

# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN THE MANUFACTURE OF PIPE.

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*To all whom it may concern:*

Be it known that I, GEORGE L. EAGAN, of the city and county of San Francisco, State of California, have invented certain new and useful Improvements in the Manufacture of Pipe; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to the manufacture of pipes for the conveyance of water, gas, and other purposes; and it consists in the process of manufacturing the same, as I will now proceed to describe.

The method of constructing my pipe is as follows: In the first place I prepare a semi-hard, plastic, adhesive mass, of a consistency like putty, capable of readily drying by pressure and becoming hard. There are many substances and compositions that will answer the purpose. Preferably I employ pitch, asphaltum, or bituminous matter, thickened with pulverized earth or other analogous matter that will render the mass plastic, and of such consistency that it may be pressed by a roller, preferably, or otherwise, into the pores of sheets of cloth, paper, pasteboard, or equivalent substance; or the plastic mass may be pressed into holes made in the cloth, paper, &c., to which it is applied. After the sheets have been thus prepared I wind them around a mandrel or roller, so as to form a tube of any required size and thickness, and insert, if preferred, between the layers thin longitudinal strips of metal, wood, leather, or any other suitable material, for the purpose of forming a bond and supplying bulk. By the employment of the perforations in the sheets the coating, when pressed into them, will adhere to the sheets with great tenacity; or a metal tube of any description may be placed on the mandrel, the tube being provided with projecting points, which will pass into or through the sheets, or roughen the surface; and the sheets may be rolled thereon instead of upon the smooth mandrel. The coating will thus be caused to adhere more firmly to the cloth, and the cloth and the different layers will be bound more closely and firmly together, strengthening the pipe and rendering it more durable. The pipe or tube thus con-

structed having been thoroughly rolled and united together in all its parts, I glaze or coat it inside and out, if necessary, with any suitable substance that will resist the action of acids, and of other corrosive substances and agents to be found in water, gas, &c.; but, preferably, I coat the inner side only with such protecting material, and paint the outer side of the tube. The pipe is then complete, and ready for use. It is very tough, strong, and durable, and answers as a cheap and perfect substitute for iron and lead pipes for the conveyance of water, gas, &c.

I am aware that asphaltum or bituminous substances in a liquid state have heretofore been applied to sheets of cloth, paper, and pasteboard, and strengthened, if needed, by the employment of wooden strips; and I therefore lay no claim to such invention. The composition or coating which I employ is never in a liquid state, but is a semi-hard plastic material like putty, which is laid on the cloth and pressed into it, so as to adhere thereto with great tenacity. Sheets of cloth, &c., thus prepared from the employment of liquid bituminous substances applied to the cloth, and which are afterward used to make pipe, invariably set, and the size of the tube is reduced thereby in diameter, and in setting, also, such pipes frequently and generally crack, thus rendering them worthless. Pipes thus constructed require also much time to dry, and the liquid asphaltum adheres with little tenacity to the cloth; whereas in my invention, by perforating the cloth and pressing the semi-hard plastic putty-like mass into the cloth by a roller or otherwise, it adheres tenaciously thereto, there is no setting and consequent reduction of the diameter of the pipe, and no cracking.

Another advantage gained by the employment of the plastic semi-hard material, as described by me, over asphaltum in a liquid state is, that there is no necessity for using any drying process upon the sheets, as the coating contains but little liquid, which is forced out by compression, and they are ready for use as soon as the semi-hard plastic material has been forced into their pores, or into perforations made in them, by means of a heavy roller.

The objections urged against the use of liq-

uid asphaltum, as set forth, hold good also in the use of cement, which must set and reduce the diameter of the pipe, which is very liable, also, to crack in setting, and to which, also, a drying process must be applied, which I entirely avoid.

Having thus described my invention, what I claim is—

The process of forming pipes by the application of the non-liquid plastic compound, as

set forth, of putty-like consistency, to the cloth or other material, and its compression into the pores of the same, or into perforations made therein, so as to adhere firmly thereto, substantially as described.

GEORGE L. EAGAN.

Witnesses:

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