

PATENT SPECIFICATION

(11) 1241 669

1241 669

DRAWINGS ATTACHED

- (21) Application No. 53761/68 (22) Filed 13 Nov. 1968
 (45) Complete Specification published 4 Aug. 1971
 (51) International Classification E 06 b 7/22
 (52) Index at acceptance
 E1J 5213 5224 5225 5236



(54) SEALING STRIP FOR WINDOWS AND 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 sealing strip for sealing the inevitable chinks or interstices between doors and window sashes and their surrounding frames against the infiltration of wind, rain, snow, dust, and noise and against the leakage of heat either outward or inward.

In recent years, it has become a common practice to provide the peripheral parts of architectural fixtures such as doors and window sashes with packing material or sealing strips consisting of rubber and other resilient strip materials covered with a pile for purposes such as thermal insulation and prevention of infiltration of wind and rain in regions of high temperatures, strong winds, and heavy rains, prevention of heat loss and infiltration of wind and snow in cold regions, and prevention of infiltration of noise and dust in urban areas.

When strips of this type are applied on the peripheries of wood sliding doors, for example, a metal strip such as strap steel is generally overlapped over the entire length of the outer surface of these strips and nailed to the doors at certain spaced intervals. The resulting metal strip and nail heads present an extremely unsightly appearance, which is the principal reason for the general unpopularity of these strips.

It is an object of the present invention to overcome the above-mentioned drawback of these pile covered strips by providing a sealing strip utilising a pile covered resilient strip of unique configuration which, upon being secured in place, is relatively inconspicuous and does not present an unpleasant appearance.

An equally important object of the invention is to provide a sealing strip which is highly effective against infiltration of wind, rain, snow, dust and noise and leakage of heat.

Another object of the invention is to provide a sealing strip of the above-stated character which is of relatively simple construction and can be readily installed at low cost, both on existing fixtures such as doors and window sashes, and on new fixtures.

According to the present invention, there is provided a sealing strip of resilient material for sealing interstices around doors, window sashes, and like fixtures against infiltration of wind, rain, snow, dust, noise and leakage of heat, having a substantially U-shaped cross-section and comprising one flange functioning as a resilient contact part, which flange is longer than the other flange functioning as an attachment part, the longer flange being parallel to or at least partially divergent from the shorter flange, the sealing strip being covered with a pile over its exposed surfaces.

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

Figure 1 is a side elevational view, in vertical section with the middle part cut away, of a pair of sliding doors and their frame incorporating the sealing strip of the invention;

Figure 2 is a view similar to Figure 1 showing an alternative way of incorporating the sealing strip;

Figure 3 is a plan view, in horizontal section, with parts cut away, of the example shown in Figure 2; and

Figures 4, 5 and 6 are enlarged sectional views showing three examples of pile covered resilient sealing strips according to the invention and the details of the manner in which they are secured.

Examples of pile covered resilient sealing strips according to the present invention are shown in cross-section in Figures 4, 5 and 6. Each of these strips is in the shape of a channel of substantially U-shaped cross-section, with a short flange *a* for attachment to a door 1, and a long flange *c* constituting a resilient contact flap, a recess *b* being formed within the channel by the inner surfaces of the flanges

11
2
5
10
15
20
25

a and *c*. The exposed surfaces of each strip are covered with an imbedded pile. It has been found that forming a bulbous head *e* along the longitudinal edge of the resilient contact flap *c* increases the effectiveness of the flap *c*.

Depending on the circumstances of application, the cross-sectional configuration of the longer flange *c* of the resilient strip can be suitably changed as illustrated in Figures 4, 5 and 6. While the longer flange *c* of the example shown in Figure 6 is substantially parallel to the short flange *a*, the longer flanges *c* in the examples shown in Figures 4 and 5 extend divergently relative to the short flange *a*, the longer flange of the example shown in Figure 4 being bent divergently at an intermediate point, while that of the example shown in Figure 5 diverges immediately from its root part from the remainder of the strip structure.

Each pile covered strip is secured to a door 1 by opening the resilient contact flap outwardly, placing a metal strip 2 against the inner surface of the flange *a*, and fastening the metal strip to the door 1, with the flange *a* interposed therebetween, by means of nails 3 or screws.

In one application of the pile covered resilient strip according to the invention, as shown in Figure 1, the pile covered strip is fastened to the upper and lower edges of sliding doors 1 installed in a tropical region of strong winds and heavy rains. The strip is fastened to each door near its upper and lower edges on its outer side, being so positioned that the edges of the resilient contact flaps *c* of the upper and lower strips firmly contact the inner surfaces of the lintel or head *A* and sill *4a*, respectively, of the doorway frame.

Figure 2 illustrates an application of the pile covered strip in a cold region. In this case, in order to prevent damage by snow, the strip at the lower edge of the sliding door is fastened to the interior or indoor side of each door. The space between the inner and outer doors is sealed by a pile covered resilient strip 5 of a cross-section such as that shown in Figure 3 secured vertically directly on to one of the doors and resiliently contacting the other door. This strip 5, which is described and claimed in our co-pending Application No. 54009/68, is hidden from view from both the interior and the exterior when the doors are fully closed or when they are overlapped in exact coincidence.

The present invention can be effectively applied not only to double and single sliding doors and windows but also to other doors and windows such as double-hung windows. While the pile covered resilient strip may be fastened to the door or window sash by an adhesive, it has been found that fastening by means of a metal strip and nails or screws is preferable because of the longer serviceable life of the strip so fastened.

By using the sealing strip of the present invention, the unsightly appearance of the metal strip and nail heads is completely eliminated irrespective of whether the pile covered resilient strip is secured on the exterior side or whether it is secured on the interior side of the fixture.

Furthermore, the pile covered resilient strip according to the invention has a cross-sectional shape such as to enable almost the entire body thereof, except for the short flange *a* for attachment, to exhibit fully the resilient property of the material. Accordingly, fully resilient contact of the extreme edge of the resilient contact flap *c* throughout its entire length is made possible with respect to the surfaces to be sealed of the doorway or window frame, whereby sealing of the door or window against infiltration of wind, rain, snow, dust, and noise, and leakage of heat can be effectively accomplished by this pile covered resilient strip. Moreover, the pile covered resilient strip according to the invention has the additional advantage of being applicable to both new doors and windows and those already installed.

WHAT I CLAIM IS:—

1. A sealing strip of resilient material for sealing interstices around doors, window sashes, and like fixtures against infiltration of wind, rain, snow, dust, noise and leakage of heat, having a substantially U-shaped cross section and comprising one flange functioning as a resilient contact part, which flange is longer than the other flange functioning as an attachment part, the longer flange being parallel to or at least partially divergent from the shorter flange, the sealing strip being covered with a pile over its exposed surfaces.

2. A sealing strip according to claim 1 wherein the attachment part is provided with means for securing the strip to a fixture.

3. A sealing strip according to claim 2 wherein the means for securing the strip comprises a metal strip placed against the inner surface of the attachment part, and nails or screws for securing the metal strip to a fixture with the attachment part interposed.

4. A sealing strip according to claim 2 wherein the means for securing the strip comprises an adhesive layer on the outer surface of the attachment part.

5. A sealing strip according to any one of the preceding claims wherein the resilient contact part has a portion parallel to the attachment part and a portion which diverges from the attachment part.

6. A sealing strip according to any one of the preceding claims wherein the outermost edge of the resilient contact part is in the form of a bulbous bead extending throughout the length of the strip.

7. A sealing strip according to any one of the preceding claims when secured to, and in combination with, a door or a window sash.

11
2
a and c. The exposed surfaces of each strip are covered with an imbedded pile. It has been found that forming a bulbous head e along the longitudinal edge of the resilient contact flap c increases the effectiveness of the flap c.

Depending on the circumstances of application, the cross-sectional configuration of the longer flange c of the resilient strip can be suitably changed as illustrated in Figures 4, 5 and 6. While the longer flange c of the example shown in Figure 6 is substantially parallel to the short flange a, the longer flanges c in the examples shown in Figures 4 and 5 extend divergently relative to the short flange a, the longer flange of the example shown in Figure 4 being bent divergently at an intermediate point, while that of the example shown in Figure 5 diverges immediately from its root part from the remainder of the strip structure.

Each pile covered strip is secured to a door 1 by opening the resilient contact flap outwardly, placing a metal strip 2 against the inner surface of the flange a, and fastening the metal strip to the door 1, with the flange a interposed therebetween, by means of nails 3 or screws.

In one application of the pile covered resilient strip according to the invention, as shown in Figure 1, the pile covered strip is fastened to the upper and lower edges of sliding doors 1 installed in a tropical region of strong winds and heavy rains. The strip is fastened to each door near its upper and lower edges on its outer side, being so positioned that the edges of the resilient contact flaps c of the upper and lower strips firmly contact the inner surfaces of the lintel or head A and sill 4a, respectively, of the doorway frame.

Figure 2 illustrates an application of the pile covered strip in a cold region. In this case, in order to prevent damage by snow, the strip at the lower edge of the sliding door is fastened to the interior or indoor side of each door. The space between the inner and outer doors is sealed by a pile covered resilient strip 5 of a cross-section such as that shown in Figure 3 secured vertically directly on to one of the doors and resiliently contacting the other door. This strip 5, which is described and claimed in our co-pending Application No. 54009/68, is hidden from view from both the interior and the exterior when the doors are fully closed or when they are overlapped in exact coincidence.

The present invention can be effectively applied not only to double and single sliding doors and windows but also to other doors and windows such as double-hung windows. While the pile covered resilient strip may be fastened to the door or window sash by an adhesive, it has been found that fastening by means of a metal strip and nails or screws is preferable because of the longer serviceable life of the strip so fastened.

By using the sealing strip of the present invention, the unsightly appearance of the metal strip and nail heads is completely eliminated irrespective of whether the pile covered resilient strip is secured on the exterior side or whether it is secured on the interior side of the fixture.

Furthermore, the pile covered resilient strip according to the invention has a cross-sectional shape such as to enable almost the entire body thereof, except for the short flange a for attachment, to exhibit fully the resilient property of the material. Accordingly, fully resilient contact of the extreme edge of the resilient contact flap c throughout its entire length is made possible with respect to the surfaces to be sealed of the doorway or window frame, whereby sealing of the door or window against infiltration of wind, rain, snow, dust, and noise, and leakage of heat can be effectively accomplished by this pile covered resilient strip. Moreover, the pile covered resilient strip according to the invention has the additional advantage of being applicable to both new doors and windows and those already installed.

WHAT I CLAIM IS:—

1. A sealing strip of resilient material for sealing interstices around doors, window sashes, and like fixtures against infiltration of wind, rain, snow, dust, noise and leakage of heat, having a substantially U-shaped cross section and comprising one flange functioning as a resilient contact part, which flange is longer than the other flange functioning as an attachment part, the longer flange being parallel to or at least partially divergent from the shorter flange, the sealing strip being covered with a pile over its exposed surfaces.

2. A sealing strip according to claim 1 wherein the attachment part is provided with means for securing the strip to a fixture.

3. A sealing strip according to claim 2 wherein the means for securing the strip comprises a metal strip placed against the inner surface of the attachment part, and nails or screws for securing the metal strip to a fixture with the attachment part interposed.

4. A sealing strip according to claim 2 wherein the means for securing the strip comprises an adhesive layer on the outer surface of the attachment part.

5. A sealing strip according to any one of the preceding claims wherein the resilient contact part has a portion parallel to the attachment part and a portion which diverges from the attachment part.

6. A sealing strip according to any one of the preceding claims wherein the outermost edge of the resilient contact part is in the form of a bulbous bead extending throughout the length of the strip.

7. A sealing strip according to any one of the preceding claims when secured to, and in combination with, a door or a window sash.



8. A sealing strip for sealing interstices around doors, window sashes, and like fixtures, substantially as hereinbefore described with reference to any one of Figures 4, 5 or 6 of the accompanying drawing.

5

BROOKES & MARTIN,
Chartered Patent Agents,
High Holborn House,
52—54 High Holborn,
London, W.C.1.
Agents for the Applicants.

Printed for Her Majesty's Stationery Office, by the Courier Press, Leamington Spa, 1971.
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from
which copies may be obtained.

