

Oct. 4, 1960

M. L. MILES
DOOR SEALS

2,954,591

Filed Oct. 1, 1956

4 Sheets-Sheet 1

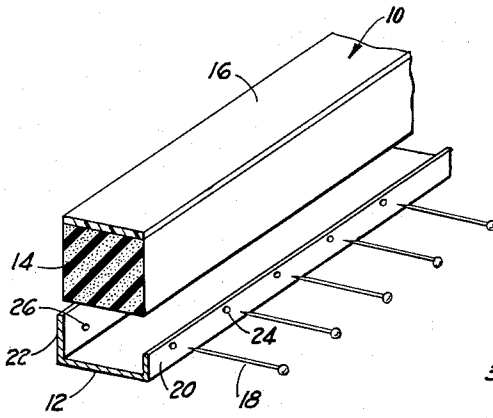


Fig. 1

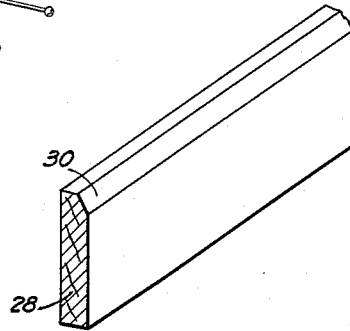


Fig. 4

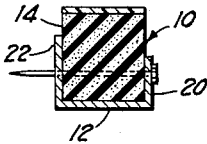


Fig. 2

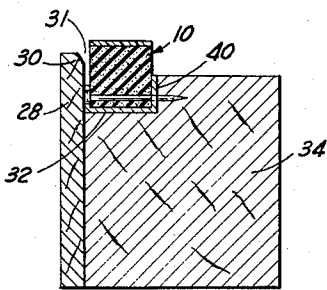


Fig. 3

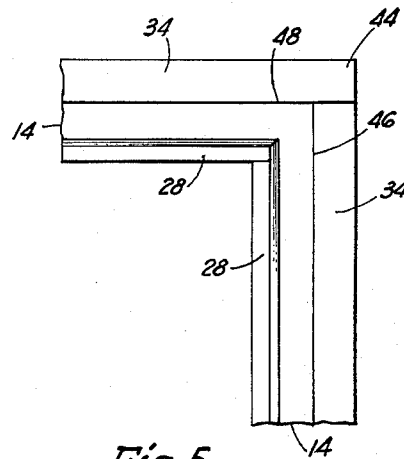


Fig. 5

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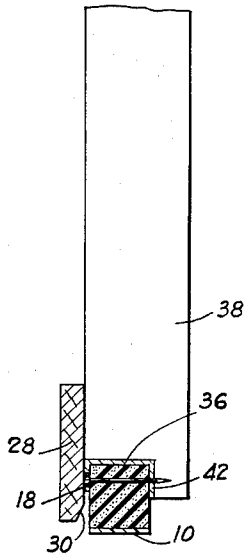


Fig. 6

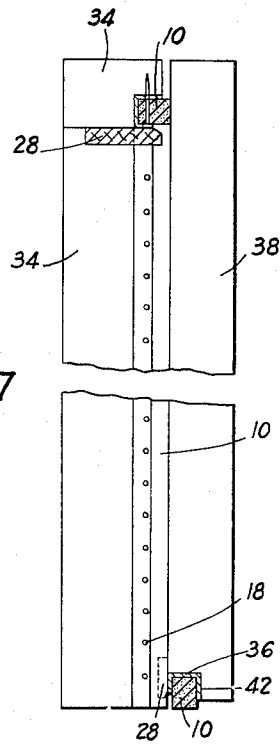


Fig. 7

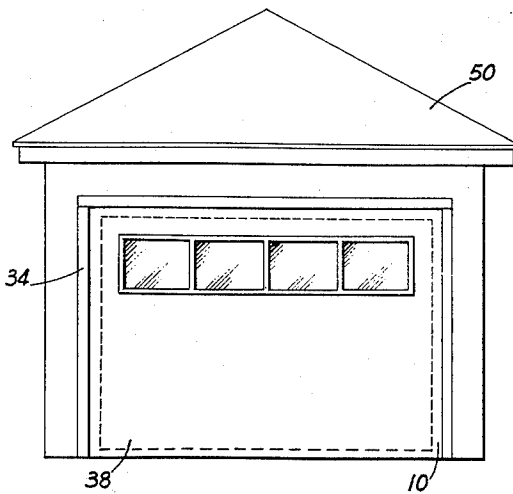


Fig. 8

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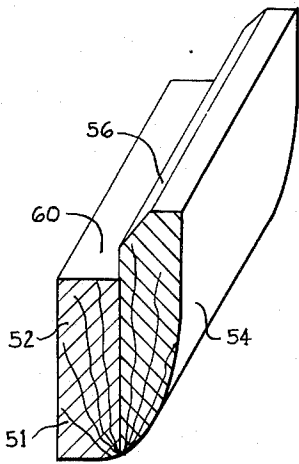


FIG. 9

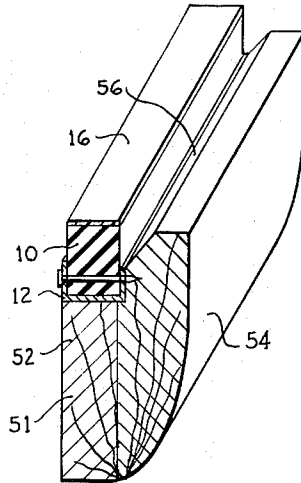


FIG. 10

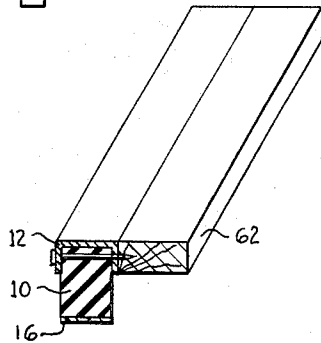


FIG. 11

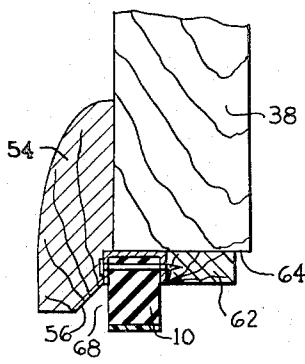


FIG. 12

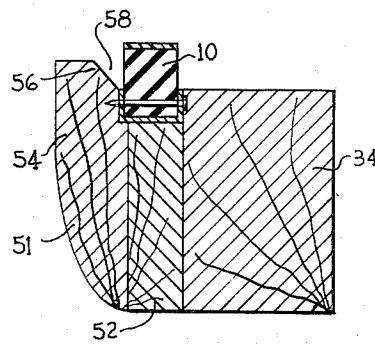


FIG. 13

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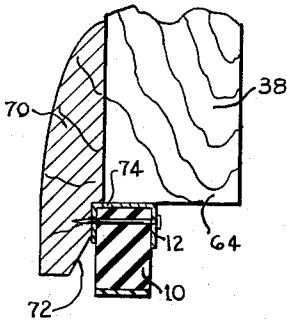


FIG. 14

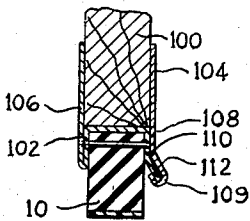


FIG. 16

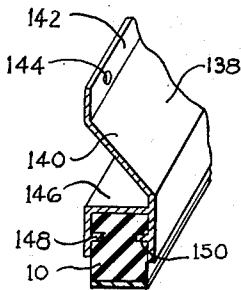


FIG. 17

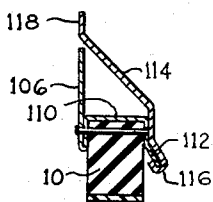


FIG. 18

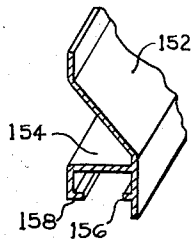


FIG. 19

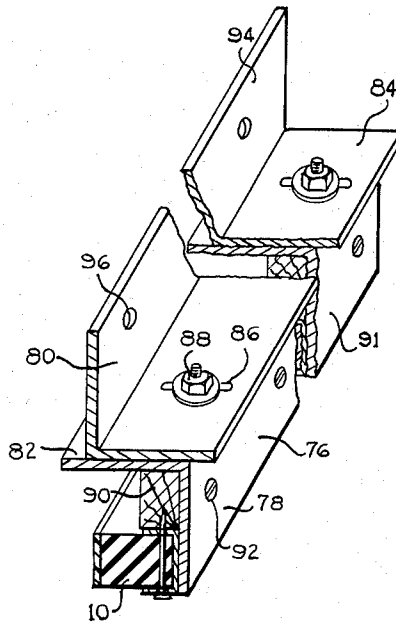


FIG. 15

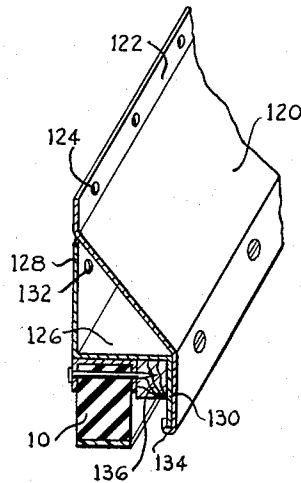


FIG. 20

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2,954,591

DOOR SEALS

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1 Claim. (Cl. 20-69)

This invention relates to improvements in weatherstripping and more particularly, but not by way of limitation, to weatherstripping utilized with overhead garage doors, frames, or the like. This application is a continuation-in-part of my co-pending application Serial No. 460,897, filed October 7, 1954, and entitled "Door Seals," which has now become abandoned.

It is well known that the modern overhead garage doors do not fit adjacent a garage door frame with sufficient force to provide a weatherproof closure. Any inefficient fit between the door and the frame will permit cold air, rain, and the like to enter the garage. It will be apparent that a garage having weatherproof closure will provide a greater utilization of the facilities available therein. Although there are presently available devices for weatherproofing a garage door, it has been found in practical use that they are unsatisfactory in that the pressure required to properly seal the door against the frame will distort the sealing material thereby causing an inefficient seal. The stress and strain of the pressure of the door against the seal also often forces the sealing material to loosen and pull away from the door frame thereby rendering it inefficient.

The present invention contemplates a weatherstripping which may be easily and economically secured to a garage door and frame to provide a substantially weatherproof closure around the entire perimeter of the door. The novel sealing means is firmly secured to the door frame or door in a manner to substantially preclude any possibility of the sealing material pulling away from the holding device, thus assuring an efficient, long lasting seal around an overhead garage door or the like.

It is, therefore, an important object of this invention to provide a seal for overhead garage doors and the like to insure a substantial weatherproofing thereof.

It is another object of this invention to provide a weatherproofing seal for overhead garage doors and the like designed to substantially preclude any distortion or loosening from the seal holding device utilized therewith.

It is a further object of this invention to provide a weatherproofing seal for overhead garage doors and the like which may be easily and economically applied to garage doors and door frames.

It is a still further object of this invention to provide a weatherproofing seal for overhead garage doors and the like which is of a simple and economical construction.

Other objects and advantages of the invention will be evident from the following detailed description, read in conjunction with the accompanying drawings, which illustrate my invention.

In the drawings:

Figure 1 is an exploded perspective view of the novel weatherstripping seal.

Figure 2 is a sectional view of the novel sealing means.

Figure 3 is a transverse sectional view of a garage door frame embodying the invention.

Figure 4 is a perspective view of a door stop of the invention.

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Figure 5 is a front elevational view of a corner of a door frame embodying the invention having a seal unit shown thereon and exaggerated for purposes of better illustration.

5 Figure 6 is a vertical sectional view of the bottom of a garage door embodying the invention.

Figure 7 is a vertical sectional view of the garage door and door frame.

10 Figure 8 is a front elevational view of a garage depicting the relative environment of the novel sealing means.

Figure 9 is a perspective view of a modification of the seal holding member.

15 Figure 10 is a perspective view of the sealing member secured within the seal holding member shown in Fig. 9.

Figure 11 is a perspective view of yet another method of securing the seal member to a door or frame member.

20 Figure 12 is a sectional elevational view of a portion of a door member having the novel seal member disposed thereon.

Figure 13 is a transverse sectional view of a door frame member having the novel seal member secured thereon.

25 Figure 14 is a sectional view of the seal member disposed within a modified seal holding member.

Figure 15 is a perspective view of still another means for securing the seal member to a door or frame member.

30 Figure 16 is a sectional view showing the seal member secured to the bottom of a door by means of a modified holding frame member.

Figure 17 is a perspective view of the seal member disposed in yet another modification of the holding member.

35 Figure 18 is a sectional view of yet another form of sealing member.

Figure 19 is an end view of another modification of the seal holding frame member.

40 Figure 20 is a perspective view of the seal member secured within another modified seal holding member.

Referring to the drawings in detail, reference character 10 refers in general to an assembled weatherproofing seal strip comprising a substantially channel shaped bracket 12, a sealing strip 14 of substantially square configuration, a layer of plastic tape 16 or the like and a plurality of nails 18. The bracket 12 is provided with a pair of upstanding flanges 20 and 22. The flange 22 extends upward further than the flange 20 for a purpose as will hereinafter be set forth. The flanges 20 and 22 are provided with a plurality of apertures 24 and 26, respectively, disposed in substantial alignment to receive the nails 18. The seal 14 is preferably made of sponge rubber or the like, but not limited thereto, and is constructed of the proper complementary dimensions to fit snugly in the bracket 12 between the flanges 20 and 22. The seal 14 protrudes beyond both ends of the bracket 12 a sufficient amount to provide an effective seal at the joint as two or more of the assembled weatherproofing strips 10 are disposed in tandem relation as will be hereinafter set forth.

45 The plastic tape 16 is preferably provided with one adhesive side in order to permit the tape to be easily and securely disposed on the top side (Figs. 1 and 2) of the seal strip 14. In practical use it has been found that the plastic tape 16 greatly improves the friction and sealing properties of the weatherproofing strip 10, although it will be apparent that an efficient sealing may be obtained without the use of the tape 16.

50 A door stop 28 (Fig. 4) is preferably made of wood or the like, but not limited thereto, and is utilized in complement to the weatherproofing strip 10 in a manner as will hereinafter be set forth. The stop 28 is of substantially rectangular configuration having at least one

beveled edge 30. The beveled edge 30 creates a dead air space 31 (Fig. 3) between the stop 28 and the sealing means 10.

Operation

In order to install the weatherproofing seal 10 to be utilized with an overhead garage door, a groove 32 (Fig. 3) may be provided for the entire inner perimeter of a standard door jamb or frame 34. A similar groove 36 (Figs. 6 and 7) may be provided along the bottom of a normal overhead garage door 38. The grooves 32 and 36 are of the proper dimensions to receive the bracket 12 with the longer flange 22 adjacent the side faces 40 and 42, respectively, of the grooves 32 and 36. The seal strip 14 is forced into position within the bracket 12 prior to the disposition of the bracket 12 within the grooves 32 and 36. The bracket 12 is disposed within the grooves and the nails 18 are driven in any well known manner through the apertures 24, the seal 14, and the aperture 26 and into the frame 34 or door 38. As previously set forth, the seal 14 extends slightly beyond the ends of the bracket 12. The disposition of one bracket 12 adjacent another bracket 12 in end to end tandem relation causes a compression of the abutting seals 14 to assure a substantially leak-proof and weather-proof joint.

Referring to Fig. 5, it will be noted that a similar compression of the seal 14 occurs at a corner 44 of the door frame 34 as the end 46 of one strip 10 abuts the end 48 of another strip 10 in a perpendicular relation. Similarly, the end 48 abuts the frame 34 to assure an efficient sealing action at the corner 44. Under practical conditions it has been found satisfactory to manufacture the strips 10 in seven and eight foot lengths to be economically utilized with the standard dimensions of present day garage doors. It will be apparent, however, that any desired length may be utilized to obtain an effective weatherproofing of the door and frame. As previously noted, the flange 20 does not extend upwardly as far as the flange 22, thereby permitting an adequate space for outward bulging or expansion of the seal under a compressed condition along the inner edge of the weather-stripped door and providing a better seal.

The door stop 28 is placed adjacent the frame 34 or door 38 and the strip 10 as clearly shown in Figs. 3 and 6 is secured thereto by any suitable means (not shown). The beveled corner 30 is disposed in the proximity of the strip 10, thereby providing a dead air space 31 acting as an additional sealing factor to enhance the sealing qualities of the strip 10. The stop 28 extends any desired distance beyond the frame 34 as determined by the positioning of the stop against the frame to permit proper contact of the door 38 against the seal 14. The stop 28 also extends below the bottom of the door 38 in a similar manner to permit proper sealing contact of the ground (not shown) against the door 38. The environment drawing (Fig. 8) clearly shows the disposition of the weatherproofing seal 10 in dotted lines extending around the entire closure of the garage door 36 in the garage 50.

Modified seal holding members

Referring to Fig. 9, it has been found to be practical and economical to eliminate the necessity of providing a groove on the door frame itself for receiving the seal member 10. A sealing holding member, generally indicated at 51 in Figs. 9, 10 and 13 may be provided for securing the sealing member 10 to the door frame member 34. The seal holding member 51 comprises a substantially rectangular member 52, preferably constructed of wood, but not limited thereto, which is suitably rigidly secured to a stop member 54. The stop member 54 is preferably similar to the stop member 28 and is provided with at least one beveled edge portion 56 for creating a dead air space 58 between the stop member 54 and the sealing member 10. The rectangular member 52 is provided with at least one longitudinally flat surface

60 (Fig. 9) which is positioned slightly below the beveled edge portion 56 of the stop member 54. Thus, the channel member 12 may be disposed on the surface 60 in order that the sealing member 10 may be nailed adjacent the stop member 54 in the same manner as hereinbefore set forth in securing the sealing member 10 adjacent the door frame member 34. The seal holding member 51 may then be secured adjacent the door frame 34 by nailing, or the like, and in such a manner that the sealing means 10 extends slightly beyond the door frame 34 for contacting the garage door member 38 as hereinbefore set forth. It will be apparent that it is simpler and more economical to construct the seal holding member 51 for securing the sealing means to the door frame 34 than it is to provide a longitudinal groove along the edge of the door frame 34 itself.

When the seal holding member 51 is utilized for securing the sealing means 10 to the door frame 34, it is preferable to secure the sealing member 10 to the bottom of the garage door 38 in the manner shown in Figs. 11 and 12. The sealing member 10 may be nailed to a rectangular member 62 in the same manner as hereinbefore set forth in securing the sealing member 10 to the door frame 34. The member 62 is preferably constructed of wood, but not limited thereto, and may be nailed, or suitably rigidly secured to the bottom edge 64 of the garage door 38. This eliminates the necessity of providing a groove along the lower edge of the garage door, and thereby greatly simplifies the installation of the sealing member 10. The stop member 54 is preferably nailed, or the like, to the garage door in order that the beveled edge 56 of the stop member 54 will provide a dead air space 68 between the stop member 54 and the seal member 10, thereby improving the sealing qualities of the seal 10.

Still another method of securing the sealing means 10 to the bottom edge 64 of the garage door 38 is shown in Fig. 14. A stop member 70 of substantially the same configuration as the stop member 54 is provided with at least one beveled edge portion 72. A longitudinal groove 74 is provided throughout the length of the stop member 70 adjacent the beveled edge portion 72, as clearly shown in Fig. 14. The channel member 12 of the sealing means 10 may be disposed in the groove 74 and nailed therein in the manner hereinbefore set forth. The stop member 70 may then be nailed, or the like, to the lower portion of the door 38 in such a manner that the sealing member 10 is disposed adjacent the lower edge 64 of the door as clearly shown in the drawings.

For the purposes of producing large quantities of the sealing members 10 and holding means therefor, it has been found that a metallic holder, preferably made of aluminum or the like, but not limited thereto, may be manufactured at a minimum cost to provide for an economical sealing means. For example, an adjustable seal holding member, generally indicated at 76 in Fig. 15, has proven to be very satisfactory for installing the sealing member 10 on both the door frame members and door itself. The seal holding member 76 comprises a substantially L-shaped or angle member 78 which is adjustably secured to a second angle member 80. One leg 82 of the member 78 is preferably disposed adjacent one leg member 84 of the member 80. The leg members 82 and 84 are preferably adjustably secured together by means of cooperating slotted portions 86 and bolt members 88. Thus, the member 82 may be adjusted transversely with respect to the member 80. The sealing means 10 may be nailed against a wooden strip member 90 in the same manner as hereinbefore set forth in securing the seal to a door frame. The wooden strip member 90 may then be secured to the second leg member 91 of the angle member 78 by means of suitable screw members 92 in such a manner that the strip member 90 is disposed adjacent the leg member 82 and the seal member 10 is spaced therefrom and as clearly shown in Fig. 15. The second leg member 94 of the angle member 80 is preferably provided with a plurality of spaced apertures

96 to receive nails (not shown), or the like, for securing the seal holding member 76 to a garage door or door frame, as desired.

The seal holding member 76 is preferably utilized for securing weatherstripping around the periphery of a solid type of pivotal overhead garage door. It has been found in practical applications that it is preferable to secure the seal holding member 76 having the seal means 10 disposed therein directly to the door frame adjacent the garage door from the pivot point (not shown) of the garage door and extending downwardly to the garage floor. The seal holding member 76 is preferably secured along the bottom edge 64 of the door itself in all instances. It is also preferable to secure the seal holding member 76 to the door itself from the pivot point of the door upward to the top thereof, and along the top edge of the door, thereby providing a sealing member 10 around the entire periphery of the door for an efficient sealing thereof.

Many of the present day garage doors are called Hollywood overhead doors, and are constructed from material approximately one-half inch thick. This type of door is indicated at 100 in Fig. 16. The sealing means 10 of the present invention may be secured to the lower edge portion 102 of the door 100 by means of a bracket or channel member 104. The bracket member 104 is preferably comprised of two members constructed of aluminum, or the like, but not limited thereto. A pair of flange members 106 and 108 are spaced apart for receiving the door 100 therebetween, as clearly shown in Fig. 16. The flange member 106 is preferably bent or suitably formed at the lowermost portion thereof to provide a channel shaped portion 110. The channel shaped portion 110 is substantially the same configuration as the channel member 12, and is adapted for receiving the sealing member 10 in the same manner. The channel shaped portion 110 may be provided with an outwardly extending or angular flange member 112 for receiving the flange member 108, as clearly shown in Fig. 16. The flange member 108 may be bent as at 109 to encircle a portion of the angular flange 112 for securing the flange 108 to the channel portion 110. The flange members 106 and 108 may be rigidly secured to the opposite faces of the door 100 in any suitable manner, such as screws, or the like (not shown). Thus, the seal member 10 may be secured along the lower edge 102 of the door 100 for an efficient sealing between the door and the garage floor (not shown).

The flange member 106 may also be utilized for securing the seal means 10 to the door frame or side edges and top edge of the garage door. However, an angular flange member 114 (Fig. 18) is preferably utilized in lieu of the flange member 108. The member 114 is provided with an outwardly flared portion 116 for encircling the angular flange 112 to secure the member 114 to the member 106. The member 114 extends upwardly and rearwardly and terminates in an upwardly directed flange member 118 which is substantially in alignment with the flange member 106. A plurality of apertures (not shown) may be spaced longitudinally along the upwardly directed flange 118 for receiving nails or screws, or the like (not shown) for securing the angular member 114 to the door frame, or garage door, as desired. Of course, the flange member 106 is preferably similarly secured to the door or frame member. In this manner the seal member 10 may be secured around the entire periphery of the garage door for the sealing thereof, as hereinbefore set forth.

Figure 20 discloses a modified form of the members shown in Fig. 18. An angular flange member 120 of a similar configuration as the member 114 is provided with an upstanding flange portion 122 having a plurality of apertures 124 spaced thereon. Suitable screw, or the like (not shown) may be utilized in cooperation with the apertures 124 for securing the member 120 to a door

frame or garage door, as desired. An angle member 126 is provided with opposed outwardly extending flange members 128 and 130. The flange member 128 extends upwardly toward the flange member 122, and is in substantial alignment therewith. A plurality of spaced apertures 132 are provided on the flange member 128 for facilitating the securing of the member 126 to the garage door or door frame member. The flange member 130 is secured to the member 120 in any suitable manner, such as by the bent member 134 of the member 120, which encircles the lowermost portion of the flange 130. The seal member 10, including the channel member 12 therefor, is preferably nailed, as hereinbefore set forth, to a wooden strip member 136 which is similar to the strip member 90. The wooden strip member 136 may in turn be suitably secured by nailing or the like (not shown) to the member 126 in such a manner that the seal member 10 extends downwardly from the member 126, as viewed in Fig. 20. In this manner, the seal member may be secured around the door frame, or garage door for sealing therebetween, as hereinbefore set forth.

Figures 17 and 19, however, disclose the preferred embodiment of the invention, and have proven to be the most economical type of construction for the novel weatherstripping of the invention. Furthermore, this type of construction provides for a greatly simplified method of installation of the weatherstripping material on a door or door frame. A bracket member 138 is provided which securely holds the sealing member 10 and which may be easily nailed or screwed, or the like, into the door or door frame. The member 138 is preferably constructed of aluminum, or the like, but not limited thereto, and comprises an upwardly directed angular member 140 having an upwardly extending substantially straight flange member 142. The member 142 is provided with a plurality of spaced apertures 144 which receive suitable nails, or the like (not shown) for securing the entire member 138 and the sealing member 10 to the garage door or door frame, as desired. The member 138 is preferably formed in any suitable manner (not shown) such as bending to provide a substantially channel shaped member 146 at the lower portion thereof as viewed in Fig. 17. The channel member 146 is similar to the channel member 12, however, the member 146 is preferably provided with a pair of opposed inwardly directed lug members 148 and 150. The sponge rubber material of the sealing means 10 is preferably provided with longitudinal slits or grooves (not shown) which extend throughout the length thereof in alignment with each of the lug members 148 and 150. These groove portions facilitate the installation of the sponge rubber material within the channel member 146, and the lug members 148 and 150 hold the sealing material securely on the bracket member 138. Thus, it is not necessary to nail the seal member 10 to the channel member 146. The entire sealing unit 10 and bracket member 138 may thus be easily installed on a garage door or door frame by simply securing the bracket member 138 to the door or frame by nailing, or the like, as hereinbefore set forth.

The bracket member 152 depicted in Fig. 19 is substantially similar to the bracket member 138. However, the construction of the bracket member 152 is somewhat more economical and utilizes slightly less material in the construction thereof. The bracket member 152 may be constructed by an extrusion process at a substantially reduced cost. It will be apparent that this is of considerable advantage in the construction or manufacture of large quantities of the sealing members. The bracket 152 is provided with a channel shaped member 154 similar to the bracket 146. A pair of oppositely disposed inwardly directed lug members 156 and 158 are provided on the channel member 154. However, it will be noted

that the lug member 158 terminates the free end of the channel member 154, thereby eliminating a substantial portion of the downwardly extending portions of the channel member 154. It has been found that this construction securely holds the seal member 10 within the channel member 154, yet is substantially more economical in construction than the other types of bracket members disclosed herein. Furthermore, in the event the sponge rubber material of the sealing member 10 becomes worn or inefficient for any reason, an additional strip of the rubber may be provided with longitudinal grooves for replacing the worn seal member. This provides for an economic replacement of inefficient sealing members.

From the foregoing, it will be apparent that the present invention provides an effective, long lasting, substantially leak-proof seal to be utilized with overhead garage doors and the like. The novel sealing means is of economical construction and may be easily and quickly installed on the present day overhead garage door and frame to provide a substantially weatherproof garage, thus providing a greater utilization thereof.

Changes may be made in the combination and arrangement of parts as heretofore set forth in the specification and shown in the drawings, it being understood that any modification in the precise embodiment of the invention may be made within the scope of the following claim without departing from the spirit of the invention.

I claim:

In combination with an overhead garage door and garage door frame, a weather strip cooperating therewith and comprising a substantially channel shaped hold-

ing bracket, a pair of upstanding flanges provided on the bracket, said flanges being provided with a plurality of aligned apertures, a resilient sealing member disposed on said bracket between said upstanding flanges, means extending through the apertures for securing the sealing member on the bracket, one of said flanges being of greater height than the other and also extending outwardly at an angle from the sealing member, a flange member positioned on the longer bracket flange parallel to said flanges and having an outward extending portion on one end thereof adapted to encircle the outwardly extending end of the longer flange, said flange member in conjunction with the longer bracket flange defining an insulating dead air space between the flanges and the sealing member, and a layer of plastic tape secured to the sealing surface of the sealing member.

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