

Oct. 12, 1937.

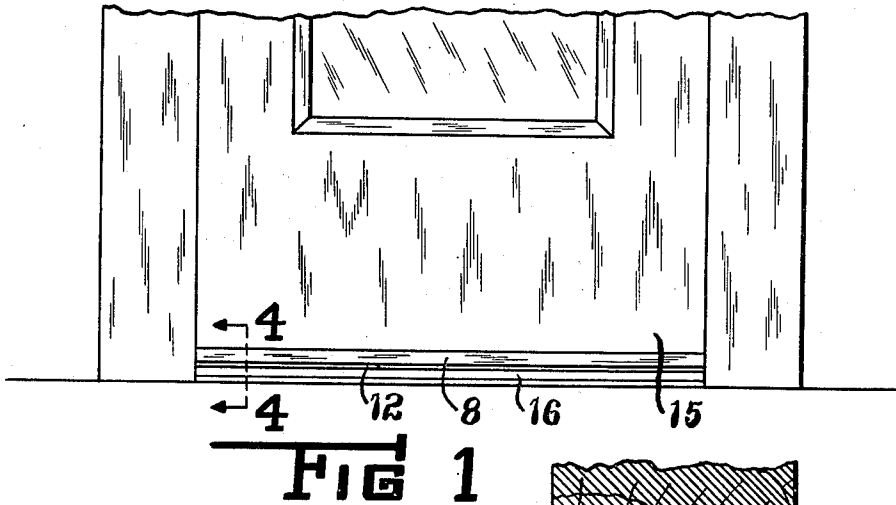
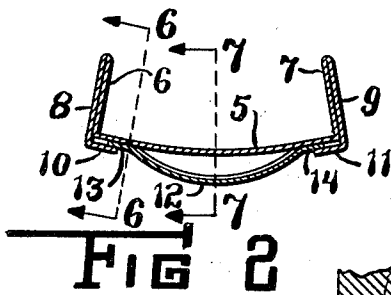
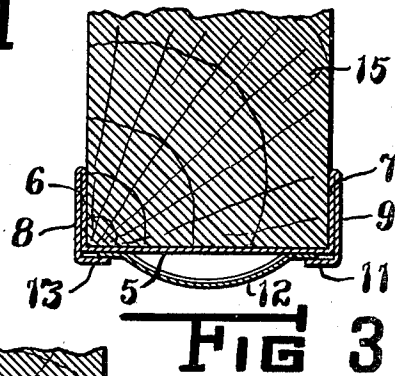
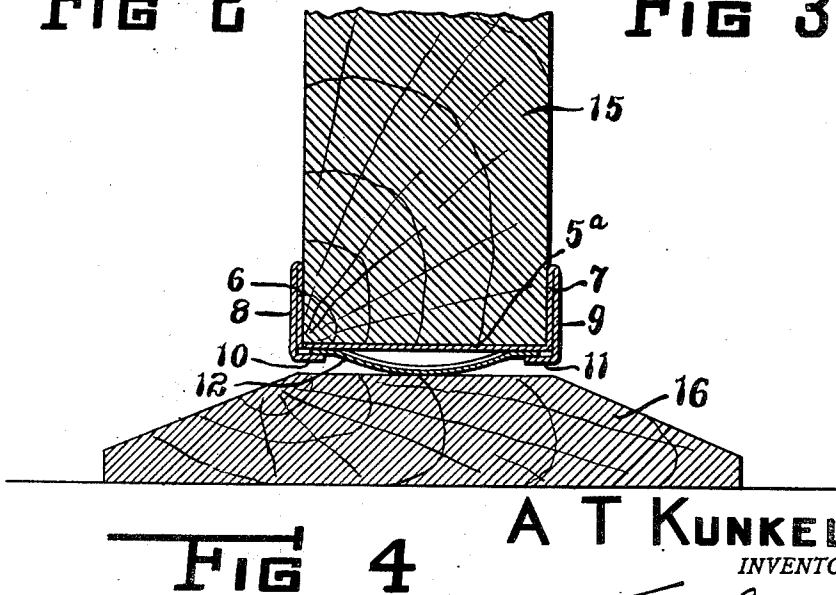
A. T. KUNKEL

2,095,669

WEATHER STRIP

Filed June 5, 1936

2 Sheets-Sheet 1



A T KUNKEL
INVENTOR

BY *F. E. Sherman*
ATTORNEY

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A. T. KUNKEL

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WEATHER STRIP

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2 Sheets-Sheet 2

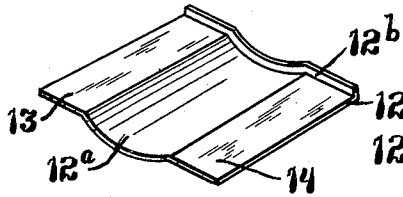


FIG 5

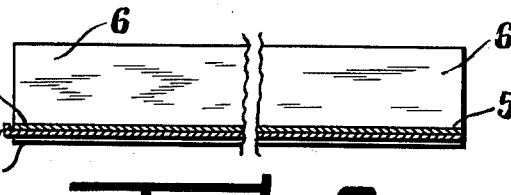


FIG 6



FIG 7

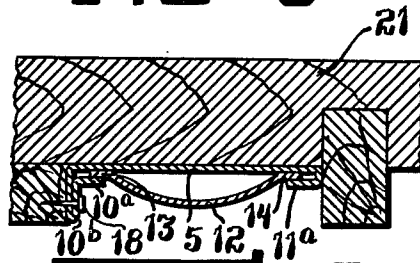


FIG 8

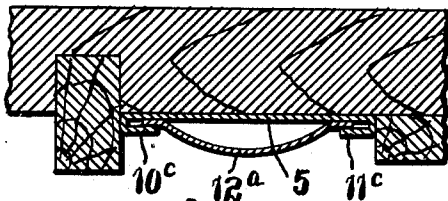


FIG 9

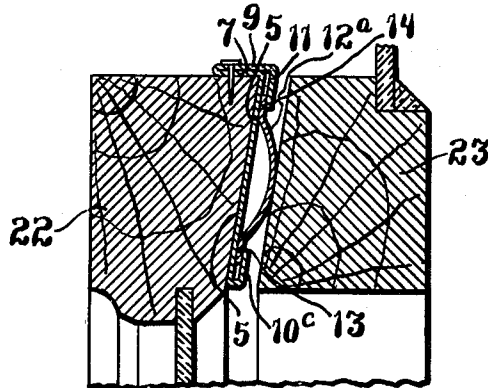


FIG 10

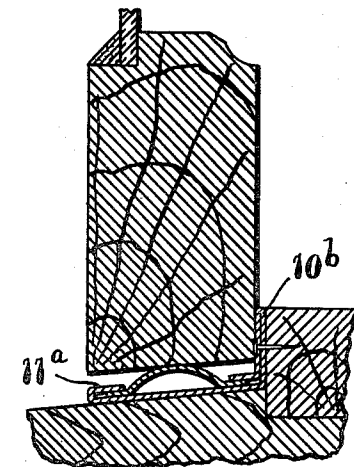


FIG 11

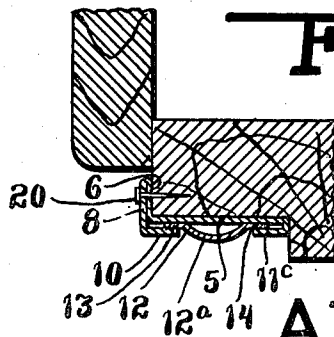


FIG 12

AT KUNKEL

INVENTOR

BY

F. E. Harmon

ATTORNEY

UNITED STATES PATENT OFFICE

2,095,669

WEATHER STRIP

Aloysius T. Kunkel, Akron, Ohio

Application June 5, 1936, Serial No. 83,678

10 Claims. (Cl. 28-69)

This invention relates to improvements in weather strips and while adapted for use generally wherever it may be advantageously employed, it is particularly adapted for use in connection with doors, windows and similar structures to tightly close the crevice between the edge of a door or other closure member and the edge of the aperture in which it is mounted.

Objects of the invention are to provide a sealing device in which a laterally arched strip of resilient material is held in a full, floating position to extend longitudinally of a door, window sash or other closure member or along the edge of an opening in which the closure member is mounted to close the crevice between the closure member and the edge of the opening in which it is mounted whereby each edge of the strip may be moved laterally when the strip is subjected to pressure and to thereby provide a sealing strip which will readily yield to conform to an irregular surface.

Particular objects are, to provide a weather strip of strong, durable construction, which may be economically manufactured and which can be quickly and conveniently placed on a door or other closure member and securely held thereon without the use of screws, nails or other fastening means and which will be very efficient in completely closing the crevice between the edge of the door on which it is positioned and the edge of the door aperture.

Further objects are to provide a weather strip comprising a channel member adapted to receive the edge of a door and provided with means for loosely mounting a laterally arched strip of thin material thereon in a full floating position whereby the arched strip will be readily compressible throughout its length and will readily conform to the irregularities in the surface of a threshold or other structure.

The above objects are accomplished and additional ends are attained by the novel construction, combination and arrangement of parts illustrated in the accompanying drawings in which there is shown a preferred form of the invention, it being understood that changes and modifications may be made or resort had to substitutions which come within the scope of the claims hereunto appended.

In the drawings:

Figure 1 is a front, elevational view showing the lower portion of a door with a weather strip constructed in accordance with this invention operatively mounted thereon,

Figure 2 is a cross sectional view of a weather

strip constructed in accordance with this invention, the same being shown in its normal condition before being applied to a door,

Figure 3 is a cross sectional view of a weather strip constructed in accordance with this invention, operatively attached to a door,

Figure 4 is a cross sectional view taken as indicated by the lines 4-4 of Figure 1,

Figure 5 is a cross sectional view showing in perspective the end portion of a sealing strip employed in reducing the invention to practice,

Figure 6 is a longitudinal, sectional view taken as indicated by the lines 6-6 of Figure 2, parts being broken away to conserve space,

Figure 7 is a similar view taken as indicated by the lines 7-7 of Figure 2,

Figure 8 is a fragmentary, cross sectional view of the upper portion of a window frame showing the manner of mounting my improved strip thereon,

Figure 9 is a cross sectional view of a portion of a window frame showing one form of the invention mounted therein,

Figure 10 is a cross sectional view of a portion of overlapping sash showing a weather strip constructed in accordance with this invention operatively mounted therebetween,

Figure 11 is a cross sectional view illustrating the manner of applying the weather strip to the bottom of a window,

Figure 12 is a similar view showing my improved strip as it is mounted along the edge of an opening.

A weather strip constructed in accordance with this invention is adapted for use on various closure members and includes a sealing strip which is mounted between the edge of a closure member and the edge of the opening in which the closure member is mounted. The sealing strip 12 is preferably composed of a strip of thin, spring brass with a laterally arched middle portion 12a which extends longitudinally thereof, and, flat, marginal portions 13 and 14 which extend along each side thereof.

The strip 12 is held in position by a holding member which may be varied to fit substantially any type of closure member or the edge of the opening in which it is mounted.

In Figures 1, 2, 3, and 4, the numeral 5 is used to denote a holding member which may be detachably secured on the edge portion of a door, window or like structure. In the particular adaptation of the invention disclosed in Figures 1, 2, 3, and 4 there is shown a channel member composed of one piece of copper, spring brass or other suit-

able sheet material, bent to provide a base wall 5a and side walls 6 and 7. The sheet material is bent outwardly and downwardly at the upper edge of the side walls 6 and 7 and extends downwardly flat against the outer face of each side wall to provide the outer walls 8 and 9. The wall 8 extends downwardly along the wall 6 to a plane spaced below the lower edge of the bottom wall 5 and then bent inwardly in parallel, spaced relation to the adjacent surface of the bottom wall 5a to provide a relatively narrow flange 10. The portion 9 is similar to the portion 8 and extends downwardly along the side 7 to a plane spaced below the lower surface of the bottom member 5a from which plane the material is bent inwardly in parallel, spaced relation to the bottom wall 5a to form the relatively narrow flange 11 which is similar to the flange 10 and is oppositely disposed relative thereto.

The numeral 12 denotes a strip of relatively thin spring brass or other suitable material. The strip 12 is provided on each lateral side thereof with the flat, marginal portions 13 and 14. The flat marginal portion 13 is received between the flange 10 and the bottom wall 5a and the flat marginal portion 14 is received between the flange 11 and said bottom wall, with the middle portion 12a bulged away from the wall 5a. It will be noted that the flat portions 13 and 14 are of sufficient width to permit a substantial lateral sliding movement in the space between the flanges 10 and 11 and the bottom wall 5a.

Each of the side walls 6 and 7 meet the adjacent edge of the bottom wall 5a at substantially a right angle. The bottom wall 5a being curved downwardly to position the side walls 6 and 7 at an inward inclination so that the channel thus formed is substantially narrower at the mouth thereof. To position the weather strip on a door, the side walls 6 and 7 are forced outwardly and are positioned over the edge portion of the door. As the bottom wall 5a is formed of spring material, it will exert a very strong spring pressure on the walls 6 and 7 causing the same to grip the edge of the door 15 to firmly hold the channel in position thereon as shown in Figure 3.

The strip 12 is provided at one end thereof with a relatively narrow, upturned flange 12b which engages the base portion 5a at the hinged side of the door to hold the strip 12 from longitudinal movement in a holding member 5. The upturned flange 12b forms a sealing strip 12 having a middle portion 12a which will not present a sharp edge portion to the threshold at the hinged edge of the door.

In Figure 4 the weather strip is shown operatively mounted on a door 15 to close the crevice between the door and the threshold 16. It will be seen that the strip 12 is substantially flattened and that the same will be held in forced contact with the adjacent surface of the threshold 16 by the inherent resiliency of the material of which it is composed.

The invention may also be applied to the edge of an opening in which a closure member is mounted. In Figures 8, 9, 10, and 11 I have illustrated my improved weather strip as it is applied to an ordinary window frame 21 having overlapping sliding sash 22 and 23.

In Figure 8 the holding member 5 is formed of a strip of sheet metal having one lateral edge portion 11a thereof turned back in close, spaced relation to itself to form a flange 11a which serves the same purpose as the flange 11, and having the other lateral edge portion bent forwardly,

then rearwardly to form a nailing flange 10b; then bent inwardly in close, spaced relation to the wall 5a to form the flange 10a which serves the same purpose as the flange 10. The strip 12 is mounted thereon with the marginal portion 13 entered between the flange 10a and the base 5a and with the marginal portion 14 entered beneath the flange 11a. The strip is held in position along the upper side of the frame by the nails 18 or other fastening means which are entered through the nailing flange 10b. Substantially the same construction as is illustrated in Figure 8 is shown in Figure 11, for use between the lower sash and the window sill.

In Figure 9, I have shown the manner of applying the invention to the sides of a window opening. In this adaptation of the invention, each lateral edge portion of the base strip 5 is turned back upon itself to form the flanges 10c and 11c which serve the same purpose as the flanges 10 and 11. The marginal edge portion 13 of the strip 12 is positioned between the flange 10c and the wall 5a and the marginal edge portion 14 between the flange 11c and the wall 5a with the middle portion 12a of the strip 12 bulged away from the wall 5a.

In applying this adaptation of the invention to the sides of a window frame, no fastening means is necessary as the strip is snugly received in the groove in which the window sash is mounted. The inwardly bulged portion, 12a is distorted when a sash is operatively mounted therein. The bulged portion 12 thus frictionally engages the sash so that it may be easily raised to an open or partly opened position and retained in place by the spring pressure of the strip 12a.

In Figure 10, I have illustrated the weather strip as it is applied between the overlapping rails 22 and 23 of a window sash to tightly close the crevice therebetween. In this adaptation of the invention one edge portion of the strip 5 is provided with the walls 7 and 9 and with a flange 11 which is substantially the same as shown in Figures 2, 3, and 4. The other lateral side of the strip is turned upon itself to form a flange 10c which is similar to the flange 10c shown in Figure 9 and serves the same purpose. In the adaptation of the invention shown in Figure 10, the marginal portion 13 of the strip 12 is mounted beneath the flange 10c and the marginal portion 14 beneath the flange 11. When pressure is applied to the portion 12 each lateral edge portion of the strip will move laterally beneath the flanges 10c and 11 under which it is mounted.

A weather strip constructed in accordance with this invention when used between a frame and a sliding sash as shown in Figure 9, seals the crevice between the sash and the frame and provides a sash mounting which will entirely eliminate rattling. The bulged portion 12a of the strip 12 frictionally engages the edge of the sash and provides a window mounting in which the sash may be freely moved and will not be materially effected by the contraction or swelling of the material of which it is composed. This construction also provides a sash mounting in which the usual sash cords, pulleys and window weights may be entirely eliminated as the friction of the bulged portion 12a of the strip 12 is sufficient to overcome the weight of the sash and hold it in any desired position.

In Figure 12, the strip is shown applied to a door jamb. In this adaptation of the invention the strip 5 is provided at one edge thereof

with a flange 11c, the other edge thereof is provided with a wall 6, an outer wall 8 and the flange 10 similar to that shown in Figure 2. Nails 20 or other fastening means are driven through the walls 6 and 8 into the door jamb to secure my improved weather strip in an operative position thereon. A sealing strip 12 having a longitudinally extending, laterally bulged portion 12a is thus operatively mounted along each lateral side and top of a door jamb.

As the strip 12 is held in a full floating position, it will readily yield to conform to irregular surfaces in the threshold or other structure to an extent which has heretofore been unknown.

What I claim is:—

1. In a weather strip, a flat mounting member adapted to be secured along the edge of a closure member, a laterally arched spring strip positioned longitudinally along the outer face of said member with the convex side thereof presented outwardly said strip adapted to be completely flattened against said flat mounting member and means for holding said strip in a full floating position on said member.

2. In a weather strip, a flat mounting member adapted to be secured along the edge of a closure member or along the edge of an opening in which said closure member is mounted, a laterally arched spring strip disposed longitudinally on said mounting member with the convex side thereof presented outwardly said spring strip being normally narrower than said mounting member and means holding said strip on said mounting member, said means permitting a full flattening movement of said strip and the consequent lateral movement of both edges thereof.

3. In a weather strip, a flat mounting member adapted to be secured between a closure member and the edge of an opening in which the closure member is mounted; oppositely disposed flanges projecting inwardly from each lateral side of said mounting member and a laterally arched spring strip being normally narrower than said mounting member and extending longitudinally thereof, said flanges overlapping the edge portions of said strip to loosely hold the same in a lateral self-adjusting position thereon.

4. In a weather strip, a mounting member comprising a flat elongated base provided along each lateral side thereof with oppositely disposed flanges which overlap the marginal portions of said base, a spring strip having an outwardly arched, middle portion extending longitudinally thereof, the lateral edge portions of said strip slidably positioned between said flanges and said base portion, said strip being sufficiently narrow to permit a local or longitudinal flattening movement thereof.

5. In a weather strip, a mounting member comprising a flat elongated base provided along each lateral side thereof with oppositely disposed flanges which overlap the marginal portions of said base to form oppositely disposed seats, a

spring strip having an outwardly bulged middle portion extending longitudinally thereof, the lateral edge portions of said strip positioned between said flanges and said base portion for limited, lateral, sliding movement in said seats and means to limit the longitudinal movement of said strip on said base.

6. In a device of the character described, a channel member adapted to snugly receive the edge portion of a closure member, said channel member composed of a strip of sheet metal formed to provide a base wall adapted to fit against the edge of the closure member, the lateral portions of said strip bent at a right angle to said base wall, then back upon itself to form side walls, then inwardly along the lateral portions of the base wall to form flanges and a laterally arched spring strip extending along said base portion with the edge portions thereof positioned beneath said flanges.

7. In a weather strip, a channel member composed of a strip of sheet metal formed to provide a laterally curved, downwardly bulged bottom wall, the lateral portions of said strip extending at approximately a right angle to the adjacent portion of the bottom wall to form side walls, then extending in flat, abutting relation to said side walls, then inwardly along the lateral portion of said bottom wall to form oppositely presented flanges and a laterally arched spring strip having flat, marginal portions, said marginal portions moveably positioned beneath said flanges.

8. In a weather strip, a channel member composed of sheet metal formed to provide a downwardly arched bottom wall, inwardly inclined side walls disposed at approximately a right angle to the adjacent edge portion of said bottom wall, and a sealing strip operatively mounted on said channel member, said channel member adapted when the bottom wall is flexed by forcing the side walls outwardly to receive the edge portions of a closure member.

9. In a weather strip, a channel member composed of resilient sheet metal formed to provide a bottom wall and two side walls, said bottom wall being normally bulged outwardly with inwardly inclined side walls, said channel member adapted to be positioned on the edge portion of a door by flexing said bottom wall to move the side walls outwardly and a sealing strip operatively mounted on said channel member.

10. In a weather strip, a laterally arched strip of resilient metal, adapted to be positioned longitudinally between the edge of an opening and the edge of a closure member for said opening and means overlapping the lateral edge portions of said strip for holding the same in an operative position, said means permitting a free lateral movement of both edge portions of said strip, whereby the same may be flexed to a full, flattened condition substantially as herein described.

ALOYSIUS T. KUNKEL.