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ASH TRAY

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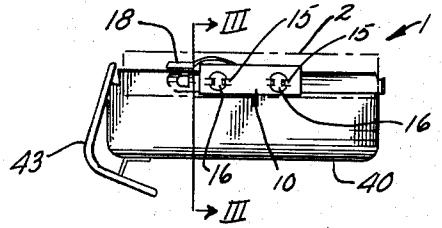


FIG. 1.

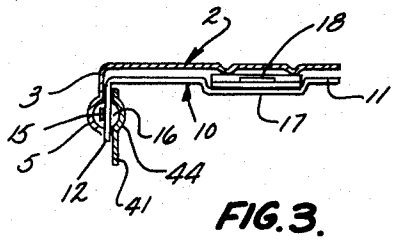


FIG. 3.

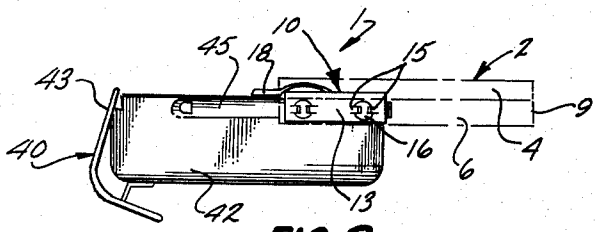


FIG. 2

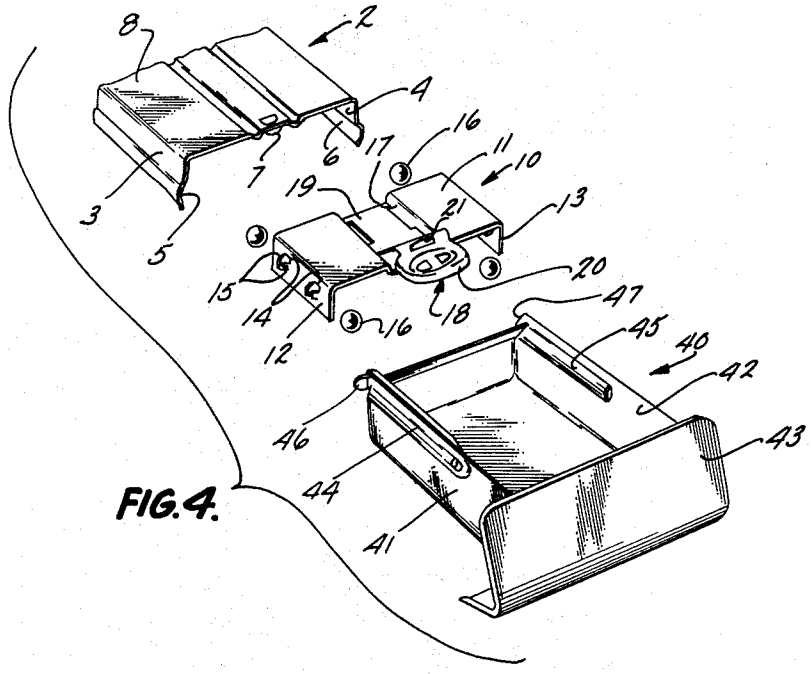


FIG. 4.

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ASH TRAY

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This invention relates to ash trays. More particularly, this invention relates to an ash tray adapted to be mounted in the interior of an automobile and the like.

Many types of ash trays for automobiles are presently in existence. One problem which is inherent in the structure of all such ash trays is the lack of a completely smooth operation, for example, in pulling the tray outwardly from the dash for use or pushing it back flush with the dash to close it. Moving parts rub against each other causing friction and sticking of the ash tray. Further, cocking of the tray with respect to the dash occurs and sticking is again experienced. Among the many, many attempts to overcome the lack of smooth operation caused by such sticking, many ash trays now utilize plastic glides since friction is thereby reduced because of the characteristics of the plastic. However, the use of plastics in the construction of such ash trays is expensive. Further, the problem of the tray cocking with respect to its associated dash structure is still experienced, thus causing sticking and the prevention of smooth operation.

It is an object of this invention to provide an ash tray for use in the interior of automobiles and the like which achieves maximum smoothness of operation.

Another object of this invention is the provision of such an ash tray which achieves maximum smoothness of operation without the use of expensive plastic glides.

Another object of this invention is the provision of such an ash tray which uniquely utilizes rolling bearing means in its operation.

A further object of this invention is the provision of such an ash tray which essentially eliminates friction and cocking of the component parts, thus essentially eliminating sticking of the tray.

A still further object of this invention is the provision of such an ash tray having a more positive location of the ash tray with respect to its associated opening, further eliminating the possibility of sticking.

An additional object of this invention is the provision of such an ash tray which, because of its exceptional operation and stability, can be made to open and expose a larger portion of the ash box for more efficient use.

A further object of this invention is the provision of such an ash tray which achieves these results with a relatively simple structure, being less expensive to fabricate than many ash trays presently in use.

These and other objects of this invention will become obvious to those skilled in the relevant arts upon reading the following specification in conjunction with the accompanying drawing, wherein:

FIG. 1 is a side view of an ash tray embodying the principles of this invention, the mounting member being shown in phantom to better illustrate the invention;

FIG. 2 is a view similar to FIG. 1, the ash box being pulled outwardly from the mounting member;

FIG. 3 is a cross-sectional view taken along the plane III—III of FIG. 1; and

FIG. 4 is a plan, perspective, exploded view of the ash tray and its associated structure.

Briefly, this invention relates to an ash tray adapted to be mounted in the interior of an automobile and the like including a mounting member, an ash box and a rolling bearing means associated between the box and the

member, movement of the box with respect to the member being through this bearing means. Referring more specifically to the drawings, the reference numeral **1** designates an ash tray embodying the principles of this invention. In the embodiment shown, the ash tray **1** includes a mounting member **2**, a carriage element **10** and an ash box **40** (FIG. 4).

The mounting member **2** is adapted to be mounted in an automobile or the like, and within the broadest aspects of the invention could be an integral part of the dash or the like. In the embodiment shown, the mounting member **2** includes a pair of depending flanges **3** and **4**, the flanges having elongated tracks or beads **5** and **6** respectively formed therein. It will be noted that the beads **5** and **6** are open at the front edge of the member **2**. A finger **7** depends from generally the middle of the front edge of the bight portion **8** of the member **2**, the functioning of which will be described hereinafter.

The ash box **40** includes a pair of side walls **41** and **42**, together with a front panel **43**. The panel **43** is adapted to lie flush with the dash or the like of an automobile, such panels being already well-known to the art. Elongated tracks or beads **44** and **45** are formed in the side walls of the ash box **40** respectively. The ends **46** and **47** of the beads **44** and **45** respectively are bent to enclose these beads in assembly of the ash tray **1**, which will be more fully described hereinafter.

The carriage element **10** is of generally U-shape, including a bight portion **11** and a pair of depending legs **12** and **13**. Openings **14** are formed in each of the legs **12** and **13**, tabs **15** positioned at each side of the openings **14**, the tabs **15** extending outwardly of the legs. Ball bearings **16** are adapted to rotatably lie within the openings **14**, retained from the exterior of the element **10** by means of the tabs **15**. A depression **17** is formed in the bight portion **11** of the element **10**, the depression receiving spring **18**, secured therein at its end **19**. The other end **20** of the spring **18** comprises a cigarette snubber and includes a notch **21** therein, adapted to receive the finger **7** of the mounting member **2**.

Assembly and Operation

The ash tray **1** is assembled as follows. The mounting member **1** is secured for example in the dash of an automobile, the flanges **3** and **4** extending downwardly, the beads **5** and **6** having their open ends facing forwardly. In assembling the carriage element and ash box, the ball bearings **16** are positioned within the openings **14**, retained from the exterior of the element **10** by the tabs **15**. The U-shaped carriage element **10** is then slipped over the top of the ash box **40** from the back thereof. The ball bearings **16** slide into the beads **44** and **45** respectively, the ends **46** and **47** of the beads being bent to prevent the ball bearing from escaping therefrom.

When thus assembled, the ash box **40** may be inserted into the mounting member **2**. This is accomplished by simply sliding the ball bearings **16**, exposed from their associated openings **14** through the tabs **15** to the exterior of the carriage element, into the open beads **5** and **6** in the flanges **3** and **4** of the mounting member. Upon pushing the ash box inwardly, the ball bearings rotating with respect to both the beads **5** and **6** and the beads **44** and **45**, the finger **8** snaps into the notch **21** in the spring **18**, detachably affixing the element **10**, and thus the ash box **40** to the member **2**. A depending flange **9** is provided at the rear of the mounting member **2**, the purpose of the flange **9** being to properly space the tray with respect to the member. It will now be seen that by merely grasping the panel **43**, the ash box **40** may be drawn outwardly from the mounting member **2**. Movement is provided by rotation of the ball bearings **16** within the beads **5** and **6** of the mounting member **2** and the beads

44 and 45 in the ash box 40 (FIG. 2). By touching the panel 43 and inserting an inward pressure, the panel 43 is positioned flush with the tray 1 (FIG. 1). The ball bearings 16 providing the movement to the ash box is in practical operation so smooth that the spring 18 is preferably formed to bear against the bight portion 8 of the mounting member 2, thereby retarding movement of the ash box somewhat. When one wishes to remove the ash box 40 from the mounting member 2, the end 20 of the spring 18 is depressed, disengaging the finger 7 from the notch 21, allowing the box 40 and the element 10 to be removed from the mounting member 2 for cleaning of the box.

It will now be seen that this invention has provided a unique ash tray, providing maximum smoothness in operation of the ash box. The possibilities of friction and cocking are essentially eliminated, thereby eliminating the possibility of the ash box sticking during movement. Expensive plastic glides are eliminated and the structure is relatively simple, allowing it to be fabricated at less expense than conventional ash trays for automobiles and the like. Due to the exceptional stability of the unit, the length of travel of the ash box may be made longer and thus the entire ash tray is made much more efficient. The ash box may be quickly and simply removed from the unit for cleaning and again replaced.

While only one embodiment of this invention has been shown and described, it may be possible to practice the invention through the utilization of certain other embodiments without departing from the spirit and scope thereof. Such other embodiments are to be included as part of this invention unless the following claims specifically state otherwise.

I claim:

1. An ash tray adapted to be mounted in the interior of an automobile and the like, comprising: a mounting member including a pair of tracks at its sides; an ash box including a pair of tracks at its sides; a carriage element having means retaining ball bearings at its sides; ball bearings positioned in said means and lying in said tracks of said box; and said ball bearings exposed through said means to said tracks of said member, whereby said box

is movable with respect to said member through said ball bearings rolling in said tracks.

2. An ash tray as defined in claim 1, said element detachably secured to said member.

3. An ash tray as defined in claim 1, said tracks comprising elongated beads formed in the side walls of said box and in vertical portions of said member.

4. An ash tray adapted to be mounted in the interior of an automobile and the like, comprising: a mounting member including a pair of vertical flanges having elongated, horizontally extending first beads formed therein; an ash box including elongated, horizontally extending second beads formed in its side walls; a carriage element having means retaining ball bearings at its sides; ball bearings positioned in said means and lying in said second beads of said box; said ball bearings exposed through said means to said first beads of said member, whereby said box is movable with respect to said member through said ball bearings rolling in said tracks; the ends of said second beads holding said ball bearings therein; and said element detachably secured to said member,

5. An ash tray as defined in claim 4, said carriage element being generally U-shaped, outwardly extending tabs formed in depending side walls thereof comprising said means retaining said ball bearings.

6. An ash tray as defined in claim 5, said carriage element including a spring secured to the bight portion thereof, said spring having a notch therein, said member having a finger aligned with said notch and received thereby, compression of said spring releasing said finger from said notch and said element and box slidably removable from said member.

7. An ash tray as defined in claim 6, said spring frictionally engaging said member retarding normal sliding movement of said box with respect to said member.

References Cited in the file of this patent

UNITED STATES PATENTS

2,334,925	Hendricks	Nov. 23, 1943
2,809,877	Hammesfahr	Oct. 15, 1957
2,944,865	Hammesfahr	July 12, 1960
3,017,227	Thornton	Jan. 16, 1962