Feb. 6, 1923. 1,444,524.

E. S. PRIDHAM ET AL.

MAGNETIZING DEVICE.

FILED APR. 28, 1920.

Fig. 2.

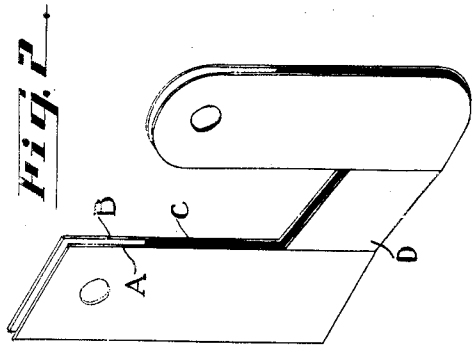


Fig. 1.

Fig. 3.

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UNITED STATES PATENT OFFICE.

EDWIN S. PRIDHAM AND PETER L. JENSEN, OF OAKLAND, CALIFORNIA, ASSIGNORS TO MAGNAVOX COMPANY, OF OAKLAND, CALIFORNIA, A CORPORATION OF ARIZONA.

MAGNETIZING DEVICE.

Application filed April 28, 1920. Serial No. 377,355.

To all whom it may concern:

Be it known that we, EDWIN S. PRIDHAM and PETER L. JENSEN, citizens of the United States, residing at Oakland, in the county of Alameda and State of California, have invented new and useful Improvements in Magnetizing Devices, of which the following is a specification.

This invention relates to magnet charging devices and in particular to a solenoidal arrangement whereby a closed magnetic circuit may be inserted in or removed from the solenoid without breaking the magnetic circuit.

It is a well known fact that a closed magnetic circuit retains a high degree of magnetization after the charging current has been stopped. This magnetization persists in the core until the magnetic circuit is broken. The force required to make the initial break in the magnetic circuit after charging is always much greater than the force required to make any subsequent break which indicates that a strong magnetic flux persists in a closed magnetic circuit after the charging current has ceased. This is true of any closed magnetic circuit but is especially noticeable in a soft iron circuit of small reluctance. In this case the force required to produce the initial break is many thousands times greater than that required to produce any subsequent break.

It is also well known that in the charging of permanent magnets that a long continued charging tends to set the molecules of the steel at the point of maximum magnetization. In this manner a magnet can be produced which will be stronger and hold its magnetization longer than by short quick magnetization.

In the invention which is the subject of this application, we have produced a device whereby a closed magnetic circuit may be charged and removed intact from the charging device without the necessity of breaking the magnetic circuit.

The device consists essentially of two solenoids, one for each leg of the magnet to be charged. These solenoids are connected together to form the proper poles.

Each solenoid is formed of one layer of a number of turns of conductor. Each turn is made in two sections so that it is possible to open each turn either independently or all the turns on the solenoid may be opened simultaneously.

By opening up all the turns of the solenoids, it will be understood that the magnet with its armature in place can be introduced into the solenoids. The turns are then closed and the energizing current passed through the turns. A strong magnetic flux will be produced in the closed magnetic circuit which will persist after the energizing current has been stopped.

Now the turns of the solenoids may all be opened and the closed magnetic circuit be lifted out intact.

In actual practice the method as heretofore outlined has been used by us with a high degree of success as magnets may be charged and set aside until the time comes to use them without deterioration but rather an actual gain in their magnetic strength.

One form which our invention may assume is exemplified in the following description and illustrated in the accompanying drawings, in which—

Fig. 1 shows a perspective view of a device embodying our invention

Fig. 2 shows a detail of one of the stationary partial turns of the winding.

The device consists of a base 10 and side frame members 11. Between the latter are two sets of stationary partial turns 12 and 13, each partial turn comprising as shown in Fig. 2 a pair of conductors A and B with insulation C between and formed with an off-set D. These members are arranged side by side between the frame members 11 and held in place by bolts 14 and 15. At each side of the frame members 11 upon hinge pins 16 and 17 are handles 18 and 19 carrying a series of movable partial turns 20 and 21. Each movable partial turn comprises a conductor E to fit between the conductor plates A and B. The off-set D permits an arrangement whereby adjacent stationary partial turns will be connected across by the movable partial turns, thus forming a continuous winding.

With the handles thrown back as shown in Fig. 1, a horseshoe magnet may be laid in the charging device with its keeper in place. Thereupon, the handles are moved inwardly to close the circuit and when magnetization is completed, the handles are again thrown back to break the circuit and

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allow the magnet to be lifted out without disturbing or removing its keeper.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. The method of charging a magnet, having a continuous magnetic circuit composed of magnetic material, which comprises the establishment of a magnetic flux in the magnetic circuit of the magnet to be charged by means of an energizing winding and then removing said magnet from said energizing winding by the disconnection of the turns of said winding so as to obviate the breaking of the magnetic circuit of the magnet.

2. A method of charging a magnet having a continuous magnetic circuit composed of magnetic material, which consists in placing the magnet in an energizing winding formed in part of movable connectors and removing the magnet by opening said movable connectors whereby the magnetic circuit will not be interrupted.

3. The method of removing a magnet having a continuous magnetic circuit composed of magnetic material from an energizing coil which consists in opening the turns of said coil whereby the magnet can be removed without interrupting its magnetic circuit.

4. A device for energizing a magnet, having a continuous magnetic circuit, comprising a plurality of partial turns around said magnetic circuit, a plurality of movable connectors between said partial turns whereby said partial turns may form with said movable connectors a continuous energizing coil around said magnetic circuit, the movement of said connectors being such as to permit the magnet to be inserted or removed without interrupting its circuit.

5. A device for energizing a magnet, having a continuous magnetic circuit, comprising an energizing winding, each turn of said winding formed of two parts separable from each other, whereby the winding may be opened for the introduction of said magnet and subsequently closed to form a coil on said magnetic circuit through which energizing current can be passed to produce a magnetic flux.

6. A device for energizing a magnet, having a continuous magnetic circuit, comprising a coil formed with a number of partial turns stationarily mounted, a pair of hinged elements co-operating with each other and with the said partial turns to complete the winding of the coil, said hinged elements being movable to permit a magnet to be inserted or removed without interrupting the circuit of said magnet.

In testimony whereof we have hereunto set our hands.

EDWIN S. PRIDHAM.
PETER L. JENSEN.