Dec. 22, 1953 C. L. HOOKER, JR 2,663,504

DISPOSAL DEVICE FOR CIGARS, CIGARETTES, AND THE LIKE WASTE MATERIALS

Filed Aug. 13, 1951 2 Sheets-Sheet 1

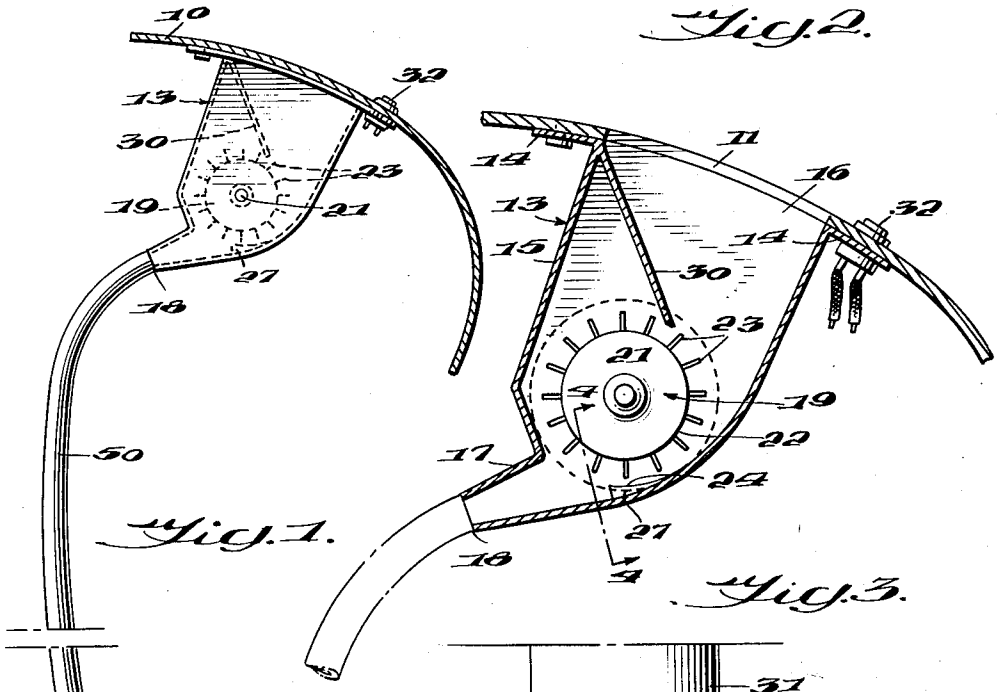


Fig. 1.

Fig. 2.

Fig. 3.

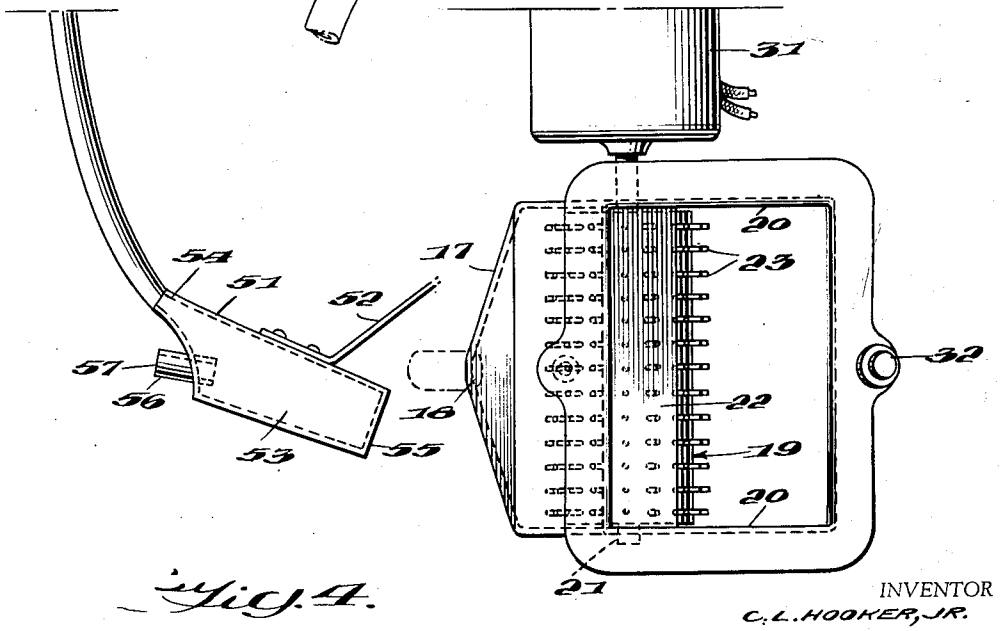
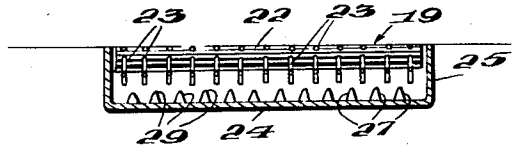


Fig. 4.



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Fig. 5.

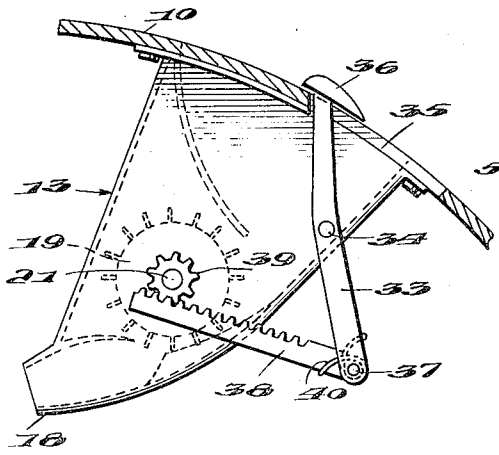


Fig. 8.

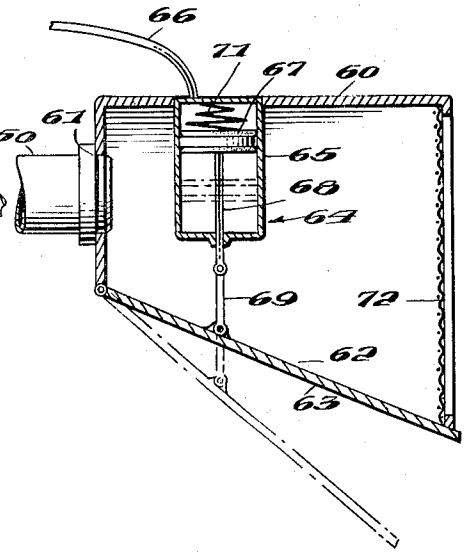


Fig. 6.

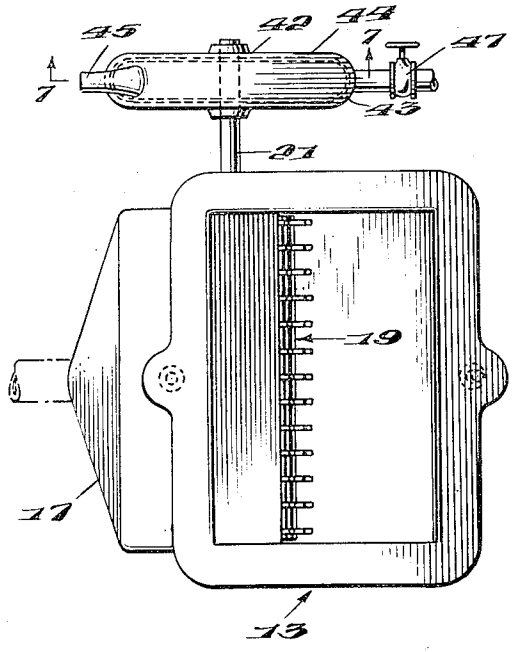
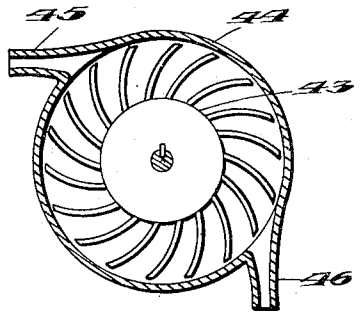


Fig. 7.



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DISPOSAL DEVICE FOR CIGARS, CIGARETTES, AND LIKE WASTE MATERIALS

Charles L. Hooker, Jr., El Cajon, Calif.

Application August 13, 1951, Serial No. 241,546

1 Claim. (Cl. 241—186)

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This invention relates to improvements in receiving and disposal apparatus for waste material such as the ashes and butts of cigars, cigarettes and the like and more particularly to apparatus of this type provided with means for grinding or comminuting the butts of cigars, cigarettes and the like and for disposing of the resulting ground or comminuted material.

A primary object of the invention is the provision of an improved device for receiving and quickly and effectively disposing of lighted or unlighted cigar and cigarette butts and ashes.

A further object of the invention is the provision of a receiving and disposal device for cigar and cigarette butts adapted to grind and/or comminute the cigar or cigarette butts preparatory to disposal thereof thereby facilitating extinguishment and discharge of such butts and eliminating or substantially reducing the possibility of the disposal apparatus becoming clogged.

A still further object of the invention is the provision of a cigarette, cigar and like waste disposal device for automobiles, airplanes or like types of conveyances adapted to receive and disintegrate such material into relatively small particles and to automatically collect and/or discharge such particles at a point remote from the disintegrating mechanism whereby smoke and odor from the articles deposited is eliminated.

Another object of the invention is the provision of a waste disposal device for automobiles, airplanes and the like provided with power operated grinding or comminuting means for disintegrating waste material such as cigar and cigarette butts deposited therein and with suction means for discharging or otherwise disposing of the disintegrated waste material.

Still another object of the invention is the provision of a waste disposal unit for automobiles and the like adapted to receive and hold waste material when the automobile is in operation and to automatically discharge such material when the automobile is at rest and the engine cut off thereby avoiding the possibility of discharging burning material when the automobile is in operation.

These and other objects and advantages of the invention will become apparent from the following detailed description when taken in connection with the accompanying drawings, in which:

Fig. 1 is a side elevational view, partly in section, showing the device of the invention as applied to the dash of an automobile;

Fig. 2 is a vertical sectional view of the receiving receptacle;

Fig. 3 is a top plan view of the receiving receptacle;

Fig. 4 is a cross-sectional view of a portion of the receiving receptacle taken on the line 4—4 of Fig. 2;

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Fig. 5 is a side elevational view, partly in section, of a modified form of receiving receptacle;

Fig. 6 is a top plan view of a further modified form of the receiving receptacle.

Fig. 7 is a vertical sectional view taken on the line 7—7 of Fig. 6;

Fig. 8 is a vertical sectional view of a modified form of the waste disposal member.

One of the more commonly used devices for the disposal of lighted cigars and cigarettes in automobiles and the like consists of a receptacle or tray slidably mounted in the dash and having a dished member suspended therein against which a lighted cigar or cigarette may be pressed by an occupant of the automobile prior to depositing it in the tray. While this device is relatively simple and inexpensive it has the disadvantage that the tray or receptacle must be emptied periodically and while this is a rather simple operation it usually is not thought of at the proper time and place for ready disposal of the contents. As a result cigarette and cigar ashes and butts are permitted to remain in the trays for relatively long periods of time with consequent unsightliness and disagreeable odor.

Furthermore, the necessity of manually extinguishing the lighted cigar or cigarette prior to depositing it in the tray is a rather troublesome and difficult operation to carry out particularly for the operator of the vehicle who must keep his eyes on the road ahead. As a result the lighted cigar or cigarette is frequently only partially extinguished thereby constituting a very definite fire hazard particularly when dropped into a tray which is partially filled with previously deposited waste material. Furthermore if it is attempted to extinguish a lighted cigar or cigarette in this manner when the windows of the automobile are open the wind will frequently blow the burning particles of tobacco onto the clothes of the occupants or onto the upholstery of the car burning a hole therein and sometimes setting fire to the car.

With the device of the present invention the objectionable practices and features above mentioned are effectively eliminated. Lighted cigar and cigarette butts are quickly and easily disposed of merely by dropping them into a receptacle and pressing a button or actuating a handle. Fire hazards and disagreeable odors are eliminated or substantially reduced so that occupants of the car ride with a greater sense of security and comfort.

In the drawings there are illustrated typical embodiments of the invention which are particularly designed for use with an automobile. In the embodiment of the invention illustrated in Figs. 1–4, the numeral 10 denotes a support member which may be a portion of the dash of an automobile or the like. The member 10 is provided with an opening 11 which may be closed

by a hinged or slidable door (not shown) when not in use. A receptacle 13 is disposed below the opening 11 and secured to the dash 10 in any suitable manner as by welding, bolting or otherwise securing the flanges 14 thereof to the dash.

The receptacle 13 is desirably formed with a substantially rectangular shaped body portion 15 having an open end 16 at the top thereof in alignment with the dash opening 11 and a substantially funnel shaped discharge portion 17 at the bottom thereof terminating in an outlet 18. Intermediate the top and bottom of the body portion 15 is disposed a toothed cutter 19 rotatably mounted in the side walls 20 of the receptacle by a shaft 21 and adapted to be rotated at a relatively high speed to comminute waste material delivered to the receptacle 13. The toothed cutter 19 may desirably comprise a drum-like cylindrical shaped member 22 secured on the shaft 21 in any suitable manner and provided with relatively small teeth 23 secured to the peripheral surface thereof and projecting radially outward therefrom for cooperation with a serrated bed plate 24 hereinafter described. The teeth 23 may desirably comprise pin-like or spike-like members rigidly secured in spaced relation over the entire peripheral surface of the drum or alternatively may be of the hammermill type wherein portions thereof are hinged on axes parallel to the axis of the drum.

The serrated bed plate 24 is preferably curved around the toothed cutter 19 as shown and provided with a serrated cutting surface 25 for cooperation with the teeth 23. The bed plate 24 may desirably be formed as a curved wall of the receptacle 13 which narrows toward its bottom and has affixed thereto in spaced relation thereon cutting teeth 27. The cutting teeth 27 are preferably elongated substantially wedge shaped members having concavely curved upper portions 29 positioned adjacent the path of movement of the teeth 23 and designed for cooperation therewith to quickly and effectively grind or comminute waste material such as cigar and cigarette butts into finely divided particles.

In order to insure that waste material introduced into the receptacle 19 is carried downwardly between the toothed cutter 19 and the serrated bed plate 24 a baffle 30 is secured in the receptacle 19 in any suitable manner and extends diagonally downward from one end thereof in a manner such that waste material introduced through the openings 11 and 16 is deflected downwardly and laterally in the desired direction. The baffle 30 thus functions to insure proper delivery of waste material to the grinding and comminuting means and in addition further functions to prevent accidental discharge of comminuted waste material back through the opening in the event any such material is carried around by the rotating toothed cutter.

While the toothed cutter 19 may be rotated or operated continuously, it is preferable to operate it intermittently at such times as it is desired to grind or comminute the waste material. One suitable and preferred means for rotating the cutter 19 comprises an electric motor 31 coupled to the cutter shaft 21 and having electrical connections with the battery of the car. Operation of the motor may be controlled by a push button switch 32 of any suitable type electrically connected to the motor and secured to the dash of the car closely adjacent the opening 11 therein.

In the modified construction shown in Fig. 5 the cutter 19 is designed to be manually operated by a lever 33, pivoted at 34 on the receptacle 13 and having a portion thereof projecting through an opening 35 in the dash and provided with an operating handle 36. The lever 33 is hingedly connected as at 37 to a toothed rack 38 designed for meshing engagement with a pinion 39 mounted on the shaft of the cutter 19. A spring 40 cooperatively associated with the lever 33 and the rack 38 serves to hold the rack 38 in meshing engagement with the pinion 39 while simultaneously urging the lever 33 toward its upper rest position. If desired, additional springs may be employed to hold the lever 33 in the retracted position shown in Fig. 5 and the rack 38 in mesh with the pinion 39.

The pinion 39 preferably comprises a ratchet sprocket designed to positively rotate the shaft 21 in one direction to grind and comminute the material while being freely rotatable on the shaft in the opposite direction. This permits the cutter to be operated continuously in one direction by one or more actuations of the operating handle against the restraining action of the spring 40.

In the further modification of the invention shown in Fig. 6 the cutter 19 is rotated by a fluid motor 42 secured to the shaft 21. The motor 42 is preferably of the suction type comprising a rotor 43, and a casing 44 having an inlet 45 open to the atmosphere and an outlet 46 connected to a source of vacuum. Alternatively, if desired, the motor 42 may be of the pressure type in which case the inlet 45 may be connected to a source of fluid under pressure and the outlet 46 open to the atmosphere. A suitable valve 47 may be placed in the line to the motor 22 so that it may be intermittently operated by an occupant of the automobile or the valve may be omitted so that the motor 42 will operate continuously while the engine of the automobile is in operation.

It will be apparent from the description thus far that cigar and cigarette butts and the like waste material introduced into the receptacle 13 through the dash opening 11 and the receptacle opening 16 will strike the baffle 30 and be deflected laterally downward between the descending teeth 23 of the cutter 19 and the teeth 27 of the serrated bed plate 24. The cutter 19, if not already in operation, may then be actuated by means of any of the various mechanisms hereinbefore described to effectively grind and/or comminute the waste material into small particles. Under the influence of gravity and the rotating cutter 19 as well as a suction means hereinafter described the comminuted material passes downwardly into and through the funnel shaped discharge portion 17 and through the outlet 18 to a discharge conduit 50.

The conduit 50 may desirably comprise a flexible tube formed of any suitable flexible material such as rubber, rubberized fabric, copper tubing or the like and serves to convey the comminuted waste material from the receptacle 13 to a disposal member 51. The disposal member 51 may be mounted on any convenient part of the body or framework of the automobile as by the bracket 52 and is preferably located at or below the chasis so as to discharge the comminuted waste material directly onto a street or highway.

In the embodiment of the invention shown in Figs. 1–5 the disposal member 51 comprises a casing 53 having an inlet end 54 communicating with the conduit 50 and an outlet end 55 open to the atmosphere. Intermediate the inlet and outlet ends the casing 53 is provided with an air intake orifice 56 having its open end 57 facing in the direction of movement of the car. Thus when the car is moving in a forward direc-

tion air is forced through the orifice 56 into and through the disposal member 51 and discharged through the open end thereof. This creates a suction on the discharge conduit 50 which, as pointed out above, assists in withdrawing comminuted waste material from the receptacle 13 and discharging it through the open end of the disposal member.

The modified form of disposal member shown in Fig. 8 is designed for use under conditions which render it undesirable to discharge the waste material along the highway. This form of the invention eliminates any possibility of discharging sparks or burning material while travelling along the street or highway and hence eliminates the fire hazards occasioned by the discharge of such material.

The construction shown comprises a housing 60 having an inlet 61 at one end thereof for receiving comminuted waste material from the conduit 50 and a discharge opening 62 in the bottom thereof for discharging the waste material. A closure door 63 is pivoted to the housing 60 adjacent the opening 62 and is normally maintained in closed position during operation of the engine by a vacuum controlled device 64. The door 63 preferably slopes downwardly from the inlet end of the housing 60 so that material discharged thereon will tend to gravitate toward the front of the housing.

The device 64 may comprise a cylinder 65 mounted in the housing 60 and having one end thereof connected to a source of vacuum by a conduit 66. A piston 67 is reciprocably mounted in the cylinder 65 and has a piston rod 68 connected to the pivoted door 63 by a connecting link 69. When the engine is running a partial vacuum is set up in the cylinder 65 through the conduit 66 which pulls the piston 67 upwardly therein to hold the door 63 in closed position. When the engine is stopped the vacuum is released and a spring 71 mounted between the piston and the top of the cylinder urges the piston down to open the door.

It will thus be seen that any waste material discharged into the housing 60 will be retained therein while the engine is running and will not be discharged until the engine is stopped.

As a further feature the end of the housing 60 opposite the inlet end is preferably open to the atmosphere and covered by a relatively fine mesh screen or grating 72. By virtue of this arrangement the housing 60 acts as an incinerator in which all unconsumed particles, in the presence of a spark or sparks, are caused to burst into flame whereby they are quickly reduced to an incombustible state for discharge in the form of ashes. The screen 72, of course, prevents the discharge of such material but permits the entry of air to support combustion.

It will thus be apparent that the present invention provides an improved apparatus for the quick and ready disposal of waste material such as cigar and cigarette butts and ashes. The grinding and comminuting of the material in accordance with the invention facilitates rapid and automatic evacuation thereof from the collecting receptacle so that fire hazards and disagreeable odors are eliminated or substantially reduced. Grinding and comminuting of the waste material furthermore facilitates movement thereof through the discharge conduit and the disposal member and substantially reduces the tendency of these parts of the device to become clogged as frequently happens when it is attempted to pass butts and the like therethrough. In addition to the above applicant's device eliminates the fire hazards and the unsightly appearance created by throwing or discharging lighted cigar and cigarette butts along the streets and highways since the comminuted material is widely scattered when discharged and is substantially unnoticeable.

While the invention herein is illustrated in its preferred forms as applied to an automobile or like type of conveyance it will be understood that it could readily be applied to a stationary construction such as a room wall or the like. These and other modifications of the invention described and illustrated will most likely occur to those skilled in the art to which the invention relates and may be made without departing from the spirit of the invention, the scope of which is indicated in the attached claim.

I claim:

In a disposal device for waste material of the nature of cigar and cigarette butts comprising a fixed housing adapted to be secured to the dash of an automobile having an opening for the reception of waste material and suction outlet means communicating with said housing, the improvement consisting of a rotatable cutter extending across said housing in the path of waste material introduced thereinto, said housing having an opening in its top communicating with the first opening for introducing waste material thereinto, and side walls leading from the housing opening converging around the cutter and connecting with the outlet, a baffle plate steeply inclined downwardly from the housing opening tangentially directed with respect to the rotatable cutter to funnel waste material thereto, said rotatable cutter comprising a shaft and a drum-like member on said shaft having a plurality of outwardly projecting pin-like teeth thereon, a plurality of stationary laterally wedge shaped cutting teeth on a converging wall of the housing extending across the length of the rotatable cutter and to adjacent the periphery of the pin-like teeth, the stationary teeth reaching from the point of nearest approach of the pin-like teeth to the side wall to a point removed downstream therefrom, the pin-like teeth and the stationary teeth having substantially the same clearance throughout the extent of the latter, and means for rapidly rotating the rotatable cutter in a direcion away from the baffle plate towards the stationary teeth to comminute waste material for removal by the suction means from the converging housing section.

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