July 28, 1931. H. E. LAKE 1,815,920

VENT PROTECTOR

Filed Feb. 19, 1931

Fig:1.

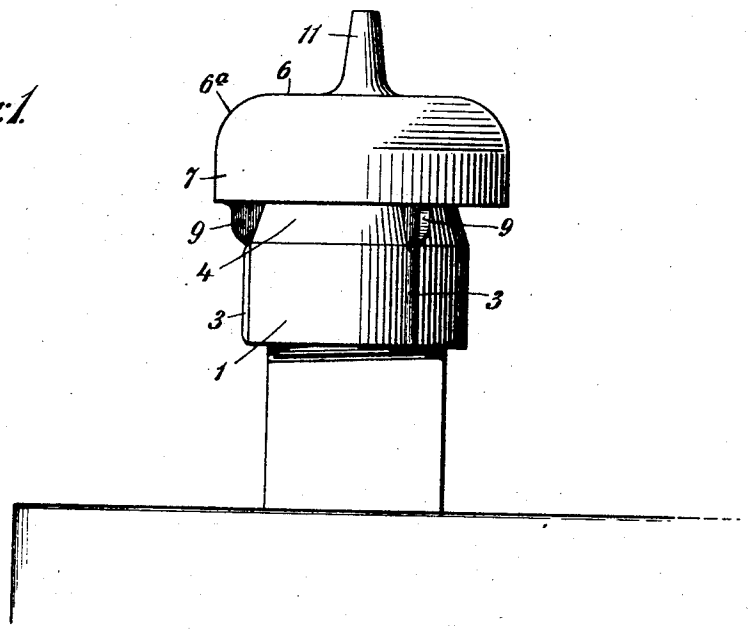


Fig:4.

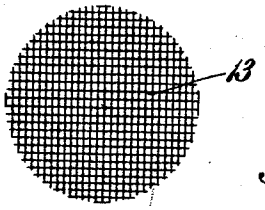


Fig:2.

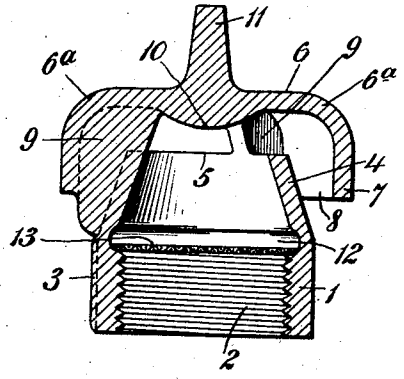
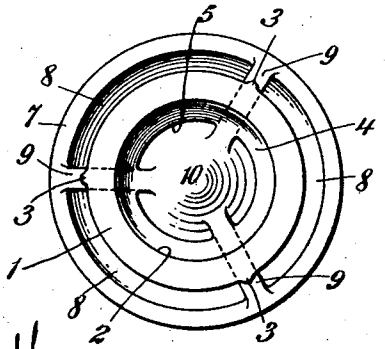


Fig:3.



Harry E. Lake INVENTOR

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Patented July 28, 1931 1,815,920

UNITED STATES PATENT OFFICE

HARRY E. LAKE, OF NEW YORK, N. Y., ASSIGNOR TO PREFERRED UTILITIES MANUFACTURING CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE

VENT PROTECTOR

Application filed February 19, 1931. Serial No. 517,028.

My invention consists in the novel features hereinafter described, reference being had to the accompanying drawings, which illustrates one embodiment of the same, selected by me for purposes of illustration, and the said invention is fully disclosed in the following description and claims.

The object of my invention is to provide a protector for the outer end of a vent pipe such as is used in connection with tanks containing gasoline, kerosene and the heavier fuel oils, so that any fumes passing through the vent pipe shall be distributed in substantially all directions and dissipated in the atmosphere, while air is permitted to enter the tank through the vent pipe as the liquid contents thereof is withdrawn, while the terminal opening in the vent pipe is protected from rain and snow and ice, and from foreign particles in the air, while uninterrupted communication between the interior of the tank and the atmosphere through the vent pipe is maintained at all times.

In the accompanying drawings I have illustrated one embodiment of my invention, selected by me for purposes of illustration, in which drawings

Fig. 1 represents an elevation showing my improved vent protector installed upon the upper end of a vertical pipe, a portion of the tank being illustrated in the figure.

Fig. 2 is a vertical sectional view of my improved vent protector.

Fig. 3 is a bottom plan view of the same.

Fig. 4 is a detail view of a flexible screen which may be employed in connection with the vent protector.

In the drawings, 1, represents the tubular main body of my improved vent protector, which has its lower portion provided with internal threads, as indicated at 2, to engage the terminal end of the vent pipe, the exterior surface of the main body being provided with wrench engaging portions, in this instance in the form of vertically disposed lugs, 3, disposed at suitable intervals around the main body. The upper portion of the walls of the main body are tapered inwardly, as indicated at 4, to an interior discharge aperture, indicated at 5. The upper part of the tapered portion of the main body is enclosed in an inverted cup shaped hood, 6, the lateral walls, 7, of which are of considerably greater internal diameter than the maximum external diameter of the enclosed portion of the main body, and are preferably of greater internal diameter than the maximum external diameter of the main body at one point therein, thus providing a substantially annular exterior discharge opening, indicated at 8, between the lower edge portions of the hood and the main body, the area of which is not less than the area of the interior discharge opening, 5, of the main body, so that full venting area is provided. The lateral wall of the hood, 6, extends down over the end of the main body so as to prevent water or foreign matter from being passed down through the vent pipe into the tank. The hood is also provided with curved shoulder portions, 6a, connecting the horizontal portion of the hood with the downwardly extending annular portions, 7. Radially disposed webs, indicated at 9, integral with the main body and with the hood connect the hood to the main body and support the hood in the desired and predetermined spaced relation with respect to the main body. I have shown three such supporting webs, 9, but any desired number may be employed, provided the area of the substantially annular exterior discharge opening, 8, is not too greatly decreased. The inner surface of the hood is provided centrally with a downwardly extending deflecting portion, indicated at 10, which is preferably in the form of a segment of a sphere, which projects towards the interior aperture, 5, but is located a sufficient distance from the edges of said aperture to avoid throttling, and to provide a substantially annular passage between it and the edges of the aperture, 5, at least as great as the area of the aperture, 5. This deflecting portion causes the outflowing gases to be distributed substantially equally to all portions of the exterior discharge aperture, 8, so that they may be quickly dissipated in the surrounding atmosphere in all directions. As a result, no part of the surrounding atmosphere will be likely to be

come sufficiently charged with gases to cause a fire hazard. The exterior surface of the hood is provided, centrally, with a projection or spike, 11, which serves to protect the hood and prevent the placing therein of objects which might otherwise interfere with the proper operation of the vent protector.

The main body, 1, is preferably provided interiorly with an annular recess, 12, located preferably above the threaded portion, 2, to receive a flexible screen, 13, shown in detail in Fig. 4. This screen is conveniently formed by cutting a sheet of wire mesh in circular form of a diameter greater than the threaded portion of the main body, and when it is desired to employ a screen, it can be readily sprung into position within the main body with its edges lying in the annular recess, 12, as clearly indicated in Fig. 2. In some instances it is considered desirable to employ a screen in order to prevent fire being sucked back through the vent protector into the tank. It is sometimes found, however, that, especially where the vent protector is used in connection with vent pipes from tanks containing the heavier fuel oils, that these screens become clogged. This may happen by carelessness in filling the tank and causing a portion of the oil to flow up through the vent pipe into contact with screen, such portions drying in the mesh of the screen, and occasionally completely filling the same so as to interfere with the venting of the tank. With my improved construction of vent protector, it may be used either with or without the screen, as may be preferred, and where the screen is used it may be readily removed and a clean screen inserted, should it become clogged.

It will be seen that the hood extends downwardly around the enclosed portion of the main body to act as a seal and effectually prevent rain, snow, dust or other foreign matter which may fall upon the exterior of the hood, from being carried down the vent pipe into the tank, while maintaining the tank and vent pipe at all times in full communication with the atmosphere. The exterior spike, 11, also tends to divide any matter falling upon the hood and direct it toward the lateral edges of the hood, from which it will fall clear of the main body and vent pipe, thus fully protecting the interior discharge aperture, 5. It will also be seen that the webs, 9, not only extend from the tapered portion of the main body to the lateral walls of the hood, but are extended beyond the main body in the direction of the longitudinal axis thereof, and are united to the horizontal portion of the hood, thus forming an extremely strong construction which prevents the hood from being broken loose from the main body in case a board or other heavy object should be carelessly rested on the vent protector. The spike, 11, also serves to prevent the placing of objects carelessly on the top of the vent protector, as it naturally affords an unstable support for any such article as might be carelessly rested upon it and assists in preventing injury to the vent protector from this cause.

My improved vent protector forms an extremely neat, cheap and efficient article for this purpose, and it can be quickly installed by placing the threaded portion, 2, in engagement with the terminal threaded portions of the vent pipe and screwing the vent protector thereon by the aid of a wrench, which is prevented from slipping by the lugs, 3, on the main body.

What I claim and desire to secure by Letters Patent is:

1. A vent protector comprising a tubular body provided with means for securing it to the terminal portion of a vent pipe, an inverted cup-shaped hollow hood covering the upper end of the tubular body, the lateral wall portions of said hood being of greater diameter than the covered portions of the tubular body to form a substantially annular passage communicating with the interior of the tubular body, the lateral wall portions of the hood forming a seal to prevent water and foreign matter from passing into the tubular body and vent pipe while maintaining the vent pipe in constant and free communication with the atmosphere, and radially disposed webs cast with said tubular body and holding said body and hood in permanent spaced relation, said cast webs being connected with the top edge of the tubular body and with the interior of the dome of the hood and extending substantially in the longitudinal direction of the tubular body.

2. A vent protector comprising a tubular body provided with means for securing it to the terminal portion of a vent pipe, an inverted cup-shaped hollow hood covering the upper end of the tubular body, the lateral wall portions of said hood being of greater diameter that the covered portions of the tubular body to form a substantially annular passage communicating with the interior of the tubular body, the lateral wall portions of the hood forming a seal to prevent water and foreign matter from passing into the tubular body and vent pipe while maintaining the vent pipe in constant and free communication with the atmosphere, and radially disposed webs cast with said tubular body and holding said body and hood in permanent spaced relation, said cast webs being connected with the top edge of the tubular body and with the interior of the dome of the hood and extending substantially in the longitudinal direction of the tubular body, said hood being provided in its inner surface with a central deflected portion co-axial with the tubular body and a central outwardly projecting spike.

3. A vent protector comprising a tubular body provided with means for securing it to the terminal portion of a vent pipe, and inverted cup-shaped hollow hood covering the upper end of the tubular body, the lateral wall portions of said hood being of greater diameter than the covered portions of the tubular body to form a substantially annular passage communicating with the interior of the tubular body, the lateral wall portions of the hood forming a seal to prevent water and foreign matter from passing into the tubular body and vent pipe while maintaining the vent pipe in constant and free communication with the atmosphere, and radially disposed webs cast with said tubular body and holding said body and hood in permanent spaced relation, said cast webs being connected with the top edge of the tubular body and with the interior of the dome of the hood and extending substantially in the longitudinal direction of the tubular body, said tubular body being provided with an internally disposed annular screen receiving groove.

4. A vent protector comprising a tubular body provided with means for securing it to the terminal portion of a vent pipe, an inverted cup-shaped hollow hood covering the upper end of the main body, the lateral wall portions of said hood being of greater diameter than the cover portions of the main body to form a substantially annular passage communicating with the interior of the main body within the hood, the lateral wall portions of the hood forming a seal to prevent water and foreign matter from passing into the main body and vent pipe while maintaining the vent pipe in constant and free communication with the atmosphere and radially disposed lugs cast with and connecting said hood and main body and holding them in permanent spaced relation, said cast lugs connecting the top edge of the tubular body with the interior of the dome of the hood and having their longitudinal axis substantially parallel to the axis of the body.

In testimony whereof I affix my signature.

HARRY E. LAKE.