Jan. 25, 1938. H. L. BROOKS ET AL 2,106,315

BUILDING CONSTRUCTION

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FIG_1_

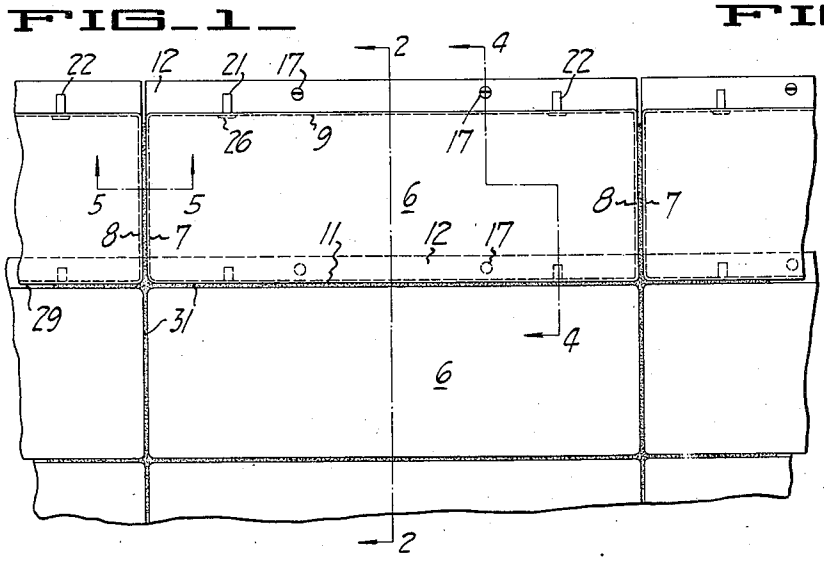


FIG_2_

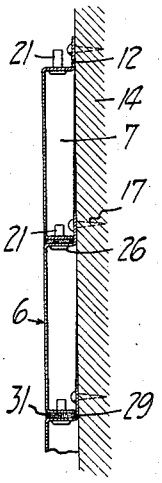


FIG_3_

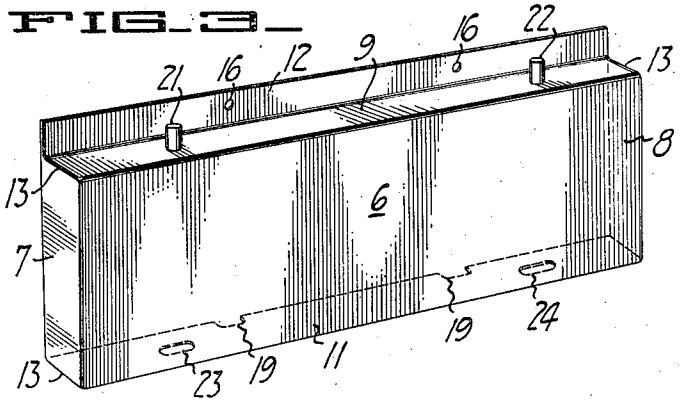


FIG_4_

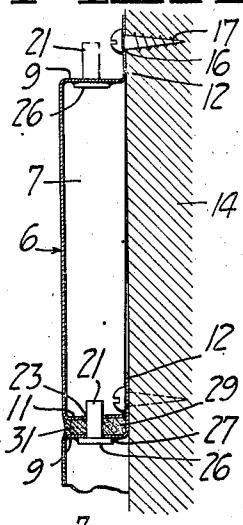


FIG_5_

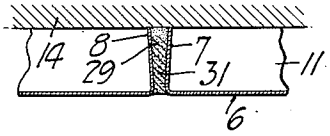


FIG_7_

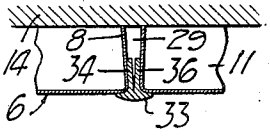


FIG_6_

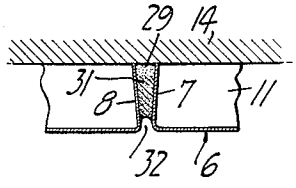
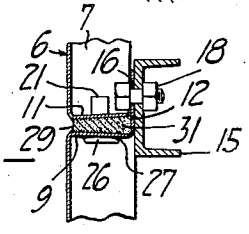


FIG_8_



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BUILDING CONSTRUCTION

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FIG. 9.

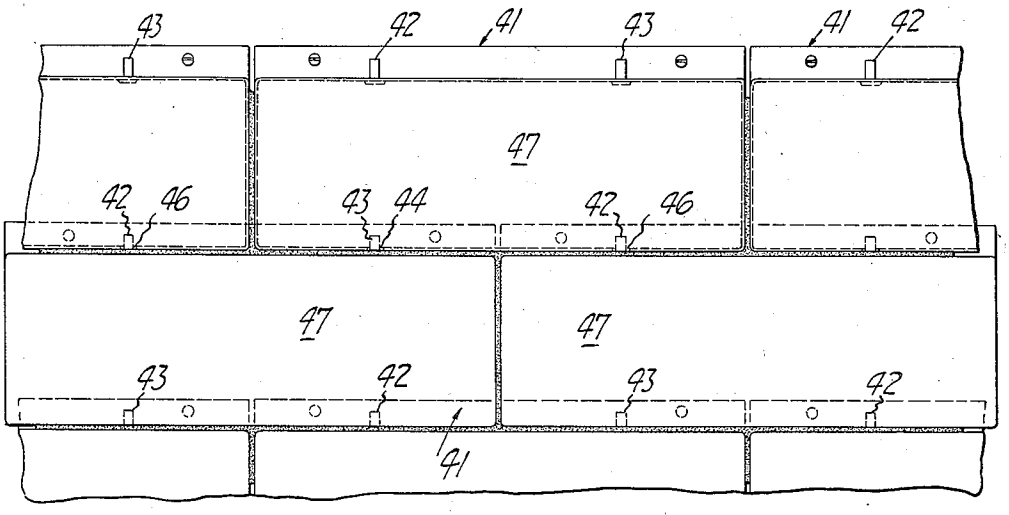


FIG. 10.

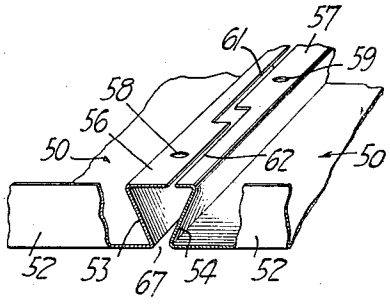
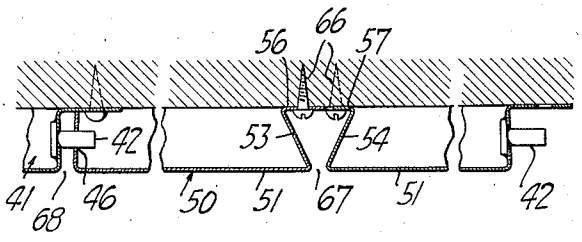


FIG. 11.



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UNITED STATES PATENT OFFICE

2,106,315

BUILDING CONSTRUCTION

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Application June 24, 1936, Serial No. 86,994

1 Claim. (Cl. 189—85)

Our invention relates to means for providing a finished surface on buildings, particularly ornamental exterior and interior surfaces. While the building unit of our invention is susceptible to incorporation in the structural part of a building, it is in the disclosed embodiments primarily intended as a finish or surface treatment.

An object of our invention is to provide a building unit which is easily applied to provide a pleasing finish.

Another object of our invention is to provide a building construction which requires very little variation from standard erection practice.

A further object of our invention is to provide a building unit which is permanent in character and is readily maintained in its original condition.

A still further object of our invention is to provide a building unit which can be installed under a wide variety of circumstances with equally satisfactory results.

An additional object of our invention is to provide a building construction which is deterioration- and fire-proof.

Another object of our invention is to provide a building unit which is susceptible to a variety of artistic uses.

The foregoing and other objects are attained in the embodiments of the invention illustrated in the drawings, in which—

Fig. 1 is an elevation of part of a building surface covered with building units in accordance with our invention.

Fig. 2 is a cross-section the plane of which is indicated by the line 2—2 of Fig. 1.

Fig. 3 is a perspective of a building unit constructed in accordance with our invention.

Fig. 4 is a cross-section the planes of which are indicated by the line 4—4 of Fig. 1.

Fig. 5 is a cross-section the plane of which is indicated by the line 5—5 of Fig. 1.

Fig. 6 is a cross-section similar to Fig. 5 but showing a modified construction.

Fig. 7 is a cross-section similar to Fig. 5 but showing a further modified construction.

Fig. 8 is a section similar to Fig. 4 but showing a modified form of construction.

Fig. 9 is a front elevation of a building constructed in accordance with our invention, modified from the arrangement of Fig. 1.

Fig. 10 is a fragmentary perspective of special building units in accordance with our invention.

Fig. 11 is a cross-section showing the installation of the special units of Fig. 10.

In its preferred form, the building unit of our invention comprises a metal unit mounted on a support, the unit itself being enamelled on its exposed surface, and having means for the reception of fasteners engaging the support, and likewise being arranged with interlocking members to interengage with adjacent similar units.

In the form of invention disclosed particularly in Figs. 1 to 8, we provide a building unit which is preferably fabricated of a sheet of metal, such as rustless or rust-resisting iron of approximately 16 to 20 gauge. This sheet of metal is suitably cut and formed to provide a face area 6 which generally is planar and conveniently rectangular in outline, being several times as long as it is high. Opposite ends of the sheet are turned with respect to the face area 6, to provide upstanding flanges 7 and 8, which are disposed at such a dihedral angle to the face area 6 as to incline inwardly toward each other a small amount.

Adjacent the sides of the face area 6, the metal sheet is likewise turned to be upstanding to provide flanges 9 and 11. These are substantially parallel to each other and make approximately a right dihedral angle with the face area 6. The sheet is formed to provide a projecting lip 12 substantially at a right dihedral angle with the flange 9 and consequently approximately parallel to the face area 6. The structure so formed is inherently rigid, but to increase its rigidity and resistance to deformation, especially at high temperature, we preferably unite the adjacent edges of the flanges 9 and 11 with the flanges 7 and 8, by welding or comparably joining the metals along the corners 13. The welds are made as thin as possible so that the cross-section of the metal will be substantially uniform throughout the unit.

In accordance with our invention, the unit so formed is mounted on any suitable support, such as a stud or wall 14 or a channel 15, and consequently we provide means for fastening the unit thereto. Preferably, the lip 12 is pierced to provide a pair of perforations 16. The perforations are so arranged and sized as readily to receive fastening means, such as round-headed screws 17 easily engaged with the support 14, or such as nuts and bolts 18 engaged with the channel 15. Since the fastening means 17 or 18 are located relatively close together on one side of the building unit, the units can be applied over irregular surfaces without warping or bending, as might be the case if fastenings at a plurality of spaced points were required. Never-

theless, the weight of the unit is distributed to and borne by the plurality of fasteners.

We preferably dispose, adjacent each single building unit, a plurality of similar units. Since the units are preferably juxtaposed and lie in close order, we cut notches 19 in the margin of the lower side flange 11 in order that the heads of the fastening screws 17 or 18 will be amply cleared during relative approaching movement of two units. Adjacent units are fastened together with interlocking fasteners preferably constituted of a pair of pins 21 and 22 adapted to interengage with co-operating apertures 23 and 24, the pins preferably projecting from the surface of the side flange 9 so that the lip 12 acts as a partial protection to the pins in handling, and the apertures 23 and 24 preferably being in the other side flange 11. With this arrangement on a vertical support, for instance, the lowermost unit is put into position and held by fastenings through the apertures 16, and the next higher unit is then put into position first by engaging the pins 21 and 22 of the lower unit through the apertures 23 and 24 of the upper unit and subsequently fastening the upper unit in place by screws or bolts through its apertures 16. Thus, one unit locks the next unit in position.

The pins 21 and 22 are preferably provided with enlarged heads 26 and are forced through apertures in the flange 9. They are also held in location by any suitable means, such as welding 27. With this arrangement, even though the welding should fail or, for some other reason, the fastening should not be entirely satisfactory, the pins are still a sufficiently tight fit in their respective flanges not to become readily dislodged and hence they still exert a supporting force on the adjacent unit. At the same time, the size and shape of the apertures 23 and 24 are such that some freedom of movement between adjacent units is possible in order to provide for uneven surfaces or supports, for making different spacings of units for different constructions, and to allow for various irregularities in manufacture.

While our building unit is satisfactory when made entirely of metal, preferably stainless or tarnishless metal, we prefer in most cases to coat it with a suitable surface, such as enamel baked in place. By this means it is possible to provide a very hard, easily cleaned, non-deteriorating exposed or weather surface in any desired color and within a very wide range of textures and surface finishes. Hence, in providing our units we preferably fabricate them first of sheet metal, as described, and then treat them to one or more coats of vitreous enamel each of which is preferably baked in place, the rigidity of the metal shape being such as to resist warping or deformation during baking. Even when a non-resistant base metal is utilized, the resulting enamelled product is resistant to weather and maintains its original character virtually indefinitely. Our building units are lightweight surface coverings which can be afforded in any desired size and which can be applied either in new construction or over old surface finishes, to give a permanent and very pleasing effect.

While it is not necessary that the spaces or joints between adjacent units be in anywise treated, in many instances we prefer to mount the units in a separated or spaced condition and to provide the resulting grooves 29 therebetween with a filler 31 such as an asphaltic or mastic composition, although cement or plaster can likewise be used. The slight taper or flare of the groove widening toward the support is effective to hold the filler so that it is not readily dislodged. The filler can be left flush with the surface of the building units or can be raked to provide a shallow trough 32. Additionally, either with or without a plastic filler, the space between adjacent units can be masked by a surface strip 33, preferably of ornamental contrasting metal, which is provided with extensions 34 and 36 having sufficient spring to hold themselves in the tapered space after once being forced or sprung into position.

With the pins 21 on each unit spaced as shown in Fig. 3 particularly, the units are arranged in regular files and series with no breaking of the joints, which arrangement is especially adapted to the use of finishing strips in the grooves, as shown in Fig. 7.

In the event it is desired to have the joints broken or to provide any of the usual bonds customary in tile or brickwork, we preferably make the building units as shown in Fig. 9, in which each unit 41, although otherwise similar to the previously described units, has its projecting interlocking pins 42 and 43, as well as the receiving apertures 44 and 46, so spaced with respect to the face area 47 of the unit as to permit breaking or alternating of the joints between adjacent units, as illustrated in Fig. 9.

In certain installations where an area is covered by our building units in such a number that, due to the interlocking feature, many units would have to be removed in order to replace a single damaged unit near the center of the area, for example, we provide a specially arranged unit for installation at frequent intervals, which can be readily detached and necessitates the removal of only a few units in order to expose any given interlocked unit. For this purpose, each of the special units 50 is provided with a face area 51 and suitable end flanges 52, but the side flanges 53 and 54 do not project at approximately a right angle but do project at an acute dihedral angle with respect to the face area. The side flanges on each special unit are inclined toward each other as they extend away from the face area, and both of them are then bent to provide lips 56 and 57 extending substantially parallel with the plane of the face area 51. The lips 56 and 57 are provided with suitable perforations 58 and 59, respectively, displaced away from a central line or line of symmetry drawn between adjacent units, so that the apertures 58 and 59 lie on opposite sides of such line. In order to provide sufficient material for strength, yet not to occupy an excessive amount of space, the flanges 56 and 57 are staggered or alternately cut away, as at 61 and 62. In use, the special unit 50 is preferably mounted with its apertures 44 and 46 in engagement with the pins, such as 42 and 43, of an adjacent unit. However, instead of the unit 50 being overlapped by the successive unit, it is held in place preferably by screws 66 or bolts, passing through the apertures 58 and 59 and accessible to a screw-driver extending through the space 67 between adjacent units. This space 67 at its narrowest is preferably the same width as the space 68 between the adjacent standard units, so that from the exterior no difference between the special unit and the standard units can be readily observed. Nevertheless, to remove an adjacent standard unit 41, it is

necessary merely to insert a screw-driver through the space 67, disengage the fastener 56, and, since the apertures 44 and 46 engage the pins 42 and 43 somewhat loosely, in effect to rotate the special unit 50 about an approximate center on the pins 21 or 42, lowering the lip 56 past the flange 54 and detaching the unit. Then the next standard unit can be disengaged from its support and from its interlocking adjacent unit, and in that fashion the panel to be replaced can readily be exposed.

We claim:

A building unit for attachment to a support, comprising a metal sheet having a rectangular face area, a pair of end flanges upstanding from opposite ends of said face area, a pair of side flanges upstanding from opposite sides of said face area, one of said side flanges having a pair of apertures therein, and a pair of cylindrical pins projecting from the other of said side flanges parallel to said rectangular face area slidably to engage the apertures in an adjacent similar unit.

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