

(No Model.)

H. M. HOBART.
ELECTRICAL TRANSFORMER.

No. 567,237.

Patented Sept. 8, 1896.

FIG. 1.

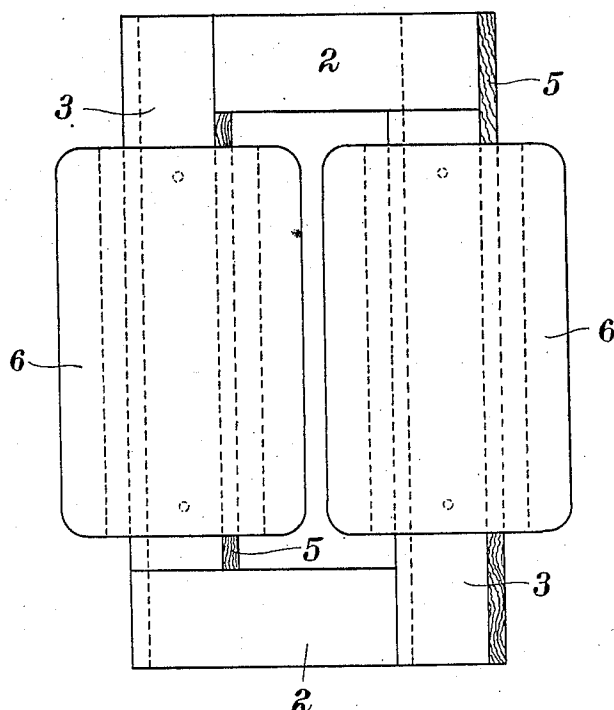


FIG. 3.

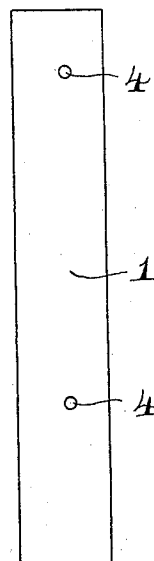
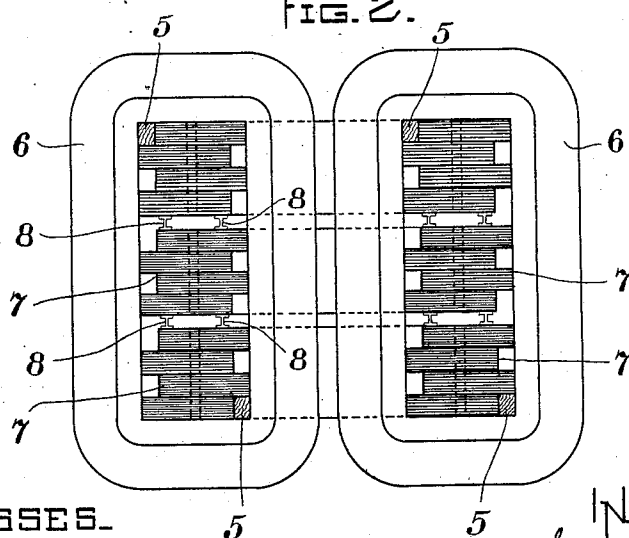


FIG. 2.



WITNESSES.
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UNITED STATES PATENT OFFICE.

HENRY M. HOBART, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
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ELECTRICAL TRANSFORMER.

SPECIFICATION forming part of Letters Patent No. 567,237, dated September 8, 1896.

Application filed May 15, 1896. Serial No. 591,644. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. HOBART, a citizen of the United States, residing at Boston, in the county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Transformers, (Case No. 398,) of which the following is a specification.

This invention relates to transformers, and has for its object to provide an improved core for transformers formed of built-up groups of laminæ and constructed and arranged as hereinafter set forth and claimed.

The special object of the invention is to provide additional ventilating or air-circulation spaces between the coils and the core and between the passages of the core, through which air or oil may circulate and maintain a low temperature for the transformer.

Referring to the accompanying drawings, Figure 1 is a view in elevation of a core constructed in accordance with this invention. Fig. 2 is a plan view thereof, showing the core in horizontal section; and Fig. 3 is a detail view showing one of the laminæ of which the core is composed.

In the construction of the core the latter is built up with laminæ 1, or strips of sheet-iron of the rectangular form shown in Fig. 3. These laminæ may be made up of different sizes, and are assembled together in groups or singly of a number of such laminæ. They may be arranged with each group overlapping an adjacent group at one end, and being correspondingly shorter than its neighbor at the other end; or, in other words, the groups may be alternately mismatched, so that when the laminæ have been built up to the desired thickness there is formed at each end a tongue-and-groove arrangement. The end pieces or yokes 2 may be constructed in a similar manner, and the sides 3 of the core, as shown in Fig. 1, may have abutting joints with the ends or yokes of the core. The essential feature, however, of this invention consists in assembling the laminæ in laterally-offset relation, as illustrated in Fig. 2 of the drawings. In the construction herein shown the laminæ are all of one size and shape for the sides, as shown in Fig. 3, having holes or openings 4, which are irregularly placed and

through which are inserted the spacing-pins employed in building up the core. A suitable number of laminæ having been bunched upon the spacing-pins, they are arranged in a lengthwise laterally-overlapping form, as shown in Fig. 2, the spacing-pins being indicated by dotted lines. At the corners of the core the space left unoccupied by this construction is preferably filled in with insulating material, although metal may be used if it is itself well insulated. As shown in Fig. 2, the fillings are indicated by the reference-figure 5. By this means the rectangular exterior for the winding of the coils is preserved. The core, as shown, is wound with the coils 6. The core may be completed by end caps and a casing, all constructed as well known in the art. If desired, further provision may be made for cooling the core by forming spaces between the bundles of laminæ. 7 indicates the bundles of laminæ, and a number of these bundles 7 may be separated by suitable separating bars or strips 8, thereby dividing the core into groups of the overlapping sets, as shown in Fig. 2. These additional spaces would ordinarily be used in transformers of large size, where more heating occurs or where masses of metal are larger and the radiating-surfaces need to be increased. It will thus be seen that by means of this construction and arrangement complete provision is made for thorough ventilation and circulation between the coils and the core, and between the parts of the core itself in the interior thereof, where heat is usually retained.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a transformer, a built-up core having its sides and ends composed of bundles of laminæ of magnetizable material united at their ends, said bundles of laminæ being assembled in offset relation lengthwise and laterally to form ventilating and circulating spaces between the coils and the core, and between the passages of the core, as herein set forth.

2. In a transformer, a built-up core having its sides and ends composed of bundles of metallic laminæ united at their ends, said bundles of laminæ being assembled in offset

relation lengthwise and laterally, and being arranged in groups spaced so as to form air-passages from end to end, all of which is constructed and arranged to provide ventilating or circulating spaces between the coils and the core, and between the passages of the core, as herein set forth.

3. In a transformer, a built-up core with its sides composed of bundles of laminæ of magnetizable material assembled in offset relation lengthwise and laterally, as herein set forth, and the ends of the core composed of bundles of laminæ of magnetizable material similarly arranged in offset relation lengthwise and laterally, said ends and sides being jointed, as herein set forth.

4. The combination in an electrical trans-

former, of a core having its sides composed of sheet-iron laminæ of rectangular form, arranged in laterally-offset relation so as to form circulating and ventilating passages between the coils and the core and between the passages of the core, and yokes for said sides similarly constructed and arranged, the yokes and sides being united together, and inducing and induced windings upon said cores, as set forth.

In witness whereof I have hereunto set my hand this 12th day of May, 1896.

HENRY M. HOBART.

Witnesses:

JOHN W. GIBBONEY,

AUGUSTINE R. EVEREST.