This invention relates to a closure for fluid tanks and particularly for tanks for holding volatile liquids such as gasoline.

The object of the invention is to provide a closure which will allow for the ingress of air after the filling opening has been closed and a vacuum forms in the tank, and which will allow for the egress of air when the tank is being filled or for the egress of vapor when the filling opening is closed.

The object of the invention is further to provide such a closure having small openings to maintain communication between the atmosphere and the interior of the tank when the filling opening is closed and in which these openings shall be protected so that dust and dirt shall not pass therethrough into the tank, and further in which means shall be provided to guard against flame passing back through these openings into the tank.

The object of the invention is further to provide a simple and efficient ventilating closure for the filling opening.

These and other objects and features of the invention will appear more fully from the accompanying description and drawings and will be particularly pointed out in the claims.

In the drawings:

Fig. 1 is a side elevation of a preferred form of closure embodying the invention shown attached to a tank, the cover being shown in open position.

Fig. 2 is a view in vertical cross section of the construction shown in Fig. 1, the cover being shown in open position.

Fig. 3 is a view in transverse cross section taken through the ventilating openings of the construction shown in Figs. 1 and 2 with the cover removed.

The closure of this invention is adapted to be secured to the filling opening of a fluid tank and particularly to the filling opening of such a tank designed for containing volatile liquids such as gasoline. The tank, only a small portion of which is shown, may be formed of any usual shape and of any suitable material. The upper wall 1 of such a tank is shown as provided with a circular filling opening 2. This tank is conveniently provided with an annular flanged nozzle 3 exteriorly screw threaded at its upper end 4.

The closure of this invention in the preferred form illustrated comprises an annulus cast or otherwise suitably formed of metal. This annulus presents two main sections. The lower section 5 is of greater internal diameter than the upper section 6. This annulus is conveniently secured to the filling opening by having the lower portion of the interior of the lower section screw threaded at 7 to screw on to the threaded portion 4 of the nozzle 3.

The closure further comprises a tubular extension 8 which, in the form shown, is a separate piece. This tubular extension is shown as threaded into the upper section of the annulus at 9. This tubular extension extends down from the upper section through the lower section 8 of the annulus well into the tank and serves two main purposes, first, to direct the fluid through the filling opening into the tank, and, second, to form with the lower section 8 an annular chamber 10, which opens into the tank through the filling opening.

A zonal recess 11 is preferably provided in the upper portion of the lower section 5 of the annulus. A series of ventilating openings 12 extend between the exterior surface of the annulus and this zonal recess and consequently the upper portion of the annular chamber 10, so that free communication is established between the interior of the tank and the atmosphere independently of the filling channel through the tank 8.

A strip of fine wire gauze 13 is fitted snugly in the zonal recess 11 and thus covers the inner ends of the openings 12.

The closure further comprises a suitable cover. This cover may be mounted in any suitable manner, and is shown as provided with ears 14 pivoted at 15 to a lug 16 projecting from one side of the annulus and with diametrically opposite ears 17 aligning with another projection 18 from the annulus. The cover may thus be locked in place by a suitable device in the aperture 19 in the ears 17 and the aperture 20 in the projection 18.

This cover fits snugly over the top of the annulus and is provided with a depending skirt 21, which extends down over the series of openings 12, but is slightly spaced from the annulus so as to allow the passage of air and vapor between the skirt and the annulus.

While the closure has been shown of circular shape, it is obvious that the particular shape is inconsequential so long as it surrounds the filling opening of the tank. While this annulus has been shown as thread-
obvious that the annulus may be otherwise secured to the tank about the filling opening, provided that the annular chamber 10 be left between the lower section 5 of the annulus of the tubular extension and opening into the tank through the filling opening.

The ventilating openings 12 which communicate with the tank through the chamber 10 enable air to pass into and out of the tank. It is desirable that air pass out of the tank when fluid is being poured through the filling opening, and this it may do through these openings 12. It is also desirable that there shall be a vent from the tank when the filling opening is closed to allow for the passage of gas and vapors. It is also desirable that such ventilating openings be provided because frequently a vacuum occurs within the tank and these openings allow air to enter and break the vacuum.

These objects are effected in the present invention with this closure in such a manner that dust and dirt is prevented from entering the tank and impairing the contents. The skirt of the cover fully protects the openings, while at the same time allowing egress and ingress of air and vapor through the openings. Furthermore, the fine wire gauze prevents the passage of any flame arising at the exterior of the tank back through these openings 12, this gauze acting on the well-known principle of the Davy safety lamp.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. A closure for a fluid tank comprising an annulus to be secured to the tank surrounding the inlet opening, the lower section of the annulus being of greater internal diameter than the upper, a tubular extension from the upper section down through the lower section to direct the fluid into the tank and forming with the lower section an annular chamber opening into the tank, a series 45 of openings extending between the exterior and the upper portion of the annular chamber, and a cover fitting and closing the mouth of the annulus and having a skirt extending down over the series of openings and spaced from the annulus exterior to permit the passage of air and vapor through said openings.

2. A closure for a fluid tank comprising an annulus secured to the tank surrounding the inlet opening, the lower section of the annulus being of greater internal diameter than the upper and having a zonal recess in its upper portion, a tubular extension from the upper section down through the lower section to direct the fluid into the tank and forming with the lower section an annular chamber opening into the tank, a series of openings extending through the wall of the annulus into the zonal recess in the upper 65 portion of the annular chamber, a strip of wire gauze mounted in the zonal recess and covering the said series of openings, and a cover fitting and closing the mouth of the annulus and having a skirt extending down over the series of openings and spaced from the annulus exterior to permit the passage of air and vapor through said openings.

In testimony whereof, I have signed my name to this specification.

MARK A. LAWTON.