Aug. 2, 1938. A. M. GEORGIEV 2,125,373

CONTAINER FOR ELECTROLYTIC CONDENSERS

Filed June 23, 1934

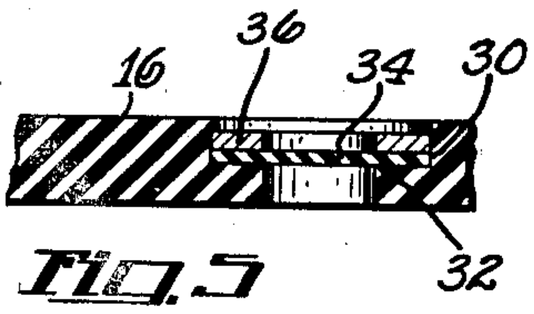

Fig. 5

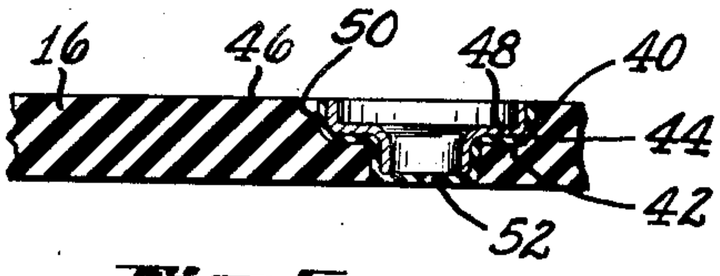

Fig. 6

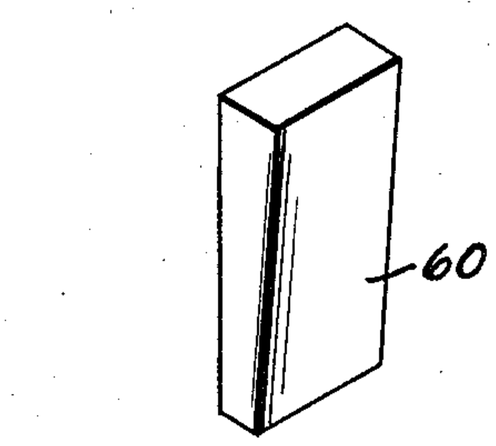

Fig. 7

Fig. 2

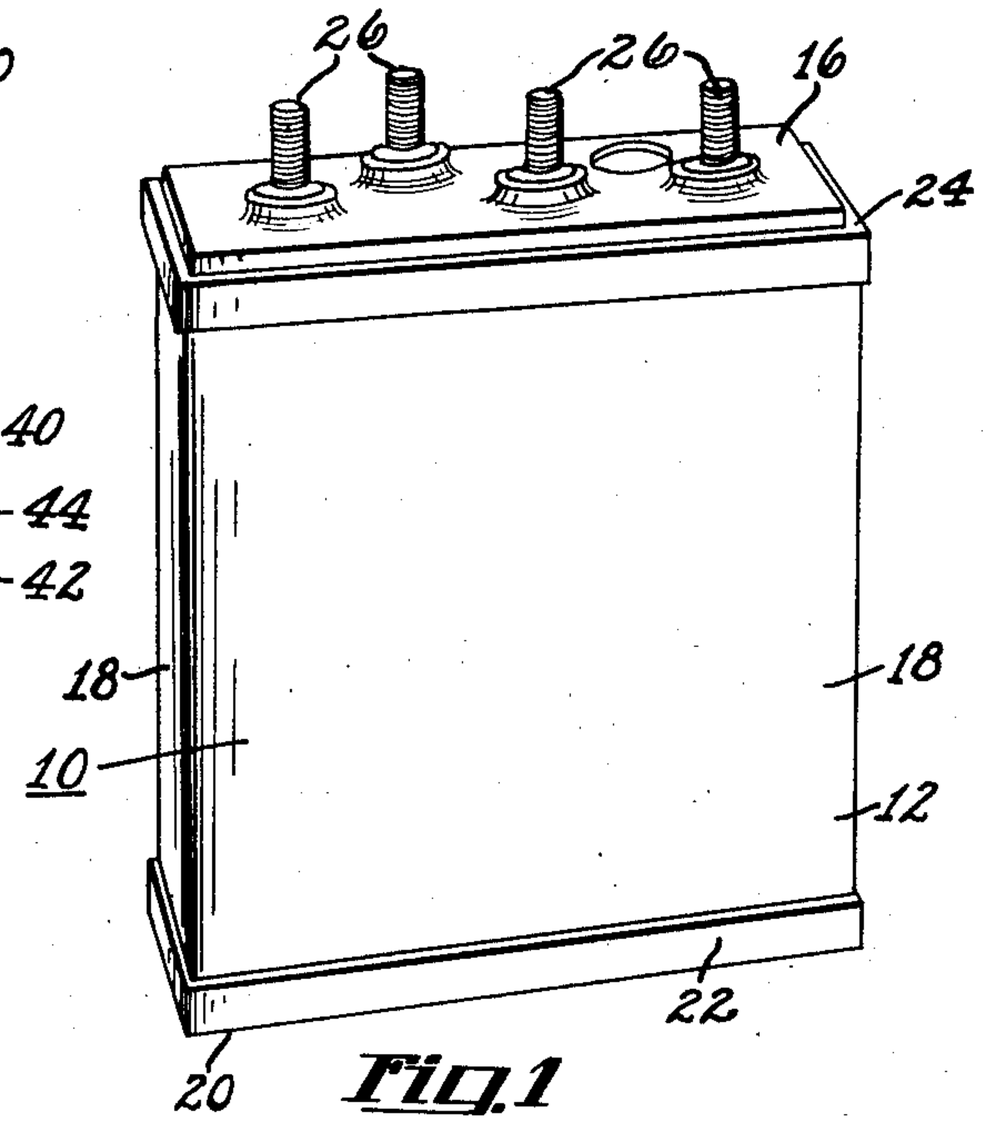

Fig. 1

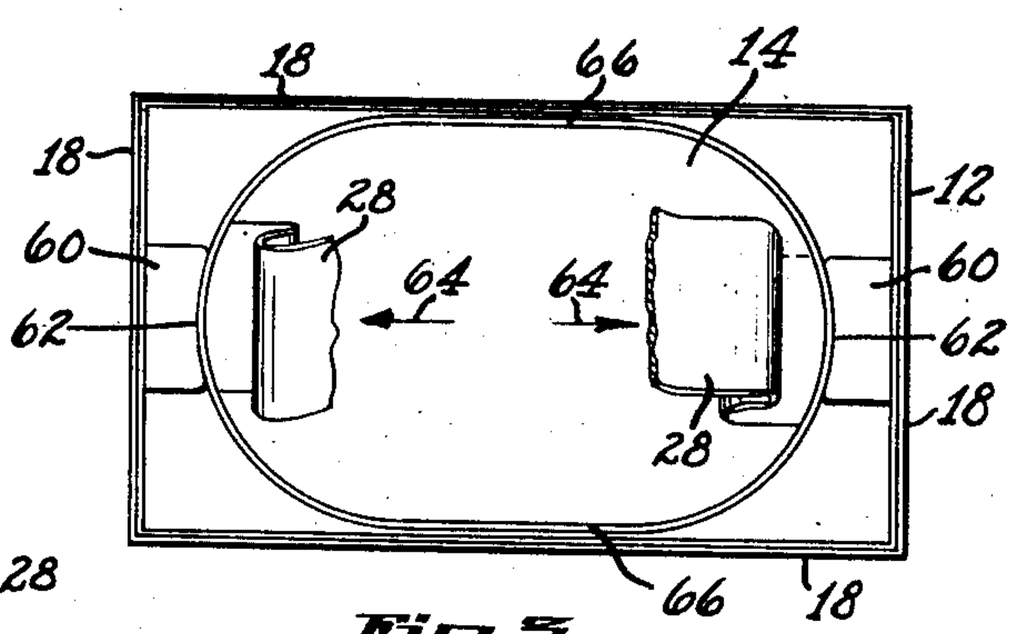

Fig. 3

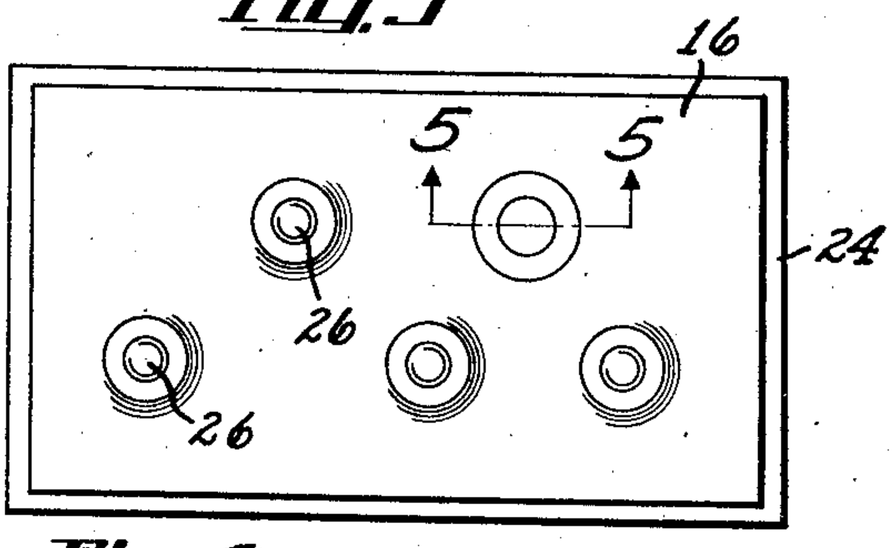

Fig. 4

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CONTAINER FOR ELECTROLYTIC CONDENSERS

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4 Claims. (Cl. 175—315)

This invention relates generally to electrolytic condensers and more particularly to containers for dry or substantially dry electrolytic condensers.

It is an object of the present invention to provide a container of good heat dissipating material for electrolytic condensers particularly of the dry or substantially dry type, in which an appreciable amount of heat is generated due to the flow of currents of considerable magnitude.

It is another object of the present invention to seal the containers in a manner that the seal is not affected by a heat treatment to which the condenser may be subjected subsequently.

It is another object of the present invention to provide a container for electrolytic condensers particularly of the dry or substantially dry type, which is very compact.

If the condensers are to be used in connection with electric motors for starting a single phase motor for instance, it is a further object of the present invention to incorporate in the containers a terminal board of a simple and inexpensive construction for properly interconnecting a motor, a condenser and a power source.

It is another object of the present invention to provide an improved vent plug in sealed containers of electrolytic condensers.

It is another object of the present invention to hold the condenser sections in place within their containers in such manner that air in the containers may circulate around the condenser sections and thus more effectively cool the condensers.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing wherein a preferred embodiment of the present invention is clearly shown.

In the drawing:

Fig. 1 is a perspective view of a condenser embodying the present invention.

Fig. 2 is a cross-section through the condenser.

Fig. 3 is a top view of the condenser with the cover removed.

Fig. 4 is a top view of the cover.

Fig. 5 is an enlarged fragmentary section taken on the line 5—5 of Fig. 4.

Fig. 6 illustrates a modification of the disclosure in Fig. 5.

Fig. 7 shows a detail of the condenser.

Referring to the drawing, there is shown an electrolytic condenser 10 of the dry or substantially dry type. This condenser comprises an open container 12 within which is located a form wound and subsequently flattened conventional condenser section 14. The open container is closed by a cover 16. The container 10 is made of any suitable metal having good heat dissipating properties such as tinned steel, and consists of side walls 18 which are formed from one piece and the ends thereof sealed together by soldering or otherwise, and a bottom 20 which is secured to the side walls 18 by preferably soldering the drawn rim 22 of the bottom to the side walls 18. The cover 16 is molded preferably from bakelite or hard rubber and has a metal rim insert 24 preferably of the same material as the container 18. As best shown in Fig. 2, the rim 24 of the cover 16 overlaps the side walls 18 of the container and is soldered thereto in order to form a perfect seal. Also molded in the cover 16 are a plurality of terminals 26 all of which extend to the outside of the sealed container and two of which extend to the inside of the container and are connected in any suitable manner with the electrodes 28 of the condenser section 14. The other terminals serve for the connection of an electric motor with a power source in case where the condenser is used in connection with the electric motor and is directly mounted thereon.

Due to the flow of currents of considerable magnitude in the condenser, an appreciable amount of heat is generated which naturally is accompanied by a corresponding expansion of the air and vapors within the sealed container. In case the condenser becomes excessively overheated, the following provision is made for permitting the escape of the highly compressed air and vapors from the sealed container. As best shown in Fig. 5, the cover 16 is provided with an opening 30 of two different diameters and an internal shoulder 32. Resting on the shoulder 32 and extending across the opening 30 is a diaphragm 34 of flexible or better resilient material such as rubber, and pressfitted or otherwise secured in said opening 30 is a washer 36 which clamps the diaphragm 34 against the internal shoulder 32. In case the air and vapors in the sealed container 12 become too hot and therefore excessively compressed, the unclamped portion of the diaphragm will become ruptured and the air and vapors may then escape therethrough.

Fig. 6 discloses a modification of the arrangement disclosed in Fig. 5. In Fig. 6, the cover 16 is provided with a similar opening 40 of two different diameters and an internal shoulder 42. A disc 44 of resilient material such as rubber is originally placed on the top surface 46 of the cover and directly above the opening 40 thereof.

An eyelet 48 is then pressed into the opening whereby the disc 44 is pressed against the side walls 50 and the internal shoulder 42 thereof, whereby a central portion 52 of the disc is slightly stretched. Again when the air and vapors in the sealed container become too highly compressed under excessive heat generation of the condenser, the stretched diaphragm portion 52 will become ruptured and permit the compressed air and vapors to escape from the container.

The diaphragms 34 and 52 naturally permit a limited expansion of the air in the sealed container as for instance during the reforming of the condenser, due to the ability of a portion of either diaphragm to stretch within the elastic limits of the diaphragm material.

Referring more particularly to Figs. 2, 3 and 7, the condenser section 14 is held spaced from the metal container 12 by means of two blocks 60 of any insulating material such as rubber, cork or wood, which are interposed between two opposite side walls 18 of the container and the semi-circular ends of the condenser section. As best shown in Figs. 2 and 3, the section engaging surfaces 62 of the blocks 60 are curved so as to conform to the semi-cylindrical shape of the block engaged portions of the condenser section 14. In this manner movement of the condenser section 14 relative to the container 18 is not only prevented in the direction of arrows 64 but also in a direction at right angles thereto, wherefore the plane surfaces 66 of the condenser section are held spaced from the adjacent side walls 18 of the container. As best shown in Figs. 2 and 7, the blocks 60 are considerably shorter than the axial length of the wound condenser section 14 and are furthermore wedge-shaped so as to be tightly pressed in position. It is obvious that with the application of the spacer block, the air in the sealed container may freely circulate around the condenser section and thus effectively cool the condenser.

In order to prevent any chemical or electrochemical reaction between the electrolyte of the condenser section and the material of the container, the latter is internally coated with a substance which does not chemically react with the electrolyte. A substance which is sold under the trade-mark "Duco" has been found to form a very satisfactory coat and is preferably used because it is universally marketed and not too expensive. The molded cover which entirely covers the opening of the container does not chemically react with the electrolyte and therefore need not be coated.

While the embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow:

1. In combination with a sealed container and a wound electrolytic condenser section therein, angularly spaced wedge-shaped blocks of insulating material wedged between the container and curved portions of the condenser section therein, the section engaging block surfaces being of the same shape as the engaged section surfaces.

2. In combination with a rectangular sealed container and a wound and partially flattened electrolytic condenser section therein, two wedge-shaped blocks of insulating material and shorter than the axial length of the section wedged between opposite sides of the container and the oppositely curved portions of the partially flattened section for spacing the latter entirely from the former, the section engaging block surfaces being of the same shape as the engaged section portions.

3. In combination with a sealed container and a wound electrolytic condenser section therein, angularly spaced wedge-shaped blocks of insulating material and shorter than the axial length of the section, said blocks being wedged between the container and curved portions of the condenser section therein for spacing the latter from the former, the section engaging block surfaces being of the same shape as the engaged section portions.

4. In combination with a sealed container and a dry electrolytic condenser section fitting loosely therein, at least one pair of wedges of insulating material pressed between opposite portions of the container wall and the condenser section to keep the latter separated from the container wall, said wedges being shorter than the condenser section to permit air circulation past the wedges.

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