S. F. HASKELL.

WEATHER STRIP.

APPLICATION FILED APR. 22, 1908.

926,409. Patented June 29, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

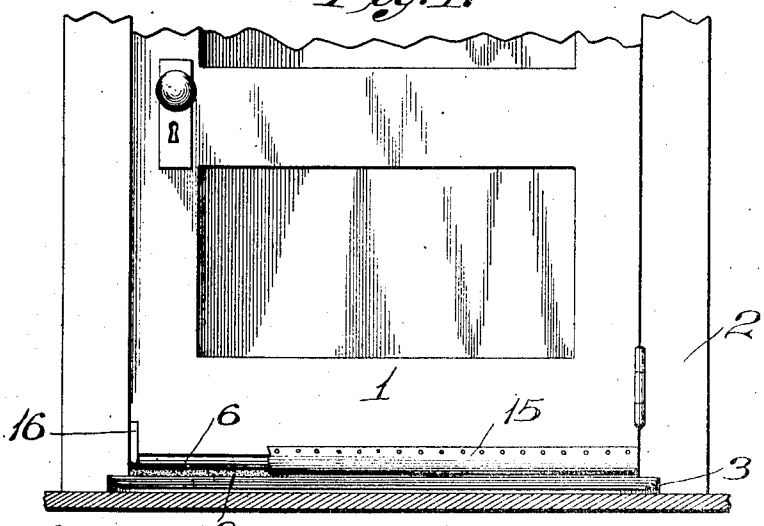


Fig. 2.

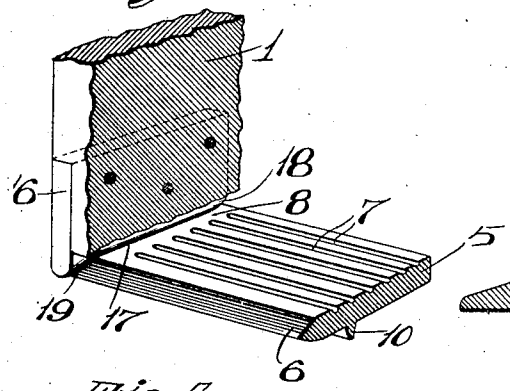


Fig. 3.

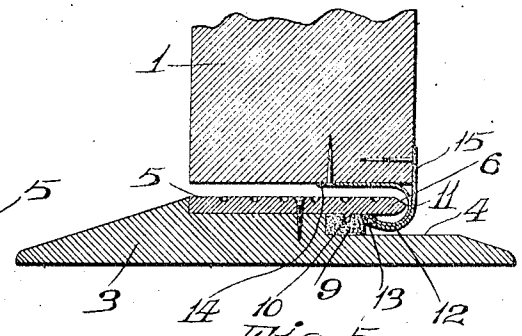


Fig. 4.

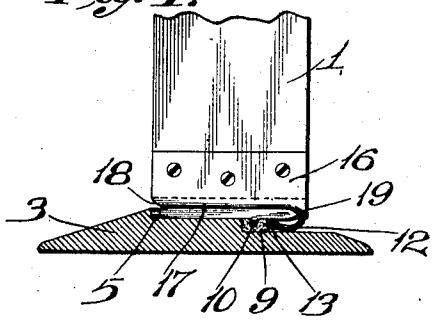
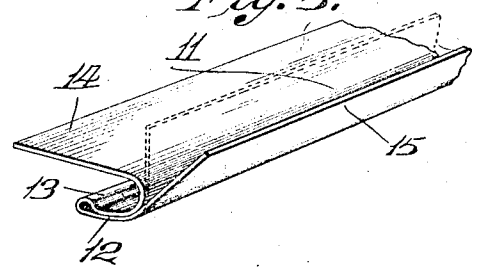


Fig. 5.



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2 SHEETS—SHEET 2.

Fig. 6.

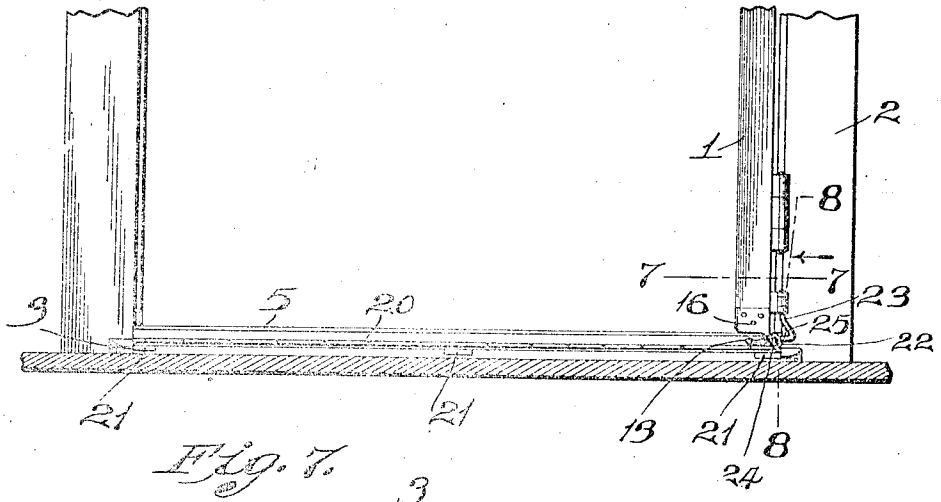


Fig. 7.

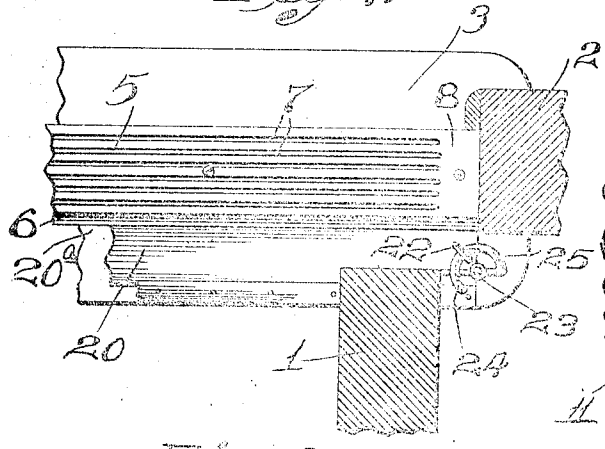


Fig. 8.

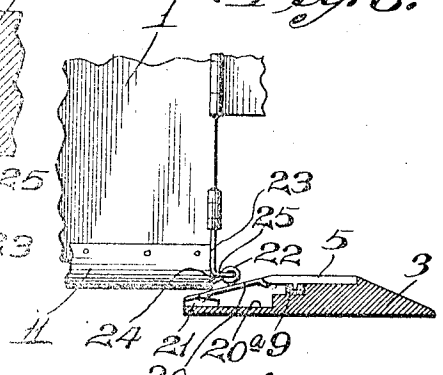


Fig. 9.

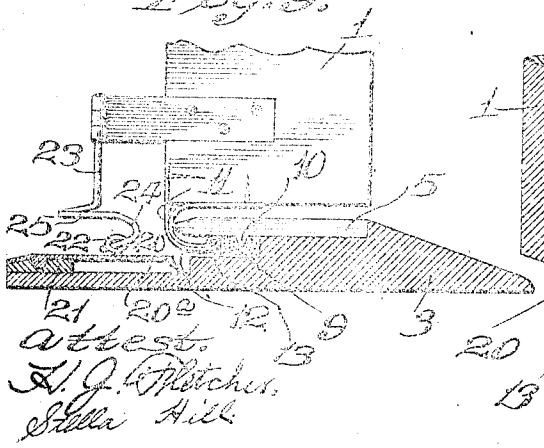
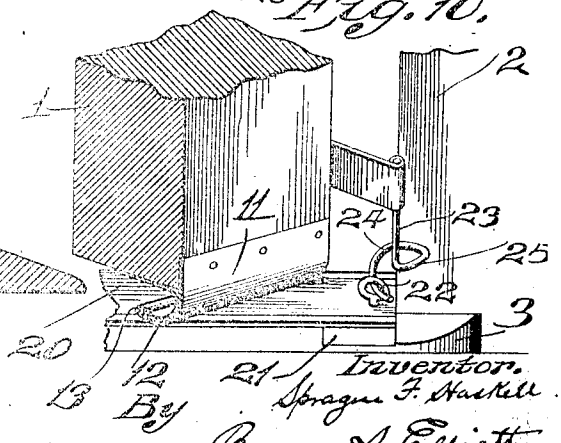


Fig. 10.



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UNITED STATES PATENT OFFICE.

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WEATHER-STRIP.

No. 926,409. Specification of Letters Patent. Patented June 29, 1909.

Application filed April 22, 1908. Serial No. 428,575.

To all whom it may concern:

Be it known that I, SPRAGUE F. HASKELL, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented new and useful Improvements in Weather-Strips, of which the following is a specification.

This invention relates to certain new and useful improvements in weather strips for doors, and has for its general object to provide a weather strip which shall effectually exclude the entrance of air and dust beneath the door under all conditions of working and weather.

A further object of the invention relates to the provision of a dust-guard for covering the opening under one member of the weather-strip.

Still further objects of the invention relate to details of construction and to combinations and operations of parts, all as hereinafter fully set forth.

In the simpler forms of weather-strips, material such as rubber or felt, is secured on the bottom of the door to the thickness necessary to fill up the space between the bottom of the door and the surface of the sill. The constant friction between this material and the sill soon wears the former away, so that the entrance of dust and air is no longer prevented, and there is no way of compensating for this wearing away, except by securing additional material to the bottom of the door, which is not only troublesome, but is apt to render the door unsightly, In addition, the material secured on the door, if the latter be an outside door, frequently becomes wet and freezes to the sill and is torn off when the door is opened. This objection applies also to practically all forms of weather strips affording direct contact with the sill and in which material other than metal is employed. Attempts have been made to provide weather-strips which shall automatically compensate for wear by providing springs for pressing the strips into contact with the sill, which springs are either normally operative, or are brought into operation by the operation of closing the door. All such devices are open to the objection of expense and trouble in installation, of liability to injury, and of danger of the springs rusting and breaking after use for some time.

My invention aims to overcome these and other objections, by providing a substantially all-metal weather-strip, one member of which is carried by the door and the other by the sill, and the contact between which parts when the door is closed is direct and positive, as opposed to frictional, or sliding, and yielding.

In the drawings: Figure 1 is a broken face view, showing a door and sill having my invention applied thereto, the door being closed, and a portion of the weather-strip being broken away to better illustrate the construction. Fig. 2 is a perspective view on an enlarged scale, showing one end of the sill member of the weather-strip with a plate carried by the door resting thereon, the door being broken away and sectioned. Fig. 3 is a cross section, also on enlarged scale, through the door sill and the lower portion of the door. Fig. 4 is a sectional view taken on a line passing between the front edge of the door and the door frame. Fig. 5 is a perspective view of a portion of the weather-strip member which is designed to be secured to the door, the full lines showing the normal shape and the dotted lines the shape after it is applied to the door. Fig. 6 is a view similar to Fig. 1, the door being opened and showing the application of a dust-guard for covering the opening beneath the member of the strip secured on the door sill. Fig. 7 is a horizontal sectional view on the line 7—7 of Fig. 6, but on an enlarged scale. Fig. 8 is a section on the line 8—8 of Fig. 6 viewed in the direction of the arrow. Fig. 9 is a view similar to Fig. 8 but on an enlarged scale and the door being shown in a closed position. Fig. 10 is an enlarged perspective view showing the mode of operating the dust-guard from the door.

Referring now to the drawings, 1 indicates the door, 2 the frame thereof and 3 the door sill. This door sill in the form of the invention shown in Figs. 1 to 4 is preferably narrowed on its inner side edge, shown more clearly in Figs. 3 and 4, and is provided at said inner side on its upper surface with a recess 4.

5 indicates a metal wear plate, preferably of bronze, which is let in to the upper surface of the sill, and extends from end to end thereof, said plate projecting over the recess 4 and having its inner edge beveled or rounded on opposite sides as shown at 6. The upper surface of this plate is corrugated or roughened, as indicated at 7 except at the end portions where a plain surface 8 is provided, one of which is shown in Fig. 2, and the other in

Fig 7. In the space between the bottom of the recess 4 and the under side of the plate 5, I interpose a felt strip 9, which is held in place by a rib 10 on the under side of the projecting portion of said plate, the plate 5 constituting one member of the weather-strip. The other member is carried by the door and is indicated by the numeral 11. Said member comprises a strip of light-weight, pliable metal, such as zinc, which is bent upon itself to provide a curved projecting portion 12 having a hollow rounded edge portion 13. One member of this strip projects outward over the curved portion 13 and is indicated by 14 and the other member, indicated by 15 normally extends as shown by the full lines in Fig. 5 at more or less of an obtuse angle to the member 14. The member 15 is of sufficient height to permit a portion thereof to be cut off as may be necessary to make it run parallel to the lower edge of the door. That is to say, the bottom edge of a door is frequently sprung outward at its lock edge and in applying the strip 11 it is first placed against the lower edge of the door and the edge portion 13 pushed inward until it comes in contact with the felt strip. This necessitates the forward part of the strip at the lock edge, being placed farther in than that portion at the hinge edge of the door. The upper edge of the member 15, as shown by the dotted lines in Fig. 5, is now drawn inward and brought in contact with the lower edge of the door and a line is drawn on the strip from this point following the lower edge door line the entire length of the strip. This line is then paralleled on the strip by another line to a distance of about three-eighths of an inch nearer to the extreme edge of the member 15 for a nailing margin, and the surplus strip is then cut away so that the upper edge of 15 will, when the members 14 and 15 are made fast to the door, as shown by Fig. 3, run parallel with the bottom edge thereof, with the first line exactly on the line of said bottom edge of the door and permit sufficient extra width of the strip to extend downward and inward at an angle so as to accommodate itself both to the outward spring of the door at the lock edge and at the same time uniformly engage with the felt 9 and plate 5 with the rounded edge 13, the application of the member 14 to the bottom edge of the door causing the projecting portion 12 to assume a position substantially parallel with the bottom edge of the door. This manner of procedure is rendered necessary by the fact that the adjustment and making fast of the member 11 of the weather-strip must be done when the door is off its hinges and away from the bronze plate 5.

At the front edge of the door, near the bottom thereof, I secure a plate 16, which is let into the wood so that its outer side will be flush with the outer edge of the door, said plate having a rounded bottom edge 17 which is curved upward at the rear as indicated at 18 and at its front end has a downwardly projecting portion 19 which is adapted to ride upon the upper beveled portion 6 of the strip 5. The purpose of this plate 16 is to form a closure against access of air and dust, by contact with the smooth portion 8 of the plate 5 at a point which would otherwise be without protection and furthermore to slightly raise the front edge portion of the door as the latter is closed, and thus offset the slight sag of the door which commonly occurs at this part. For this reason the rear end of the plate 16 is rounded at its bottom so that it will ride up the incline 6 of the plate while the downward projecting portion 19 will rest upon the beveled surface 6 in the closed position of the door. This slight lift of the forward edge portion of the door will also have a tendency to bring the rounded edge 13 of the member carried by the door in firm contact with the under side of the plate 5 as more clearly shown by Fig. 3.

As thus far described it will be seen that the two members of my weather-strip coöperate without friction to produce an air-tight closure beneath the door. In addition, the felt strip acts in the manner of a bumper to insure an easy or silent closing movement of the door.

It is frequently the case that the door sills are relatively very wide and the occupant of the house objects to having the same cut away at one side in the manner shown in Fig. 3. Where the full width of the weather-strip is utilized the opening beneath the plate 5 at the inner side is rendered somewhat more pronounced in appearance and it is often desirable to close this space when the door is opened, not only to prevent access of dust and dirt beneath the plate 5, but to prevent liability of said plate offering an obstruction to persons passing through the door. To this end, I provide a plate 20 which is pivotally mounted at its outer edge in metal blocks 21 located at the ends and center of the door sill, respectively, the free edge portion of said plate being adapted to be raised into contact with the under beveled surface of the plate 5 and to rest in a recess 20[a] provided in the sill when in its lower position. To raise this plate I secure a small eye 22 at the inner end thereof and secure on the inner edge of the door, in line with the hinge pintle, a rod 23 having its lower end formed as a spiral, as indicated at 24, and above this spiral having a straight portion 25. As the door is opened the spiral 24 engages the eye 22 and raises the plate 20, this raising of the plate, however, not beginning until the projecting member 12 of the strip carried by the door has passed from under the inner edge of the plate 5. This lifting movement continues until the outer edge of the plate is

brought into engagement with the under side of the front edge of the plate 5 when the straight portion 25 of the rod 23 engages the eye and holds the plate in this position. When the door is closed the plate or dust-guard 20 is depressed by the spiral before the projection 12 starts to enter beneath the plate 5. The raised position of the dust-guard 20 is shown in Fig. 8 and its lowered position in Fig. 9.

I claim:

1. A weather strip comprising a sill having a recessed portion, a metal wear plate secured on the sill to lie flush therewith and projecting over said recess, and a pendent member carried by the door and extending along the bottom edge thereof, said member consisting of a metal plate bent and curved upon itself to form, respectively, free edge portions extending substantially at right angles to each other, and a reëntrant portion, said edge portions being secured, respectively, to the bottom edge and face of the door, and said reëntrant portion being adapted to enter beneath the projecting edge of said wear plate when the door is closed.

2. A weather-strip comprising a sill having a recessed portion, a metal wear plate secured on the sill and projecting over said recess, a pendent member secured along the bottom of the door and having a curved edge portion adapted to enter beneath the projecting edge of said plate when the door is closed, and a metal plate secured on the lock edge of the door and projecting below the bottom thereof, said plate having its lower edge rounded at its rear end and a forward downwardly-projecting portion, the bottom edge of this plate being adapted to engage the upper surface and the inclined inner edge of said first named plate and thereby tend to press the curved projecting portion of the pendent member into contact with the under side of the wear plate in said closed position of the door.

3. A weather-strip comprising a recessed sill and a metal plate secured thereon and projecting over said recess, a pendent member carried by the door and extending along the bottom thereof and adapted to enter beneath the projecting edge of said plate when the door is closed, a plate pivotally mounted at its inner edge in said sill and means carried by the door for engaging said plate and lifting it into contact with said first named plate as the door is opened.

4. A weather-strip comprising a sill having a recessed portion, a metal plate secured on the sill and projecting over said recess, a pendent member carried by the door and extending along the bottom thereof and adapted to enter beneath the projecting edge of said plate when the door is closed, a metal plate pivotally mounted at its inner edge in said sill and provided at its inner end with an eye, a rod secured to the inner side of the door and having a spirally-shaped lower end adapted to engage with said eye to raise and lower said last named plate as the door is opened and closed, said sill being recessed to receive the plate as the latter is lowered.

5. A weather-strip comprising a sill having a recessed portion, a metal wear plate secured on the sill to lie flush therewith and projecting over said recess, a pendent member secured along the bottom of the door and having a curved edge portion adapted to enter beneath the projecting edge of said plate when the door is closed, and a metal plate secured at the lock edge of the door and projecting below the bottom thereof and having a cam surface adapted to engage the upper surface of said first named plate, said plate tending to provide a contact of the pendent member and under face of the wear plate in the closed position of the door.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SPRAGUE F. HASKELL.

Witnesses:
STELLA HILL,
CHASE MORSEY.