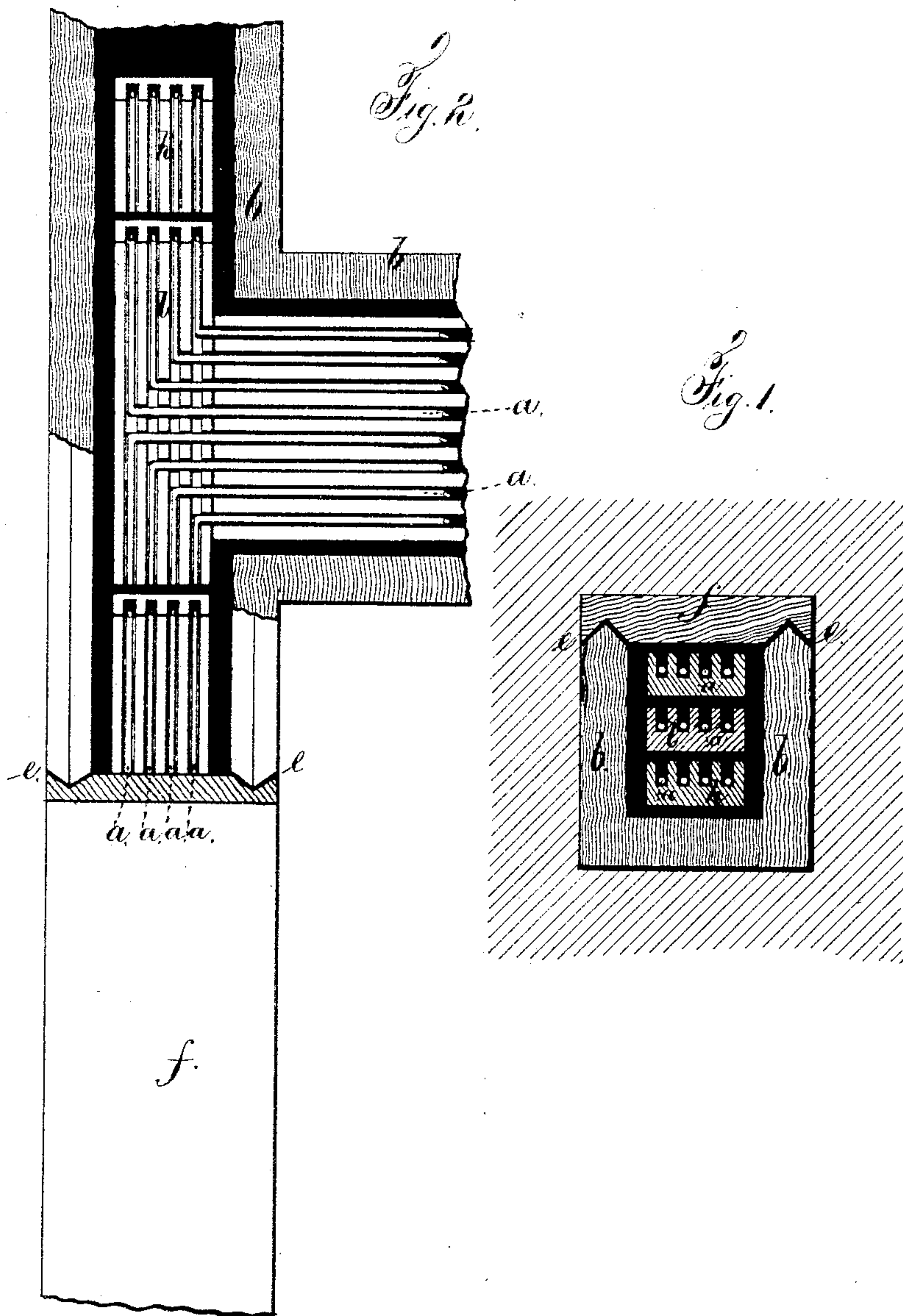


J. S. PIERSON.
Underground Telegraph Line.

No. 217,479.

Patented July 15, 1879.



Witnesses
Harold Serrell
Geo. D. Pinckney

Inventor
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UNITED STATES PATENT OFFICE.

JAMES S. PIERSON, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN UNDERGROUND-TELEGRAPH LINES.

Specification forming part of Letters Patent No. **217,479**, dated July 15, 1879; application filed November 22, 1878.

To all whom it may concern:

Be it known that I, JAMES S. PIERSON, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Underground-Telegraph Lines, of which the following is a specification.

Telegraph-wires heretofore laid in the ground have been incased in non-conducting material, and then introduced in tubes. In some instances these tubes have been of metal and laid together in sections.

My invention relates to the means for holding the wires in position, insulating them, and rendering the entire structure water-proof.

In the drawings, Figure 1 is a cross-section of the lines and the inclosing-case; and Fig. 2 is a plan, partially in section, of the case and lines.

The telegraph wires or conductors *a* are of copper or other material, and the size of the underground structure will depend upon the number of conductors.

The case *b* is of either wood, metal, or earthenware. I prefer to make the same of wood thoroughly coated with asphalt. The sections or lengths of case are united by tongues and grooves at *c*, and india-rubber, asphalt, or other yielding material is to be inserted to keep out water, and with metal cases this yields to expansion or contraction from heat or cold. The cover *f* is preferably secured by screws.

A layer of melted native asphalt or bitumen is laid in the case *b*, and upon this a plank or board, *h*, having numerous grooves in its upper surface, and into these grooves the conductors *a* are laid. It is generally best to supply these telegraph-wires from reels that are drawn along the top edge of the pipe or case *b*, and planks or boards *h* are laid successively upon the bitumen, the grooves matching each other.

Melted bitumen or asphalt is poured upon the boards *h*, and in sufficient quantities to

fill the grooves and prevent moisture reaching either the board or the conductors.

A second board, *l*, is laid upon the asphalt while hot, and pressure is applied sufficient to cause an intimate contact between the board and the bitumen.

The grooved boards should be laid so that the joints of one layer come near the middle of the boards of the next layer.

A second range of wires is laid in the grooves in the surfaces of the second layer of boards, *l*, and the filling-in of melted bitumen is made use of, as before described. In this manner several layers are introduced in the case, and then the cover is put on and fastened down, if desired.

The bitumen, being indestructible, entirely water-proof, and slightly elastic, is excellently adapted to the insulation and protection of underground-telegraph lines, and the risk of injury is lessened in consequence of the slight elasticity of the bitumen, because the same will yield and not crack by the settling of the earth or the frost displacing the case containing the conductors.

It is to be understood that it is preferable not to employ the inferior or brittle quality of bitumen or asphalt.

Lateral branches are taken off in the manner represented in Fig. 1, the wires being laid in transverse grooves that correspond to the grooves in the plank that pass off laterally.

I claim as my invention—

In combination with grooved planks or boards and the conductors in such grooves, a filling of asphalt introduced into such grooves and around the boards, substantially as set forth.

Signed by me this 19th day of November, A. D. 1878.

JAMES S. PIERSON.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.