

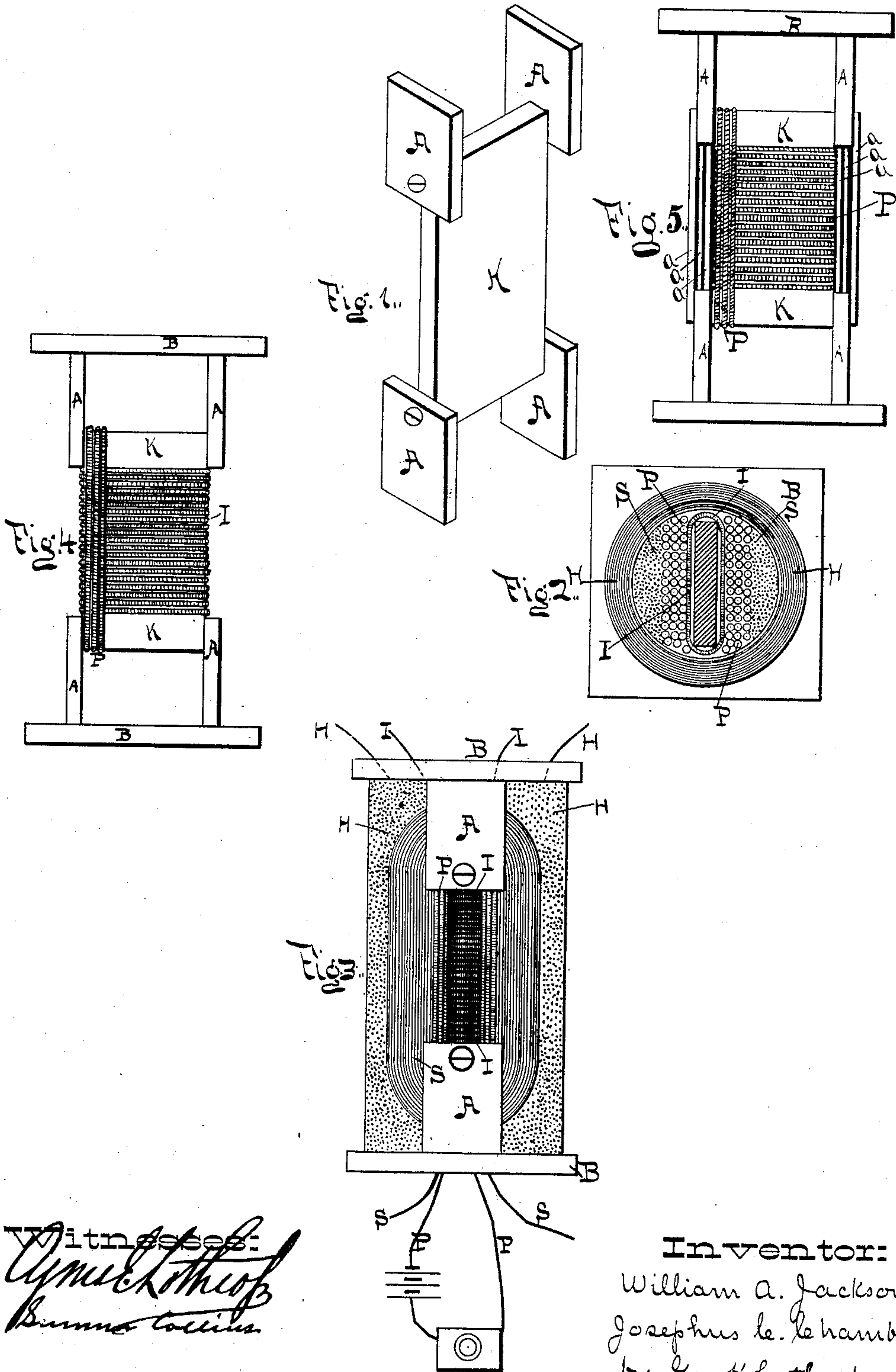
(No Model.)

W. A. JACKSON & J. C. CHAMBERS.

INDUCTION NEUTRALIZING COIL.

No. 322,727.

Patented July 21, 1885.



Witnesses:
Geo. H. Lothrop
Bruno L. Collins

Inventor:
William A. Jackson
Josephus C. Chambers
by *Geo. H. Lothrop, atty.*

UNITED STATES PATENT OFFICE.

WILLIAM A. JACKSON AND JOSEPHUS C. CHAMBERS, OF DETROIT, MICH.,
ASSIGNORS TO GEORGE H. LOTHROP, TRUSTEE, OF SAME PLACE.

INDUCTION-NEUTRALIZING COIL.

SPECIFICATION forming part of Letters Patent No. 322,727, dated July 21, 1885.

Application filed November 5, 1884. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM A. JACKSON and JOSEPHUS C. CHAMBERS, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Induction-Neutralizing Coils, of which the following is a specification.

Our invention consists in an induction-neutralizing-coil for telephone circuits, and is hereinafter fully pointed out in the claims.

Figure 1 is a perspective of the core of an induction-coil. Fig. 2 is a transverse section through the coil. Fig. 3 is an elevation of the coil with the inclosing-helix in section. Fig. 4 is an elevation of the core when ready for the primary, with a few rows of the primary wound on. Fig. 5 is similar to Fig. 4, with the addition of some strips of iron at the sides of the core.

K represents the body of the core, made of iron, the softer the better, and is shown in the drawings as a thin rectangular piece, as this form reduces the finished coil to the smallest possible compass.

A represents four pole-pieces secured to K, or cast integral therewith, so as to form extending-arms, between which lie the convolutions of the primary and secondary. These pole-pieces may be made of thin iron similar to that of which K is composed, or they may be formed by simply cutting slots in the ends of K, and their form and the form of the body of the core may be varied.

While we prefer to use a core having pole-pieces, as shown and described, because we think such construction best, we do not wish to be understood as limiting our invention to a coil having a core of this particular shape.

I represents an insulated wire, which we make of soft iron, as that material gives the best effect, though we find that copper wire gives a perceptible effect. This wire is wound in an open coil—that is, with the ends not joined—around the body K of the core, and is insulated from the core and from every part of the coil. We usually lead the ends of wire I out through the wooden caps B B of the finished coil and leave them free, though they may be connected together, if desired.

Instead of being a continuous wire, I may consist of short pieces laid across K and care-

fully insulated both from K and the primary. An electrical equivalent for wire I consists in one or more pieces of iron wholly or partially surrounding the body K, but insulated therefrom, and we sometimes employ thin iron, such as is used by photographers, for this purpose.

a a a a represent thin strips of iron laid along the sides of the core after wire I or its equivalent has been put in place, and insulated from the core, from wire I, and from each other. We rarely use these, but have used them when the core has small surface.

P represents the primary, and S the secondary, wound over the core and wire I and at an angle to wire I, as shown. Any angle will do; but a right angle is most convenient.

H represents a wire, either copper or iron, though we prefer to use iron, wound over the secondary and at an angle thereto. The ends of H may be connected together or not.

The completed coil consists of a core, K A, an insulated wrapping, I, around the body of the core, a primary, a secondary, and an inclosing-helix, each element being insulated from every other element. The effect of this construction is that the wire I or its equivalent becomes really the core of the induction-coil as ordinarily understood, because, as it underlies the primary at all points, except the small space where the primary crosses the ends of K, it is acted upon by and reacts upon the primary in the ordinary manner of the core of an inductorium. This leaves the core K A, so far as the primary is concerned, practically an inert piece of iron, and it is influenced by the electrical currents which pass through the secondary when this is made a portion of an electrical circuit, and in turn reacts upon the secondary. This peculiar function of K A is interfered with when it is subjected directly to the action of the primary, and to obviate this the wire I, which is really a supplemental core, is introduced. This coil is connected with a telephone-line in precisely the same manner that an ordinary induction-coil is, the ends of the secondary being respectively connected with the line and ground wire, and the ends of the primary being connected with a battery-circuit which includes the electrodes in the transmitter. The effect

of the coil is to neutralize nearly all the electrical currents which would otherwise flow through the secondary into a receiving-telephone connected therewith, except the normal telephonic currents, which are little interfered with.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, with a core, primary, and secondary, of a supplemental core separating the primary from the core, each element being insulated from every other, substantially as and for the purposes described.

2. An induction-coil composed of a core having projecting pole-pieces, one or more electrical conductors partly or wholly inclosing said core, except said pole-pieces, a primary coil wound over said core and conductor or conductors, but insulated therefrom, and a secondary coil wound over the primary coil and in contact with said pole-pieces, each element being insulated from every other element, substantially as and for the purposes set forth.

3. The herein-described induction-neutralizing coil, consisting of the core K, having pole-pieces A, wire I, primary coil P, secondary coil S, and inclosing-helix H, substantially as shown and described.

4. The combination, with the core K A and insulated conductor I, of the insulated iron strips *aa*, arranged substantially as shown and described.

5. In combination with a telephone-circuit, an induction-coil whose secondary forms part of such circuit, consisting of a primary and secondary wound over a compound core, the parts of said compound core being insulated from each other and from the other elements of the coil, substantially as shown and described.

WILLIAM A. JACKSON.
JOSEPHUS C. CHAMBERS.

Witnesses:

GEO. A. MCKINLOCK,
F. A. FORBES.