently about a form) a sheet or ribbon of metal. The edges of the sheet or ribbon in its successive windings do not overlap but lay edge to edge in the same plane, thus forming a smooth surface. The joint formed by these edges in winding the inside layer is represented at *b', b'*.

The second layer of metal, *c*, with the adhesive layer or coating, *f*, between it and the first layer is wound firmly over the first layer and spirally in the same direction as the first layer and in such a manner that the joints, *c', c'*, formed by the successive windings of this second layer will come between the corresponding joints, *b', b'*, of the first layer. The nearer they come midway between these joints the better.

The third layer, *d*, having the adhesive coating, *f'*, between it and the second layer, is wound firmly over the second layer and spirally in the opposite direction to the spirals of the first and second layers, binding them firmly together.

The object of the layer or coating of an adhesive water-proof substance is to fill the spaces between the metallic layers, and between the joints, *b', c'*, and *d'*, in these layers, and thus make them water and gas tight, and also by adhering to the metallic layers to give strength to the pipe and prevent the joints, *b', c'* and *d'*, from opening by the pipe bending while being handled.

The form of bitumen known as maltha, when reduced to proper consistency and ap-

plied hot, fulfills very well the conditions of the adhesive waterproof substance mentioned above.

I have shown in the drawing my standard pipe, using in its construction three layers of iron, the inner and middle layers being wound spirally in the same direction and the outside one wound spirally in the opposite direction. The pipe however is not necessarily limited to this special winding or to this special number of layers.

For light pressure and easy service, and where the pipe will not need much handling before laying, and where the conditions for laying and covering are favorable, a pipe made of the two layers, *b* and *c*, in the drawing, may answer; and in some cases it may be advantageous to wind three layers spirally in the same direction. For extra pressures or severe service, instead of increasing the weight of iron in each layer, more layers than the three of the standard pipe may be used and wound on in the same or opposite directions as desired until a pipe of sufficient strength is produced.

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

As an improved article of manufacture, a pipe or tube formed by windings spirally about a form a ribbon of metal wound with its edges close together but not over-lapping, and so as to form a tube; and over this tube another such spirally wound tube having the joints between its convolutions break joints with those of the first tube, and having wound in between it and the first tube a layer or coating of adhesive waterproof substance; and over these to form the completed pipe another spirally wound tube having its spirals wound in the opposite direction to the spirals of the first and second tubes, and having wound in between it and the second tube a layer or coating of adhesive waterproof substance, all substantially as represented and for the purposes set forth.

DAVID J. MACPHERSON.

Witnesses:

EDWARD GROENENDYKE,
W. D. MCGILVRAY.