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FUME ELIMINATOR

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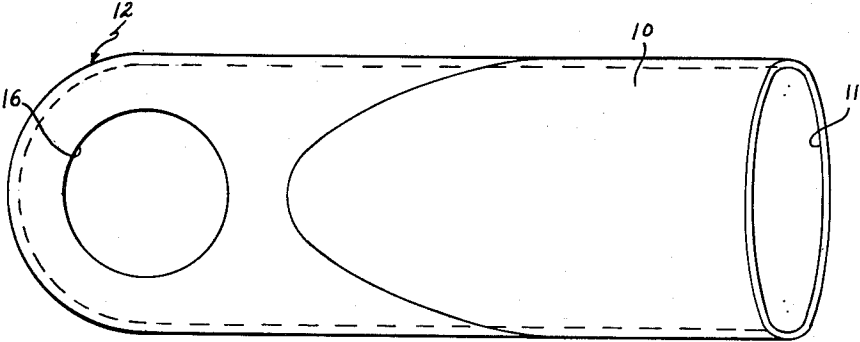


Fig-1

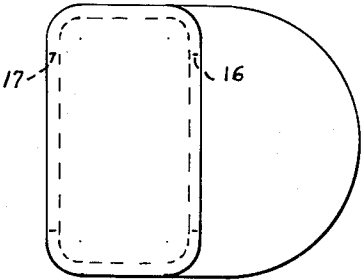
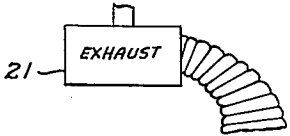


Fig-2

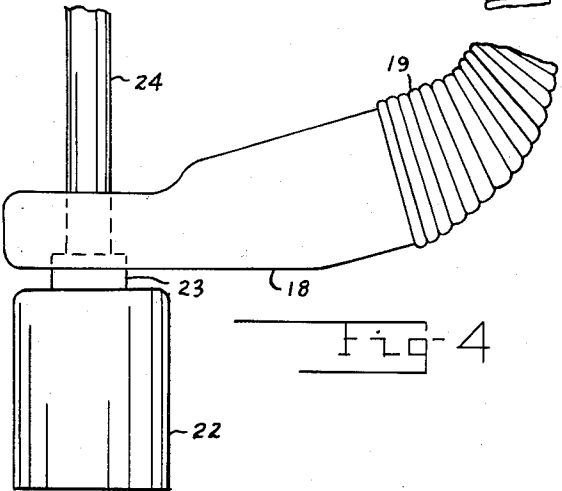


Fig-4

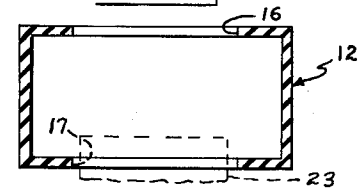


Fig-5

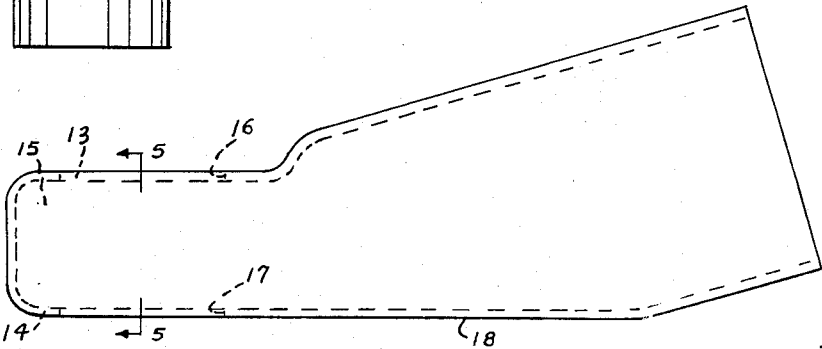


Fig-6

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FUME ELIMINATOR

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This invention relates to fume eliminators or exhaust hoods for evacuating fumes in the filling of fuel tanks and the like. Although not so limited it has particular utility as an article of marine equipment, useful in connection with dockside refilling of in-board fuel tanks.

The object of the invention is to simplify the construction as well as the means and mode of operation of fume eliminators, whereby such eliminators may not only be economically manufactured, but will be more efficient and satisfactory in use, adaptable to a wide variety of application, and be unlikely to get out of order.

An object of the invention is to provide an article of the kind described having independent, separable application to fuel tanks and the like, and having general application to fuel tanks of differing construction.

Another object of the invention is to provide an exhaust hood of simple one-piece construction readily applicable to and removable from a fuel tank.

A further object of the invention is to present an exhaust hood in the form of a boot constructed and arranged for a simplified entrainment and carrying off of fumes released incident to refueling.

A still further object of the invention is to provide an exhaust boot as described made of a material resistant to the deteriorating action of fuel compounds, and made resilient and deformable with attendant advantages of cushioning and adaptability.

A further object of the invention is to provide a fume eliminator possessing the advantageous structural features, the inherent meritorious characteristics and the mode of operation herein mentioned.

With the above and other incidental objects in view as will more fully appear in the specification, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof, and the mode of operation as hereinafter described or illustrated in the accompanying drawings, or their equivalents.

Referring to the accompanying drawing wherein is shown one but obviously not necessarily the only form of embodiment of the invention.

FIG. 1 is a view in top plan elevation of a device in accordance with the illustrated embodiment of the invention;

FIG. 2 is an elevational view of the device of FIG. 1, taken from the closed end thereof and showing the device turned 90° from what may be considered its normal attitude;

FIG. 3 is a view in side elevation, at the same scale as FIGS. 1 and 2;

FIG. 4 is a partly diagrammatic view showing the exhaust boot of the invention installed for fume removal; and

FIG. 5 is a view in cross-section taken substantially along the line 5—5 of FIG. 3.

Like parts are indicated by similar characters of reference throughout the several views.

Referring to the drawings, an exhaust hood hereinafter referred to as a boot, in accordance with the illustrated form of the invention is a one-piece hollow article suitably formed, as by molding, to a configuration as shown. Thus it has a cylindrical, elongated portion 10 providing a large open area 11 at its one end for connection with suction applying means. The opposite end of cylindrical

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portion 10 terminates in a toe portion 12 which is flattened in diametrically opposed areas to define vertically spaced apart transverse walls 13 and 14. The sides and adjacent end of the boot at the toe unitarily join the walls 13 and 14 and cooperate therewith in defining an enclosed chamber 15 which is in free and open communication with the interior of cylindrical portion 10.

A through opening 16 is formed in the wall 13 and is aligned with a like through opening 17 in the wall 14. These are adapted respectively to receive a filler hose nozzle and the spout or inlet fitting of a fuel storage or like tank, with the nozzle being introduced into the spout within the enclosed chamber 15.

A circumferential section of the cylindrical portion 10 is formed with a longitudinally extending flat 18. This flat or flattened area merges with and occupies approximately the same plane as the bottom wall 14 of toe portion 12. Wall 14 and flat area 18 define the bottom of the boot, locating it normally in the attitude shown in FIG. 3, with the openings 16 and 17 vertically aligned and opening 16 overlying opening 17. Cylindrical portion 10 inclines upwardly from the area 18, and from the top wall 13 of the toe, facilitating connection of the open end 11 thereof to suction applying means. The boot is, in this connection, made of a material sufficiently rigid that the boot tends to hold its shape as shown.

According to a feature of the invention, the boot, although possessing some rigidity as described, is made of a resilient deformable material, for example a synthetic such as neoprene. It is thus inexpensive and sturdy of construction as well as being resistant to attack by deteriorating fuel compounds. Also the toe 12 and elongated portion 10 provides cushioned support for the fuel nozzle and handle inhibiting marring of a deck surface or the like. Openings 16 and 17 may also, in accordance with this concept, be accommodated to spouts and nozzles of different size. According to a further feature of the invention, however, one or both openings 16 and 17 are designed to receive their respective nozzle or spout with a loose fit whereby to allow air to enter chamber 15 and be drawn therefrom to outlet opening 11.

In the use of the exhaust boot, one example of which is diagrammatically indicated in FIG. 4, the open end 11 is suitably connected to exhaust fan means, as by being attached to a flexible conduit 19 leading to a dock mounted exhaust fan unit 21. The boot is applied to a fuel tank 22 in the boat, being in the case of an under-deck integral storage tank put in a position of rest on the deck, with the spout or inlet fitting 23 of the tank projecting upward through opening 17 into the enclosed chamber 15. A filler nozzle 24 then is inserted through the overlying opening 16 into chamber 15 and introduced into the fitting 23. Then, as filling commences, exhaust unit 21 is energized and produces a continuing negative pressure in the exhaust boot. A flow of air accordingly is induced from outside the boot through one or both the openings 16 and 17 and thence through the boot and conduit 19 for discharge at the exhaust 21. In the process, noxious fumes released from the discharging fuel and from the fuel tank are entrained and carried with the air away from the boot.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the

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invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise but one of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described my invention, I claim:

1. An accessory for the elimination of fumes in the filling of fuel tanks and the like, the inlet to which is defined by a projected fitting, consisting of a one piece hollow resilient body structure a portion of which provides a base having an aperture opening to its interior, said base being elongated and formed to extend laterally of said aperture and provide a cushioned support for said body structure as said aperture accommodates a fitting on a fuel tank to project therethrough to the interior of said body structure, means defining a second aperture in said body structure over and generally aligned with said first mentioned aperture, said second aperture being formed to receive the nozzle of a fuel delivery spout therethrough with clearance therebetween, whereby the nozzle may be freely introduced to the fitting interiorly of said body structure, and means defining a passage for application of suction to the interior of said body structure to draw air through at least said second mentioned aperture to entrain the fumes in and about said body structure and disperse them through said passage.

2. The structure as set forth in claim 1 characterized by the upper surface of said body structure being formed adjacent said second mentioned aperture to afford a cushioned support for the fuel delivery spout the nozzle of which is introduced in said fitting interiorly of said body structure.

3. An accessory for the elimination of fumes in the

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filling of fuel tanks and the like, the inlet for said tank being defined by a projecting fitting, comprising a one piece semi-rigid hollow body structure including a tubular open section at one end and a closed rectangular section at the other end, said rectangular section having top and bottom parallel walls, means defining aligned apertures in said top and bottom walls of said closed rectangular section, the aperture in said bottom wall being formed to admit the projected fitting of said fuel tank to project interiorly in said body structure, the means defining the aperture in the top wall being formed to admit the delivery nozzle of a fuel spout with clearance therebetween whereby said nozzle may be freely introduced to said fitting interiorly of said body structure, said tubular section being adapted for application of suction therethrough to cause an inflow of air to the interior of said body through said aperture in the top wall of said body to scavenge the fumes which may occur therein and thereabout and flow them in a direction to exit through said tubular section.

4. The structure according to claim 3 in which the one piece hollow body structure is composed of a rubber-like material to provide a cushioning support for the nozzle of the fuel spout when said nozzle is introduced into said fitting interiorly of said body structure.

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