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COMBINATION INTERLOCK AND WEATHER SEAL STRIP ARRANGEMENT FOR RELATIVELY SLIDABLE CLOSURE MEMBERS

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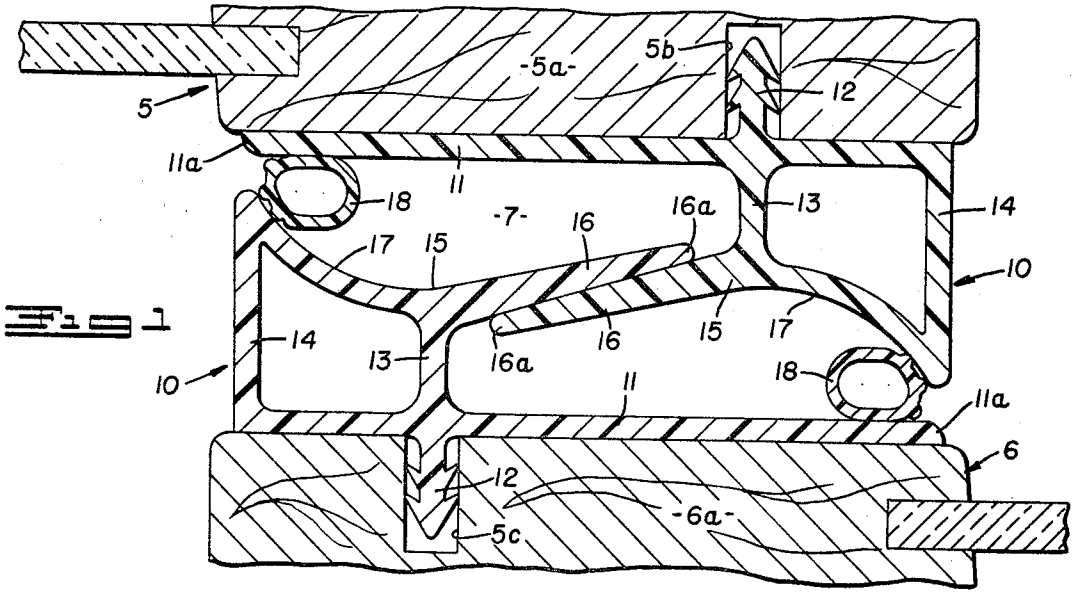


Fig 1

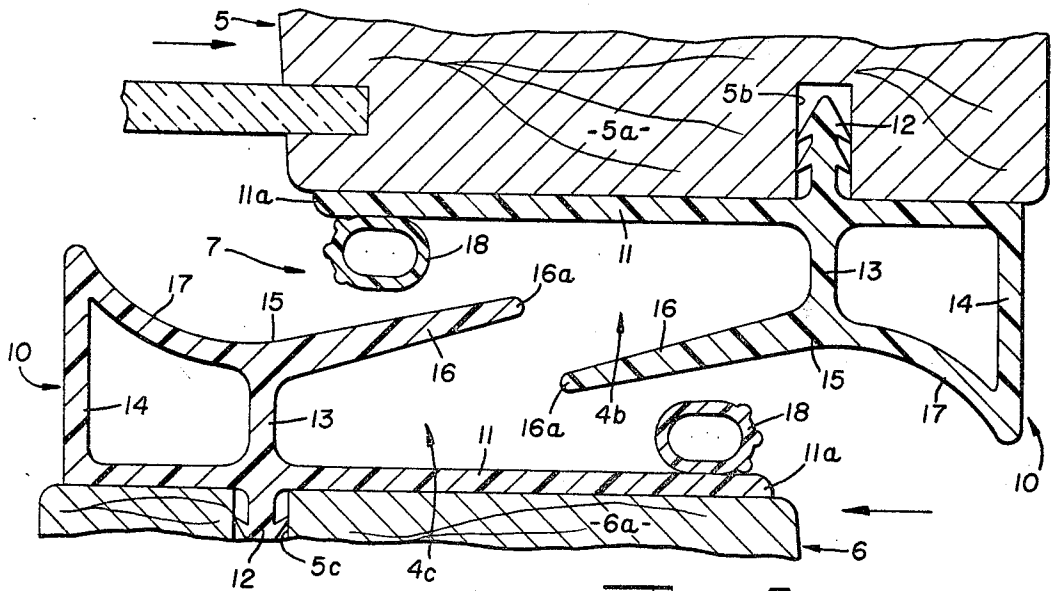


Fig 2

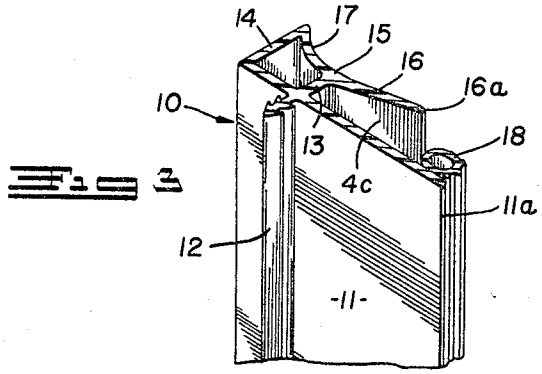


Fig 3

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COMBINATION INTERLOCK AND WEATHER SEAL STRIP ARRANGEMENT FOR RELATIVELY SLIDABLE CLOSURE MEMBERS

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Int. Cl. E06b 3/30, 3/64, 3/88

ABSTRACT OF THE DISCLOSURE

An extruded plastic interlock and weather seal strip for application to sliding doors and/or windows and which includes integral mounting and interlock portions of rigid composition and a weather seal portion of relatively softer, flexible composition; a pair of such strips being mounted in opposing relation on the relatively overlapping end frames or stiles of a pair of sliding doors or windows to provide an interlocking weather seal therebetween.

Background of the invention

This invention relates generally to weather stripping, and more particularly to a combined weather seal and interlock system for relatively slidable closure members.

Summary of the invention

The present invention comprises a combination interlock and weather seal strip arrangement for sealing and tightening the joint between the relatively adjacent, overlapping end frame members or stiles of a pair of relatively slidable doors or windows when they are moved into relatively closed positions. The arrangement includes identically shaped strips applied in opposing relation to each of the relatively overlapping door frame members. Each strip is formed as an integral, one-piece extrusion of plastic material having sections of different hardness. These strips comprise substantially rigid, longitudinally extending base legs or mounting webs secured in face to face contact with the frame members of the doors; rigid, longitudinally coextensive, curved cam portions which are spaced laterally outwardly from the base legs and which terminate in relatively engageable cam fingers, and integral longitudinally coextensive, relatively soft and flexible sealing tubes connected with the base legs and engageable with the cam portions of the opposing strips upon closure of the doors to effect a weather seal therebetween.

General description of drawing

The invention is illustrated in its preferred form in the accompanying drawing in which:

FIGURE 1 is a horizontal sectional view through cooperating doors in closed position having the combination interlock and weather seal strip arrangement of this invention applied thereto.

FIGURE 2 is a similar view but showing the doors moved toward open position.

FIGURE 3 is a perspective view of a section of one of the strips.

Detailed description

With reference to the drawing, for purpose of illustration only, the present invention is shown applied to two door members **5** and **6** which are slidable relatively in parallel planes in the direction of the arrows as shown in FIGURE 2. When in closed position, as shown in FIGURE 1, the vertical or upright stiles or end frame members **5***a* and **6***a*, at the outer edges of the respective door members, overlap with their surfaces in parallel relationship to provide a space **7** therebetween in which the interlock and weather seal strip arrangement of this invention is located. This arrangement comprises a pair of strips **10** which are substantially vertically or longitudinally coextensive with the frame members **5***a* and **6***a* and which engage and interlock with each other when the door members are moved into closed position so as to provide a rattle-free and weathertight sealed joint. The door uprights **5***a* and **6***a* are indicated as being of wood but they may be of other material.

Each strip **10** is of elongated form and includes a flat base or mounting web member **11** which is longitudinally continuous and is of substantial width, having a longitudinally extending edge **11***a*. On the one face of this web **11** is an integral barb-like attaching rib **12** which is longitudinally coextensive with the web **11** and projects laterally outwardly normal thereto. Spaced laterally outwardly from the opposite face of the web **11** and joined integrally thereto by the parallel longitudinally extending inner and outer parallel ribs **13** and **14**, is the cam portion **15**, this portion and the ribs being continuous and longitudinally coextensive with the web **11**. The cam portion **15** includes a finger portion **16** of wedge-shaped cross section which projects beyond the rib **13** in acutely angular relation to the web **11** and terminates in a free thinner edge. The cam portion also includes a concavely curved, cam surface **17** merging with the outer surface of the finger **16** and extending from the inner rib **13** outwardly to the rib **14**. It will be noted that the free edge **16***a* of the cam finger **16** terminates short of or inwardly of the corresponding longitudinal edge of the web **11** and that each finger angles laterally outwardly away from the plane of the web. Also, it will be noted that the curved cam surface **17** extends laterally outwardly from the plane of the web **11** and away from the edge **11***a* of the web. Formed integral at this edge of the web **11** and on the adjacent face of the web is a laterally projecting, hollow or tubular formation **18**, which is continuous and longitudinally coextensive with the web **11** and is of a resiliently yieldable, relatively softer composition than the remaining sections of the strip.

The strip **10** is extruded as an integral one-piece unit from suitable plastic material. All portions are made of a relatively rigid or semi-rigid plastic except the tubular section **18** which is formed of a softer and more flexible plastic, all sections being extruded simultaneously. The relatively rigid and softer sections may be of different compatible plastic compositions or may be of the same plastic compositions plasticized to different degrees and, according to the present invention, the latter is preferred. For example, a polyvinyl chloride compound may be used as the plastic material. The flexible tubular section **18** will preferably be of a softer composition having a hardness preferably ranging from **40**A to **90**A Shore durometer. The two plastic materials which form the different sections of the strip are joined together at the orifice of the extrusion machine in a manner well known in the plastic extrusion art.

In mounting a strip **10** on each of the door members **5** and **6**, a section of suitable length is cut from the extrusion so that it will extend substantially the complete height of the door member. The door member in the face of the upright frame member is provided with a vertically extending kerf or slot, indicated at **5***b* and **5***c* respectively, which opens outwardly at that face and is designed to receive the barbed rib **12** on the strip, the rib being forced inwardly into the slot and being of such a cross-sectional size and shape relative to the slot that it will be retained firmly therein. The adjacent flat surface of the web **11** of the strip will contact the surface of the frame member. The strip is shown so disposed on the door that the free edge **11***a* of the web **11** and the free edge of the cam finger **16** of each strip will extend inwardly from

the outer edge of that door. The result of this arrangement is that when the door members **5** and **6** are moved apart as in FIGURE 2, the strips **10** carried by the respective doors quickly move out of contact, the cam portion **15** of one door strip quickly moving out of contact with the cam portion **15** and the tubular formation **18** of the other door. When the door members are moved into closed position, as indicated in FIGURE 1, the wedge-shaped finger **16** on the one strip will move within and wedge against the wedge-shaped finger **16** of the other strip with a gradually increasing wedging contact, it being noted that the one strip provides a flared socket or throat **4***b* or **4***c*, for receiving the opposed cam finger **16** of the other strip which is directed toward and will advance into that converging socket when the door members are moved relatively toward closed position. As the cam fingers **16** move into final firm face-to-face engagement, the curved cam surface **17** on each strip engages and slightly compresses the resilient tubular formation **18** on the other strip. The interlocking engagement of the fingers **16** of the two strips prevents relative lateral movement of the two door members, that is, movement in a direction normal to the parallel planes of the door members, and this will prevent rattling of the doors under wind pressure. The engagement of the cam finger **16** of the one strip with the resiliently compressible tube **18** of the other strip will provide an effective weathertight seal and it will be noted that a double seal is provided, one at the outer edge of each door member.

It will be apparent from the above that the strip of this invention, when used on relatively slidable closure members as indicated, provides an effective weathertight interlocking joint. Also, the strip can be formed and installed economically.

Having thus described this invention, what is claimed is:

1. In combination with a pair of relatively slidable closure members having end frames disposed in relatively adjacent, parallel relationship when said closure members occupy relatively closed positions; a pair of identically formed strips of extruded plastic composition secured, respectively, in relatively opposing relationship on the end frames of said closure members and longitudinally coextensive therewith, each of said strips being of integral, one-piece construction and comprising a rigid flat base web secured in face to face contact with the end frame of one of said closure members, a rigid curved cam portion disposed in outward laterally spaced relation to the base web and terminating in a cam finger disposed on acutely angular relation to said base web and defining therewith an open ended, inwardly tapering socket to receive the cam finger of the opposing strip when said closure members are moved to their relatively closed positions, and a resiliently compressible, tubular sealing section carried by and coextensive with said base web and arranged to sealingly engage the curved cam portion of the opposing strip when said closure members occupy relatively closed positions.

2. The combination defined in claim **1**, wherein each of said strips is formed with a longitudinally coextensive, barbed attaching rib projecting perpendicularly from the base web and into a kerf formed in the end frame of one of said closure members.

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