

Dec. 10, 1940.

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2,224,307

ELECTROLYTIC CONDENSER

Filed March 7, 1938

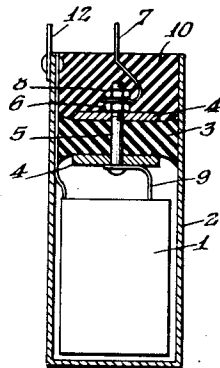


Fig. 1

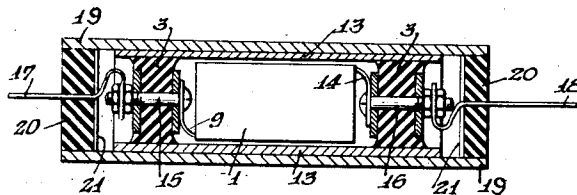


Fig. 2

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2,224,307

ELECTROLYTIC CONDENSER

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Application March 7, 1938, Serial No. 194,437
In Germany March 6, 1937

3 Claims. (Cl. 175—315)

(Granted under the provisions of sec. 14, act of
March 2, 1927; 357 O. G. 5)

This invention relates to electrolytic devices, in particular condensers.

It is an object of the invention to provide an airtight and moisture-proof seal of the electrolytic condenser.

It is another object of the invention to provide a safe and moisture-proof construction of the electrolytic condenser suitable for use within a wide range of temperatures, and especially for low temperatures.

It is still another object of the invention to prevent the electrolyte from forming electric contact with the metallic case into which the condenser is insulatedly built.

These and other objects of the invention will be more clearly understood from the following description and the drawing in which by way of example Fig. 1 shows a cross-section of an electrolytic condenser according to the invention and Fig. 2 a cross-section of a modification thereof.

Identical reference numbers designate identical parts.

In wound electrolytic condensers care must be taken to seal the air and moisture proof, the electrolyte being strongly hygroscopic. Furthermore means must be provided to prevent the electrolyte when insulated from the metallic case from making contact with the container as this would result in short circuits, corrosion and punctures as is well known in the art. While for metallic containers a tight seal may be obtained by soldering or by swaging of the rim or by the use of gaskets, with containers of insulating material as frequently used sealing may be achieved by the application of compounds.

Within the normal range of temperature such devices are entirely satisfactory but for large differences of temperature and especially in the lower ranges, e. g. -40°C ., owing to cracks and fissures caused by contraction, they are no longer satisfactory.

According to the invention, the above mentioned drawbacks are overcome and an air- and moisture-tight seal is obtained.

Referring more particularly to Fig. 1, a wound condenser body 1 is arranged in a container 2 consisting of metal or insulating material. An elastic stopper 3 is arranged above the condenser body and is longitudinally compressed by means of pressure plates 4, 4 and a bolt 5. Thereby the stopper is laterally expanded and seals the condenser body in the container 2. Nut 6 serves to adjust this pressure. A lead 7 is secured by another nut 8 to the bolt 5 which simultaneously serves as electric conductor and is connected at

its other end to a lead 9 of an electrode of the condenser body, preferably of the anode. A compound 10 above stopper 3 completely closes the opening of the container 2 and provides a mechanical support of the lead 7. The other condenser lead 11 passes between container and stopper and the compound seal, and is riveted to the container and a soldering lug 12.

From the above it will be appreciated that by adjusting the nut 6 any desired compression and thereby cross-expansion of the stopper can be obtained which is thereby tightly forced against the walls of the container. Such expansion seals may be constructed in various ways. But it is to be observed that all of its parts within the container facing the electrolyte should be either chemically inert in regard to the electrolyte or consist of a metal of anodic characteristic, such as, e. g., aluminum.

Fig. 2 shows a wound condenser body 1 contained in a tube 13 and sealed by expansion seals 3, 3 one at each end. Each of the two leads 9 and 14 is attached to the respective pressure bolt 15, 16 of the adjacent expansion seal. 17, 18 are outside terminals. The condenser is inserted in another tube 19 carrying seals on both ends consisting of glazed board 21 below compound 20. Tubes 13 and 19 may either consist of metal or insulating material. If two metallic containers are used, insulating spacers are provided for avoiding insulated mountings of the condenser.

It will be appreciated from the above that the invention provides an efficient and simple seal which due to its elasticity and permanent high compression follows the variations of the inner diameter of the container due to variations of temperature. In particular, with a structure according to Fig. 2 the seal may move slightly to the outside if vapor pressure is developed within the container due to overheating of the electrolyte, thus substituting or releasing to some extent a valve action.

It is to be understood that the invention is not limited to the exemplifications given but is to be derived in its broadest aspect from the appended claims.

What I claim is:

1. An electrolytic condenser unit, comprising, in combination, a tubular container having an opening of sufficient area to introduce a rolled condenser element, a rolled condenser element and an electrolyte in said container, a first seal inside said container in front of said condenser element and electrolyte and spaced from said opening, said first seal comprising an elastic

body of insulating material, as exemplified by rubber, covering substantially said area and engaging a substantially straight inside portion of said container, conductive means traversing and engaged by said elastic body spaced from said portion and connected with one pole of said condenser element, pressure means on opposite sides of said elastic body the circumferences of which are slightly spaced from said straight portion, said pressure means traversed and pressed by said conductive means upon said elastic body so as to compress and expand it radially and force it tightly against said straight portion and said conductive means, and a second seal of insulating compound in front of said first seal and also traversed by said conductive means.

2. An electrolytic condenser, comprising, in combination, a substantially cylindrical container having an opening of sufficient area to introduce a rolled condenser element, a rolled condenser element and an electrolyte in said container, a first seal inside said container in front of said condenser element and electrolyte and spaced from said opening, said first seal comprising an elastic body of insulating material, as exemplified by rubber, covering substantially said area, and engaging a cylindrical inside portion of said container, conductive means traversing and engaged by said elastic body, said means spaced from said portion and including a flexible portion connected with one pole of said condenser element, rigid discs of insulating material on opposite sides of said elastic body the circumferences of which are slightly spaced from said cylindrical portion, said discs traversed and pressed by said conductive means upon said elastic body so as to compress and expand it radially and force it tightly against said cylin-

drical portion and said conductive means, and a second seal of insulating compound in front of and spaced from said first seal arranged within the opening of said container, said second seal traversed by a conductive lead forming a portion of said conductive means.

3. An electrolytic condenser unit, comprising, in combination, a first tubular container having openings on both sides of sufficient area to introduce a rolled condenser element, a rolled condenser element and an electrolyte in said container, two first seals inside said container, close to a front each of said condenser element and spaced from an adjacent opening of said container, each first seal comprising an elastic body of insulating material, as exemplified by rubber, covering substantially said area and engaging a substantially straight inside portion of said container, conductive means traversing and engaged by the elastic body of each of said first seals, being spaced from said portion and including a flexible part connected with one pole of said condenser element, pressure means on opposite sides of each elastic body the circumferences of which are slightly spaced from said straight portion, said pressure means traversed and pressed by said conductive means upon said elastic bodies so as to compress and expand them radially and force them tightly against said straight portion and said conductive means, a second tubular container of insulating material enclosing said first container and projecting beyond both ends of it, two second seals of insulating compound, one within a projecting end each of said second container and traversed by a lead forming a part of said conductive means.

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