

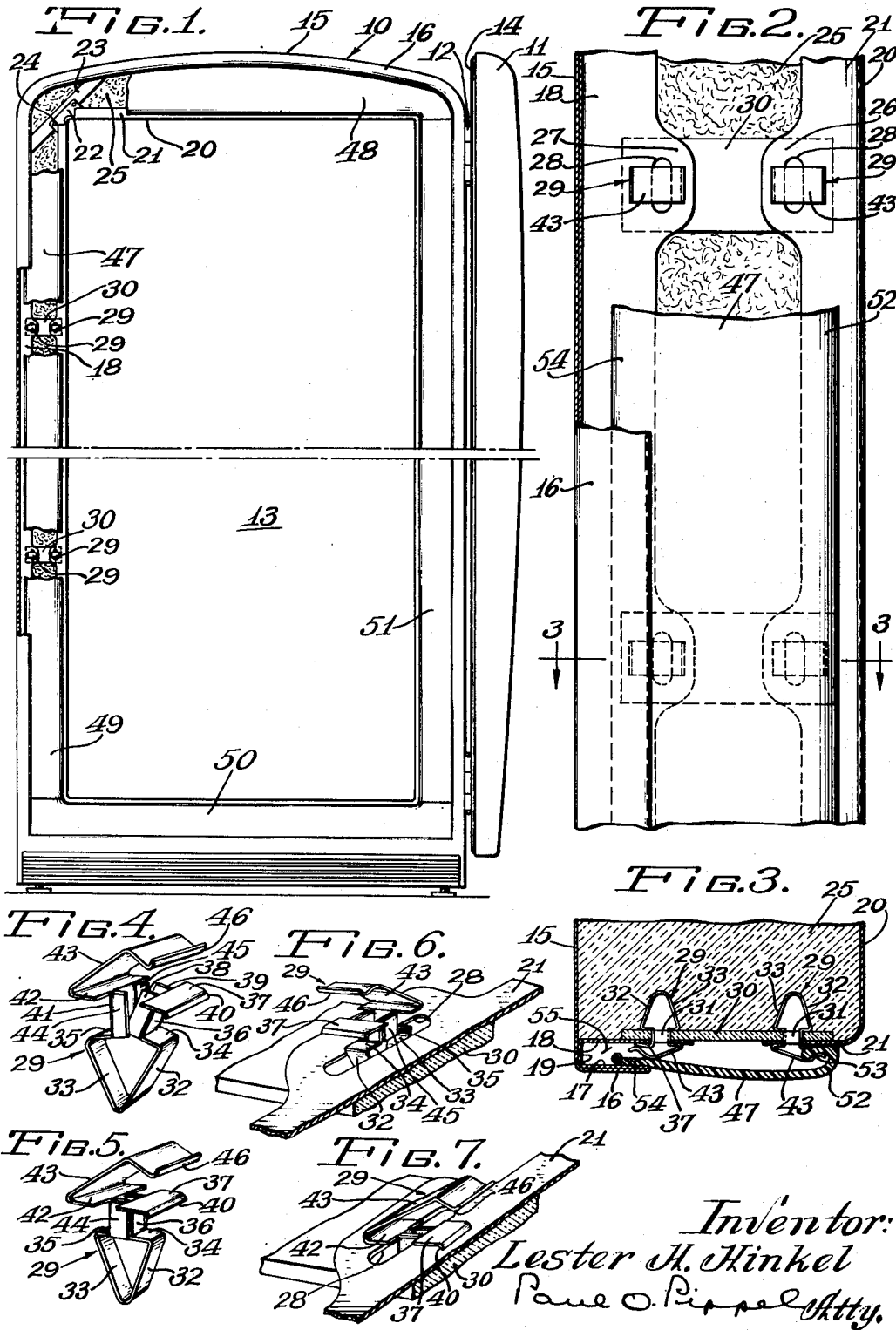
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BREAKER STRIP CONSTRUCTION

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BREAKER STRIP CONSTRUCTION

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This invention relates generally to an improved breaker strip construction and more particularly to a breaker strip member which connects the inner and outer walls of a refrigerator cabinet.

In the conventional household refrigerator cabinet, the inner liner and outer shell usually terminate in spaced apart edges around the periphery of the door opening with a breaker strip member bridging across these edges. The breaker strip member acts as a heat break member and also provides a finished appearance to the cabinet. Since the temperature of the inner liner is considerably lower than the temperature of the outer shell, the breaker strip should be constructed so that it will conduct as small a quantity of heat as possible. It is common to provide the inner liner and outer shell with inturned flanges to which the breaker strip is secured by clip members. In the manufacture of such a cabinet, the insulating material which is positioned between the walls of the inner liner and outer shell usually terminates at the inturned flanges so that the breaker strip must be as flat as possible in order to avoid the formation of a large air space between the breaker strip and insulating material. If this air space is large, the difference in temperatures of the inner liner and outer shell will cause convectional air currents to flow in the space and large heat losses will result. The present invention provides a breaker strip which meets the above mentioned requirements.

One object of the present invention is to provide a refrigerator cabinet with a breaker strip member which connects the spaced apart cabinet walls and acts as a heat break member therebetween.

Another object of the invention is to provide the refrigerator cabinet with a breaker strip member which is positioned in close proximity to insulating material disposed between the spaced apart walls so that only a small air space is enclosed by the breaker strip member.

Another object of the invention is to provide the refrigerator cabinet with spacer members for maintaining the edges of the outer shell and inner liner in spaced relationship.

Another object of the invention is to provide novel means for securing the breaker strip member and spacer members to inturned edge portions of the spaced apart walls.

Another object of the invention is to provide a breaker strip member which allows for variations and warpage of the spaced apart walls of the refrigerator cabinet.

Another object of the invention is to provide a

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breaker strip member which is neat in appearance, simple in structure, economical to manufacture, and easy to assemble and disassemble.

These and other objects of the invention and the various features and details of the construction thereof are hereinafter fully set forth and shown in the accompanying drawing, in which:

Fig. 1 is a front elevational view of a refrigerator cabinet which embodies the present invention.

Fig. 2 is an enlarged fragmentary view of a portion of the wall construction of the cabinet of Fig. 1.

Fig. 3 is a sectional view taken along line 3—3 of Fig. 2.

Fig. 4 is a perspective view of the clip member of Fig. 3 in its free position.

Fig. 5 is a perspective view of the clip member in depressed position.

Fig. 6 is a perspective view showing the clip member being inserted into a slot provided in an inturned flange.

Fig. 7 is a perspective view showing the clip member in assembled position.

Referring to the drawing for a detailed description of the invention, a refrigerator cabinet 10 is shown having a door 11 connected thereto by hinges 12. A food storage compartment 13 is enclosed by the refrigerator cabinet and may be provided with appropriate shelves and drawers (not shown) on which food articles may be placed. The door 11, shown in open position in Fig. 1, is provided with a gasket 14 which contacts the cabinet when the door is swung closed and seals the food storage compartment 13 from the atmosphere.

The cabinet 10 comprises an outer metallic shell 15 having the edge portions around the periphery of the door opening bent inwardly into a U-shaped channel 16 which comprises an outer leg or extension 17, an inner leg or extension 18 and a connecting portion 19. Spaced within the outer shell 15 is a metallic inner shell 20 which encloses the food storage compartment 13, the edge portions of which are bent outwardly around the door opening into an outturned flange 21 which is located in approximately the same plane as inner extension 18 of channel 16. Fixedly secured to each corner of inner shell 20 is a bracket 22 to which a support member 23 is secured by screws 24 as illustrated in Fig. 1. The oppositely disposed ends of the supports 23 are attached to the inner extension 18 of channel 16 in any suitable manner so that the inner shell 20 is secured in position within the outer shell 15. Insulating material 25 is disposed between the

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spaced apart walls of the inner shell 20 and outer shell 15, and as seen in Fig. 3, the insulating material terminates in substantially the same plane in which flange 21 and inner extension 18 are located.

Inturned flange 21 and inner extension 18 of channel 16 are provided with extensions 26 and 27 respectively which are spaced around the door opening at regular intervals. Each extension is provided with an elongated slot 28 therethrough into which a clip member 29 is positioned and secured. Located proximate the extensions 26 and 27 are spacer members 30, each one having elongated slots 31 which are positioned in alignment with slots 28 and through which clip members 29 extend. The clip members 29 secure the spacer members 30 to the flange 21 and channel 16 so that the spacer members will maintain the flange and channel in evenly spaced relationship around the door opening and will prevent any misalignment thereof. The spacer members 30 are constructed from a heat insulating material in order to prevent transfer of heat from the outer shell 15 to inner shell 20.

Each clip member 29 is bent from sheet metal or other resilient material into the form best shown in Figs. 4-7 inclusive, comprising an enlarged or triangular lower portion having inclined sides 32 and 33 and base portions 34 and 35. From base 34 the clip member is provided with an upwardly extending or neck portion 36 and an outwardly extending leg portion 37 which are of a wider width than the base. The edge portions 38 and 39 of neck portion 36 are bent inwardly so that the over-all width of this neck portion is substantially the same as base 34. The outer edge of leg 37 is bent slightly downwardly in order to form a flange 40. The clip member 29 is bent upwardly from base 34 into a second neck portion 41, then outwardly into an extension portion 42 and then at approximately 135 degrees into inclined leg 43. The edge portions 44 and 45 of neck portion 41 are bent inwardly to overlie edge portions 38 and 39. Extension portion 42 and inclined leg 43 are substantially the same width as leg 37. The edge of inclined leg 43 is bent downwardly and then upwardly into a rounded flange 46.

Fig. 4 illustrates the clip member 29 in its free position whereas Fig. 5 shows the clip member after it has been deflected so that edge portions 38 and 39 of neck portion 36 are overlapped completely by edge portions 44 and 45 of neck portion 41. The clip member is now ready for insertion into elongated slots 28 and 31 of flange 21 and spacer member 30 as shown in Fig. 6. It is pushed down until leg 37 touches flange 21, then rotated ninety degrees to the position shown in Figs. 3 and 7. The base portions 34 and 35 will engage the spacer member 30 and the neck portions 36 and 41 will spring slightly outwardly into contact with the sides of the slots 28 and 31 so that the spacer member 30 will be held securely in position and the clip member will be prevented from rotating within the slots. A similar clip member 29 is inserted into slot 28 of inner extension 18 in the same manner so that the opposite end of spacer member 30 is secured to the inner extension.

To complete the wall construction of the cabinet 10, a breaker strip member 47 is assembled thereto so that it bridges across the space between the walls of outer shell 15 and inner shell 20. As best seen in Fig. 1, the breaker strip 47 comprises a separate top portion 48, side portion

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49, bottom portion 50 and side portion 51 which are fitted end to end around the door opening. The breaker strip 47 is constructed from a heat insulating material, such as plastic, and as seen in Fig. 3, the inner edge 52 thereof is curved inwardly toward the inner shell 20 and is provided with an inturned rib 53. In assembling the breaker strip, each of the separate portions 48, 49, 50, and 51 is placed in its proper location with the outer edge 54 thereof positioned within channel pocket or groove 55 between channel extension 17 and inclined leg 43 of clip 29, then pushed outwardly until rib 53 is engaged between legs 37 and 43 of clip member 29 as seen in Fig. 3. The inclined leg 43 of the clip members 29, which are secured to channel 16, is deflected inwardly by the breaker strip 54 so that the pressure exerted by the clip member forces the outer edge 54 of the breaker strip against the outer extension 17 of the channel. The rib 53 of the breaker strip deflects the inclined leg 43 of the clip members 29 secured to flange 21 outwardly so that the clip member exerts a pressure against the rib and forces it against the flange. The clip members 29 are spaced at regular intervals and their combined pressure is great enough to hold the breaker strip securely in position.

From the foregoing description it can be seen that a novel breaker strip construction is provided which incorporates many desirable features. In the manufacture of refrigerator cabinets of the type illustrated, the insulating material is ordinarily inserted adjacent the walls of the outer shell before the inner shell is positioned therein. Since the edge portions of the outer shell and inner shell are bent inwardly, the insulating material does not extend past the bent-in portions, and the breaker strip should be constructed as flat as possible to prevent the formation of a large air space therebelow for the reasons explained heretofore. The present invention provides a breaker strip 47 of simple design which can be easily assembled and which encloses only a small air space above the insulating material 25. It blends in attractively with the refrigerator cabinet 10 and acts as an efficient heat breaker member between the walls of the cabinet. Any dimensional variations or warpage of the outer shell 15 or inner shell 20 will not affect the fit or appearance of the breaker strip member.

The clip members 29 will hold the spacer members securely in position so that the edge portions of inner shell 20 and outer shell 15 will be maintained in spaced relationship around the door opening. Heretofore, it has been common to provide screws to hold spacer members in place and such a structure has been a source of trouble because of chippage of the porcelain on the inner shell during assembly and because the porcelain tends to fill the screw holes which causes assembly difficulties. These problems are not encountered in the present invention since the clip members 29 can be easily slipped into the elongated slots 28 even though the porcelain has built up slightly therearound. The clip members are utilized for the dual purpose of securing the spacer members 30 to the walls and maintaining the breaker strip in position.

While a particular embodiment of the invention has herein been illustrated and described, it is not intended that the invention be limited to such disclosure but that changes and modifications may be made and incorporated within the scope of the annexed claims.

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What is claimed is:

1. In a refrigerator cabinet having a wall with a slot therein to which a breaker strip with a flange thereon is to be mounted, means for mounting said breaker strip to said wall comprising a clip formed of a resilient strip material, said material formed with a compressible wedge-shaped lower portion having the end of the wedge partially open, a neck comprising channel-shaped portions of said strip material extending upwardly from each side of the end of the wedge whereby said channel-shaped portions cooperate when said wedge is compressed to form a rectangularly-shaped neck, leg members comprising a portion of said strip material formed to extend at a right angle from each of said channel-shaped portions, a flange comprising a portion of said strip material on the end of one of said leg members projecting in a downward direction, an arm formed of a portion of said strip material on the end of the other of said leg members and positioned to form an acute angle with said leg members, and a second flange comprising a portion of said strip material on the end of said arm projecting in a downward direction, whereby said lower portion of said clip is insertable through said slot, whereby said lower portion, said neck and said leg members will maintain said clip mounted in said wall, and whereby said flange of said breaker strip is projectible under said arm, whereby said arm will maintain said breaker strip mounted to said wall.

2. In a refrigerator cabinet having a wall with a slot therein to which a spacing member with a slot therein and a breaker strip with a flange thereon is to be mounted, means for mounting said spacing member and said breaker strip to said wall comprising a clip formed of a resilient strip material, said strip material formed with a compressible wedge-shaped lower portion having the end of the wedge partially open, a neck comprising channel-shaped portions of said strip material extending upwardly from each side of the end of the wedge whereby said channel-shaped portions cooperate when said wedge is compressed to form a rectangularly-shaped neck, leg members comprising a portion of said strip material formed to extend at a right angle from each of said channel-shaped portions, a flange comprising a portion of said strip material on the end of one of said leg members projecting in a downward direction, an arm formed of a portion of said strip material on the end of the other of said leg members and positioned to form an acute angle with said leg members, and a second flange comprising a portion of said strip material on the end of said arm projecting in a downward direction, whereby said lower portion of said clip is insertable through said slot in said wall and said slot in said spacing member, whereby said lower portion, said neck, and said leg members will maintain said spacing member mounted to said wall and said clip mounted in said wall, and whereby said flange of said breaker strip is projectible under said arm whereby said arm will maintain said breaker strip mounted to said wall.

3. In a refrigerator cabinet having a wall with a pair of slots therein to which a breaker strip is to be mounted, means for mounting said breaker strip to said wall comprising a clip formed of a resilient strip material, said strip material formed with a compressible wedge-shaped lower portion having the end of the wedge partially open, a neck comprising channel-shaped portions of said strip material extending up-

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wardly from each side of the end of the wedge whereby said channel-shaped portions cooperate when said wedge is compressed to form a rectangularly-shaped neck, leg members comprising a portion of said strip material formed to extend at a right angle from each of said channel-shaped portions, a flange comprising a portion of said strip material on the end of one of said leg members projecting in a downward direction, an arm formed of a portion of said strip material on the end of the other of said leg members and positioned to form an acute angle with said leg members, and a second flange comprising a portion of said strip material on the end of said arm projecting in a downward direction, whereby said lower portion of said clip is insertable through one of said slots, whereby said lower portion, said neck and said leg members will maintain said clip mounted in said wall, and whereby said breaker strip is projectible into the other of said slots and in cooperation with said arm, whereby said arm will maintain said breaker strip mounted to said wall.

4. In a refrigerator cabinet having a wall with a pair of slots therein to which a spacing member with a slot therein and a breaker strip is to be mounted, means for mounting said breaker strip to said wall comprising a clip formed of a resilient strip material, said strip material formed with a compressible wedge-shaped lower portion having the end of the wedge partially open, a neck comprising channel-shaped portions of said strip material extending upwardly from each side of the end of the wedge whereby said channel-shaped portions cooperate when said wedge is compressed to form a rectangularly-shaped neck, leg members comprising a portion of said strip material formed to extend at a right angle from each of said channel-shaped portions, a flange comprising a portion of said strip material on the end of one of said leg members projecting in a downward direction, an arm formed of a portion of said strip material on the end of the other of said leg members and positioned to form an acute angle with said leg members, and a second flange comprising a portion of said strip material on the end of said arm projecting in a downward direction, whereby said lower portion of said clip is insertable through one of the slots of said wall and said slot of said spacing member, whereby said lower portion, said neck, and said leg members will maintain said spacing member mounted to said wall and said clip mounted in said wall, and whereby said breaker strip is projectible into the other of the slots of said wall and in cooperation with said arm, whereby said arm will maintain said breaker strip mounted to said wall.

5. In a refrigerator cabinet, an inner wall, the edge of said inner wall having a flange thereon, a slot in said flange disposed parallel to the edge of said wall, a breaker strip having a flange thereon, means for mounting said breaker strip to said inner wall comprising a clip formed of a resilient strip material, said strip material formed with a compressible wedge-shaped lower portion having the end of the wedge partially open, a neck comprising channel-shaped portions of said strip material extending upwardly from each side of the end of the wedge whereby said channel-shaped portions cooperate when said wedge is compressed to form a rectangularly-shaped neck, whereby said lower portion of said clip is insertable through said slot and rotatable through a right angle to compress said channel, leg members

comprising a portion of said strip material formed to extend at a right angle from each of said channel-shaped portions, a flange comprising a portion of said strip material on the end of one of said leg members projecting in a downward direction, whereby said lower portion, said neck, and said leg members maintain said clip in said slot, an arm formed of a portion of said strip material on the end of the other of said leg members and positioned to form an acute angle with said leg members, and a second flange comprising a portion of said strip material on the end of said arm projecting in a downward direction, whereby said flange of said breaker strip is insertable under said arm, whereby said breaker strip is mounted to said inner wall.

6. In a refrigerator cabinet, an inner wall, the edge of said inner wall having a flange thereon, a slot in said flange disposed parallel to the edge of said wall, a spacing member with a slot therein, a breaker strip having a flange thereon, means for mounting said spacing member and said breaker strip to said inner wall comprising a clip formed of a resilient strip material, said strip material formed with a compressible wedge-shaped lower portion having the end of the wedge partially open, a neck comprising channel-shaped portions of said strip material extending upwardly from each side of the end of the wedge whereby said channel-shaped portions cooperate when said wedge is compressed to form a rectangularly-shaped neck, whereby said lower portion of said clip is insertable through said slot in said flange and through said slot in said spacing member and rotatable through a right angle to compress said channels, leg members comprising a portion of said strip material formed to extend at a right angle from each of said channel-shaped portions, a flange comprising a portion of said strip material on the end of one of said leg members projecting in a downward direction, whereby said lower portion, said neck, and said leg members maintain said spacing member mounted to said inner wall and said clip in said slot in said wall flange, an arm formed of a portion of said strip material on the end of the other of said leg members and positioned to form an acute angle with said leg members, and a second flange comprising a portion of said strip material on the end of said arm projecting in a downward direction, whereby said flange of said breaker strip is insertable under said arm, whereby said breaker strip is mounted to said inner wall.

7. In a refrigerator cabinet, an outer wall, a pair of slots mounted adjacently in a flange on the edge of said outer wall, a breaker strip, means for mounting said breaker strip to said outer wall comprising a clip formed of a resilient strip material, said strip material formed with a compressible wedge-shaped lower portion having the end of the wedge partially open, a neck comprising channel-shaped portions of said strip material extending upwardly from each side of the end of the wedge whereby said channel-shaped portions cooperate when said wedge is compressed to form a rectangularly-shaped neck, whereby said lower portion of said clip is insertable through one of said slots and rotatable through an angle to compress said channels, leg members comprising a portion of said strip material formed to extend at a right angle from each of said channel-shaped portions, a flange comprising a portion of said strip material on the end of one of said leg members projecting in a downward

direction, whereby said lower portion, said neck, and said leg members maintain said clip in said one slot, an arm formed of a portion of said strip material on the end of the other of said leg members and positioned to form an acute angle with said leg members, and a second flange comprising a portion of said strip material on the end of said arm projecting in a downward direction, whereby said breaker strip is insertable into the other of said slots and in cooperation with said arm, whereby said breaker strip is mounted to said outer wall.

8. In a refrigerator cabinet, an outer wall, a pair of slots mounted adjacently in a flange on the edge of said outer wall, a spacing member having a slot therein, a breaker strip, means for mounting said spacing member and said breaker strip to said outer wall comprising a clip formed of a resilient strip material, said strip material formed with a compressible wedge-shaped lower portion having the end of the wedge partially open, a neck comprising channel-shaped portions of said strip material extending upwardly from each side of the end of the wedge whereby said channel-shaped portions cooperate when said wedge is compressed to form a rectangularly-shaped neck, whereby said lower portion of said clip is insertable through one of said slots in said flange of said wall and through said slot in said spacing member and rotatable through an angle to compress said channels, leg members comprising a portion of said strip material formed to extend at a right angle from each of said channel-shaped portions, a flange comprising a portion of said strip material on the end of one of said leg members projecting in a downward direction, whereby said lower portion, said neck, and said leg members maintain said spacing member mounted to said outer wall and said clip in said one slot in said flange on said outer wall, an arm formed of a portion of said strip material on the end of the other of said leg members and positioned to form an acute angle with said leg members, and a second flange comprising a portion of said strip material on the end of said arm projecting in a downward direction, whereby said breaker strip is insertable into the other of said slots in said flange on said outer wall and in cooperation with said arm, whereby said breaker strip is mounted to said outer wall.

9. In a refrigerator cabinet, inner and outer spaced apart walls, the edge of said inner wall having a flange thereon with a slot therein, the edge of said outer wall having a flange thereon with a pair of slots therein, a spacing member having a pair of slots therein, a breaker strip having a flange on one edge thereof, means for mounting said breaker strip to said inner and outer walls comprising a pair of clips each formed of a resilient strip material, said strip material formed with a compressible wedge-shaped lower portion having the end of the wedge partially open, a neck comprising channel-shaped portions of said strip material extending upwardly from each side of the end of the wedge whereby said channel-shaped portions cooperate when said wedge is compressed to form a rectangularly-shaped neck, whereby the lower portion of one of said clips is insertable through said slot in said flange on said inner wall and through one of said slots in said spacing member and rotatable through a right angle to compress said channels, and whereby said lower portion of the other of said clips is insertable through one of said

slots in said flange on said outer wall and through the other of said slots in said spacing member and rotatable through a right angle to compress said channels, leg members on each of said clips comprising a portion of said strip material formed to extend at a right angle from each of said channel-shaped portions, whereby said lower portion, said neck and said leg members of said clips maintain said spacing member mounted to said inner and outer walls and maintain said clips in said slots in said flanges on said inner and outer walls, an arm on each of said clips formed of a portion of said strip material on the end of one of said leg members and positioned to form an acute angle with said leg members, whereby said flange of said breaker strip is insertable under said arm of said clip mounted in said inner wall and whereby said breaker

strip is insertable into the other of said slots in said flange on said outer wall and in cooperation with the arm of said clip mounted in said outer wall, whereby said breaker strip is mounted to said inner and outer walls.

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