

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) SEALING STRIP FOR DOORS

(71) I, KUNIO ISAMATSU, a subject of Japan, of 11-4, 5-Chome, Sekimae, Musashino-Shi, Tokyo-To, Japan, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a new and improved sealing strip for sealing the gaps between closed doors and their doorways against leakage therethrough of draughts, sounds, and other elements, the sealing strip being secured to the inwardly facing surface of the doorway frame.

Heretofore, the commonly accepted practice in preventing the leakage of draughts, sounds, heat and other elements, past doors hinged to doorway frames when these doors are closed, has been to provide packings on the surfaces of the door stop ledges (hereinafter referred to as "door stops") against which the doors are caused to bear in their closed states. In almost all cases, however, the gap between the surface of the door stop and the confronting surface of the door is insufficient for attachment of a packing of special configuration by means of an adhesive, or screws or nails, or metal strips and screws, nails, and the like.

Furthermore, in recently produced metal doorways, the widths of the door stops are usually very narrow, further increasing the difficulty of applying packings thereon. In the case where a free-swinging door which can be swung inward and outward past a doorway having no door stop is to be converted into a door which can be opened in only one direction, a door stop member can be installed easily only in the case of a wooden doorway, and cannot be so easily installed in the case of a metal doorway.

It is an object of the present invention to provide a new and improved sealing strip whereby the above-described difficulties can be overcome, and a closed doorway can be fully sealed against the leakage therethrough of draughts, sounds, heat and other elements.

Another object of the invention is to provide a sealing strip of the above-stated

character in which the attachment of the packing is strengthened, and the exterior appearance of the entire strip is rendered neat and aesthetically pleasant.

According to the present invention, there is provided a resilient sealing strip for sealing gaps between closed doors and their door frames against leakage of draughts, sounds, and heat and other elements, having a substantially triangular cross-section and comprising, in integral and contiguous relationship, a flat base part for securing the strip to a door frame, a projecting part extending from only one edge of the base part, and a door-contacting part extending from the projecting part generally towards the other edge of the base part, the exposed parts of the strip having a pile covering.

A sealing strip in accordance with the invention will now be described by way of example only, with reference to the accompanying drawing, in which:—

Figures 1 and 2 are partial plan views, in section, showing two different embodiments of sealing strips according to the invention, as applied to the gap between the free swinging side of a door and the corresponding doorway jamb;

Figure 3 is a partial, elevational sectional view showing a third embodiment of the invention, as applied to the upper part of a door and the corresponding doorway lintel; and

Figure 4 is a partial, plan sectional view showing a fourth embodiment of the invention, as applied to the hinged side of a door and the corresponding doorway jamb.

Referring to Figure 1, there is shown an embodiment of the invention as applied to the free side of a door 4 hung in a doorway with a jamb 1 made of wood, which has no door stop. On the surface of this jamb 1, there is secured by means of a metal strip 2 and nails 3, a flat base part *a* of a resilient strip of substantially triangular cross-section. A projecting part *b* extends diagonally outwardly from, and is formed contiguously with, one edge of the base part *a*, and a bent-back door-contacting part *c* is formed contiguously with the outer edge of the

projecting part *b* and serves to conceal most of the base part *a*.

The exposed outer surface of the strip is covered with an electrically or adhesively implanted pile *d*. Figure 1 indicates the state of the parts at the instant when the edge of the swinging side of the door 4 is just contacting the strip. The door 4 is provided along its rear lower marginal portion with another pile covering 5 for sealing the gap between the lower edge of the doorway and the floor.

In another embodiment of the invention as illustrated in Figure 2, the strip of the invention is applied to a doorway jamb 7 fabricated from steel sheet and having a door stop 6. The resilient strip in this case has a cross-sectional form which differs from that shown in Figure 1 and consists of a flat base part *a*₁, a perpendicular part *b*₁ extending from one edge of the base part *a*₁, and a bent-back door-contacting part *c*₁ with a bead at its free end. The base part *a*₁ and the perpendicular part *b*₁ fit into the corner formed by the jamb 7 and the door stop 6, the base part *a*₁ is secured to the jamb 7 by means of an adhesive and screws 8 such as self-tapping screws, and the exposed outer surface of the packing is covered with a pile *d*. In all other respects, the sealing strip and its function are similar to those of the example illustrated in Figure 1.

In another application of the invention as shown in Figure 3, a third embodiment of the invention is applied to function between the upper edge of a door 4 and a corresponding doorway lintel 9 made of wood. As shown, the cross-sectional form of the resilient strip differs from that shown in Figure 1 and consists of a flat base part *a*₂ secured to the lintel 9 by means of a metal strip 2 and nails 3, a projecting part *b*₂ extending downwardly and diagonally toward the door from one end of the base part *a*₂, and a folded-back door-contacting part *c*₂. Again the exposed surfaces are covered by a pile *d*.

Figure 4 illustrates a further application of the invention as applied to the sealing of the gap between the hinged side, provided with hinges 10, of a door 4 and a doorway jamb 12 made of aluminium alloy and having a door stop 11. The resilient strip in this case is similar in cross-sectional form, attachment, and function to that of the example shown in Figure 2, and consists of a flat base part *a*₃, secured to the jamb 12 by means of a metal strip 2 and screws 8, a projecting part *b*₃ extending from one end of the base part *a*₃, and a bent-back door-contacting part *c*₃, the exposed surfaces of the parts *b*₃ and *c*₃ being covered with a pile *d*.

While in the foregoing disclosure the invention has been described with respect to preferred embodiments and applications thereof wherein strips of respectively dif-

ferent cross-sectional forms are used in applications to different parts and conditions of the doorway, it is to be understood that any of the examples illustrated above and modifications thereof can be applied to parts and conditions of the doorway other than those illustrated. For example, for the sake of economy and convenience, it is preferable to use strips of the same form for the lintel and left and right jambs of any one doorway.

Since, in all applications of the strip of the present invention, the strip is secured to the inwardly facing surfaces of the lintel and left and right jambs of a doorway, the strip can be firmly secured by means such as metal strips, screws, and nails irrespective of the width of the door stop or insufficient gap between the surface of the door stop and the confronting surface of the door.

Furthermore, in the case where an inwardly and outwardly swinging door without a door stop is to be converted into one which is openable in only one direction, the strip of the present invention can be effectively applied as a substitute for a door stop, which, moreover, can then also function as an effective sealing strip.

It is to be observed that the cross-sectional form of the sealing strip according to the invention affords full and advantageous utilisation of the resiliency of the strip which, together with the functioning of the pile, is highly effective in sealing the gaps between the door and doorway against leakage of draughts, rain, sound, heat, and other elements. The resiliency of the strip, moreover, affords tight sealing even in cases where the door and doorway are not fabricated to close tolerances or where some irregularity has developed in the gaps therebetween.

A further advantageous feature of the sealing strip of the invention is that the projecting part *b* and the door-contacting part *c* of the strip serve effectively to conceal the securing means such as the metal strip 2 and the heads of nails 3 or screws 8, whereby the sealing strip, when installed, presents a neat and aesthetically pleasant appearance.

WHAT I CLAIM IS:—

1. A resilient sealing strip for sealing gaps between closed doors and their doorframes against leakage of draughts, sounds, and heat and other elements, having a substantially triangular cross-section and comprising, in integral and contiguous relationship, a flat base part for securing the strip to a door frame, a projecting part extending from only one edge of the base part, and a door-contacting part extending from the projecting part generally towards the other edge of the base part, the exposed parts of the strip having a pile covering.

2. A sealing strip according to claim 1

projecting part *b* and serves to conceal most of the base part *a*.

The exposed outer surface of the strip is covered with an electrically or adhesively implanted pile *d*. Figure 1 indicates the state of the parts at the instant when the edge of the swinging side of the door 4 is just contacting the strip. The door 4 is provided along its rear lower marginal portion with another pile covering 5 for sealing the gap between the lower edge of the doorway and the floor.

In another embodiment of the invention as illustrated in Figure 2, the strip of the invention is applied to a doorway jamb 7 fabricated from steel sheet and having a door stop 6. The resilient strip in this case has a cross-sectional form which differs from that shown in Figure 1 and consists of a flat base part *a*₁, a perpendicular part *b*₁ extending from one edge of the base part *a*₁, and a bent-back door-contacting part *c*₁ with a bead at its free end. The base part *a*₁ and the perpendicular part *b*₁ fit into the corner formed by the jamb 7 and the door stop 6, the base part *a*₁ is secured to the jamb 7 by means of an adhesive and screws 8 such as self-tapping screws, and the exposed outer surface of the packing is covered with a pile *d*. In all other respects, the sealing strip and its function are similar to those of the example illustrated in Figure 1.

In another application of the invention as shown in Figure 3, a third embodiment of the invention is applied to function between the upper edge of a door 4 and a corresponding doorway lintel 9 made of wood. As shown, the cross-sectional form of the resilient strip differs from that shown in Figure 1 and consists of a flat base part *a*₂ secured to the lintel 9 by means of a metal strip 2 and nails 3, a projecting part *b*₂ extending downwardly and diagonally toward the door from one end of the base part *a*₂, and a folded-back door-contacting part *c*₂. Again the exposed surfaces are covered by a pile *d*.

Figure 4 illustrates a further application of the invention as applied to the sealing of the gap between the hinged side, provided with hinges 10, of a door 4 and a doorway jamb 12 made of aluminium alloy and having a door stop 11. The resilient strip in this case is similar in cross-sectional form, attachment, and function to that of the example shown in Figure 2, and consists of a flat base part *a*₃, secured to the jamb 12 by means of a metal strip 2 and screws 8, a projecting part *b*₃ extending from one end of the base part *a*₃, and a bent-back door-contacting part *c*₃, the exposed surfaces of the parts *b*₃ and *c*₃ being covered with a pile *d*.

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A further advantageous feature of the sealing strip of the invention is that the projecting part *b* and the door-contacting part *c* of the strip serve effectively to conceal the securing means such as the metal strip 2 and the heads of nails 3 or screws 8, whereby the sealing strip, when installed, presents a neat and aesthetically pleasant appearance.

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2. A sealing strip according to claim 1



wherein said door-contacting part is curved.

3. A sealing strip according to claim 1 or claim 2 wherein said door-contacting part is provided with a beading along its free edge.

4. A sealing strip substantially as hereinbefore described with reference to Fig. 1, Fig. 2, Fig. 3 or Fig. 4 of the accompanying drawings.

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