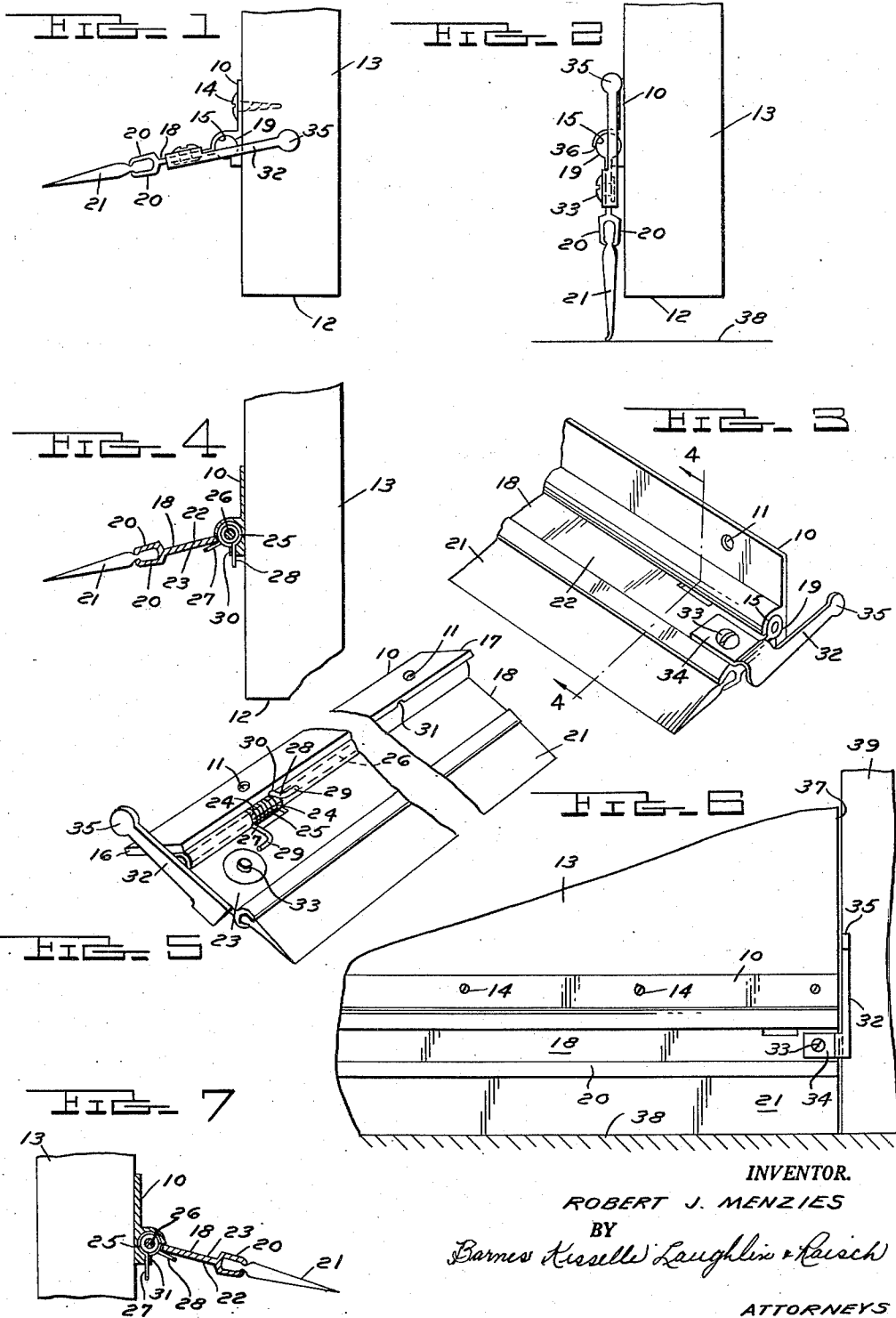


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DOOR SEAL STRUCTURE
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DOOR SEAL STRUCTURE

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6 Claims. (Cl. 20—67)

This invention relates to a device for sealing a crack at one edge of a door and is especially adapted for sealing the crack between the bottom edge of a door and a subjacent floor surface.

An object of the invention is to provide an inexpensive door seal structure of improved operation and simplicity which is adapted for use on doors opening either to the right or to the left. In accordance with the invention a seal strip and an attachment strip are hinged together by a roll-formed hollow bead engaged within an elongate recess with a spring supported by a pintle fixed within the hollow of the bead biasing the seal strip toward open position. The seal strip and spring positions are reversible for use on right and left hand doors. One form of the invention is shown in the accompanying drawings:

Fig. 1 is a partly diagrammatic end elevational view of a seal according to this invention in open position on a door opening to the left.

Fig. 2 is similar to Fig. 1 showing the seal in closed position.

Fig. 3 is a perspective view of the striker end of the seal separate from a door.

Fig. 4 is a sectional view on line 4—4 of Fig. 3 with door 13 attached thereto.

Fig. 5 is a generally perspective view of the seal separate from a door showing structure at the reverse side.

Fig. 6 is a partly diagrammatic, front elevational view of the seal in sealed position on a door.

Fig. 7 is similar to Fig. 4 but illustrating the relation of the parts when mounted for use on a door opening to the right.

The device shown in the drawings has an elongate attachment strip 10 apertured as at 11 for being secured adjacent the lower edge 12 of a door 13 by such means as screws 14. The attachment strip preferably comprises an extrusion and has an elongate longitudinal recessed portion 15 preferably extending between the ends 16 and 17 thereof. An elongate seal strip 18 also comprising an extrusion has a longitudinally extending, hollow, cylindrical, coterminous bead 19 along one edge and its other edge is bifurcated to form jaws 20 squeezed together to grip a flexible seal element 21 which may be made of a natural or synthetic rubber or a plastic material. Bead 19 is extruded in open or bifurcate form and is then rolled to closed cylindrical form. Strip 18 has opposite side surfaces or faces 22 and 23.

Bead 19 is interrupted adjacent one end to form an opening 24. A coil spring 25 is rotatably positioned in opening 24 by a pintle 26 projecting axially therethrough and fixed into adjacent portions of the hollow bead (Fig. 5). The end portions 27 and 28 of the spring project generally radially outwardly of bead 19 and the extremities thereof may be turned to provide finger holds 29. Attachment strip 10 is provided with notches 30 and 31 for engagement with the end portions of spring 25 for a purpose to be described.

A striker 32 is mounted at one end of seal strip 18 as by a bolt 33 transfixing a bracket portion 34 of the striker and strip 18. The striker has an end portion 35 spaced from the end of strip 18 and projecting laterally outwardly of bead 19.

The attachment strip and seal strip are assembled for use on a door which opens toward the left as illustrated in Figs. 1 through 6 by slidably engaging bead 19 within recess 15 with legs 27 and 28 of spring 25 pressed toward each other to pass end 16 of strip 10. The legs are then released so that leg 27 engages against face 23 of strip 18 and so that leg 28 snaps into recess 30, forming a detent releasably locking the strips in position. Bead 19 is rotatable in recess 15 to provide a hinged connection between the strips. The spring is angularly or rotationally stressed for biasing the strips toward angled position relatively to each other and a shoulder 36 (Fig. 2) defining one edge of recess 15 provides a stop which limits the hinging action of the members.

In use, attachment strip 10 is secured adjacent the bottom edge 12 of a door 13 by screws 14 with striker 32 spaced outwardly from the edge 37 of the door opposite the door hinges (not shown). When the door is open, the seal is in the open position shown in Figs. 1 and 4 with strips 10 and 18 angled to each other so that flexible seal element 21 is elevated above floor 38 beneath the door. When the door is closed the end portion 35 of the striker engages the door jamb or frame member 39 adjacent edge 37 of the door and is forced in a counterclockwise direction as Figs. 1 and 2 are viewed, hinging strip 18 on strip 10 to lower seal element 21 into sealing contact with the floor, thereby closing the crack between door 13 and the floor. When the door is opened, end 35 of the striker disengages door frame or jamb 39 and seal strip 18 and seal element 21 return to open position under the action of spring 25.

To arrange the device for use on a door opening toward the right, spring 25 is rotated and seal strip 18 is reversed end for end so that leg 28 of the spring engages face 22 of the seal strip and leg 27 engages in notch 31 as shown in Fig. 7. The parts thus assembled are secured adjacent the bottom of door 13 as described above with striker 35 disposed outwardly of the left hand edge of the door. The seal operates as described above except that striker end 35 engages the door jamb adjacent the left edge of the door. The device may be switched for right and left hand use by merely depressing a leg of the spring out of engagement with its cooperating notch, slidably disengaging strips 10 and 18, reversing the spring rotatively and the strips longitudinally and reassembling the parts.

The roll-formed hollow bead 19 provides both a hinge pin and a simple, inexpensive mount for pintle 26 and spring 25. The reversibility of the strips and spring facilitates convenient use and minimizes the number of parts required for adapting to right and left hand opening doors, thereby further reducing the cost of the seal.

I claim:

1. A seal for closing the crack between an edge of a door and one of a plurality of members defining a doorway comprising, a first elongate strip adapted to be secured adjacent an edge of the door, a second elongate strip, seal means on said second strip, one of said strips having an open portion rolled to form a hollow generally cylindrical bead, the other strip having a generally cylindrical recess therein, said bead and recess being generally coterminous with their respective strips, said bead and recess being rotatably interengaged to form a hinge between said strips to facilitate swinging said second strip to closed position with said seal means overlying the crack between the door and an adjacent doorway-defining member and to open

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position, said bead being interrupted to form an opening adjacent one end, a helical spring, a pintle projecting axially through said spring, said pintle being fixed in the hollow in said bead with said spring disposed in said opening therein, said spring having generally radially projecting ends disposed at an angle to each other when said spring is in unstressed condition, said ends of said spring engaging one face of said second strip and engaging said first strip when said seal is in assembled condition, said spring being rotationally stressed in said assembled condition to bias said second strip toward open position, a striker on said second strip positioned for engaging another doorway-defining member for swinging said seal means to said closed position, said bead and recess being slidably disengageable and axially reversible and said spring being freely rotatable on said pintle to engage opposite ends thereof against opposite faces of said second strip in relatively reversed position of said strips, whereby to adapt said seal for use on door hinged on opposite sides, and like means adjacent each end of said first strip cooperable with an end of said spring to form a detent releasably locking said strips against relative sliding movement.

2. The seal defined in claim 1 wherein said like means at each end of said first strip comprises a notch for receiving an end of said spring.

3. A seal for closing the crack between an edge of a door and one of a plurality of members defining a doorway comprising, a first element adapted to be secured adjacent an edge of a door, a second element with seal means thereon, hinge means securing said elements together so that said seal means can be swung to and from sealing engagement with a member defining a doorway, said hinge means including a bead on one of said elements and means forming a bearing on the other element, said bead being rotatable in said bearing, said bead and bearing being generally coextensive with the length of said elements, said elements having generally equal lengths, a coil spring adjacent an end of one of said elements, said spring having generally radially extending end portions each contacting a side of one of said elements with said spring being stressed to urge said seal means out of engagement with a member defining a doorway, said bead and bearing being slidably disengageable and being reversible end for end relatively to each other, said coil spring being freely rotatable on said one element to position said end portions thereof against opposite sides of said one element selectively according to the relative endwise positioning of said elements, whereby to adapt said seal selectively for use on doors hinged on opposite sides, and means on said seal operable responsively to closing movement of a door on which seal is mounted to swing said seal means into sealing position against the action of said coil spring, said bearing

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being provided adjacent each end with a recess, said recess being positioned to receive one of said end portions of said coil spring when said elements are in assembled condition, said recess and end portions being arranged to form a detent releasably securing said elements together.

4. A seal structure for closing the crack between a door and a doorway defining member comprising, a pair of elongate strips, one of which is adapted to be secured generally adjacent an edge of a door and the other of which has means thereon forming a seal, means on said strips cooperating to form a hinged connection so that when said one strip is secured to a door the other strip can be swung relatively thereto for swinging said seal to and from sealing position, said other strip having means generally adjacent one end forming a striker for engaging a stationary member adjacent a door on which said seal structure is mounted for swinging said seal toward sealing position, said hinged connection being connectable in reversed end for end positions of said strips relatively to each other to facilitate selective use of said seal structure on doors hinged at opposite sides, said strips having side portions which are in apposed relation when said strips are interhinged, spring means having projecting portions which engage the apposed side portions of said strips and bias said other strip away from said sealing position, said spring means being mounted so that said projecting portions can be swung selectively to positions adjacent the opposite side portions of said other strip, whereby to position said projecting portions for operatively engaging said apposed side portions of said strips in either end for end relative position thereof, and means on said one strip cooperating with said projecting portions of the said spring means to form a detent releasably securing said strips in interhinged relation.

5. The seal structure defined in claim 4 wherein said one strip has recessed means into which said projecting portions of said spring means engage to form said releasable detent.

6. The seal structure defined in claim 4 wherein said spring means is disposed generally adjacent one end of said other strip and said one strip has a recess generally adjacent each end into which one of said projecting portions engages to form said releasable detent.

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