

No. 710,206.

Patented Sept. 30, 1902.

J. O'BRIEN & J. MATTIMORE.

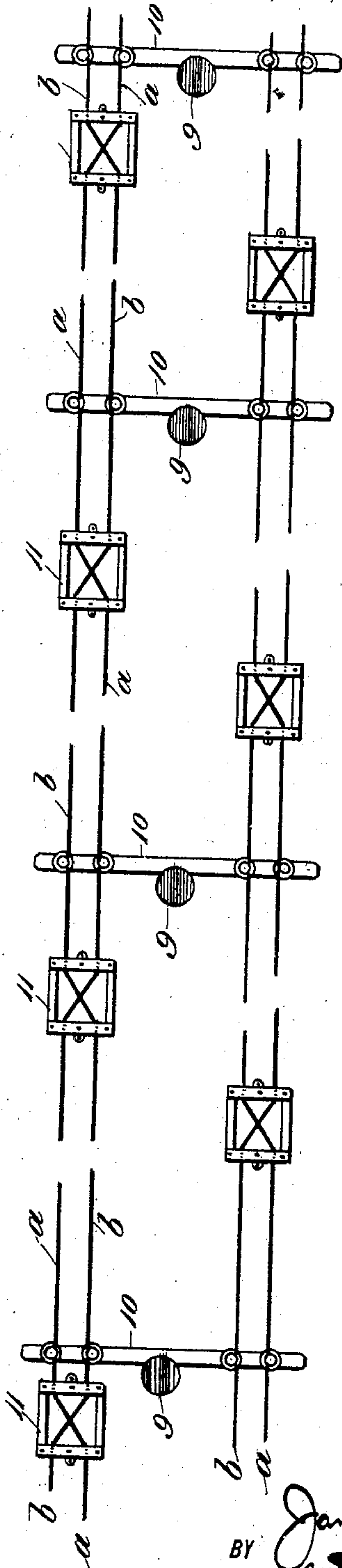
APPARATUS FOR TRANSPOSING ELECTRIC CIRCUIT WIRES SO AS TO
EQUALIZE INDUCTION.

(No Model.)

(Application filed Aug. 12, 1901.)

2 Sheets—Sheet 1.

Fig. 1.



WITNESSES

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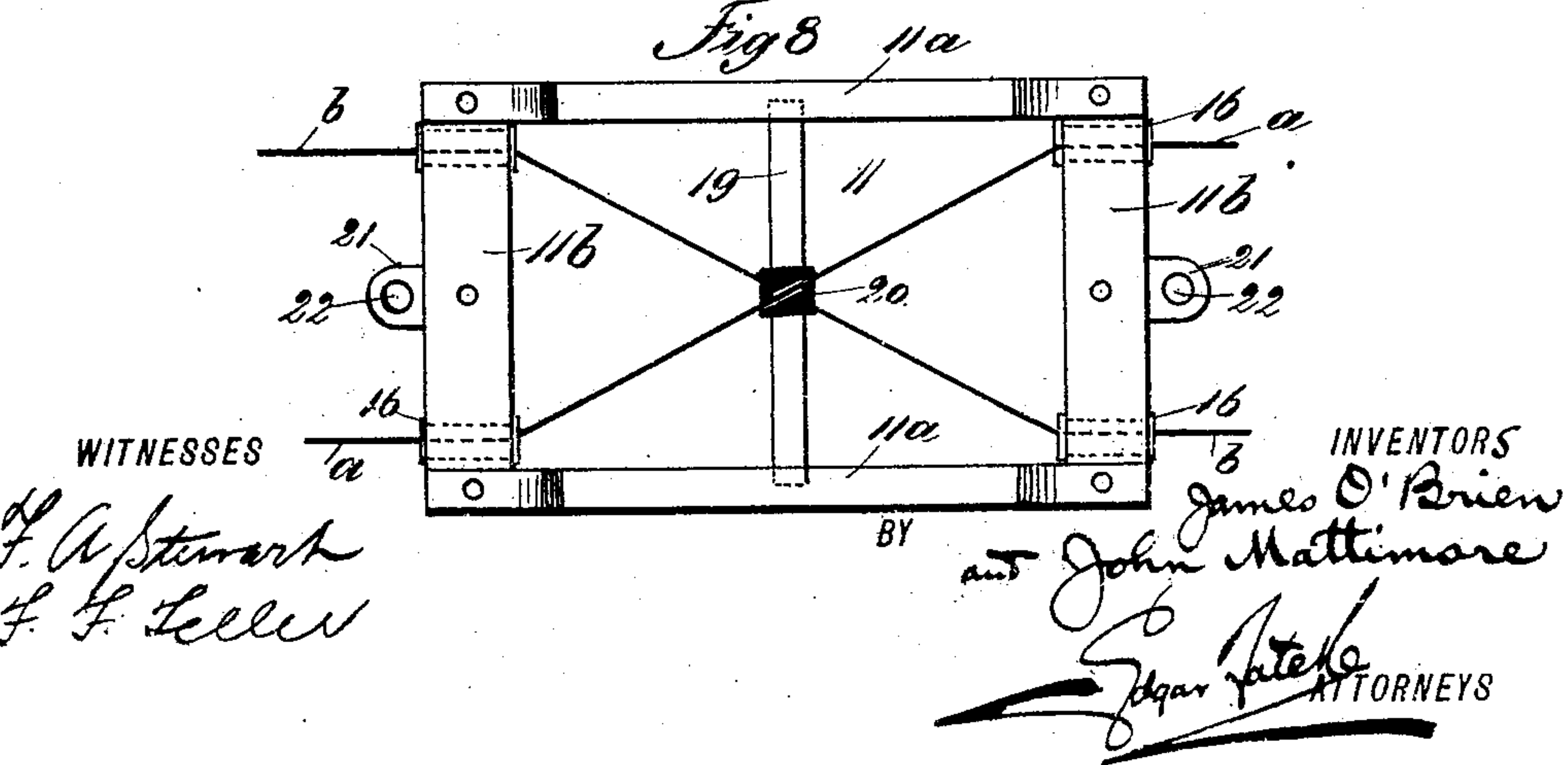
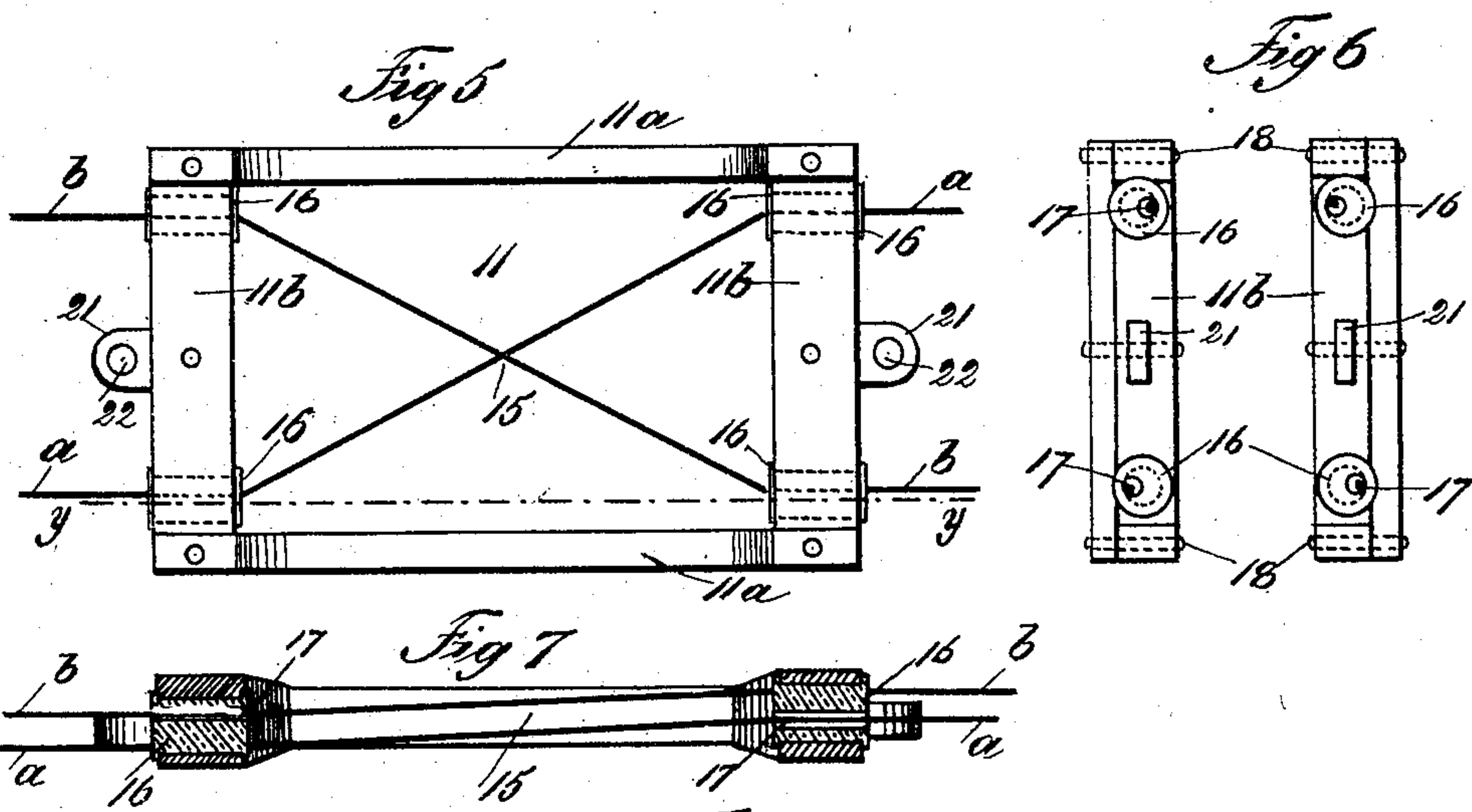
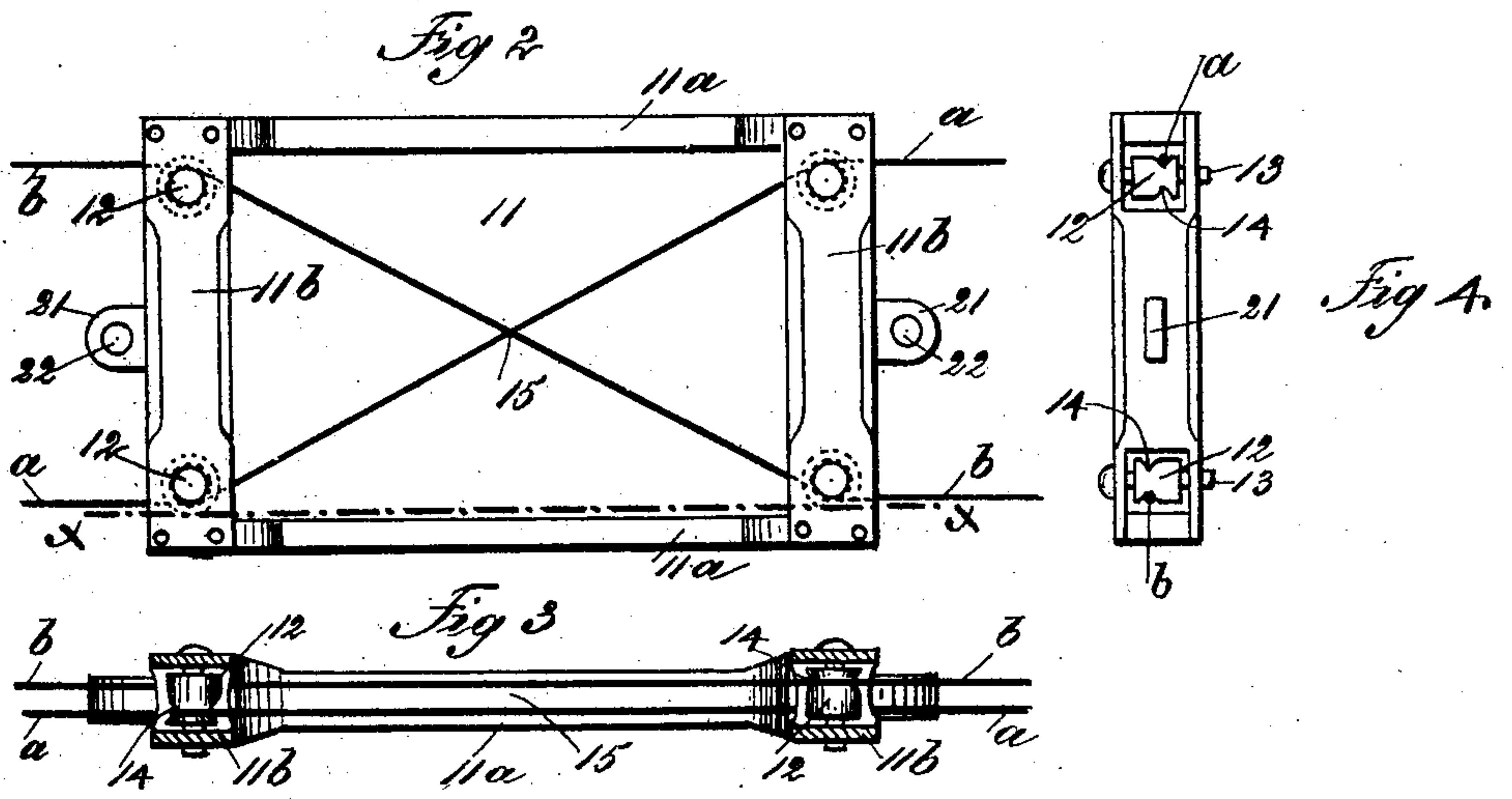
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2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

JAMES O'BRIEN AND JOHN MATTIMORE, OF STATEN ISLAND, NEW YORK.

APPARATUS FOR TRANSPOSING ELECTRIC-CIRCUIT WIRES SO AS TO EQUALIZE INDUCTION.

SPECIFICATION forming part of Letters Patent No. 710,206, dated September 30, 1902.

Application filed August 12, 1901. Serial No. 71,873. (No model.)

To all whom it may concern:

Be it known that we, JAMES O'BRIEN and JOHN MATTIMORE, citizens of the United States, residing at Staten Island, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Apparatus for Transposing Electric-Circuit Wires so as to Equalize Induction, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

It is a well-known fact that telephone, telegraph, and other electric circuits are often interfered with by induction from other sources—such, for example, as an electric-light or trolley wire running in proximity with it—and this induction interferes to a large extent with the operation of telephone and telegraph wires, and especially with the wires of a telephone circuit or system. It is also a well-known fact that it is customary to transpose adjacent wires of a telephone or other circuit at certain intervals, so as to equalize this induction, and this transposition is usually made at points where said circuit-wires are supported by poles or other devices, and by reason of the fact that these poles or supports are not always at equal distances apart the distance between the points of transposition varies. We have discovered that by having these points of transposition at equal distances apart the transposition of the circuit-wires is rendered more effective and the induction equalized throughout the circuit or circuits; and this invention consists of a new method of effecting the transposition of the circuit-wires, so as to equalize the distance between the points of transposition, and in the means by which this operation is performed, as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of the apparatus which we employ are designated by the same reference characters in each of the views, and in which—

Figure 1 is a plan view of a telephone or other circuit, showing the method of transposition which we employ and means by which the transposition is accomplished; Fig. 2, a plan view of the device we employ; Fig. 3, a

side view thereof; Fig. 4, an end view of said device; Fig. 5, a view similar to Fig. 2, showing a modification. Fig. 6 represents opposite end views of the device shown in Fig. 5; Fig. 7, a section on the line *y y* of Fig. 5; and Fig. 8, a similar view to Figs. 1 and 2, showing another modification.

In the drawings forming part of this specification, reference being had to Fig. 1, we have shown at 9 the posts or poles which support the wires of an electric circuit, and these posts or poles are provided with the usual cross-bars 10, which carry at their opposite ends the wires *a b* of two electric circuits, which for the purposes of this description will be described as the wires of telephone-circuits, and while we have shown two sets of these wires at each side of the poles or supports it will be apparent that one set thereof will be sufficient to illustrate our invention.

It will be observed that the poles 9, as shown in Fig. 1, are not at equal distances apart, and it will also be observed that the wires of the separate circuits at both sides of the poles are transposed at regular intervals by means of our improved transposition device 11, and this transposition device consists of a frame which is preferably rectangular in form and may be made of any desired material and which consists of side members 11^a and end members 11^b, and in each of the corners of this frame, as shown in Figs. 1 to 4, inclusive, is supported an insulator 12, which consists of a block of glass or other insulating material mounted on a pin or support 13, and these insulators are each provided with an annular groove 14, in which the circuit-wires are placed, and the grooves in the insulators at one side of the frame are arranged at a higher point than those on the opposite side of the frame in order that the circuit-wires *a b* will not come in contact where they cross at the middle of the frame, as shown at 15.

In Figs. 5 to 7, inclusive, we have shown a modification of the construction shown in Figs. 2 to 4, inclusive, and in this modification we substitute for the insulating-block 12 on the supports or pins 13 stationary, cylindrical, or other shaped insulating-blocks 16, which are set into the ends of the frame and which are provided each with an open-

ing 17, through which the circuit-wires are passed. The openings 17 in the insulating-blocks 16 are higher at one side than at the other side of the frame in order to separate the circuit-wires where they cross at the middle of the frame, the same as in Fig. 1. In this form of construction the end portions of the frame are composed of two parts bolted or otherwise secured together, as shown at 18; but this construction is immaterial and the transposition-frame may be made in any desired manner.

In Fig. 8 is shown another form of transposition-frame, the construction of which is that shown in Fig. 5; but in this form of construction we employ a central transverse bar 19, which passes between the circuit-wires *a* and *b* and positively separates the same and at the center of which is placed an insulator 20.

Although we have shown and described three different forms of these transposition-frames, it will be apparent that many other modifications thereof may be made, and said frame may be composed of any desired material, the only object in this connection being to provide a device of this class of suitable form and which will operate in the same manner.

Each of the insulating transposition-frames herein shown and described is provided at its opposite end with a projecting device 21, having an opening 22, through which in practice a rope is passed, and by means thereof our improved transposition-frame may be moved from point to point on the circuit-wires, so as to equalize the distance between the points where the transposition is made, as will be readily understood.

In placing the transposition-frames on the circuit-wires the said wires are cut at the poles or supports and are passed through or around the insulators 12 or 16, as will be readily understood, and are again connected in the usual manner, and by means of ropes passed through the projections 21, the separate ends of which depend to the ground, the said transposition-frames may be moved along the circuit-wires, as will be readily understood, and the distances between the points where the transpositions are made may thus be equalized at all times.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The herein-described means for equalizing induction in telephone and other circuit wires, comprising a base or frame mounted on and adjustable on a plurality of said wires,

and within which said wires are crossed, substantially as shown and described.

2. The herein-described means for equalizing induction in telephone or other circuit wires comprising a device mounted on a plurality of said wires and adjustable longitudinally thereon and within which the wires are crossed, said devices being provided with insulators, by means of which connection thereof with said wires is made, substantially as shown and described.

3. A device for equalizing induction in telephone and other circuit wires, said devices being adapted to be connected with a plurality of circuit-wires and to be adjustable longitudinally thereon and being also provided with insulators, by means of which connection thereof with said wires is made, substantially as shown and described.

4. The herein-described transposing devices for use in connection with electric-circuit wires and for equalizing induction, comprising a frame having insulating devices at its opposite corners and with which the circuit-wires are adapted to be connected, said circuit-wires being crossed within said frame, substantially as shown and described.

5. The herein-described transposing devices for use in connection with electric-circuit wires and for equalizing induction, comprising a frame having insulating devices at its opposite corners and with which the circuit-wires are adapted to be connected, said circuit-wires being crossed within said frame, and means for separating the circuit-wires where they cross within the frame, substantially as shown and described.

6. The herein-described device for equalizing induction in electric-circuit wires, comprising a frame mounted on said wires and longitudinally adjustable thereon and within which said wires are crossed, said frame being provided with insulating devices for said wires, substantially as shown and described.

7. A transposer for telephone-lines, comprising a pair of wires permanently crossed, means for insulating said wires, and a casing for protecting said wires.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of the subscribing witnesses, this 3d day of August, 1901.

JAMES O'BRIEN.
JOHN MATTIMORE.

Witnesses:

F. A. STEWART,
F. F. TELLER.