March 15, 1966 S. C. HARTER 3,239,985

LAPPED MULTIPLANAR SURFACING

Filed March 23, 1960 3 Sheets-Sheet 1

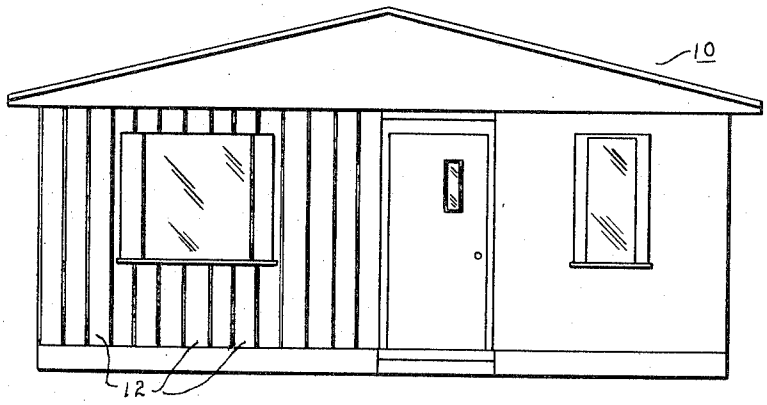


FIG. 1

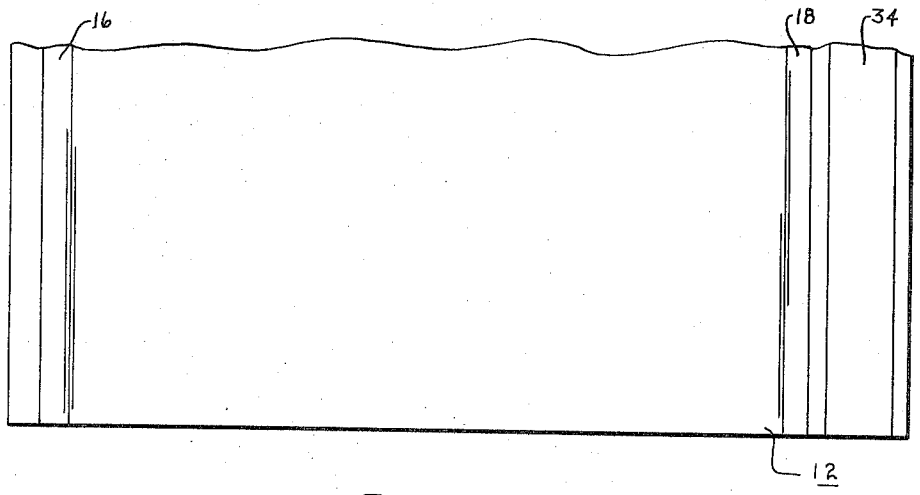


FIG. 2

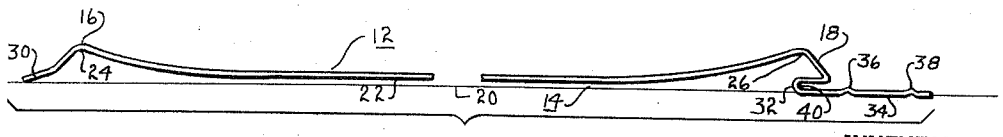


FIG. 3

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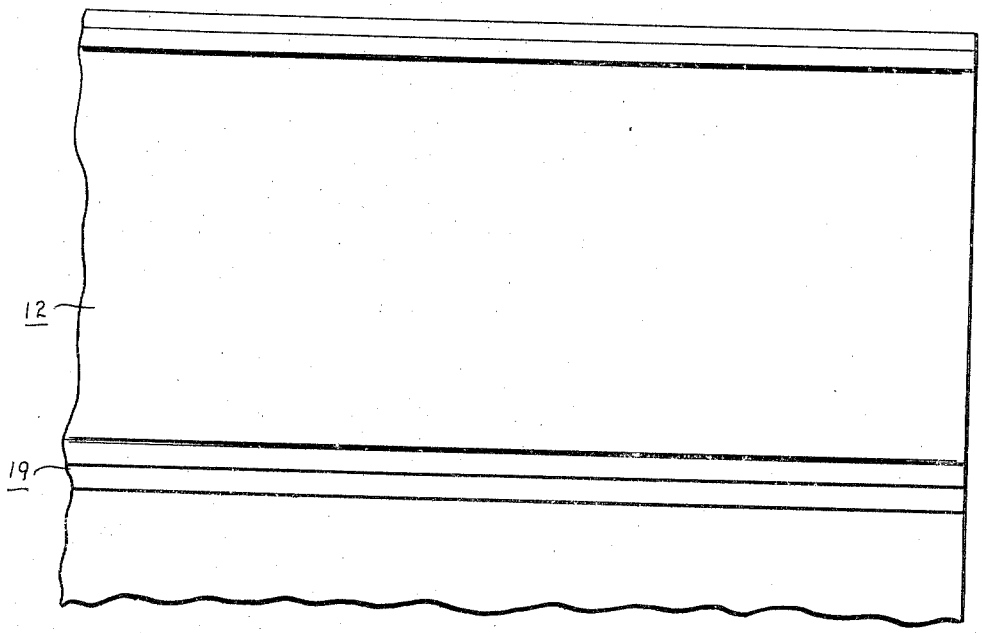


FIG. 4

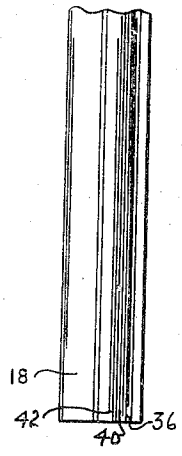


FIG. 6

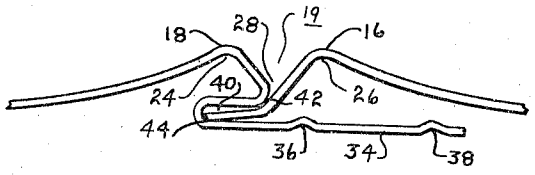


FIG. 5

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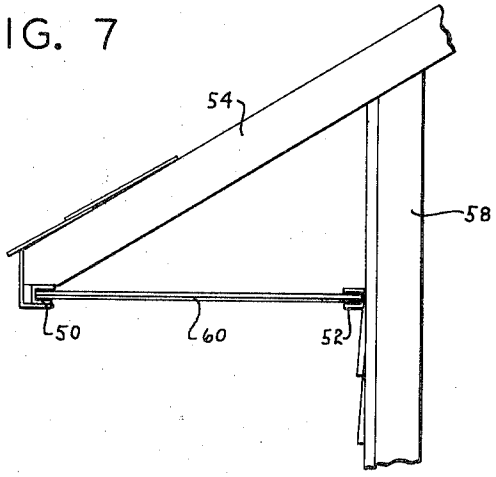
ATTORNEY

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FIG. 7



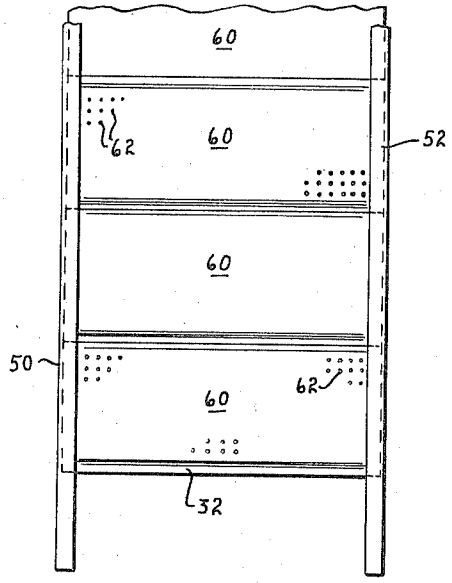


FIG. 8

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LAPPED MULTIPLANAR SURFACING

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Filed Mar. 23, 1960, Ser. No. 17,096
6 Claims. (Cl. 52—531)

The present invention relates to structural material and more particularly to siding, soffit and roofing material for buildings such as homes, commercial and industrial buildings and similar structures.

One of the principal objects of the present invention is to provide a siding, roofing, soffit and ceiling material for homes, industrial and commercial buildings and the like, which can be applied either as vertical or horizontal strips with water tight joints between the strips, and which can be applied to new building as the original siding, roof or soffits or to and old building directly over the original material without any elaborate new framing to support the new material.

Another object of the invention is to provide metal and plastic siding material in panels which are so contoured that a shadow or highlight effect is created from one longitudinal edge to the other and which is provided with a large, substantially flat area throughout its length and most of its width, resting substantially flush with or being spaced only about one-eighth of an inch from the sheathing.

Still another object of the invention is to provide a siding, roofing and soffiit material of metal or plastic and in relatively long strips which can be used either in the vertical or horizontal position and which form a water tight joint between the strips in either position without the use of caulking compound or other joint sealing material.

A further object is to provide a siding or soffit material which is fabricated with desired contours, connecting joint structure and surface coating, and which can be installed on the building site with the use of only conventional carpentry tools and equipment.

Another object is to provide a structural material of the aforesaid type having a slip-in type joint, i.e. a joint completed by pushing directly together the adjacent edges of two strips or panels of the material.

Another object of the invention is to provide a siding, roofing and soffit material which can be easily fabricated and readily applied to a building structure without any special skills or know-how, and which has the appearance of conventional wood paneling or strip siding.

Additional objects and advantages of the present invention will become apparent from the following description and accompanying drawings, wherein:

FIGURE 1 is an elevational view of a small house on which the present material has been applied as a section of the front wall;

FIGURE 2 is an enlarged elevational view of one end of a strip of the siding material;

FIGURE 3 is an end view of the material shown in FIGURE 2;

FIGURE 4 is a front elevational view of a portion of two strips of my material, showing the appearance of a joint between the two strips and the strips in a horizontal position;

FIGURE 5 is an enlarged fragmentary end view of two strips showing the manner in which the joint between the strips is formed;

FIGURE 6 is a fragmentary side elevational view of one of the panels showing in greater detail the structure of one part of the joint;

FIGURE 7 is a vertical cross sectional view of an eave of a house showing the present material being used in the construction of a soffit; and

FIGURE 8 is a plan view of the lower side of a series of panels of the present material being used in the constructon of the soffit shown in FIGURE 7.

Referring more specifically to the drawings, numeral 10 designates a house on which strips or panels 12 of my siding have been applied in vertical position to one section of the front wall. The use of the paneling on only one section is merely for the purpose of illustrating its use on one house design. The paneling may be used to cover smaller sections or to cover the entire surface of the four side walls of the house. The paneling is also constructed to be used without change as roofing material, preferably, but not necessarily, with the joints between the strips extending in the vertical direction, and as soffit material usually cut into relatively short panels.

Panels 12 may be wide or narrow to satisfy requirements; normally, however, the strips are within the range of two to sixteen inches and they may be in various lengths such as eight, ten or twelve feet. A single standard length may be fabricated for most building applications, since the strips can be readily cut to the desired shorter length. Longer sections can be covered by overlapping the ends of the strips either at random or at a definite horizontal line. When the latter arrangement is used, it is usually advisable to have the overlapping joints occur at a natural parting line in the building structure. While various materials, including aluminum, steel and plastic materials, may be used for the panels, the material preferably used is sheet aluminum, since this material requires no special treatment to prevent corrosion, it can be easily fabricated into the panel shape embodied in the present invention, and it can be readily cut on location to the desired length and shape using either hand or power tools. The aluminum may have smooth surfaces or it may be quilted or otherwise embossed for decoration and strength.

The cross sectional shape of panels 12 is the principal feature of the present invention, consisting of an arcuate section 14 extending from approximately one longitudinal edge to the other and terminating in the male and female parts 16 and 18 of joint 19. Arcuate section 14 slopes inwardly toward the longitudinal center, and in the uninstalled panel the longitudinal center is spaced slightly forward from a straight line 20 extending between the back sides of the two joint parts 16 and 18. The curvature of the arcuate section inwardly from the two edges follows closely to line 20 throughout a substantial portion 22 of the distance. As will be explained more fully herein, the panel is flexed during installation sufficiently that most of the back side of portion 22 is in direct contact with, or spaced only about one eighth of an inch from the sheathing or frame supporting the siding. The spacing is preferable since the small air pocket formed thereby provides additional insulation for the building.

The outside margins of section 14 terminate in V-shaped members 24 and 26, which extend outwardly from the sheath and, when the strips are assembled, form inwardly extending V-shaped channels 28. Member 24 is provided with a longitudinal rearwardly and outwardly extending flange 30, and member 26 with a first inwardly and then outwardly longitudinal U-shaped flange 32, the latter flange being adapted to receive flange 30 when the strips are installed in the manner illustrated in FIGURE 5. The wider portion 34 of U-shaped flange 32 is preferably provided with two longitudinal ribs 36 and 38 to provide increased stiffness to the flange and a well defined area for receiving the nails used in securing the strips to the sheathing or other supporting structure, the nails being driven through portion 34 at spaced intervals throughout the length of the panel. One of the important advantages of the present structure is the manner in which the panels are joined. It is seen that two

panels are joined merely by pushing or slipping flange 30 directly into U-shaped flange 32.

The type of operation employed to form the foregoing panel construction is not important to the present invention. The type normally employed, starting with flat sheet material such as aluminum alloy material of the desired length, includes bending individually the marginal edges of the sheet material into the cross sectional configuration clearly shown in FIGURES 3 and 5. The panel thus formed is then pressed to form the arcuate section 14, and ribs are rolled into flange 32 either before or after the formation of part 18. While the aluminum panels may be used without a surface treatment, it is preferable to coat the external surface with a protective and/or decorative material such as plastic, paint or enamel, normally the coating being one which does not require any attention or servicing throughout the life of the siding material. Such coatings are well known and readily available on the market.

In applying the panels to the side or roof of a house or other building, one sheet is placed at the edge or corner of the area to be covered with the edge of flange 30 against the corner line. While the panel is held in this position, nails are driven at spaced intervals throughout the length of flange portion 34. Flange 30 must also be secured to the sheathing or frame using nails, stripping or any other suitable attachment means. The next panel is assembled by placing flange 30 thereof into groove 40 of flange 32 and seating it firmly therein to form an effective seal between the two sheets at points 42 and 44 throughout the length of the panels. The upward pressure of flange 30 of the second sheet on the upper part of U-shaped flange 32 causes the first panel to flex sufficiently to seat section 14 over a large area thereof onto the sheathing or within close proximity thereto, i.e. within one eighth of an inch. The second panel is nailed along flange portion 34 throughout its length. The opposite edge of the panel is held firmly in place by the interlocking of flange 30 in groove 40 as seen in FIGURES 3 and 5. The next succeeding sheets are secured in place in the same manner as the second sheet. The method of applying the siding is the same whether the panels are applied vertically or horizontally.

An important use for the present material is illustrated in FIGURES 7 and 8 wherein the material is used in a soffit construction consisting of a pair of opposed parallel channel iron strips 50 and 52, the former being attached to the lower ends of the rafters 54 and having the groove therein facing inwardly, and the latter being attached to the wall structure 58 and having the groove facing outwardly toward strip 50. Panels 60 of the present material of short lengths and of the same configuration described hereinbefore, are slipped into the grooves of the two strips, as illustrated in FIGURE 8, with flanges 30 and 32 extending from one channel strip to the other, one panel first being assembled at one end of the two strips and with its ends in the grooves and flange 32 facing toward the opposite end. The next succeeding panels are assembled in the strips by pushing each into abutment with the last assembled panel with flange 30 slipping into groove 40. This soffit construction permits the entire underside of an eave to be enclosed without nailing the panels and by a simple slip-in operation requiring very little time to perform. This same structure can be used equally as well in constructing soffits secured to the underside of the rafters projecting over the edge of the wall structure.

When this material is used in the construction of soffits, it is often desirable to provide some or all of the panels with small perforations 62 throughout the panel for ventilation. In FIGURE 8 every other panel is shown with the perforations. The perforated material is also highly satisfactory for use in the construction of room ceilings and the like, since this type of panel or strip is an effective sound deadener.

While the panel structure forming the present invention has been developed primarily for use as a siding and soffit material, it is suitable for roofing and indoor paneling and is applied to the sheathing or framing in these uses in the manner described above. One embodiment of the invention has been described in detail herein; however, various changes in size and shape can be made without departing from the basic concept.

I claim:

1. A structural material, comprising a longitudinal central section of sheet material, members disposed along each side of said section having joint parts formed integrally with each edge of said section, one of said joint parts consisting of a flange U-shaped in cross section forming a groove with the opening thereof facing outwardly from the edge of and being disposed in part behind said member, the walls of said groove being generally parallel with the plane of said section, and the other of said joint parts consisting of a substantially straight outwardly and rearwardly extending flange joined integrally at its forward edge to the other of said members and being adapted to seat in the groove of said first joint part of another duplicate panel, firmly engaging the front wall of said groove at the outside edge thereof and the rear wall of said groove at the inside edge thereof.

2. A structural material, comprising a longitudinal central section of sheet material, members disposed along each side of said section having joint parts formed integrally with each edge of said section, one of said joint parts consisting of a flange U-shaped in cross section forming a groove with the opening thereof facing outwardly from the edge of and being disposed in part behind said member, said flange extending substantially straight from the bottom of said groove to the side beyond said member to form a nailing strip and having spaced longitudinal ribs therein, the other of said joint parts consisting of a substantially straight outwardly and rearwardly extending flange joined integrally at its forward edge to the other of said members and being adapted to seat in the groove of said first joint part of another duplicate panel, firmly engaging the front wall of said groove at the outside edge thereof and the rear wall of said groove at the inside edge thereof, and a decorative coating on the front surface.

3. A structural material, comprising an elongated panel of sheet material having a front and a back surface, a trough shaped longitudinal central section, V-shaped members disposed along each side of said panel joined integrally at one edge to said section and having a joint part at the other edge, one of said joint parts consisting of a flange U-shaped in cross section forming a groove with the opening thereof facing outwardly from the edge of the respective V-shaped member and being disposed in part behind said member, the walls of said groove being generally parallel with the plane of said panel, and the other of said joint parts consisting of a substantially straight outwardly and rearwardly extending flange joined integrally at its forward edge to the other of said members and being adapted to seat in the groove of said first joint part of another duplicate panel, firmly engaging the front wall of said groove at the outside edge thereof and the rear wall of said groove at the inside edge thereof.

4. A structural material, comprising an elongated panel of aluminum sheet material having a front and a back surface, a concave longitudinal central section, V-shaped members disposed along each side of said panel joined integrally at one edge to said section and having a joint part at the other edge, one of said joint parts consisting of a flange U-shaped in cross section forming a groove with the opening thereof facing outwardly from the edge of the respective V-shaped member and being disposed in part behind said member, said flange extending substantially straight from the bottom of said

groove to the side beyond said member to form a nailing strip and having spaced longitudinal ribs therein, and the other of said joint parts consisting of a substantially straight outwardly and rearwardly extending flange joined integrally at its forward edge to the other of said members and being adapted to seat in the groove of said first joint part of another duplciate panel, firmly engaging the front wall of said groove at the outside edge thereof and the rear wall of said groove at the inside edge thereof.

5. A soffit structural material, comprising a central section of sheet material, members disposed along each side of said section having joint parts formed integrally with each edge of said section, one of said joint parts consisting of a flange U-shaped in cross section forming a groove with the opening thereof facing outwardly from the edge of and being disposed in part behind said member, the walls of said groove being generally parallel with the plane of said soffit, and the other of said joint parts consisting of a substantially straight outwardly and rearwardly extending flange joined integrally at its forward edge to the other of said members and being adapted to slip in and seat in the groove of said first joint part of another duplicate panel by abutting movement of the one panel against the other, firmly engaging the front wall of said groove at the outside edge thereof and the rear wall of said groove at the inside edge thereof.

6. A soffit structural material, comprising a panel of sheet material having a front and a back surface, a trough shaped longitudinal central section, V-shaped members

disposed along each side of said panel joined integrally at one edge to said section and having a joint part at the other edge, one of said joint parts consisting of a flange U-shaped in cross section forming a groove with the opening thereof facing outwardly from the edge of the respective V-shaped member and being disposed in part behind said member, the walls of said groove being generally parallel with the plane of said soffit, and the other of said joint parts consisting of a substantially straight outwardly and rearwardly extending flange joined integrally at its forward edge to the other of said members and being adapted to slip in and seat in the groove of said first joint part of another duplicate panel, firmly engaging the front wall of said groove at the outside edge thereof and the rear wall of said groove at the inside edge thereof.

References Cited by the Examiner

UNITED STATES PATENTS

420,708	2/1890	Toner et al.	52—529
460,283	9/1891	Adler	189—36
727,179	5/1903	Moomaw	52—529
1,125,414	1/1915	Vogan	52—522
1,510,614	10/1924	Torrence	52—529
2,565,610	8/1951	Kinghorn	52—522

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