

No. 651,009.

Patented June 5, 1900.

B. ERLANDSON.
AUTOMATIC WEATHER STRIP FOR DOORS.

(Application filed Feb. 28, 1900.)

(No Model.)

Fig. 1.

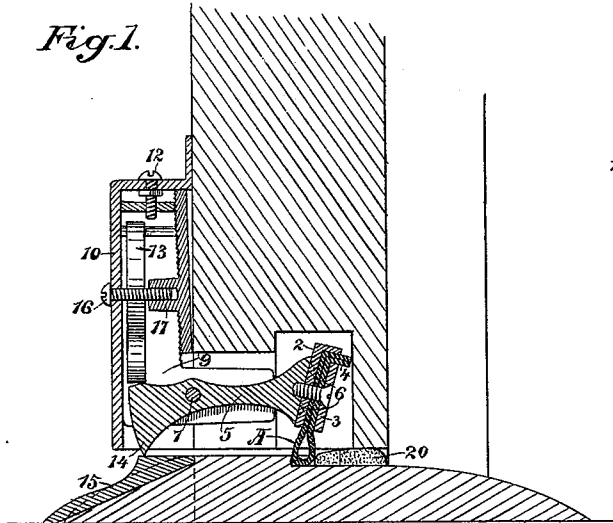


Fig. 2.

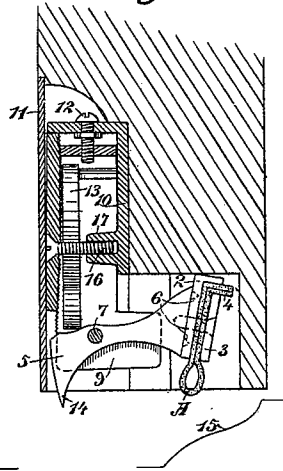


Fig. 3.

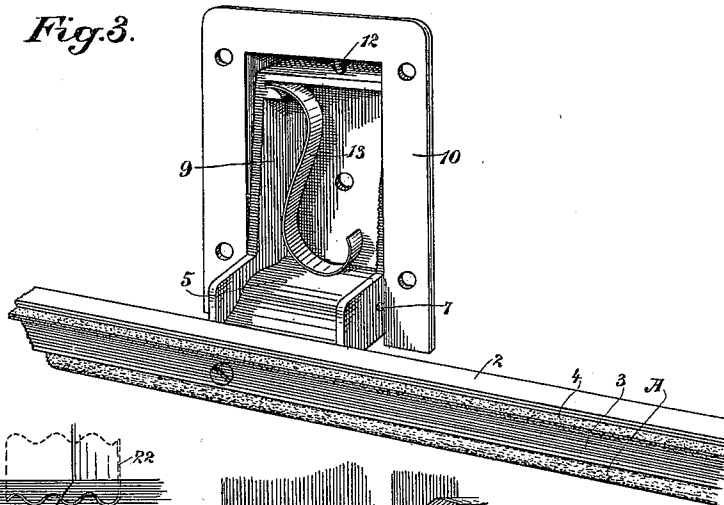


Fig. 4.

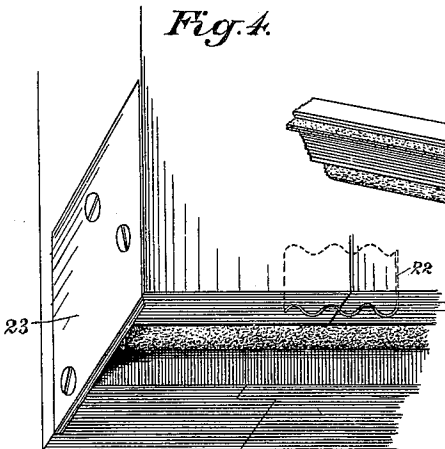
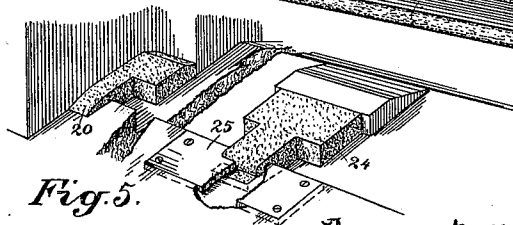


Fig. 5.



Witnesses,
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UNITED STATES PATENT OFFICE.

BERGER ERLANDSON, OF SAN FRANCISCO, CALIFORNIA.

AUTOMATIC WEATHER-STRIP FOR DOORS.

SPECIFICATION forming part of Letters Patent No. 651,009, dated June 5, 1900.

Application filed February 28, 1900. Serial No. 6,840. (No model.)

To all whom it may concern:

Be it known that I, BERGER ERLANDSON, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Automatic Weather-Strips for Doors; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a device for closing and sealing the space at the bottoms of doors and the like.

It consists of a sealing-strip adapted to close against the sill or surface below the door or window, a lever by which said strip is carried, and mechanism by which it is automatically actuated to depress the strip and make a tight joint when the door is closed and to allow it to rise clear of its seat when the door is opened.

It also comprises details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a transverse vertical section through the bottom of a door, showing the casing containing the operating device on the outside. Fig. 2 is a similar view showing the casing inserted into the door. Fig. 3 is a detached view of the casing and its connections. Fig. 4 is a corner on the bottom of the door. Fig. 5 is a view of the different stops used in connection with my weather-strip.

In devices for forming joints at the bottom of doors or windows which are exposed to the inrush of wind, rain, or snow it is desirable to form a tight joint at the instant when the door is closed and to relieve the friction of these sealing parts when the door is to be opened, so as to allow the latter to move freely and easily. It is also desirable to provide a means for adjusting the parts so that they can be made to compensate for any shrinkage in the door, its casing, or surrounding parts and which would otherwise produce a more or less inefficient seal.

It is the object of my invention to provide for such a seal and adjustments therefor. The sealing surface or edge may be made of any suitable or desired material. I have found that a sheet of rubber folded upon itself, so as to form a flexible and elastic bight, as shown at A, and means for holding it so

that it will extend across the entire width of the door or window opening, with means for raising it when the door is to be opened and depressing it when the door is closed, is a very effectual device. As here shown, the folded strip forms the hollow elastic tubular bight A, and the folded edges extend up between the two parts 2 and 3 of a bar, between which they are clamped by screws or otherwise, and the upper edges of the folded part are bent outwardly at right angles, as shown at 4. This is effected by making the part 2 of an L shape and the part 3 fitting against the longer vertical portion of the L and its edge abutting against the part which extends at right angles with the first-named portion, so that when the two parts are secured together the folded portion of the elastic strip extends between the part 3 and the longer vertical part of 2 and is thence turned at right angles by its compression between the upper extension of 2 and the upper edge of 3, as plainly shown in the drawings. This bar is mounted upon one end of a lever-arm 5, which is here shown as centrally located and having points, as shown at 6, which enter the bar 2 and a central hole for the screw, by which the bar is firmly drawn against the end of the lever 5. The points 6, entering the part 2, lock it firmly with relation to the lever 5 and prevent its turning or twisting out of position. Thus the single lever centrally located will ordinarily be sufficient to support the sealing device, which extends the full length of the bottom of the door from its central point of support. This lever-arm 5 is fulcrumed, as shown at 7, between the outwardly-projecting lugs 8 of a yoke or frame 9, which extends upwardly within an exterior casing or housing 10. This casing or housing may either be secured to project outside of the lower part of the door or it may be set into the bottom of the door, so as to lie flush therein and to be covered by an exterior plate 11. Within this casing the part 9 is vertically movable and is raised or lowered for the purpose of adjustment by means of a screw 12, so located as to be accessible from the top by the removal of the plate 11 when the casing is sunk into the door or directly when it lies upon the outside. The object of thus raising and lowering this yoke or carrier is to

adjust the apparatus to suit the size of the opening beneath the door and any shrinkage or alteration in the relative position of the threshold or seat and the bottom of the door.

5 Thus when the carrier 9 is raised it lifts with it the fulcrum 7 of the lever 5 and correspondingly raises the connected parts, and when depressed a like depression of these parts takes place.

10 In order to normally raise the bar carrying the sealing-strip A, I have shown a spring 13, the lower end of which is adapted to press upon the rear end of the lever 5, and the upper end is suitably fixed in the upper part of the carrier 9. One form of this spring and method of securing it is well shown in the drawings herewith; but it will be manifest that the character of the spring and its shape may be modified to suit conditions.

20 The lever-arm 5 has a downwardly-projecting point at the outer end, as shown at 14. This point is adapted to engage with the curved plate 15, which is fixed in the threshold of the door and in the line of movement of this lever, so that when the door is closed the point 14, moving over this plate, pushes up the inner end of the lever against the pressure of the spring 13, and thus depresses the flexible elastic tube A into contact with the threshold or surface beneath the door or like part, and it will thus prevent any air, rain, snow, or the like entering through this part. As the sealing-strip is fitted into a groove or channel in the bottom of the door, it will be seen that when it is thus depressed there will be a passage left over the top of the sealing-strip through which air would ordinarily find its way if the wind was blowing in that direction, and in order to prevent this the projecting edges 4 of the sealing-strip are so located with relation to the side of the channel in which the device operates that when the part A has been depressed upon the threshold the edge 4 will have moved in an arc of a circle (shown in dotted lines) which will bring it into contact with the side of the channel in which the sealing-strip is movable, and this forms a tight joint along the full width of that side, and thus prevents any entrance of air at that point. When the door is opened, the first movement allows the end 14 of the lever to follow the curvature of the plate 15, and the spring 13 acts to depress the lever and raise the sealing-strip A from the threshold, thus relieving all friction and allowing the door to swing freely.

In order to lock the yoke or frame 9 at any point of adjustment, I have shown a screw 16, passing through the side of the casing 10 and adapted to screw into a corresponding lug or seat 17. The edges of the yoke or frame 9 and the corresponding faces with which it is adapted to contact are preferably corrugated or notched, so that when the two parts are drawn together by the screw 16 they will be prevented from sliding upon each other, and thus locked in place. These edges may

also be inclined or wedge-shaped to make them interlock more firmly. 20 are recessed rubber blocks fitted into the angles of the door-opening to prevent any leakage at those points, and the sealing-strip forms a tight joint with these blocks when the door is closed. Similar blocks 24 are fitted at the center of the threshold when double doors are used to form a tight joint where the doors meet, and there is a suitable metal support 25 and protector for the elastic block, as shown. By making a channel in the bottom of the door to receive this sealing-strip the wood is weakened, and the joints between the vertical stiles and the bottom rail are strengthened by strips of corrugated steel 22, which are driven into the meeting edges, thus strengthening and binding them together. At the ends of the channel in the bottom rail are fitted metal plates 23, which lie flush and close the channel, also strengthening the door at this point.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a door, window, or the like, of a sealing device and closure for the opening at the bottom thereof, consisting of a clamping-bar standing on edge and carrying the sealing-strip, a centrally-fulcrumed lever, horizontally disposed and to one end of which the bar is rigidly attached, a plate with which the opposite end of the lever contacts when the door is closed, whereby the sealing-strip is forced into contact with the surface beneath.

2. A weather-strip for doors consisting of a bar movable in a channel made within the lower edge of the door, a centrally-fulcrumed lever projecting horizontally outward from the central portion of the bar and to one end of which said bar is fixed, and through which power is transmitted to raise or lower the bar, an elastic sealing-strip carried upon the lower edge of the bar, and a corresponding sealing-strip projecting from the side of the bar and adapted to form a closure against the inner surface of the channel when the bar has been depressed.

3. In a weather-strip for doors, a bar movable in a channel formed in the bottom of the door, and composed of two strips, with means for securing the two together, a horizontal inwardly-projecting lever having means engaging one of said plates to prevent its turning with relation to the lever, means for operating the lever and a flexible sealing-strip folded to form a tubular projection below the bar having the folded portions clamped between the two parts of the bar, with the upper edge turned at right angles and projecting from the side and adapted to form a closure against the side of the channel simultaneously with the sealing at the lower edge.

4. A weather-strip for doors consisting of a bar having an elastic sealing-strip secured thereto, a centrally-fulcrumed lever, and means for tilting the same, to one end of which

the bar is secured, said lever having projecting points adapted to enter the bar and prevent its turning with relation to the lever.

5 In a weather-strip for doors, a bar movable in a channel formed in the bottom of the door, an elastic sealing-strip carried by said bar and adapted to simultaneously close against the threshold and against one side of the channel, a centrally-fulcrumed lever, to one end of which the bar is fixed, a plate secured to the threshold against which the downwardly-projecting opposite end of the lever contacts when the door is closed whereby the sealing device is depressed, and a spring acting against the upper part of the outer end of the lever whereby the bar and sealing-strip are raised when the door begins to open.

6. In a weather-strip for doors, a bar fixed to a centrally-fulcrumed lever, said bar carrying a sealing-strip and movable up and down within a channel formed in the bottom of the door, a plate against which the outer end of the lever contacts to depress the seal when the door is closed, a spring acting against the lever to raise the seal when the door is opened and the lever retracted from the plate, and an adjustable carrier within which said spring is located.

7. A weather-strip for doors comprising a sealing-strip, bars upon which it is carried movable within a channel in the lower part of the door, a centrally-fulcrumed lever, to one end of which said bars are secured, a contact-plate by which the outer end of the lever is raised and the sealing-strip depressed when the door is closed, a spring located within a carrier and pressing upon the top of the outer end of said lever whereby it is tilted and the sealing-strip raised as soon as the door begins to open, and an exterior casing with adjusting and locking screw whereby the carrier and connected parts are raised or depressed and locked in place.

8. In a weather-strip for doors, a casing, a carrier and screws by which said carrier is raised or lowered within the casing and locked in place, a lever fulcrumed in the lower part of the carrier, and a spring located within the carrier and pressing upon the outer end of

the lever whereby it is normally depressed, a sealing-strip and bars by which it is carried, said bars being fixed to the inner end of the lever and vertically movable within a channel in the lower part of the door, a plate fixed in the threshold in the line of movement of the lever and adapted to engage the lower part of the outer end when the door is closed so as to raise this end and depress the sealing-strip.

9. In a weather-strip for doors, a bar movable in a channel formed in the bottom of a door, a flexible sealing-strip carried by said bar, mechanism by which the strip is raised or depressed to form a closure against the threshold and recessed elastic blocks fixed in the angles of the door-casing and the threshold with which said sealing-strips engage.

10. In a weather-strip for doors, a flexible sealing-strip carried thereby, mechanism by which the bar is supported and automatically raised and depressed when the door is opened or closed, a channel formed in the bottom of the door within which said bar is carried and movable, elastic recessed blocks fitted in the angles of the door-casing and threshold and at the meeting points of double doors, with which blocks the sealing-strips form joints when the door is closed.

11. In a weather-strip for doors, a fulcrumed tilting bar a flexible sealing-strip carried thereby, mechanism including a spring normally pressing upon the bar and a curved plate or surface, whereby the fulcrumed bar is raised when the door is opened and depressed when the door is closed, a channel formed in the bottom of the door and through one side thereof within which said bar is movable, metal plates forming closures to the ends of said channel and corrugated plates driven into the meeting ends of the stiles and bottom rails upon the sides of the channel.

In witness whereof I have hereunto set my hand.

BERGER ERLANDSON.

Witnesses:

S. H. NOURSE,
JESSIE C. BRODIE.