May 28, 1940. O. DAHL 2,202,482

WEATHER STRIP

Filed Dec. 10, 1938

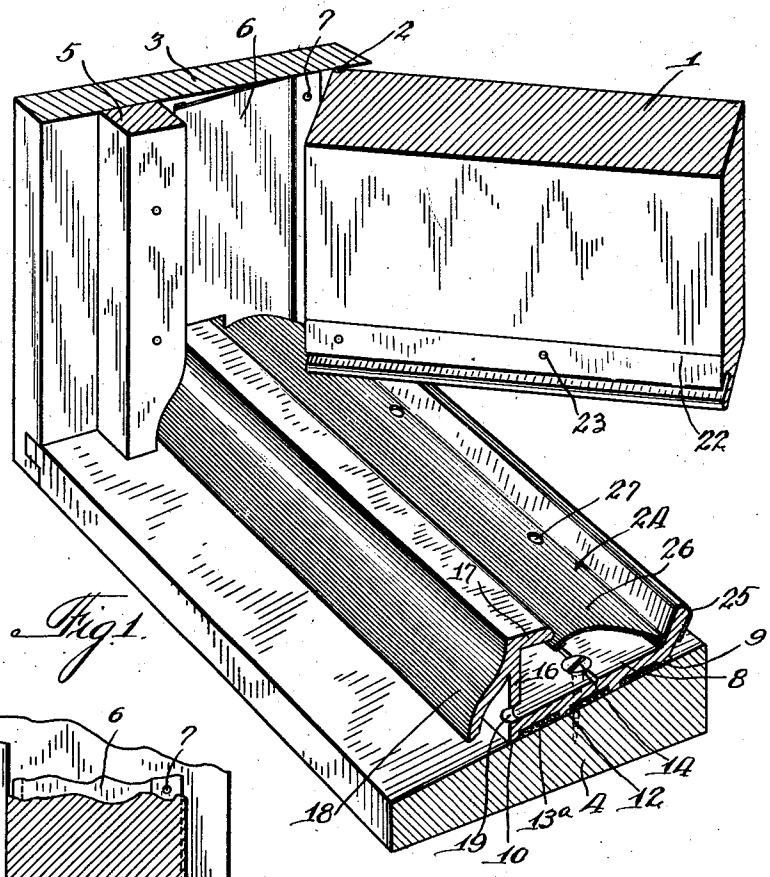


Fig. 1.

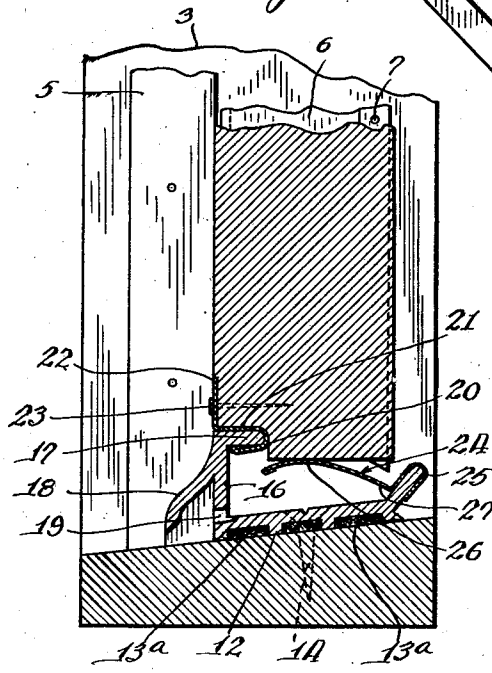


Fig. 2.

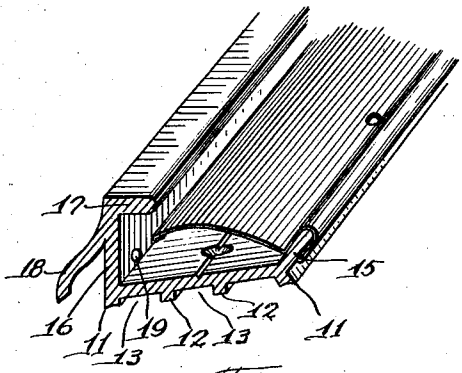


Fig. 3.

Inventor:
Oscar Dahl.
By: Amos, Thies, Clark & Mecklenburger.
Atty's.

Patented May 28, 1940 2,202,482

UNITED STATES PATENT OFFICE

2,202,482

WEATHER STRIP

Oscar Dahl, Chicago, Ill., assignor to Maurice S. Oftedal, doing business as Master Metal Strip Service, Chicago, Ill.

Application December 10, 1938, Serial No. 244,900

6 Claims. (Cl. 20—69)

This invention relates to a weather strip structure and particularly to a structure wherein strip material is employed on thresholds, sills, window casements, and the like, to provide a weatherproof seal between the sash or door and the sill or threshold, but which may at the same time permit the ready opening and closing of the doors or windows.

It is an object to provide a structure that is particularly useful in casements having inwardly swinging windows or doors.

It has been difficult in the past to provide a structure that will provide a weathertight closure, particularly at the bottom of a hinged sash, where it is especially desirable to provide a snugly fitting seal and at the same time prevent the accumulation of water on the sill or adjacent the inner side of the sash or door. It often happens in cold weather that condensation water accumulates on the inside of casement windows and the like, and the water has a tendency to drip from the sash onto the floor or to accumulate on the sill. This is effectively prevented in the instant invention.

It is, therefore, an object of this invention to provide means for collecting the condensation water and to discharge it to the outside of the casement, and also to discharge to the outside any water which may in any way accumulate in the strip.

A further object is to provide a weather strip of the character described for window casements and the like having means for retaining calking material and for snug sealing engagement with a support whereby leakage of moisture under the strip is prevented when the latter is secured to the support.

It is also an object to provide a threshold seal or weather strip structure of the character described which will be of few parts, cheap to manufacture, easy to assemble, and which may readily be disassembled for cleaning; also which will not easily get out of order in use.

Further objects will be apparent from the specification and the appended claims.

In the drawing:

Fig. 1 is a sectional perspective view of one embodiment of the invention wherein a window sash, or the like, is shown in partially opened position.

Fig. 2 is a sectional view of the embodiment shown in Fig. 1 with the sash in closed position.

Fig. 3 is an enlarged transverse section through the weather strip base.

In practicing this invention, the weather strip may be secured to the window sill or casement frame in alignment with the edge of the closed sash. The weather strip per se may comprise an elongated channel bar comprising a base portion and two oppositely disposed upwardly extending web portions or flanges. The outside web portion is adapted to engage a complementary portion of the sash when the window is in closed position in a manner to form a substantially weatherproof joint therebetween and to enable the co-operating parts to be easily separated so that the sash or door may readily be opened. The height of the inner web portion is limited so that the window sash or door will clear it while being opened and closed. The upper edge of this inner web portion, however, projects beyond the inner surface of the closed sash so that the web is in a position to collect any water which may drip from the inner surface of the sash and the water will be directed into the channel proper from which it is discharged to the outside through suitable weep holes. The outside web portion may terminate in an inturned flange adapted to engage in a complementary U-shaped strip secured to the sash or door, whereby a tight joint is provided between the sash and the sill. The inside web portion may have a resilient sheet metal strip frictionally engaged thereover for convenient removal and having an arcuate portion extending inwardly of the channel and adapted to frictionally engage the lower edge of the closed sash. The clamping portion of this resilient strip preferably conforms substantially to the shape of the inner flange, whereby it may removably be clamped thereon, and the free end extends inwardly of the channel and is arcuately formed to provide a weatherproof seal against the bottom edge of the casement or door when it is in the closed position and to provide a suitable drain in both directions.

Suitable weep holes are provided in the resilient sealing member adjacent the inner flange, and other weep holes are provided through the outer web to permit the moisture entering the channel to be discharged to the outside of the window casement. The weep holes through the resilient strip are preferably staggered relative to the weep holes leading from the channel in order to prevent drafts from passing directly through the weather strip.

A suitable apron or shield may be provided on the outside of the strip and arranged to cover the weep holes to protect them from the wind and to prevent clogging of the holes during painting or by reason of accumulation of dirt adjacent the outside edge of the weather strip.

Referring to the drawing in detail, the embodiment illustrated comprises a window sash or door 1 which is hinged at 2 to a casing comprising vertical uprights 3 and a sill 4. The upper surface of the sill 4 is preferably angularly disposed as shown so as to direct moisture to the outside of the casing. The uprights 3 and sill 4, together with suitable stops 5, provide a casing for the sash 1, which latter may be opened and closed as desired. The description herein will be confined to a casement window. However, it will be understood that the weather strip is adaptable to any structure having a casing and a hinged closure therefor substantially as illustrated.

The vertical casings 3 may be provided with sheet metal strips 6 which are of resilient material and may be secured by brads or screws 7 along one edge, whereby they resiliently bear against the edge of the door when it is closed to provide weatherproof engagement.

The weather strip per se comprises an elongated channel member having a substantially flat base portion 8 which substantially conforms to the angular surface of the sill, as shown. The under surface of this flat base is provided along its lateral edges with ribs 9 and 10. The lower surface of these ribs is preferably arcuate in form, as shown in Fig. 3, in order to provide cutting edges 11 which effectively seal the joint between the sill and the weather strip when the weather strip is secured in position. The bottom of the strip is also provided with downwardly extending ribs 12 which are spaced to provide channels 13 to retain a suitable calking material 13*a*, as shown in Figs. 1 and 2. The strip may be provided with a central groove or mark which is formed at the time that the strip is made in order to provide an aligning means for drilling suitable holes through which screws 14 may be inserted to secure the weather strip to the sill as shown.

It will be apparent that, when the strip is clamped snugly against the sill by means of the screws 14, the cutting edges 11, together with the calking material, will effectively seal the joint between the strip and the sill. The channel member 8 is preferably of substantially rigid material and ordinarily is made of extruded metal, so that it is preferable to drill the holes for the screws 14 after the channel itself has been formed. The channel member is provided with oppositely disposed upwardly extending flanges extending along its marginal edges and the inner flange 15 preferably extends substantially 45 degrees to the inner surface of the sash or door when closed. This flange also extends somewhat beyond the inner surface of the sash, as shown in Fig. 2, so that any water of condensation forming on the inner surface of the sash will be caught by this angular flange and be directed into the channel proper. This flange preferably terminates in a rounded edge, as shown, and the outer edge is preferably somewhat thicker than the inner portion of the flange so that the resilient sheet metal sealing member may readily be clamped thereover. This sealing member will be described in detail later.

The outer flange 16 extends upwardly slightly above the bottom of the door, as shown, and terminates in an inturned flange 17, which also is preferably provided with a rounded edge and forms a tongue for engagement in a complemental groove on the sash to provide a substantially weatherproof seal therewith. A downwardly extending shield or hood 18 is provided on the outside of the strip and comprises a downwardly and outwardly extending flange which is preferably substantially of the contour shown and terminates adjacent the sill. This shield or hood is for the purpose of shielding suitable weep holes 19 in the flange 16 which are arranged to drain any water from the channel to the outside of the casement window.

The outside of the sash may be grooved to receive the inturned flange 17. However, a preferable construction is to notch or rout out the corner of the casement, as shown at 20, to receive a U-shaped sheet metal member 21, which is provided with an upturned flange 22 whereby it may be secured to the sash by any suitable means such as the brads or nails 23. The member 21 is preferably of resilient sheet metal and so formed as to snugly engage the inturned flange 17 when the sash is closed, to thereby provide a weatherproof joint.

A resilient sealing member 24 is provided with an angular U-shaped portion 25, which is arranged to resiliently embrace the inwardly extending flange 15 so that it is snugly retained thereon and yet may easily be removed whenever desired. This resilient sheet metal member 24 is provided with an upwardly arcuate free portion 26, which engages the bottom edge of the sash, as shown, when the sash is closed and which terminates substantially in alignment with the edge of the inturned flange 17. The free edge is turned downwardly whereby any water which passes over the flange 17 when the sash is open will be directed into the channel. The sheet metal member 24 is provided with weep holes 27 closely adjacent the flange 15, and these weep holes are preferably staggered relative to the weep holes 19 in the outer flange so that excessive draft is prevented through the weather strip. It will be clear that, with this construction, when the sash is closed the weather strip and resilient members associated therewith will provide an effective weatherproof seal between the sash and the sill. Also, the sash may easily be opened or closed and water of condensation forming on the inside of the sash will drop within the outturned flange 15 and pass through the weep holes 27 into the channel portion of the weather strip, from which it will drain through the outer weep holes 19.

The resilient sealing member 24 is particularly advantageous in the present construction in that it may easily be removed merely by lifting it from the flange 25, and therefore the channel may easily be cleaned at any time and the resilient sealing member may easily be replaced and will be securely held in position.

Modifications may be made without departing from the spirit of the invention, and it is therefore desired that the invention be limited only by the prior art and the scope of the appended claims.

Having thus described this invention, what is claimed and desired to be secured by Letters Patent is:

1. A channel bar weather strip comprising a base portion, two upwardly extending oppositely disposed web portions, an inwardly extending flange adjacent the upper end of one of said upwardly extending portions adapted to frictionally engage in a complementary groove in the outside surface of a hinged sash, and an elongated trough-like spring sealing member removably secured to the other of said upwardly extending portions and having its free edge

adapted to frictionally engage the bottom surface of said sash in weatherproof relationship, said other web portion and sealing member thereon extending angularly beyond the inside edge of said sash when closed, whereby condensation water on the inner surface of said sash will drip into said trough-like sealing member, said sealing member having perforations therethrough to direct the water into said channel bar, said bar having perforations to direct the water to the outside of said sash.

2. A casement construction comprising a window sash and a channel bar secured to said casement in alignment with said sash when in the closed position, said channel bar having an upwardly extending web adjacent the outside edge of said sash, said web having an inwardly extending lip member positioned adjacent the upper extremity thereof, and a second upwardly extending web portion projecting beyond the inside edge of said sash when closed, the outside edge of said sash having a resilient grooved member secured thereto adapted to frictionally engage said inwardly extending lip member to provide a substantially weathertight seam, a trough-like spring strip member having one edge embracing said second web with its free edge adaptable to frictionally engage the bottom of said sash when said sash is in the closed position to form a trough in the plane of the inner surface of said sash to receive moisture dripping therefrom, said strip member and said outer web having openings to direct moisture from said sash to the outside of said channel bar.

3. A channel bar construction as defined in claim 1 having the perforations positioned in staggered relationship in said elongated spring member and in said first described upwardly extending web portion, said portion being provided with an outwardly and downwardly extending flange for shielding the perforations in said member.

4. A channel bar weather strip having a web adapted to be secured to a sill, a comparatively high outer flange adapted to engage the outer side of a swinging sash, an inner flange extending angularly beyond the inner surface of said sash, and a resilient sheet metal trough having one side substantially conforming to the inner surface of said inner flange and formed to embrace said flange for removable support thereon, the free side of said trough extending upwardly toward said outer flange and adapted to frictionally engage the bottom surface of said sash, said trough and said channel having drain perforations to direct water to the outside of said sash.

5. A weather strip for a casement sash comprising a channel bar having an outer flange adapted to provide a stop for said sash, an inner flange below the path of said sash, and a resilient sheet metal trough positioned to catch water dripping from the inner surface of said sash, one side of said trough being formed to resiliently and removably engage said inner flange to removably support said trough and having its free side positioned to frictionally engage the bottom of said sash, said channel bar and said trough having openings to direct water therefrom.

6. The combination with a casement sash, of a weather strip comprising a channel-like trough positioned under said closed sash to receive water entering therebetween, and a second trough in alignment with the inner surface of said sash and having a resilient free side frictionally engaging the bottom of said sash, and resilient means removably clamping said troughs together.

OSCAR DAHL.