

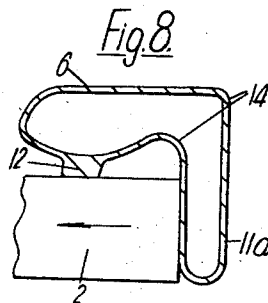
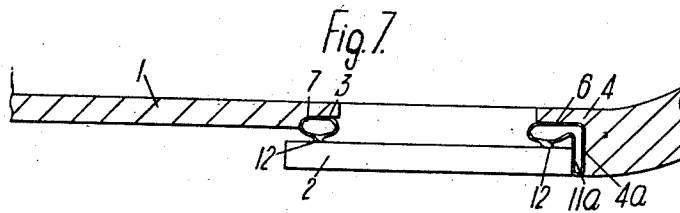
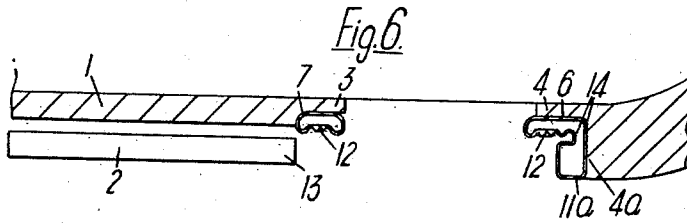
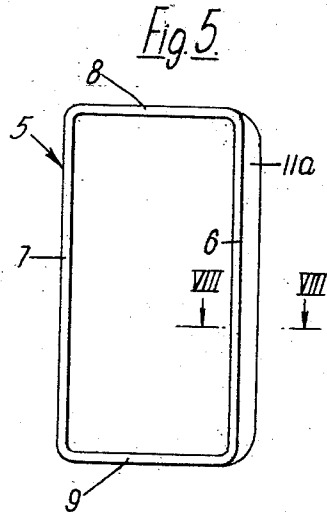
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SEAL FOR SLIDING DOOR

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2 Sheets-Sheet 2



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SEAL FOR SLIDING DOOR

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1 Claim. (Cl. 20—19)

This invention relates to the sealing of doors by resilient seal strips.

With slidable doors good sealing round the whole perimeter against passage of air through the junction between the closed door and the door surround presents difficulty, especially in vehicles, because if the seal strip constantly exerts a strong pressure the resulting friction causes difficulty in sliding the door, and causes wear of the seal strip. By the present invention these difficulties can be overcome.

The invention is applicable to doors in general, whether hinged or slidable, and is not restricted to vehicle doors, it has however more advantages when applied to slidable doors of vehicles.

A seal strip according to the invention may be on the door itself or laid round the edge of the opening to be closed by the door.

The scope of the invention is defined by the appended claims; how the invention may be performed is particularly described below with reference to the accompanying drawings, in which:

FIGURE 1 is an elevation of one form of seal strip;

FIGURE 2 is a transverse section through a slidable side door of a vehicle, showing a seal strip according to FIGURE 1 mounted in position, the door being open;

FIGURE 3 is a view similar to FIGURE 2, but with the door closed;

FIGURE 4 is an enlarged transverse section through the seal strip, on line IV—IV in FIGURE 1, at the moment when the door is beginning to open;

FIGURE 5 is an elevation of a second form of seal strip;

FIGURE 6 is a transverse section similar to FIGURE 2, but showing the second form of seal strip;

FIGURE 7 is a view similar to FIGURE 6, but showing the door closed;

FIGURE 8 is a section similar to FIGURE 4, but taken on the line VII—VIII in FIGURE 5.

Referring to FIGURES 1—4 of the drawings, a closed motor vehicle body 1 has a slidable side door 2 which is closed by sliding it forwardly of the vehicle and opened by sliding it rearwardly. Around the edge 3, 4, 4a surrounding the opening to be closed by the door 2 is laid a tubular seal strip 5 of resilient material, comprising forward and rear vertical runs 6, 7, and top and bottom horizontal runs 8, 9. To the vertical run 6 is attached, by a neck 10 an elongated sac 11 for inflating the seal strip. The seal surface 12 of the strip has a clearance from the door (see FIGURE 1) until the latter is quite shut. The sac 11 is laid against the surround part 4a so that it is opposite the adjacent edge 13 of the door 2, while the strip proper is at the side of the door and has a clearance inwardly thereof. The sac 11 and the seal surface 12 are at right angles as seen in section and are secured to the right-angled surround portions 4, 4a. In closing the door there is no contact between the seal surface 12 and the door until the forward edge 12 of the door strikes the sac 11, and by compressing it inflates the seal part of the strip 5 round the entire perimeter, thereby causing the seal surface 12 to press against the door 2 and make a seal (FIGURE 3). In moving the door from the shut position (FIGURE 3) towards the

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open position (FIGURE 2), the initial movement of the door causes the seal part 12 to roll sideways in the vertical lengths or runs 6, 7 thereof (see FIGURE 4), while at the top and bottom horizontal lengths 8, 9 the door slides over the seal surface 12 without difficulty. As soon as pressure of the door on the sac 11 is released the seal strip 5 deflates and the door opens easily, as the seal surface 12 then becomes spaced from the door.

A second embodiment according to the invention is shown in FIGURES 5—8, in this the strip 5 is mounted in a similar way to FIGURE 3 but differs in its own construction. This second form of strip has an elongated sac 11a extending from top to bottom of the forward vertical length 6 of strip 5. The sac 11a is attached to the body of the strip 5 along the entire length of the sac, by a portion 14 of narrower cross section than that of the sac. The way the arrangement works is exactly the same as in FIGURES 1—4: on sliding the door 2 forwardly against the elongated sac 11a, it compresses the sac and thereby causes the strip 5 to inflate and press the seal surface 12 against the inner surface of the door 2, thus making a seal.

In either embodiment strip 5 may either be endless, as shown in FIGURE 5, or it may have two closed ends which are abutted together, as indicated at 15 in FIGURE 1. The disposition of the sac 11 or 11a at right angles to the seal surface 12 may be secured by appropriately moulding the rubber or like resilient material of the strip; or alternatively it may be secured merely by the securing of the strip 5 and sac 11 or 11a to the body surround 4, 4a.

In each embodiment the sac 11 (or 11a) is shorter than the strip 5. In FIGURE 1—4 however, the sac 11 is shorter than the forward vertical length 6 of the strip; whereas in FIGURES 5—8 is of the same length as the forward vertical length 6.

I claim:

The combination comprising, a door frame having an opening therein and an abutting surface located generally normal to the plane of said opening, a door movable between opened and closed positions with respect to said opening in a plane located generally parallel to the plane of said opening and intersecting said abutting surface, a hollow tubular sealing strip mounted on said door frame adjacent said opening and located intermediate the plane of said opening and the plane of door movement and completely surrounding said opening, said door being located in overlapping relationship to said opening in the closed position thereof, an elongated hollow fluid containing compressible reservoir mounted on said abutting surface and including means engaged by the leading edge portion of said door upon movement thereof to said closed position, and means communicating said reservoir with said strip, engagement of the leading edge portion of said door with said reservoir compressing said reservoir and forcing the fluid contained therein into said strip to expand said strip transversely of the plane of said opening and into engagement with a portion of said door overlapping said opening to provide a seal between said door frame and said door.

References Cited in the file of this patent

UNITED STATES PATENTS

647,379 Davis _____ Apr. 10, 1900

FOREIGN PATENTS

403,097 Great Britain _____ Dec. 5, 1933

986,854 France _____ Apr. 4, 1951

729,980 Great Britain _____ May 11, 1955