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WEATHER STRIPPING

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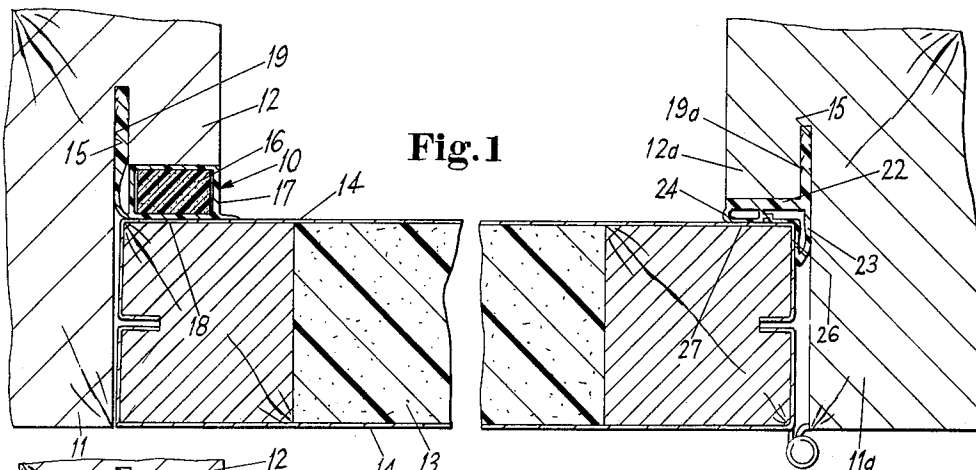


Fig. 1

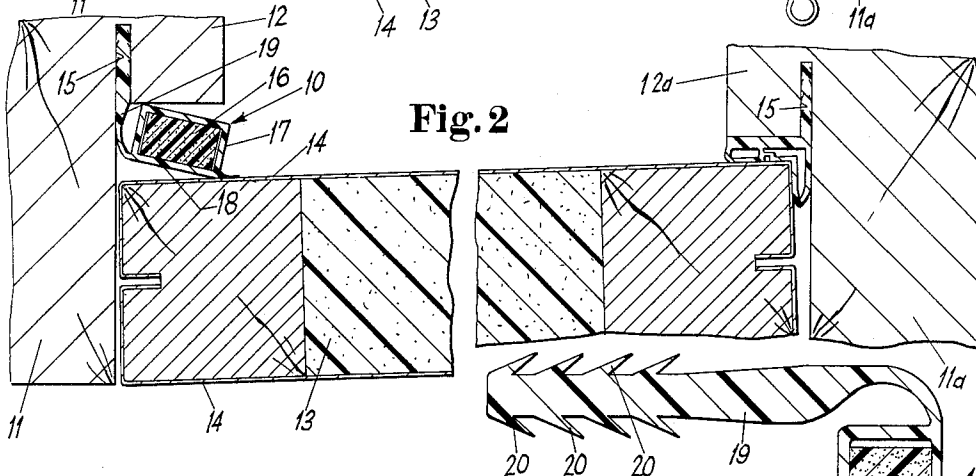


Fig. 2

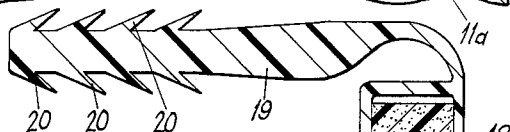


Fig. 3

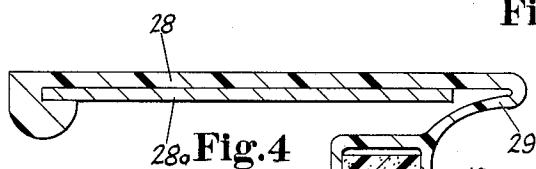


Fig. 4

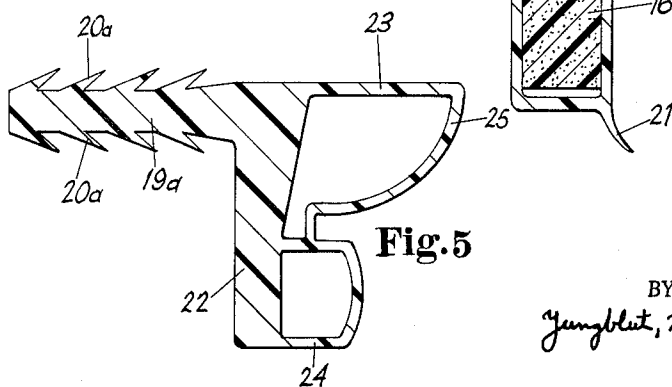


Fig. 5

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WEATHER STRIPPING

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This invention relates to weather-stripping around doors and the like, and more particularly to a weather-stripping for use with steel faced doors, or doors with magnetic edges.

Effective insulation between the interior and exterior of a home or building is, of course, desirable both to secure more even interior heating or cooling, and to reduce fuel cost. With the development of new materials, highly effective insulation of the walls and the like is now possible. But any of the advantages of good insulation are lost if good seals are not provided and maintained at the outside doors, windows, and the like.

With reference to doors, it is conventional to use a compressible material, such as felt, against which the door is closed, or to provide interdigitating strips on the door and door frame respectively, to accomplish the desired seal.

Recent discoveries have made it possible to produce a steel face door so designed as to give good insulating qualities. While it is, of course, possible to use the conventional weather-stripping around such steel faced doors, it will easily be recognized that the development of a magnetic weather-stripping would be highly desirable.

In spite of its obvious desirability, a commercially acceptable magnetic weather-stripping has not heretofore been produced. These prior efforts have been unsuccessful, at least in part, because of the alignment problems which arise in the field. That is, it is now quite common in the building industry to utilize prefabricated door and door frame units. In such a case, the door and door frame are assembled at a factory and shipped to a contractor for installation. Quality control of production in such prefabrication has largely eliminated the problem of alignment of the door frame with the sides of the door; and as such units leave the factory, the alignment of the door frame is generally satisfactory. However, when such a unit is installed on a job by a carpenter or building contractor, one of the door jambs is very often tilted into or out of the doorway. This means that when the door is closed, it will contact the tilted door jamb at either the top or bottom, and be spaced therefrom at the other end. In the case of conventional wooden doors, this misalignment problem can be relatively easily cured by the proper use of weather-stripping (trimming the weather-stripping to the desired dimensions). However, the magnetic weather-stripping heretofore available is designed to be fastened to a door frame during its manufacture, and is not thereafter adjustable to compensate for the ordinary errors in alignment.

It is therefore a primary object of this invention to provide a magnetic weather-stripping for use with steel faced doors which is so designed as to be adjustable to accomplish a tight seal in spite of normal misalignment errors.

A further object of the invention is to provide such weather-stripping which, though installed in a prefabricated door-frame unit in the course of manufacturing, is readily adjustable on the job.

Still another object of the invention is to provide a weather-stripping so designed as to provide a certain degree of "reach," that is, a weather-stripping in which the magnetic element will reach out and engage a door which has not been fully closed.

Numerous other objects and advantages of this inven-

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tion will readily become apparent upon reading the following specification, taken in conjunction with the accompanying drawings. In the drawings:

FIGURE 1 is a cross sectional view showing a door frame, door stop, a door, and the weather-stripping of this invention;

FIGURE 2 shows the elements shown in FIG. 1 with the door not quite fully closed;

FIGURE 3 is an enlarged cross-sectional view of the magnetic weather-strip of this invention.

FIGURE 4 is an enlarged cross-sectional view showing a modification of the magnetic weather-stripping of this invention; and

FIGURE 5 is a cross-sectional view showing a non-magnetic compression strip which is used on the hinge side of a door.

Referring now to FIGURE 1, a piece of magnetic weather-stripping is indicated in cross-section generally at 10. Also shown in cross-section in FIG. 1 are the door jambs 11 and 11a, door stops 12 and 12a, and a door 13 having steel facings 14. It will of course, be understood that a complete door frame includes a pair of opposed vertical door jambs, a lintel across the top of the jambs, and a door sill across the bottom of the jambs. Each door jamb, as well as the lintel, is generally provided with a door stop. In the drawings, the door stops 12 and 12a are shown as integral parts of the door jambs 11 and 11a respectively.

It will be seen that the door stops 12 and 12a are each provided with a slot 15 adjacent the jambs 11 and 11a respectively. As will be explained in more detail hereinafter, the weather-stripping of this invention is adjustably engaged in the slots 15.

In the preferred embodiment of this invention, magnetic weather-stripping such as is indicated generally at 10 in FIG. 1, will be utilized along the top and lock side (opposite from hinged side) of the door. A non-magnetic but compressible weather-strip will be used along the hinged side of the door.

The magnetic weather-stripping of this invention has been shown on a greatly enlarged scale in cross section in FIG. 3. As clearly shown therein, the magnetic weather-strip includes an elongated, flexible magnetic strip 16, which is encased within the resilient bulb 17. In the embodiment shown, the bulb is generally rectangular; this particular configuration is not critical, but it is desirable that the bulb 17 have a rather wide, flat, door engaging face 18.

Secured to the bulb 17 adjacent one edge of the face 18 is the rearwardly extending foot 19. As should by now be apparent, it is the rearwardly extending foot 19 which is engaged in the slot 15 in the door frame. In one embodiment of the invention, the foot 19 is provided with a plurality of barbs 20, which permit the foot 19 to be forced into the slot 15 but tend to restrain its withdrawal. Withdrawal of the foot is, however, possible, and by means of this arrangement, the builder is able to adjust the position of the weather-strip with respect to the door stop 12.

As explained above, the foot 19 is secured or joined to the bulb 17 adjacent one edge of the face 18. This particular construction permits the bulb 17 and magnetic strip 16 to hinge outwardly, as shown in FIG. 2. In other words, the weather-strip of this invention, once secured in place, still provides a measure of "reach" by means of which the magnetic strip 16 may engage a door which is not quite fully closed.

It will also be seen in FIG. 3 that the bulb 17 includes a forwardly extending, resilient fin 21. As best seen in FIG. 1, this forwardly extending fin will be urged into sealing contact with the door facing 14 by the attraction between the magnetic strip 16 and the facing 14.

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As briefly noted above, the preferred form of the invention contemplates the use of a non-magnetic, compressible weather-stripping along the hinge side of the door frame. An exemplary configuration for such compressible weather-stripping is shown in cross section in FIG. 5. As shown therein, the compressible weather-stripping includes a foot 19a having a plurality of barbs 20a which is exactly the same as the foot and barbs 19 and 20 on the magnetic weather-stripping described above, and is adapted to be engaged within the slot 15 along the hinged side of the door.

The foot 19a is secured to the base 22, which as shown in FIG. 1 rests against the door stop 12a. The base 22 also serves as a base for the two integral elongated bulbs 23 and 24. As clearly shown in FIG. 5, the bulb 23 extends somewhat farther outwardly from the base 22 than the bulb 24; the bulb 23 is also provided with a curved face 25, which serves to engage the end of the door 13 as at 26 (see FIG. 1). The bulb 24 on the other hand engages the face of the door as at 27 (see FIG. 1).

It is believed that utilization of the weather-stripping of this invention will now be clear. After the entire door frame has been installed in its proper location, the door is hinged to one of the door jambs. The door is then swung to the closed position, and the seal between the magnetic weather-stripping along the lock side and top of the door, as well as the seal with the compressible weather-stripping along the hinge side of the door is closely examined. If, because of misalignment of the door frame, the door is spaced from the weather-stripping at any point, the entire weather-stripping section may be moved within its slot 15 so that a tight seal is accomplished. In actual practice, it has been determined that providing a foot 19 of sufficient length to give an adjustment of approximately $\frac{3}{8}$ of an inch will be entirely satisfactory.

Many modifications may of course be possible in this invention. For example, as shown in FIG. 4, the foot 19 may be replaced by the modified foot 28. As will be apparent from comparing FIGS. 3 and 4, the foot 28 is considerably thinner than the foot 19; it is therefore desirable to provide some additional stiffening means for this modified foot such as the sheet metal strip 28a. A stiffened modified foot can also be formed by extruding the foot 28 from a rigid plastic material, in which case the strip 28a would be unnecessary. The stiffening means and the modified foot itself will be provided with a series of transverse slots (not shown) at predetermined spaced intervals. Screws or other suitable fastening members may be inserted through the slots, and prior to tightening, will permit appropriate adjustment of the weather-stripping. It will also be noted that in this particular modification, the modified foot 28 is secured to the bulb 18 by the reverse hinge 29. By virtue of this arrangement, the fastening means will be substantially hidden from view.

It is believed that the foregoing constitutes a full and complete description of this invention. And while the above description has been couched in terms of an exemplary embodiment of the invention, no limitation is intended except insofar as set forth in the following claims.

What is claimed as new, and what it is desired to secure by Letters Patent is:

1. In combination:

(a) a door frame having opposed vertical door jambs,

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a horizontal lintel, and a horizontal sill, said door jambs and said lintel each having a door stop portion;

(b) each said jamb and said lintel having an elongated slot at the base of its associated stop portion;

(c) a door having a magnetically attractable surface hingedly secured to one of said door jambs;

(d) compressible weather stripping including an elongated, rearwardly extending foot having a plurality of barbs, said foot being adjustably engaged in said slot in said stop portion of one of said jambs, and

(e) magnetic weather stripping including a magnetic strip, an elongated resilient bulb encasing said magnetic strip, said bulb having a door engaging face, and an elongated, rearwardly extending foot resiliently secured to said bulb adjacent said face, said foot having a plurality of barbs and being adjustably engaged in said slots in said stop portion of said lintel and said other door jamb, whereby said compressible and said magnetic weather stripping can be moved with respect to their respective door jambs and lintel in order to compensate for misalignment between said door and said jambs and said lintel.

2. In combination:

(a) a door frame having opposed vertical door jambs, a horizontal lintel, and a horizontal sill, said door jambs and said lintel each having a door stop portion;

(b) each said jamb and said lintel having an elongated slot at the base of its associated stop portion;

(c) a door having a magnetically attractable surface hingedly secured to one of said door jambs; and

(d) weather stripping including an elongated, rearwardly extending foot having a plurality of barbs, at least a portion of said weather stripping including magnetic means, said foot of said weather stripping being adjustably engaged in said slots in said jambs and said lintel, whereby said weather stripping can be moved with respect to their respective door jambs and lintel in order to compensate for misalignment between said door and said jambs and said lintel.

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