

W. E. PRALL.
Underground-Telegraph.

No. 218,192.

Patented Aug. 5, 1879.

Fig: 1.

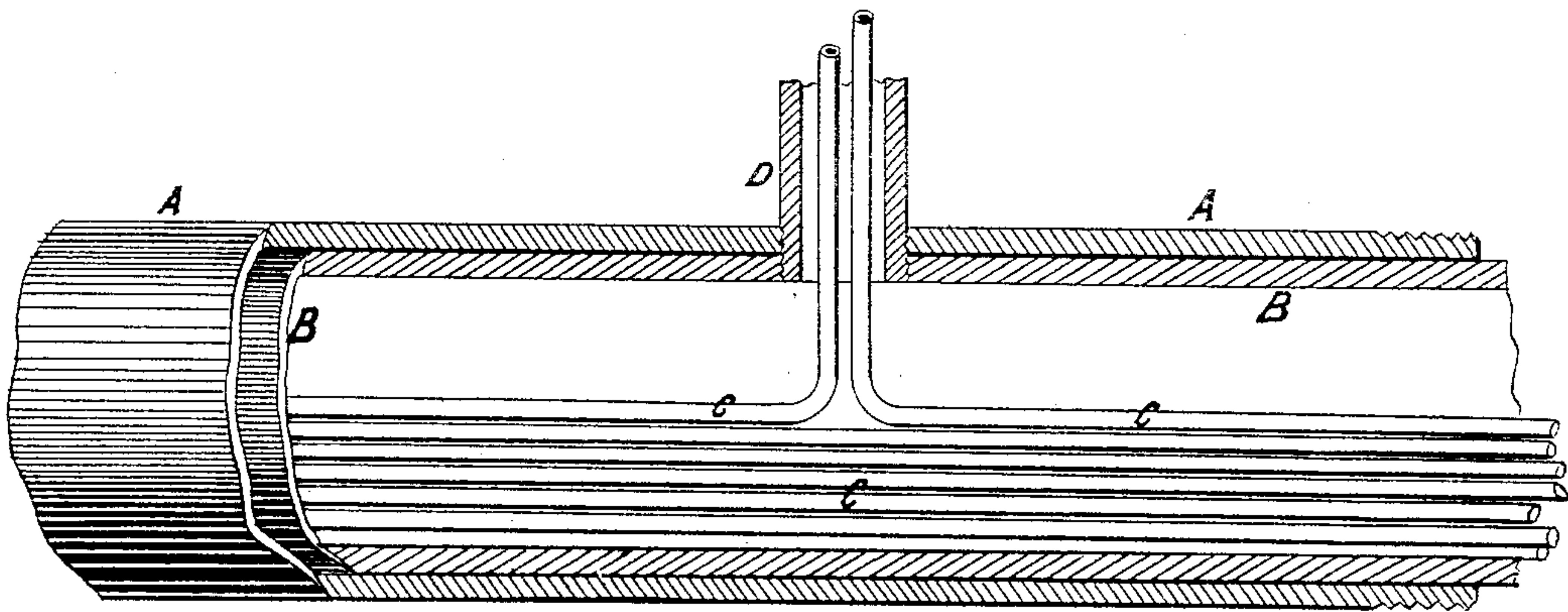


Fig: 2.

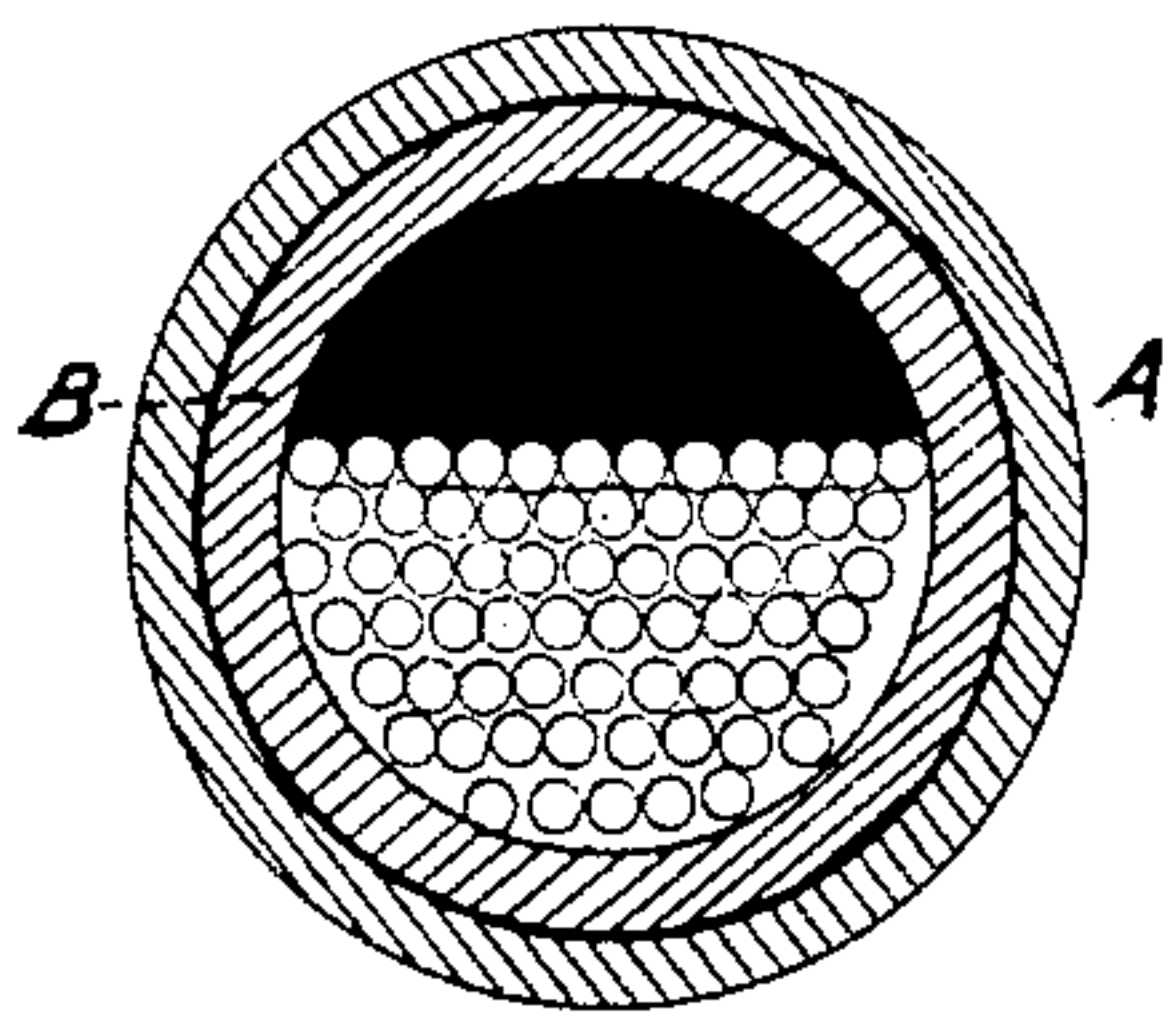
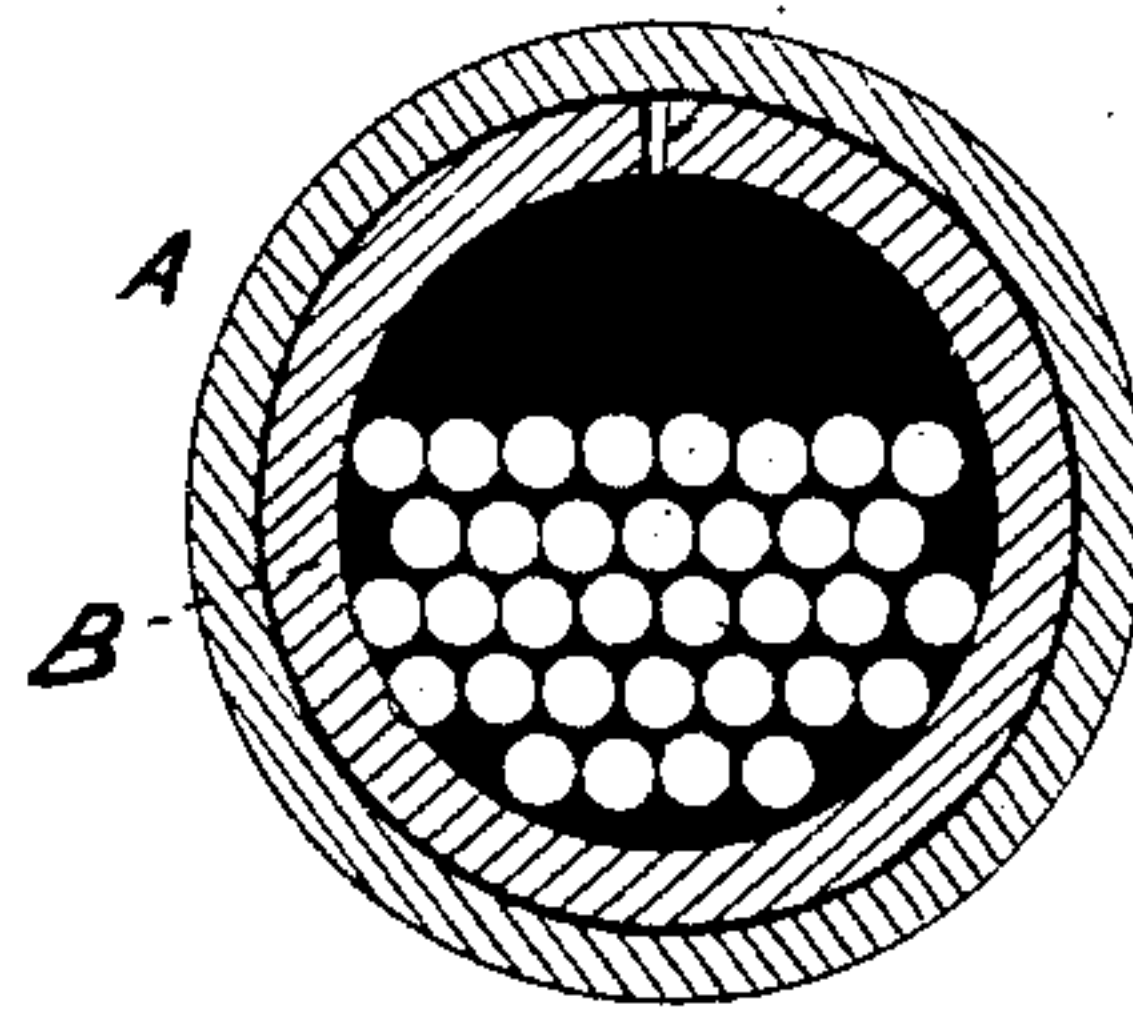


Fig: 3.



Witnesses:

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UNITED STATES PATENT OFFICE

WILLIAM E. PRALL, OF NEW YORK, N. Y., ASSIGNOR TO J. L. PRALL, OF
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IMPROVEMENT IN UNDERGROUND TELEGRAPHS.

Specification forming part of Letters Patent No. **218,192**, dated August 5, 1879; application filed
June 5, 1879.

To all whom it may concern:

Be it known that I, WILLIAM E. PRALL, of New York, county and State of New York, have invented an Improved Method of Protecting and Insulating Telegraph-Wires, of which the following is a specification.

My invention relates to an improved method of protecting and insulating telegraph-wires when carried under ground in metallic or other pipes.

In the drawings, A represents the metallic pipe; B, the inside casing or pipe, constructed of a non-conducting material; C, the electric wires, and D the opening in the pipe for taking out the wires for branch connections.

In the practical adaptation of my invention the metallic pipes will be of the proper size to contain all the wires which it is desired to convey in them without crowding or binding the wires, and the openings in the pipe will be made at all such places as it is desired to make connections, either for testing them or for the purpose of introducing new wires at any time, as well as for general use.

In putting down the iron pipes, and before they are connected, I propose to insert an inside casing or pipe, which is to be made of glass fiber or mineral fiber of some kind that is a good non-conductor of electricity. This casing may be formed in any manner into the tubes of such a size as that they can be introduced into the iron pipes without difficulty, and so arranged therein that the joints will form a close connection, and thereby prevent the corrosion of the iron pipe from coming in contact with the covering on the wires. The iron pipe should first be dipped in coal-tar, or some such substance as will prevent the corrosion, as well as fill up all the pores, if any should exist, and thus prevent the admission of water, gas, or other substance. By this inside casing the wires will be kept away from the metallic pipe by the thickness of the material of which it is formed, and as it will be a non-conductor of electricity it will thoroughly insulate the interior surface of the metallic pipe.

The casing may be first saturated with oil, paraffine, or wax, which would prevent the destruction of the material of which it is

made when other substances than those of a mineral character were employed in its composition; but glass fiber, or what is known as "mineral wool," would, perhaps, be found to be the best; and it may be made into pipes or elastic casings in a similar manner, as from asbestos, by combining it with glue or paste. When made of such material it would be indestructible in the metallic pipes, and would form a smooth surface for the wires to rest upon in drawing them in or out.

The advantage of thus insulating the interior of pipes for conveying electric wires will be easily comprehended, for while it is true that the covering on the wires prevents them from coming in direct metallic contact with the pipes containing them or with each other, it will be seen that the insulated protection from the pipes is only one-half as great as it is between the wires themselves, for the covering on each wire makes the distance twice as great between the metallic wires as that between the wires and the metallic pipe upon which they rest, unless some additional protection is provided, as done by this casing.

I am aware that solid glass pipes have been placed within metallic pipes; but they have been found practically useless, on account of their liability to break by the expansion and contraction of the metallic pipe, and from other causes.

I am also aware that wooden tubes have been employed as a means of insulation in metallic pipes; but as they soon decay, and not being a perfect non-conductor at any time, they have not been found practical for general use. Cables of wires have also been wrapped together inseparably before being inserted in the metallic pipes; wires have been insulated and then incased with lead; but all these methods have been found more or less impracticable for general underground use. I have therefore endeavored to supply the need of a durable insulator adapted for use in underground metallic pipes used for conveying electric wires—one which can be easily introduced in sections before the pipes are put together, and which, when in use, will not interfere to bind the wires, but will leave them free, so that any single wire may be removed, or others

may be added to the number, if required, without disturbing those already in the pipe. The paraffine with which the sections are saturated will serve the purpose of protecting the metallic pipe from corrosion, as well as acting to insulate the same. The sections, being flexible, will not be liable to break. They will also form a smooth soft surface for the wires to rest upon, and will be indestructible when saturated with oil and inclosed in the metallic pipe.

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

The within-described method of insulating metallic pipes for conveying electric wires, by the introduction of sectional flexible casings, saturated with paraffine or other oil, and covering the interior of the pipe independent of the wires, in a manner to prevent the wires from coming in contact therewith substantially as shown and described.

W. E. PRALL.

Witnesses:

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