

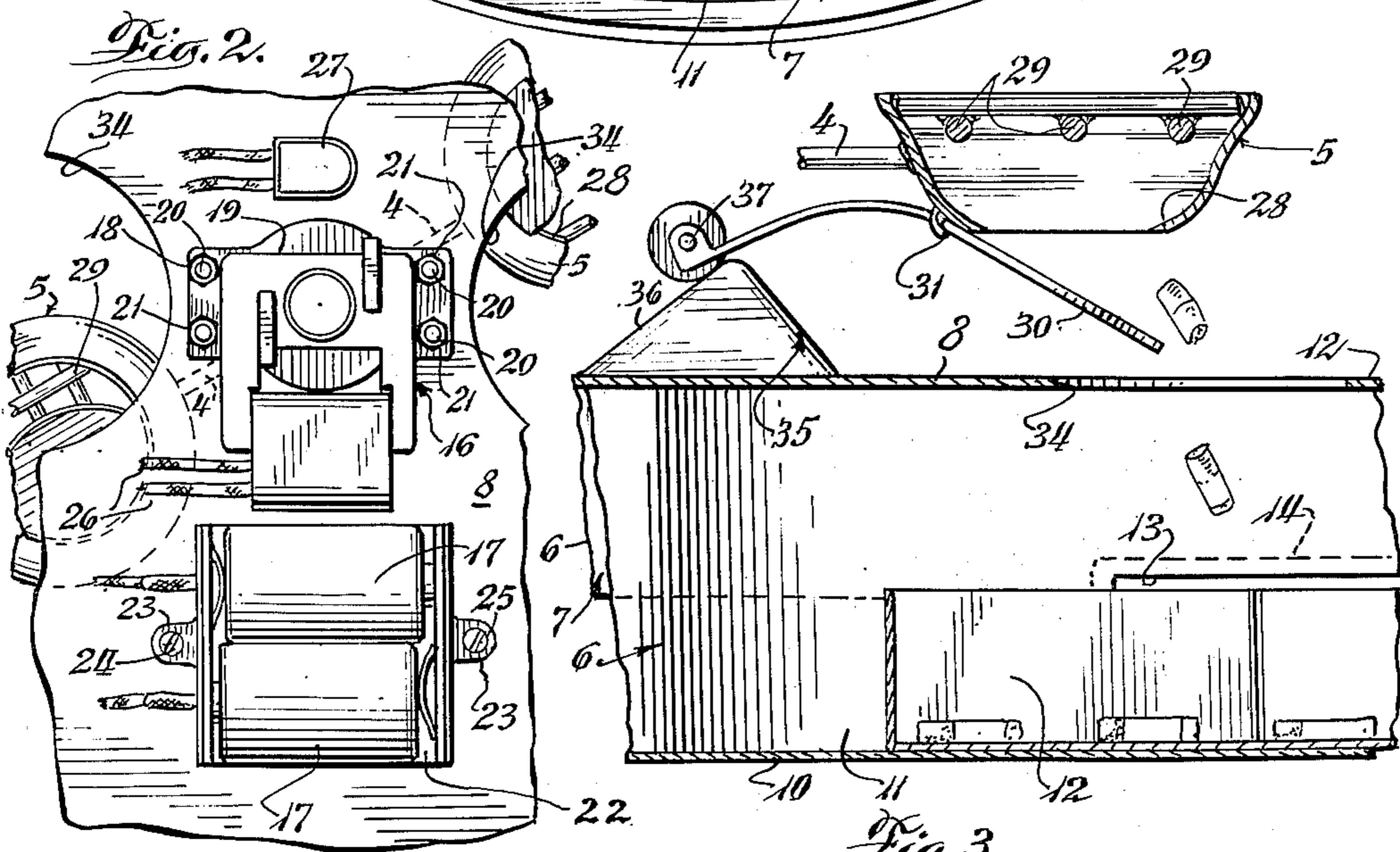
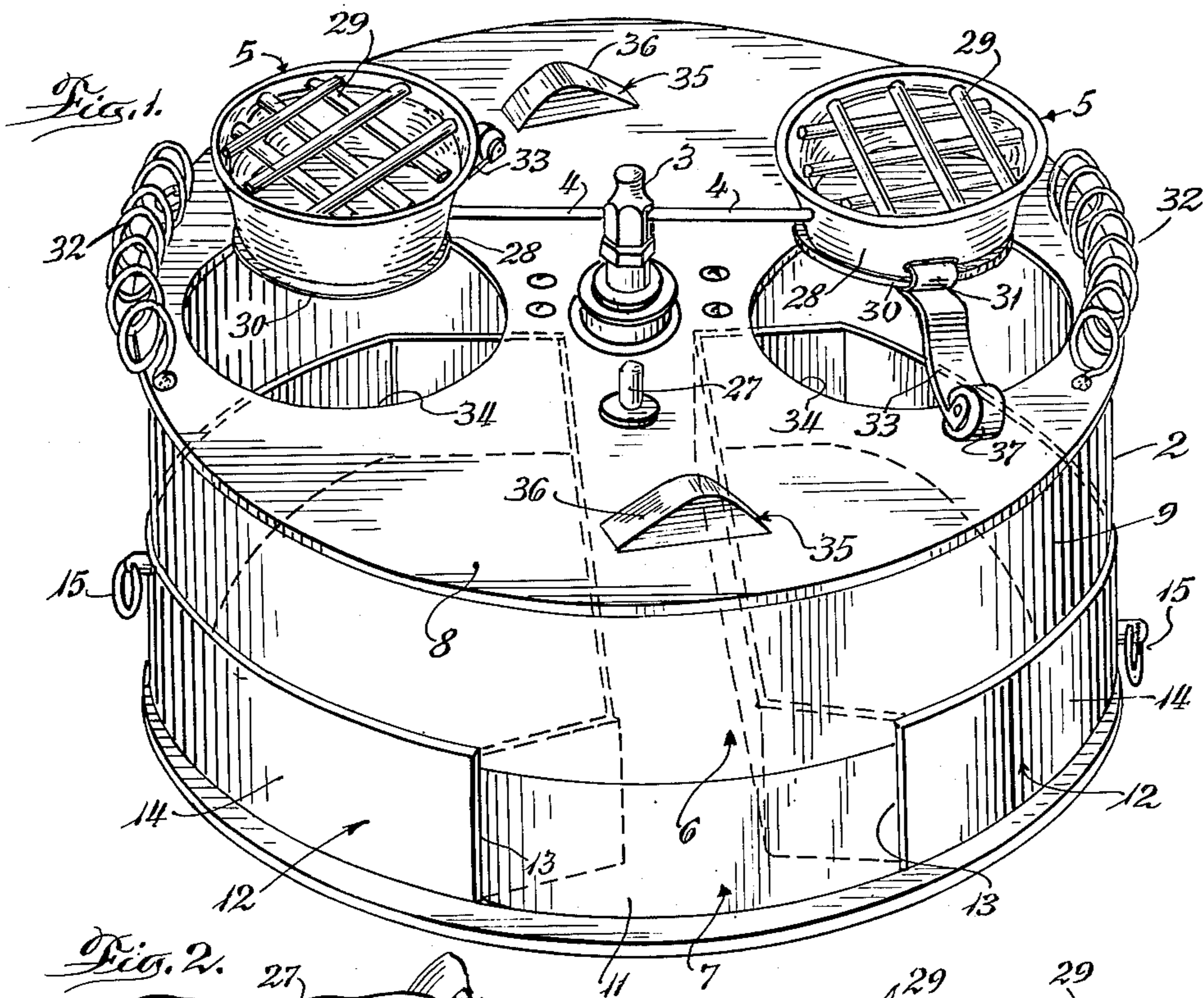
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R. S. TAUB

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ASH TRAY

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INVENTOR.

Robert S. Taub

BY

Schneider, Dressler, Goldsmith & Clement
Attorneys

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ASH TRAY

Robert S. Taub, 6145 N. Talman, Chicago, Ill.

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This invention relates to a self-emptying ash tray and is particularly concerned with means for automatically emptying a small ash tray into a larger receptacle at periodic intervals.

In accordance with this invention one or more small ash trays are mounted on or supported by arms projecting laterally from a center post projecting vertically above the top of a housing. The housing serves as a base for the structure and may rest on a table or similar supporting surface, or may be mounted on a stand. A motor, preferably battery operated, is concealed within the housing and rotates the center post continuously. The operation of the motor is controlled by a manually operable switch that is conveniently mounted on the housing. The laterally projecting arms and the ash trays are rotated with the center post. The rate of rotational movement of the ash trays is slow enough so that smokers can place ashes and other refuse in an ash tray as it is being rotated.

The top cover of the housing is closed except for one or more openings through which ashes from the small ash trays are dumped automatically as the tray reaches a predetermined position. A large receptacle is removably mounted in the base in vertical registration with each of the openings. A single receptacle may extend under all of the openings but preferably a separate receptacle is provided for each of the openings. Each ash tray has a hinged bottom, and the top of the housing has means mounted thereon either for actuating mechanism to open the hinged bottom or for releasing a catch to permit the hinged bottom to open by gravity. The hinged bottom is adapted to be closed automatically, either by gravity or by spring pressure, after the ashes have been dumped through one of the openings into the receptacle aligned therewith.

In the illustrative embodiment of the invention shown in the drawings, there are two ash trays, two openings in the top of the housing and two receptacles enclosed in the housing for receiving the ashes dumped from the ash trays. But it should be understood that the number of any of these items may be varied. Two ash trays and two openings in the top of the housing are preferred because of the symmetry of such arrangement. The use of two receptacles for holding the dumped ashes permits continuous use of the device while one of the containers is removed for the purpose of being emptied.

The continuous rotational movement of the ash trays attracts the attention of viewers, and thus increases the salability as well as the use of the device by adding the features of eye-catching attractive novelty to the utilitarian features of the structure. Although the ash trays mounted for rotation above the housing are of comparatively small size, the frequent dumping of them into the receptacle or receptacles concealed in the housing prevents any of the ash trays from becoming filled and thus keeps them constantly ready for use. The automatic dumping of each ash tray at least once during each complete revolution of the center post eliminates the necessity of emptying the ash trays manually at frequent intervals as required with the use of conventional ash trays of comparable size.

An illustrative embodiment of the invention and a structure by means of which the above noted and other advantages of the invention are attained is described in detail in the following specification, taken in conjunction with the accompanying drawings, in which:

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FIGURE 1 is a perspective view of a self-emptying ash tray embodying the invention;

FIG. 2 is a fragmental bottom plan view looking at the underside of the top of the housing; and

FIG. 3 is a fragmental sectional view, showing one ash tray being emptied into the receptacle.

The structure embodying the invention and shown in the drawings has a housing 2, a vertically disposed rotatably mounted center post 3 projecting above the top of the housing, one or more arms 4 rigidly secured to the center post for rotation therewith, and an ash tray 5 mounted on each of the arms.

The housing may have any desired configuration, but the illustrated embodiment comprises complementary upper and lower sections 6 and 7, respectively, having telescopic engagement. Upper section 6 comprises a top 8 and a depending wall 9. Lower section 7 comprises a flat bottom 10 and an upstanding wall 11. The walls 9 and 11 may be integral with the walls 8 and 10, respectively, or may be permanently secured thereto in any suitable manner. If desired, a single wall may be substituted for the walls 9 and 11. Such single wall may be integral with one wall 8 or 10 and detachably secured to the other, or may be detachably secured to both of said walls. The upper and lower sections are shown as being circular in horizontal cross section, with cylindrical wall 9 fitting within cylindrical wall 11. If desired, wall 9 may fit on the outside of wall 11. Wall 9 is shown as terminating in spaced relationship to the bottom 10 for a reason hereinafter disclosed, but may extend to the bottom, if desired.

Two large receptacles 12 are slidably mounted in lower section 7. Wall 11 is provided with cutouts 13 to permit each of the receptacles 12 to be slid into the housing. Preferably the front wall 14 of each receptacle 12 is shaped to fit against wall 11 and is larger than cutout 13 to cover it completely when the receptacle is positioned in the housing. Front wall 14 is provided with a drawer pull 15 to facilitate removal of receptacle 12 from the housing when it is to be emptied. Wall 9 is also provided with a cutout adapted to register with cutout 13 when walls 9 and 11 are coextensive.

A motor 16 and batteries 17 for running the motor are concealed within housing 2 and are secured to said housing in any suitable manner. As shown in FIG. 2, ears 18 projecting from the motor housing 19 are secured to the underside of top 8 by any suitable fastening means such as, for example, screws 20 and nuts 21. Batteries 17 are detachably mounted in a supporting channel 22 that has ears 23 secured to the underside of top 8 by fastening means 24 and 25. Wiring 26 connects motor 16 to batteries 17 through a manually operable switch 27 that projects upwardly through top 8 to make it accessible. The back and side walls of receptacle 12 are not high enough to engage the motor housing or the batteries that depend from the underside of top 8.

Motor 16 is operatively connected to the vertically disposed rotatably mounted center post 3 that projects above the top 8. The motor rotates center post 3 continuously at a slow rate as long as the motor is running. One or more arms 4 are rigidly secured to center post 3 for rotation therewith. The arms may extend laterally through the center post and have an ash tray 5 mounted on each end of each arm, or may have an ash tray mounted on one end only, and have the other end secured to the center post. Ash trays 5 are comparatively small because they do not have to carry any substantial quantity of ashes, since they are emptied automatically at least once during each revolution of the center post.

Each ash tray comprises a tubular side wall 28 of any desirable shape. Preferably the side wall curves upwardly

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and outwardly, as shown in FIG. 3. A screen 29 is preferably fitted in the top of each ash tray 28 to provide a supporting surface for a cigarette or cigar stub or for a pipe. The screen openings are large enough for a cigarette stub to be inserted into the ash tray through the screen. The screen may be secured to the tray but is preferably mounted loosely therein to facilitate cleaning of the tray. A flat plate 30 is hinged to the lower edge of side wall 28 to form a bottom closure for each ash tray 5. Any desirable means, such as, for example, springs 32 may be mounted on top 8 to hold cigarettes, cigars or pipes.

An arm 33 has a portion near its front end rigidly secured to the underside of the bottom plate 30. The front end portion of the arm 33 is then bent rearwardly upon itself and inserted through a slot in the wall 28 adjacent its lower edge to form a hinge 31 pivotally securing the bottom plate 30 to the wall 28. The hinge 31 is located in vertical alignment with the circumference of the circle circumscribed by the center point of the ash trays as they are rotated about the center post. Although the hinge may be located on the leading edge of the tray as it is rotated about center post 3, it is preferred to locate it on the trailing edge of the tray because such arrangement results in a simpler dumping operation by means of which the ash trays are emptied into the receptacles 12 that are located in housing 2. The arm 33, weighted at its rear end, extends rearwardly from the ash tray and is biased so as to normally hold the bottom plate upwardly against the lower edge of side wall 28.

One or more openings 34 extend through top 8 with each opening in vertical registration with the circle circumscribed by the center of the ash trays as they are rotated about center post 3. Openings 34 are larger in surface area than the bottom of the ash tray. A cam 35 is secured to the top 8 in any suitable manner. One cam 35 is provided for each opening 34, and said cam is spaced rearwardly of the opening along the circumference of the circle circumscribed by the center of the ash tray as it is rotated about the center post. The cam is inclined upwardly and forwardly, as indicated at 36, and its uppermost surface is spaced from the rear edge of the adjacent opening 34 a distance slightly less than the length of arm 33.

As each ash tray 5 approaches the opening 34 during its rotation about the center post 3, the arm 33 engages the low end of the cam and rides upwardly on the inclined surface 36 of the cam. As shown in FIG. 3, the rear end of the arm 33 has a roller 37 rotatably mounted thereon to provide extra weight and to provide a rolling contact for the rear end of the arm as it moves up the cam incline 36. The rigid connection between the weighted arm 33 and the bottom plate 30 causes downward pivotal movement of the bottom plate on its hinge 31 as the free end of arm 33 is raised by movement along the inclined surface 36 of cam 35.

The high end of cam 35 is spaced from opening 34 a distance slightly less than the length of arm 33. Accordingly, as the leading edge of the ash tray passes the rear edge of opening 34 the bottom plate 30 starts moving downwardly about its hinge 31. The rear end of arm 33 reaches its uppermost position just before the trailing edge of the ash tray moves into vertical registration with the rear edge of opening 34. In this position the bottom plate extends downwardly at an angle of approximately 45 degrees, and all the refuse deposited in the ash tray is automatically dumped through the opening 34 into a receptacle 12 positioned below said opening.

In the embodiment of the invention illustrated, the weight of the rear end of arm 33 moves said rear end downwardly as it is moved past the high end of cam 35 in the rotational movement of the ash tray about center post 3. The pivotal mounting of bottom plate 30 and the rigid connection between the opposite end of arm 33 and the bottom plate cause the bottom plate to be moved pivotally upwardly as the rear end of arm 33 moves

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downwardly. The extra weight at the rear end of arm 33 holds bottom plate 30 in tray closing position against the lower end of side wall 28 until the rear end of arm 33 engages the next cam 35. Each ash tray 5 is automatically emptied by the downward pivotal movement of bottom plate 30 every time the rear end of arm 33 is moved upwardly by engagement with any suitable projection extending above top 8.

The means for emptying the ash trays may be decorative, if desired. For example, roller 37 may be shaped to represent a baseball or football, and a replica of a baseball player with a baseball bat at the proper level, or a football player with a foot at the proper level, may be mounted on top 8 in position for the bat or foot to raise the arm 33 so as to move plate 30 downwardly to empty each tray.

Instead of weighting the arm 33, it is possible to substitute a spring pressed hinge for the hinge 31. The hinge is biased to hold bottom plate 30 downwardly and a catch on the ash tray holds plate 30 up in closed position against the action of the spring. A projection engaging the catch releases it and the spring moves plate 30 downwardly to empty the tray. Plate 30 is forced upwardly to closed and latched position against the action of the spring by a cam projecting upwardly from top 8.

Although I have described a preferred embodiment of the invention in considerable detail, it will be understood that the description thereof is intended to be illustrative, rather than restrictive, as many details of the structure may be modified or changed without departing from the spirit or scope of the invention. Accordingly, I do not desire to be restricted to the exact construction described.

I claim:

1. In combination, a base, an ash tray mounted for rotation in a horizontal plane above said base, said ash tray including a body portion and a closure plate movable relative to said body portion, means for rotating said ash tray in a closed path of travel in said horizontal plane, a weighted arm projecting from said closure plate and secured thereto in such a manner as to normally hold said closure plate in closed position, and a cam projecting upwardly from said base, said cam being engageable with said weighted arm to automatically move said closure plate into open position at a predetermined point along the closed path of travel of said ash tray.

2. In combination, a base, a vertically disposed post projecting above said base, a support extending laterally from said post, an ash tray mounted on said support, means for rotating said post to move said ash tray along a closed path of travel in a horizontal plane above said base, said ash tray including a body portion and a closure plate movable relative to said body portion, means normally holding said closure plate in closed position, and a cam projecting upwardly from said base and cooperating with said second mentioned means for automatically moving said closure plate to open position at a predetermined point along the path of travel of said ash tray.

3. In combination, a housing having a top provided with an opening therein, an ash tray mounted for rotation in a horizontal plane above said top, said ash tray having a body portion and a bottom movable relative to said body portion to empty said ash tray, means for rotating said ash tray in a circular path in said horizontal plane, said ash tray being in vertical registration with said opening during part of its rotational movement, weighted means normally holding said movable bottom in closed position, and means cooperating with said weighted means for automatically moving said bottom relative to said body portion and thereby emptying said ash tray into said opening each time said ash tray is moved into vertical registration with said opening.

4. In combination, a housing having a top provided with an opening therein, an ash tray mounted for rotation in a horizontal plane above said top, said ash tray

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having an open bottom, a bottom closure plate, means for holding said closure plate against said open bottom, means for rotating said ash tray in a circular path in said horizontal plane, said ash tray being in vertical registration with said opening during part of its rotational movement, means for automatically moving said bottom closure plate to open position as said ash tray is moved into vertical registration with said opening, and means for moving said bottom closure plate to closed position as said ash tray is moved out of vertical registration with said opening.

5. In combination, a housing having a top provided with an opening therein, an ash tray mounted for rotation in a horizontal plane above said top, said ash tray having an open bottom, a bottom closure plate, means for holding said closure plate against said open bottom, means for rotating said ash tray in a circular path in said horizontal plane, said ash tray being in vertical registration with said opening during part of its rotational movement, and means for automatically moving said bottom closure plate to open position as said ash tray is moved into vertical registration with said opening, said last mentioned means including an arm projecting from said bottom closure plate, said arm being weighted to move said bottom closure plate to closed position as said ash tray is moved out of vertical registration with said opening.

6. In combination, a housing having a top provided with an opening therein, an ash tray mounted for rotation in a horizontal plane above said top, said ash tray having an open bottom, a bottom closure plate, means for holding said closure plate against said open bottom, means for rotating said ash tray in a circular path in said horizontal plane, said ash tray being in vertical registration with said opening during part of its rotational movement, an arm rigidly secured to said closure plate and projecting therefrom, and a cam extending upwardly from said top, said arm being adapted to engage said cam and to ride upwardly thereon during each revolution of said tray, said cam being so positioned relative to said opening as to cause said arm to automatically move said bottom closure plate to open position as said ash tray is moved into vertical registration with said opening, said arm having its outer end weighted, whereby it moves said bottom closure plate to closed position as said ash tray is moved out of vertical registration with said opening.

7. In combination, a housing having a top provided with an opening therein, an ash tray mounted for rotation in a horizontal plane above said top, said ash tray having an open bottom, a bottom closure plate, a hinge connecting said closure plate to the lower edge of said ash tray, an arm rigidly secured to said closure plate forwardly of said hinge, said arm extending rearwardly and downwardly of said hinge whereby its weight urges said closure plate toward closed position, means for rotating said ash tray in a circular path in said horizontal plane, said ash tray being in vertical registration with said opening during part of its rotational movement, and means adapted to engage the rear end of said arm to lift it during each revolution of said ash tray and thereby move said closure plate to open position, said last mentioned means being so positioned relative to said opening as to move the closure plate to open position as the ash tray is moved into vertical registration with said opening.

8. In combination, a housing having a top provided with an opening therein, an ash tray mounted for rotation in a horizontal plane above said top, said ash tray having an open bottom, a bottom closure plate, a hinge connecting said closure plate to the lower edge of said ash tray, an arm rigidly secured to said closure plate forwardly of said hinge, said arm extending rearwardly and downwardly of said hinge whereby its weight urges

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said closure plate toward closed position, means for rotating said ash tray in a circular path in said horizontal plane, said ash tray being in vertical registration with said opening during part of its rotational movement, and a cam projecting upwardly from said top, said cam being adapted to engage the rear end of said arm to lift it during each revolution of said ash tray and thereby move said closure plate to open position, said cam being so positioned relative to said opening as to move the closure plate to open position as the ash tray is moved into vertical registration with said opening.

9. In combination, a housing having a top provided with an opening therein, an ash tray mounted for rotation in a horizontal plane above said top, said ash tray having an open bottom, a bottom closure plate, a hinge connecting said closure plate to the lower edge of said ash tray, an arm rigidly secured to said closure plate forwardly of said hinge, a roller rotatably mounted on said arm adjacent its rear end, said arm extending rearwardly and downwardly of said hinge whereby its weight urges said closure plate toward closed position, means for rotating said ash tray in a circular path in said horizontal plane, said ash tray being in vertical registration with said opening during part of its rotational movement, and a cam projecting upwardly from said top, said cam having an inclined surface extending upwardly and forwardly, said roller being adapted to engage said inclined surface and roll upwardly on it to lift the rear end of said arm during each revolution of said ash tray and thereby move said closure plate to open position, said cam being so positioned relative to said opening as to move the closure plate to open position as the ash tray is moved into vertical registration with said opening.

10. In combination, a housing having a top provided with an opening therein, a vertical center post projecting above said top, means to rotate said center post, an arm rigidly secured to the upper portion of said center post to rotate therewith, said arm extending laterally from said center post, an ash tray mounted on said arm, said ash tray being in vertical registration with said opening during part of its rotational movement, said ash tray including a bottom closure plate releasably held in closed position, and means for moving said closure plate from closed position automatically as said ash tray is moved into vertical registration with said opening.

11. In combination, a housing having a top provided with a plurality of openings therein, a vertical center post projecting above said top, a motor mounted within said housing, said motor being operatively connected to said center post to rotate it, an arm rigidly secured to the upper portion of said center post to rotate therewith, said arm extending laterally from said center post, an ash tray mounted on said arm, said ash tray being in vertical registration with each of said openings during part of its rotational movement, said ash tray including a bottom closure plate releasably held in closed position, and means for moving said closure plate from closed position automatically as said ash tray is moved into vertical registration with each of said openings.

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