Aug. 12, 1969 H. DE BOER 3,460,876

ASH TRAY

Filed July 19, 1967

FIG. 1

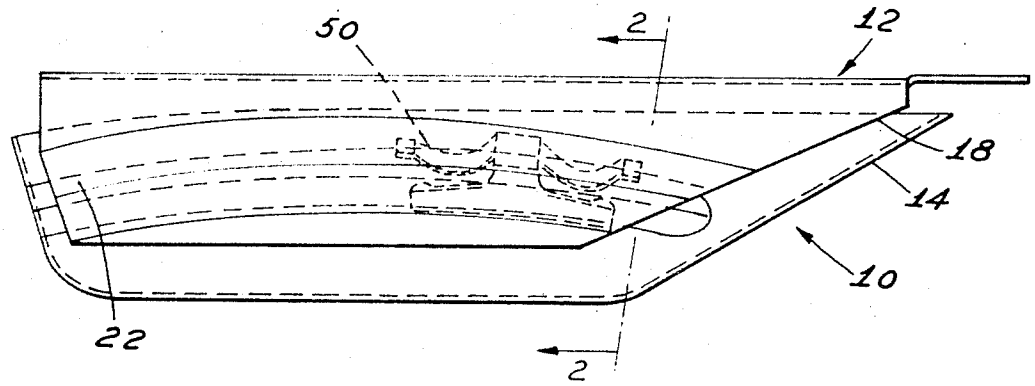


FIG. 2

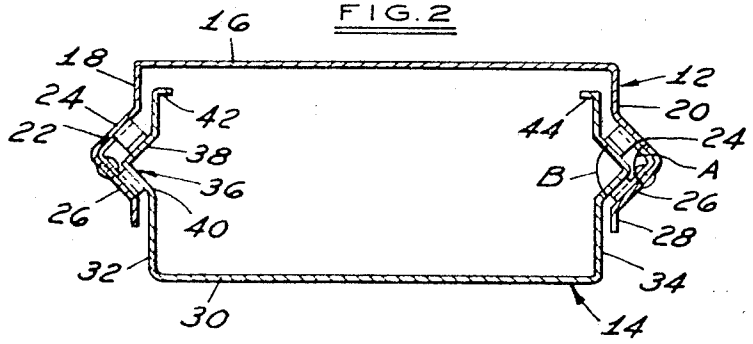


FIG. 4

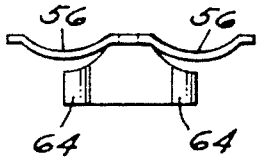


FIG. 5

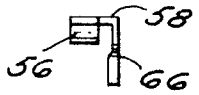


FIG. 6

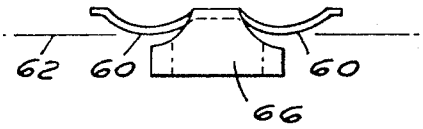


FIG. 7

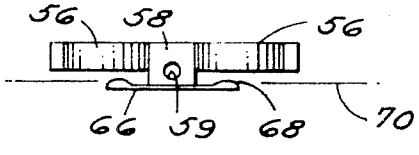
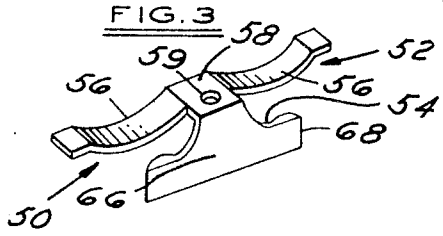


FIG. 3



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ASH TRAY

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U.S. Cl. 312—246 13 Claims

ABSTRACT OF THE DISCLOSURE

There is disclosed an ash receptacle or tray for installation within an automobile dashboard, including an ash receiving receptacle body or drawer slidable from a fully retracted and enclosed position within the dashboard to a fully open position forwardly of the dashboard. A housing is provided for attachment to the dashboard or other suitable support structure within the vehicle as is conventional in the art. The drawer is slidably received within the housing for withdrawal as the need arises.

The drawer has elongated guides or tracks on each side thereof. Each track comprises a bearing surface and a guide surface which are connected and are located approximately 90° apart. The housing is provided with a resilient tension element or tensioner, made from a plastic material, opposite each track. A single mounting element connects the tension element to the housing approximately midway between the ends thereof. Each tension element is provided with resilient bearing means and guide means which are in contact with the adjacent bearing surface and the guide surface respectively.

Specifically, each resilient tension element includes a pair of elongated cantileverly supported resilient arms interconnected on their inner ends and a pair of bearing protuberances. The resilient arms contact the corresponding bearing surface of the track and urge the drawer and in particular the bearing surface thereon into contact with the guide protuberances.

Background of the invention

Numerous designs for vehicle ash trays have been made in the past. An acceptable ash tray design must meet a number of requirements. One requirement is that the ash tray construction must be susceptible to low cost manufacture. Another is that the design should be compact so as to use a minimum amount of space in the vehicle. The ash tray design must be rugged to withstand the stress of years of use in a vehicle.

Further in drawer-type ash trays, the drawer element must be easily slidable inwardly and outwardly and it must be sufficiently restrained so that it will not move without the application of an external force applied thereto. The construction must be such that the drawer will not bind or jam and that it will be maintained in proper alignment at all times. Finally, the drawer must be easily removable to permit emptying thereof.

The present invention utilizes a minimum number of parts including the resilient tension elements made from a plastic material and combines all of the aforementioned qualities to an optimum degree.

Summary of the invention

The vehicle ash tray comprises a housing for fastening to a vehicle. A drawer for ashes is removably received in the housing. The drawer has an elongated track on each side thereof, each track comprising a bearing surface and a guide surface. The housing is provided with a resilient tension element or tensioner opposite each track. Each tension element includes resilient bearing means and guide means which are in contact with the adjacent bearing surface and guide surface respectively. Each bearing means comprises a pair of resilient arms connected on their inner ends and each guide means comprises a pair of guide protuberances. The resilient arms acting against the corresponding bearing surface urges the drawer against the guide protuberances to maintain the drawer in proper alignment in the housing.

In the drawings:

FIGURE 1 is a side elevational view of the ash tray in accordance with the present invention;

FIGURE 2 is a sectional view taken substantially along the line 2—2 of FIGURE 1 looking in the direction of the arrows;

FIGURE 3 is a perspective view of a resilient tension element;

FIGURE 4 is a front elevational view of the resilient tension element;

FIGURE 5 is a side elevational view of the resilient tension element;

FIGURE 6 is a rear elevational view of the resilient tension element;

FIGURE 7 is a bottom view of the resilient tension element.

FIGURE 1 illustrates a vehicle ash tray **10** comprising a housing **12** and a drawer or tray **14** which is removably received in the housing **12**. In use, the housing **12** is secured to a suitable panel or support structure in the vehicle, usually the vehicle dashboard.

The housing **12** is made from metal and comprises an upper plate-like portion **16** having downwardly directed side walls **18** and **20** on each side thereof. Each side wall **18** and **20** is provided, intermediate the edges thereof, with an outwardly extending longitudinally curved zone **22** of transverse V-shaped cross section. The zone **22** includes a downwardly and outwardly extending wall portion **24** and an inwardly and downwardly extending wall portion **26** as best illustrated in FIGURE 2. The wall portion **26** terminates in a flange portion **28**. Angle A between wall portions **24** and **26** is approximately 90° as shown in FIG. 2.

The drawer **14** is made from metal and includes a bottom **30** having upwardly extending walls **32** and **34**. Each wall **32** and **34** is provided with an outwardly extending longitudinally curved metal track **36** of substantially V-shaped cross section. Each track **36** comprises an upper downwardly and outwardly extending bearing surface **38** and a lower downwardly and inwardly extending guide surface **40**. The upper ends of the side walls **32** and **34** are provided with inwardly extending flanges **42** and **44** respectively. Angle B, between the bearing and guide surfaces **38** and **40**, is approximately 90° as illustrated in FIGURE 2.

FIGURES 3–7 inclusive illustrate the resilient tension element or tensioner **50**. The element **50** is made entirely from a self-lubricating material such as a plastic material, as an example from nylon. The element **50** comprises bearing means **52** and guide means **54**. The bearing means **52** are in the form of a pair of longitudinally aligned cantileverly supported resilient arms **56**. The adjacent and inner ends of the arms **56** are connected by a bridge or strap portion **58**. The outer ends of the arms **56** are unsupported and free. The arms **56** are provided with contacting surfaces **60** which are located in a plane **62**. The surfaces **60** contact the bearing surface **38** of the corresponding track **36** with a minimum of friction contact therebetween due to the small area of contact.

The guide means **54** of each tension element **50** comprises a pair of longitudinally spaced apart guide protuberances **64** which are located on a wall or flange **66** connected to the strap **58**. The flange **66** is located at one side of the resilient arms **56** as best illustrated in

FIGURES 3 and 7. The guide protuberances **64** are provided with contacting surfaces **68** which are located in a second plane **70**. Planes **62** and **70** intersect at approximately 90°. The strap **58** is provided with a mounting opening **59** which is centrally located midway between the ends of element **50**.

A pair of tension elements **50** are located in each tray **10**, with one element **50** opposite each track **36**. Each element **50** is connected to the housing **12** by means of a single rivet or fastener **72** which extends through the element **50** and the wall portion **24** as best illustrated in FIGURE 2. With such a construction the flange **66** abuts the wall portion **26** while the strap **58** abuts the other wall portion **24** as best illustrated in FIGURE 2.

Each tension element or tensioner **50** is formed or molded as a single and integral unit from a plastic material such as nylon or from other self-lubricating materials which are well known in the art. The tension element **50** is resilient whereby the arms **56** function as springs. With such a construction there is no requirement for metal springs, rollers, ball bearings, etc. as in prior art devices. Thus the plastic tension element or tensioner **50** performs the various functions previously performed by metal springs and plastic rollers in some prior art devices.

It should be noted that the contacting bearing and guide surfaces **60** and **68** of each element **50** have substantially line contact with the corresponding metal track surface thus minimizing friction contact therebetween and thereby insuring longer life and lower maintenance costs.

The drawer **14** when assembled in the housing **12** is held in proper alignment by means of the tensioners **50**. The resilient arms **56** exert a biasing force on the bearing surface **38** of the drawer **14** effective to hold the guide surface **36** of the drawer **14** in contact with the guide protuberance **64** and to thus insure proper alignment of the drawer **14** as it is moved with respect to housing **12** in the usual manner.

The drawings and the foregoing specification constitute a description of the improved ash tray in such full, clear, concise and exact terms as to enable any person skilled in the art to practice the invention, the scope of which is indicated by the appended claims.

What I claim as my invention is:

1. A vehicle ash tray comprising a housing for fastening same to a vehicle, a drawer for ashes removably received in said housing, an elongated track on each side of said housing, each track having a bearing surface and a guide surface, a resilient tension element connected to said housing opposite each track, each tension element having thereon resilient bearing means and guide means in contact with the adjacent bearing surface and guide surface respectively, said bearing means maintaining said drawer in contact with said guide means, said bearing means on each tension element comprising a pair of longitudinally aligned cantileverly supported resilient arms interconnected on their inner ends, said arms contacting the corresponding bearing surface.

2. The ash tray defined in claim **1** wherein said bearing surface and said guide surface of each track intersect and are located at an angle.

3. The ash tray defined in claim **2** wherein said angle is approximately 90°.

4. The ash tray defined in claim **1** wherein the bearing means on each tension element comprises a pair of longitudinally aligned cantileverly supported resilient arms interconnected on their inner ends, said arms contacting the corresponding bearing surface.

5. The ash tray defined in claim **1** wherein the guide means on each tension element comprises a pair of spaced apart guide protuberances which contact the corresponding guide surfaces.

6. The ash tray defined in claim **1**, wherein the bearing means on each tension element comprises a pair of longitudinally aligned cantileverly supported resilient arms interconnected on their inner ends, and the guide means on the same tension element comprising a pair of spaced apart guide protuberances, said resilient arms and guide protuberances contacting the corresponding bearing surface and the guide surface respectively, each pair of resilient arms including contacting surfaces which are located in a first plane, and each pair of guide protuberances including contacting surfaces which are loaded in a second plane which intersects said first plane at an angle.

7. The ash tray defined in claim **6** wherein said angle is approximately 90°.

8. The ash tray defined in claim **1** wherein each resilient tension element is connected to said housing by means of a single mounting element.

9. The ash tray defined in claim **8** wherein said single mounting element is centrally located between the ends of said resilient tension element.

10. A vehicle ash tray comprising a housing for fastening same to a vehicle, a drawer for ashes removably received in said housing, an elongated track on each side of said housing, each track having a bearing surface and a guide surface which intersect, a resilient tension element on said housing opposite each track, each tension element having thereon bearing means and guide means, said bearing means having a pair of cantileverly supported resilient arms interconnected on their inner ends, said arms having contacting surfaces which are located in a first plane, said guide means having thereon a pair of guide protuberances having contacting surfaces which are located in a second plane, said first and second planes intersecting at an angle, the contacting surfaces of said resilient arms and said guide protuberances being in contact with the adjacent bearing surface and guide surface respectively, said resilient arms maintaining said drawer in contact with said guide protuberances.

11. The ash tray defined in claim **10** wherein said angle is 90°.

12. The ash tray defined in claim **11** wherein a single mounting element is provided for each tension element, said mounting element being located midway between the ends of said tension element.

13. The ash tray defined in claim **12** wherein each resilient tension element is made from a plastic material.

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U.S. Cl. X.R.

206—19; 312—242