

(No Model.)

H. C. SPALDING.

CONDUIT FOR UNDERGROUND CONDUCTORS.

No. 327,466.

Patented Sept. 29, 1885.

Fig 1

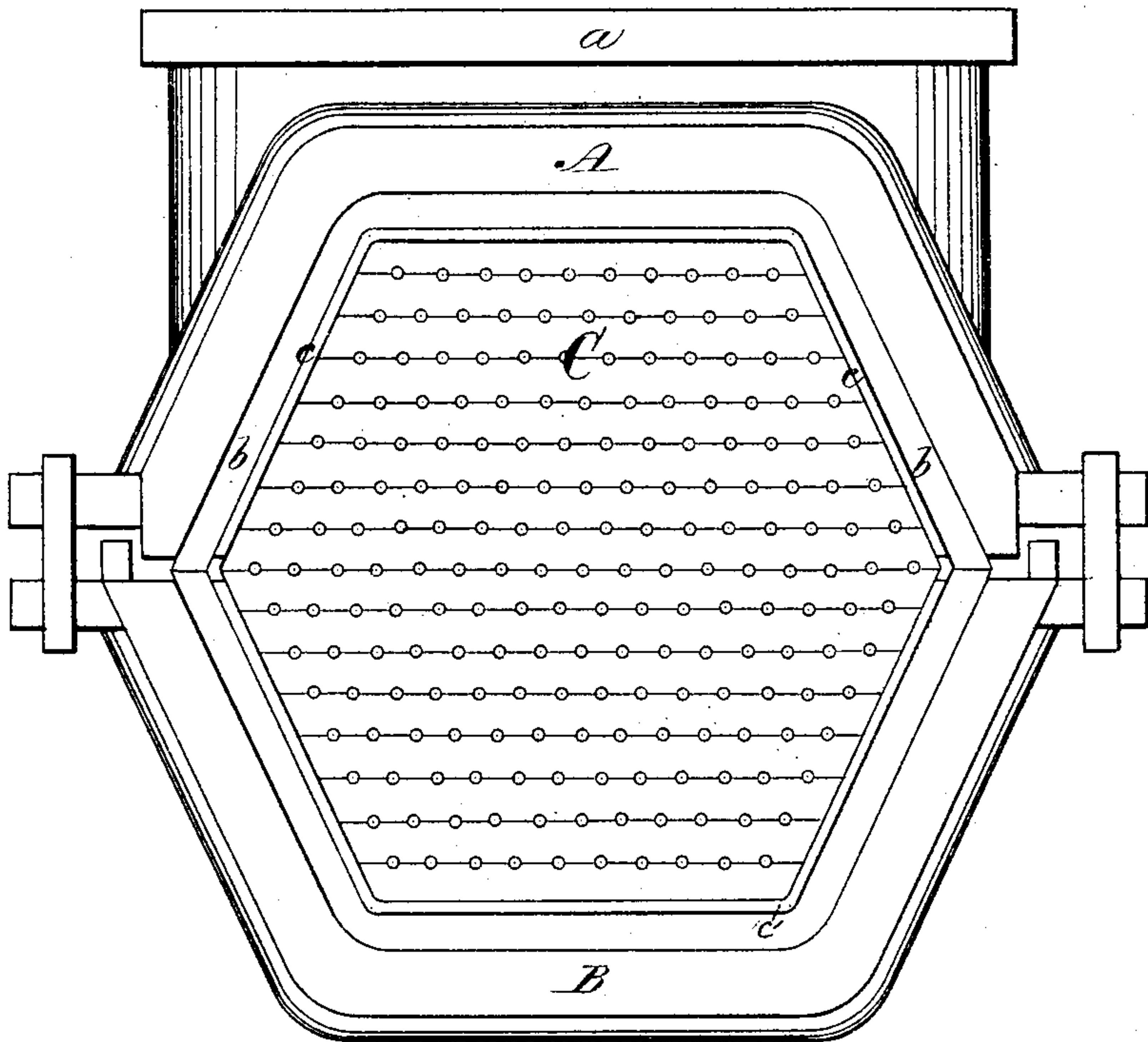
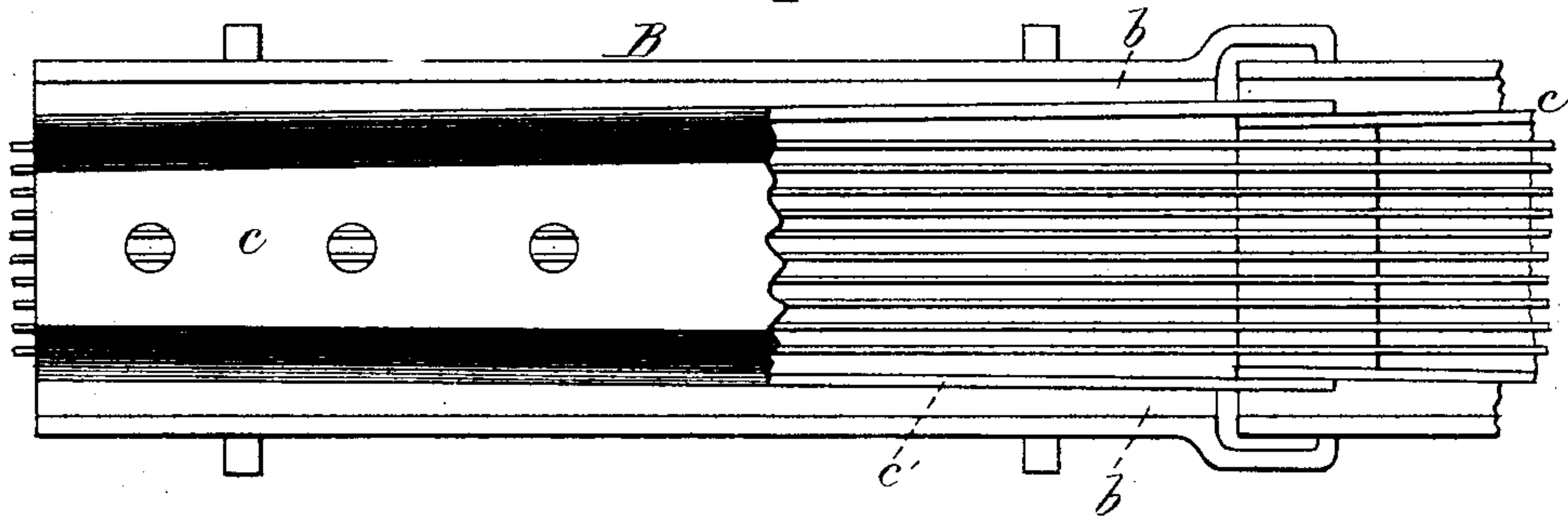


Fig 2



WITNESSES

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CONDUIT FOR UNDERGROUND CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 327,466, dated September 29, 1885.

Application filed November 23, 1883. Renewed February 23, 1885. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. SPALDING, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Conduits for Underground Conductors, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

The object of my present invention is the prevention of the retarding effects of the electro-static induction upon the insulated conductors of subterranean or subaqueous systems. This I accomplish by interposing between the conductors and the earth or water in which they are deposited an insulated metallic sheath or screen. In its purpose and effects this screen differs from the casings or sheaths heretofore used. It is well known that the free electricity of the earth is acted upon by the currents traversing underground conductors, and reacting thereon tends to produce a retardation or sluggishness of the said currents. To interpose a metallic casing or sheath between such conductors and the earth operates adversely, if at all, in preventing such retardation if the sheath is in contact with the earth at any point or points, since in that case the sheath becomes also a primary conductor or medium for the deleterious charge, which thus acts directly upon the conductors inclosed by the sheath. I have found, however, that in inclosing the insulated conductors by a sheath or screen entirely disconnected and insulated from the ground retardation due to the earth's electricity is largely diminished, the effect being to all appearances similar to that observed when a plate of metal is interposed between two parallel wires, or when a metal cylinder is interposed between the primary and secondary coils of an induction-coil, the effect in both cases being to shut off the induction of currents in one wire by currents in the other.

My present invention consists, therefore, in the combination, with a conduit for underground or similar conductors, of an insulated sheath or screen inclosing the conductors, and, secondly, in the combination, with a sectional conduit, of a sectional sheath or screen, as will be more fully hereinafter set forth.

The invention is applicable to any form of conduit, into which a group of insulated wires inclosed or surrounded by an insulated metal screen may be introduced. I shall describe it, however, in connection with a conduit of a special kind, and which I have described more in detail, than will be herein, in other applications.

Figure 1 is a cross-section of the conduit. Fig. 2 is a view, partly in horizontal section, showing parts of the metal sheath in plan.

A and B represent the upper and lower sections of the conduit, which, after the introduction of the conductors in the lower section, are brought together, properly secured, and filled with insulating material. C C are blocks of insulating material placed in the conduit for supporting the conductors or wires. Around the blocks C, and between the conductors and the outer casing, is the metallic screen *c c*, made, preferably, in section similar to those forming the conduit. Between the screen *c* and the outer casing I insert blocks or sheets *b*, of an insulating compound, to insure the proper isolation of the screen *c* from the ground. The portions of the sectional sheath at the top and bottom of the conduit are provided with a number of perforations, as shown in Fig. 2, which permit the escape of air and the free circulation of the insulating compound, which is introduced into the conduit after the wires have been laid and the sections secured together. The screen *c* may be of sheet iron, copper, or other metal, and the materials for the conduit may be any of those commonly used.

I would here state that other disturbances—such as induction and retardation, due to other causes than earth-currents—affect, often seriously, the rapid working of underground lines. For providing against these I have employed special devices and constructions, which I have made the subject of other applications of even date herewith. The insulated sheath, however, as observation and experiment have led me to conclude, has in itself a useful and novel function—namely, the prevention of retardation caused by earth-currents. In this respect it forms a novel and valuable adjunct to systems of this kind.

Without claiming the conduit or the method of laying the same herein described, since these

are matters contained in applications now on file, what I claim herein is—

1. The combination, with the conductors of an underground system, of a metal sheath or screen inclosing all of said conductors and insulated from both the conductors and the ground, as and for the purpose set forth.

2. In an underground conduit for electrical conductors, the combination, with said conductors, of a sheath or screen interposed between the conductors and the conduit and insulated from both, as set forth.

3. The combination, with a sectional conduit and the conductors contained therein, of a sectional metallic sheath between the conduit and the group of conductors and insulated from both, as set forth.

4. The combination, with a conduit composed of sections A and B, of a group of wires contained therein, a metal sheath or screen inclosing and insulated from the conductors, and layers or plates of insulating material *b*, between the screen and the conduit, as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HENRY C. SPALDING.

Witnesses:

E. B. WELCH,
ALEX. L. HAYES.