

No. 669,051.

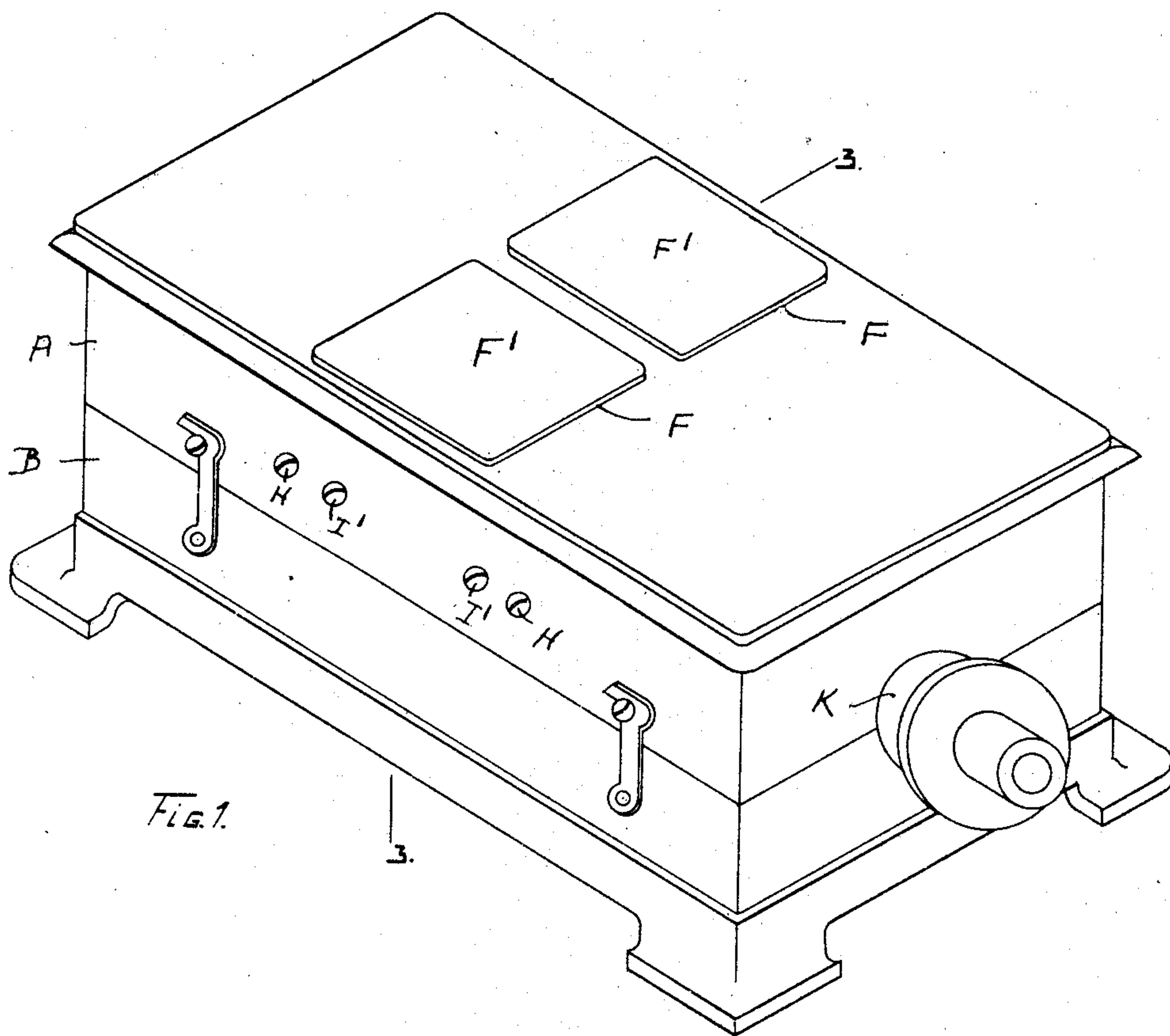
Patented Feb. 26, 1901.

O. S. WALKER.
DEMAGNETIZER.

(Application filed July 31, 1899.)

(No Model.)

2 Sheets—Sheet 1



Witnesses

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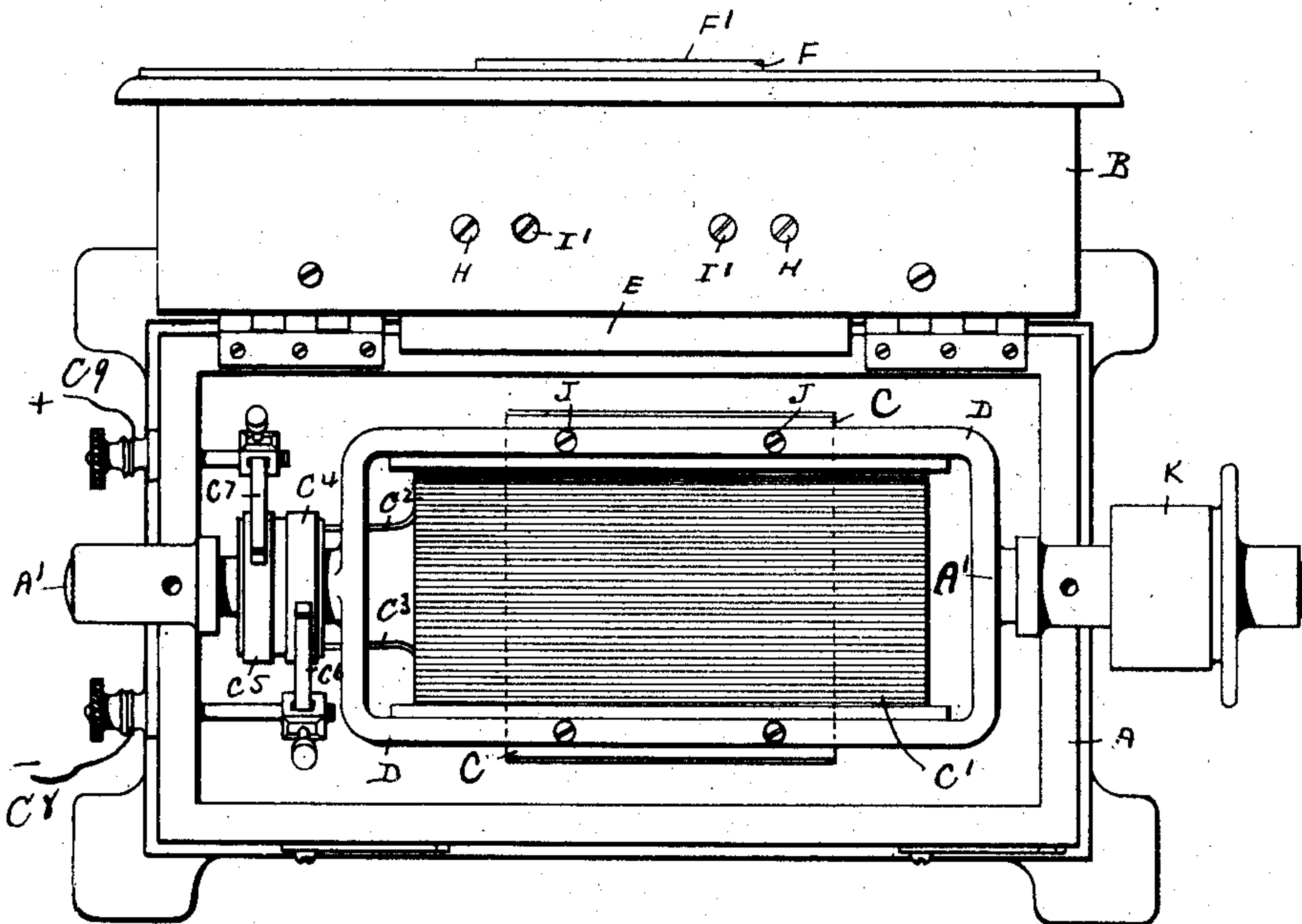


Fig. 2.

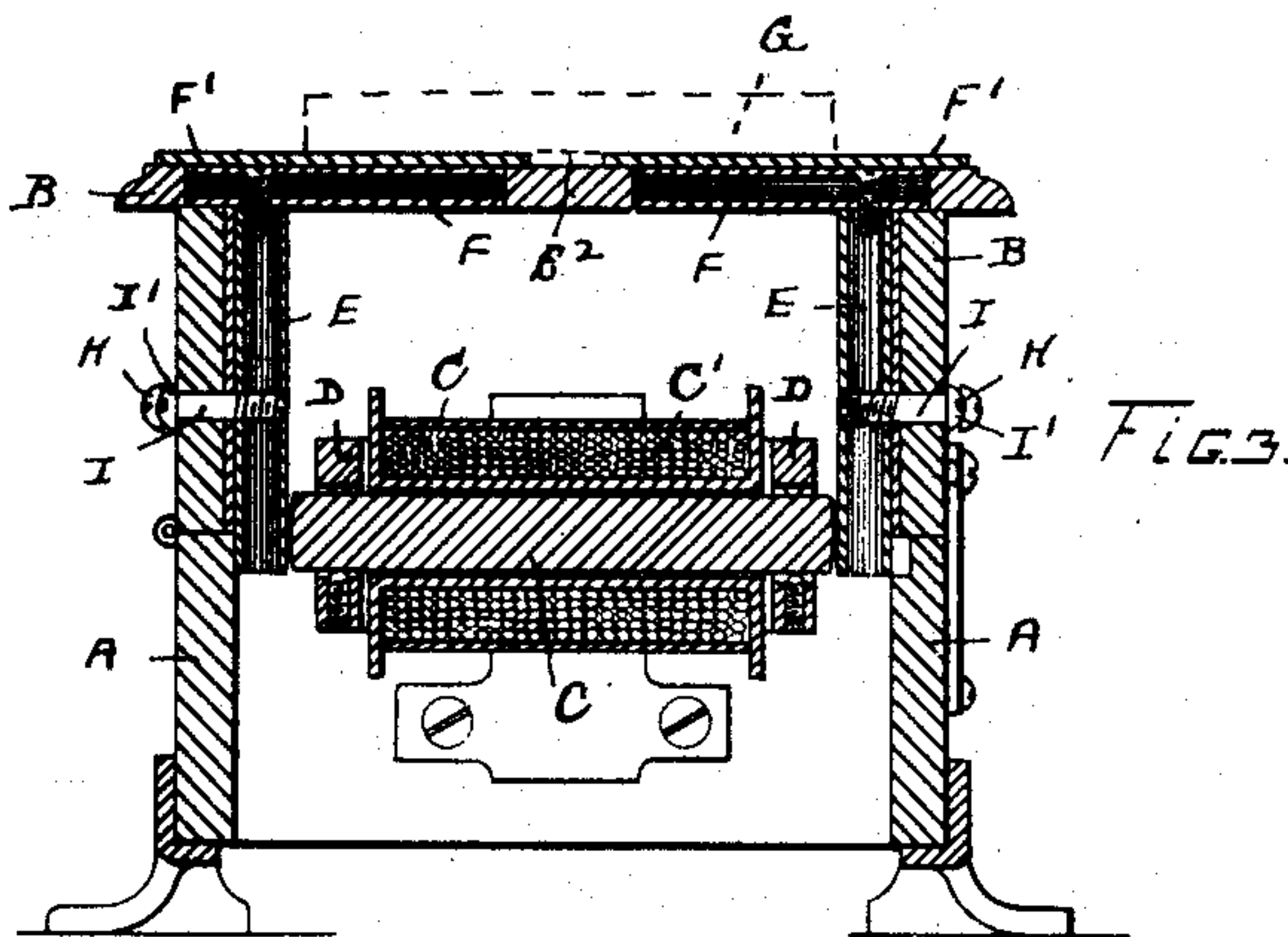


Fig. 3.

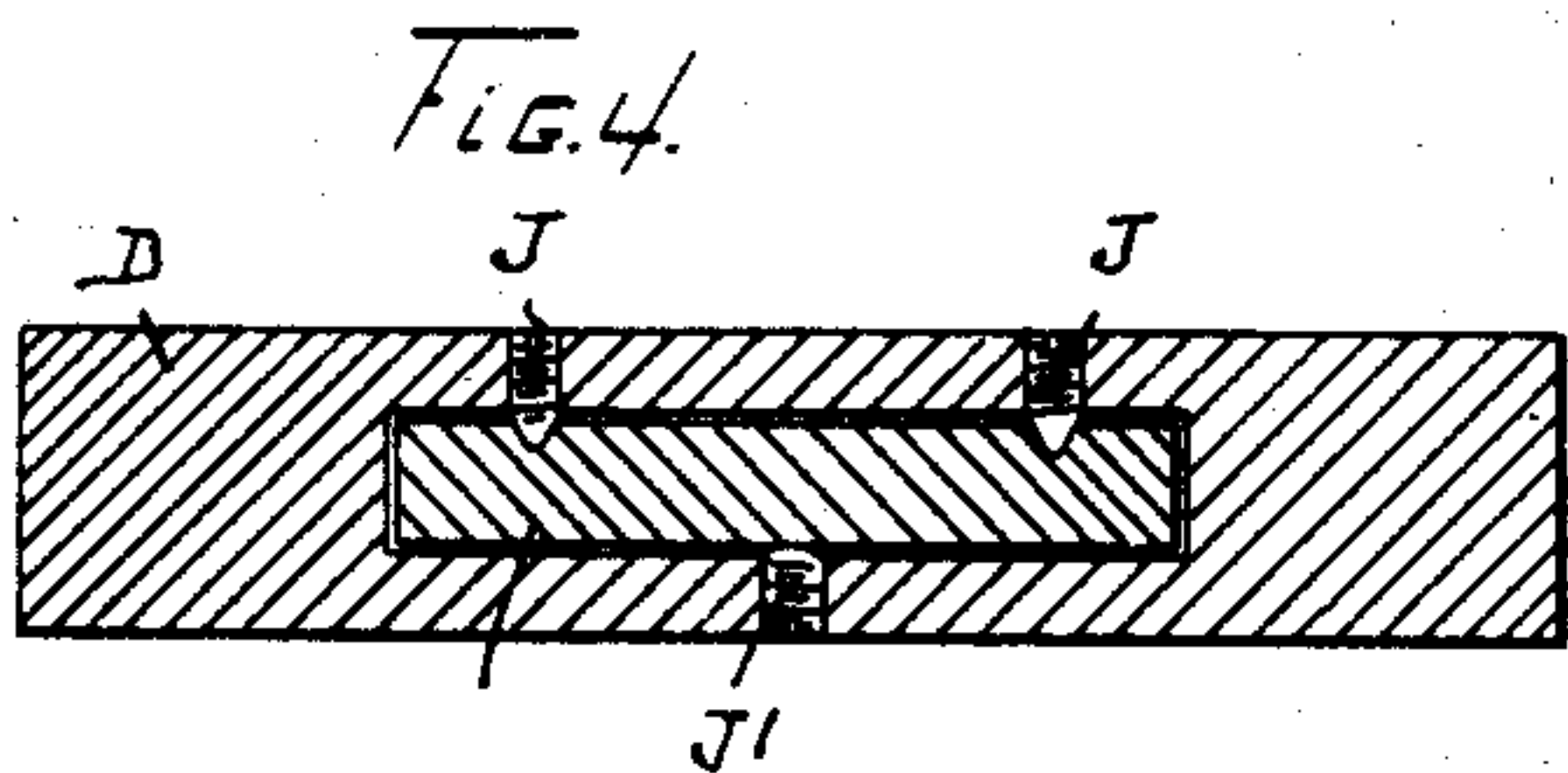


Fig. 4.

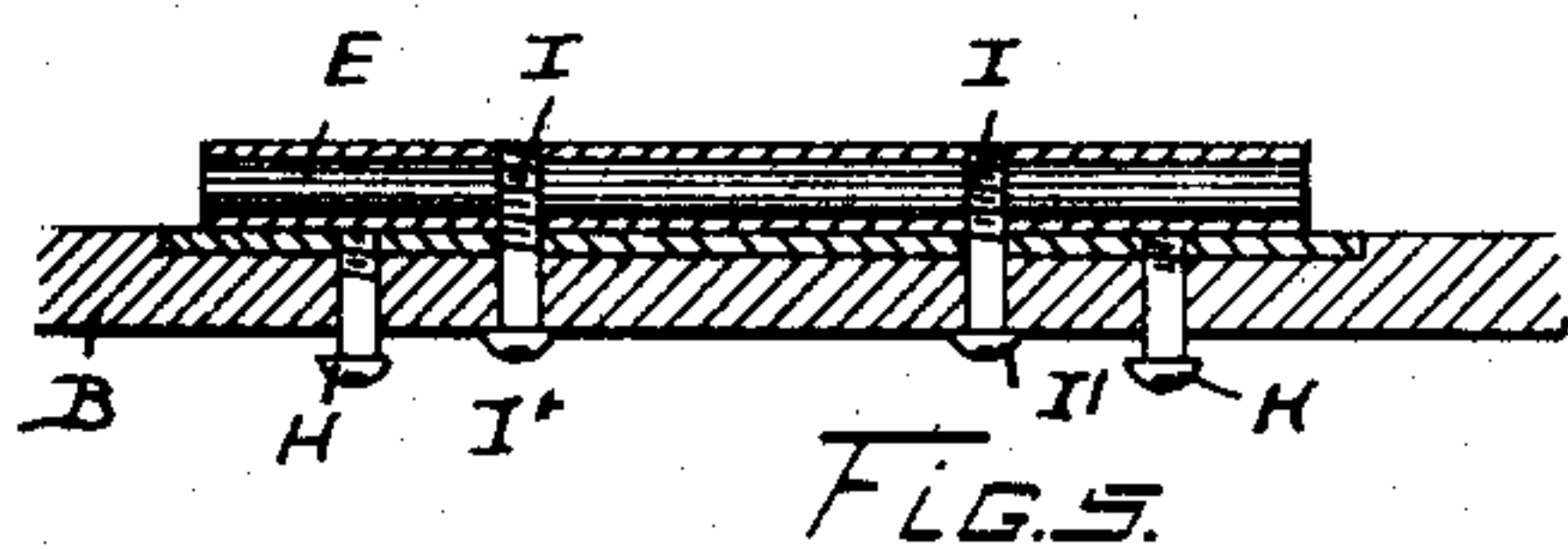


Fig. 5.

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UNITED STATES PATENT OFFICE.

OAKLEY S. WALKER, OF WORCESTER, MASSACHUSETTS.

DEMAGNETIZER.

SPECIFICATION forming part of Letters Patent No. 669,051, dated February 26, 1901.

Application filed July 31, 1899. Serial No. 725,593. (No model.)

To all whom it may concern:

Be it known that I, OAKLEY S. WALKER, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Demagnetizers, of which the following is a specification, accompanied by drawings forming a part of the same, and in which—

Figure 1 represents a perspective view of a demagnetizing apparatus embodying my invention. Fig. 2 is a top view showing the hinged cover of the inclosed case raised to disclose the interior mechanism. Fig. 3 is a sectional view on line 3 3, Fig. 1. Fig. 4 is a sectional view of a portion of the revolving magnet on the plane of the adjusting-screws J J. Fig. 5 is a sectional view of a portion of the case and laminated magnetic conductor attached thereto, said section being shown on the plane of the adjusting-screws H H.

Similar letters refer to similar parts in the different figures.

The object of my invention is to provide an apparatus for removing from articles of iron or steel the magnetism which they may have acquired from their proximity to magnets; and it consists in making the article to be demagnetized a part of a metallic magnetic circuit and charging it with magnetism induced by a direct electric current and providing means for rapidly reversing the polarity of the magnetism in the article; and it further consists in the construction and arrangement of parts as hereinafter described, and set forth in the annexed claims.

The methods now usually employed for demagnetizing articles of iron or steel, so far as I am aware, are to either subject the articles to a high degree of heat or pass them through an open coil charged by an alternating current of electricity, having the effect to rapidly reverse the polarity of the magnetism induced, and as the same is withdrawn from the coil it causes a gradual weakening of its magnetic charge. Many articles are not capable of being demagnetized by the first-named method and the second method requires an open coil sufficiently large to receive the largest articles to be demagnetized and also requires an alternating current of electricity. An alternating current is not

always obtainable, and by employing the coil with an opening of fixed size adapted for the largest articles to be demagnetized the magnetic effect becomes decreased in the case of smaller articles and the effect of the demagnetizing-coil is weakened by the fact that the article is placed within the magnetic field instead of being made a part of a metallic magnetic circuit.

The ordinary uses of electricity require a direct current, and it is one of the objects of my present invention to be able to utilize a direct current for the purposes of demagnetization and also to increase the demagnetizing effect by making the article to be demagnetized form part of a metallic magnetic circuit.

One form of an apparatus embodying my invention is represented in the accompanying drawings, comprising an inclosing box or case A, provided with a hinged cover B. In the body of the box I journal a revolving shaft A', carrying a bar-magnet C, inclosed by a coil of wire C', having its ends C² and C³ connected, respectively, with the revolving metallic rings C⁴ and C⁵, which are brought into an electric circuit by means of brushes C⁶ and C⁷, connected by wires C⁸ and C⁹ with the source of an electric current. The revolving bar-magnet C and coil C' are carried by a rotating frame D, of brass or other non-magnetic material, within which is concentrically held the bar C, with its opposite ends projecting slightly beyond the rotating frame D.

Attached to the inside of the box are magnetic conductors E E, preferably consisting of a series of sheet-iron plates, said conductors being arranged to be slightly touched by the ends of the revolving bar C. The upper ends of the laminated conductors E E are electrically connected with similar laminated conductors F F, recessed in the cover of the box and having their upper surface F' F' projecting slightly above the surface of the box-cover and arranged to support the article to be demagnetized in the position indicated by the broken lines G. Between the conductors F F is a gap F², which is magnetically closed by the article to be demagnetized as it rests upon the conductors F F. As the coil C' is charged with a current of electricity the bar C becomes an electromagnet with its ends of opposite polarity.

When the magnetic bar C is in position between the laminated conductors E E and with its ends nearly in contact with the conductors E E, the conductors E E and F F become magnetic with a polarity opposite that of the adjacent ends of the bar C. If the bar C be rotated one-half a revolution, the conductors E E and F F will again become magnetic with alternating polarity, and during the period that the conductors E E and F F are charged with magnetism a metallic magnetic circuit is maintained between them by placing the article to be demagnetized on the surface F' F', as represented at G, Fig. 3, causing the article to be alternately charged by magnetism and having its polarity reversed by the rotation of the bar-magnet C.

The ends of the bar C should rotate in at least close proximity to the conductors E E, and I deem it preferable to bring the conductors E E almost into contact with the ends of the bar as it rotates, and in order to adjust the position of the conductors E E, I provide adjusting-screws H H, which are screwed into the side of the case A and bear against the inner surface of the conductors E E, which are held against the screws H H by means of screws I I, which pass through the sides of the case or box and are screwed into the conductors E E, with their heads I' I' bearing against the outside of the case or box. The bar C is also held centrally within the revolving frame D by means of adjusting-screws J and J', carried by the frame D and bearing against the opposite sides of the bar C.

By the above-described apparatus the direct electric current communicated through the brushes C⁶ and C⁷ causes the conductors E E and F F to be intermittently magnetized and the polarity of the magnetism to be changed twice during each revolution of the bar-magnet C, and the rapidity of the alternation of polarity is determined by the speed of the revolving arbor, which is preferably driven by a belt connection through a pulley K, thereby allowing the speed of the revolving bar-magnet to be increased or decreased, so as to secure the greatest demagnetizing effect with articles of different sizes by changing the speed of the counter or driving shaft

from which the revolving magnet is rotated, it having been found that articles of different sizes or of greater or less mass of metal require that the rapidity of the alternations of polarity shall be varied inversely to the mass of metal in the article to be demagnetized.

I greatly increase the demagnetizing effect by imparting the magnetic charge to the article by means of its direct contact with two magnetic conductors, thereby causing the article to constitute a metallic connection between two magnetic surfaces of opposite polarity, and this result is secured whether the polarity of the magnetic contacting surfaces is reversed by a revolving bar-magnet constantly magnetized by a direct current of electricity or by the employment of an alternating current.

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

1. The combination of two magnetic conductors arranged to be magnetically united by the article to be demagnetized and a rotating electromagnet arranged to bring its poles into proximity with said conductors, whereby the polarity of said conductors is changed, substantially as described.

2. The combination of two magnetic conductors arranged to be magnetically united by the article to be demagnetized, a bar-magnet interposed between said conductors with its poles in proximity thereto, and means for changing the polarity of said conductors, substantially as described.

3. The combination of a supporting-case, a pair of magnetic conductors, a bar-magnet capable of rotating between said conductors and means for adjusting said conductors relatively to said bar-magnet, substantially as described.

4. In a demagnetizer, the combination of a rotating frame, and a bar-magnet carried therein, of means for adjusting said magnet within said frame relatively to its axis of rotation, substantially as described.

Dated this 28th day of July, 1899.

OAKLEY S. WALKER.

Witnesses:

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