March 10, 1936. H. O. SIEGMUND 2,033,309

ELECTROLYTIC CONDENSER

Filed Aug. 4, 1930

FIG. 1

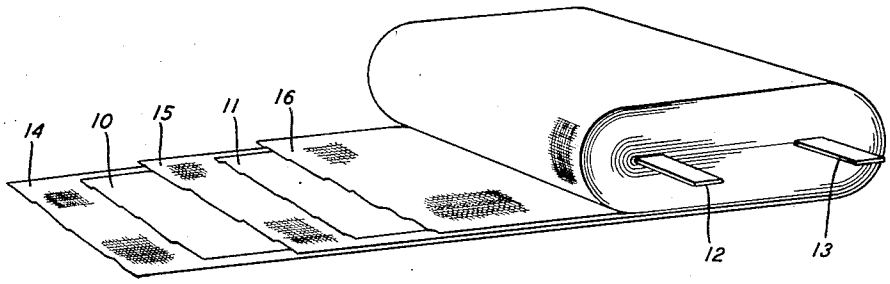
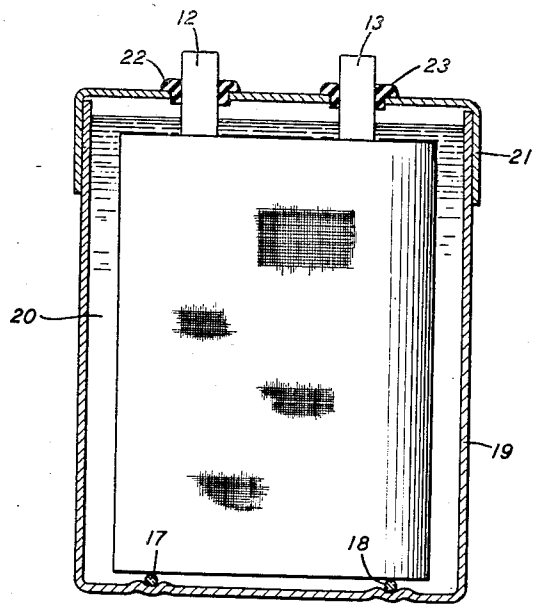


FIG. 2



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Patented Mar. 10, 1936

2,033,309

UNITED STATES PATENT OFFICE

2,033,309

ELECTROLYTIC CONDENSER

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Application August 4, 1930, Serial No. 472,911

4 Claims. (Cl. 175—315)

This invention relates to condensers and more particularly to electrolytic condensers.

In the construction of electrolytic condensers it has been the usual practice to stack the plates in alternate relationship at a suitable distance apart and then immerse the unit in a container which is filled with an electrolyte. Such condensers are in general satisfactory but they require a large amount of space and in addition are difficult to transport from place to place without injury to the unit.

An object therefore of the present invention is to provide an electrolytic condenser that is compact in form and one that may be safely transported from place to place without injury.

In accordance with the present invention this and other objects are attained by rolling or stacking alternate sheets of metal foil and absorbent material, into a compact unit, and then immersing this unit in a receptacle containing a suitable liquid electrolyte. Due to capillary attraction the electrolyte is drawn up through the pores of the absorbent material thus providing the necessary film of electrolyte between the sheets of metal foil which is essential to the proper operation of this type condenser.

For a clearer understanding of this invention reference may be had to the accompanying drawing in which Fig. 1 is a view showing the preferred manner of constructing the unit and Fig. 2 a view showing the manner in which the unit is mounted in the container.

In the drawing 10 and 11 represent sheets of metal foil, sheet 10 being preferably made from lead and sheet 11 from tantalum. Sheets 14, 15 and 16 of absorbent material such as cloth are placed in alternate relationship with sheets 10 and 11 and are slightly wider in order to prevent the ends of the metallic sheets from coming into contact with each other. Metallic terminals 12 and 13 which serve to make external electrical connection are in contact with metallic sheets 10 and 11 respectively. A simple satisfactory method of accomplishing this is to insert the thin flat terminal strips between the metallic and the adjacent cloth sheets. These sheets are then wound into a compact form and pressed to obtain the desired shape and the unit thus formed is then mounted on glass rods 17 and 18 which are held in place by grooves in the bottom of metallic container 19. This construction prevents the unit from resting on the bottom of the container and also serves to prevent lateral displacement of the unit when the container is moved from place to place. While the unit is preferably made by rolling the alternate sheets of metal foil and absorbent material yet satisfactory results may be obtained by simply stacking the sheets in alternate relationship.

The container is then filled with an electrolyte 20 such as ammonium borate which has the property of being held in solution indefinitely without coagulating. A metallic cover 21 having soft rubber bushings 22 and 23 through which terminals 12 and 13 pass fits snugly over container 19 and prevents the electrolyte from splashing and spilling when the container is moved about.

Due to capillary attraction the electrolyte is drawn up through the pores of the absorbent material thus providing the film of electrolyte between the sheets of metal foil which is essential to the proper operation of this type of condenser.

Condensers constructed in this manner are compact in form and may be safely transported from place to place without danger of having the metallic plates short circuit which is a common occurrence in condensers constructed in this usual manner.

What is claimed is:

1. In an electrolytic condenser a receptacle containing a liquid electrolyte in which is immersed a condenser unit comprising alternate layers of metal foil spaced solely by a fibrous material wound into compact form.

2. A condenser comprising a receptacle containing a liquid electrolyte in which is immersed a condenser unit comprising a plurality of electrodes separated from each other by absorbent material and means comprising a plurality of glass rods resting in a plurality of grooves in the bottom of said receptacle for supporting said unit out of contact with said receptacle.

3. In an electrolytic condenser a receptacle containing a liquid electrolyte in which is immersed a condenser unit comprising alternate layers of metal foil, separated solely by and wound into a compact form with a material which will absorb said liquid electrolyte by capillary action during the operation of said condenser.

4. In an electrolytic condenser a receptacle containing a liquid electrolyte, a condenser unit mounted therein and in contact with said liquid electrolyte comprising alternate layers of metal foil separated solely by and wound into a compact form with a material which will absorb said liquid electrolyte by capillary action during the operation of said condenser.

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