

Aug. 5, 1924.

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E. THOMSON
ELECTROSTATIC CONDENSER

Filed Nov. 13, 1920

Fig. 1.

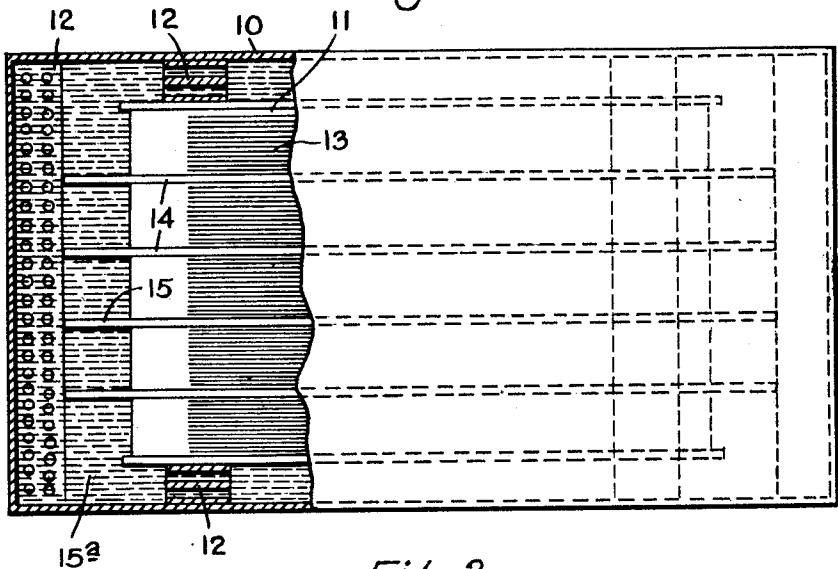


Fig. 2.

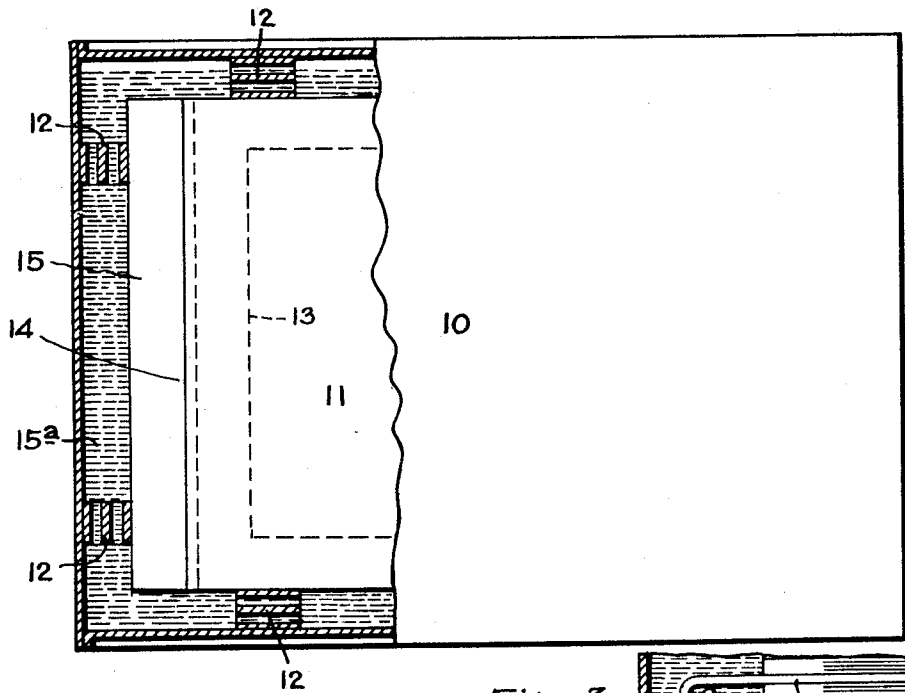


Fig. 4.

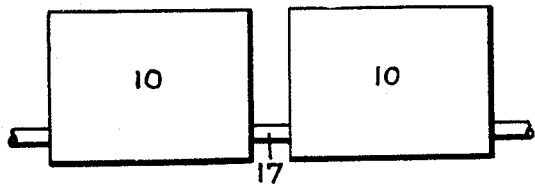
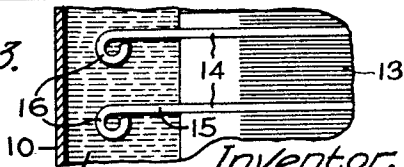


Fig. 3.



Inventor,
Elihu Thomson,
by Albert G. Davis
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UNITED STATES PATENT OFFICE.

ELIHU THOMSON, OF SWAMPSCOTT, MASSACHUSETTS, ASSIGNOR TO GENERAL
ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTROSTATIC CONDENSER.

Application filed November 13, 1920. Serial No. 423,963.

To all whom it may concern:

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

This invention relates to electrostatic condensers and more particularly to that type of condenser which comprises a plurality of closely compacted conducting leaves or sheets suitably insulated from one another. It has been found that condensers of this type, particularly when operated on power circuits, become overheated with the result that the insulation is injured. One object of my invention is to provide such a condenser with means whereby heat be conducted away from its interior.

Another object of my invention is to provide means whereby a plurality of condensers may be prevented from becoming overheated by enclosing the same in tanks containing a cooling and insulating fluid and causing this fluid to circulate through the tanks. Other objects and advantages may appear from the following description taken in connection with the accompanying drawings, wherein Fig. 1 is a top plan view partly in section, and Fig. 2 is a side elevation also partly in section of a condenser and its enclosing casing, constructed in accordance with my invention; Fig. 3 is a detail of the slightly modified construction, and Fig. 4 is a diagrammatic view of two condenser casings and connecting pipes to permit of the circulation therethrough of a cooling fluid.

Referring to Figs. 1 and 2, the casing 10 has located therein a condenser 11, spaced from the casing by perforated strips 12 of insulating material. The condenser 11 is formed of thin sheets of conducting material 13, such as metal foil between which is located insulating material such for example as suitably prepared sheets of paper. The conducting sheets 13 constitute the active elements of the condenser and are connected to its terminals.

At intervals throughout the body of the condenser and interleaved with the sheets 13 are plates or sheets 14 of substantial thickness and formed of material which is a good conductor of heat, such as aluminum

or copper. The plates 14 extend beyond the body of the condenser at 15 so as to present a considerable surface to the cooling action of the liquid 15^a which fills the tank 10. In Fig. 3 the plates 14 have their edges curled at 16 to provide a still greater cooling surface. Plates 14 are preferably not in electrical connection with the condenser terminals and are therefor inactive as condenser elements. By insulating the plates 14 from the active elements of the condenser, the danger of the destructive discharge from these plates is minimized. A suitable liquid for cooling the condenser is the usual non-sludging transformer oil which should, however, be particularly free from moisture. While considerable freedom may be allowed in the spacing of the plates 14 it is preferable that the sections of the condensers which lie between adjacent plates 14 be made relatively thin.

Fig. 4 shows two condenser tanks connected by tubing 17 to provide means for circulating the cooling oil through the tanks. Means may also be provided whereby the oil itself may be cooled. Such a means may take the form of radiators exposed to the air or in contact with cooling water or some form of refrigerating machine may be employed if desired.

Having now described my invention, what I claim and desire to secure by Letters Patent of the United States is:

1. In a condenser, a series of electrically active sheets and a plurality of electrically inactive sheets of high heat conducting capacity interleaved with said active sheets and arranged to conduct the heat from the interior of the condenser.

2. In a condenser, a series of electrically active sheets and a plurality of electrically inactive sheets of material having high heat conductivity, interleaved with said active sheets, said inactive sheets extending outwardly from the body of said condenser.

3. In a condenser, a series of electrically active sheets and a plurality of heat conducting, electrically inactive sheets interleaved with said active sheets at frequent intervals and formed external to the body of said condenser with enlarged heat radiating surfaces.

4. In an electrostatic apparatus, a casing adapted to contain an insulating liquid, a condenser comprising a series of electrically

active sheets located within said casing, and a series of inactive plates formed of material having high heat conductivity, interleaved with said sheets and extending outwardly from the body of said condenser. 5

of the condenser, and a sheet of comparatively high heat conducting capacity interleaved with the first mentioned sheets and extending beyond the same. 10

In witness whereof, I have hereunto set my hand this tenth day of November, 1920.

ELIHU THOMSON.

5. In a condenser, a series of sheets of metal foil having comparatively low heat conducting capacity forming active elements