A. R. EVEREST.

CONDENSER.

APPLICATION FILED AUG. 7, 1905.

925,165.

Patented June 15, 1909.

2 SHEETS—SHEET 1.

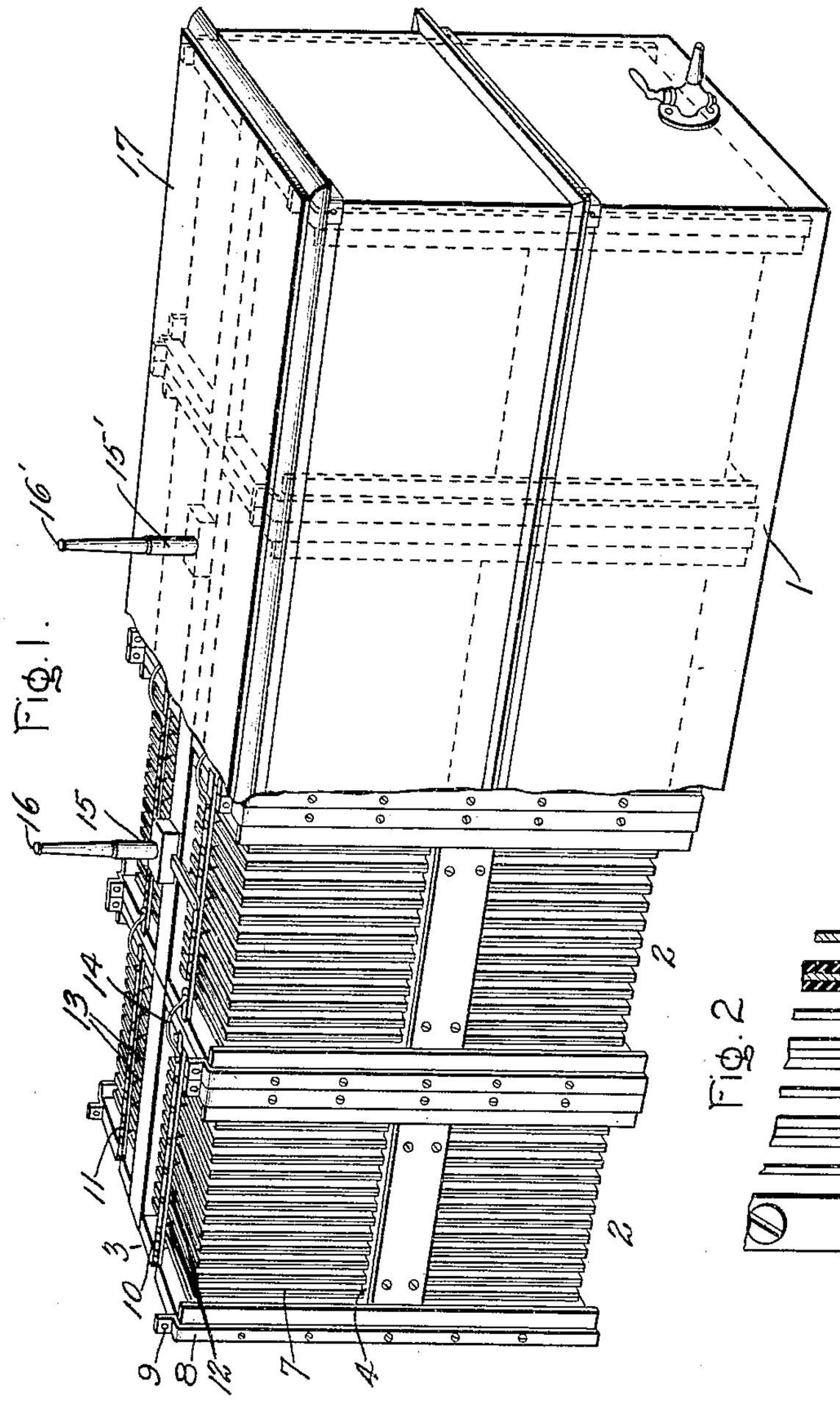

Fig. 1.

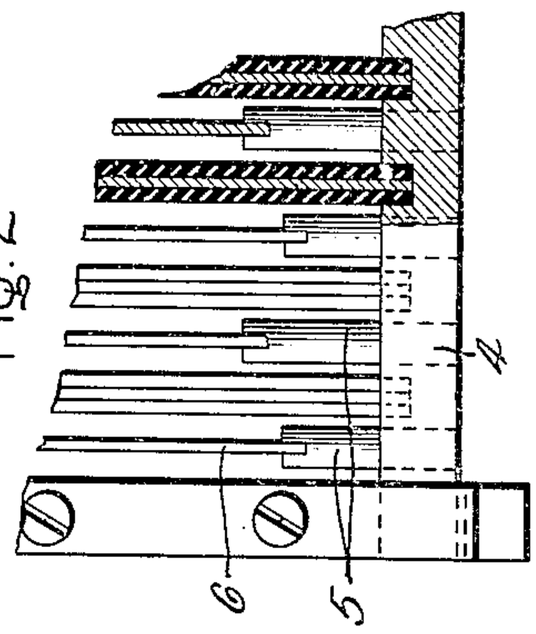

Fig. 2.

Witnesses.

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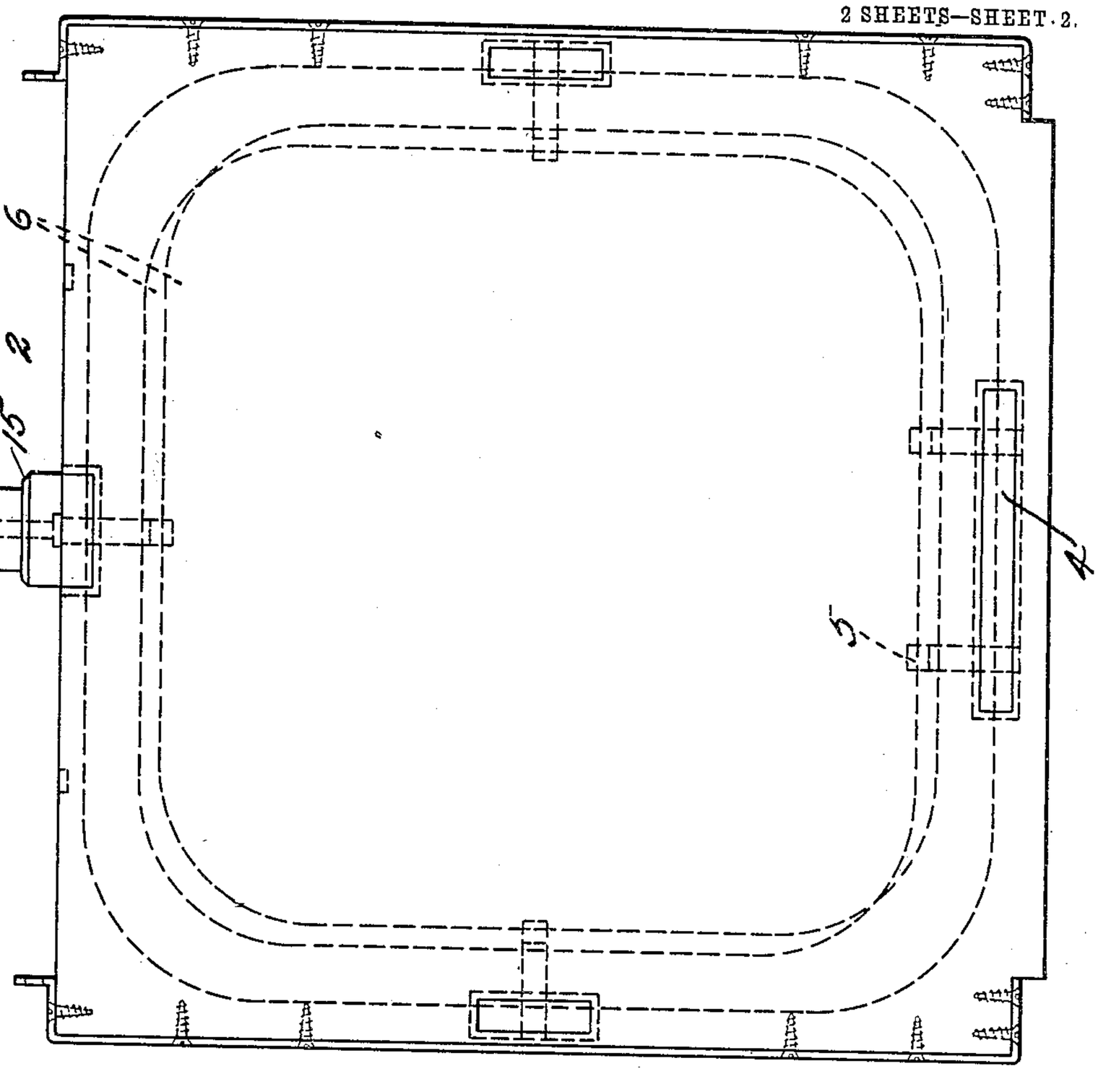

Fig. 4.

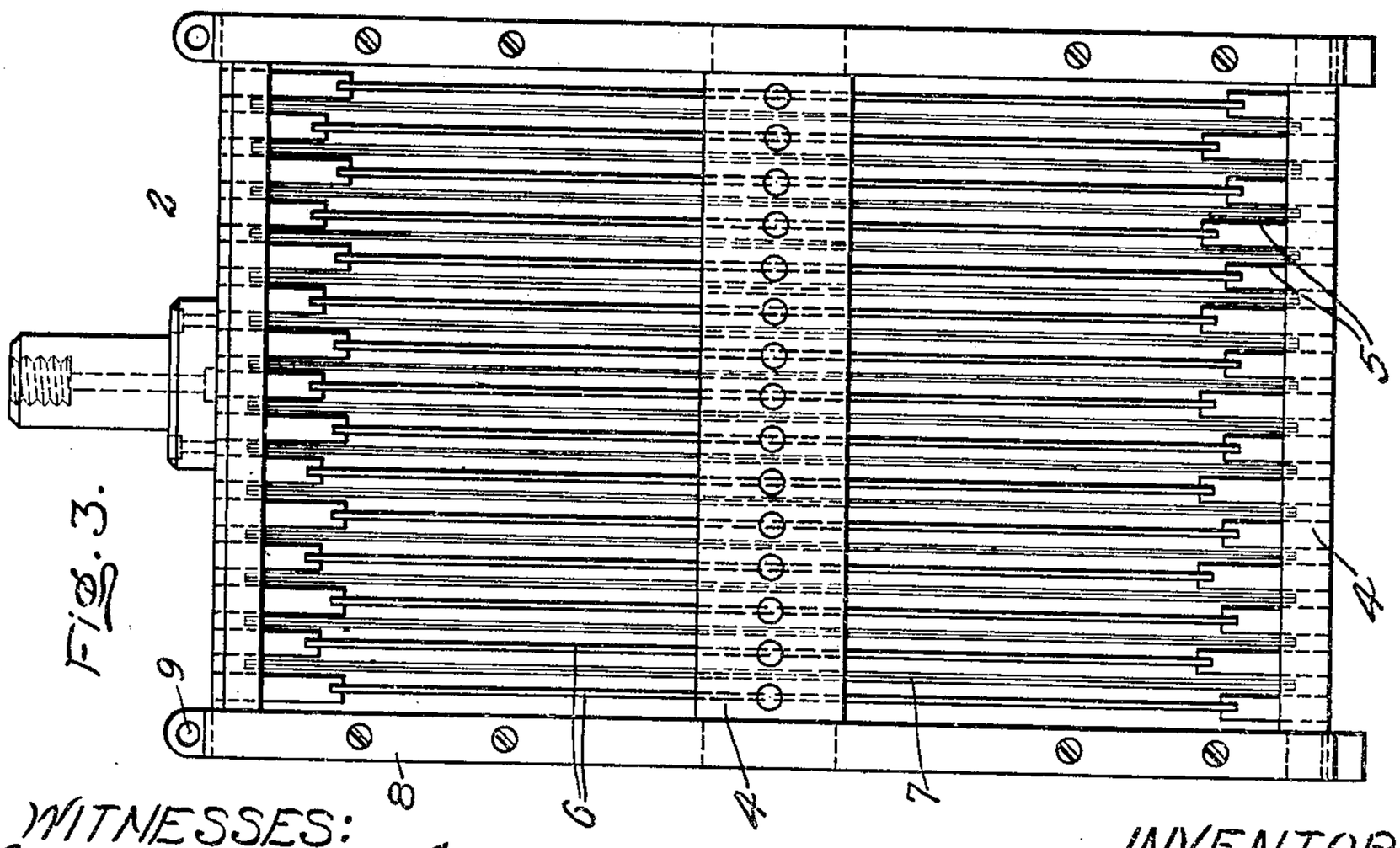

Fig. 3.

WITNESSES:

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Bertha Leon

INVENTOR:

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Att'y.

UNITED STATES PATENT OFFICE.

AUGUSTINE R. EVEREST, OF LYNN, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

CONDENSER.

No. 925,165. Specification of Letters Patent. Patented June 15, 1909.

Application filed August 7, 1905. Serial No. 272,985.

To all whom it may concern:

Be it known that I, AUGUSTINE R. EVEREST, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Condensers, of which the following is a specification.

My present invention has for its purpose improvements in the construction and arrangement of static electric condensers.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of my invention, however, reference may be had to the accompanying drawings and descriptive matter in which I have illustrated and described one of the forms in which my invention may be embodied.

In the drawings, Figure 1 is a perspective view with parts broken away of a high potential, large capacity condenser embodying my invention; Fig. 2 is an elevation partly in section illustrating a feature of construction which may be employed; Fig. 3 is an end elevation; and Fig. 4 a side elevation of one of the units or sections into which my condenser may be divided.

Referring to the drawings, 1 represents a tank or receptacle in which the condenser is placed. In the form of my invention illustrated in the drawings, the condenser is made up of four substantially similar sections 2. Each of the sections comprises a frame or rack formed of two end members 3 which may be in the form of rectangular plates of wood and are connected together by four parallel bars 4 also advantageously formed of wood. As shown, the bars 4 extend between the outer edges of the end members 3, one bar extending from each side of each end member and being located midway between adjacent corners of the end members. Each bar 4 is provided with a plurality of inwardly projecting pins or guide members 5 formed of suitable insulating material such as wood which support the active conducting plates 6 of the condenser. Kerfs or slots are formed in the inner ends of the guides or pins 5 into which the edges of the plates 6 of the condenser are received. The plates 6 may be formed of any suitable material. I have obtained excellent results, however, by making them of pieces of sheet iron. The iron plates are preferably covered with an enamel or varnish not soluble in oil or other insulating medium employed which serves to prevent oxidation of the plates and also as an insulating coating.

In the particular embodiment of my invention disclosed the plates are substantially square but have their corners rounded off as is clearly shown in Fig. 4.

As shown, successive pins 5 extending from each bar 4 are of different lengths, alternate pins, however, being of the same length. By this arrangement successive plates 6 are laterally displaced so that the distance between the similar parallel edges of adjacent plates is greater than the distance between the bodies of the plates. This diminishes the liability of break down which, as is well known, is more apt to occur between the edges of the conducting plates than between their bodies. One or more barriers preferably in the form of plates of insulating material such as press-board similar in shape to the plates 6 but larger, are located between each pair of pins 5. In the form of invention disclosed, the bars 4 are provided with kerfs or slots located one between each adjacent pair of pins 5 each kerf receiving the edges of a pair of plates 7.

The end members 3 are provided each with a pair of reinforcing metal strips 8. The upper ends of the strips 8 are formed with eyes 9 in which may engage suitable lifting devices by means of which the condenser sections may be placed in or lifted out of the receptacle 1. Each section of the condenser is provided with a pair of bus bars or conductors 10 and 11 which are located at each side of the top bar 4 and are secured to and supported by the end member 3. Leads 12 extend from the bus-bars 10 to alternate plates 6. Leads 13 connect the bus-bars 11 to the plates 6 which are not connected to the bus-bar 10. The bars 10 of the different sections which are in alinement with each other are connected by suitable conductors 14. The bars 11 are connected in a similar manner. The top bar 4 of one of the sections carries supports 15 of insulating material. A terminal 16 carried by the support 15 has its lower end connected to the bus-bars 10. A similar support 15′ carried by a top bar of another section of the condenser holds a terminal 16′ similarly connected to the bus bars 11. The terminals

16 and 16′ thus form the terminals of the condenser. The tank or receptacle 1 in which the condenser sections may be immersed in oil or other suitable insulating material is provided with a cover 17 formed with apertures through which the supports 15 and 15′ extend.

The construction described is simple and compact and possesses many advantages in mechanical strength and arrangement. The conducting plates are reliably supported and insulated. By interposing in the insulating fluid between adjacent plates barriers in the form of solid insulating material, the capacity of the condenser to resist break down stresses is greatly increased. It has been found that the strength of the insulation between condenser plates when composed of fluid insulating material and one or more barriers of solid material separated from each of the plates by the fluid insulating material, is much greater than if the barriers are not employed, and this even though the insulating properties of the material of which the barrier is composed are inferior to the insulating properties of the fluid insulating material displaced by the barriers. In fact if thin barriers of conducting material are employed the resistance to break down stresses may be greater than if no barriers are used.

In Fig. 2 I have shown a construction in which an insulated plate of conducting material such as sheet iron is placed between the pair of insulating barriers between each pair of active plates. Such insulated conducting plates equalize the stresses between adjacent active plates and diminishes the likelihood of break down.

It will be obvious that changes may be made in the form of the invention disclosed without departing from its spirit and that certain features of my invention may be employed with beneficial results without employing at the same time other features of the invention.

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

1. In a condenser, a box-like frame comprising end members and bars connecting said end members, supporting pins of insulating material carried by said bars, and plates of conducting material supported at their edges by said pins.

2. In a condenser, a box-like frame comprising end members and bars connecting said end members, supporting pins carried by said bars, plates of conducting materials supported by said pins, and barriers of insulating material supported between adjacent pins.

3. A condenser unit comprising a rack or frame, active conducting plates the edges of which are engaged and supported by said frame, one or more insulating barriers between adjacent pairs of active plates, said barriers being in the form of plates the edges of which are also engaged and supported by said frame.

4. In a condenser, a frame or rack, plates of conducting material the edges of which engage and are supported by said frame, one or more barriers of insulating material in the form of plates located between adjacent pairs of conducting plates but out of contact therewith, the edges of said barriers engaging and being supported by said frame, and a receptacle containing a bath of insulating fluid in which said frame and plates are immersed.

5. In a condenser, a frame or rack, plates of conducting material the edges of which engage and are supported by said frame, one or more barriers of insulating material in the form of plates located between adjacent pairs of conducting plates, the edges of said barriers engaging and being supported by said frame, and a receptacle containing a bath of insulating fluid in which said frame and plates are immersed.

6. In a condenser, a frame or rack, a pair of active conducting plates of opposite polarity, and a third insulated plate of conducting material located between said active plates but out of contact therewith, the edges of said plates engaging and being supported by said rack.

In witness whereof, I have hereunto set my hand this fourth day of August, 1905.

AUGUSTINE R. EVEREST.

Witnesses:
JOHN A. MCMANUS, JR.,
HENRY O. WESTENDARP.