

(No Model.)

2 Sheets—Sheet 1.

E. THOMSON.

SECTION INSULATOR FOR OVERHEAD ELECTRIC CONDUCTORS.

No. 434,961.

Patented Aug. 26, 1890.

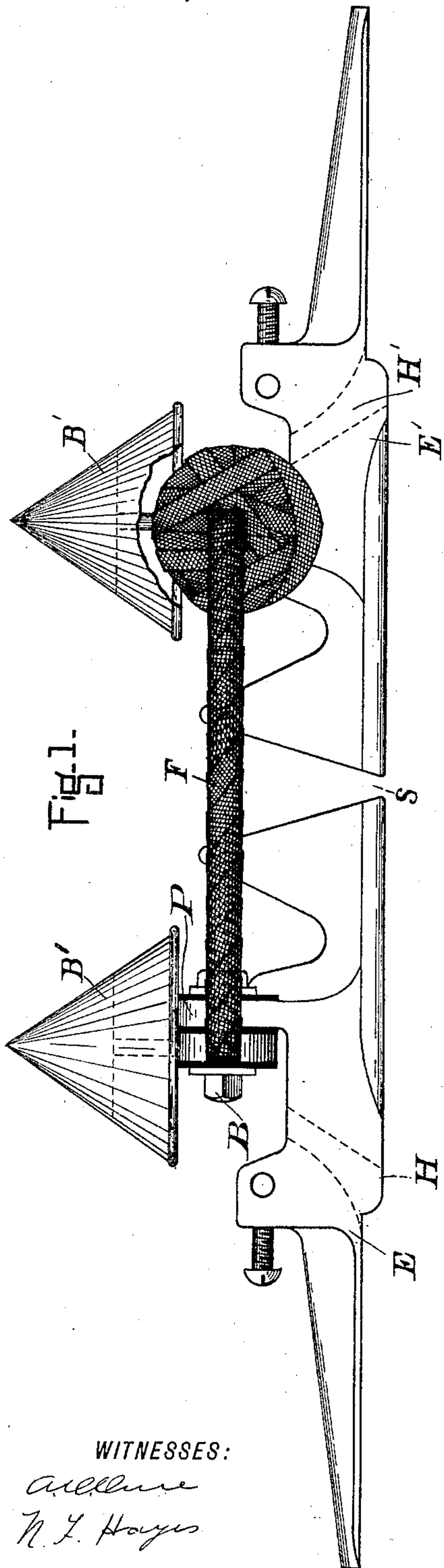


Fig. 1.

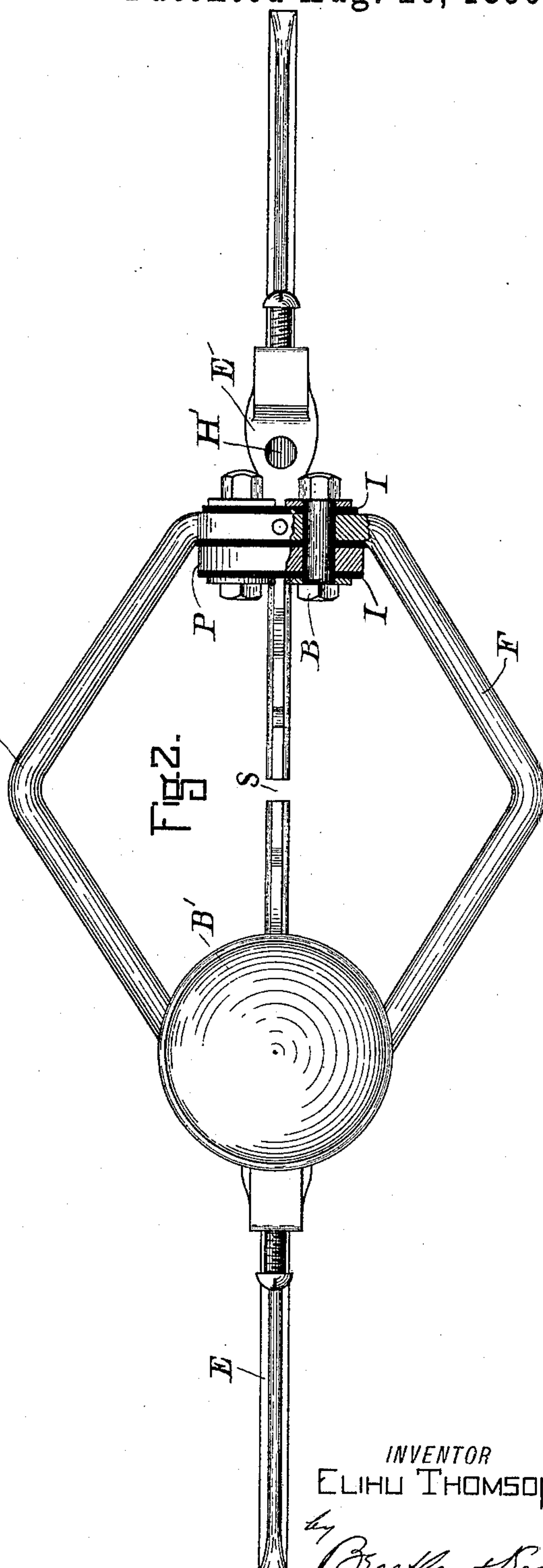


Fig. 2.

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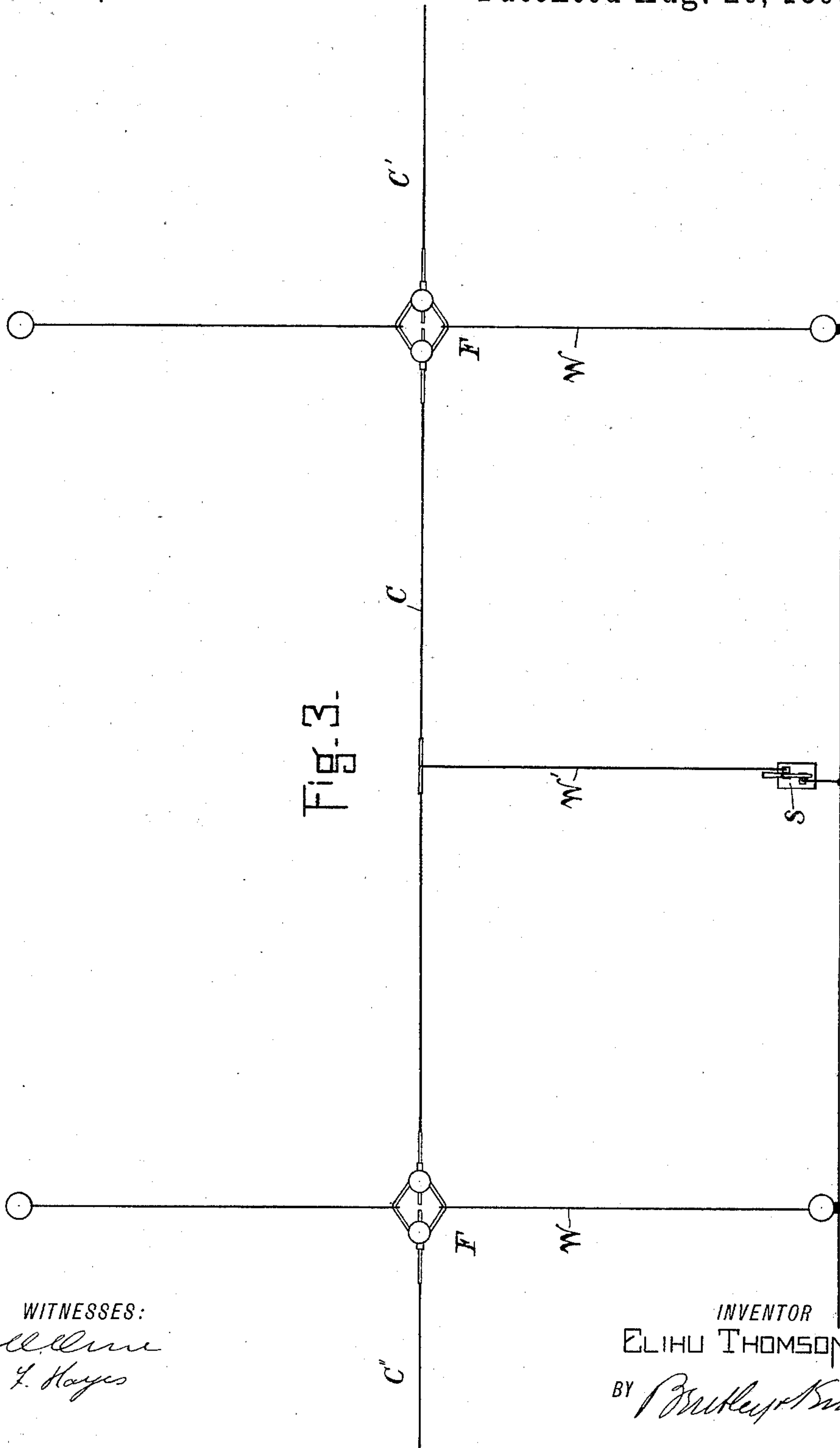
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WITNESSES:

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UNITED STATES PATENT OFFICE.

ELIHU THOMSON, OF LYNN, MASSACHUSETTS, ASSIGNOR TO THE THOMSON-HOUSTON ELECTRIC COMPANY, OF CONNECTICUT.

SECTION-INSULATOR FOR OVERHEAD ELECTRIC CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 434,961, dated August 26, 1890.

Application filed March 10, 1890. Serial No. 343,386. (No model.)

To all whom it may concern:

Be it known that I, ELIHU THOMSON, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Section-Insulators for Overhead Electric Conductors, of which the following is a specification.

My invention consists in an improved construction of a support for overhead lines whereby adequate insulation is provided between contiguous sections of the overhead-line conductor, which are to be kept electrically independent of each other, and whereby, also, any arc which may be caused to exist between the adjacent sections of conductors, as by the trolley-wheel leaving one section and passing to the other, will be automatically extinguished.

The invention is illustrated in the drawings, in which Figure 1 is a side view of the same. Fig. 2 is a plan, and Fig. 3 shows its application to an overhead electric-railway line in the manner proposed.

In Fig. 1 E E' are two ears, shaped as shown, to which the line-conductor can be attached on the under side by soldering or other suitable manner, the end of the line being drawn up through holes H H' provided for the purpose, and the ends riveted to retain the same in position. The ears E E' are extended toward each other along the line of travel in the same horizontal plane and project to within a short distance of each other, being separated by a small air-space S, Figs. 1 and 2. These extensions form a way for the trolley-wheel after leaving the trolley-wire proper and feed-current to the car. The air-space S is narrowest at its lower portion and becomes wider and wider toward the top. The ears E E' are supported on a frame F, extending back of projections P of the ears E E', and secured thereto by bolts B, the frame F being, however, safely insulated from the projections P of the ear E by the interposition of suitable insulating material I, such as sheets of mica fiber or other good insulating material. It is not necessary, of course, that the frame should reach back of the projections P, as they might of course be

on the inner sides; but this is the preferred arrangement for mechanical reasons. The insulation I is also extended along the bolts B. While under favorable conditions as to weather, or the employment of a comparatively low potential on the overhead line, the insulation thus provided might prove sufficient, it is preferred in the employment of potentials as high as three hundred to five hundred volts and upward to further increase the insulating effect by pitching over the ears E E' and frame F, where they are bolted together, with a good insulating-pitch—such as asphaltum—and wrapping the whole with a pitched tape, or a tape free of pitch may be wound about these parts and the whole then soaked in or painted with pitch. This will effectually prevent any leakage occurring by moisture gaining access to the joints and reducing the resistance in wet and rainy weather. It is even advantageous in most cases to tape the frame F from one side to the other, as indicated in Fig. 1, so that leak of current from one section of conductor to the other over dampened or moist surfaces is absolutely prevented. Hoods B' B' may also be used to shed water off the joints between the frame F and the ears E E', though it is not absolutely necessary that these be provided in all instances if the taping and pitching in the manner described be thoroughly and effectually performed.

The divergence of the sides of the space S, as shown in Fig. 1, is to destroy any arc that might be established by the trolley-wheel passing from one section of conductor to the next. The arc so established will rise to the upper and wider portion of the space S on account of the current of air established by the heated flame, and will be bowed and eventually broken at the upper portion of the space S. No magnets or moving electrodes need therefore be provided, and the structure becomes cheaper to manufacture and more slightly. Fig. 3 shows the application of such a device to a railway-line, one section of the overhead conductor, as C, being shown as entirely insulated from the adjacent sections C' C''.

The section-insulator itself is best support-

ed as shown in Fig. 3—that is, the cross or side suspension wires W are attached to each side of the frame F, respectively. The strain of the cross-wires will then counteract the strain of the overhead conductor C C' C'', which of course tend to elongate the frame F of the insulator, and would destroy its usefulness for the purpose intended were it not made exceptionally strong; but, by attaching the cross-wires W in the manner mentioned, the frame F, and, in fact, the whole insulated structure, can be made much lighter over what it would otherwise be necessary to make it. The structure, when supported in this manner, therefore can be made to present a neater appearance and can be made more compact, more efficient, and its thorough insulation is accomplished with greater ease.

The feeding of current to any section of the overhead conductor, as C, is accomplished by feed-wires W', these wires being preferably attached at such points along the conductor C as will equalize the potential throughout its length. Thus if one feeder were used, it would be attached at the center of the conductor C; if two were employed, at one-quarter of the distance from the end, and so on. Switches S' are of course provided to each feed-wire W', so that in case it is desired or necessary to cut out a section, as C, along the track—as when a fire occurs or for any other reason—it is only necessary to open the switch S', when such section will be idle; while cars may still be operated on the adjacent sections C' C''.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a connector for line-conductors on electric railways, the combination of two ears attached to the two ends of the line-sections, respectively, and an open metallic frame connecting the said ears, but insulated therefrom, the said frame sustaining the ears so as to provide an air-space between their ends and around them.

2. In a connector for line-conductors on electric railways, the combination, with two ears

adapted to be attached to adjacent ends of the line-wires, of an open frame extending laterally and forming an insulated mechanical connection between the two ears.

3. In a connector for electric line-wires, the combination, with two ears adapted to be attached to adjacent ends of the line-wire, but separated by an air-space, of an open frame forming an insulated mechanical connection between the two ears, but leaving a free space above the opening between the two ears.

4. The combination, with the two ears adapted to be attached to adjacent ends of an open sectional line-conductor, of a connecting-frame connected to each of said ears through insulation, and a protecting-cap for the insulation at each point of connection.

5. The combination, with ears E E', of an open connecting-frame covered with insulation.

6. The combination, with the ears E E', of a frame forming an insulated mechanical connection between the said ears, the said frame and the joints between the frame and the ears being covered with insulating material.

7. The combination, with a connector for adjacent sections of line-conductor consisting of two ears attached to the adjacent ends of the wire and a connecting-frame therefor, of supporting-wires connected to the said frame and extending transversely.

8. The combination, with a connector for sectional line-wires consisting of ears attached to adjacent ends of two wire sections and connected by a diamond-shaped frame, of transverse supporting-wires attached to opposite angles of the said frame.

9. The combination, with a sectional line-conductor, of connectors consisting of two ears attached to the ends of adjacent sections separated by a free air-space, and a supply-wire connecting each of said sections to a main feed-wire.

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Witnesses:

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