

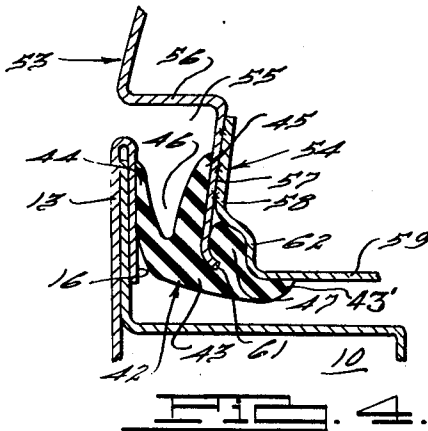
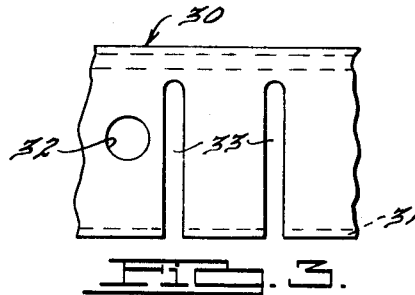
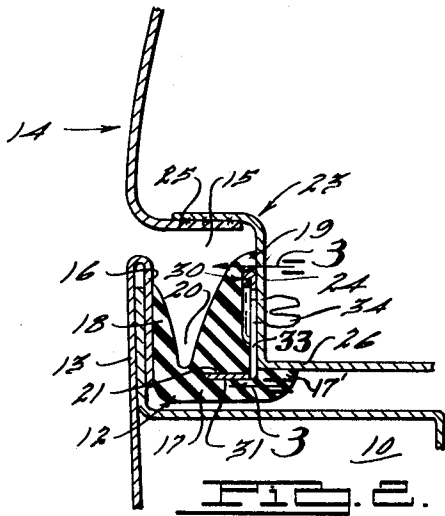
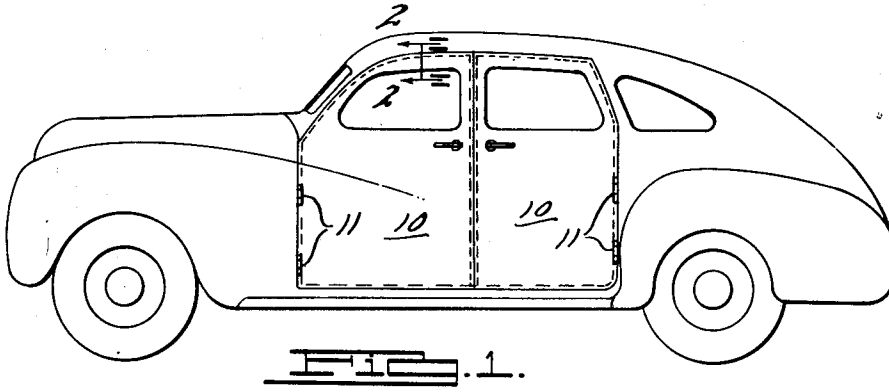
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DOOR SEAL CONSTRUCTION

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DOOR SEAL CONSTRUCTION

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This invention relates to closure seals and has particular reference to motor vehicle door constructions wherein a unitary combination door seal and drip molding assembly is mounted within the door jamb recess. The combination door seal and drip molding assemblies herein disclosed are designed so that they provide an efficient, durable seal that effectively cushions the closing of the door and eliminates the possibility of rattles between the door and its surrounding framework, insure a substantially airtight seal along the joint between the body and the door, prevent drainage of moisture into the sealing joint, improve the appearance of the door and the surrounding body structure by removing from view the unsightly, conventional, outwardly projecting, drip molding, eliminate the drip molding as a source of noise resulting from wind resistance as well as interference with the air flow about the door and the associated body structure and combine the drip molding and door seal into a single preformed, resilient member which may be easily and economically manufactured and installed.

In the past it has been common practice to mount the door frame drip molding along certain portions of the joint between the door and the surrounding body structure in such a manner that the molding projects outwardly from the body structure and forms a cupped roof over the sealing joint between the door and the surrounding door jamb. Due to the outwardly projecting position of the cupped, drip molding it has been the source of noise due to wind resistance and interference with the air flow about the door. Furthermore, the outwardly projecting molding mars the appearance of the vehicle body due to the fact that it interrupts the smooth body lines where the body structure flows into the door structure. The door jamb constructions herein disclosed are designed to remedy the disadvantages of the outwardly projecting drip molding and to improve door jamb constructions in general.

It is a primary object of this invention to provide a door jamb construction wherein the door seal and drip molding are combined into a single element which is arranged within the door jamb recess to thereby improve the appearance of the sealing joint, prevent noise due to wind resistance, eliminate a source of interference with the air flow about the body and door structure and materially reduce the cost of manufacture and installation of the door seal assembly.

It is a further object of this invention to

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provide a recessed door jamb construction including a combination drip molding and door seal wherein the drip molding is positioned so as to prevent drainage of moisture into the sealing joint between the door and the jamb, the molding being so located that it can not become a possible source of noise due to wind resistance or air flow interference.

It is an additional object of this invention to provide a combination door seal and drip molding of simplified form which is economical to manufacture and install, highly efficient in operation, lends itself to improving the appearance of the door assembly on which it is mounted, and removes a possible source of noise due to wind resistance and interference with the air flow around the door assembly.

It is an additional object of this invention to provide a resilient sealing strip formed in such a manner that it also constitutes a drip molding for the sealing joint.

It is a further object of this invention to provide a combination drip molding, door cushioning and weathersealing strip which is adapted to be detachably connected within the door jamb recess.

It is a further object of this invention to provide an efficient, inexpensive combination door seal and drip molding that lends itself to low cost production and installation.

It is a further object of this invention to provide an improved, simplified, low cost, combination sealing strip and drip molding which lends itself to easy, cheap replacement in the event it becomes worn or otherwise impaired.

Other objects and advantages of this invention will become apparent from the following description of my improved constructions when considered in conjunction with the drawings in which:

Fig. 1 is a side view of an automobile equipped with a combination door cushioning and sealing means constructed in accordance with my invention;

Fig. 2 is an enlarged sectional elevational view taken along the line 2—2 of Fig. 1, indicating the position of the combination door seal and drip molding after closing of the door;

Fig. 3 is a fragmentary side elevational view of the anchor plate for the spring clip attaching means associated with the sealing strip, this view being taken looking in the direction of the arrows 3—3 of Fig. 2; and

Fig. 4 is an enlarged, sectional, elevational view of a modified form of combination door seal

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and drip molding wherein the base portion of the strip includes an integral formation adapted to provide means whereby the seal may be readily and economically mounted on its supporting framework.

Each door 10, supported on the usual hinges 11, is provided with a combination drip molding and weather sealing strip 12. The sealing strip 12 is adapted to be mounted on the door jamb 23 so as to sealingly engage the side edges of the door. The vehicle body 14 is formed with a depressed door jamb 23 providing a continuous marginal recess 15 adapted to receive the door flange 13 and the combination drip molding and sealing strip 12. The depressed door jamb 23 includes an inwardly extending wall portion 25 from which a substantially vertically extending wall 24 and another inwardly extending wall or flange 26 depend. This recessed door jamb construction is preferably designed so that the outside surface of the door will be flush with the outside surface of the vehicle body 14 when the door is closed. In the past it has been common practice to mount the conventional drip molding outside the door jamb recess, above the upwardly facing edges of the door, to prevent drainage of moisture into the sealing joint between the door and the door jamb. Such an arrangement caused the drip molding to project beyond the outside surface of the vehicle body and to thus constitute a possible source of noise due to wind resistance and interference with the air flow around the vehicle body. This invention provides means whereby the drip molding may be mounted within the door jamb recess so that it prevents drainage of moisture into the sealing joint but still does not project beyond the outside surface of the vehicle body so as to create noise or mar the appearance of the vehicle body.

The sealing strip 12 will ordinarily be provided around the entire periphery of the door, the continuity of the strip being indicated by the dashed lines in Fig. 1. The strip 12 is preferably of molded or extruded rubber, or some similar resilient material, and can be formed with an outer skin on its exposed surfaces to improve its wearing characteristics. The sealing strip 12 is intended to be cemented or otherwise suitably anchored to the recessed, depending, substantially vertical wall 25 and to the inwardly extending wall 26 of the door jamb 23.

The spring clip attaching means 30-34 shown in Figs. 2 and 3, and the wall engaged attaching formation 47 shown in Fig. 4, will be subsequently described in detail.

The sealing strip 12 (shown in Fig. 2) is formed in cross section so that it provides a base portion 17 from which two legs 18 and 19 divergingly project. A substantially V-shaped channel 20 is formed between the diverging legs 18 and 19 and this channel constitutes the gutter portion of the combination drip molding and door seal 12. Channel 20 is so located that it collects all moisture draining into the door jamb recess 15 and conducts this moisture to the side edges of the door where it can freely drain out of the door jamb recess. The exteriorly exposed leg 18 of the sealing strip 12 provides a cantilever-type sealing leg which is adapted to be bent into sealing engagement with the inside face 16 of the door marginal flange 13 when the door is moved to closed position. Normally the sealing leg 18 extends outwardly at an obtuse angle with the base portion 17 and when the door flange 13 is swung into closed position within the door jamb

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recess 15 then the sealing leg 18 is flexed or bent into sealing engagement with the inside face 16 of the door flange 13. This tensioning of the sealing leg 18 against the door flange 13 provides a soft door closing action, insures a tight seal regardless of variations in clearance between the door jamb 23 and the door flange 13, and keeps wear of the seal to a minimum. It will be noted that the usual compressive action of the conventional door seal on door closing action has been replaced with bending stress in the sealing leg 18 which action is considerably less detrimental to the seal and its anchoring means.

The inwardly disposed leg 19 of the seal 12 provides a seal anchoring portion which is adapted to be connected to the wall 24 of the door jamb 23. Leg 19 includes a slot 21 adapted to receive a flange portion 31 of the spring clip anchor plate 30. Flange 31 is cemented or otherwise suitably mounted within slot 21. The anchor plate 30, which is mounted in a depression in the leg 19 of seal 12, includes openings 32 adapted to receive spring clip connecting studs 34 or the like. Plate 30 also includes slots 33 to increase its flexibility. The vertical wall 24 of the door jamb 23 is formed with a series of openings aligned with the openings 32 in the plate 30 so that the studs 34 can be extended through the aligned openings to thus detachably mount the sealing strip 12 on the wall 24 of door jamb 23. The inner, normally unexposed, sides of the leg 19 and the attaching portion 17 of base portion 17 of strip 12 may also be coated with some form of cement to more permanently connect the seal 12 to the door jamb 23. It is obvious that the spring clip attaching means 34 provides an efficient detachable mounting means that permits ready replacement of the combination drip molding and sealing strip in the event the strip should become worn or otherwise impaired.

While the molding strip 12 is completely within the door jamb recess 15, still, it is so located that its gutter portion 20 extends along the outer edge of the door jamb recess so that it will catch all moisture draining into the door jamb recess from the outer body surfaces. Accordingly, the sealing joint between the leg 18 and door flange 13 is protected from draining rain, snow, ice, and the like. With the drip molding positioned within the door jamb recess as shown, the molding still performs its intended functions but it is so located that it can not be a possible source of noise or air flow interference, nor will it mar the smooth outer contour of the surrounding vehicle body. By positioning the drip molding within the door jamb recess a cheaper installation is possible for less care need be exercised in installing and painting the drip molding due to the fact that the molding is substantially hidden from view by the door flange 13 when the door is in a closed position. This feature is of importance when considering the mass production of motor vehicles requiring door seals and drip moldings of the type herein described. Furthermore, the sealing connection between the leg and the door flange face 16 is concealed beneath the outwardly projecting sealing leg 18 and this protects it from the elements.

Fig. 4 shows a modified form of the invention wherein a combination door seal and drip molding 42 is mounted within the door jamb recess 55. In this form of the invention the seal 42 comprises a base portion 43 from which leg portions 44 and 45 divergingly project. A substantially V-shaped channel 46 is formed be-

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tween the diverging legs 44 and 45 and this channel-like formation constitutes the gutter portion of the combination drip molding and weather seal 42. Normally the sealing leg portion 44 extends outwardly from the base portion 43 at an obtuse angle. When the door is swung to closed position the inner face 16 of the door marginal flange 13 engages the exterior side of the outwardly projecting sealing leg 44 and bends the leg 44 inwardly so that a substantially airtight seal is developed between the side of cantilever sealing leg 44 and the face 16 of door flange 13.

The vehicle body 53 includes the depressed door jamb 54. Door jamb 54 is defined by the inwardly extending wall 56, the depending, substantially vertically extending, contiguous walls 57 and 58 respectively, and the inwardly extending wall or flange 59.

Sealing strip 42 is adapted to be mounted on the door jamb 54 by means of the finger-like projection 47 formed on the attaching portion 43' of base portion 43 of the seal 42. The depending free end 61 of door jamb wall 57 is adapted to be bent about the projection 47 on the sealing strip 42 so as to fasten the sealing strip to the door jamb. A preformed seat portion 62 may be pressed into the door jamb wall portion 58 to cooperate with the wall portion 61 in securely anchoring the sealing strip 42 to the door jamb 54. It may also be desirable to coat the inner, normally unexposed face of seal leg 45 with some form of cement to securely fasten this leg of the seal to the outer side of door jamb wall 57.

In this second form of the invention the sealing strip 42 is a simple, resilient, element that can be readily formed by the usual molding or extrusion processes. The door jamb is of standard construction and can be easily stamped in such a manner as to provide fastening means adapted to cooperate with the finger-like projection 47 on the sealing strip. Accordingly, this form of the invention provides a combination door seal and drip molding adapted to be mounted within the door jamb recess with a minimum expenditure of time, labor and expense.

While both forms of the invention have been shown with the sealing strip mounted on the door jamb, obviously it is within the scope of this invention to mount the sealing strip on the side edges of the door and have the cantilever sealing portions sealingly engage the wall portions of the door jamb.

I claim:

1. A combination weather sealing and drip molding strip formed from resilient material comprising a base portion, a pair of diverging leg portions projecting from said base portion in such a manner as to provide a longitudinally extending substantially V-shaped drainage channel between said leg portions, one of said leg portions normally extending at an obtuse angle with said base portion and providing a cantilever-type sealing leg adapted to be bent into sealing engagement with a surface positioned adjacent the outer face of said sealing leg, the other leg portion being adapted to be mounted on a supporting framework, an integral attaching portion on said base portion extending normal to said other leg portion and an integral finger-like portion projecting from said attach-

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ing portion adapted to be connected to mating portions of the supporting framework.

2. A combination weather seal and drip molding adapted to be mounted within a frame member recess comprising a resilient strip formed in cross section to provide a longitudinally extending, substantially V-shaped drainage channel, one leg of the channel formation projecting outwardly in such a manner as to constitute a cantilever-type, sealing member, and an integral attaching portion extending normal to the other leg of the channel having a finger-like protrusion adjacent the other leg of said channel formation providing means adapted to be engaged with the frame member on which the strip is to be mounted.

3. A resilient, combination weather sealing and drip molding strip, said strip being formed in cross section to provide a longitudinally extending, drainage channel, one side of the channel formation including an outwardly projecting portion providing a cantilever-type, sealing member, the other side of said channel formation being adapted to be mounted against a supporting frame member, and a finger-like protrusion extending from said seal adjacent said other leg of said channel formation providing means adapted to be positively engaged with preformed portions of the frame member on which the strip is adapted to be mounted.

4. In an automobile body, a door frame member having a jamb portion formed with an inwardly extending wall and a depending substantially vertical wall, said vertical wall having an inwardly extending flange at the free edge thereof providing a pair of right angularly disposed seal supporting surfaces, a combination drip molding and weather sealing strip formed from resilient material and mounted within said recess to extend along the right angularly disposed seal supporting surfaces of said jamb, said strip being formed in cross section to provide a longitudinally extending, outwardly projecting, cantilever-type, sealing leg, a longitudinally extending, substantially V-shaped, drainage channel, and an L-shaped strip attaching leg portion adapted to be mounted on said right angularly disposed surfaces of said door jamb, integrally formed, finger-like projections extending from said strip attaching portion connectible to mating formations on said seal attaching surfaces, and a door member swingably mounted on said frame member, said door member including a marginal flange portion adapted to be engaged with said sealing leg when said door is swung to closed position.

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