July 17, 1951 W. E. HENTSCHEL 2,561,275

ASH COLLECTOR WITH SHREDDING MEANS

Filed April 26, 1948

Fig. 1.

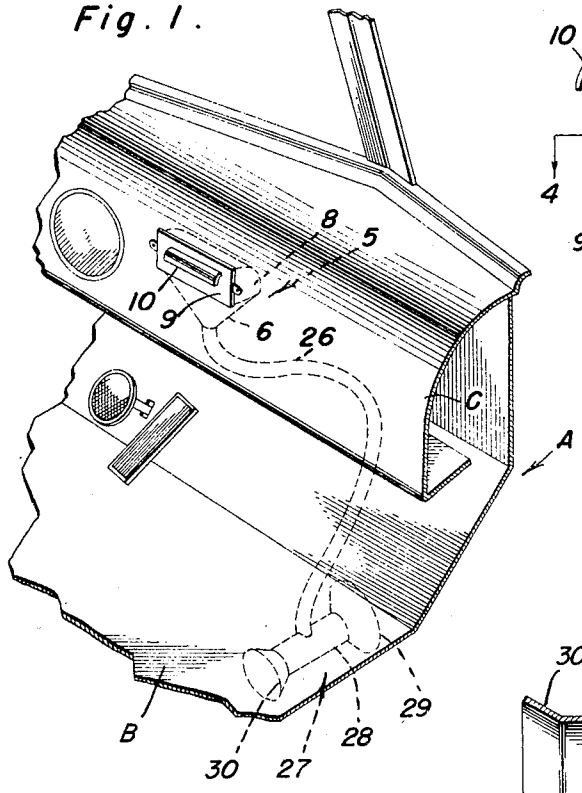


Fig. 2

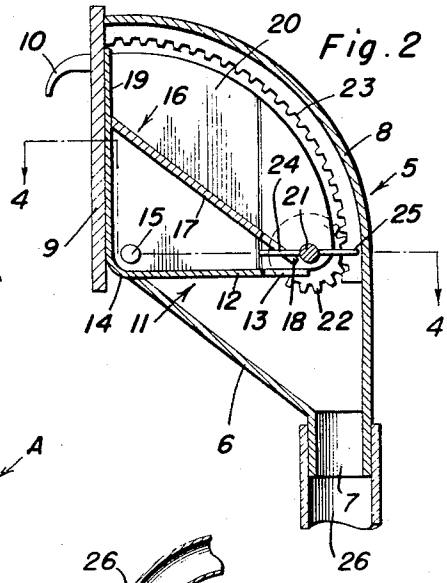
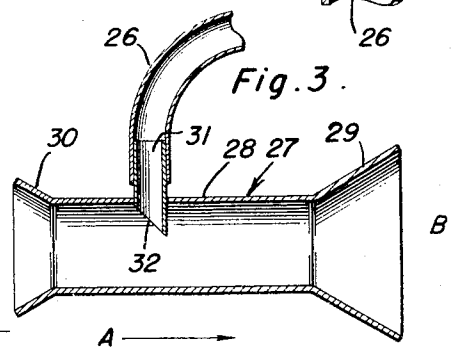


Fig. 3.



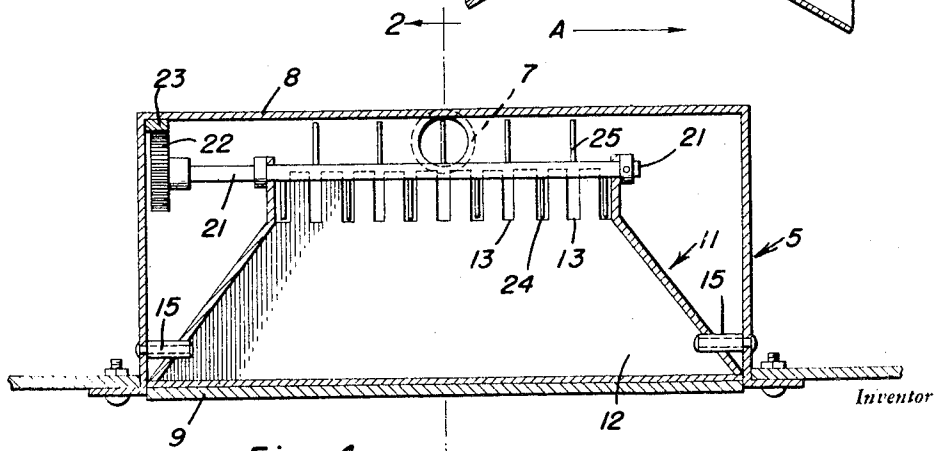


Fig. 4.

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ASH COLLECTOR WITH SHREDDING MEANS

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10 Claims. (Cl. 241—60)

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The present invention relates to ash receivers and collectors which are adapted to be used in automobiles and equivalent conveyances as well as in airplanes and the like, the same having to do, more particularly, with a collector which is designed for convenient depositing of cigarette butts, cigar stumps and analogous refuse, means being provided whereby the accumulated mass may be satisfactorily disposed of.

As the introductory statement of the invention implies, I am, to an extent, conversant with the state of the art to which the invention appertains and am, therefore, aware that ash receivers with disposal and dumping facilities are not broadly new. In an effort to better comply with what I believe to be the essential requirements of the trade and users, I have devised what I believe to be a collector which is possessed of significant novelty, structural betterments and refinements, and coacting facilities which, conjointly considered, better fulfill the requirements in this field of endeavor.

More specifically, one phase of the stated novelty has to do with a simple mechanical grinder which disintegrates the deposited refuse and reduces it to bits less likely to catch afire from smoldering cigar and cigarette butts.

A further improvement has to do with the disposal means, the latter being connected to and depending from the collector and extending to a point within the vicinity of the ground, when used on an automobile or the like, and terminating in a Venturi funnel which is sufficient to automatically produce suction which plays on the discharge end of the disposal tube and empties the material into the air.

In carrying out a preferred embodiment of the invention, I provide a hooded hopper, hingedly mount a tray-like chute therein, provide disintegrating means which comes into play during the swinging movements of the chute, and attach a disposal tube to the discharge of the hopper and connect the tube at its lower end with a Venturi funnel for final trapping and disposal purposes.

Other objects, features and advantages will become more readily apparent from the following description and the accompanying illustrative drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the views:

Figure 1 is a fragmentary perspective view, showing the instrument panel and floor portion of an automobile and, also, showing my improved ash collector, with disposal means, incorporated therein.

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Figure 2 is a vertical cross-sectional view taken approximately on the plane of the line 2—2 of Figure 4.

Figure 3 is a sectional view showing the Venturi-funnel disposal means.

Figure 4 is a horizontal section on the line 4—4 of Figure 2, looking in the direction of the arrows.

Referring to the drawings, and to Figure 1, it makes no difference so far as the invention is concerned, whether the vehicle shown be an automobile, bus, railway train, airplane or the like. For convenience, A designates an automobile having floor means B, and instrument panel means C. The essential part of the invention is attachable, if desired, to the panel means C. As stated, the invention is characterized by a casing unit, unitarily designated by the numeral 5 and the latter may be considered as embodying an appropriately proportioned and shaped hopper 6 with a centralized discharged neck 7 through which the contents empty. It also includes an upper portion which may be conveniently referred to as an open front hood 8, said open front being essentially closed by a panel forming a door 9. This matches the instrument panel and has a suitable hand-grip 10. The panel is attached to a hinged drawer-like structure, the principal part of which is denoted by the numeral 11 and includes a bottom plate 12 with clearance notches 13 which serve a purpose to be hereinafter described. The corner portion 14 is rounded to clear the adjacent portion of the hopper and suitable hinging means is provided as at 15. The primary part with which I am concerned is the collector or tray part which is denoted by the numeral 16 and embodies an inclined bottom 17 with notches 18, said notches 18 coacting with the notches 13. There is an upstanding front wall 19 attached to the inside of the door and upstanding end flanges 20. Thus, the tray, in effect, becomes a gravity chute and the cigarette butts, cigar stumps and other refuse deposited will glide down the chute and come into contact with the disintegrating means. This comprises the rotatably mounted shaft 21 having a pinion 22 keyed on one end, said pinion being operatively associated with an arcuate toothed rack 23 fixedly mounted in the hooded portion of the casing. The shaft is provided with disintegrating or chopping and agitating fingers 24 and 25, and said fingers are arranged to rotate in paths in alignment with the afore-

mentioned notches 13 and 18. It follows that as the door panel 9 is tilted and swung open for purposes of depositing refuse, the rack and pinion means comes into play and starts to spin the finger-equipped shaft. The fingers rotate through the coacting notches, as is obvious. When the door is closed and the chute or tray resumes the position shown in Figure 2, the articles deposited gravitate down the chute bottom and into engagement with the rotating fingers. The fingers obviously disintegrate the deposited articles, and they are churned to bits. By so reducing and virtually pulverizing the articles deposited, there is little likelihood of same catching afire, even where the cigarette butts are left partly burning at the time of deposit. It follows that one aspect of the invention has to do with the hooded hopper, the hingedly mounted door controlled tray or chute, and gearing and agitating and disintegrating means, which is automatically operable and which reduces the deposited products to substantially harmless bits for final disposal.

Although the disintegrating and reducing step is, in effect, a part of the disposal means herein referred to, I prefer to envision the latter as having to do primarily with the flexible disposal tube or conduit 26, which is connected with the aforementioned discharge neck 7. Then, the tube is carried down to a convenient point just above the ground (not shown) where it is hooked up with the Venturi-funnel means 27. The latter comprises a Venturi tube 28 of more-or-less customary design having an enlarged flaring front or intake funnel 29 and a smaller flaring rear and discharge funnel 30 at the opposite end. There is a nipple 31 provided, and this connects with and projects into the tube 28 where the rear end is bevelled, as at 31, to create the necessary air disturbances for proper operational results. The arrow A indicates the direction of movement of the vehicle, and the arrow B the direction of movement of the air entering the front funnel intake 29.

It is obvious that in operation, after the deposit of cigarette butts and cigar stumps has been made along the lines described, the reduced products empty and discharge by gravity down through the discharge neck by way of the hopper and into the tube 26. Sufficient suction is produced on the discharge neck 7 by the Venturi arrangement to "pull" the ashes, tobacco and pieces of paper, etc., down through the tube. They finally deposit in the Venturi tube 28, where they are forced out from the rear by the sweeping air currents. It is evident, therefore, that the articles deposited in my collector are acted upon and reduced to requisite size to be discharged by gravity and, also, by suction, through a disposal tube, the latter being increased in its efficiency of operation by the Venturi means attached to the lower discharge end of said tube.

When installation of ash tray unit is in aircraft, the venturi may be omitted, using only the end of the disposal tube. This tube to be cut off at an angle with the longest end forward. Also, more than one ash tray may be used on one venturi, such as the front and rear seats of automobiles, aircraft, etc.

A careful consideration of the foregoing description in conjunction with the invention as illustrated in the drawings will enable the reader to obtain a clear understanding and impression of the alleged features of merit and novelty sufficient to clarify the construction of the invention as hereinafter claimed.

Minor changes in shape, size, materials and rearrangement of parts may be resorted to in actual practice so long as no departure is made from the invention as claimed.

Having described the invention what is claimed as new is:

1. In an ash collector and disposal assembly of the class described, a casing embodying a hopper and a hooded entrance for said hopper, said hopper having a discharge neck, a hinged door closing the open side of said hood-like entrance portion, and a tray-like chute mounted on the inner side of said door and operable in said hooded portion, said chute having an inclined bottom, said inclined bottom having clearance notches, a rotatably mounted shaft on said chute, fingers on said shaft cooperable with said notches, and gearing for rotating the shaft comprising a pinion on said shaft and a fixed rack in said hopper in mesh with said pinion, whereby to provide the desired disintegrating action.

2. In a cigarette butt and ash collector for automobiles and the like, a collecting hopper having a hooded portion, said hooded portion having an intake opening, a door for closing said opening, tray means on the inner side of said door, said tray means being hingedly mounted in the hopper, said tray means embodying end confining flanges and an inclined bottom and thus performing as a gravity-type chute, the inner edge portion of said bottom being provided with notches, a shaft mounted for rotation between said flanges and provided with fingers turnable through said notches, a fixed arcuate rack in said hopper having its center of curvature concentric with the axis about which said tray is hinged, a pinion on said shaft, said pinion being in mesh with the teeth on the rack.

3. Ash tray and disposal means for a vehicle comprising a tray within the vehicle, means mounting the tray for movement between open and closed positions, said tray having a port disposed to discharge refuse, shredding mechanism associated with said tray to shred material therein, said shredding mechanism comprising rotary fingers, and slots in a wall of the tray through which said fingers pass and means operated by movement of said tray between open and closed positions for actuating said shredding mechanism.

4. A device as defined in claim 3 in which the means for actuating the shredding mechanism comprises a pinion connected to drive said fingers, a rack in mesh with said pinion, said rack and pinion being relatively movable in meshed relation by opening and closing movement of said tray.

5. A device as defined in claim 3 in which the means for actuating the shredding mechanism comprises a pinion connected to drive said fingers, said fingers and pinion being carried by said tray, and a fixed rack in mesh with said pinion.

6. A device as defined in claim 5 in which said tray is rockable between open and closed positions, and said rack is arcuate with its center of curvature at the axis about which said tray rocks.

7. An ash tray housing having a curved rear wall, an ash tray pivotally mounted in said housing about a transverse axis adjacent its bottom front edge, the front wall of said tray being downwardly and rearwardly inclined when said

tray is closed, the lower edge of said front wall being spaced from the rear wall of said housing to define therewith a space through which refuse may fall, a shaft carried by said tray adjacent the lower edge of said front wall, fingers on said shaft, slots at the lower edge of said front wall through which said fingers pass, a pinion on said shaft, and an arcuate rack carried by said housing in mesh with said pinion.

8. Ash tray and disposal means for a vehicle comprising a tray within the vehicle, means mounting the tray for movement between open and closed positions, said tray having a port disposed to discharge refuse, shredding mechanism associated with said tray to shred material therein, said shredding mechanism being located above said port, means operated by movement of said tray between open and closed position for actuating said shredding mechanism, a conduit extending from said port to the exterior of said vehicle, and means for establishing a suction to draw shredded refuse through said conduit and to discharge the same outside the vehicle.

9. A device as defined in claim 8 in which said conduit is a flexible tube.

10. A device as defined in claim 8 in which said means for establishing a suction in the conduit is a Venturi tube disposed in the air stream occasioned by movement of the vehicle.

WILLIAM E. HENTSCHEL.

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