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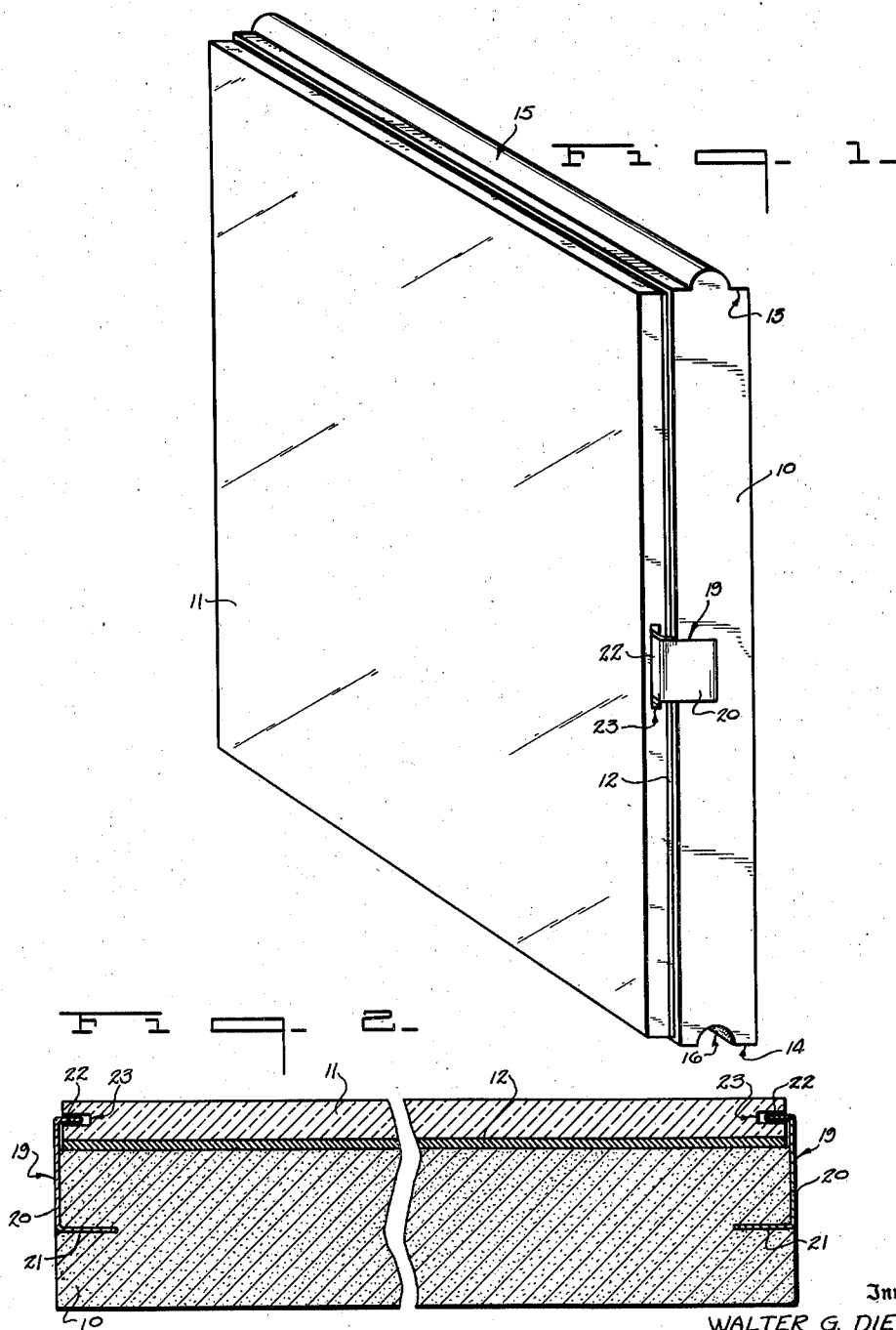
W. G. DIETER

2,289,634

BUILDING UNIT

Filed Aug. 5, 1938

2 Sheets-Sheet 1



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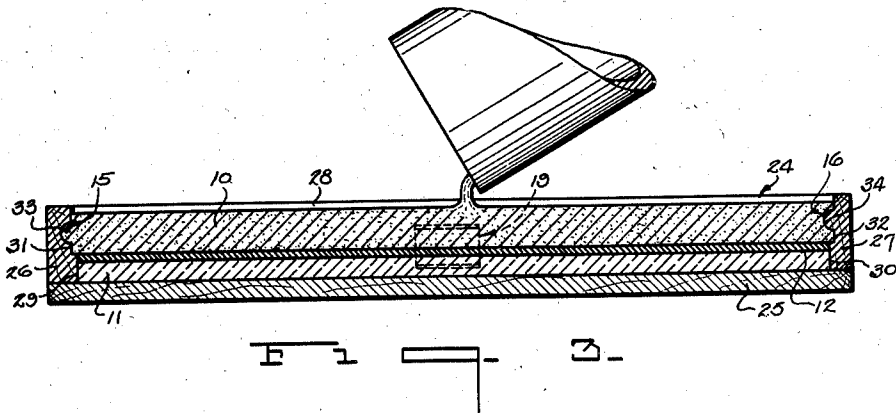
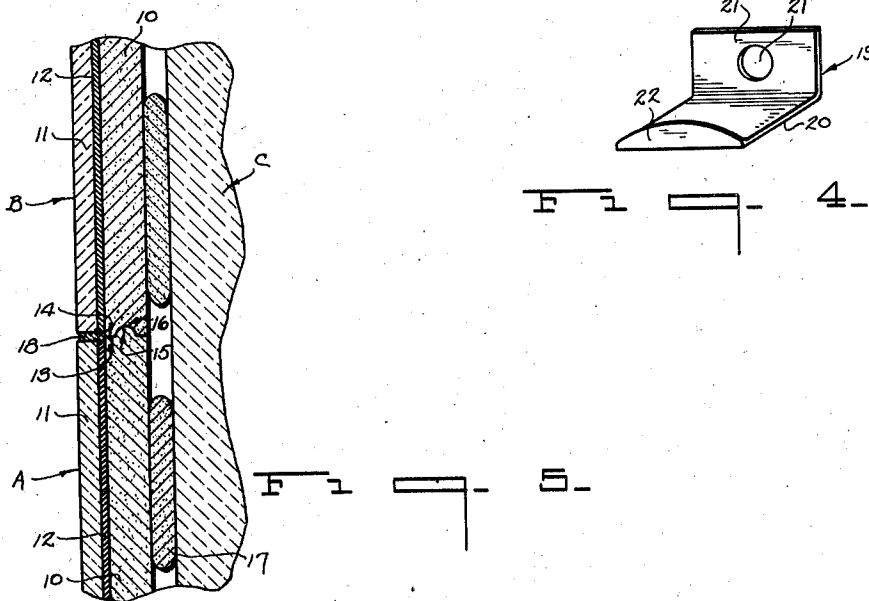
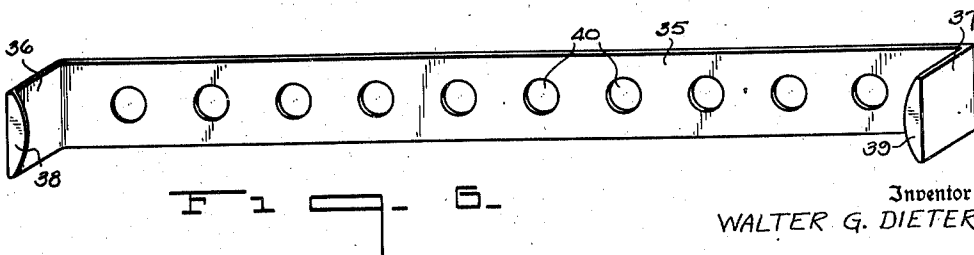
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2,289,634

BUILDING UNIT

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2 Sheets-Sheet 2



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2,289,634

BUILDING UNIT

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9 Claims. (Cl. 72-18)

This invention relates broadly to wall constructions and more particularly to an improved type of building unit for use in the construction of both exterior and interior walls.

The building unit herein provided consists in general of a composite block comprising a body portion preferably formed from a suitable cementitious material, such as gypsum cement-plaster or concrete, and an ornamental facing therefor consisting preferably of a sheet or plate of opaque structural glass, such as "Vitrolite," although ceramic tile or any other desired material might be used for the facing. The ornamental face plate is firmly secured to the body portion by an interposed non-brittle sheet of strengthening material and also, if desired, by mechanical fastening means engaging the said face plate and body portion.

An important object of the invention is the provision of a building unit of the above character of novel and improved construction which can be readily and conveniently mounted with respect to a supporting wall and without the necessity of using cement or mortar between the edges of adjacent units to secure them in place.

Another important object of the invention is the provision of a building unit of the above character embodying means for facilitating the lining up of the units relative to one another during the setting thereof and for effectively maintaining them in accurate alignment and against accidental displacement after setting.

Another important object of the invention is the provision of a building unit of the above character so constructed that when the units are laid up in courses in a wall, the structural load of the wall will be borne entirely by the body portions of the units, while the ornamental face plates of vertically adjacent units will be spaced slightly from one another to receive a caulking or pointing material therebetween, thereby removing all strain from the face plates and reducing to a minimum liability of breakage or chipping thereof.

Another important object of the invention is the provision of a building unit of the above character embodying improved means for firmly securing the face plate to the body portion, while at the same time permitting relative expansion and contraction between the said body portion and face plate without danger of fracturing or cracking the latter.

Other objects and advantages of the invention will become more apparent during the course of

the following description, when taken in connection with the accompanying drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the same:

Fig. 1 is a perspective view of a building block constructed in accordance with the present invention;

Fig. 2 is a horizontal transverse sectional view therethrough;

Fig. 3 is a transverse sectional view through a mold illustrating the fabrication of the building block;

Fig. 4 is a perspective view of one of the mechanical fasteners;

Fig. 5 is a vertical sectional view illustrating the manner in which the building blocks are mounted relative to one another in the construction of a wall; and

Fig. 6 is a perspective view of another type of mechanical fastener.

In the embodiment of the invention illustrated in the drawings, there is disclosed a building block comprising a body portion 10 having an ornamental facing 11 covering one surface thereof. The body portion 10 is adapted to be formed of a suitable cementitious material such as gypsum, cement-plaster or concrete while the ornamental facing 11 preferably consists of a sheet or plate of "Vitrolite" or other opaque structural glass.

Interposed between the body portion 10 and ornamental face plate 11 is a non-brittle sheet of strengthening material 12 adapted to firmly secure the said body portion and face plate together while at the same time allowing relative expansion and contraction therebetween. The sheet of strengthening material 12 preferably consists of a fibrous base coated with a bituminous substance such as asphaltum and one type of material which has been used with satisfactory results is that made and sold by The Ruberoid Company, of Erie, Pa., under the trade name "Ru-ber-oid." This type of material is relatively inexpensive, will stand up indefinitely and does not deteriorate. In fact, actual tests have shown that the bond established between the face plate and body portion of a block with such material is exceptional and the use thereof offers more mechanical strength than asphalt mastic.

As shown in Fig. 1, the block is substantially rectangular and the upper and lower edges 13 and 14 respectively of the body portion 10 project slightly beyond the upper and lower edges of the face plate 11 to provide load-bearing sur-

faces when the block is laid up in courses in a wall. The upper edge 13 of the body portion is provided intermediate the front and rear faces thereof with an upwardly projecting tongue 15, while the bottom edge 14 of said body portion is formed with a complementary groove 16 adapted to receive the tongue 15 of the adjacent block. By extending the upper and lower edges 13 and 14 of the body portion beyond the corresponding edges of the face plate, the entire load of the wall will be taken by the body portions 10 of the blocks and no load or strain whatever will be placed upon the face plates 11.

In Fig. 5 is illustrated the application of two blocks A and B, constructed in accordance with the invention, to a supporting wall C, the blocks being secured to said supporting wall by a suitable cement or mortar 17 or by any desired type of mechanical anchoring means. In setting the blocks, the bottom course of blocks is first plumbed, after which the blocks of the next course are mounted upon the blocks of the bottom course and this procedure is continued until a wall of the desired height is obtained. When mounting the blocks, it is simply necessary for each block to be placed directly upon the next lower block, with the upper edge 13 of one block contacting the bottom edge 14 of the next block, and the tongue 15 of the lower block being snugly received in the groove 16 of the upper block. In this manner, the edges 13 and 14 of vertically adjacent blocks will contact one another, whereas the corresponding edges of adjacent face plates 11 will be spaced from one another to receive therebetween a suitable pointing or caulking compound 18.

When the blocks are assembled as in Fig. 5, the structural load of the wall will be supported entirely by the body portions of the blocks, with none of the load being placed upon the face plates. In other words, the load of one block is transferred directly to the next lower block through the contacting load bearing surfaces 13 and 14 and each block takes the full strain of the blocks above it. Since it is impossible for the vertically adjacent face plates 11 to engage one another when the blocks are put in place, the strain upon the said face plates will be reduced to a minimum, thereby eliminating breakage and spalling thereof. The tongue and groove arrangement at the top and bottom of the blocks not only makes a more rigid, sounder construction but also serves to facilitate the aligning of the blocks with one another during setting as well as maintaining them in accurate alignment and against accidental displacement relative to one another after they are set.

Although not essential, the width of the face plate 11 is also preferably relatively less than the width of the body portion 10, as shown in the drawings, and this is desirable in order to provide a definite space for the pointing or caulking compound between the vertical edges of the face plates when the blocks are set side by side against one another as well as for permitting relative expansion and contraction between the face plate and body portion. Also, while not absolutely necessary, it may be desirable, in order to comply with the requirements of building codes in certain cities, to provide mechanical fastening means between the face plate and body portion of the block to supplement the securing action of the sheet of strengthening material 12.

The mechanical fastening means disclosed in Figs. 1, 2 and 4 consists of one or more substan-

tially U-shaped metal straps 19 arranged at either or both sides of the block. Each strap 19 comprises a web portion 20 overlying the edges of the body portion 10 and face plate 11 and provided at one end with a right angular flange 21 embedded in said body portion 10 and at its opposite end with a right angular tongue 22 adapted to be loosely received in a relatively narrow groove 23 formed in the edge of the face plate. The grooves 23 are positioned inwardly of the opposite side faces of the face plate and may be cut therein either with a carborundum grinding wheel or in any other suitable manner. The grooves are relatively shallow and are preferably provided with rounded bottoms. The thickness of the tongues is relatively less than the width of the grooves and also the tongues have rounded outer edges which are spaced from the bottoms of the grooves. By making the grooves 23 relatively larger than the tongues 22 of the metal fasteners, there is provided a loose fit which permits the face plate to expand and contract without being restrained by said fasteners. Likewise, the metal fasteners may expand and contract without placing any strain upon the facing.

In the event no metal fasteners are used, a tongue 15 could be formed on two adjacent edges of the body portion and a groove 16 on the other two edges. If metal fasteners are used, the tongue 15 might be formed on two opposite edges, with the metal fasteners running therethrough and the groove 16 on the other two edges. The fasteners should not be used at the grooved edges of the block but they will not interfere with the projecting tongues.

In fabricating the block, there is first provided a mold 24 (Fig. 3) of the desired shape and size according to the block to be formed, said mold comprising a horizontal bottom 25, opposite end walls 26 and 27, and side walls 28. The inner surfaces of the end walls 26 and 27 are provided with the straight lower portions 29 and 30 between which the face plate 11 is received when laid face down upon the bottom 25 of the mold. Directly above the straight portions 29 and 30, the inner surfaces of the end walls 26 and 27 are cut or set back, as indicated at 31 and 32 respectively, to form the load bearing surfaces 13 and 14 upon the block so that they project outwardly beyond the adjacent edges of the face plate. The set-back surface 31 is provided with a groove 33 for forming the tongue 15 on the body portion of the block, while the set-back surface 32 is provided with a tongue 34 for forming the groove 16 in said body portion. The inner surfaces of the side walls 28 of the mold can be suitably shaped to form the desired arrangement at the opposite sides of the block.

Before the face plate 11 is placed in the mold, the sheet of strengthening material 12 is adapted to be secured to the rear surface thereof. This can be accomplished by first treating one side of the sheet 12 with turpentine and permitting it to stand until it becomes tacky. The sheet is then placed upon the rear surface of the face plate with the tacky side in contact therewith and the said sheet weighted down and allowed to stand the required length of time until it becomes firmly secured to the face plate. The face plate is then placed in the mold and the opposite side of the sheet of strengthening material treated in the same manner with turpentine until it becomes tacky. The plastic material, forming the body portion, is then poured into the mold upon the strengthening material, as shown in

Fig. 3, and allowed to set whereupon the block is ready for use. Although the body portion 10 is preferably formed of gypsum, cement-plaster, or concrete, if a lighter backing is preferred for interior work, sawdust, cork, rockwool, asbestos, or some similar material can be mixed with the gypsum.

If it is desired to produce a block with the metal fasteners 19, the said fasteners are properly associated with the face plate 11 when the said face plate is arranged in the mold 24 and before the body portion is poured. In this way, after the body portion has set, the flanges 21 of the metal fasteners will be firmly embedded therein. In such case, an opening 21' may be provided in the flange 21 of each fastener to permit the plastic material forming the body portion to run through. The web portions 20 of the metal fasteners 19 are preferably flush with the edges of the body portion 10 as best shown in Fig. 2.

The sheet of strengthening material 12 and body portion 10 serve to greatly reinforce the facing 11 and not only permits the use of relatively thinner structural glass than heretofore but also renders it stronger than structural glass of a much heavier thickness. Even though a crack might develop in the glass facing, it would hardly be perceptible on an installation as the strengthening material would prevent the crack from opening. Also, if the glass face plate should become broken, the strengthening sheet would retain the pieces in much the same manner as safety glass and prevent them from falling out. The sheet of strengthening material further serves to cushion the face plate against shock and blows, thereby greatly increasing its resistance to breakage.

If desired, instead of using separate metal fasteners 19 at opposite edges of the block, one or more fasteners such as shown in Fig. 6 can be employed. This fastener comprises a straight metal strap 35 provided at its opposite ends with the forwardly directed web portions 36 and 37 which terminate in the inwardly directed right angular tongues 38 and 39 respectively. The strap 35 is adapted to extend the entire width of the block and is embedded in the body portion thereof. The web portions 36 and 37 overlie the edges of the body portion and face plate, with the tongues 38 and 39 fitting loosely in the grooves in the edges of said face plate in the same manner as the tongues 22 of fasteners 19. The strap 35 is preferably provided with a series of holes 40 which permit the plastic material forming the body portion to run through and which also affords added reinforcement to the body portion. This type of fastener would be fabricated in an overall outside length dimension to correspond to the inside width of the mold and outside width of the body portion of the block.

It is to be understood that the form of the invention herewith shown and described is to be taken as the preferred embodiment of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A building unit, comprising a body portion, a face plate secured to one surface thereof, said face plate being provided with grooves in certain of its edges, and metal fasteners carried by said body portion and having tongues loosely re-

ceived in the grooves in said face plate, said tongues being spaced from the bottoms of said grooves and the thickness of the said tongues being relatively less than the width of the said grooves.

2. A building unit, comprising a body portion, a face plate secured to one surface of said body portion, said face plate being provided with grooves in certain of its edges, and metal fasteners overlying the edges of said body portion and face plate and having portions embedded in said body portion and other portions loosely received in the grooves in said face plate, said last-named portions being spaced from the bottoms of said grooves and the thickness of the said portions being relatively less than the width of the said grooves.

3. A building unit, comprising a body portion of cementitious material, a face plate of vitreous material secured to one surface of said body portion, said face plate being provided with grooves in certain of its edges, and substantially U-shaped metal fasteners, each comprising a web portion overlying the edges of said body portion and face plate and formed at one end with a flange embedded in said body portion and at its opposite end with a tongue loosely received in the respective groove in said face plate, said tongue being spaced from the bottom of said groove and the thickness of the said tongue being relatively less than the width of the said groove.

4. A building unit, comprising a body portion, a face plate secured to one surface thereof and having grooves in certain of its edges, said body portion projecting beyond the edges of said face plate upon the load supporting sides of the unit whereby the face plate does not support any load, the said body portion being provided at said edges of the face plate with complementary locking portions for connecting adjacent units together, and metal fasteners carried by said body portion and having tongues loosely received in the grooves in said face plate, said tongues being spaced from the bottoms of said grooves and the thickness of the said tongues being relatively less than the width of the said grooves.

5. A building unit, comprising a body portion, a face plate secured to one surface thereof and having grooves in certain of its edges, said body portion projecting beyond the edges of said face plate upon the load supporting sides of the unit whereby the face plate does not support any load, the projecting portion of said body portion at one of said edges of the face plate being formed with a tongue and the projecting portion at the opposite edge thereof being formed with a groove, and metal fasteners overlying the edges of said body portion and face plate and having portions carried by said body portion and other portions loosely received in the grooves in said face plate, said last-named portions being spaced from the bottoms of said grooves and the thickness of the said portions being relatively less than the width of the said grooves.

6. A building unit, comprising a body portion of cementitious material, a face plate of vitreous material secured to one surface of said body portion and having grooves in certain of its edges, the said body portion projecting beyond the edges of said face plate upon the load supporting sides of the unit whereby the face plate does not support any load, the projecting portion of said body portion at one of said edges of the face plate being formed with a tongue and the projecting portion at the opposite edge thereof being formed

with a groove, the said tongue and groove being disposed intermediate the opposite side faces of said body portion, and substantially U-shaped metal fasteners, each comprising a web portion overlying the edges of said body portion and face plate and formed at one end with a flange embedded in said body portion and at its opposite end with a tongue loosely received in the respective groove in said face plate, said tongue being spaced from the bottom of said groove and the thickness of the said tongue being relatively less than the width of the said groove.

7. A building unit, comprising a body portion, a face plate covering one surface of said body portion and having grooves in certain of its edges, a unitary self-sustaining non-brittle sheet of strengthening material interposed between said face plate and body portion for securing the former to the latter, said body portion projecting beyond the edges of said face plate upon the load supporting sides of the unit to provide load bearing surfaces, the said body portion being provided at said edges of the face plate with complementary locking portions for connecting adjacent units together when the load bearing surfaces of said body portion engage the load bearing surfaces of vertically adjacent units, and metal fasteners carried by said body portion and having tongues loosely received in the grooves in said face plate, said tongues being spaced from the bottoms of said grooves and the thickness of the said tongues being relatively less than the width of the said grooves.

8. A building unit comprising a body portion, a face plate covering one surface of said body portion and having grooves in certain of its edges, a unitary self-sustaining non-brittle sheet of strengthening material comprising a bituminous substance interposed between said face plate and body portion for securing the former to the latter, said body portion projecting beyond the edges of said face plate upon the load supporting sides of the unit to provide load bearing surfaces, the projecting portion of said body portion at one of said edges of the face plate being formed with a tongue and the projecting portion at the oppo-

site edge thereof being formed with a groove, said tongue and groove serving to connect the unit with vertically adjacent units when the load bearing surfaces of said body portion are engaged by the load bearing surfaces of said vertically adjacent units, and metal fasteners overlying the edges of said body portion and face plate and having portions embedded in said body portion and other portions loosely received in the grooves in said face plate, said last-named portions being spaced from the bottoms of said grooves and the thickness of the said portions being relatively less than the width of the said grooves.

9. A building unit comprising a body portion of cementitious material, a face plate of vitreous material covering one surface of said body portion and having grooves in certain of its edges, a unitary self-sustaining non-brittle sheet of strengthening material comprising a fibrous base coated with asphaltum interposed between said face plate and body portion for securing the former to the latter, said body portion projecting beyond the edges of said face plate upon the load supporting sides of the unit to provide load bearing surfaces, the projecting portion of said body portion at one of said edges of the face plate being formed with a tongue and the projecting portion at the opposite edge thereof being formed with a groove, the said tongue and groove being disposed intermediate the opposite side faces of said body portion and serving to connect the unit with vertically adjacent units when the load bearing surfaces of the said body portion are engaged by the load bearing surfaces of said vertically adjacent units, and substantially U-shaped metal fasteners, each comprising a web portion overlying the edges of said body portion and face plate and formed at one end with a flange embedded in said body portion and at its opposite end with a tongue loosely received in the respective groove in said face plate, said tongue being spaced from the bottom of said groove and the thickness of the said tongue being relatively less than the width of the said groove.

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