

(No Model.)

W. STANLEY, Jr.  
ELECTRIC CONVERTER.

No. 496,212.

Patented Apr. 25, 1893.

Fig. 2.

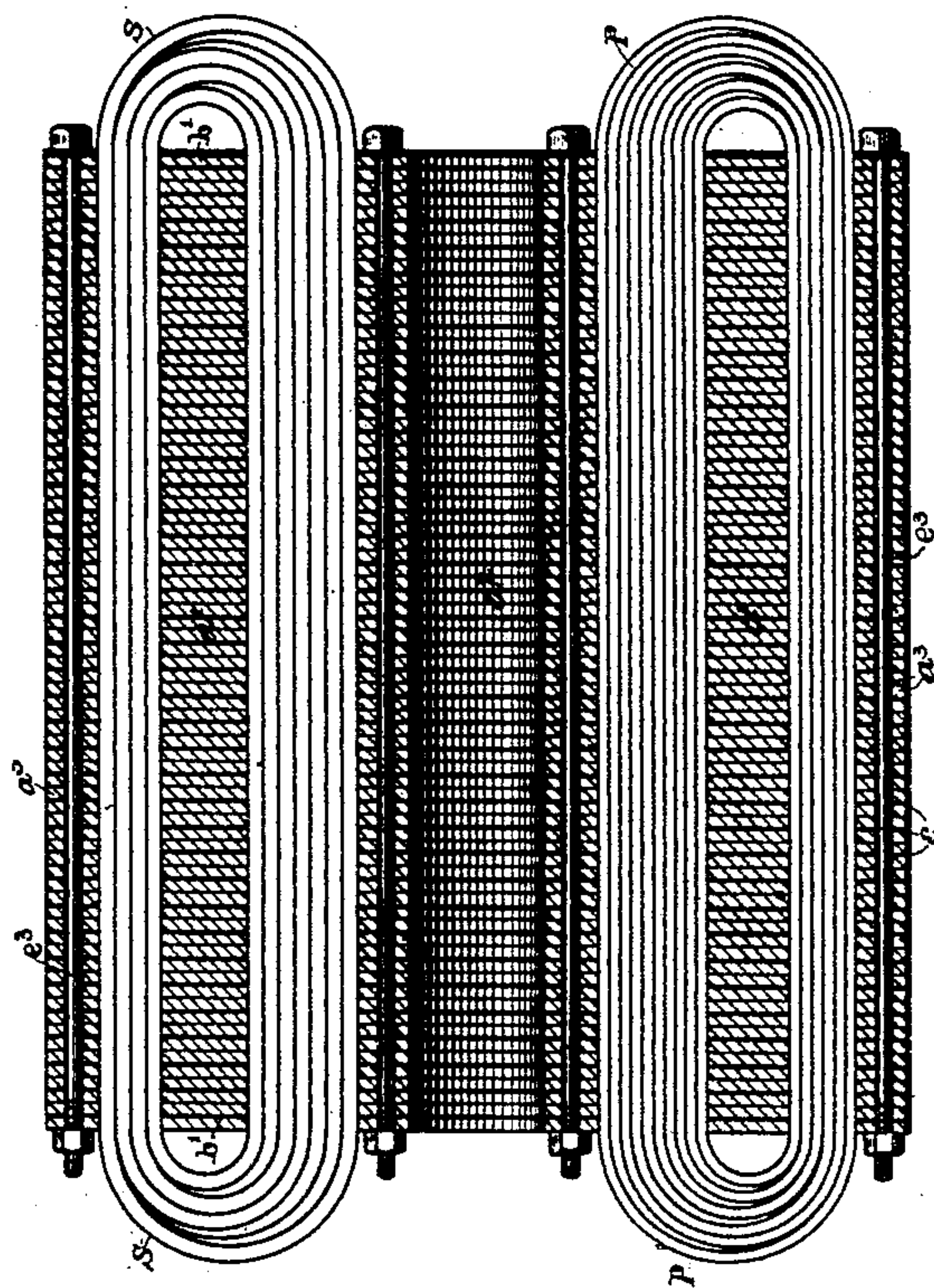
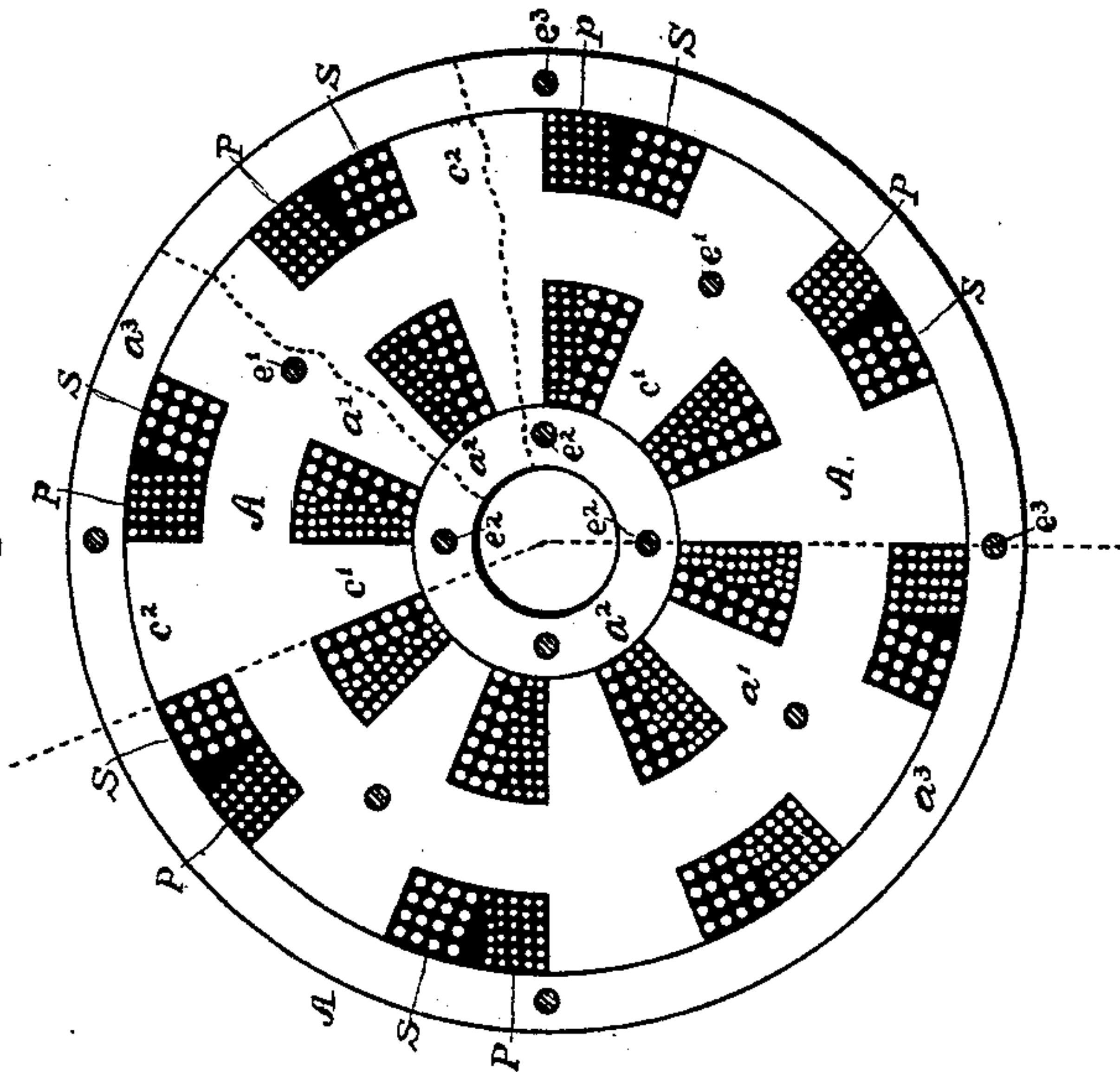


Fig. 1.



WITNESSES:

*George Brown Jr.*  
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INVENTOR.

WILLIAM STANLEY, JR.

*By Charles A. Tinsley*

Att'y.



# UNITED STATES PATENT OFFICE.

WILLIAM STANLEY, JR., OF GREAT BARRINGTON, MASSACHUSETTS, ASSIGNOR,  
BY MESNE ASSIGNMENTS, TO THE WESTINGHOUSE ELECTRIC AND MANU-  
FACTURING COMPANY, OF PITTSBURG, PENNSYLVANIA.

## ELECTRIC CONVERTER.

SPECIFICATION forming part of Letters Patent No. 496,212, dated April 25, 1893.

Original application filed October 1, 1887, Serial No. 251,173. Divided and this application filed April 1, 1889. Serial No. 305,531.  
(No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM STANLEY, Jr., a citizen of the United States, residing at Great Barrington, in the county of Berkshire and State of Massachusetts, have invented certain new and useful Improvements in Electric Converters, (Case No. 300,) of which the following is a specification.

The invention relates to the construction of apparatus employed for transforming alternating, pulsatory, or intermittent primary electric currents, into alternating secondary or induced currents. Devices for this purpose are technically termed inductoriums, trans-  
formers or converters.

In carrying out the invention primary and secondary coils of insulated wire are wound upon a laminated core of inductive material. Currents traversing one of the coils induce in the core rapid changes in magnetic condition, and these changes in turn induce currents in the other coils. The iron may be conveniently arranged in the general form of a Gramme ring, the wire being wound through the center and between projecting teeth. After the wire is applied, an outer casing of laminated iron is placed outside the coils and ring, and another tube similarly constructed is inserted within the ring.

The invention will be described in detail in connection with the accompanying drawings, in which—

Figure 1 is a transverse section and Fig. 2 a vertical section of a converter, embodying the principles of the invention.

Referring to the figures, A represents the core of the converter, and P the primary coil, and S the secondary coil. The core is made up of three portions  $a'$ ,  $a^2$  and  $a^3$ . The portion  $a'$  is composed of thin plates  $b'$ ,  $b'$  of magnetizable material, which may be stamped out. These plates are insulated from each other sufficiently to prevent the circulation of Foucault currents and have inner projections or teeth  $c'$ , and outer projections  $c^2$  at convenient distances from each other. The coils P and S are wound in the spaces between these projections. The plates are separated

from each other preferably by plates or sheets of paper or other insulating material as shown at  $c$ , such insulation being merely sufficient to prevent the circulation of Foucault currents in a manner well understood.

The primary and secondary coils are wound in the spaces between the projections and they may be superposed upon each other or placed side by side as found desirable. After the coils are wound, the inner tube  $a^2$  is applied. This is built up of annular laminæ of iron as shown and it makes magnetic contact with the inner teeth  $c'$ . The outer cylinder  $a^3$  is in like manner built up of insulated laminæ of soft iron, and it incases the coils making magnetic contact with the outer teeth  $c^2$ . The laminæ of the several sections  $a'$ ,  $a^2$  and  $a^3$ , may be bound together by longitudinal bolts  $e'$ ,  $e'$ ,  $e^2$ ,  $e^2$ ,  $e^3$   $e^3$ . In this manner magnetic circuits are completed about the several sections of the coil. The coils, it will be observed, are thus completely surrounded by laminated iron. Instead of employing all the sections of the coils in the spaces between the teeth a portion only may be used, that is to say a section such as is embraced between the dotted lines in Fig. 1. The core then consists of a central portion of H-shaped cross-section, the ends of the corresponding arms being closed about the coils by magnetizable material.

This application is a division of an application filed by me, October 1, 1887, Serial No. 251,173.

I claim as my invention—

1. The combination with the primary and secondary coils of a converter, of a core composed of annular laminæ of magnetizable material, having inner and outer teeth, the coils being arranged between the teeth upon the core, and laminæ of soft iron closing the openings between the teeth outside of the coil, substantially as described.

2. An electric converter consisting of insulated laminæ of soft iron, annular in form, having inner and outer teeth, coils wound between the teeth, and a soft iron cylindrical core closing the teeth about the coils.

3. A secondary generator or transformer of  
alternating currents of electric energy, said  
transformer consisting of primary and sec-  
ondary conductors, an outer iron sheathing,  
5 and a magnetic iron core, having a number of  
channels for the primary and secondary con-  
ductors, and forming with the sheathing in-  
dependent short magnetic circuits, whereby  
each division of the magnetic iron portion  
10 with its sections of primary and secondary  
conductors constitutes an independent small  
secondary generator, any number of which  
may be connected up to form a generator or  
transformer.

4. A core for electric converters composed 15  
of laminæ of soft iron insulated from each  
other, annular in form, and having inner and  
outer teeth, and two laminated cylinders, one  
within and the other inclosing the core, sub-  
stantially as described. 20

In testimony whereof I have hereunto sub-  
scribed my name this 26th day of March, A. D.  
1889.

WILLIAM STANLEY, JR.

Witnesses:

FRANK H. WRIGHT,  
LEWIS K. JENKINS.