No. 657,605. Patented Sept. 11, 1900.

# W. LACY.

## COATED METAL PIPE.

(Application filed Jan. 15, 1900.)

(No Model.)

Fig. 1.

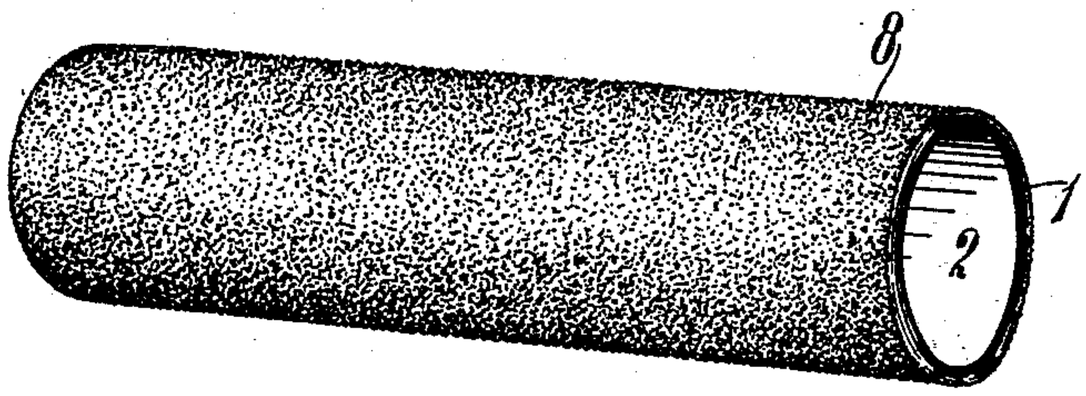
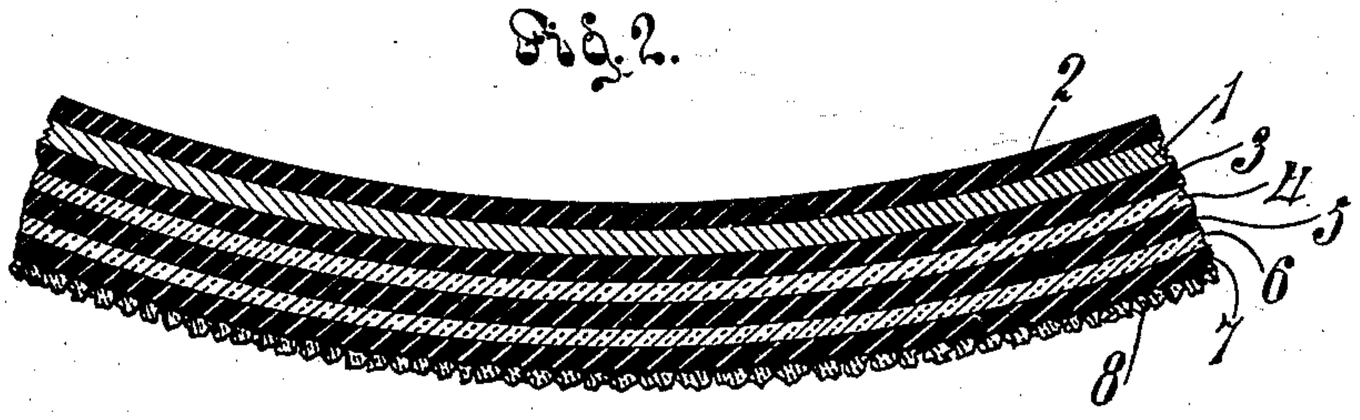



Fig. 2.




Witnesses
Terry Ingman.
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# UNITED STATES PATENT OFFICE.

WILLIAM LACY, OF LOS ANGELES, CALIFORNIA.

## COATED METAL PIPE.

SPECIFICATION forming part of Letters Patent No. 657,605, dated September 11, 1900.

Application filed January 15, 1900. Serial No. 1,575. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM LACY, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Coated Metal Pipes, of which the following is a specification.

My invention relates more particularly to underground pipes and is an improvement over the invention set forth in Letters Patent granted to me by the United States May 24, 1892, No. 475,454, for coated metal pipe and methods of manufacturing the same.

My present invention is superior to that patented to me, as aforesaid, in that I use a fibrous sheet coated with a preservative gum and rendered absolutely impervious to moisture and provide a coating of practically indestructible material embedded in the coating of preservative gum exterior the sheet of fibrous material. I prefer small gravel or broken quartz for the exterior coating, but any suitable silicious material will serve. The use of a fibrous sheet allows of a more tenacious covering, and the use of a silicious covering prevents any injury to the fibrous coat and prevents any wearing of the pipe from any ordinary handling or usage in transit to the point where the pipe is to be laid. A further advantage is that the silicious outer covering presents a surface which is clean, and the pipe can therefore be handled without inconvenience and will not adhere to other surfaces, as a surface covered with a gum is liable to do when exposed to the heat of the sun. A further advantage of providing the exterior coating of silicious material is that it is not subject to decay and is not liable to be attacked by alkali soils.

The object of this invention is to provide a pipe having superior powers of resistance to the destructive forces to which underground pipe is subjected after being laid, and also to prevent injury to coating of asphaltum on the pipe while in transit from place where made to place where laid.

My present invention consists in constructing a pipe with a strong inner shell of metal or other suitable material and an outer coating of grains of hard inelastic material and an intermediate cushioning-body.

My newly-invented pipe comprises a metal shell or body, a fibrous coating outside the metal shell, an outer coating of granulated hard inelastic material, and a suitable binding material. Preferably the metal shell has a coating inside and out of asphaltum or other suitable gum, and a fibrous sheet is applied outside the coated pipe with a coating of asphaltum or other suitable gum, and outside of the coated sheet is a coating of fine gravel embedded in and held by the coating of gum on the sheet.

The accompanying drawings illustrate my invention.

Figure 1 is a perspective view of a section of pipe embodying my invention. Fig. 2 is a fragmental enlarged cross-section of the pipe.

1 indicates the strong shell, preferably a metal pipe.

2 and 3 respectively indicate coatings of preservative gum on the interior and exterior of the metal pipe.

4 and 6 indicate layers of fibrous sheets.

5 indicates the coating of preservative gum between the fibrous sheets.

7 indicates the coating of preservative gum on the outer side of the sheet 6.

8 indicates the coating of silicious material embedded in the coating 7 of preservative gum. The fibrous material and the gum form an elastic or cushioning body between the harder outer coating and the metal shell.

In the manufacture of my improved pipe the inner shell of the pipe is dipped in heated asphaltum or other preservative gum or gums, and the fibrous sheets with asphaltum between are applied to its outside, the outer side of the fibrous sheet having a coat of asphalt or preservative gum applied thereto and a coating of silicious material is embedded in the gum, either by means of rollers or by pressure applied in any suitable manner.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. A pipe comprising a strong inner shell; an outer coating of grains of hard inelastic material; and an intermediate cushioning-body.

2. A pipe comprising a metal shell; an intermediate cushioning-body; and a coating of fine gravel outside the cushioning-body.

3. A pipe comprising a metal shell; a body

formed of a fibrous sheet and a gum; and a coating of fine gravel outside the fibrous sheet.

4. A pipe comprising a metal shell; a fibrous coating outside the metal shell; an exterior coating of granular hard inelastic material and a suitable binding material.

5. A pipe comprising a metal shell; a gum coating on the shell; a fibrous sheet outside the gum coating; a gum coating outside the fibrous sheet; and a coating of granulated hard and inelastic material outside the gum coating of said sheet.

6. The combination of a metal pipe having a coating of preservative gum; a sheet of fibrous material exterior the gum; a coating of preservative gum exterior the fibrous sheet; and a coating of silicious material embedded in the exterior coating of preservative gum.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Los Angeles, California, this 6th day of January, 1900.

WILLIAM LACY.

Witnesses:

JAMES R. TOWNSEND,

FRANCIS M. TOWNSEND.