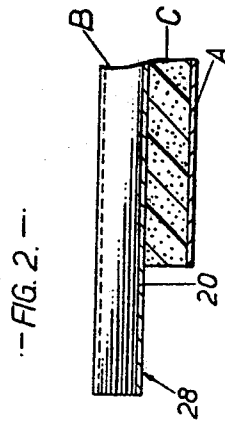
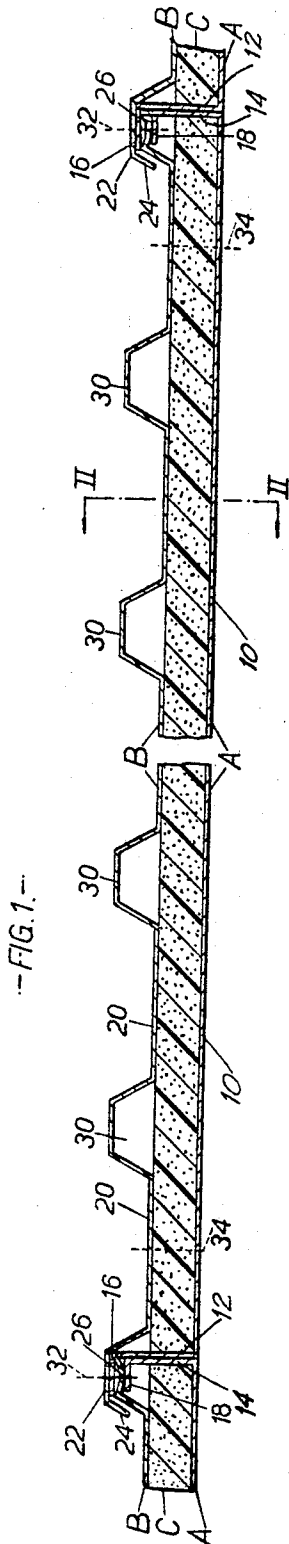


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BUILDING SHEATHING ELEMENTS

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INVENTORS
HAROLD J. W. PAYNE
CLIFFORD E. DYER
BY *Wm A Keck*
ATTORNEY

1

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BUILDING SHEATHING ELEMENTS

Harold James William Payne, Raby Mere, England, and Clifford Edward Dyer, Waterloo, Belgium, assignors to H. H. Robertson Company, Pittsburgh, Pa., a corporation of Pennsylvania

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ABSTRACT OF THE DISCLOSURE

A prefabricated, insulated building panel formed from an inner liner sheet and a fluted outer facing sheet with side edges of both sheets engaged to allow overlapping connection of the assembled panels in side-by-side relation on a building outer surface. The panels contain foamed-in-situ insulation which serves as thermal and sound insulation and serve to rigidify the panel. The foamed-in-situ insulation may fill less than all of the volume of the fluted outer facing sheet.

Background of the invention

Field of invention—This invention relates to the cladding of roofs and walls and more particularly, but of course not exclusively, the roofs and walls of industrial buildings, and has for its object to provide a composite wall or roof sheathing element which may be assembled and erected in more or less the same fashion as conventional corrugated cladding or sheathing elements but which will possess effective sound and heat insulating properties and constitutes a good fire barrier.

Description of the prior art—Shop assembled building panels with inner and outer sheets have been proposed having interlocking side-to-side junctions. Building sheathing has been proposed using abutting liner sections connected on the building site to fluted facing sheets. Shop assembled building panels with inner and outer sheets have been proposed having interior transverse subgirts to connect inner and outer sheets.

Summary of the invention

This invention provides a prefabricated building sheathing panel having an inner liner sheet and an outer fluted facing sheet wherein the two sheets are engaged along their side edges.

Broadly, according to the invention, and in one mode of embodiment, a sheathing element for the purpose specified comprises a facing sheet, a backing sheet, and bonded therebetween a layer of rigid foamed plastics material, e.g. polyurethane; said backing sheet being in the form of a shallow, generally channel-shaped member, and said facing sheet being of corrugated profile. Preferably, but not essentially, the flutes or channels of the facing sheet extend in the same direction as the side walls of the backing sheet. The upper edges of the side walls of said backing sheet may be turned both in the same direction to form flanges one of which extends inwardly of the trough of said channel and the other outwardly thereof, and the corrugated facing sheet may have terminal side edges which overlie said flanges. Preferably, one end of said facing sheet is arranged so as to extend beyond the adjacent ends of the rigid foamed core and said backing sheet. Thus constructed, said sheathing elements may be assembled in overlapped weatherproof relationship.

Brief description of the drawing

The invention is further described with the aid of the accompanying explanatory drawings which illustrate by

2

way of example and not of limitation an example of same.

In said drawings:

FIGURE 1 depicts in cross-section a sheathing element assembled with fellow elements, and

FIGURE 2 is a fragmentary sectional view as on line II—II of FIGURE 1.

Description of the preferred embodiment

Referring to said drawings, the character A generally denotes the backing sheet of a wall or roof sheathing element, B the facing or front sheet thereof, and C an inner layer of rigid foamed polyurethane.

The backing sheet A consists of a generally channel section member comprising a tension flange or web 10, and side walls 12, 14. Said side walls, which may or may not extend normal to the tension flange or web 10, are formed with flanges 16, 18 which extend both in the same direction as shown parallel or substantially so to the flange or web 10. Said sheet may be composed of any suitable material, e.g. mild steel sheeting treated so as to be resistant to corrosion or a non-ferrous metal or metal alloy.

The facing or front sheet B also may be composed of sheet metal or metal alloy, and may be of any desired corrugated profile. In the example shown the sheet is formed as by rolling or pressing with a plurality of substantially uniformly spaced flutes or channels 20 the sides and bottoms whereof are of planar construction. At one side the sheet B is formed with a flange 22 arranged so as to overlie the flange 16 of the backing sheet A, and the flange 22 is terminated with a turned down lip 24 which extends beyond said flange 16. At its other side said sheet B terminates at a flange 26 which overlies the flange 18 of sheet A but does not extend beyond same. Said flange 26 is depicted as being of concave cross-section but may be planar.

It also is arranged for the facing sheet B to extend beyond the end of the sheet A and the core C at one end as at 28 in FIGURE 2 thereby to provide for an overlapping assembly of the facing sheets B with the facing sheets of adjacent fellow sheathing elements according to the invention.

The core C preferably is foamed in situ in the member A and the sheet B placed in position during the foaming operation whereby said sheets become bonded firmly together. In order to obviate the buildup of undue pressures between sheets A and B during the foaming therebetween of the core C, it may be arranged for the spaces 30 between each channel 22 to remain unfilled as shown. Alternatively, said core C may be preformed and subsequently bonded in position by means of an adhesive.

It will be seen that sheathing elements according to the invention may be employed with advantage in the cladding of roof and wall structures and will obviate the necessity for the separate provision of inner sheathing elements and intervening insulating bats. Adjacent elements may be connected one to the other by fastening means, e.g. screws or bolts, inserted through the overlapped flange parts at the points indicated by the numeral 32 in FIGURE 1. The elements may be secured to a supporting structure by fastening means passed there-through as indicated at 34.

We claim:

1. A prefabricated insulated building panel adapted to be erected in side-by-side overlapping relation to form a wall, comprising

a generally U-shaped inner liner sheet having an essentially flat web and upstanding sidewalls terminating in first and second marginal flanges, said first marginal flange projecting inwardly over said web and said second marginal flange projecting outwardly away from said web;

a fluted outer facing sheet overlying said liner sheet and having alternating crests and valleys, said facing sheet having a crest at one longitudinal side thereof which overlies and engages said first flange and a crest at its opposite longitudinal side which overlies and engages said second marginal flange; and

a core of foamed insulating material bonding said liner sheet to said facing sheet;

said second flange being closer to said web than said first flange to allow overlapping engagement of one said building panel with adjacent building panels.

2. The building panel of claim 1 wherein the crest engaging said second flange has an arcuate cross-section.

3. The building panel of claim 2 wherein the crest engaging said second flange is exteriorly concave.

4. The building panel of claim 1 wherein said core comprises a foamed-in-situ insulating material.

5. The building panel of claim 4 wherein said foamed-in-situ insulating material fills the space between said web of said inner liner sheet and said valleys of said outer facing sheet.

6. The building panel of claim 1 wherein said first and second flanges are disposed outwardly beyond said valleys of said outer facing sheet.

7. The building panel of claim 6 wherein said first marginal flange is disposed outwardly from the said second marginal flange by distance corresponding to the thickness of the crest engaged with said second flange.

8. The building panel of claim 1 wherein adjoining panels are assembled by means of a fastener extending sequentially through a crest and an engaged marginal flange of one panel and a crest and an engaged marginal flange of the adjoining panel.

References Cited

UNITED STATES PATENTS

3,062,337 11/1962 Zittle ----- 52—537

FRANK L. ABBOTT, *Primary Examiner.*

S. D. BURKE, *Assistant Examiner.*