

# UNITED STATES PATENT OFFICE.

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## IMPROVED DRAIN AND WATER PIPES.

Specification forming part of Letters Patent No. 76,778, dated April 14, 1868.

*To all whom it may concern:*

Be it known that I, WILLIAM P. KIRKLAND, of the city and county of San Francisco, State of California, have invented an Improved Drain and Water Pipe; and I do hereby declare that the materials used, and the manner of mixing and preparing the same to manufacture the said pipe, with the best apparatus known to me for the purpose, are described in the following specification.

The nature of my invention is to provide an improved drain and water pipe combining strength with durability and cheapness.

To accomplish this object, I employ a series of strands or cords loosely twisted, and place them in a tank or caldron of boiling asphaltum or pitchy substance, and confine their ends to a cylinder or roller suspended over the tank. These cords or strands are so attached to the cylinder or form that in turning they will cross each other diagonally. Between each coil of rope I place a layer of oakum or hemp, and when a desired number of coils or layers has been wound upon the roller it is withdrawn, and the pipe is coated with the contents of the tank above described.

To more fully illustrate and describe my invention, I employ a tank or caldron, in which is placed a pitchy substance, (I prefer asphaltum after the oil has been extracted, but common pitch from trees or resin might answer,) which should be well mixed by boiling, and kept heated. In this I place a series of strands, loosely twisted, or cords in two sets, so arranged as to be easily withdrawn from the tank, which may be accomplished, after they are attached to the cylinder, by confining their ends to a strip of paper or cloth.

Above the tank containing the pitch I place a cylinder or roller, resting in bearings, and having suitable handles for turning at each end. The cords and their attachments, having been completely submerged in the pitch, are placed upon the cylinder or form diagonally, so that the lower series will be crossed by the upper series continually. After the form has been turned completely around once I commence to place a layer of oakum or hemp at right angles to the strands, turning the cylinder until a pipe of suitable thickness and

strength is obtained, when the form is removed, and the pipe so formed is dipped in the pitch or asphaltum in the tank, above described, which coats it completely inside and out, thus forming a pipe of asphaltum or pitch and fibrous material without iron or other form.

A very good pipe may be obtained, and perhaps equally as strong as the one above described, by placing beneath the strands, at right angles to them, cords of the same dimension, and leaving openings or meshes of about one inch, more or less. In this case no oakum would be necessary, except in case where large service-pipes are wanted, and the warp would pass in regular lines around the form.

In the manufacture of pipes of lesser dimensions smaller cords and cylinder must be employed; but the same general manner of construction may be followed.

By this means a strong and durable pipe is obtained at a small expense as compared with other drain and water pipes, and which will conform itself to uneven surfaces without breaking or injury.

My pipe is intended to be used more especially as an underground pipe; but it may be used above ground, in which case I would coat it with some suitable substance impervious to the rays of heat from the sun.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In the manufacture of drain and water pipes, the use of ropes, cords, or strands dipped in a pitchy or tarry substance, and wound spirally or placed at right angles around a form, for the purpose of obtaining the desired shape and thickness of the pipe.

2. The use of a filling of oakum or other fibrous material, placed under the strand or cords, substantially as described, for the purposes set forth.

In witness whereof I have hereunto set my hand and seal.

WILLIAM P. KIRKLAND. [L. S.]

Witnesses:

C. W. M. SMITH,  
J. L. BOONE.