Nov. 6, 1956 T. E. MOBERG ET AL 2,769,447

VACUUM ASH TRAY FOR VEHICLES

Filed Jan. 21, 1955

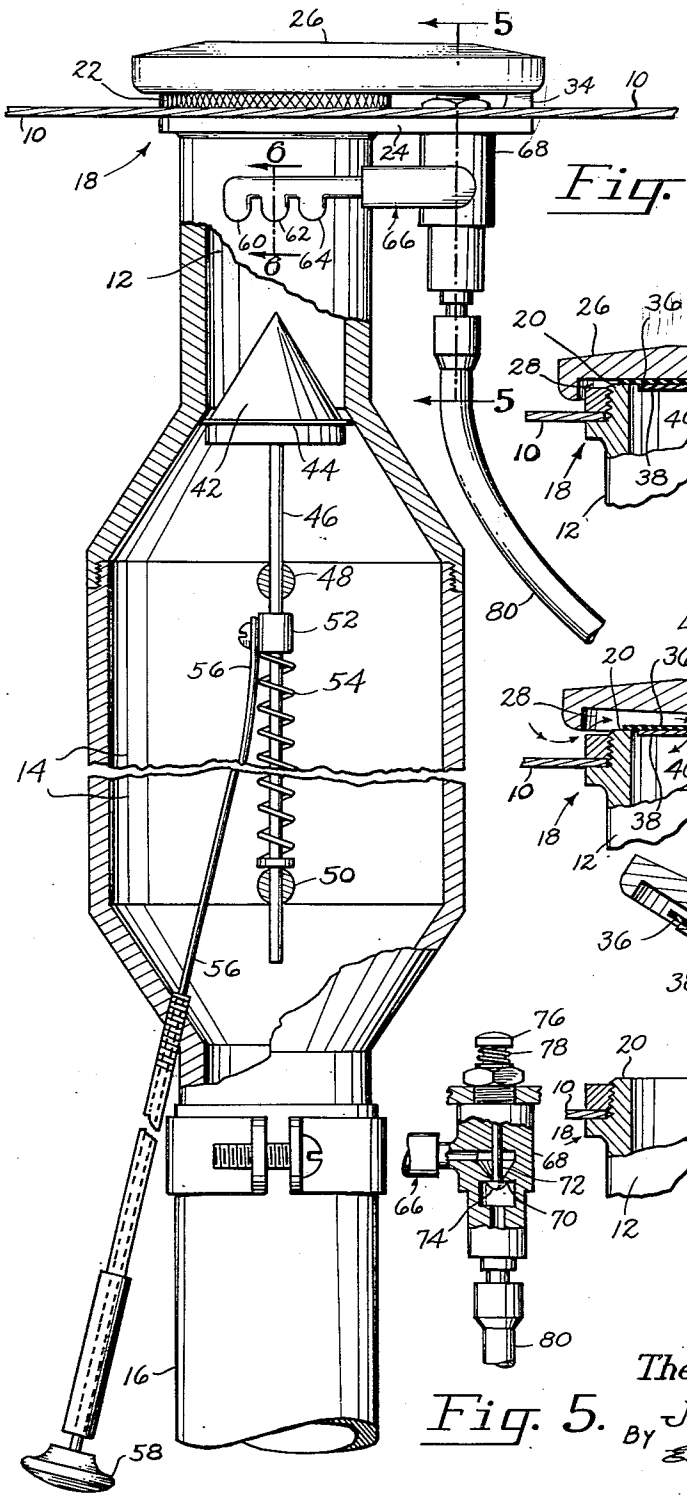


Fig. 1.

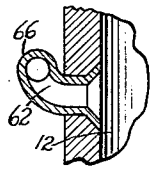


Fig. 6.

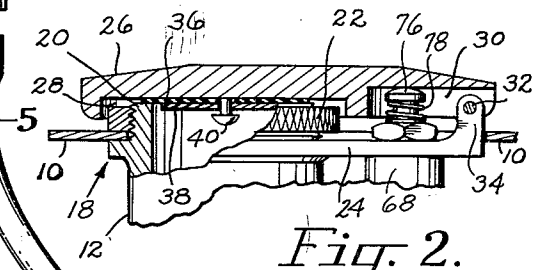


Fig. 2.

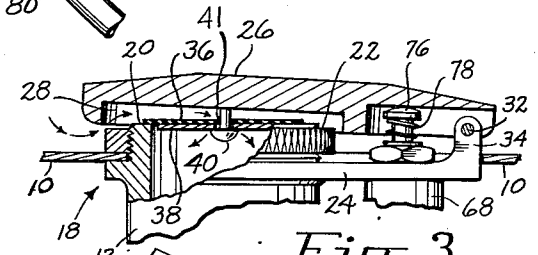


Fig. 3.

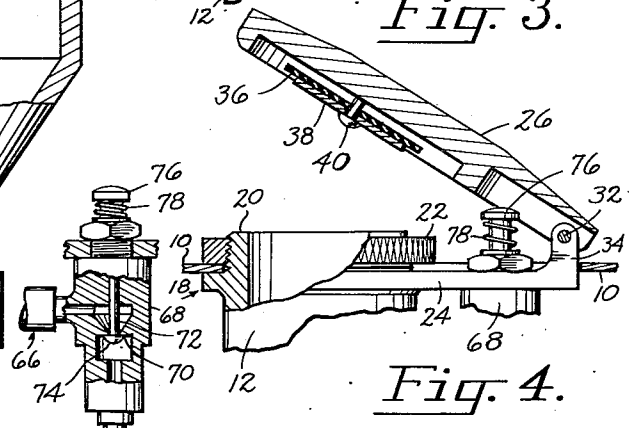


Fig. 4.

Fig. 5.

INVENTORS
Theodore E. Moberg
James M. Sackman
BY Eugene L. Farley Atty.

United States Patent Office

2,769,447

Patented Nov. 6, 1956

2,769,447

VACUUM ASH TRAY FOR VEHICLES

Theodore E. Moberg and James M. Sackman, Tacoma, Wash.

Application January 21, 1955, Serial No. 483,235

3 Claims. (Cl. 131—256)

This invention relates to a vacuum ash tray for the reception of ashes, cigarette stubs, cigar butts, matches, and other smokers' materials. It is adapted for installation particularly in vehicles such as automobiles, trucks, busses, boats, and trains, wherein a source of vacuum is available.

It is a primary object of this invention to provide an ash tray for vehicles which will extinguish burning cigarettes and the like rapidly and effectively, and which will eliminate the disagreeable odor usually associated with such materials.

It is another object of this invention to provide a vacuum ash tray for vehicles which will eliminate the fire hazard attendant upon the disposal of smokers' materials.

It is another object of this invention to provide a vacuum ash tray for vehicles which is easy to use.

Another object of this invention is the provision of an ash tray for vehicles which may be installed inconspicuously in a wide variety of vehicles.

The manner in which the above and other objects of this invention are accomplished will be apparent from the accompanying specification and claims considered together with the drawings wherein:

Figure 1 is a view in side elevation, partly in section, of the presently described vacuum ash tray;

Figures 2, 3, and 4 are detailed sectional views illustrating the cover assembly of the presently described vacuum ash tray in its closed, partly open, and fully open positions;

Figure 5 is a detail sectional view taken along the line 5—5 of Figure 1 and illustrating the construction of a valve for use in evacuating the presently described vacuum ash tray; and

Figure 6 is a fragmentary sectional view taken along the line 6—6 in Figure 1 and showing details of construction of the vacuum ports.

As is apparent from the drawings, the vacuum ash tray of this invention is adapted for installation on the horizontal portion of the dash panel 10 of an automobile, or in any other suitable and convenient location. It comprises broadly an extinguishing chamber 12 and a discharge chamber 14 which may be attached to or include a discharge conduit 16, these three elements of the assembly being arranged one below the other.

The extinguishing chamber 12 preferably is tubular in form and is provided with an annular flange 18 and a threaded section 20, at its upper extremity. The latter section is dimensioned to be inserted in an opening through the dash panel 10 and to receive the knurled nut 22, thereby providing means for attaching the assembly to the dash panel, in the manner illustrated particularly in Figures 2–4.

Flange 18 may be circular in outline but is arranged eccentrically with respect to extinguishing chamber 12. This provides a laterally extending bracket 24 upon which may be mounted a cover assembly for sealing the upper end of the extinguishing chamber, and valve means for use in evacuating the chamber.

The cover assembly comprises a cover 26 which preferably is circular in outline, conforming in general to the outline of flange 18. Its underside is recessed to form recesses 28 and 30 respectively. The former is adapted to cover the mouth of the extinguishing chamber, and the latter to receive the control member for the valve which controls the vacuum in the chamber. Hinge means including pin 32 are employed for hinging the lid to a standard 34 which extends upwardly from the bracket portion 24 of flange 18.

Means are provided for sealing off the mouth of the extinguishing chamber so that it is substantially airtight. In the illustrated form (Figures 2, 3 and 4) such means comprise the sealing ring 36 preferably made of rubber or similar material, and the reinforcing washer 38. These members are superimposed on each other and held in place loosely by means of the headed pin 40 extending downwardly from the central portion of recess 28 in cover 26. The shank of pin 40 extends through aligned openings 41 in the ring 36 and washer 38, which openings are of larger diameter than the said shank. The sealing ring 36 is larger in dimension than the interior cross section of chamber 12, and thus is caused to rest upon the edge of the threaded section 20 when the cover 26 is closed, thereby forming a seal between the cover and chamber, as shown in Figure 2. The reinforcing washer 38 is smaller in dimension than the interior cross section of chamber 12, and functions to prevent buckling of the flexible sealing ring 36 when the latter is raised, upon opening the cover 26 to the position shown in Figure 4. The loose fit between the sealing ring, washer and pin facilitates opening of the lid, since it permits the entry of air into the evacuating chamber 12 through the aligned openings 41, as indicated by the arrows in Figure 3, immediately upon lifting the lid, thereby breaking the vacuum within the chamber.

Means also are provided for sealing off the lower end of extinguishing chamber 12, such means in the illustrated embodiment being combined with discharge means for discharging the extinguished contents of the chamber. The combined sealing and discharge means thus comprise a conical valve member 42 which carries a circumferentially disposed sealing ring 44. The latter may be made of rubber or other suitable material and is dimensioned to engage the outwardly flared sidewalls of discharge chamber 14.

Valve member 42 is mounted upon and actuated by an assembly which includes a vertical shaft 46 reciprocably mounted in bearings 48, 50, which are attached to the inner sidewalls of discharge chamber 14. On shaft 46 are mounted a collar 52 and a coil spring 54, the latter being interposed between the collar and bearing 50.

A flexible wire 56 is connected to collar 52 and extends outside the discharge chamber, where its terminal portion is connected to a control button 58 which may be mounted on the instrument panel of the vehicle in the usual manner. Accordingly, by actuation of the control button, the cone shaped valve member for the tube may be opened and closed alternately, the degree of opening being sufficient to permit the smokers' material extinguished in chamber 12 to pass into discharge chamber 14 and thence into conduit 16 where it is discharged into a suitable receptacle, or in the alternative through the floor of the vehicle.

Evacuating means are associated with the extinguishing chamber for evacuating it and thereby extinguishing the burning material contained in it. To this end the sidewall of chamber 12 is perforated in several places and vacuum ports 60, 62, 64 (Figure 1) are secured therein, as illustrated in Figure 6. The vacuum ports communicate with the interior of chamber 12 and are interconnected by an exhaust manifold 66 which is con-

nected to a valve **68**. The latter may be of any suitable type, one such being illustrated in detail in Figure 5.

The valve **68** comprises a hollow body formed with a valve seat **70**. Slidably mounted within the body is a stem **72** having at its inner end the valve member **74**. On its outer end is a head **76** adapted to be contained within recess **30** in cover **26** and to contact the ceiling of the same.

A coil spring **78** encircles the shaft and is interposed between head **76** and the outside of the valve body. Accordingly, when cover **26** is closed, the valve is opened, interconnecting the extinguishing chamber **12** and vacuum line **80** which may be connected to the intake manifold of an internal combustion engine or other source of vacuum. This evacuates the chamber. However, when cover **26** is opened, the valve is closed, thereby shutting off chamber **12** from the source of vacuum.

Operation

The manner of operation of the herein described vacuum ash receptacle is as follows. The cigarette stubs or other burning smokers' material is placed in extinguishing chamber **12**, conical valve **42** being in its closed position. Cover **26** then is placed over the mouth of chamber **12**. This seals off the chamber and at the same time opens valve **68**, interconnecting the chamber with the vacuum source. Accordingly the chamber is evacuated and the burning waste material extinguished substantially instantaneously.

Further quantities of smokers' waste material may be placed in the extinguishing chamber by raising the cover at intervals and extinguished by closing the same in a similar manner until the chamber is full. During these operations continued evacuation of the chamber is insured by the provision of the multiple openings **60–64**, since if one of these inadvertently should be sealed off by the refuse material, the chamber still may be evacuated through the other ports.

When it is desired to empty the extinguishing chamber, conical discharge sealing valve **42** may be opened by manipulation of the control button **58**. The refuse material then falls through the discharge chamber **14** and through discharge conduit **16** into a suitable receptacle, or to the exterior of the vehicle.

It is to be noted particularly that as stated above, upon opening cover **26** slightly, air is admitted immediately to the interior of the chamber because of the loose fit present between sealing ring **36** and pin **40**. As a consequence, little effort is required to raise the cover.

It is to be understood that the form of our invention, herewith shown and described, is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of our invention or the scope of the subjoined claims.

Having thus described our invention we claim:

1. A vacuum receiver for smokers' material comprising an extinguishing chamber having a mouth for the reception of the material, a substantially air-tight cover superimposed over the mouth, hinge means for attaching the cover to the chamber, conduit means communicating with the chamber and adapted for attachment to a source of vacuum, valve means in the conduit means operable by movement of the lid, a discharge chamber below and communicating with the extinguishing chamber, and discharge valve means releasably sealing the extinguishing chamber from the discharge chamber and operable in one position to seal the discharge chamber from the extinguishing chamber for evacuating the latter and in a second position to discharge the contents of the extinguishing chamber into the discharge chamber.

2. A vacuum receiver for smokers' material comprising an extinguishing chamber having a mouth for the reception of such material, the extinguishing chamber being formed with a laterally extending projection adjacent its mouth, a cover superimposed over the mouth of the extinguishing chamber, the cover having a lateral extension adapted to overlie the extension of the extinguishing chamber, hinge means interconnecting the extensions on the cover and the extinguishing chamber, first sealing means interposed between the cover and the extinguishing chamber for sealing the same against access of air, a conduit interconnecting the extinguishing chamber and a source of vacuum, valve means including a spring pressed valve stem in the conduit means, the valve stem bearing against the cover and being actuatable by movement of the same, a discharge chamber communicating with the extinguishing chamber, second sealing means sealing the extinguishing chamber against access of air from the discharge chamber, and discharge means interposed between the extinguishing and discharge chambers for discharging the contents of the extinguishing chamber.

3. The receptacle of claim 2 wherein the second sealing means and discharge means comprise a cone-shaped valve member interposed between the extinguishing and discharge chamber, a vertically arranged shaft connected to the valve member and mounted for reciprocation within the discharge chamber, means connected to the shaft for moving the valve member between open and closed positions, and resilient means connected to the cone for returning it to its closed position.

References Cited in the file of this patent

UNITED STATES PATENTS

241,447	Thrope	May 10, 1881
2,616,557	Gill et al.	Nov. 4, 1952

FOREIGN PATENTS

194,171	Great Britain	Mar. 8, 1923