Feb. 20, 1934. H. HORLDT 1,947,524

SELF ALIGNING DOOR BUMPER

Filed July 8, 1932

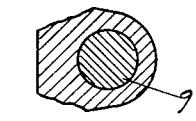


FIG. 3.

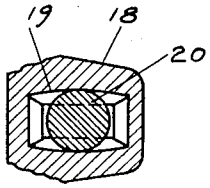


FIG. 4.

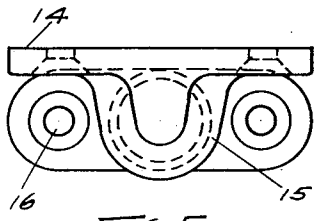


FIG. 5.

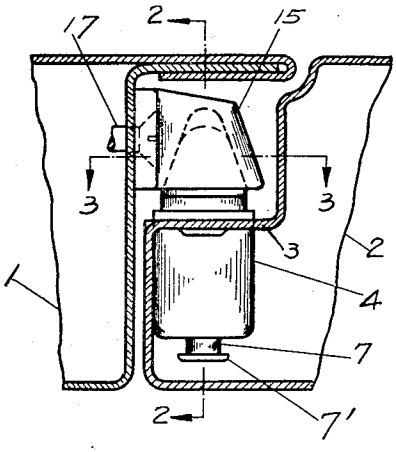


FIG. 1.

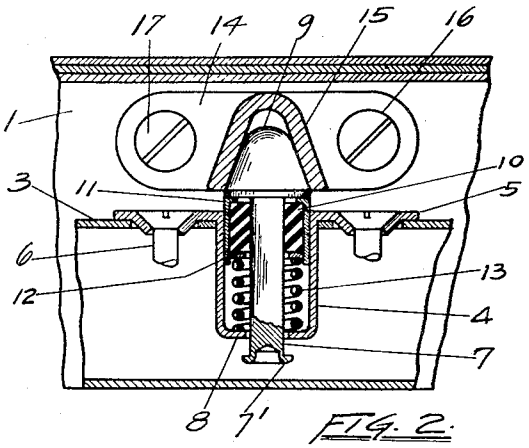


FIG. 2.

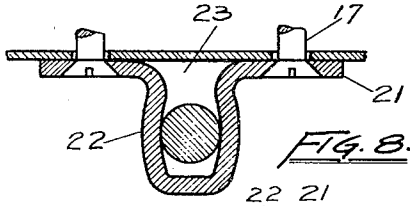


FIG. 8.

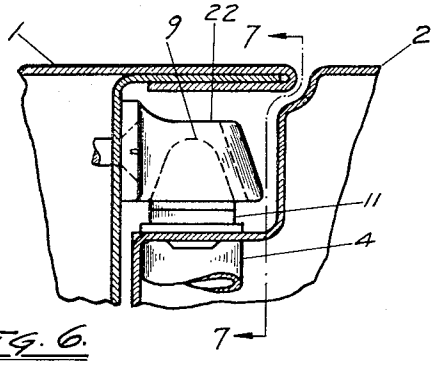


FIG. 6.

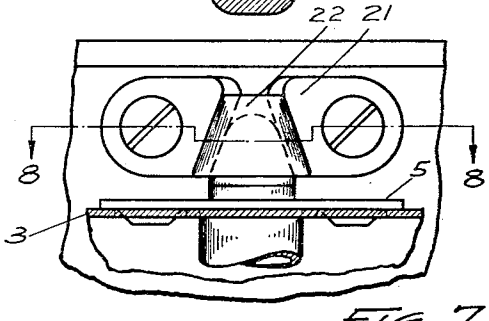


FIG. 7.

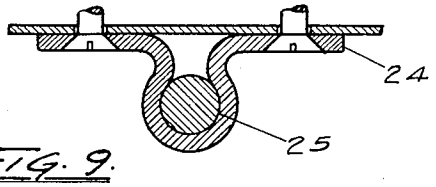


FIG. 9.

INVENTOR

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UNITED STATES PATENT OFFICE

1,947,524

SELF-ALIGNING DOOR BUMPER

Henry Horldt, Detroit, Mich.

Application July 8, 1932. Serial No. 621,392

6 Claims. (Cl. 16—85)

The present invention pertains to a novel door bumper adapted particularly for motor vehicles. One of the objects of the invention is to provide such a bumper which automatically aligns itself in all directions, as distinguished from the usual bumper which aligns itself in only two directions. Another object of the invention is to develop a spring pressure within the bumper on closing of the door and to utilize this pressure to assist in the opening of the door on unlatching. The spring pressure also serves to prevent rattling when the door is closed.

A further object is to provide a simple device of this character, and one that requires no lubrication. In the accomplishment of these objects, the novel bumper comprises a plunger slidably guided in a cylinder and surrounded by a rubber ring which permits radial movement or alignment in all directions. Another part of the door carries a striker or socket member receiving an end of the plunger and bringing it into alignment. The plunger is further surrounded by a spring which is compressed on closing the door to furnish the spring pressure to open the door freely without sticking.

The invention will now be described in detail with reference to the accompanying drawing in which

Fig. 1 is a plan section of a door and post showing the device applied thereto in elevation;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is a section on the line 3—3 of Fig. 1;

Fig. 4 is a similar section of a modification;

Fig. 5 is an end view of the device;

Fig. 6 is a view corresponding to Fig. 1, showing the striker or socket member made of sheet metal;

Fig. 7 is a section on the line 7—7 of Fig. 6;

Fig. 8 is a section on the line 8—8 of Fig. 7; and

Fig. 9 is a similar section of another modification.

Like reference characters are employed to designate corresponding parts in the several figures.

In Figure 1 is shown a door 1 adapted to close against a pillar or post 2. These parts as shown are conventional in automobile construction, but it will be understood that the invention is applicable equally to other forms of hinged closures. The post has a sunken face 3 set back from the outer surface of the door and into this face is inserted a metal cylinder 4. Apertured lugs 5 extend from the open end of the cylinder and lie on the face 3, enabling fastening of the cylinder to the post by screws 6 passed through the lugs as clearly shown in Figure 2. In the cylinder is mounted a plunger 7 passing through the bottom wall 8 of the cylinder and having its outer end peened over at 7 so that it cannot be again drawn into the cylinder. At the other end of the plunger is formed a conical head 9 having an included angle of sufficient size to prevent locking or sticking. Immediately below the head is a ring 10 of rubber or similar material and of sufficient size to assure proper action. The ring is enclosed in a ferrule 11, and the diameter is such that the ferrule has a sliding fit within the cylinder. A metal washer 12 is placed against the under side of the rubber ring, and a coil spring 13 is interposed between the washer and the bottom 8 of the cylinder. The tendency of the spring is to move the head 9 away from the stationary cylinder. Moreover, the spring tends to maintain the rubber permanently in a resilient condition and in snug engagement around the plunger 7.

A striker or socket member for receiving the head 9 is mounted on the door and this member consists of a metal part having a base 14 and a conical socket 15 formed thereon.

The base has apertures 16 through which are passed screws 17 attaching it to the door 1, holding the socket in substantial alignment with the plunger 7 and head 9.

In the operation of the device as thus far described, the closing of the door causes the socket 15 to receive the head 9 and place the spring 13 under pressure, the door being held closed by the usual lock which need not be illustrated herein. If the socket is originally out of axial alignment, the rubber ring 10 permits radial movement of the plunger and head in any direction as compelled by the socket after first receiving the point of the head. This is to be distinguished from the self-alignment in only two directions permitted by devices of prior construction. Upon releasing the above mentioned lock to open the door, the previously compressed spring 13 starts the opening movement since it lies substantially in the direction of opening.

Figure 4 shows a modified striker enabling alignment where there is an unusually large misalignment in the direction transverse of the door opening or from hinge to lock. In such case, the socket member 18 has its opening widened as at 19 in said direction to permit a wide variation of the head 20 in the transverse direction if necessary.

The sockets thus far described are optionally

die castings, but may also be stamped out of sheet metal if desired.

In Figures 6, 7 and 8 is shown such a stamped socket 21, wherein the striker part 22 is open at the base as indicated by the numeral 23. The striker part is also elongated along the width of the door, as clearly shown in Figure 8, permitting a wide variation in transverse direction as described in connection with Figure 4. In all cases, the conical angle of the head should be sufficiently large to avoid a wedge lock of the head in the socket. In Figure 9 the striker 24 is also a stamping and the striker part 25 thereof is more nearly circular, as in Figure 3. If desired, the striker may be mounted on the fixed pillar or post and the plunger in the movable part of the door structure.

The invention is not limited to the details of construction shown and described herein, but is determined by the scope of the annexed claims, as various modifications will suggest themselves to persons skilled in the art.

Having thus fully disclosed my invention I claim:

1. A self-aligning door bumper comprising a plunger adapted to be slidably guided in one of the relatively movable parts of a door structure, a striker adapted to be carried by the other part of the door structure to receive one end of said plunger, and a resilient ring surrounding said plunger within the first named part to permit radial shifting of said plunger in all directions.

2. A self-aligning door bumper comprising a plunger adapted to be slidably guided in one of the relatively movable parts of a door structure, resilient means tending to project said plunger out of said part, a striker adapted to be carried by the other part of the door structure to receive one end of said plunger, and a resilient ring surrounding said plunger within the first named part to permit radial shifting of said plunger in all directions.

3. A self-aligning door bumper comprising a plunger adapted to be slidably guided in one of the relatively movable parts of a door structure, resilient means tending to project said plunger out of said part, a striker adapted to be carried by the other part of the door structure to receive one end of said plunger, and a resilient ring surrounding said plunger within the first named part to permit radial shifting of said plunger in all directions, said plunger having a conical head and said striker having a conical socket for receiving said head.

4. A self-aligning door bumper comprising a plunger adapted to be slidably guided in one of the relatively movable parts of a door structure, a spring tending to project said plunger out of said part, a striker adapted to be carried by the other part of the door structure to receive one end of said plunger, and a resilient ring surrounding said plunger within the first named part to permit radial shifting of said plunger in all directions.

5. A self-aligning door bumper comprising a cylinder adapted to be mounted in one of the relatively movable parts of a door structure, a plunger slidable in said cylinder, a striker adapted to be carried by the other part of the door structure to receive one end of said plunger, and a resilient ring surrounding said plunger within the first named part to permit radial shifting of said plunger in all directions.

6. A self-aligning door bumper comprising a cylinder adapted to be mounted in one of the relatively movable parts of a door structure, a plunger slidable in said cylinder, resilient means tending to project said plunger out of said part, a striker adapted to be carried by the other part of the door structure to receive one end of said plunger, and a resilient ring surrounding said plunger within the first named part to permit radial shifting of said plunger in all directions.

HENRY HORLDT.