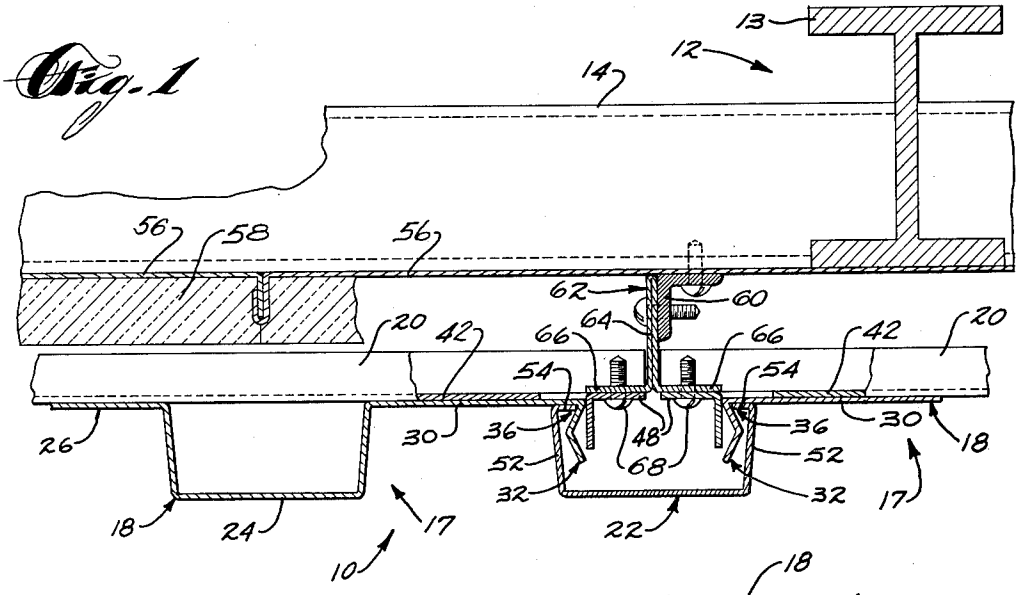
July 7, 1964 R. A. FERRELL 3,139,961

CONNECTING MEANS FOR BUILDING PANELS

Filed May 1, 1962

Fig. 1



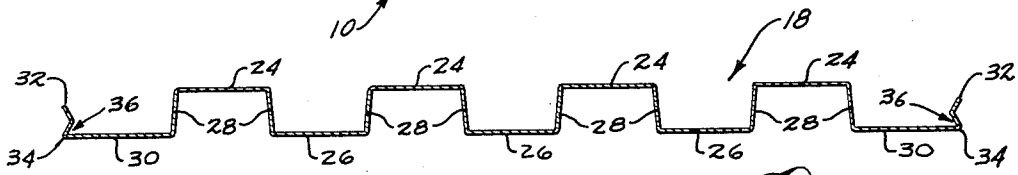




Fig. 2

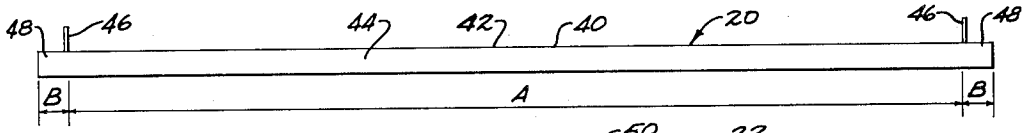



Fig. 3

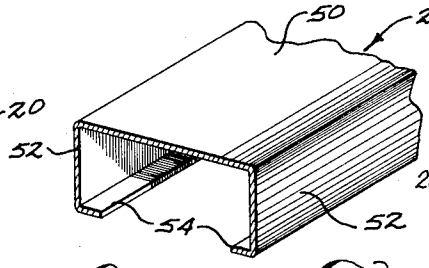



Fig. 4

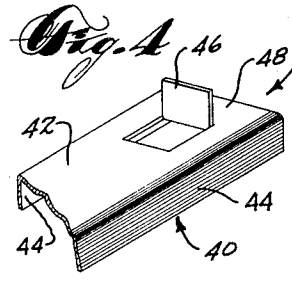
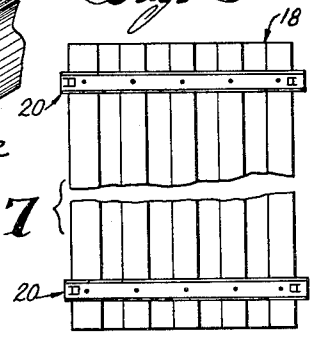



Fig. 6

Fig. 7



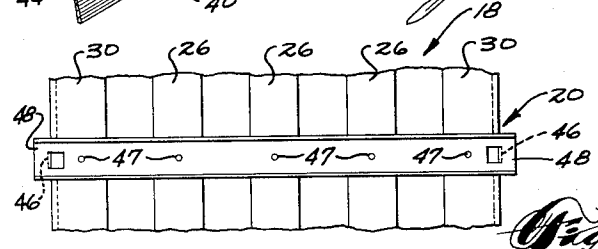




Fig. 5

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# CONNECTING MEANS FOR BUILDING PANELS

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6 Claims. (Cl. 189—88)

This invention relates to an exterior sheath of a building comprising a plurality of generally rectangular building panels and more particularly to an improved means for connecting the adjacent ones of said building panels.

According to the present invention, a plurality of generally rectangular building panels is secured in outboard relation to a building structure. The building structure may comprise the structural framework of a new building or the outer wall of an existing building. Each building panel comprises a generally rectangular sheet having at least two transverse subgirts secured to the inner face thereof. The generally rectangular sheets may comprise flat or corrugated sheets. The building panels are individually secured to the building structure by means of fasteners extending through the subgirts. Each generally rectangular sheet includes vertical lateral surfaces, each of which has an outwardly extending flange contiguous therewith. Each outwardly extending flange is bowed laterally inwardly of the vertical lateral surface to provide a receiving well at the juncture of the outwardly extending flange and the lateral surface.

When the present building panels are installed, they are spaced apart by a predetermined distance. An elongated cap member is provided which is snapped over the spaced apart, outwardly extending flanges of adjacent building panels. Thus when the assembly of the exterior sheath is completed, there are no exposed fasteners. And in the instance wherein a corrugated rectangular sheet is used, the cap member may be made to blend with the corrugations so that it is indistinguishable therefrom.

The principal objects of the present invention include:

To provide an exterior sheath having an improved means for connecting adjacent building panels;

To provide an exterior sheath wherein any one of the building panels may be removed and replaced without disturbing the adjacent building panels;

To provide an exterior sheath which may be used to cover and thereby modernize an outer wall of an existing building;

To provide an exterior sheath which may be combined with an inner sheath and insulating material to form an insulated building wall structure;

To provide an exterior sheath that may be quickly and easily erected;

To provide an exterior sheath that may be rapidly dismantled when desired; and

To provide an exterior sheath wherein all the fasteners and supporting structure used in its assembly are hidden from external view.

These and other objects and advantages of the present invention will become apparent from the following detailed description by reference to the accompanying drawings in which:

FIGURE 1 is a cross-sectional view illustrating an assembled insulated wall structure utilizing the exterior sheath of the present invention;

FIGURE 2 is a cross-sectional view illustrating a rectangular corrugated sheet of the present invention;

FIGURE 3 is an elevation view illustrating a transverse subgirt of the present invention;

FIGURE 4 is a fragmentary isometric view of one end of the transverse subgirt of FIGURE 2, illustrating one of the pair of tongues provided thereon;



FIGURE 5 is a view of the inner face of a rectangular sheet having a transverse subgirt secured thereto;

FIGURE 6 is a fragmentary isometric view, partly in cross-section, illustrating the preferred embodiment of an elongated cap member; and

FIGURE 7 is a fragmentary view of the inner face of a rectangular sheet having at least two transverse subgirts secured thereto.

Referring to FIGURE 1, there is illustrated in a cross-sectional view, an exterior sheath generally designated by the numeral **10**. The exterior sheath **10** is secured in outboard relation to a building structure **12** which in this instance comprises vertical columns **13** and girt members **14** (one each shown here).

The exterior sheath **10** comprises a plurality of building panels **17** each of which includes a rectangular sheet **18** and transverse subgirts **20**. The exterior sheath **10** also includes elongated cap members **22** (one shown here).

*Rectangular Sheet 18*

The rectangular sheet **18**, illustrated in a cross-sectional view in FIGURE 2, preferably comprises a corrugated sheet formed of thin-gauge metal and presenting alternating outer crests **24** and inner valleys **26** with a plurality of leg members **28** extending from the edges of the outer crests **24** to the adjacent inner valleys **26**. The rectangular sheets **18** also include lateral surfaces **30** each of which comprises one of the valleys **26** and which are vertically disposed when the rectangular sheet **18** is installed on a building structure. Alternatively the rectangular sheet **18** could comprise a flat metal sheet.

The rectangular sheet **18** is also provided with an outwardly extending flange **32** along the vertical side edge **34** of each of the lateral surfaces **30**. Each outwardly extending flange **32** is bowed laterally inwardly of the lateral side edge **34** and thereby provides a receiving well **36** at the juncture of the outwardly extending flange **32** and the lateral surface **30**.

*Transverse Subgirt 20*

The transverse subgirt **20**, illustrated in FIGURES 3 and 4, comprises a channel-shaped section **40** having a flat body portion **42** and depending side portions **44**. A tongue **46** is provided at each end which extends outwardly from the subgirt **20**. As best seen in FIGURE 4, each tongue **46** preferably is formed from a portion of the flat body portion **40** by any suitable means such as a punching process.

The tongues **46** are spaced apart by a predetermined distance which is designated by the letter A in FIGURE 3. The distance A is the standard width of a rectangular sheet. Thus when a rectangular sheet is secured to the subgirt **20**, the lateral side edges **34** thereof abut the inner face of the tongues **46**. Occasionally the width of a sheet may be less than or greater than the distance A. In those instances, the rectangular sheet is fitted between the tongues **46**, i.e., the sheet is spread or contracted to fit between the tongues **46**.

Preferably at least two transverse subgirts, as illustrated in FIGURE 7, are secured at spaced distances along the inner face of each rectangular sheet **18** preferably by means of spot welds **47** (see FIGURE 5) along the valleys **26** and the lateral surfaces **30**.

As can be seen in FIGURES 3, 4 and 5, the transverse subgirts **20** include subgirt end portions **48** which extend for a predetermined distance, designated by the letter B, beyond the tongues **46**. The adjacent end portions **48** provide a means by which a minimum spacing between adjacent outwardly extending flanges **32** may be fixed. That is to say, that when the adjacent subgirt end portions **48** are abutted end-to-end, the distance between the adjacent outwardly extending flanges **32** is a fixed mini-

mum distance. Thus a minimum distance between adjacent outwardly extending flanges **32** can be fixed whereby the cap member **22** may be tightly engaged thereover as shown in FIGURE 1.

*Cap Member 22*

The elongated cap member **22**, illustrated in FIGURE 6, has a generally U-shaped configuration with a face or crest **50** and two spaced legs **52** depending from the face **50**. Each leg **52** terminates in an inturned leg portion **54**. In the preferred embodiment, the dimensions of the crest **50** and the legs **52** are substantially the same as the dimensions of the crests **24** and the legs **28** of the rectangular sheets **18**. Thus when the cap member **22** is applied to the exterior sheath **10**, it blends with the corrugations of the rectangular sheet **18** and is indistinguishable therefrom.

It should be evident that a variety of aesthetically pleasing exterior sheaths could be assembled from the rectangular sheets **18** and the cap member **22**. The design possibilities include a change through the depth, shape, texture and/or color of the cap member **22** and a change through the cross-sectional shape, texture and/or color of the rectangular sheets **18**.

*Assembly*

As hereinbefore stated, the exterior sheath **10** may be combined with an inner sheath and insulating material to form an insulated building wall. The exterior sheath **10** is illustrated in FIGURE 1 as forming the outer face of an insulated building wall. The assembly of the exterior sheath **10** will now be described by reference to FIGURE 1.

A plurality of interlocked U-shaped pans **56** are secured in outboard relation to the frame **12**. The U-shaped pans **56** serve as an inner sheath which encloses the building and provides weather protection. Suitable insulation material **58** is next applied to the U-shaped pan **56**. The insulation material may comprise batts of glass fibers, mineral fibers, asbestos, rock wool, foamed plastics and the like.

A plurality of angle members **60** (one shown here) next is secured at spaced distances along the U-shaped pans **56** and directly to the girt members **14**. On each of the angle members **60** there is provided a T-clip **62** having an inboard leg **64** secured to the angle member **60** and two outboard transverse flanges **66**. The T-clip **62** preferably is formed from materials identified as protected metals, i.e., a metal sheet, usually zinc-coated carbon steel, coated with a thick, tough covering of bituminous material. The T-clip **62** serves to minimize through-conduction of heat from the interior of the building to the outer surface of the exterior sheath **10**.

As shown, the subgirt end portions **48** are secured, preferably by means of bolts **68**, to the outboard transverse flanges **66**. In this manner, the rectangular facing sheets **18** are maintained in outboard relation with the frame **12** of the building. Furthermore, each building panel **17** may be individually removed from the frame **12** without disturbing the adjacent building panels **17**.

The elongated cap member **22** next is snapped over the outwardly extending flanges **32** of the adjacent rectangular sheets **18**. The legs **52** of the cap member **22** are disposed externally of the outwardly extending flanges **32** with each inturned leg portion **54** engaged in one of the receiving wells **36**.

As can be seen in FIGURE 1, the cap member **22** blends with the corrugations of the rectangular sheet **18** so that it becomes visually indistinguishable therefrom. As hereinbefore stated, the cap member instead could be accented by changing its size, shape, texture and/or color to produce a variety of aesthetically pleasing exterior sheaths.

An object of the present invention is to provide an exterior sheath which may be used to cover and thereby modernize an outer wall of an existing building. It should be evident that the angle members **60** instead could be secured directly to the outer wall of an existing building. In this instance the exterior sheath **10** would serve to cover and modernize the exterior face of the building.

It should be evident from the foregoing detailed description, that the present invention provides an exterior sheath: having an improved means for connecting adjacent building panels; wherein any one of the building panels may be removed and replaced without disturbing the building panels adjacent thereto; which may be used to cover and thereby modernize an outer wall on existing building; which may be combined with an inner sheath and insulating material to form an insulated building wall; that may be quickly and easily erected; that may be rapidly dismantled when desired; and wherein all the fasteners and supporting structure used in its assembly are hidden from external view.

I claim:

1. In an exterior sheath of a building comprising a plurality of generally rectangular building panels maintained in outboard relation with a building structure, each said building panel comprising a rectangular sheet having lateral surfaces with vertical side edges, at least two transverse subgirts secured to the inner face of said rectangular sheet, means for securing the said transverse subgirts to said building structure, the improvement comprising:

an outwardly extending flange along the said vertical side edge of each said lateral surface, said outwardly extending flange being bowed laterally inwardly of said vertical side edge thereby providing a receiving well at the juncture of said outwardly extending flange and the said vertical side edge, the said outwardly extending flanges of the adjacent ones of said rectangular sheets being spaced apart;

a pair of tongues extending outwardly from each said transverse subgirt, said tongues being disposed externally of the said vertical side edges and aligned therewith; and

an elongated cap member of generally U-shaped configuration having a face and two spaced legs depending from the said face, said legs being disposed externally of the said outwardly extending flanges of said adjacent ones of said rectangular sheets, each said leg terminating in an inturned leg portion engaged in one said receiving well.

2. The improvement of claim 1 wherein each said transverse subgirt includes a subgirt end portion extending for a predetermined distance beyond each said tongue.

3. The improvement of claim 2 wherein each said subgirt is individually secured to the said building structure by means of a fastener extending through each said subgirt end portion.

4. The improvement in claim 2 wherein the adjacent ones of said building panels are spaced apart by a distance equal to at least twice the length of one said subgirt end portion.

5. In an exterior sheath of a building comprising a plurality of generally rectangular building panels maintained in outboard relation with a building structure, each said building panel comprising a plurality of rectangular corrugated sheets each formed to present alternating outer crests and inner valleys, a plurality of leg members extending from the edges of each said crest to the adjacent valleys, said corrugated sheets including lateral surfaces with vertical side edges, each said lateral surface comprising one of said valleys, and at least two transverse subgirts secured to said corrugated sheets by fastening means along the said valleys, means for securing the said subgirts to the said building structure, the improvement comprising:

an outwardly extending flange along the said vertical side edge of each said vertical lateral surface, each said outwardly extending flange being bowed laterally

inwardly of said vertical side edge thereby providing a receiving well at the juncture of said outwardly extending flange and the said vertical side edge, the said outwardly extending flanges of adjacent ones of said corrugated sheets being spaced apart;

a pair of tongues extending outwardly from each said subgirt, said tongues being disposed externally of the said vertical side edges and aligned therewith; and

an elongated cap member having a crest and two spaced legs depending from the said crest, said legs being disposed externally of the said outwardly extending



flanges of said adjacent ones of said corrugated sheets, each said leg terminating in an inturned leg portion engaged in one said receiving well.

6. The improvement of claim 5 wherein the dimensions of said crest and said legs of said cap member are substantially equal to the dimensions of the said crests and the said leg members of said corrugated sheets whereby the said cap member blends with the corrugations of said rectangular corrugated sheets and is visually indistinguishable therefrom.

No references cited.