

Jan. 20, 1959

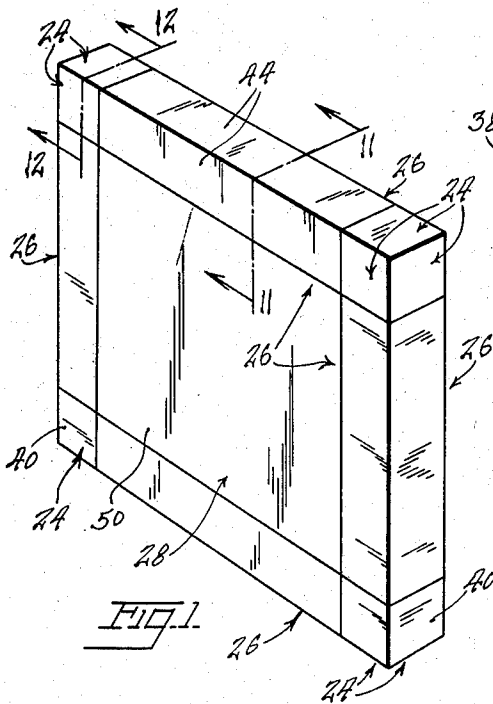
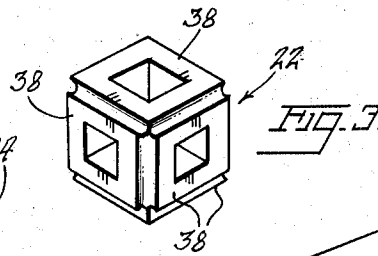
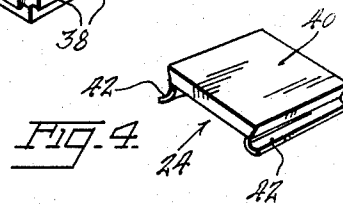
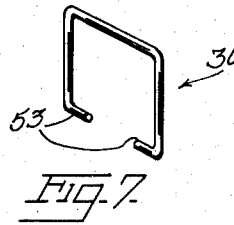
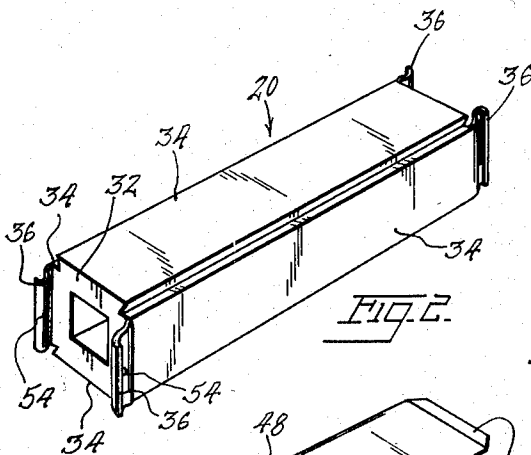
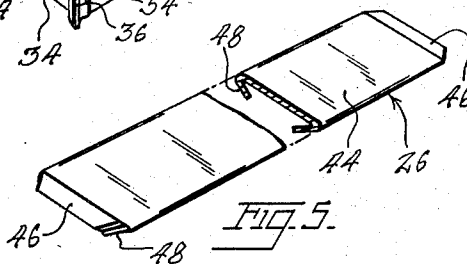
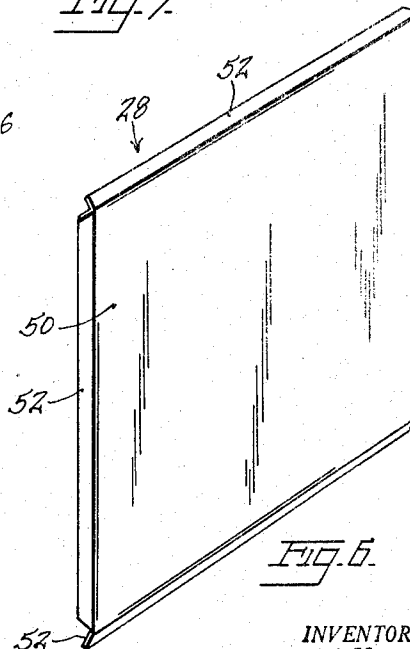
T. G. HASSETT

2,869,692

INTERLOCKING BUILDING ASSEMBLY

Filed July 23, 1954

2 Sheets-Sheet 1



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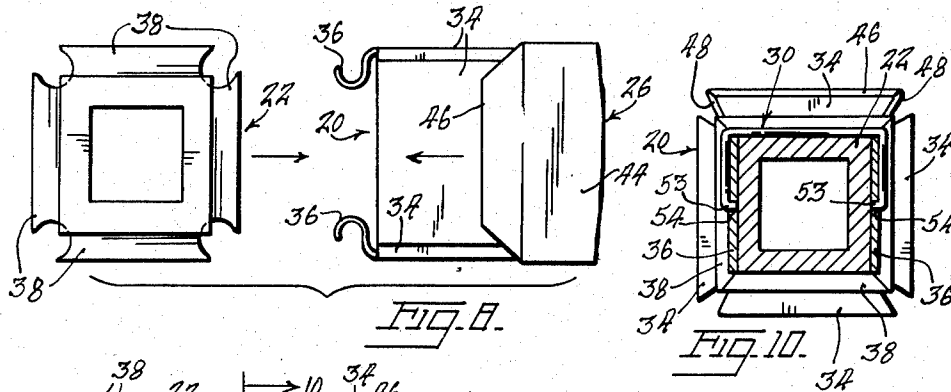
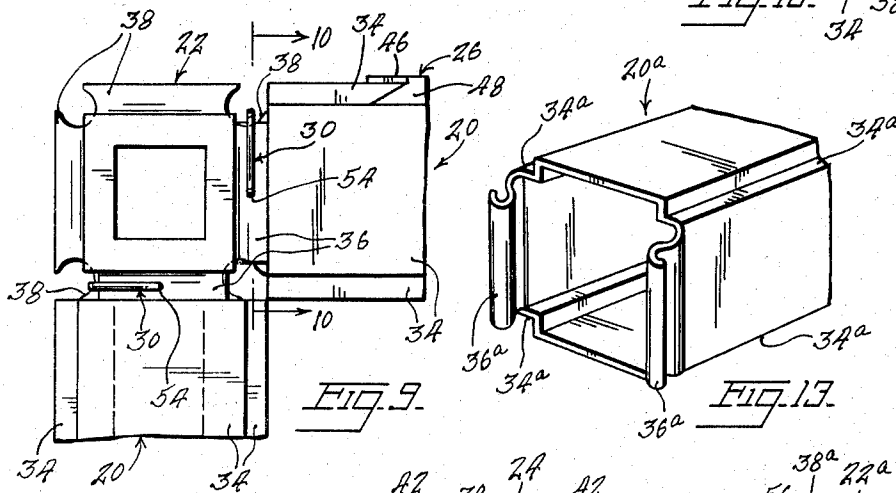
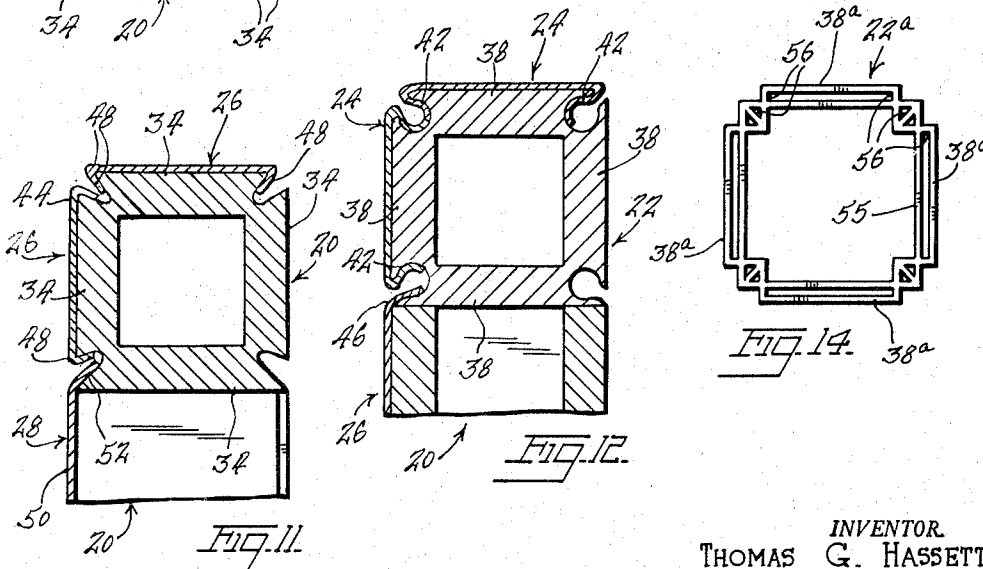
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2 Sheets-Sheet 2



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2,869,692

INTERLOCKING BUILDING ASSEMBLY

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Application July 23, 1954, Serial No. 445,217

6 Claims. (Cl. 189—34)

This invention relates to building assembly construction. More particularly, the invention is a sectionally constituted unit, adapted for assembly with other like units to form a building wall, ceiling, or other structural part of the building.

Among important objects of the invention are the following:

To permit assembly of the unit by unskilled labor;
To eliminate nails, screws, or other fasteners in the assembly of the unit;

To eliminate the necessity of tools during said assembly;
To provide a composite unit of considerable strength in relation to its weight; and

To permit manufacture of the parts of the unit by mass production methods, at a relatively low unit cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a perspective view of the assembled unit.

Fig. 2 is an enlarged perspective view of a tie bar.

Fig. 3 is an enlarged perspective view of a coupling block.

Fig. 4 is an enlarged perspective view of a key retainer.

Fig. 5 is an enlarged perspective view of a panel retainer, partly broken away.

Fig. 6 is an enlarged perspective view of a panel.

Fig. 7 is an enlarged perspective view of a holding pin.

Fig. 8 is an exploded, fragmentary top plan view showing one of the coupling blocks immediately prior to its assembly with a tie bar.

Fig. 9 is a fragmentary side elevational view showing the block assembled with adjacent tie bars.

Fig. 10 is a sectional view on line 10—10 of Fig. 9.

Fig. 11 is an enlarged sectional view on line 11—11 of Fig. 1.

Fig. 12 is an enlarged sectional view on line 12—12 of Fig. 1.

Fig. 13 is a fragmentary perspective view of a modified tie bar.

Fig. 14 is a fragmentary view of a modified coupling block.

The assembled unit shown in Fig. 1 is made up of five different types of cooperating elements, shown in Figs. 2 through 7. These include a tie bar 20 (Fig. 2); a coupling block 22 (Fig. 3); a key retainer 24 (Fig. 4); a panel retainer 26 (Fig. 5); a panel 28 (Fig. 6); and a holding pin 30 (Fig. 7).

The tie bar, four of which are used in assembling the unit, includes an elongated body 32 of square cross section. Cut into each corner of the body 32 is a groove of angular cross section, disposed radially of the body, each groove extending the full length of the body. The grooves cooperate to define dovetail tongues 34 extending

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longitudinally of the body from end to end thereof, over the full area of each longitudinal surface or face of the body. The tie bar is hollowed out into a tubular form, to permit the passage of electric wiring (not shown) therethrough.

The ends of the body are cut off squarely, and formed upon and extending beyond each end of the body is a pair of jaws 36, said jaws being bowed inwardly toward one another.

Each coupling block 22 is of square or cubical formation, and all edges thereof are cut inwardly to provide, on each surface or face of the coupling block, a rectangular, flattened locking projection 38 having undercut sides.

Four of the coupling blocks are used in the assembly of a single building unit, one at each corner of the unit.

The key retainer 24 is fashioned from rigid sheet metal material, and includes a flat, square, plate-like body 40, each edge of which is integral with a flange or lip 42 that is turned inwardly at an angle of 45° to the plane of the plate-like body. The opposite ends of each flange or lip 42 are cut away or beveled obliquely.

Four key retainers 24 are used in the assembly of each unit, one at each corner.

The panel retainer is also formed from rigid sheet metal material, and includes an elongated, rectangular, flat, plate-like body 44 integral at its opposite ends with end tongues or flanges 46. Each flange 46 is beveled at its opposite ends, and each flange 46 is obtusely related at an angle of 45° to the body 44.

Integrally formed upon the opposite side or longitudinal edges of the body 44, and extending the full length of the body, are side flanges 48, these being turned under as shown in Fig. 5, at acute angles to the body 44. As shown in Fig. 9 the opposite ends of each flange 48 are pointed, the pointed end portion of each flange 48 extending beyond the adjacent end of body 44.

Four of the panel retainers 26 are utilized, one at each side of the building unit.

The panel member 28 is framed by the parts previously described herein, and is formed as a large, rectangular sheet of material shaped with a flat body 50, integral at its several edges with narrow flanges 52, each of which is obtusely related to the body 50.

A single panel member 28 is used in the assembly of a single building unit.

In Fig. 7 there is shown a holding pin 30 of wire material, having a U shape, the opposite legs being of a springable nature, so as to be yieldably and resiliently sprung away from one another during the assembly of the panel. Each leg of the spring clip or holding pin 30 includes, at its free end, an inwardly turned finger 53.

In assembly of the building unit, the first step is to assemble a rectangular outer frame, composed of the tie bars and coupling blocks. Each tie bar is detachably connected at its opposite ends to coupling blocks 22, and to effect the connection, one need simply shift the tie bar toward the associated coupling block, or vice versa as shown in Fig. 8, so as to engage jaws 36 with the undercut sides of the adjacent projection 38. The tie bar is thus engaged in end-abutting relation to the adjacent coupling blocks used at the corners of the building panel.

Since projections 38 are provided on all faces of the coupling block, a single block can be connected to a plurality of tie bars. Not only can a single unit be constructed, but also, adjacent units, each formed as in Fig. 1, can be connected in perpendicular planes, to permit assembly of the building without the necessity of tools or the like. Further, adjacent units can be connected in coplanar relation so that a number of units can be used to form a single wall.

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Each jaw 36 has an opening 54, and after the coupling blocks and tie bars have been assembled as discussed above, a clip 30 is applied in straddling relation to the jaws 36 (see Fig. 10), with the fingers 53 of the spring clip engaging in the openings 54 of the jaws 36. This lockably holds each tie bar assembled with its associated coupling blocks, preventing separation thereof in one direction. The assembled tie bars and coupling blocks define a rectangular-shaped opening, the dimensions of which are sufficient to receive the panel member 50.

The panel member 50 is now applied, with the flanges 52 thereof engaging in the angular grooves of the several tie bars, in the manner shown in Fig. 11. Panel retainers 26 are now slid lengthwise into position over a dovetail tongue 34 of a tie bar, the side flanges 48 of the panel retainer engaging in the grooves defined at opposite sides of said dovetail tongue, to hold within said grooves the flanges 52 of the panel member. It will be understood that the panel retainers can be mounted on the front of the tie bars in the manner shown in Figs. 8 and 9, during the assembly of the tie bars with the coupling blocks.

When each panel retainer is shifted into a position in which it is coterminous with its associated tie bar, an end tongue 46 of the panel retainer will be interlocked with the adjacent undercut side of a projection 38 of the coupling block 22, in the manner shown in Fig. 12.

Key retainers 24 are now applied, over each exposed projection 38, the inwardly turned lips 42 being engaged with its associated projection 38. Thereafter, the lips 42 will engage in the grooves provided in the coupling block, to hold the end tongues of the panel retainers in place.

This completes the assembly of the building unit, and the final unit will appear as in Fig. 1. This unit can be assembled with other units, as will be apparent, adjacent units being either normal to the illustrated unit, or in perpendicular relation thereto, whichever is desired.

In Figs. 13 and 14 there are shown modified forms of the tie bar and coupling block, respectively. The modified tie bar 20^a is in this instance of tubular formation, being shaped from sheet metal or the like. This lightens the construction. The actual functional characteristics and exterior configuration of the tie bar remains unchanged, the tie bar having rabbeted grooves 34^a in each face thereof, extending the full length of the tie bar. The jaws 36^a in this form can be made integral with opposite sides of the tie bar, as in the first form, and are shaped as in the first form of the invention.

In Fig. 14 a modified coupling block 22^a is shown, said block being of open frame or skeleton construction, rather than solid as in the first form. Again, the purpose is to lighten the structure without sacrificing strength. Block 22^a includes projections 38^a, each of which projections is formed as a square, open frame 55, having arms 56 extending inwardly from the opposite ends thereof, the several arms 56 being integrally or otherwise fixedly joined at each corner of the block as shown, slots being shown between the projections and frame.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. A building unit comprising a plurality of tie bars adapted to extend along the several sides of the unit, coupling blocks at the several corners of the unit interengaging with said tie bars, means releasably locking the tie bars and coupling blocks against relative separation, a panel member circumscribed by the tie bars, retainer means on the tie bars adapted to lock the panel member in engagement with the tie bars, and key means on the

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blocks for holding the retainer means upon the tie bars, each of said coupling blocks being of substantially cubical formation and having undercut edges defining projections on the several faces of the block, each tie bar including at opposite ends thereof extending jaws adapted to engage the undercut sides of an adjacent projection, said first-named means comprising a spring clip of U-shaped formation adapted to straddle the extending jaws of each pair of extending jaws to hold said jaws releasably interengaged with the projection embraced therebetween.

2. A building unit comprising a plurality of tie bars adapted to extend along the several sides of the unit, coupling blocks at the several corners of the unit interengaging with said tie bars, means releasably locking the tie bars and coupling blocks against relative separation, a panel member circumscribed by the tie bars, retainer means on the tie bars adapted to lock the panel member in engagement with the tie bars, and key means on the blocks for holding the retainer means upon the tie bars, each of said coupling blocks being of substantially cubical formation and having undercut edges defining projections on the several faces of the block, each tie bar including at opposite ends thereof extending jaws adapted to engage the undercut sides of an adjacent projection, said first-named means comprising a spring clip of U-shaped formation adapted to straddle the extending jaws of each pair of extending jaws to hold said jaws releasably interengaged with the projection embraced therebetween, said jaws having apertures, each clip having intumed fingers at its ends engageable in said apertures.

3. A building unit comprising a plurality of tie bars adapted to extend along the several sides of the unit, coupling blocks at the several corners of the unit interengaging with said tie bars, means releasably locking the tie bars and coupling blocks against relative separation, a panel member circumscribed by the tie bars, retainer means on the tie bars adapted to lock the panel member in engagement with the tie bars, and key means on the blocks for holding the retainer means upon the tie bars, said retainer means comprising plate-like bodies adapted to overlie said tie bars, each tie bar having undercut grooves extending longitudinally thereof, said bodies being flanged at their opposite sides to engage in said undercut grooves, said panel member having flanges extending along the several edges thereof, said flanges being engageable in the undercut grooves of the tie bars and being locked in said grooves by the side flanges of the plate-like bodies, each of said bodies having extending end tongues, each coupling block having grooves in its several edges in which said end tongues are engageable.

4. A building unit comprising a plurality of tie bars adapted to extend along the several sides of the unit, coupling blocks at the several corners of the unit interengaging with said tie bars, means releasably locking the tie bars and coupling blocks against relative separation, a panel member circumscribed by the tie bars, retainer means on the tie bars adapted to lock the panel member in engagement with the tie bars, and key means on the blocks for holding the retainer means upon the tie bars, said retainer means comprising plate-like bodies adapted to overlie said tie bars, each tie bar having undercut grooves extending longitudinally thereof, said bodies being flanged at their opposite sides to engage in said undercut grooves, said panel member having flanges extending along the several edges thereof, said flanges being engageable in the undercut grooves of the tie bars and being locked in said grooves by the side flanges of the plate-like bodies, each of said bodies having extending end tongues, each coupling block having grooves in its several edges in which said end tongues are engageable, each of said key retainers comprising a plate member having flanges at its opposite ends engageable in the grooves of the coupling block, to hold said end tongues in the coupling block grooves.

5. A building unit comprising a plurality of tie bars adapted to extend along the several sides of the unit, cou-

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pling blocks at the several corners of the unit interengaging with said tie bars, means releasably locking the tie bars and coupling blocks against relative separation, a panel member circumscribed by the tie bars, retainer means on the tie bars adapted to lock the panel member in engagement with the tie bars, and key means on the blocks for holding the retainer means upon the tie bars, said coupling blocks and tie bars being of skeletal formation.

6. A building unit comprising a plurality of tie bars adapted to extend along the several sides of the unit, coupling blocks at the several corners of the unit interengaging with said tie bars, means releasably locking the tie bars and coupling blocks against relative separation, a panel member circumscribed by the tie bars, retainer means on the tie bars adapted to lock the panel member in engagement with the tie bars, and key means on the blocks for holding the retainer means upon the tie bars,

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each of said coupling blocks being of cubical formation, the several edges of each coupling block being formed with slots so as to define, on each face of the coupling block, a projection.

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