

(No Model.)

J. G. HILL & J. L. LEE.

PACKING FOR UNDERGROUND STEAM MAINS.

No. 258,065.

Patented May 16, 1882.

Fig.1.

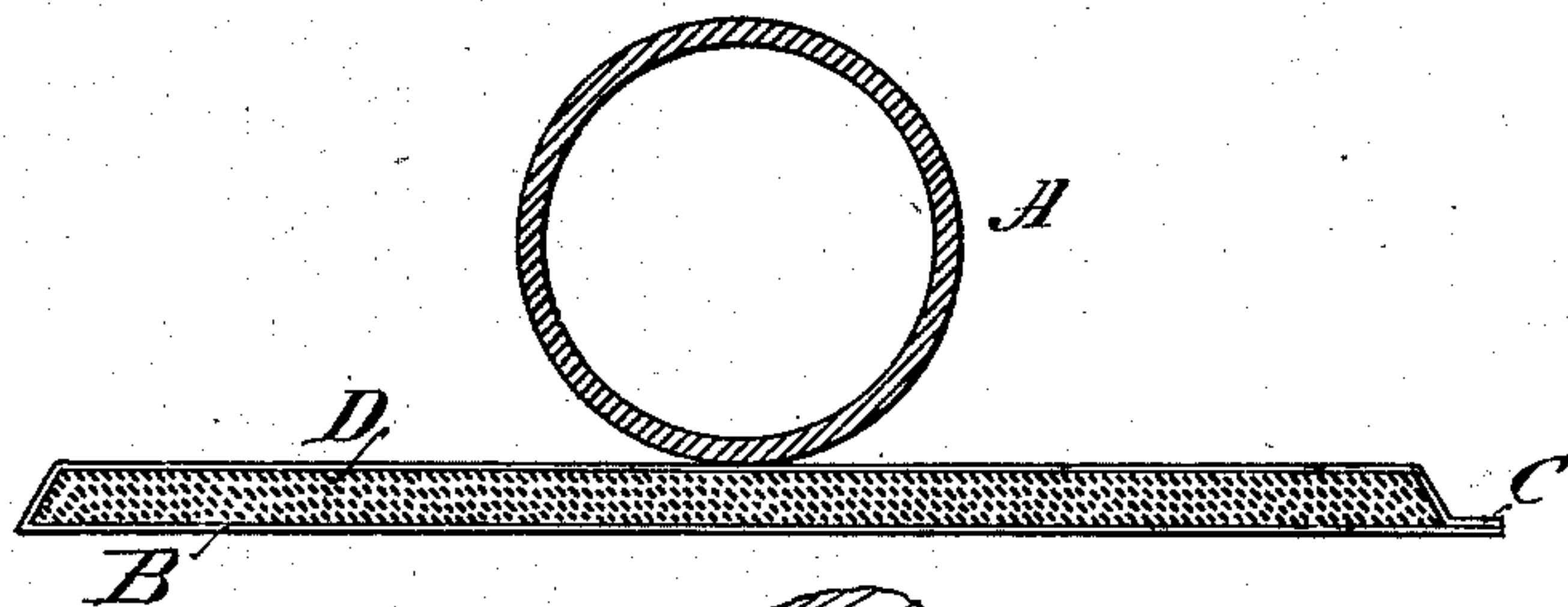


Fig. 2.

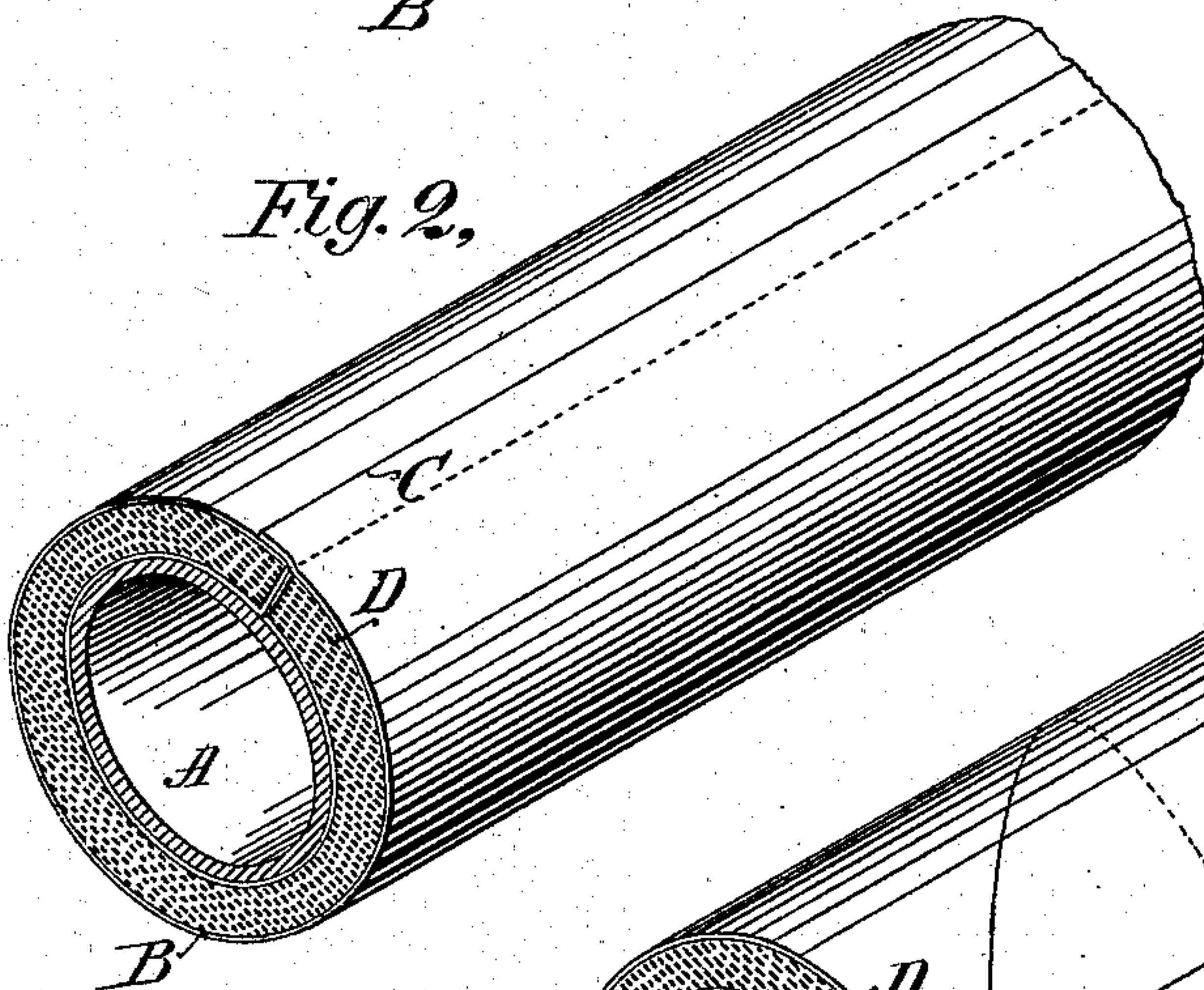


Fig. 3,

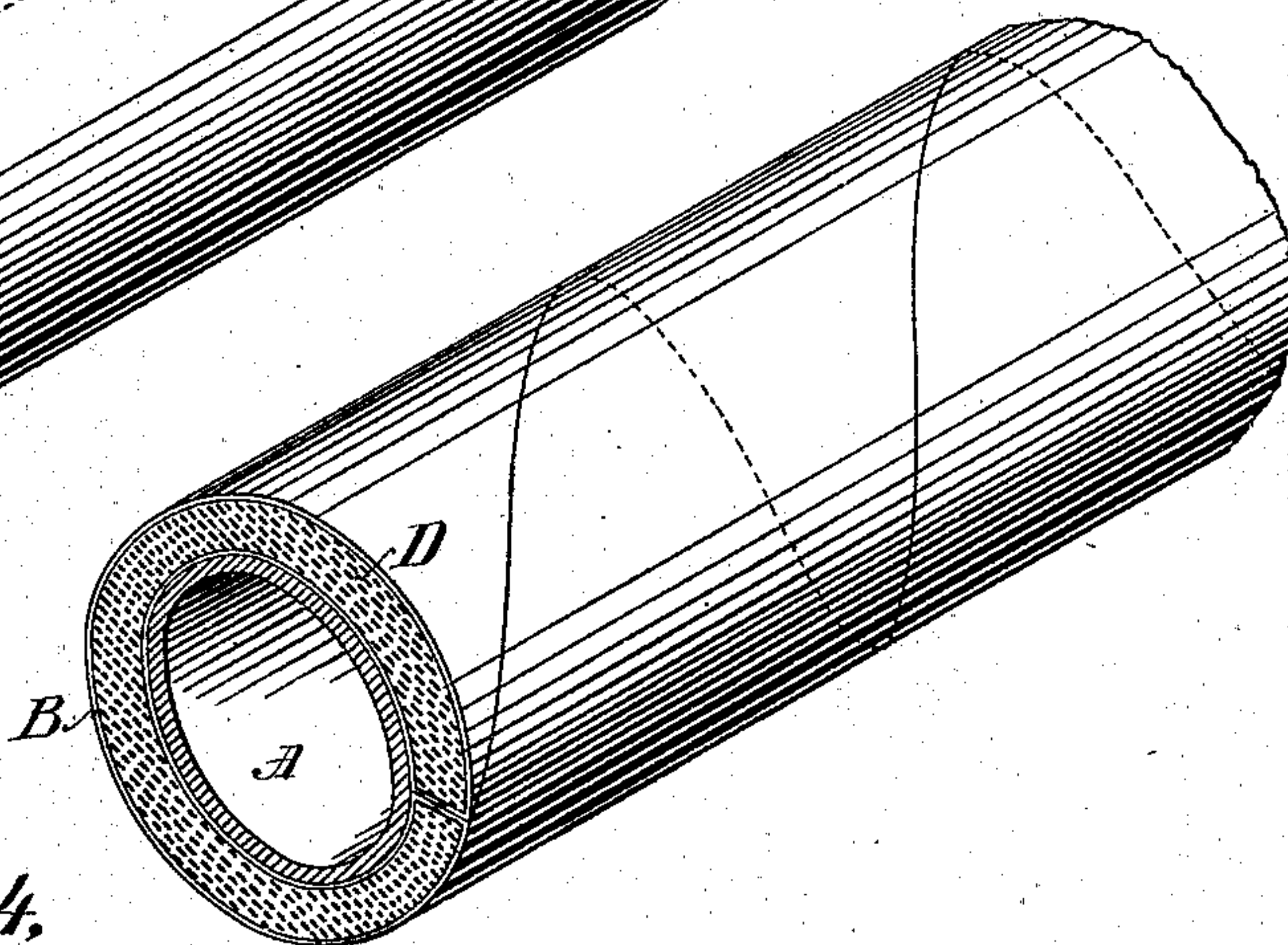
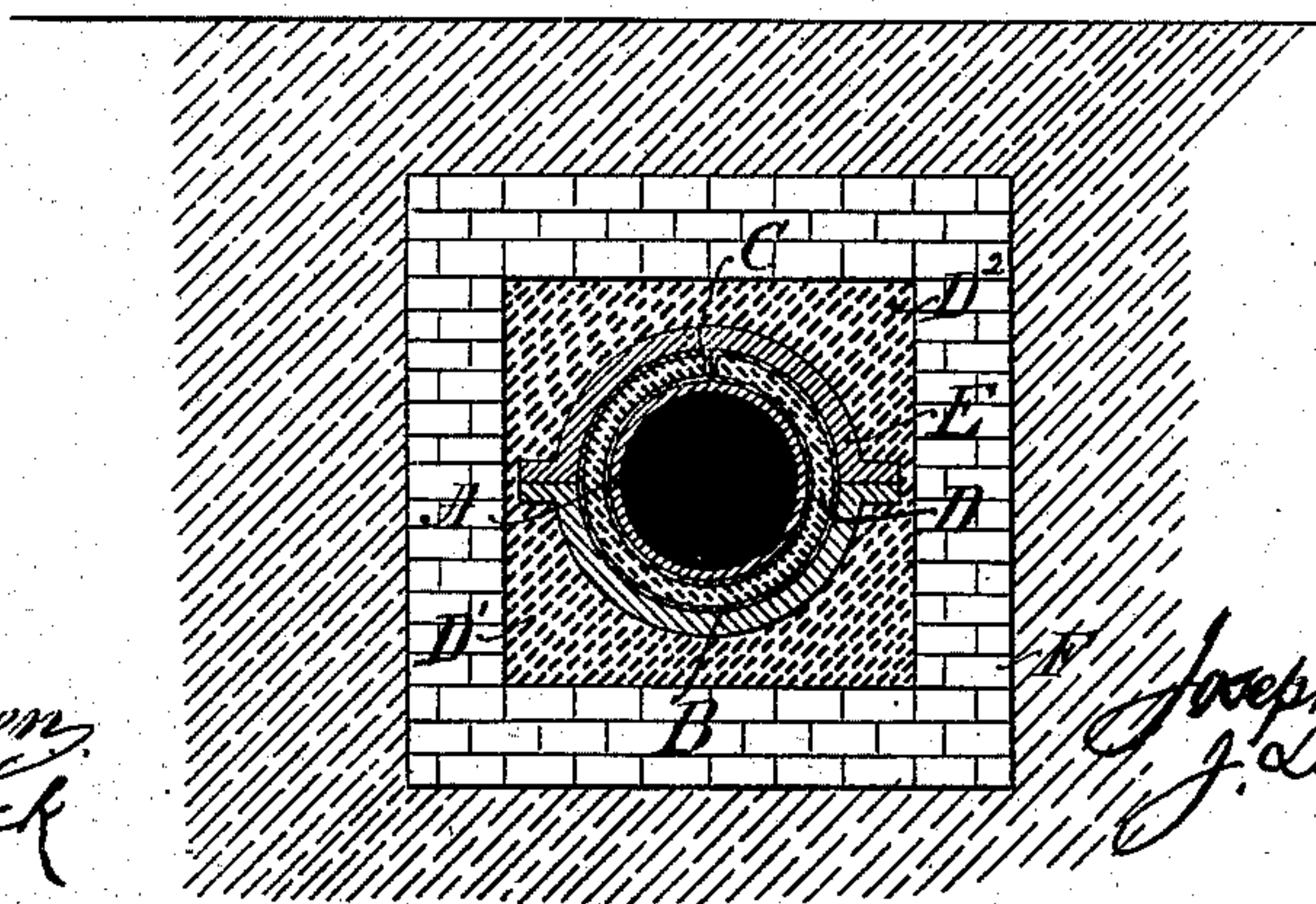


Fig. 4.



WITNESSES

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PACKING FOR UNDERGROUND STEAM-MAINS.

SPECIFICATION forming part of Letters Patent No. 258,065, dated May 16, 1882.

Application filed December 16, 1881. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH GIBBONS HILL, of Newark, Essex county, New Jersey, and JOHN LAWRENCE LEE, of the city of New York, have invented a new and useful Improvement in Packing for Underground Steam-Mains and other Purposes, which is fully set forth in the following specification.

The object of this invention is the more perfect insulation of steam or hot-water pipes, or pipes containing other heated bodies, to prevent loss of heat by radiation and conduction and prevent the conduction of moisture. The invention is broadly applicable wherever these ends—i. e., non-conduction of heat and exclusion of moisture—are desired. Many non-conductors—such as asbestos, mineral wool, felt, paper, &c.—have been used with more or less success; but all have required absolutely water-proof envelopes to prevent absorption of moisture when used where contact of moisture may occur, as when laid under ground.

The present invention consists in the use of lamp-black, which repels moisture and is at the same time an excellent non-conductor. Various modes of application may be used. One method is compression to a greater or less extent of lamp-black in bags of woven material rendered incombustible by a solution of alum, or in any other well-known way, compressed to a uniform thickness and of any required length, the width to correspond with the circumference of the pipe, with a loose flap, rendered adhesive and water-proof at the same time on one of the edges, by means of which the bags containing the lamp-black may be drawn around the pipes, and by giving the flaps a uniform thickness of the insulating material may be set around the pipe, and the point of junction being water-proof prevents moisture being carried to the pipe by capillary attraction in the containing-envelope. It may be then fastened more securely by wire drawn spirally or otherwise around the insulating-sack continuously or at intervals; and the whole may, if desired, be coated with a water-proof material or inclosed in a metallic case. These sacks may be of any desired dimensions and applied spirally, then fastened by wiring, &c., and painted with a water-proof material.

Lamp-black may also be used with other insulators, either intimately mingled with them or applied in layers. It may be desirable thus to apply to a surface a layer of mineral wool, asbestos, or other incombustible material, and the whole enveloped in lamp-black by any of the methods described; or the lamp-black may be thrown into a brick or other trench, through which pipes requiring insulation pass, completely surrounding them; or sheets of paper rendered incombustible may be used, of dimensions to surround the pipe and leave room for the desired thickness of insulating material, with an adhesive edge or flap to retain the lamp-black in position until inclosed in some supporting-envelope. This method may be used for other insulating purposes. The lamp-black may likewise be introduced into a casing composed of metal, brick, cement, stone, or other material, of larger dimensions than the pipe to be insulated, without any woven covering. It is desirable to prevent access of air, as by this means the lamp-black can stand very high temperatures without liability of combustion or ignition. This material may be used for purposes of insulation and prevention of radiation and conduction and exclusion of moisture, wherever such ends are desired; for ice-water pitchers or reservoirs for preservation of ice, as in sick rooms, where a covering in metallic or other case filled with this material may be placed over the vessel containing ice; or to retain heat in soups or cooked dishes, where it would be well to introduce a non-conducting rim, so that the metal, if metal be used, may not be continuous from the interior to the exterior.

In the accompanying drawings, which form a part of this specification, Figure 1 shows the manner of applying the lamp-black packing by means of a bag, as above described. Fig. 2 is a view in perspective of the section of a main or pipe with packing applied. Fig. 3 is a similar view of a pipe-section wrapped spirally with a long bag filled with the non-conducting material; and Fig. 4 is a view in vertical cross-section, showing an underground main jacketed and embedded in lamp-black, filling the trench wherein it is placed.

A is the pipe or main; B, a bag; C, a flap;

D D' D², non-conducting fillings or masses of lamp-black; E, a metal casing, and F the walls of a trench.

The manner of applying the lamp-black inclosed in bags has already been explained, and the description need not be repeated. The bags enable this material to be applied very conveniently, notwithstanding its fine state of division. So far as we are aware, they have never before been used in this manner with any non-conducting packing material, and therefore the invention comprises broadly this means for applying finely-divided packing materials to pipes and mains. The lamp-black under our invention may be used with other non-conductors, mingled as well as in layers.

We are aware that heretofore lamp-black has been used simply as a non-conductor of heat; but its use for that purpose broadly is not claimed herein.

Having now fully described our said invention and the manner of carrying the same into effect, what we claim is—

1. Lamp-black as a moisture-repellent packing material, substantially as described.

2. Underground mains or pipes jacketed with or enveloped in lamp-black as a heat-retaining moisture-repellent medium, substantially as described.

3. Underground mains or pipes for transmission of steam, hot water, or the like, laid

in trenches and embedded in lamp-black, substantially as described.

4. The method of applying finely-divided lamp-black to steam and other pipes, where exposed to moisture or laid in trenches or placed under ground, by filling bags with the same and wrapping the bags around the pipes, substantially as described.

5. Steam or other pipes, where exposed to moisture or laid in trenches or placed under ground, surrounded by bags filled with finely-divided lamp-black, substantially as described.

6. Woven envelopes filled with lamp-black for jacketing steam-pipes and other articles where exposed to moisture or laid in trenches or placed under ground, substantially as described.

7. A heat-retaining and water-repellent jacket for mains, pipes, and other objects, where exposed to moisture or laid in trenches or placed under ground, of lamp-black held in place by woven fabric waterproofed, substantially as described.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

J. G. HILL.

J. LAWRENCE LEE.

Witnesses:

W. H. L. LEE,

JOHN MCCLURE.