(No Model.)

F. C. PRIESTLY.

ELECTRIC CONVERTER.

No. 531,005. Patented Dec. 18, 1894.

FIG. 1.

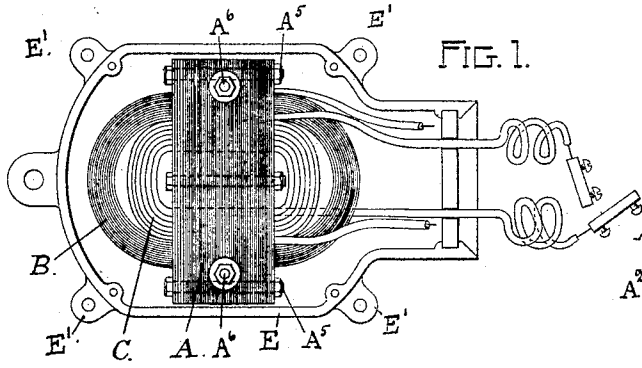


FIG. 4.

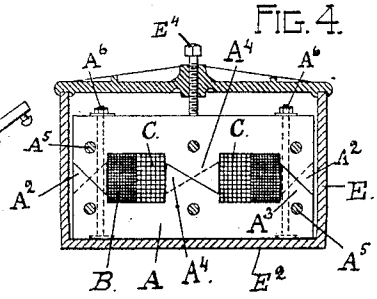


FIG. 2.

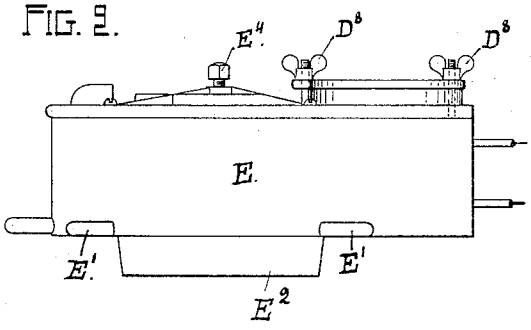


FIG. 5.

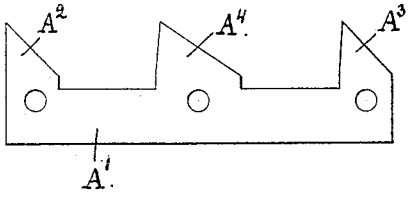


FIG. 3.

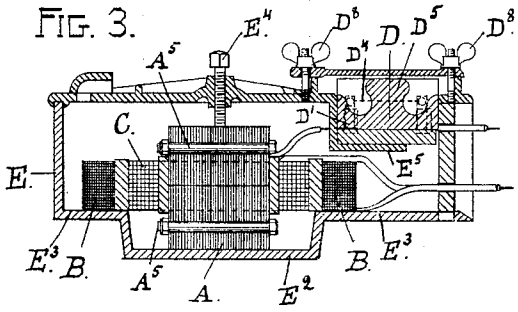


FIG. 6.

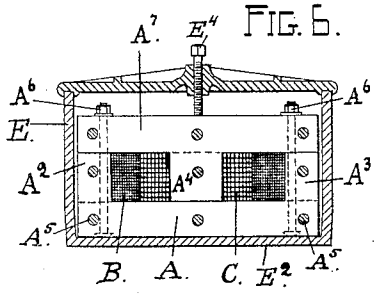
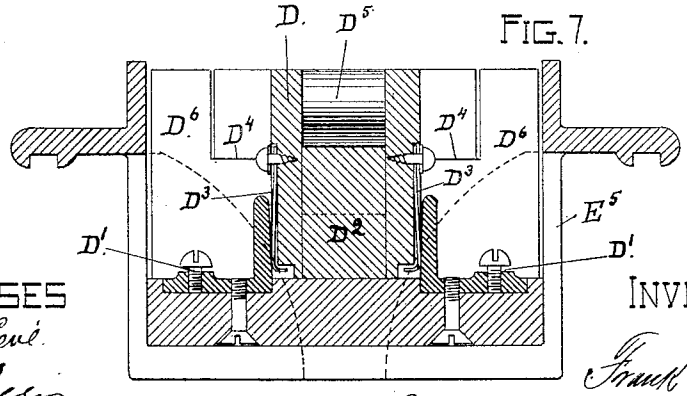


FIG. 7.



WITNESSES

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UNITED STATES PATENT OFFICE.

FRANK C. PRIESTLY, OF SAN FRANCISCO, CALIFORNIA.

ELECTRIC CONVERTER.

SPECIFICATION forming part of Letters Patent No. 531,005, dated December 18, 1894.

Application filed February 16, 1894. Serial No. 500,415. (No model.)

To all whom it may concern:

Be it known that I, FRANK C. PRIESTLY, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Electric Converters; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention relates to improvements in electric converters and consists in the novel construction and arrangement of the parts as hereinafter set forth.

It has for its objects to construct the core so as to allow it to be easily separated whereby the coils may be removed for necessary repair; further, to construct a core with interlaced segments to obtain more perfect magnetic circuit about the internal openings; further, to construct the said core of thin strips of metal similar in shape to form either side of the core thereby requiring the one form of stampings only; further, to provide a box or case which is small and compact and which will maintain the converter in position without requiring extra fastenings; and further to provide a cut out, whereby the operative is protected in making connections.

In the drawings: Figure 1 is a plan view of the converter the top of the case being removed. Fig. 2 is a side elevation of the converter. Fig. 3 is a longitudinal section of the converter. Fig. 4 is a cross-section of the same. Fig. 5 is a detail view showing one of the thin metal strips of which the core is constructed. Fig. 6 is a longitudinal section of an alternate form of my invention. Fig. 7 is a detail view of the cut out plug and box.

In the drawings the letters "A" designate the core; the letters "B", the primary coil; the letters "C", the secondary coil; the letters "D," the cut out and "E" the converter case, and the figures following each letter, designate each particular part of the whole to which it relates. Thus the core I designate by the letter "A" and the laminated strips of which it is composed are designated as "A'." These strips for convenience of manufacture are constructed exactly similar. They are formed with the extensions "A^2" and "A^3" at the ends and "A^4" in the center. For the purpose of obtaining better magnetic contact these extensions are cut on an incline as shown to permit of interlacing or lapping them.

The strips "A'" are grouped to form thin sections in which the extensions are all inclined in one direction. These sections are then assembled and bound together by the bolts "A^5;" to form the two segments of which the core is composed; each alternate section presenting the inclined extensions in the opposite direction from those of the adjoining section. When both segments of the core are thus bound it will be found that they present the same toothed appearance, the extensions of each section of the strips "A'" being turned from the extensions of the adjoining sections. Into the spaces between the extensions inclined in the same direction the oppositely arranged extensions of the section of the other segment of the core are squeezed. When now the bolts "A^5" are tightened the sides of the fitted sections are clamped tightly together making perfect magnetic circuit throughout the core.

With this form of converter the coils are first wound and arranged around one segment of the extension "A^4" of the core "A." When they are arranged the other segment of the core is then inverted over the segment containing the coils and carefully adjusted to allow the ends of the extensions "A^2," "A^3" and "A^4" of each section to mesh or extend, between the extensions of the other segment. When this adjustment is obtained the two segments are pressed together until firmly set. The bolts "A^6" are then passed through perforations provided for them to draw them the more closely together. It will be noticed, see Fig. 3, that as the bases of the sections are slightly enlarged the final action on being drawn closely together is to wedge outwardly and make a more solid contact with the within contained coils, while, when the segments are separated the tension on the sides of the coils is removed immediately.

The coils "B" and "C" shown in the drawings are of the type preferred by me. They consist of independently wound primary and

secondary coils, the former fitting snugly around the latter. By this arrangement I am enabled to replace a damaged coil either primary or secondary, as the case may be, from stock without the delay of taking the converter to the shop; but any known form of coils will answer the purpose of this invention, the spirit of which is broadly to provide a construction which will readily admit of opening the core for repair to the parts contained therein.

While I have described a particular form of strips from which I construct the core I do not wish to be understood as confining myself to that form only, as in many cases I find it preferable to use the form shown in Fig. 6 in which the strip extensions "A^2," "A^3" and "A^4" are interlaced as above described, but are made solid, as shown, and not inclined extending up to and making contact with the laminated top, "A^4," extending from one strip while A^2 and A^3 extend from the other.

When the converter has been formed as described it is placed within the case "E." The case "E" is provided with the ears "E'" by means of which it is secured to the cleats usual in mounting converters on buildings. Extending down between the said cleats is the well "E^2" which is constructed of a size to receive snugly the core "A" while permitting the extensions of the coils to rest over the levels "E^3." By thus sinking the well "E^2" between the cleats I save just so much in the extension from the side of the building to which it is fastened, while at the same time forming a box to receive and hold the converter solidly. To prevent any disadjustment or concussion of the converter against the sides of the case I provide in the cover of the case the set screw "E^4" which is secured down on the converter and holds it rigidly in place. In this case I eliminate the secondary cut out for the reason that it is more expedient to place it inside the house while the converter is often placed on the outside. The cut out box "D" I sink into the case "E" supporting it in the hanging frame "E^5." The cut out base is constructed of insulating material and is provided with the terminals "D'" for the primary circuit. Between these terminals is inserted the plug "D^2" with the spring contacts "D^3" and fuse wire "D^4." This plug is constructed of insulating material and is provided with the finger hold "D^5" by means of which the plug may be raised out of the box. The walls of the said finger hold are of insulating material and rise higher above the contacts "D^3" and thereby protect the operative. Extending out from the sides of the finger hold "D^5" are the supports "D^6" for the fuse wires "D^7." The cut out box fits down into the neck of the converter case "E" so as to protrude as little as possible from the top of the case, and leave sufficient room under the box for the passage of the incoming and outgoing wires.

The top of the case "E" is gasketed on the case so as to make it weather-proof, and is secured in position by suitable fastenings. The top of the cut out box is treated in the same way, except that it is retained by set screws "D^8" so as to be readily and easily removed.

Having thus described this invention, what I claim is—

1. In an electric converter, such as described, a core composed of two segments formed by superposed sheets of thin metal fastened together, the sheets of each segment having a series of extensions or projections extending between corresponding extensions or projections on the opposing segment, and the ends of the projections on each sheet being beveled or inclined in the same direction, with means for forcing said segments together.

2. In an electric converter, such as described, a core composed of two segments formed by superposed sheets of thin metal, the sheets of each segment having a series of extensions or projections extending between corresponding projections or extensions on the opposite segment, said extensions or projections being tapered or enlarged slightly toward the base and bolts for drawing the segments toward each other, whereby the size of the openings between the extensions or projections is reduced and coils held therein clamped tightly, substantially as described.

3. In an electric converter, such as described, a core composed of superposed sheets of thin metal united by bolts into independent segments, said sheets having alternately arranged interlocking extensions or projections and transverse bolts for drawing the segments together with the extensions or projections intermeshing; substantially as described.

4. In an electric converter such as described a case provided with a well to receive the core of the converter, and fastening lugs to suspend the converter being raised above the level of the bottom of the well substantially as described.

5. In an electric converter such as described the combination with a case therefor and a cut out box set in the top of and extending into the said case substantially as described.

6. In an electric converter such as described the combination in a cut out box of the contacts "D'" and a plug making electrical contact between the said contacts and having the finger hold "D^5" with the protecting side pieces substantially as described.

In testimony whereof I have hereunto set my hand this 5th day of February, 1894.

FRANK C. PRIESTLY.

In presence of—
J. M. BECK,
HARRIE L. GILBAN.