Jan. 13, 1942. C. A. ERICKSON 2,269,624

VAPOR DOME

Filed July 12, 1940

Fig. 1

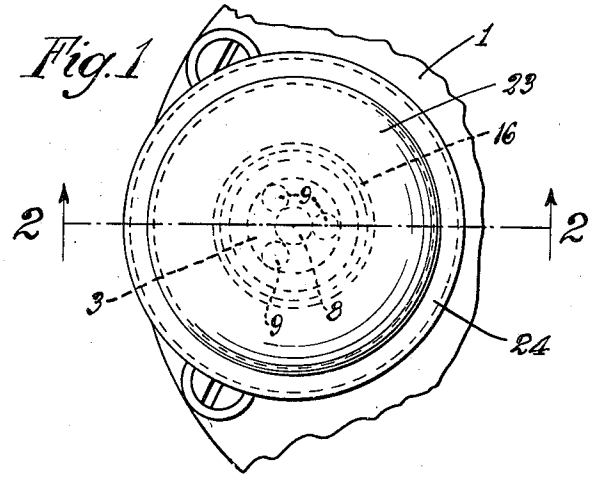
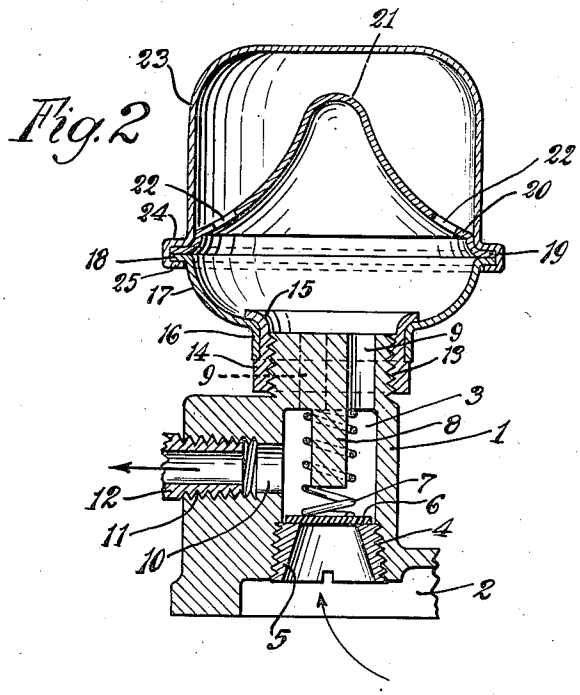


Fig. 2



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VAPOR DOME

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2 Claims. (Cl. 103—224)

This invention relates to a vapor dome which may be used in pumps of many types. It has for one object to provide a baffle in such a dome. It has for another object to provide generally means within the dome to prevent its being flooded by liquid which may be passing through the pump or system to which the dome is applied. It has for another object to provide a vapor dome having two chambers and means separating the two chambers shaped to prevent the entrance of liquid into the uppermost chamber.

Other objects will appear from time to time throughout the specification and the claims.

The invention is illustrated in the accompanying drawing as applied to a pump housing which is shown only sufficiently to indicate an entrance and an exit passage for liquid moving through the system, wherein:

Figure 1 is a plan view of the vapor dome; and Figure 2 is a vertical section taken at line 2—2 of Figure 1.

Like parts are designated by like characters throughout the specification and the drawing.

1 is a housing which defines a liquid entrance chamber 2 and a second chamber 3 which is threaded as at 4 to receive a correspondingly threaded valve seat 5. 6 is a valve which is positioned upon the valve seat at 5 and normally held in position by a spring 7 which may yield to permit opening of the valve. 8 is a projection formed preferably integrally with the housing 1 and about which the spring 7 is positioned. 9, 9 are perforations formed in the housing and leading to a vapor dome.

10 is an outlet passage interiorly threaded as at 11 to receive an outlet pipe or conduit 12.

The upward extension of the housing 1 in which the passages 9 are formed is exteriorly threaded as at 13 to receive a collar 14 which may have its upper end outwardly spun or bent to engage the collar portion 16 of a vapor dome bowl 17 which preferably terminates in an outwardly bent flange 18.

Positioned against the flange 18 is a flange 19 of a baffle 20 which is provided with an upward, more or less conical point or portion 21. The baffle may have one or more perforations 22 formed in it and these are positioned away from the upper portion and preferably adjacent the lower edge as shown. 23 is the upper bowl portion. It has preferably a flange 24 and terminates in a downwardly and inwardly bent portion 25 by means of which the two bowls and the baffle are held together.

Although there is shown an operative form of the device, it will be understood that many changes in the form, shape and arrangement of parts might be made without departing from the spirit of this invention, and it is wished that the showing be taken as, in a sense, diagrammatic.

In particular, the vapor dome of this invention may be formed in any desired manner. As shown, it is formed of sheet metal and is held together by bending a portion of one of the bowls about a portion of the other. This is a simple construction but the invention is in no sense limited to this or any other particular construction and the entire construction might be made integrally or, if made in more than one part, the parts might be secured together in any desired manner. The invention is not limited to the exact proportions or curvatures shown and, in general, comprises a vapor dome, however made, having within it a baffle which divides it into a plurality of chambers, the baffle being arranged to make entrance of liquid into one of the chambers difficult.

The invention is, of course, not limited to any particular number of openings such as the openings 9. There might be one or several. Similarly, the baffle itself might have only a single opening 22 or a number of such openings and the claims are not to be taken as limited to any particular number of openings in either of these elements.

The use and operation of this device are as follows:

The dome may be used in any pump or any other liquid handling system or apparatus in which a vapor dome may be used. Experience has shown that an ordinary vapor dome will under many conditions fill up with liquid and, thus, it no longer serves the purpose of a vapor dome but merely adds generally to the capacity of the passages or the system as a whole, and thus fails entirely to perform the function of a vapor dome.

The present invention may be utilized wherever a vapor dome is desired. As shown, it is adaptable into a liquid pump. Liquid enters through the space 2. When pressure conditions permit, the valve 6 yields against the spring 7 and liquid passes through the space 3, the passage 10 and into the outlet conduit 12. Sometimes pressure conditions cause an effect which tends to force liquid through the passages 9 and into the vapor dome. This may be a small quantity of liquid. It may even be forced in so violently as to rise up in one or more jets. When

that occurs in the present construction, the liquid tends to impinge against the baffle **20, 21**, and its entry into the space above the baffle is prevented. When a liquid shoots up into or through the lower chamber, it strikes the baffle near its center—that is to say, at some point away from the perforations **22**—and it is deflected and does not enter the upper chamber of the dome above the baffle. The baffle is provided with openings around its periphery or anywhere away from the parts of the baffle which would normally be struck by the jets of liquid entering through the openings **9**. Liquid, therefore, does not normally enter through these openings and they permit the air which is compressed in the upper chamber above the baffle **20, 21** during the discharge stroke of the diaphragm to expand and force out the liquid from the lower chamber during the suction stroke of the diaphragm. The result is a smoother flow and an increased delivery.

Should liquid in the lower bowl **17** arise sufficiently to pass through the openings **22**, they permit ready discharge of liquid when the liquid level is lowered again in response to changed pressure conditions in the system. The effect of the baffle and particularly of its shape and the locations of the perforations **22** in it is such as to make complete filling of the vapor dome extremely unlikely. Thus, the dome comprises means for preventing filling and for preserving its true vapor dome effect in the pumping or liquid transmission operation which is carried out in the system to which the dome is applied. The device has been called a vapor dome. It is recognized that other names are used for devices of this sort and the expression "vapor dome" is not to be taken as a limitation of the use or purpose of the device. It may be used anywhere where such devices or analogous devices can advantageously be used irrespective of the name by which they may be called.

I claim:

1. A vapor dome comprising a closed housing a single inlet and outlet means therefor comprising a passage member secured to said housing, a baffle, positioned within said housing above said inlet means and provided with a raised portion extending away from said inlet means, said raised portion being imperforate, said baffle being perforated away from said raised portion.

2. A vapor dome comprising a closed housing a single inlet and outlet means therefor comprising a passage member secured to said housing, a baffle, positioned within said housing above said inlet means and provided with a raised portion extending away from said inlet means, said raised portion being central of said baffle, said baffle being imperforate except adjacent its edges.

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