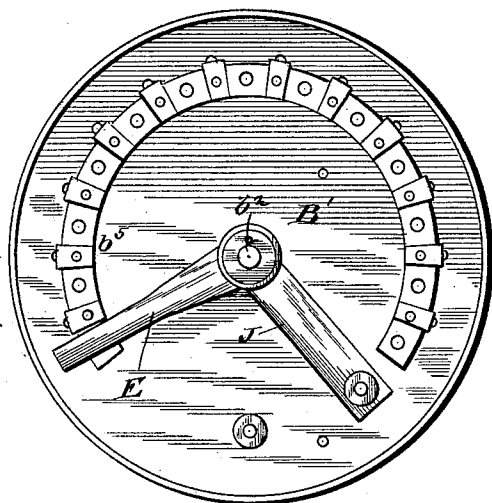


(No Model.)

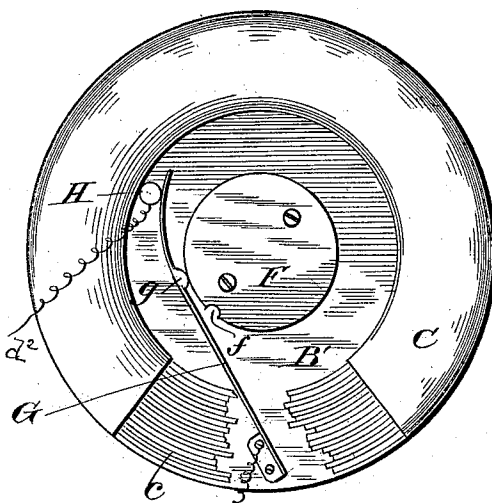
W. CARTER.
ELECTRIC TRANSFORMER.

No. 555,074.

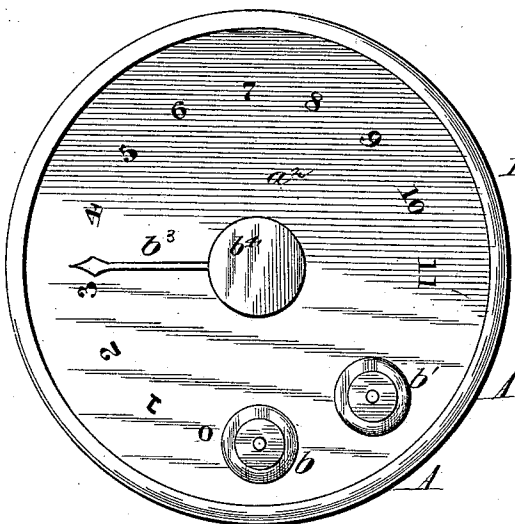
Patented Feb. 25, 1896.



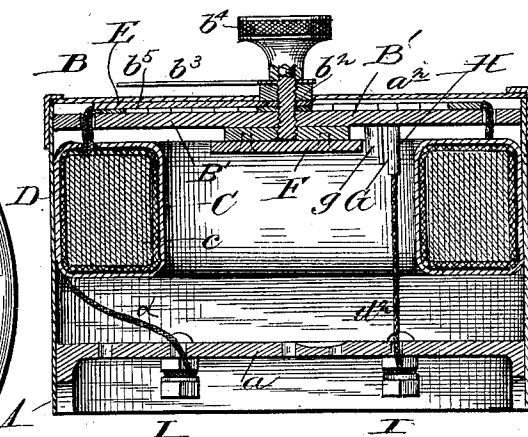
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A diagram showing a staircase with several steps. A diagonal line, labeled with the letter 'a', runs from the bottom left to the top right, passing over the steps.



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WITNESSES
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William Carter.
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Attorney

UNITED STATES PATENT OFFICE.

WILLIAM CARTER, OF LOUISVILLE, KENTUCKY.

ELECTRIC TRANSFORMER.

SPECIFICATION forming part of Letters Patent No. 555,074, dated February 25, 1896.

Application filed April 23, 1895. Serial No. 546,857. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CARTER, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Transformers or Inductive Coils; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in transformers or induction-coils, and more particularly to that class known as "open-iron circuit-transformers."

The object of the invention is to produce a cheap and simply constructed transformer to be used in connection with an alternating-current dynamo, in which currents of one intensity may readily and easily be converted into currents of different intensity when such conversion is required—as, for instance, for the purpose of heating electrical cauterizing and wood-carving instruments, such latter use being contemplated in the transformer constituting this invention.

In a transformer characterized by my invention I employ a primary and a secondary coil and a core, the latter being of the open-iron type and consisting of a plurality of approximately horseshoe-shaped laminæ of iron suitably held in operative position with relation to each other. The primary coil is connected at one terminal to a spring-conductor which is operated to cut in or cut out the primary circuit by means of an insulated disk and at its other terminal to a pin or stud, against which the spring-conductor presses at all times except when the primary circuit is broken. The secondary coil is connected to suitable contact-blocks arranged on an insulating-disk, the blocks being engaged by a spring contact-arm connecting with a pointer moving over a graduated scale and indicating the increase of the electromotive force of the secondary and also the quantity of current, thus enabling the operator, at will, to control the heating of the instrument.

Further and specific details of construction will be hereinafter described.

In the accompanying drawings, forming a part of this description and in which like let-

ters of reference indicate corresponding parts, I have illustrated one form of embodiment of my invention capable of carrying the same into effect, although other embodiments thereof may be employed without departing from the spirit thereof, and in these drawings—

Figure 1 is a top plan view of the transformer removed from the casing, showing more particularly the arrangement of the contact-blocks connecting with the secondary coils and also the spring contact-arm for engaging the said blocks. Fig. 2 is an inverted plan view of the transformer, showing the secondary coils, the spring-conductor connecting with the primary coil, and also the disk for throwing the conductor into and out of contact with the connection from the primary coil. Fig. 3 is an elevation of the casing, showing more particularly the dial or graduated scale thereon and the hand or pointer adapted to move thereon. Fig. 4 is a transverse sectional view through the transformer and the casing.

Referring to the drawings, A designates the casing of the device, which may be of any suitable material, as brass or the like, having a bottom a , of porcelain or other non-conductive material, and a top or cover a^2 provided with a graduated scale and a number of openings through which project, respectively, the binding-posts b b' of the transformer B and the stud b^2 , to which is affixed a pointer b^3 and a nut b^4 for operating the pointer.

The transformer B comprises an insulating disk or support B' , having its upper or outer face provided with a plurality of contact-plates b^5 , to which are connected the terminals of the wires leading from the secondary coil C, and a core C^2 , which latter consists of a number of approximately horseshoe-shaped laminæ c , of sheet-iron, suitably insulated from each other, around which is wound the primary coil D. The contact-plates b^5 are engaged by a spring contact-arm E carried by the upper or outer end portion of the stud b^2 , to the other end of which is affixed a disk F of insulating material, having a notch or recess f in its periphery, the function of which will appear later on. To the upper portion of the stud and on the exterior of the dial or cover a^2 is secured the pointer b^3 , which aligns with the arm E, the two being

moved in unison by the nut or the like, b^4 . The primary coil is connected at one terminal, d , to a spring-conductor G having an offset g , and at its other terminal, d^2 , to a pin or stud H located contiguous to the conductor G.

When the offset g is in contact with the periphery of the disk F, the conductor G is forced against the pin H, and thus completes the primary circuit, and as the pointer is further moved the successive coils of the secondary are cut in, thus increasing the electromotive force thereof; but as soon as the offset drops into the recess f , which will occur when the hand or pointer b^3 is at the zero-mark on the dial, the conductor will automatically disengage itself from contact with the pin H, and thus open the primary circuit. By this arrangement the mechanism that operates to increase or diminish the potential of the secondary coil also acts to cut the primary coil in or out, according to the direction of the movement of the pointer.

The primaries are connected to binding-posts I on the base or back of the device, to which are also attached the line-wires and the instrument, either for cauterizing or wood-carving, by suitable connections to binding-posts b b' on the face of casing, the post b being directly connected with the secondary coil and the post b' with the said coil through the contact-plates b^5 , contact-arm E and a metallic plate J.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an open-iron circuit-transformer, the

combination of a primary and a secondary coil, a series of contact-plates, to which the successive windings of the latter coil are connected, a stud carrying at one end a contact-arm for traversing the said plates, and at the other end an insulated disk, a conductor to which one terminal of the primary is connected, a pin arranged adjacent to the said conductor and to which is connected the other terminal of the primary, and means on the disk for opening or closing the primary coil coincidently with the movement of the contact-arm, substantially as set forth.

2. In an open-iron circuit-transformer, the combination of a primary and a secondary coil, a series of contact-plates, to which the successive windings of the latter coil are connected, a stud carrying at one end a contact-arm for traversing the said plates, and at the other end an insulated disk having its periphery provided with a recess, a spring-conductor, to which one terminal of the primary is connected said conductor having a lug or projection adapted to bear upon the periphery of said disk, a pin arranged adjacent to said conductor and to which is connected the other terminal of the primary, and means for turning the disk and contact-arm in unison, substantially as set forth.

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

WILLIAM CARTER.

Witnesses:

JNO. D. GORDON,
JAMES P. GREGORY.