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VENT FOR ELECTROLYTIC CONDENSERS

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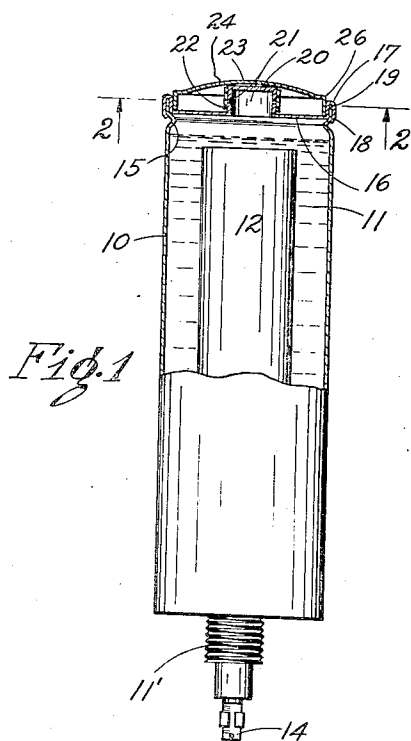


Fig. 1

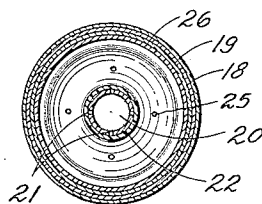


Fig. 2

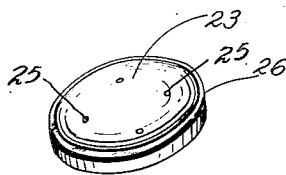


Fig. 3

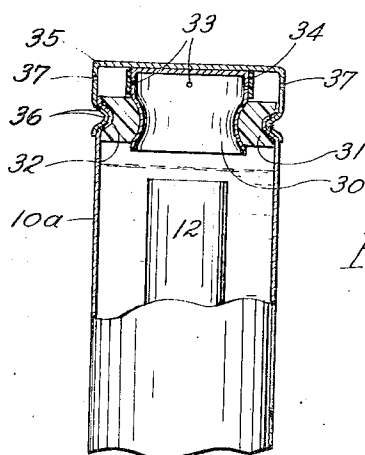


Fig. 4

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VENT FOR ELECTROLYTIC CONDENSERS

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3 Claims. (Cl. 220-44)

This invention relates to vents for electrolytic condensers such as condensers of the type embodying a filmed anode and a liquid electrolyte.

Condensers of this character generate gas under some conditions of operation and means must be provided for venting the gas and relieving the pressure. The venting means, however, must be arranged to prevent the escape of liquid under ordinary conditions so that the condensers may be conveniently shipped and so that the formation of crystals around the outside of the condenser will be prevented.

Accordingly, a general object of my invention is to provide a simple and inexpensive vent for electrolytic condensers and other similar devices. Another object is the provision of a vent which will be reliable in operation and which will substantially prevent the formation of crystals and the leakage of fluid from the condenser while permitting the escape of gas therefrom. Further objects and advantages of my invention will become apparent from the following description of a preferred form thereof, reference being made to the accompanying drawing. The essential characteristics are summarized in the claims.

In the drawing:

Figure 1 is a view partially in section illustrating my vent as it may be applied to a condenser of conventional construction;

Fig. 2 is a sectional view taken along the line 2-2 of Fig. 1;

Fig. 3 is a perspective of the cover; and

Fig. 4 is a view similar to Fig. 1, but showing a modified construction.

As illustrated in Figs. 1 to 3, the condenser may comprise a container 10 adapted to carry the electrolyte 11 and having an anode 12 disposed therewithin. The container 10 may be a tubular member, as illustrated, provided at its lower end with a threaded portion 11' which may comprise a terminal for the cathode of the condenser and through which the terminal 14 for the anode may project, the terminal 14 being suitably insulated from the cathode.

At its upper end, the container 10 may be spun inwardly as at 15 in the usual manner to support a cap indicated generally at 16, which is provided with a flange 17 which is spun downwardly and inwardly as at 18 into engagement with the upstanding cylindrical flange 19 of the condenser. The cap 16 is thus securely held in position on the condenser.

In order to provide a vent which will allow the escape of gas under pressure from the condenser while at the same time preventing the escape of

liquid under ordinary conditions and during shipment, I preferably provide the cap 16 with an upstanding hollow cylindrical boss 20, which may be formed in the cap before it is assembled with the container by an ordinary punch press operation. The boss is provided with one or more small radially extending openings 21 through which gas generated in the condenser may escape. Surrounding or encircling the exterior of the boss 20 and overlying the openings 21 is an elastic band 22 of rubber, latex or other suitable elastic material which has sufficient tension to prevent the escape of liquid through the openings 21 under all ordinary conditions, but when gas is generated in the condenser when it is being operated in its normal upright position, only slight pressure of gas is required to displace the elastic band sufficiently to allow gas to escape between the band and the cylindrical surface of the boss 20. As soon as the pressure has been sufficiently relieved, the band will automatically seal itself against the outer surface of the boss and will function to prevent the admission of air to the interior of the condenser. Also because of the elasticity of the band, the growth of crystals around the boss 20 and the openings 21 is substantially prevented, for the band allows the escape only of gases and vapor and prevents the escape of a sufficient quantity of liquid to cause the formation of any considerable amount of crystals.

In order to protect the elastic band and to hold it in place as well as to improve the appearance of the condenser, I have provided a cover or shell member 23 having a convex upper surface 24 provided with one or more openings 25 to allow the escape of gases from the condenser. The shell is provided with a downwardly extending cylindrical flange 26 which fits within the flange portion 17 of the cap 16 and is held in position by engagement therewith. It will be noted that the lower surface of the cover lies closely adjacent the top of the boss 20 and the upper edge of the elastic band 22, and thus longitudinal displacement of the elastic band is prevented.

In Fig. 4, I have shown a modified form of construction embodying a different type of closure member for the container 10a. In this construction, the closure may comprise a hollow thimble 30 which may be punched out of aluminum or other suitable material and which is disposed in the open end of the container 10a, and separated therefrom by a resilient annular gasket or washer 31 of rubber or other suitable elastic material. In this construction, a leak proof joint is made between the container and the thimble 30 by roll-

ing or spinning the upper end of the container 10a inwardly as indicated at 32 to firmly compress the gasket 31 between the outer surface of the thimble 30 and the inner surface of the rolled in portion 32 of the container. This particular method and construction is described more fully and claimed in my copending application Serial No. 52,502 filed December 2, 1935.

In order to provide a vent in this modification, I punch or drill a series of small openings 33 preferably in the upper part of the thimble 30 in the region which is disposed above the gasket 31. These openings, as in the case of the previous modification, are sealed by an elastic band 34 encircling the thimble 30 and overlying the openings. The elastic band is held in position and protected from injury by another cup shaped or thimble member 35 which is disposed closely adjacent the upper portion of the thimble 30 and the upper edge of the band 34, and which may be secured to the container 10a by spinning the lower edge thereof inwardly into the groove 32 as indicated at 36. The thimble or cover 35 is provided with openings 37 to permit the escape of gas from within the thimble.

From the foregoing description of various forms of my invention, it will be seen that I have provided a simple and inexpensive vent for electrolytic devices. Because of its simplicity, my vent is extremely reliable as there is nothing to become clogged or get out of order. My vent has ample capacity for the venting of gases from the container and at the same time functions substantially to prevent the escape of liquid therefrom and the formation of crystals around the outside of the container. Because of the cover construction, my vent is retained in position and protected against injury and, furthermore, any crystals which may be produced adjacent the elastic band will be concealed by my cover member and retained within the space between the cover member and the elastic band, thus condensers embodying my vents will always present a neat appearance.

It is evident that various other modifications of my invention can be made within the scope and spirit thereof. Accordingly, it is to be understood that my patent is not limited by the fore-

going disclosure or in any manner other than by the appended claims when given the range of equivalents to which my patent may be entitled.

I claim:

1. A vent for an electrolytic condenser having an open ended cylindrical container for electrolyte, said vent comprising a hollow cup shaped thimble adapted to form a closure for the open end of the container, a resilient gasket disposed between the exterior of said thimble and the interior of the container and the container being rolled inwardly to compress said gasket against said thimble, said thimble having a plurality of openings disposed above said gasket, an elastic band surrounding said thimble and overlying said openings, and a hollow cover member adapted to retain said elastic band in position and having an edge portion deformed inwardly into engagement with the rolled in portion of the container to secure the cover to the container.

2. A vent for an electrolytic condenser having an open ended cylindrical container for electrolyte, said vent comprising a hollow cup-shaped thimble adapted to form a closure for the open end of said container, a resilient gasket disposed between the exterior of said thimble and the interior of said container, and said container being deformed inwardly to compress said gasket against said thimble, said thimble having a radial opening disposed above said gasket, and an elastic band surrounding said thimble and overlying said opening.

3. A closure for an open ended cylindrical container for the electrolyte of an electrolytic condenser, said closure comprising a hollow cup shaped thimble disposed within the open end of said container, a resilient gasket disposed between the exterior of said thimble and the interior of said container, said container being deformed inwardly adjacent the opening end thereof to compress said gasket against said thimble, and vent means carried by said thimble above the level of electrolyte in said container and adapted to permit the escape of gas from said container while substantially preventing the escape of liquid therefrom.

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