Oct. 20, 1942. R. A. WEBSTER 2,299,668

DISCHARGE DEVICE FOR ASH RECEPTACLES

Filed May 24, 1939

Fig. 1.

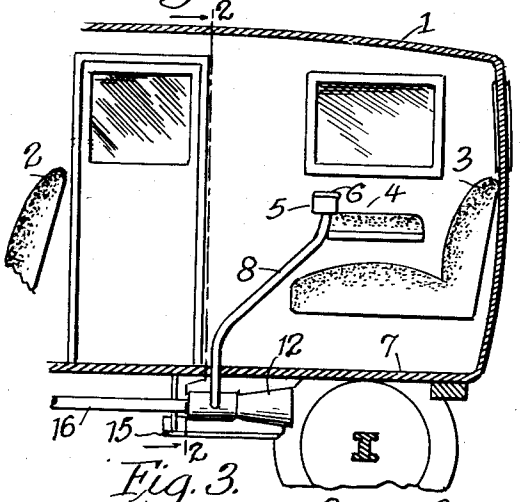


Fig. 2.

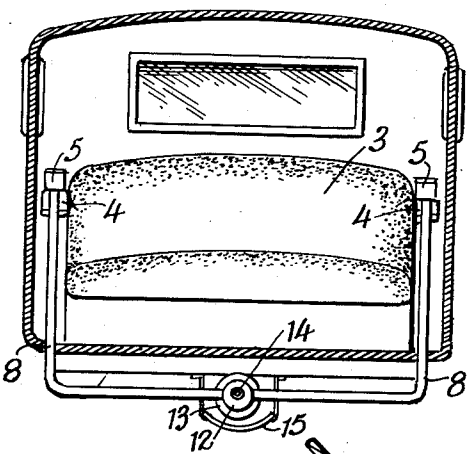


Fig. 3.

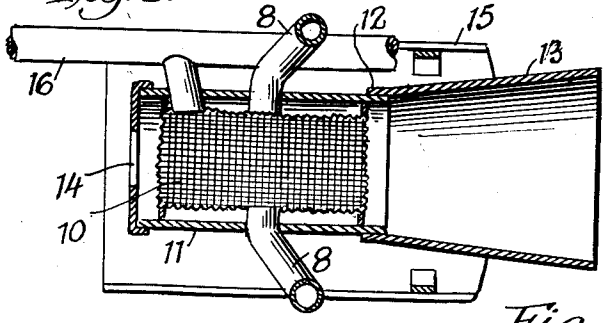


Fig. 4.

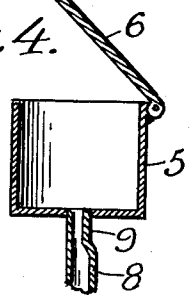


Fig. 5.

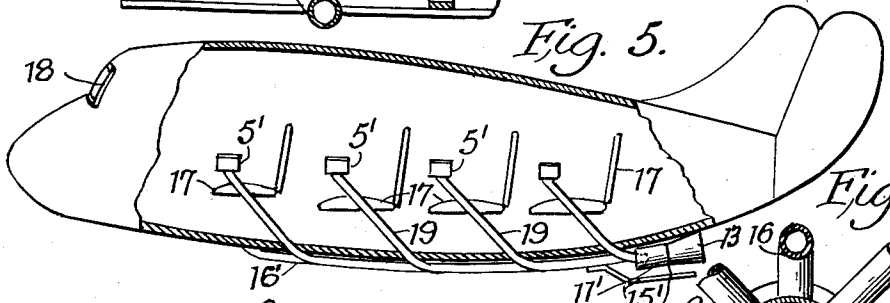


Fig. 6.

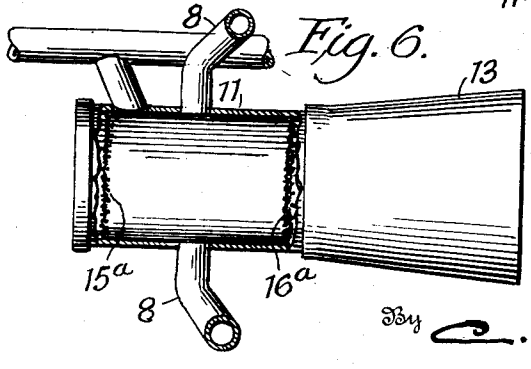
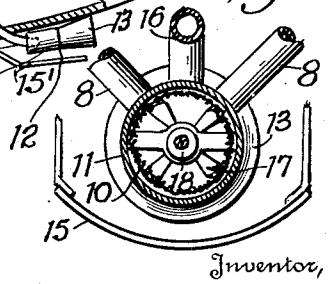


Fig. 7.



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UNITED STATES PATENT OFFICE

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DISCHARGE DEVICE FOR ASH RECEPTACLES

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5 Claims. (Cl. 206—19.5)

This invention relates to a discharge device for the ash trays or receptacles of passenger vehicles, such as automobiles, airplanes, railway passenger cars and the like.

When riding in an automobile, railway passenger car or like vehicle at high speed or over rough roads or tracks it is very difficult to deposit the stub of a cigarette or a cigar in an ash tray due to the motion of the vehicle. This results in the tendency toward throwing burning tobacco out of a car, which is a cause of the starting of forest fires and sometimes the burning stub is blown back into the car, resulting in burned upholstery, clothing or blankets. Furthermore, such ash trays are difficult to clean and where there is an accumulation of stubs the whole mass often catches fire when a burning stub is added which was not extinguished before deposit into the ash tray. The dropping of burning tobacco on the inside of aircraft is also a cause of fire danger.

The present invention is especially designed to furnish a means to effect discharge of all waste material deposited in the receptacles so as to keep the interior of the vehicle as far as possible clear of particles of such material and to consume the discharging particles thereof, so as to prevent fire hazards both interiorly and exteriorly of the vehicle. The waste matter deposited in the receptacles may be discharged by gravity from the receptacles to a catch basket or incinerator in which the waste matter is burned, or it may be discharged by compressed air or by pressure of exhaust gases from the vehicle engine or by suction induced by such gases or by special means. In the present instance I have shown the use of novel and special suction means to facilitate the discharge of the waste material from the receivers to a catch basket or incinerator, although it is understood that my invention, in its broad aspects, is not necessarily confined to any of these methods of discharge.

One object of my invention is to provide a simple, reliable and efficient type and construction of discharge means for the ash trays in such vehicles whereby the material deposited in the tray or trays will be rapidly discharged and the tray or trays kept clean and fire hazard eliminated.

Another object of the invention is to provide a suction discharge means which may be applied to a vehicle for use in connection with conventional or special ash trays in a ready and inexpensive manner.

Still another object of the invention is to provide a discharge device which embodies an incinerator of novel type in which all burning or unconsumed particles will be fully consumed before discharge.

With these and other objects in view, the invention consists of the features of construction, combination and arrangement of parts, hereinafter fully described and claimed, reference being had to the accompanying drawing, in which—

Fig. 1 is a vertical longitudinal section through a portion of an automobile showing an exemplified application of a suction type of device embodying my invention thereto.

Fig. 2 is a cross-section on line 2—2 of Fig. 1.

Fig. 3 is a sectional plan view of parts of the discharge device on an enlarged scale.

Fig. 4 is a detail view of one of the trays and coacting suction discharge tube, showing a feature of construction.

Fig. 5 is a view exemplificatively illustrating the application of the invention to an airplane.

Fig. 6 is a view showing a modification.

Fig. 7 is a view showing another modification.

Referring now more particularly to Figs. 1 to 4, inclusive, of the drawing, 1 designates a part of the body of an automobile to which my invention, for purposes of exemplification, is shown in the present instance applied. The body 1 shown is of a well known closed type, having a front seat 2 and a rear seat 3. This type of body is also one having arm rests 4 at its sides for the convenience of passengers occupying the rear seat. Supported by these arm rests or supported on the side walls of the vehicle adjacent thereto are ash receivers 5, each having or not a pivoted top closure or cover 6. The discharge means embodying my invention is herein shown as applied for use in connection with ash receivers 5 so disposed, although it is understood that the discharge means may be used in connection with ash receivers varying in number and arrangement in the vehicle body and mounted in any type of vehicle body. The receivers 5 may be of any suitable form and provided or not with covers.

Leading from the receivers 5 at the right and left hand sides of the body downward through the floor 7 of the body are discharge tubes or conduits 8. Each tube or conduit may be and preferably is of like diameter throughout except that it may be provided with a constricted portion 9 at or in close proximity to its point of connection with the receiver to prevent any material sufficient in quantity to clog the tube from being

forced into or becoming jammed in the tube and interfering with its function.

Beneath the floor 7 the tubes or conduits 8 lead to a common collector or catch receptacle 10 arranged within the forward constricted circular portion 11 of a Venturi tube 12 having a rear flaring or funnel-shaped portion 13. This collector may be of circular, rectangular or other suitable form and is made of perforate sheet material, wire mesh fabric, or other durable fireproof material suitably perforated for the purpose. The function of this receptacle 10 is to arrest the motion of and to hold from discharge all burning and not fully consumed particles of material until the same are fully consumed and reduced to an incombustible state for discharge in the form of ashes. The receptacle 10, in other words, acts as an incinerator, in which all unconsumed particles, in the presence of a spark or sparks therein, are caused to burst into flame and to be rendered harmless so far as causing a fire is concerned before they are discharged from the discharge device. Air to support combustion during this action is supplied through open receivers 5 and the suction tubes 9 and/or through a restricted air inlet 14 at the forward end of the Venturi tube. The opening 14, if used, is made of a suitably restricted size to allow air to enter the receptacle in such reduced volume and at such reduced velocity as to prevent forcible discharge of unconsumed particles before they are consumed and reduced to an ash state. The opening 14 may be omitted in the event that always-open receivers 5, i. e., receivers without closure tops, are used, but such opening is preferably used in case the receivers are provided with closure tops in order to ensure a supply of air to the incinerator in the event of the cut off of air supply through the suction tubes. The walls of the perforations or mesh interstices in the incinerator body act as detainers to assist in holding the particles while they are being consumed and to keep them separated or spread so that the streams of air passing through perforations of suitable form, number and size in the incinerator body will flow throughout the mass of particles, if collected in a mass, to ensure their rapid and complete combustion. Preferably also, the incinerator body is provided with screen disk (perforate or foraminous) front and rear walls 15 and 16 acting as baffles to control the velocity of the air and to check and prevent the discharge of the burning particles until completely consumed and reduced to the state of ashes.

The Venturi tube may be of any suitable shape and size to give the desired suction draw or force in the forward travel of the vehicle. The actual shape and size of the Venturi device employed, in other words, may be any determined by actual experiment to be best for a particular installation. This Venturi or suction producing or inducing device may be so arranged as to discharge the ashes at the rear of the car or downward out of the way of any inflammable products on the vehicle. If desired, and as shown in Fig. 6, by disposing front and rear screen partition disks 15a and 16a in the portion 11 of the Venturi tube such portion of the Venturi tube may be employed to serve as the body wall of an incinerator chamber 10a. Also, if desired, there may be employed, in place of the Venturi tube, under some conditions, a suction and discharge fan 17, as shown in Fig. 7, driven by a small electric motor 18 operated by current from the storage battery of the vehicle. This fan may be connected at some suitable point with the suction conduit or conduits to draw the waste material from one or more ash receivers into the fan chamber and then discharge the particles therefrom. The blades of this fan when the fan is so used may be formed to act as particle retainers and to turn the same over and over while they are being consumed and then discharge the resulting ashes. The fan may thus be caused to perform an incinerating action similar to that of the incinerator 10 or 10a.

There may desirably be used under some conditions in connection wtih the suction device and incinerator a guard and deflector 19 disposed beneath and if desired suitably about the sides of the same to protect such parts from damage by rocks or other foreign objects which might otherwise be thrown against the same in the travel of the car.

If desired, a connection from the exhaust pipe 20 of the vehicle engine may lead to the incinerator so that discharging hot combustion gases from the engine may be supplied thereto to facilitate the burning of the waste material.

It will, of course, be understood that any suitable means other than the means shown for producing a partial vacuum or otherwise inducing or causing a flow of air in the discharge conduit for effecting a discharge action may be employed. It will also be understood that in practice there may be provided a discharge conduit, an incinerator and a suction producing means for each individual receiver, or that any number of receivers may be operatively connected through conduits with a single incinerator and coacting suction producing means.

In Fig. 5 I have shown the application of the invention to an airplane in which ash receivers 5' arranged in proximity to seats 21 in the airplane body 12 are connected by suction conduits 23 to an incinerator and suction producing device 11' 12' of the constructions previously described, and in conjunction with which are also used a guard 15' and exhaust pipe connection 16' for the purposes described. The arrangement as shown is such as to allow occupants of the plane to dispose of lighted cigar or cigarette stubs without liability of fire hazard on the inside of the craft and so that such dangerous refuse may be consumed and discharged on the exterior of the craft in the form of dead ashes. The guard 9' here serves as a fender to prevent possible damage to the suction producing device and incinerator while landing the airplane on the ground.

The use of my discharge device in connection with the ash receivers on vehicles of the character described will be readily understood and appreciated. As all deposited ashes will be discharged by gravity or drawn down into the discharge conduits the spilling or blowing of ashes about the interior of the car will be prevented. The device will also be self-clearing and self-cleaning, as due to the flow of air and motion of the car and provision of the incinerator complete combustion of all unconsumed particles and discharge of all deposits will be ensured. By this means objectionable odors will also be eliminated because there will be at no time any collection of stale tobacco or deposits in the receptacles and the flowing air will carry off all odors with the deposits. Furthermore, as all deposited burning or unconsumed particles will be removed from the interior of the car and consumed and discharged in the form of dead ashes,

all fire hazards will be eliminated, both on the interior and exterior of the car.

From the foregoing description, taken in connection with the drawing, the construction, operation and advantages of my invention will be understood without a further and extended description. While the constructions shown for purposes of exemplification are preferred, it will, of course, be understood that changes in the form, construction and arrangement of parts, other than those indicated, may be made within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention. As stated, while the use of suction discharge means of the character disclosed is preferred, the waste matter may be discharged by gravity, or by fluid pressure or by any other type of suction means.

What I claim is:

1. A device of the character described comprising a refuse receiver, a suction conduit leading from the receiver, and a combined suction producing device and incinerator connected with the conduit and embodying a chamber having an air inlet at one end in open communication with the atmosphere, a flaring suction producing element at its opposite end, and perforate baffles in said chamber formed of diaphragm walls having small openings throughout their areas, said baffles operating to retain within and prevent the discharge from said chamber of unconsumed particles of refuse material until the particles are consumed while allowing free flow of air therethrough to support combustion of the particles and free discharge of the ashes of combustion.

2. A device of the character described comprising a refuse receiver, a suction conduit leading from the receiver, a combined suction producing receptacle and incinerator in said conduit having a restricted air inlet opening at its forward end and suction producing means at its rear end and also having perforate baffles therein formed of diaphragm walls having small openings throughout their areas, said baffles operating to retain within and prevent the discharge from said chamber of unconsumed combustible particles of refuse until the particles are consumed while allowing free flow of air and gases therethrough and discharge of the combustion ashes, and a conductor connected to the receptacle for leading hot exhaust gases thereto.

3. A device of the character described comprising a refuse receiver, a suction tube leading therefrom, an incinerator chamber in said tube provided at one end with a restricted air inlet in open communication with the atmosphere, a suction producing element at the opposite end of the incinerator chamber, and perforate baffle diaphragm walls of screen mesh material in the chamber operating to retain within and prevent the discharge from said chamber of unconsumed combustible particles of refuse until the particles are consumed while allowing free flow of air therethrough and discharge of the combustion ashes therefrom.

4. A device of the character described comprising a refuse receiver, a suction tube leading therefrom, an incinerator chamber in said tube provided at one end with a restricted air inlet in open communication with the atmosphere, a Venturi tube suction producer at the opposite end of the incinerator chamber, and perforate baffles in said chamber formed of diaphragm walls having small openings throughout their areas, said baffles operating to retain within and prevent the discharge from said chamber of combustible refuse particles until the particles are consumed while allowing free flow of air therethrough and discharge of the combustion ashes therefrom.

5. A device of the character described comprising a refuse receiver, a suction conduit leading therefrom, and a combined suction producing device and incinerator in said conduit consisting of a chamber provided with means carried thereby for producing a suction therein, and perforate baffles in the chamber formed of diaphragm walls having small openings throughout their areas, said baffles operating to retain within and prevent the discharge from said chamber of unconsumed combustible refuse particles until the particles are consumed while allowing free flow of air therethrough to support combustion of the particles.

ROBERT A. WEBSTER.