Sept. 7, 1965 J. S. HELLEKSON 3,204,374

PREFABRICATED SOFFIT CONSTRUCTION

Filed June 7, 1961 2 Sheets-Sheet 1

Fig. 1.

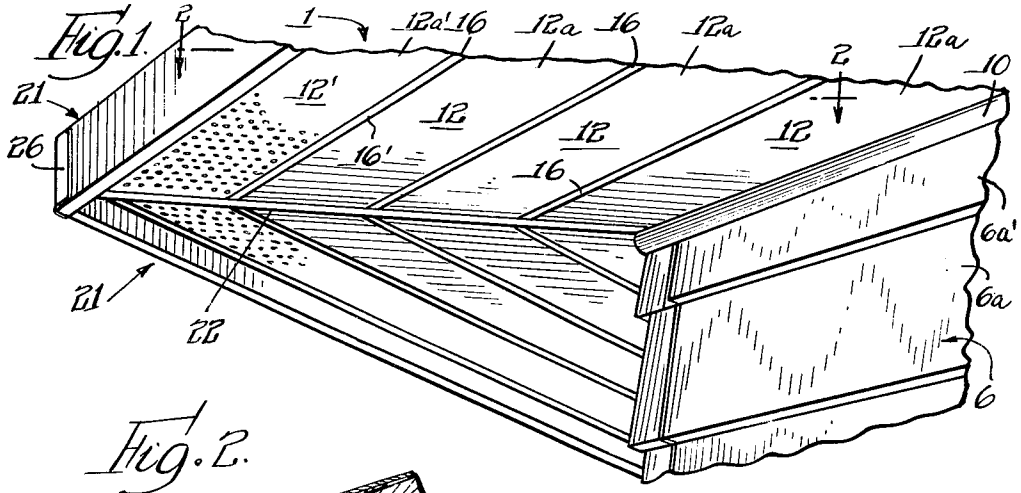

Fig. 2.

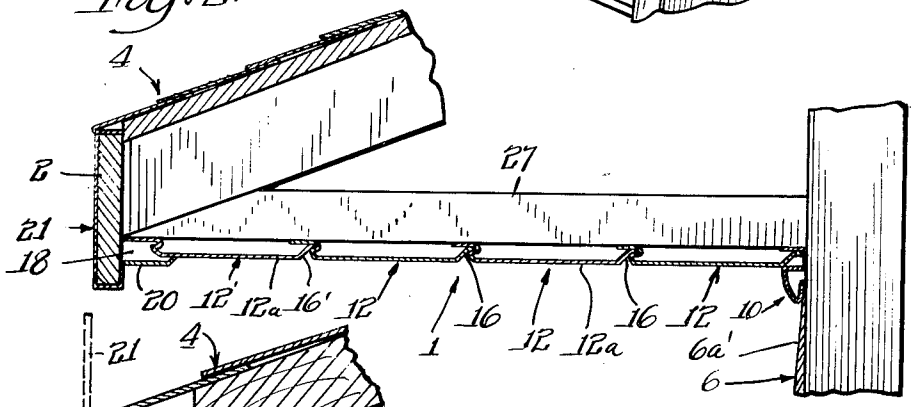

Fig. 3.

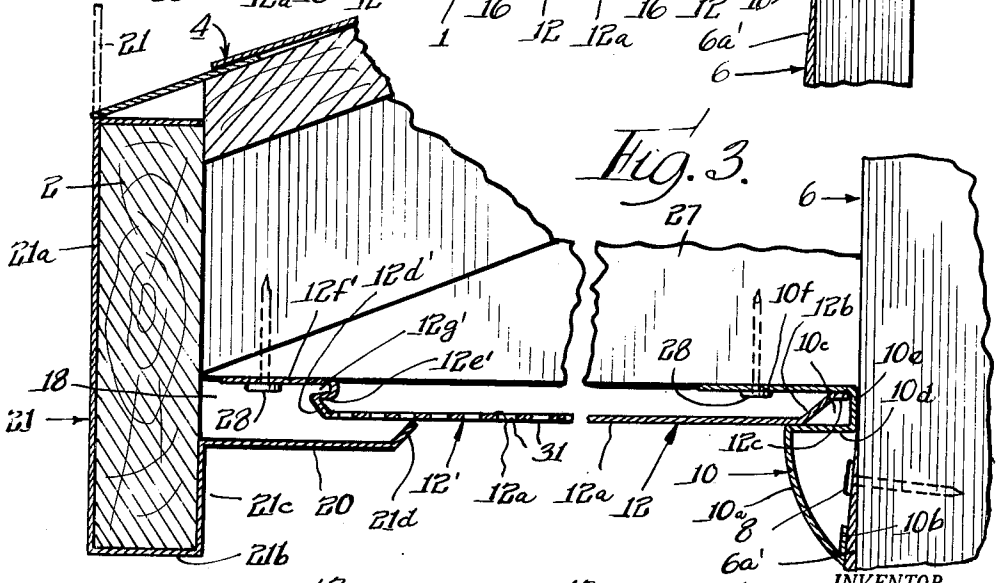

Fig. 6.

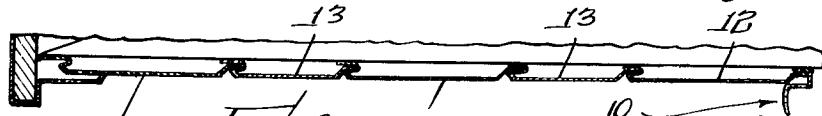

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Fig. 7.

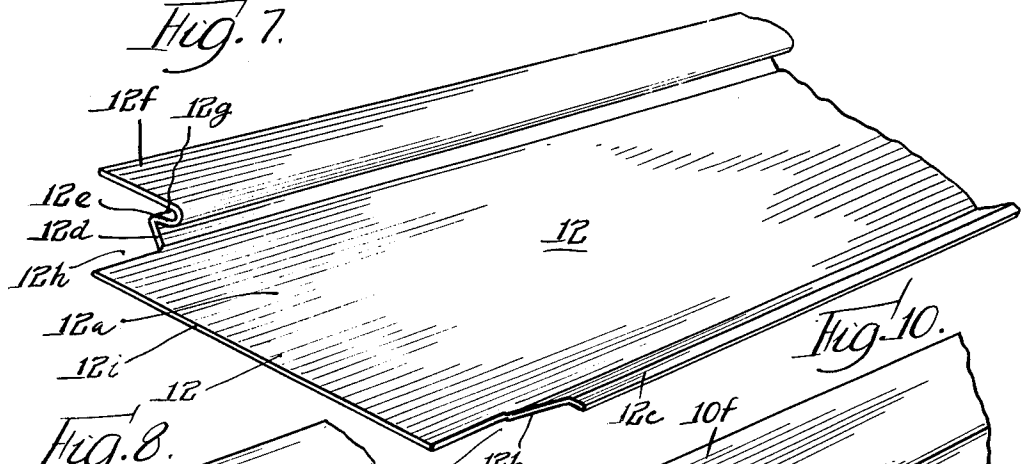

Fig. 8.

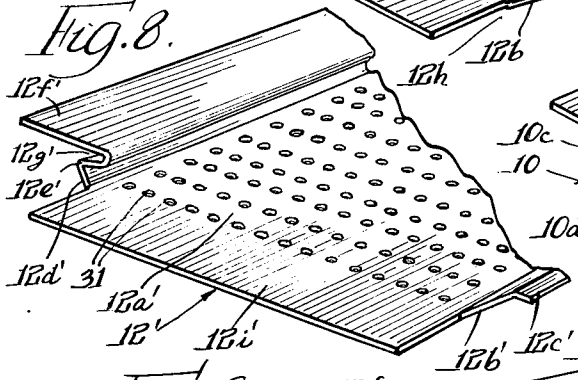

Fig. 10.

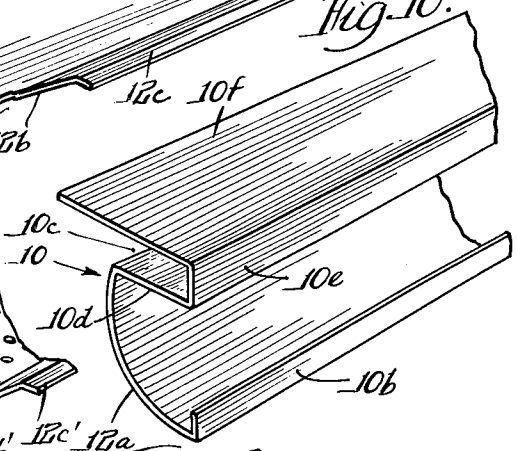

Fig. 9.

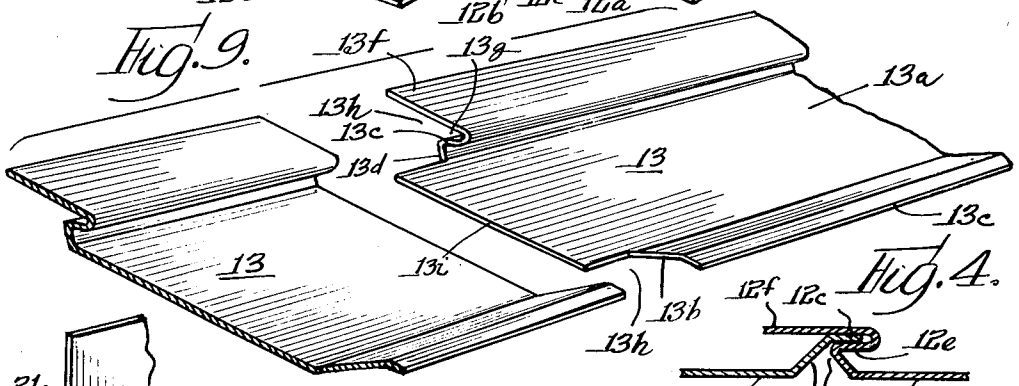

Fig. 4.

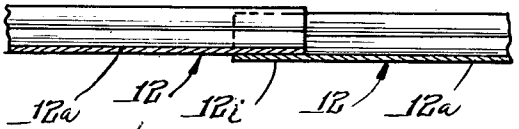

Fig. 11.

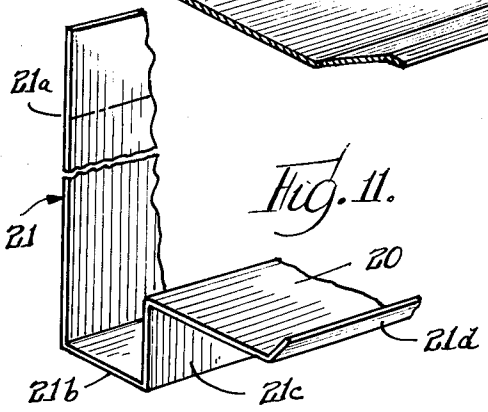

Fig. 5.

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United States Patent Office

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PREFABRICATED SOFFIT CONSTRUCTION

James S. Hellekson, Mount Prospect, Ill., assignor to National Rollex Corporation, Chicago, Ill., a corporation of Illinois

Filed June 7, 1961, Ser. No. 115,453
1 Claim. (Cl. 52—94)

This invention relates to the construction of soffits for the overhanging portions of roofs and to the components for making the same.

Soffits are required for overhanging roofs to present a finished downwardly facing surface between the siding of buildings and the perimeter of the roofs normally defined by vertical facia boards. The construction and maintenance of these soffits have, heretofore, created many problems. Thus, the conventional wooden soffits made of plywood or tongue and groove boards require periodic painting and frequently warp. Plywood soffits require exposed nailing, and, although the nails can initially be masked to a degree by paint, the heads of the nails frequently become noticeable due to peeling of the paint or discoloration thereof due to rusting.

In recent years, an attempt has been made to overcome some or all of the aforesaid problems by making the soffits out of baked enamel coated metal panels. These metal soffit constructions, however, also leave much to be desired. Some of them require exposed nailing. All of them pose problems of fabrication because of the widely varying widths of the overhanging portions of the roofs which must be spanned by the soffit installations. Obviously, this problem cannot, as a practical matter, be solved by fabricating and stocking soffit panels in minutely progressively varying sizes. Prior to the present invention, it was necessary to cut the metal soffit panels longitudinally at the situs of the buildings involved to end up with a soffit of the proper width. This was costly in terms of labor and material. Of course, the problem of cutting the soffit panels longitudinally to the proper size at the situs of the buildings is also present in wooden soffits, although cutting wood presents much less of a problem than cutting metal.

It is, accordingly, one of the objects of the present invention to provide a substantially completely prefabricated soffit construction which, using a few basic sizes of the soffit parts, is adaptable to roof overhangs of almost any size. A related object of the present invention is to provide a soffit construction as just described wherein the nails for anchoring the soffit parts in place are not exposed. Another related object of the present invention is to provide a soffit construction as above described, which is easy to install and results in a substantial saving in overall building cost.

In accordance with one of the aspects of the present invention, the soffit is constructed entirely from prefabricated, baked enamel coated, aluminum panels of a few basic sizes and which can be readily mounted in interlocked relation to provide an appearance which simulates overlapped wooden tongue and groove construction where the the nailing is covered by the lapped joints. In the preferred form of the invention, the panels come in two basic sizes which are almost but not quite mutiples of one another, for example, one providing a 5¾ inch exposed width and the other providing a 3 inch exposed width. The panels come in fixed predetermined lengths, such, for example, 8 foot lengths. In installing an 8 foot length soffit section between the siding of the building involved and a facia board, the panels are anchored in place working from the siding of the building outward to the facia board. In the example being described, for roof overhangs in the neighborhood of ½ foot wide and

larger, by various combinations of the two sizes of panels, one can always form interlocked panel arrangements which leave only a small gap between the outermost panel and the facia board. This gap will never exceed a given small value such as 1¾ inches. (This will not result, however, if the panels provide 3 and 6 inch exposed widths.) Before an installation is made, the particular combination of panel sizes necessary to end up with a gap no greater than this amount is figured out and the soffit so designed is installed. If it is possible to end up with such a gap without mixing panel sizes, then normally the installation is made in this manner.

The aforementioned small gap between the outermost panel of each 8 foot soffit section and the facia board is covered by a special baked enamel coated, aluminum facia board trim member anchored to the facia board. This member has a generally horizontal extending trim flange having a width equal to the aforesaid maximum permitted gap, such as 1¾ inches. This facia board trim member extends contiguous to the bottom surface of the outermost panel to form a smooth, attractive joint therebetween.

In accordance with another important aspect of the present invention, the facia board trim member is designed to encase the exposed portions of the facia board, so that neither the soffit nor the facia board need be painted by the building owner. This also permits the use of inexpensive facia board which materially reduces the cost of the facia board. It is significant that the soffit construction of the present invention actually results in a lower overall material and labor cost than the prior wooden and metal soffit installations.

The space covered by the soffit of an overhanging roof usually opens into the insulated portion of the roof. FHA and VA building requirements normally specify minimum ventilation requirements for the insulated space beneath the roof. In accordance with another aspect of this invention, these ventilation requirements are made by simply using one or more perforated panels in constructing the soffit. It is important, however, that the perforated panels be the outermost panel or panels, and that the innermost panels be imperforate. By perforating only the outermost panel or panels, the wind blown rain and snow cannot gain entrance to the insulated space which starts at the side of the building.

Other aspects of the invention to be described relate to specific constructional details of the panels and trim pieces used in installing the soffit.

For a more complete understanding of the various objects, features and advantages of the present invention, reference should be made to the specification to follow, the claims and the drawings wherein:

FIG. 1 is a fragmentary perspective view of a soffit construction made in accordance with the present invention, where the soffit panels are all of the same width;

FIG. 2 is a vertical sectional view of FIG. 1 taken along section line 2—2 therein;

FIG. 3 is an enlarged, fragmentary view corresponding to FIG. 2;

FIG. 4 is an enlarged, fragmentary transverse sectional view showing the manner in which adjacent transversely spaced panels interlock;

FIG. 5 is an enlarged, fragmentary longitudinal sectional view showing the manner in which adjacent longitudinally spaced panels fit together;

FIG. 6 is a vertical sectional view through a soffit installation where the soffit panels are of mixed widths;

FIG. 7 is a fragmentary perspective view of a wide, imperforate soffit panel;

FIG. 8 is a fragmentary perspective view of a wide perforated soffit panel;

FIG. 9 is a fragmentary exploded perspective view showing the contiguous ends of a pair of narrow longitudinally spaced, soffit panels;

FIG. 10 is a fragmentary perspective view of the frieze molding strip used in the soffit construction of the present invention at the juncture between the soffit and the siding of the building; and

FIG. 11 is a perspective view of a facia board cover and trim member.

Refer now more particularly to FIGS. 1 through 4 which illustrate a soffit installation **1** constructed in accordance with the present invention. The soffit extends between a vertical facia board **2** at the margin of the roof **4** of the building involved and the side thereof generally indicated by reference numeral **6**. The side of the building includes overlapped siding boards **6***a*, the uppermost of which is identified by reference numeral **6***a'*. The latter siding board **6***a'* is held in place by nails **8** which are covered by a unique frieze molding strip **10** which forms part of the soffit installation of the present invention. The soffit installation further includes elongated rectangular metal panels **12** extending parallel to the side of the building. These panels come in fixed predetermined modular lengths, such as 8 feet, as do the other molding strips **10** and other soffit parts to be described. The panels **12** present visible imperforate surfaces. The panels interlock at their longitudinal edges in a manner to be described and form upwardly converging and merging juncture surfaces **16** simulating the joints of conventional wooden tongue and groove soffit boards.

Perforated elongated rectangular panels **12'** of the same modular length as the imperforate panels **12** extend around the perimeter of the soffit installation for ventilation purposes. The perforated panels **12'** interlock with the adjacent imperforate panels **12** in the same manner as the panels **12** interlock to provide converging and merging juncture surfaces **16'**. The panels **12** and **12'** and the frieze molding strips **10** are anchored in place by nailing to regularly spaced horizontal wooden rafters, lookouts, or the like, generally indicated by reference numeral **27**, which extend between the side **6** of the building and the facia boards **2**.

Normally a gap **18** is left between the bottom surface of each perforate panel **12'** and the facia board **2**. This gap varies somewhat from installation to installation, but, due to the nature of the present invention, never exceeds a predetermined small distance no matter what the particular width of the roof overhang may be above a given minimum size (e.g. about ½ foot wide). In the embodiment illustrated in FIGS. 1 through 3, this gap is covered by a standard width trim flange **20** extending from a facia board cover and trim member generally indicated by reference numeral **21**. When the maximum gap size is 1¾ inches then this flange is preferably 1¾ inches wide.

All of the above described parts making up the soffit installation **1** are made of prefabricated sheet metal, preferably aluminum coated with a permanent baked enamel or the like of the same color throughout. These parts require no longitudinal cutting at the situs of the installation to adapt the same to varying roof overhang dimensions. The only cutting which is required is at the corners of the roof where the panels **12** and **12'**, molding strips **10**, and facia cover and trim members **21** are cut transversely to the proper length to form a right angle joint. As shown in FIG. 1, the contiguous severed ends of the panels **12** and **12'** at a corner of the roof may be covered by a suitable aluminum masking strip **22** preferably coated with the same baked enamel as the other soffit parts. The contiguous ends of the facia cover and trim members **21** at the corners of the roof also may be covered by a suitable aluminum corner piece **26** coated with the same baked enamel as the other soffit parts.

The facia cover and trim members **21** cover and protect the exposed surfaces of the facia boards **2**. The

latter, therefore, may be made of a lower than normal grade of wood which does not need to be painted. The entire soffit assembly including the facia cover and trim members **21** thus form a substantially maintenance free, attractive installation. Also, as will be explained, the soffit installation can be mounted in place at a minimum of labor and without any exposed nailing.

As above indicated, one of the most important features of the present invention is that, with only a few basic sizes of the component soffit parts, a soffit can be constructed for roof overhangs of practically any size without any longitudinal cutting of the soffit panels. In the exemplary form of the invention to be described, this is accomplished with imperforate panels **12** of only two basic sizes, namely panels providing exposed panel widths of approximately 5¾ inches and 3 inches, respectively. With this arrangement, it can be shown that for soffit widths greater than about ½ foot wide, the gap between the horizontal exposed portions of the outermost or perforate panels **12'** and the inner faces of the facia boards **2** do not exceed 1¾ inches for all possible roof overhang sizes greater than this minimum value. The perforated panels **12'** need be made in only one size, namely the 5¾ inch size.

The soffit installation encloses a space between it and the roof **4** which, in a normal house construction, communicates with the space beneath the portion of the roof overhanging the main portion of the house. The latter space normally contains insulation, and FHA and VA regulations require minimum ventilation for this space, which is amply supplied by the openings provided in the 5¾ inch wide perforated panels **12'**. Because the latter panels are located at the periphery of the soffit installation, it is highly unlikely that any snow or rain will be blown into the roof space containing the insulation, which starts approximately at the side **6** of the building involved.

Now that the broad features of the invention have been introduced, the preferred detailed aspects thereof will be described. As previously explained, the first parts of the soffit construction to be installed are the frieze molding strips **10**. Each frieze molding strip is an irregular shaped sheet metal member having a downwardly and outwardly facing curved bottom portion **10***a* which covers over the nails **8** of the adjacent uppermost siding board **6***a'* and makes a smooth appearing junction between the soffit installation and the building siding. The molding strip has a flat upstanding lip **10***b* at the bottom thereof which rests against the uppermost siding board **6***a'*. The upper portion of the molding strip is channel shaped to define a laterally outwardly facing channel **10***c*. This channel is formed by an inwardly extending horizontal wall **10***d* terminating in a short upwardly extending wall **10***e*, and a wall **10***f* extending horizontally outwardly from the upper end of the vertical wall **10***e* to a point well beyond the bottom curved portion **10***a* of the molding strip, to form a nailing flange. Nails **28** are passed through the nailing flange which extend into the rafter or lookout **27** to anchor the same in place.

Each of the imperforate panels **12** has a horizontal central portion **12***a*, a shallow inner longitudinal marginal portion which initially inclines upwardly at **12***b* away from said horizontal portion **12***a* and terminates in a narrow horizontal lip **12***c*, and a shallow outer longitudinal marginal portion which initially inclines upwardly and outwardly at **12***d* away from the horizontal central portion **12***a*, to form a wall surface similar to but extending in the opposite direction than the aforementioned inclined portion **12***b*. The inclined wall portion **12***d* terminates in a channel-forming portion including a sharply inwardly extending wall **12***e* which terminates in a reversely outwardly extending horizontal wall **12***f* which extends well beyond the portion of the panel therebelow to form a nailing flange. The various panels **12** are anchored in place to the rafters, lookouts **27** or the like

by nails **28** passing through their nailing flanges. A laterally outwardly facing channel **12***g* is formed at the inner end of each nailing flange **12***f*, the depth of which is sufficient completely to receive the lip **12***c* of the panel **12** positioned on the outside of the panel involved. At one of the ends of each of the panels **12**, a pair of slots **14—14** are cut in the inner and outer longitudinal marginal portions of the panel, so that the central portion **12***a* thereof forms a projecting tongue **12***i* which underlaps the central portion **12***a* of the adjacent longitudinally spaced panels **12** in the manner shown in FIG. 5.

The perforated panels **12'** have the identical configuration of the panels **12** and the corresponding parts thereof have been similarly numbered, except that a prime (') has been added to the reference numerals identifying the parts of the panel **12'**. The only difference between the imperforate panels **12** and the perforated panels **12'** is that the central portion **12***a* of the perforated panel contains numerous closely spaced ventilating perforations **31**.

As previously indicated, two basic sizes of panels are used in the preferred exemplary form of the invention being described. The panels **12** shown in the drawings are the wide 5¾ inch panels. The 5¾ inch dimension is measured between the outermost extremities of the outwardly inclined portions **12***b* and **12***d*. The narrow panels are shown in FIG. 9 and are identified by reference numeral **13**. The inner and outer longitudinal marginal portions of the narrow panels **13** are identical to those of the panel **12**. The parts of each narrow panel **13** have been identified by the reference numeral **13** followed by an alphabet character corresponding to that used for the corresponding part of the panel **12**. The only difference in the wide and narrow panels is in the relative widths of the horizontal central portions **12***a* and **13***a* thereof.

As previously indicated, the gap **18** between an outermost panel **12'** and the inner face of the facia board **2** is covered by the trim flanges **20** of a facia board cover and trim member **21**. The facia board cover and trim member **21** is made in only a few basic sizes to accommodate the various standard widths of facia boards. Since the height of the commonly used facia boards vary more than their thicknesses, said facia cover and trim member **21** is preferably initially made in a partially formed condition shown in FIG. 11. As there shown, each comprises a sheet metal member having a main outer vertical side wall **21***a* adapted to cover the outer vertical surface of a facia board of varying width, the wall **21***a* thereby being wider than the widest facia board with which it is to be used. During the installation of the facia board cover and trim members, the wall **21***a* is bent to its proper size around the facia board.

Each facia cover and trim member further has a horizontally extending bottom wall **21***b* adapted to cover the bottom surface of the facia board of a given thickness, a relatively short upwardly extending wall portion **21***c* extending up from the inner margin of the bottom wall **21***b*, and a horizontally extending wall portion forming the trim flange **20**. The end of the trim flange has a generally upwardly extending lip **21***d* which is adapted to abut against the bottom surface **12***a'* of the outermost panel **12'**.

The procedure for installing the soffit of the present invention is as follows. First, the frieze molding strips **10** is anchored in place in the manner explained. The innermost course of the panels **12** is placed within the molding strip channels **10***c*. As best shown in FIG. 3, the horizontal wall **10***d* at the bottom of each channel **10***c* is relatively wide so that the inner marginal portion of the central portion **12***a* of the panel **12** rests on the wall **10***d*. The width of the wall **10***d* further enables a limited horizontal adjustment of the innermost panel **12** to permit the soffit installation to be properly aligned with the building involved, even when the molding strip **10** undulates a limited amount in a horizontal plane due to an imperfectly constructed side wall. The channel **10***c* is sufficiently deep to receive the outwardly extending marginal wall portions **12***b* and **12***c* of the panel **12**. When the innermost panel **12** has been properly positioned within the associated molding strip channel **10***c*, the panel is anchored in place by the nails **28** passing through the nailing flange **12***f* of the panel **12**. The next panel **12** is then interlocked with the innermost panel **12** by placing the lip **12***c* thereof within the laterally outwardly facing channel **12***g* at the outer side of the innermost panel **12**. This process is repeated until all of the panels **12** and **12'** have been anchored in place. When the various panels are properly interlocked, the upwardly inclining portions **12***b* and **12***c* (or **13***b* and **13***c*) of the various interlocked panels **12**, **12'** and **13** form converging, merging surfaces **16** and **16'** at the junctures of these panels as previously indicated.

In the soffit installation shown in FIGS. 1 through 3, it was possible to use the panels **12** all having the same width, namely the 5¾ inch width referred to previously, to end up with a gap **18** equal to or less than the maximum spacing permitted. If, however, the use of panels of the same width would not leave the proper gap **18** to be covered by the trim flange **20**, then either the narrower panels **13** are used instead throughout or else the narrow and wide panels are combined to leave the proper gap as shown in the installation of FIG. 5.

After the panels **12** and **12'** have been mounted in place, the facia board cover and trim members **21** are mounted in place to cover the gaps **18** between the outermost perforated panels **12'** and the facia boards. As previously indicated, this can be done by the simple expedient of manually bending the upper falls **21***a* thereof around the corner of the facia board so that a horizontally extending upper wall **21***e* is formed extending over the top surface of the facia boards **2**. Of course, each facia board cover and trim member **21** can be completely prefabricated to fit a given size facia board and, in such case, is fitted around the facia board by depressing the flange **21** slightly to allow the walls **21***b* and **21***c* to fit around and snap in place around the bottom of the facia board. Also, although less preferred, where for any reason the facia board **2** is to be exposed to the elements, the facia board trim members **21** need only comprise walls **21***c*, **20** and **21***d*.

It is apparent that, except for a small amount of cutting required at the corners of a roof, the soffit construction of the present invention can be installed without cutting the parts to size with roof overhangs of practically any size and using parts of only a few basic sizes. Also, the use of the baked enamel coated facia cover and trim members **21** to cover the facia boards, along with the other baked enamel coated parts of the soffit, results in a substantially maintenance free installation that does not require any painting and makes possible the use of relatively inexpensive wood for the facia boards. Furthrmore, the soffit of the present invention is easy to install, even when the side of the house is not perfectly straight, provides automatically the proper ventilation of the space beneath the roof without the danger of snow or rain being blown into the insulation containing portions thereof, and results in a soffit construction of lower cost than the soffit constructions heretofore made.

It should be understood that numerous modifications may be made in the preferred forms of the invention described above without deviating from the broader aspects of the present invention.

What I claim as new and desire to protect by Letters Patent of the United States is:

A soffit structure for a building on the bottom of a roof overhang having a vertically extending facia board on the outside thereof, said soffit structure comprising: a number of elongated soffit-forming panels in juxtaposed coplanar edge to edge relation, the adjacent edges of the panels being interlocked, the panels being of only two basic sizes where the exposed widths thereof in their interlocked condition are respectively about 5¾ and

3 inches, whereby, in various combinations, the interlocked panels can encompass varying widths which fall short of spanning roof overhangs of all widths above a given minimum value by an amount never greater than a distance substantially less than the width of the narrowest of said panels, and a trim member along the outer margin of the soffit structure, said trim member having a portion attached to said facia board at the margin of the roof and a generally horizontally extending flange portion overlapping the outermost edge of the outermost panel, said flange portion being of less width than that of the narrowest of said two basic sizes and spanning the space between the outermost edge of said panels and the facia board.

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HENRY C. SUTHERLAND, *Examiner.*