

Dec. 2, 1969

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3,481,094

PANEL STRUCTURE WITH INTERLOCKING RIBS

Filed March 20, 1967

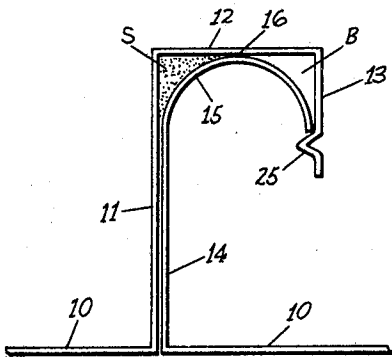


Fig. 1

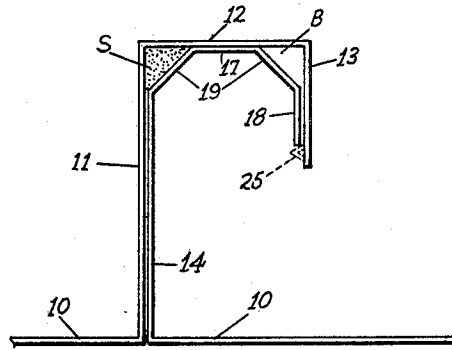


Fig. 2

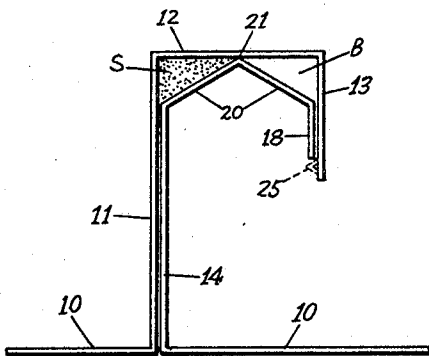


Fig. 3

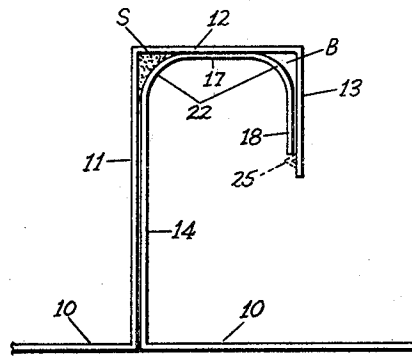


Fig. 4

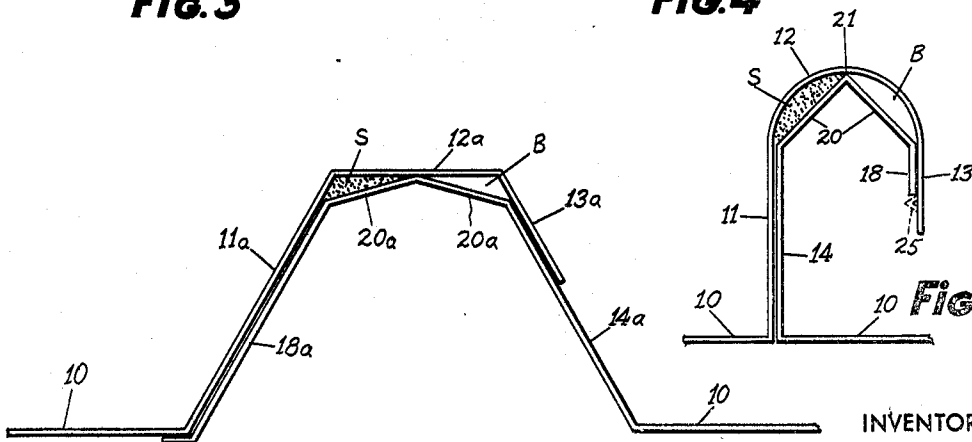


Fig. 5

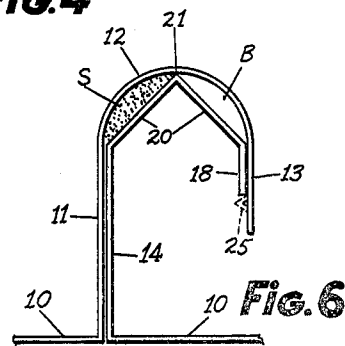


Fig. 6

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PANEL STRUCTURE WITH INTERLOCKING RIBS
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Filed Mar. 20, 1967, Ser. No. 624,496

Int. Cl. E04c 2/08, 2/40; E04b 1/54

U.S. Cl. 52—394

3 Claims

ABSTRACT OF THE DISCLOSURE

An interlocking rib panel having upstanding flanges along opposed edges, the flanges along the two edges of a panel being of different configurations, such that when one flange of one panel is interlocked with the other flange of an adjacent panel, a space is provided between said two flanges into which a sealant may be placed, and a separate space is provided between said flanges to provide a siphon break.

BACKGROUND OF THE INVENTION

The invention pertains to interlocking rib panels of sheet material, and particularly sheet metal, useful in walls, roofs and the like.

There are a great many patents in this field showing interlocking configurations of all sorts. Some of these make provision for a siphon break or a plurality of siphon breaks and some provide for some sort of sealant. Most of these structures are complex and expensive to manufacture, and difficult to interlock during erection. The panels of the present invention are simple and inexpensive to fabricate, the interlocking thereof in the field is facilitated and the panels provide both for a siphon break, or external drain for water entering the rib, and having a complete seal between panels.

SUMMARY OF THE INVENTION

The invention provides that the upstanding flanges along the opposed edges of a panel (which will be interlocked respectively with the flanges of adjacent panels to form upstanding ribs) are of different configurations to provide two spaced areas in which the interlocked flanges are out of contact with each other, one of such areas being adjacent the edges of the interlocked flanges and the other being spaced inwardly therefrom. It should be understood that the term "interlocked" has reference to the upper portion of the upstanding joint, regardless of whether adjacent panels at the deck are abutted or overlapped.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary end elevational view of a pair of flanged panels in interlocked condition.

FIGS. 2 to 6 inclusive are similar views of modified forms of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the figures, the panels are indicated at 10. Each panel is provided with a flange along each edge, which flanges differ from each other as above outlined. In general, the inner flange is so configured that it provides two separated areas between the flanges, one adjacent the terminal portions of the flanges and the other spaced inwardly therefrom.

Thus in FIG. 1 a panel 10 will have at one edge a flange comprising an upstanding portion 11 which is disposed substantially vertically with respect to the surface of the panel, a transverse portion 12 which is substantially parallel to the surface of the panel, and a return

bent portion 13 substantially parallel to the portion 11. The flange thus far described, which in the claims is designated as the first flange, is the same in FIGS. 1 to 4 inclusive.

The second flange which is disposed along the opposed edge of the panel 10, comprises a vertical upstanding portion 14 and as shown in FIG. 1 the transverse and return bent portions of the flange 14 are constituted by a substantially semi-circular arc 15. The flange 14, 15 is so dimensioned that it has substantially line contact at 16 with the transverse portion 12 of the fixed flange. In FIG. 2 the transverse portion of the flange 14 comprises a portion 17 parallel to the surface 10 and adapted in assembled relation to contact the transverse portion 12 of the first flange and the portion 17, which thus contacts only the central portion of the member 12, is connected to the portion 14 and to the return bent portion 18 of the second flange by the angular portions 19.

In the structure of FIG. 3, the transverse portion between the upstanding portion 14 and the return bent portion 18 is composed of two angularly related portions 20 which meet at the point 21 where they contact the member 12.

In FIG. 4 the portion 17 which corresponds to that of FIG. 2 is connected to the portions 14 and 18 by smoothly curved portions 22. It will be clear that in all of these views two separate spaces are provided between the flanges 11 and 14, one being indicated at S and the other at B.

The same general result is achieved in FIG. 5 where the upstanding portions of the flanges are however disposed at an angle. Thus, the first flange has the angular portion 11a, the transverse portion 12a, and the return bent portion 13a. The flange 14a has the angularly related portions 20a and the return bent portion 18a. Again the two spaces S and B are provided.

In FIG. 6 the transverse portion 12 is curved, and the portions 20 are shaped as in FIG. 3. Again line contact is provided between the spaces S and B.

It will now be clear that the assembled panels have an upstanding rib; and that the interlocking portions in the upper part of the rib are symmetrical about a vertical plane through the rib.

It will be clear that panels according to the constructions shown in these figures are very simple to manufacture. There are no complex bends and the bends which are provided can simply be performed in the usual manner on a press brake or between dies. It will also be clear that the interlocking of the panels during erection is very simple and, in fact, easier than it would be if the inner flange conformed exactly to the configuration of the outer flange. The space B in the various embodiments provides a siphon break so that if any water enters into this area through capillary action, a siphon action is prevented. The space S can make the structure entirely waterproof since it may be filled with a sealant before assembly. The sealant may be any conventional mastic or asphaltic composition which may be placed in the area S of the flanges 11, 12, 13 at the factory and it will then conform itself to the configuration of the space S when the flange 14, etc., is assembled therewith. It will be clear that a sufficient quantity of sealant is used, so that when adjacent panels are assembled, the sealant will be squeezed out to fill entirely the space S.

In FIG. 1 there is indicated a crimp 25 in the portion 13 to insure the proper retention of the curve portion 15 within the flanges 11, 12, 13. Similar crimps are shown in broken lines in FIGS. 2, 3 and 4. Such a crimp is not necessary but may be desirable in some situations.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An interlocking rib panel having upstanding first

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and second flanges of single thickness along opposed edges and of generally J-shaped configuration, each of said flanges comprising an upstanding portion, a transverse portion and a return bent portion, said flanges being dimensioned such that the first flange of one panel may engage over and interlock with the second flange of an adjacent panel with the surfaces of said panels in a common plane, the upper portion of both said flanges being symmetrical about a vertical plane through the center of the rib constituted by said flanges when in interlocked condition, the upstanding portions of said flanges being disposed substantially vertically, the transverse portion of said first flange being parallel with the surface of said panel, the transverse portion of said second flange being formed in two angularly related planes and being shaped to provide substantially line contact with the transverse portion of said first flange only in the central region thereof when two such panels are interlocked, the return bent portion of said first flange being substantially vertically disposed with its end spaced a substantial distance from the surface of said panel and the terminal portion thereof being crimped under the end of the return bent portion of said second flange, said second flange having a configuration differing from said first flange to provide two separate spaces in which said second flange is out of contact with said first flange, in the interlocked condition of said flanges, the space adjacent the terminal portions of said return bent portions serving as a siphon break, and the other of said spaces being filled with a sealant.

2. An interlocking rib panel having upstanding first and second flanges of single thickness along opposed edges and of generally J-shaped configuration, each of said flanges comprising an upstanding portion, a transverse portion and a return bent portion, said flanges being dimensioned such that the first flange of one panel may engage over and interlock with the second flange of an adjacent panel with the surfaces of said panels in a common plane, the upper portion of both said flanges being symmetrical about a vertical plane through the center of the rib constituted by said flanges when in interlocked condition, the upstanding portions of said flanges being disposed substantially vertically, the transverse portion of said first flange being parallel with the surface of said panel, the transverse portion of said second flange being constituted by two angularly related planes connected by a portion parallel to the transverse portion of said first flange, said parallel portion being adapted to contact the transverse portion of said first flange when two such panels are interlocked, the return bent portion of said first flange being substantially vertically disposed with its end spaced a substantial distance from the surface of said panel and the terminal portion thereof being crimped under the end of the return bent portion of said

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second flange, said second flange having a configuration differing from said first flange to provide two separate spaces in which said second flange is out of contact with said first flange, in the interlocked condition of said flanges, the space adjacent the terminal portions of said return bent portions serving as a siphon break.

3. An interlocking rib panel having upstanding first and second flanges of single thickness along opposed edges and of generally J-shaped configuration, each of said flanges comprising an upstanding portion, a transverse portion and a return bent portion, said flanges being dimensioned such that the first flange of one panel may engage over and interlock with the second flange of an adjacent panel with the surfaces of said panels in a common plane, the upper portion of both said flanges being symmetrical about a vertical plane through the center of the rib constituted by said flanges when in interlocked condition, the upstanding portions of said flanges being disposed substantially vertically, the transverse portion of said first flange being parallel with the surface of said panel, the transverse portion of said second flange being constituted by two portions arcuate in form connected by a portion parallel to the transverse portion of said first flange, said parallel portion adapted to contact the transverse portion of said first flange when two such panels are interlocked, the return bent portion of said first flange being substantially vertically disposed with its end spaced a substantial distance from the surface of said panel and the terminal portion thereof being crimped under the end of the return bent portion of said second flange, said second flange having a configuration differing from said first flange to provide two separate spaces in which said second flange is out of contact with said first flange, in the interlocked condition of said flanges, the space adjacent the terminal portions of said return bent portions serving as a siphon break, and the other of said spaces being filled with a sealant.

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U.S. Cl. X.R.

52—522, 534, 588; 287—189.36