

(No Model.)

C. DETRICK.

TUBE LINED CEMENT CONDUIT AND PROCESS OF MAKING THE SAME.

No. 288,033.

Patented Nov. 6, 1883.

FIG. 1.

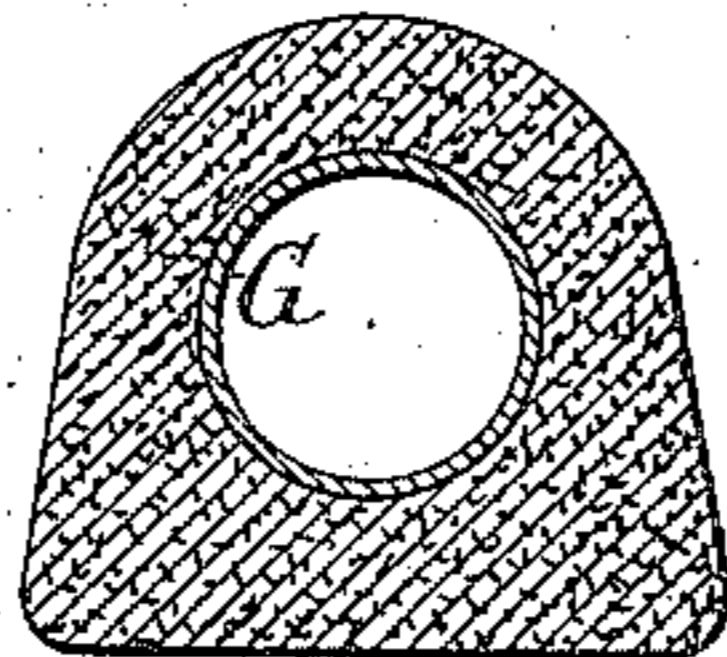


FIG. 2.

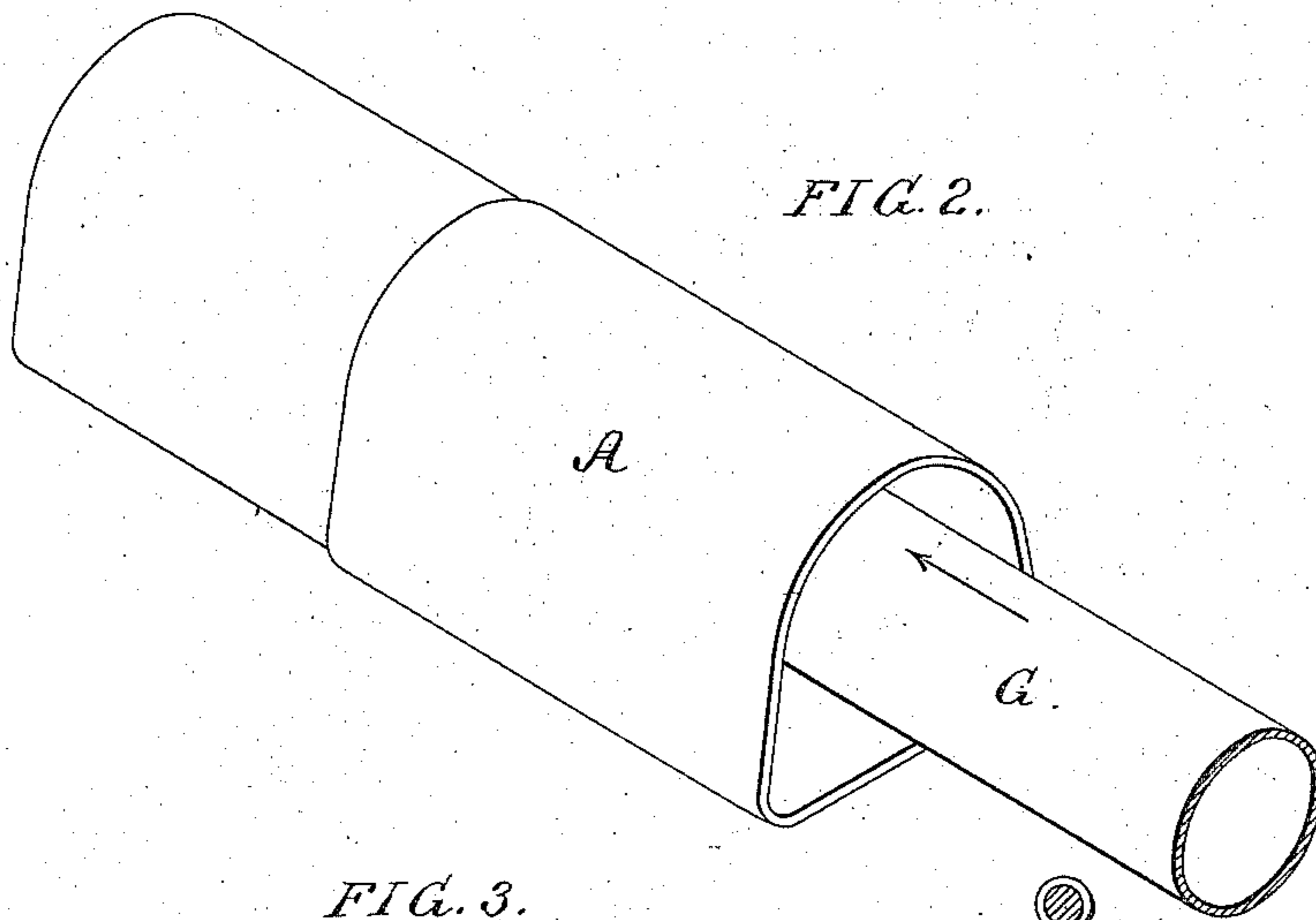
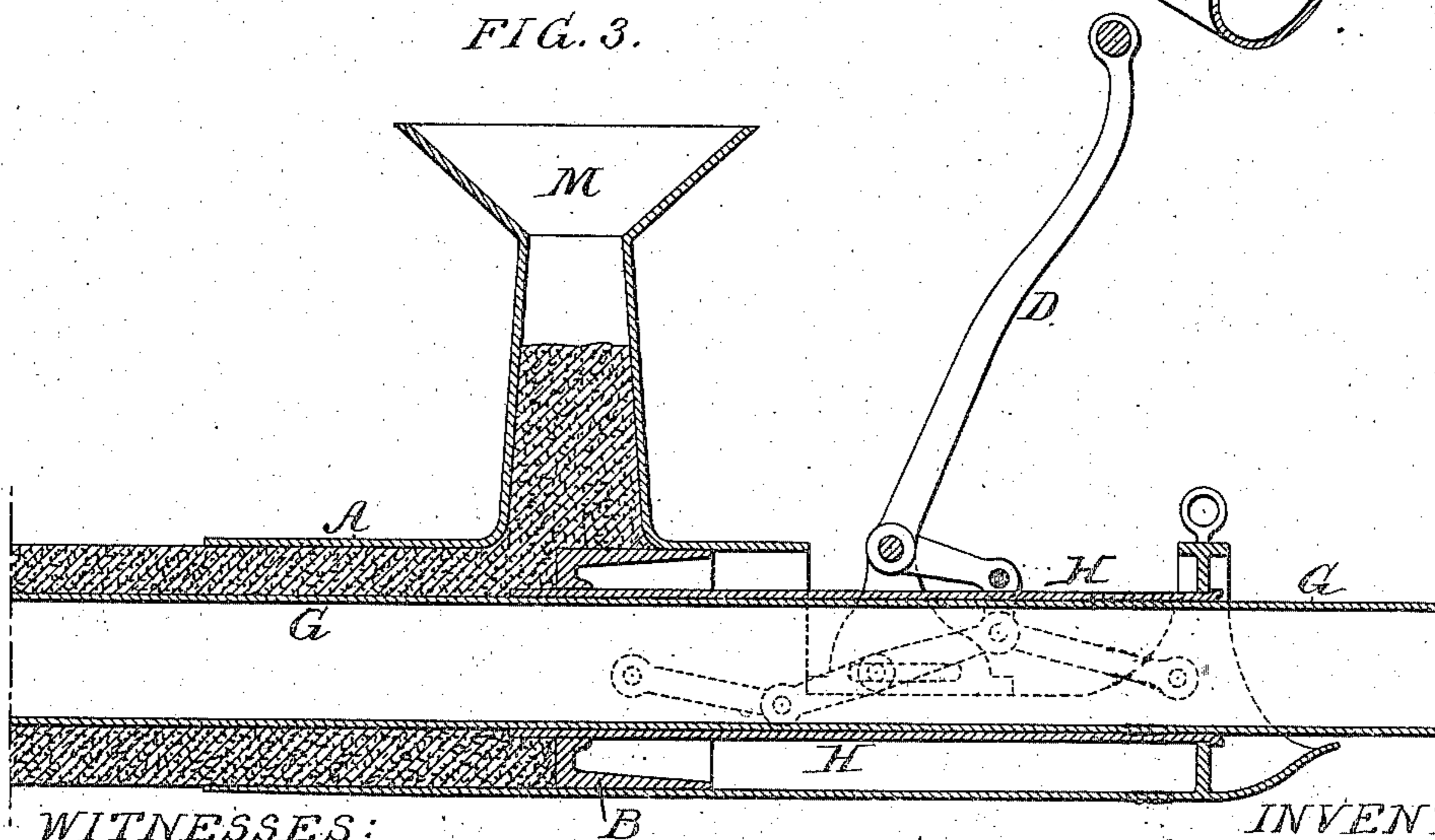


FIG. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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TUBE-LINED CEMENT CONDUIT AND PROCESS OF MAKING THE SAME.

SPECIFICATION forming part of Letters Patent No. 288,033, dated November 6, 1883.

Application filed October 1, 1883. (No model.)

To all whom it may concern:

Be it known that I, CALVIN DETRICK, a citizen of the United States, and a resident of New York city, New York, have invented an Improved Tube-Lined Cement Conduit and Process of Making the Same, of which the following is a specification.

My invention consists of a conduit composed of a tubular lining of thin metal clothed with end-pressed cement of a defined shape, as described hereinafter, my invention also consisting of the process described hereinafter of making the conduit.

In the accompanying drawings, Figure 1 is a transverse section of a conduit made according to my invention; Fig. 2, a diagram illustrating the manner of forming the conduit, and Fig. 3 a sectional view of the machine which I prefer to use in carrying my invention into effect.

Referring to Fig. 2, and supposing A to be a tubular casing of a form corresponding with that of the exterior of the desired conduit, and G a lining-tube which is to form a permanent part of the said conduit, and which is preferably made of thin sheet-iron, if the space between the tube and the casing A be packed by ramming in the direction of the arrow plastic or semi-plastic material—any available cement, for instance, which will become hard when dry—and the casing be drawn forward and sections of tubing added from time to time, there will be the conduit shown in the transverse section, Fig. 1, consisting of a thin lining-tube, or, rather, succession of sections of tubes, clothed with a thick solid mass of cement, which will soon become hard, the cement clothing being of an external form defined by the casing A, and the solidity and uniformity of the cement being insured by end ramming the material when in a semi-plastic condition, for no such solid cover of cement can be made by ramming it round a tube contained in a trough open at the top to permit vertical ramming—as by horizontally packing the material round a tube contained in a tubular casing.

As the application of the cement to the tube by hand would be a tedious operation, I use the machine shown in Fig. 3, a brief description of which will suffice here, as it forms the subject

of a separate application for a patent bearing even date herewith.

The casing A, which may be of the form shown in Fig. 1, contains a ram, B, which can be reciprocated in the casing by an operating-lever, D, through the medium of any desired mechanism, that described in my said application for a patent being preferred.

A guiding-tube, H, is secured to the rear end of the casing A, and passes through the ram B, a lining-tube, G, passing through the said guiding-tube.

When an underground conduit has to be laid, a trench of suitable depth is dug in the ground, and the above-described machine is placed on the bottom of this trench, after which a section of the lining-tube G is passed through the guiding-tube H. Semi-plastic cement is placed in the hopper M, which communicates with the interior of the casing A, an attendant being at hand to feed the hopper, while another attendant vibrates the operating-lever D. The consequence of this will be the end packing of cement round the lining-pipe G. As the operation is continued the entire machine will slowly and intermittently recede, owing to the resistance which the packed cement presents to the ram, and the receding machine leaves a conduit consisting of the packed cement containing the lining-tube, which forms a permanent part of the conduit, the external shape of the conduit being determined by that of the tubular casing A. From time to time, as the machine recedes, a section of lining-tube is fitted to the end of that which is being clothed with cement, so that a continuous conduit of any desired length may be obtained.

It is not necessary to adhere to the form of casing shown in Fig. 1, but in carrying out my invention it is necessary that the casing, whatever may be its form, shall be tubular, and that the cement should be packed endwise in the casing around the lining-tube, so that the cement may be solidly and uniformly compacted.

My invention is not restricted to any specific material for the lining-tubes. They may in some conduits be of substantial paper or cardboard; but generally they will be of sheet-iron,

which may be very thin—no thicker, for instance, than stove-pipe iron—for the lining-tubes are substantially re-enforced by the tubular packing of cement, and are protected
5 thereby from all injury.

I prefer in all cases to coat the lining-tubes with pitch or suitable varnish or pigment before they become part of the conduit.

I claim as my invention—

- 10 1. The mode herein described of forming conduits, the said mode consisting in clothing a lining-pipe with cement compacted within a tubular casing by ramming it into the end

thereof, as set forth, and advancing the casing from time to time, all substantially as specified. 15

2. The within-described conduit, the same consisting of a lining-tubing clothed with a continuous coating of cement compacted to a defined external form, as set forth.

In testimony whereof I have signed my name 20 to this specification in the presence of two subscribing witnesses.

CALVIN DETRICK.

Witnesses:

JOHN E. PARKER,
HARRY SMITH.