No. 709,485.

Patented Sept. 23, 1902.

J. O. HEINZE, JR.

INDUCTION COIL.

(Application filed July 11, 1902.)

(No Model.)

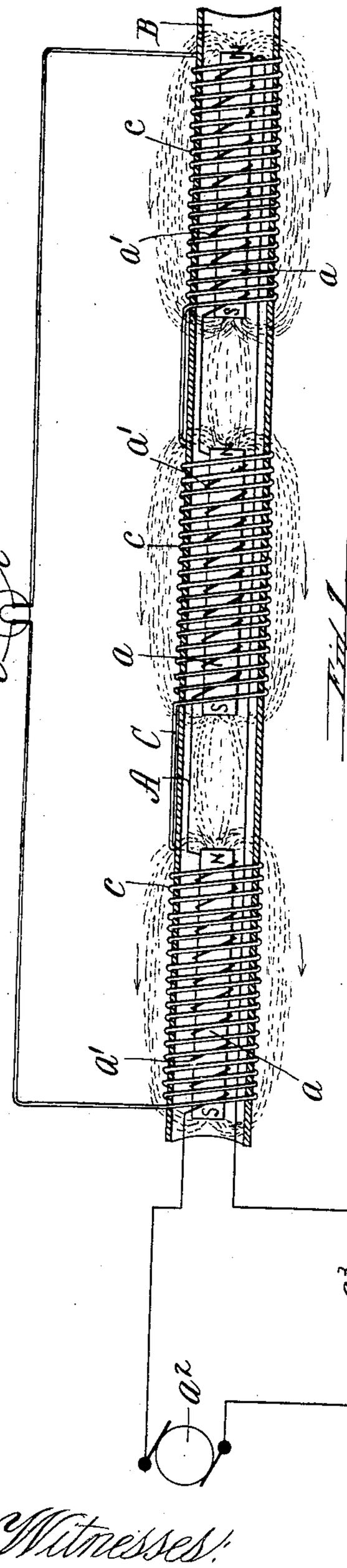

Fig. 1.

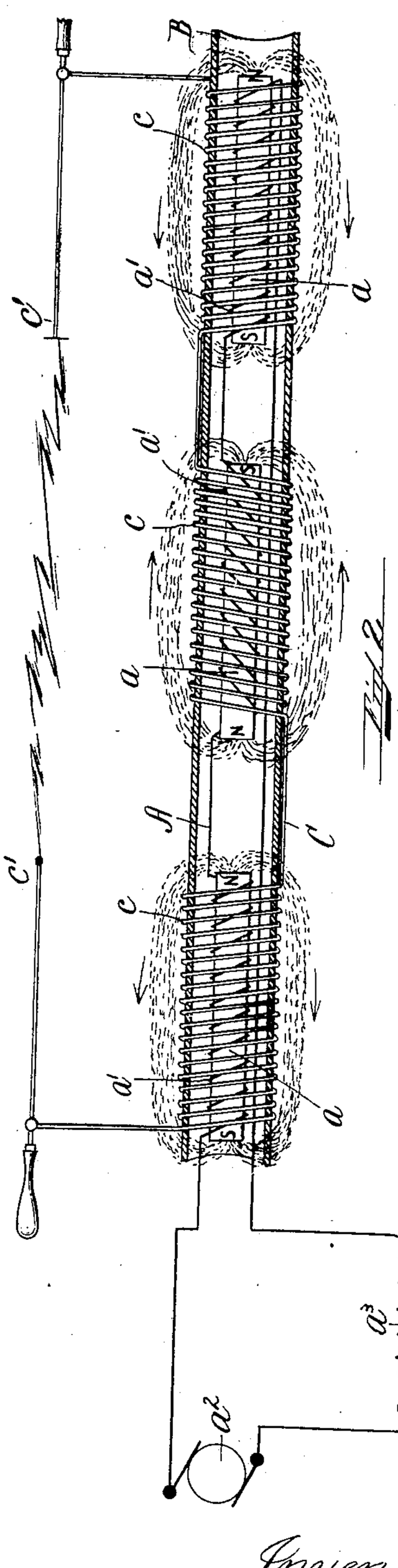

Fig. 2.

Witnesses:
W. E. Remick.
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Inventor:
John Otto Heinze, Jr.
by Charles J. Richardson
his attorney.

UNITED STATES PATENT OFFICE.

JOHN OTTO HEINZE, JR., OF REVERE, MASSACHUSETTS.

INDUCTION-COIL.

SPECIFICATION forming part of Letters Patent No. 709,485, dated September 23, 1902.

Application filed July 11, 1902. Serial No. 115,160. (No model.)

To all whom it may concern:

Be it known that I, JOHN OTTO HEINZE, Jr., a citizen of the United States, residing at Revere, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Induction-Coils, of which the following is a specification.

Figure 1 is an isometric drawing of my invention embodied in a low-potential induction-coil, the insulating-tube being in longitudinal section; and Fig. 2 is a like view of my invention embodied in a high-potential coil.

The object of my invention is to provide an induction-coil having increased electrical and magnetic efficiency and a simplified construction which can be manufactured and operated at lowest possible cost.

My invention consists in so constructing an induction-coil that its primary coil has a series of two or more magnetizable cores, the coil and cores constituting two or more magnetic circuits and being contained in and separated from the secondary coil of said induction-coil by a single and continuous insulation of any of the well-known insulating substances, such as micanite, hard rubber, glass, paraffin, or the like. By this construction the diameters of the cores and the turns of the primary and secondary coils are small as compared with the single core formerly used in an apparatus to produce the same amount of electrical energy in amperage and voltage in the secondary coil, and the length and ohmic resistance of the wire are reduced to a minimum, the number of convolutions of wire remaining the same. The efficiency of the apparatus is thus increased by reducing the resistance losses in the secondary coil. Further, by this construction the magnetic fields of the cores are short and massive, and the cost of manufacture of the coils and the cores, and hence the induction-coil, is very much lessened.

In the drawings illustrating the principle of my invention and the best mode now known to me of embodying that principle, A is a primary coil surrounding a series of cores a, of laminated iron commonly composed of iron wire or sheet-iron, the primary coil being made up of as many sections a' as there are cores a and being connected with the poles of a suitable source of electrical energy, as a dynamo a^2. This primary coil A and series of cores a are surrounded by a single and continuous mass or tube B of insulating material, as mica. A secondary coil C encircles said tube B and consists of as many sections c as there are cores a or sections a' in said primary coil A, it being understood that said sections c in said secondary coil C may be connected with one another in series, as shown in the drawings, or in multiple to produce the desired amperage and voltage. The secondary coil C has suitable discharge-terminals c' in Fig. 1, shown for an electric light c^2.

The primary coil A has a vibrating interrupter a^3 in circuit and may be of any of the well-known constructions.

The operation of my invention is as follows: The current generated by the dynamo a^2 passes around each of the cores a and returns to its source a^2 after its passage through the interrupter a^3. This interrupted current produces in each primary section a' and its core a an interrupted magnetizing and demagnetizing field, (indicated by dotted lines and arrows in the drawings,) which induces a current in the corresponding sections c of the secondary coil C, surrounding the mica tube B, the potential and amperage of this induced current depending on the number of convolutions and size of the wire employed.

In the drawings I have shown the magnetic fields in Fig. 1 in attraction and in Fig. 2 in opposition, the latter producing a much more efficient high-potential induction-coil than the former, the construction and operation of the induction-coil in Fig. 2 being otherwise the same as that in Fig. 1.

It being understood that I desire to claim my invention in the broadest manner legally possible,

What I claim is—

1. An induction-coil made up of two or more separate magnetic cores; a primary coil surrounding the said cores and having as many sections as there are cores; a continuous insulating mass surrounding said primary coil and cores; a secondary coil wound about said insulating mass, and consisting of

as many sections as there are cores, or sections in said primary coil.

2. The combination of an induction-coil, made up of two or more separate magnetic cores; a primary coil surrounding said cores; a continuous insulating mass surrounding said primary coil and cores; a secondary coil wound about said insulating mass; and a source of electrical energy for said primary coil, whereby it may be magnetized and demagnetized.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN OTTO HEINZE, JR.

Witnesses:
HOYT L. CONARY,
CATHERINE E. HAYES.