April 28, 1959 H. W. MIDBY 2,883,852

MASONRY BUILDING CONSTRUCTION

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Fig. 1.

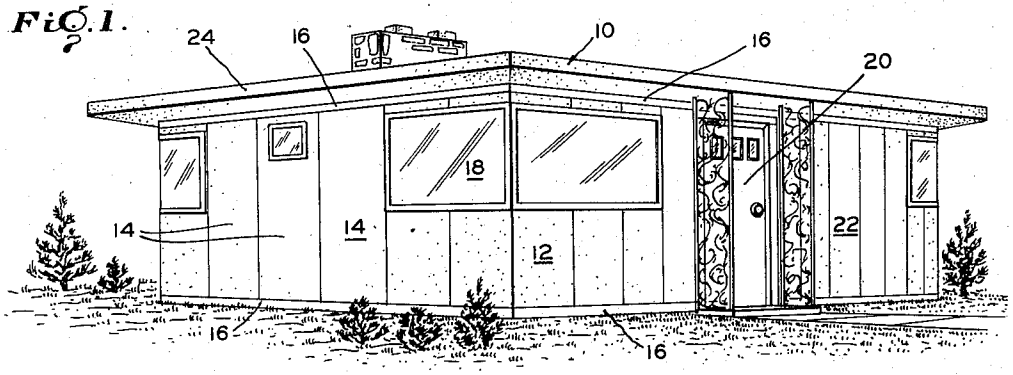


Fig. 2.

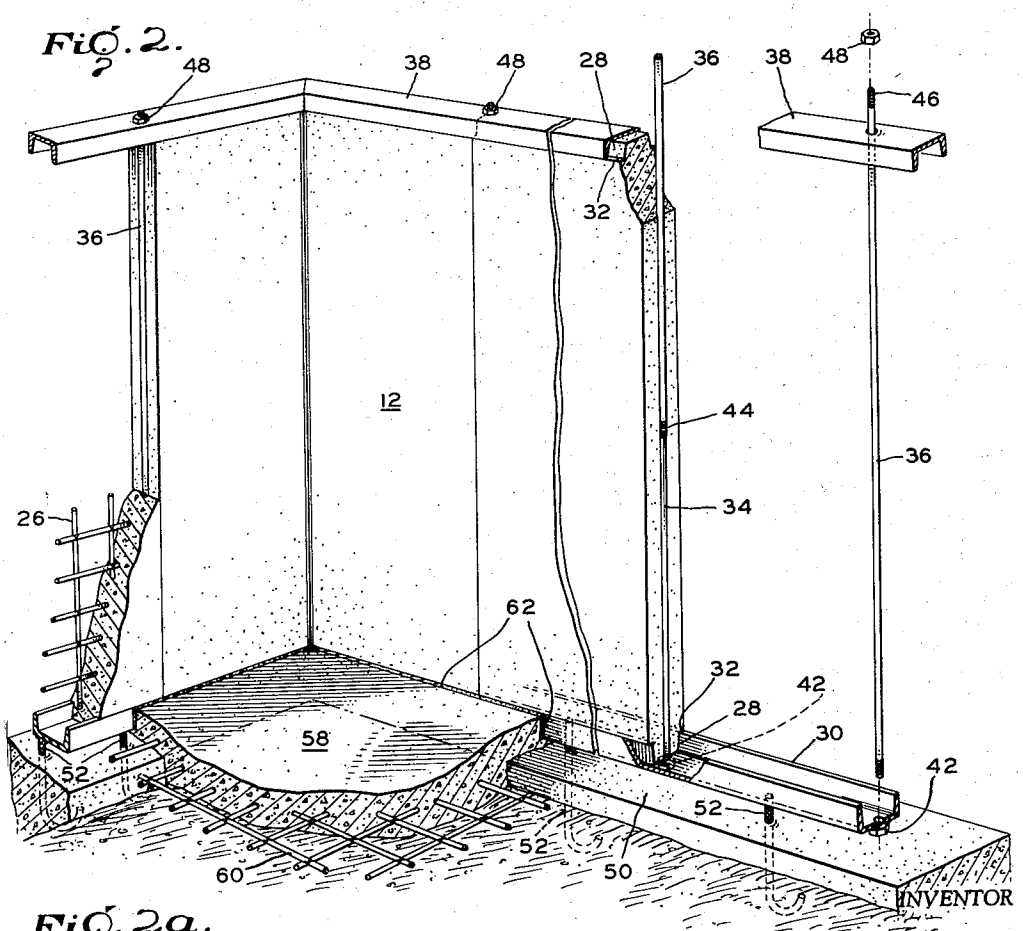
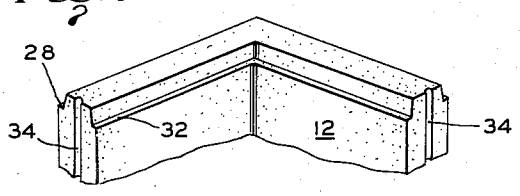


Fig. 2a.



INVENTOR

Harry W. Midby.

BY Gustav Miller

ATTORNEY

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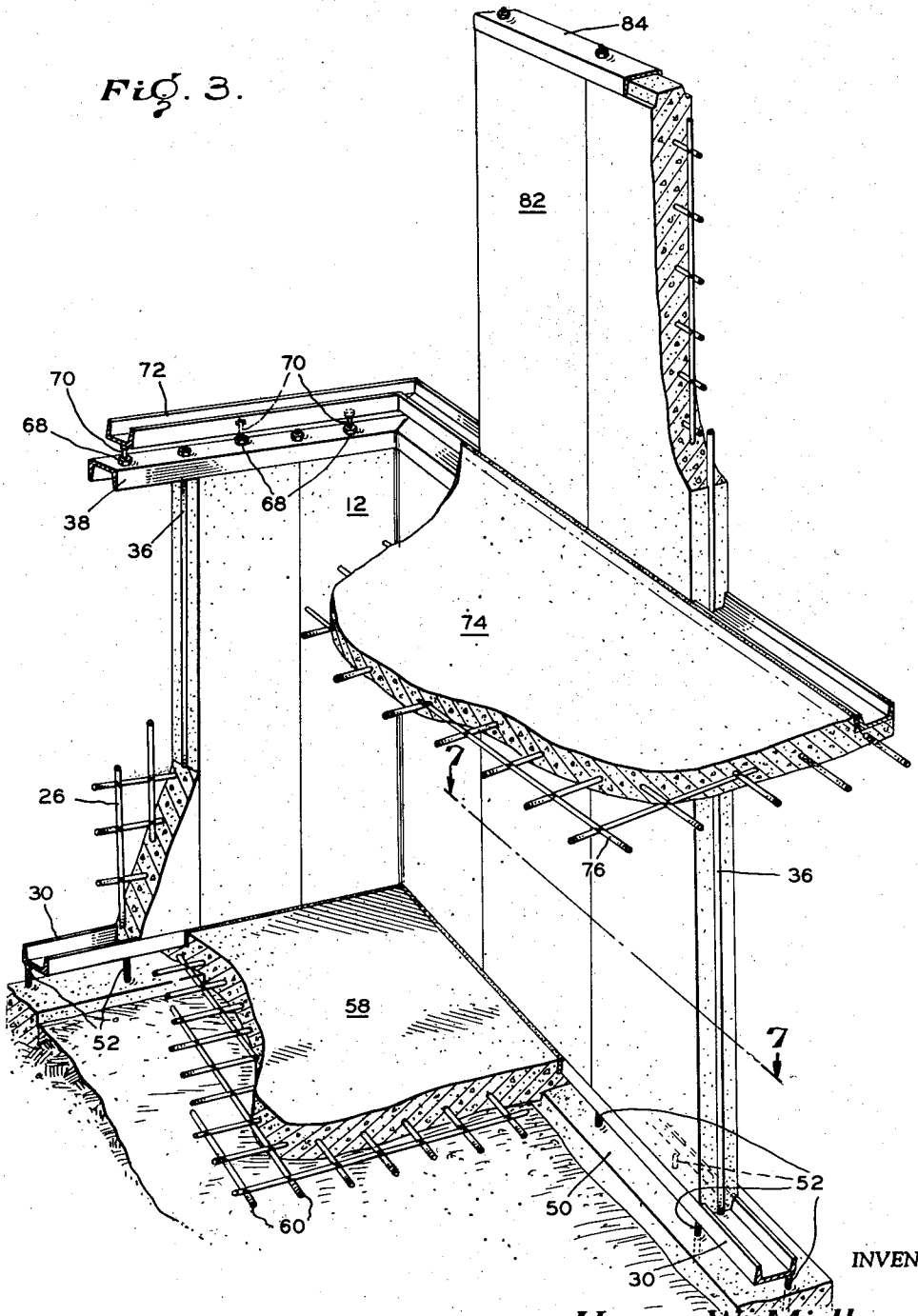
Fig. 3.



INVENTOR

Harry W. Midby.

BY Gustav Miller

ATTORNEY

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Fig. 4.

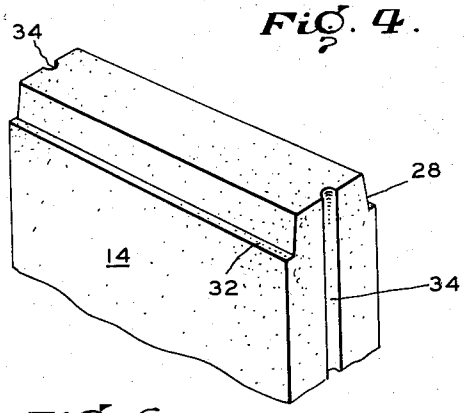


Fig. 5.

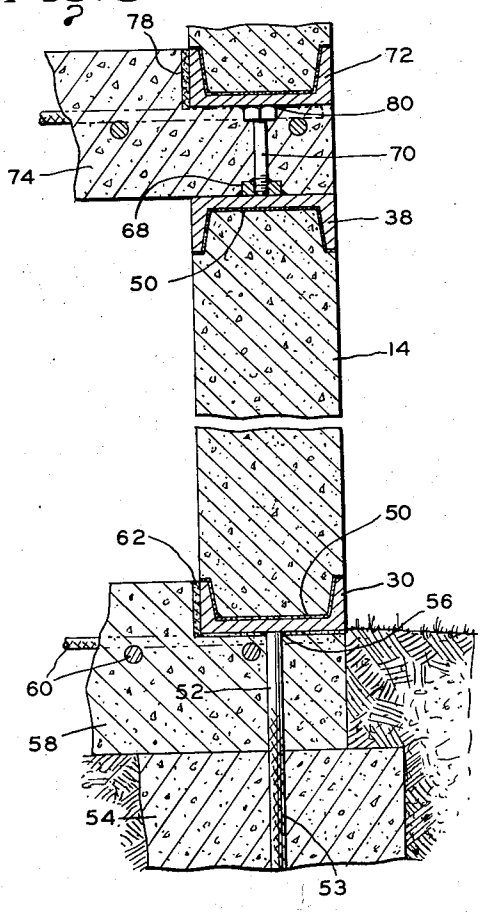


Fig. 6.

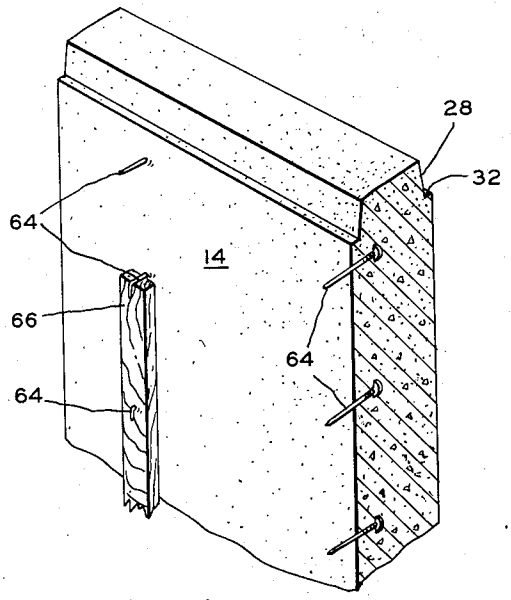
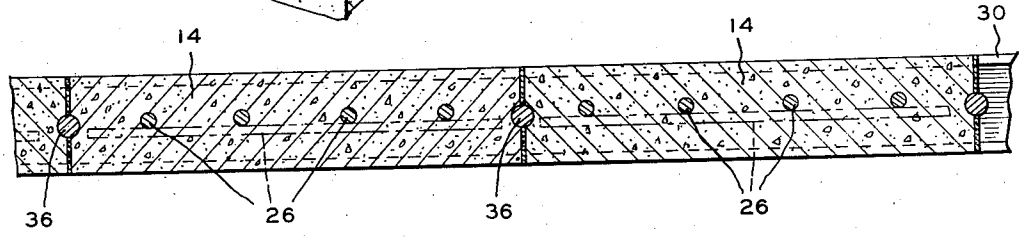


Fig. 7.



INVENTOR

Harry W. Midby.

BY Gustav Miller

ATTORNEY

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MASONRY BUILDING CONSTRUCTION

Harry W. Midby, Seward, Territory of Alaska

Application March 26, 1956, Serial No. 573,699

3 Claims. (Cl. 72—1)

This invention relates to building construction, and it particularly relates to pre-formed, masonry construction.

Although there has been much recent activity in the construction of pre-fabricated housing, such pre-fabricated construction has generally been confined to the use of wood, plywood and similar materials. However, when it was desired to build an all-masonry construction, it was generally necessary to custom-build the building in the age-old fashion.

It is one object of the present invention to provide pre-fabricated masonry building materials which can be easily used in setting up buildings of various shaps, sizes and forms.

It is another object of the present invention to enable the construction of pre-fabricated masonry buildings with all the strength and earthquake-proof qualities of a poured-in-place reinforced concrete building.

Another object of the present invention is to enable the construction of a masonry building in a much shorter time than has heretofore been possible.

Another object of the present invention is to enable the building of a masonry construction without the employment of large numbers of high-skilled and expensive labor.

Another object of the present invention is to provide a masonry structure having both an interior and exterior prefinished surface that requires no additional plaster or stucco finish.

Another object of the present invention is to enable an easy and rapid dismantling of the building, when desired, in such manner that the major portion of the materials are salvageable.

Other objects of the present invention are to provide an improved building construction, of the character described, that is easily and economically produced, which is sturdy in construction, and which is highly efficient in operation.

With the above and related objects in view, this invention consists in the details of construction and combination of parts, as will be more fully understood from the following description, when read in conjunction with the accompanying drawings in which:

Figure 1 is a perspective view of a house constructed in accordance with the present invention.

Figure 2 is a fragmentary, perspective view, partially exploded, of a corner assembly embodying the present invention.

Fig. 2*a* is a fragmentary, top perspective view of a pre-cast corner unit such as used in the assembly of Fig. 2.

Fig. 3 is a fragmentary perspective view, similar to Fig. 2, but of a two-story structure.

Fig. 4 is an enlarged perspective edge view of pre-cast panels embodying the present invention.

Fig. 5 is an enlarged, vertical, cross-sectional view of a portion of the foundation construction.

Fig. 6 is a fragmentary, perspective, detailed construction showing a furring strip mounting.

Fig. 7 is a sectional view taken on line 7—7 of Fig. 3.

Referring now in greater detail to the drawings wherein similar reference characters refer to similar parts, there is shown a house, generally indicated at **10**, which has been constructed of corner structures **12** and side panels **14** embodying the present invention. These corner structures, or corner panels, and side panels are braced by steel channel bars **16** at top and bottom. They are also so constructed that openings are provided of proper size and shape to form widoows **18** and door **20**, as well as garage door **22**. The roof **24** is also formed of the pre-fabricated masonry materials of this invention.

The corner and side panels comprise molded concrete forms which are pre-cast in molds of sizes and configurations corresponding to the sizes and configurations of the particular parts of the building which they will form. These molded building forms are made by pouring the concrete into the mold in which is positioned a mesh-like matting arrangement of reinforcing rods **26**. As the concrete hardens in the mold, the reinforcing rods become embedded in the concrete.

The edges of the mold are shaped to provide shoulders adjacent the edge so that the finished concrete form has edges provided with a reduced portion **28**. This reduced portion is of a size and shape to fit within supporting channel bars **30** while the shoulders **32** defining the reduced portion is adapted to fit on the top edges of the side walls of the channel bar. It will be noted that both the side walls of reduced portion **28** and of the channel bars are angled slightly to the vertical to complement each other. This provides a firm, bracing support for the concrete forms.

The concrete forms are also molded to provide longitudinal semi-cylindrical grooves **34** along their edges. These grooves are provided so that when the forms are placed in edge-to-edge contact, the grooves **34** of each abutting edge coact to form a longitudinal cylindrical bore into which is adapted to fit a locking rod **36**.

As illustrated, for example, in Fig. 2, the corner construction **12** is shown being connected to the foundation; this is by means of the locking rods **36** which extend through proper openings in a top channel bar **38**, of angled channel construction, through the mating grooves **34** of edge-abutting panels, and through proper openings in the bottom wall of the channel bar **30**. A nut **42** is welded on the under-surface of the channel bar **30**, around each opening, so that the threaded ends **44** of the rods **36** will be secured in place merely by rotating the rod at the top. The rods **36** are also threaded at their opposite ends **46** so that when in fastening position, a nut **48** can be threaded thereon to lock them in place. The ends **44** and **46** are preferably similar so that the rods can be turned in either end-to-end position when in use. This speeds up the assembly process because it is not necessary to take the time to seek out the proper end of the rod.

Before securing the concrete forms, either corner structures or side panels, in place, they are edge-treated with asphalt mastic or tar for water-proofing purposes, as indicated at **50** in Fig. 5.

The base channel bar **30**, which is set to grade and line with the utmost precision, is provided on its under-surface with a series of anchor rods **52**. These anchor rods are formed of bent deformed bars, having a somewhat scarred surface as at **53** which hook into the footing **54**. The bars **52** are not aligned with each other but are positioned in laterally staggered arrangement so that all lateral portions of the channel bar are firmly anchored. The anchor rods or bars **52** are connected to the under-surface of the channel bar **30** by means of welds, indicated at **56** in Fig 5.

After the base channel bar **30** is anchored in place, the space between the channel bar and the footing **54** is

filled in by pouring the floor slab 58 over a steel mesh matting 60. Before the floor slab is poured, a molded filler or "expansion strip" 62 is provided at the exterior surface of the inner side wall of the channel bar 40. The floor is then poured until it reaches the top level of the base channel bar, as best shown in Fig. 5.

After all the corner and side panels are in place between the upper and lower channel bars 38 and 30, with the panels locked in edge-to-edge abutment by means of the locking rods 36, so that the walls are in position, if the building is to be of one-story construction, the cantilevered roof slab 24 is set on the upper channel bar 38.

The result is a simple and inexpensive, reinforced-concrete, fireproof building which does not require any exterior coating or covering such as stucco to provide an acceptable appearance. By merely applying a coat of masonry paint, a beautiful, uniform surface is obtained.

If the interior wall surface is to be furred out for providing insulation or a finished wall appearance, furring nails, such as illustrated at 64 in Fig. 6, can be embedded in the concrete panel 14 before it hardens in the mold. These nails are so arranged that their pointed ends extend out from the surface of the panel while the opposite ends remain firmly embedded in the concrete. Wooden furring strips, such as shown at 66, may then be permanently nailed to the concrete panels by hammering them onto the nails 64.

When the building is to be multi-story construction, bolt nuts 68 are welded to the upper wall of the channel bar 38. These nuts are arranged in laterally off-set or staggered positions relative to each other to provide a firm support, through bolts 70, for the channel bar 72 which faces in the opposite direction and acts to support the second story.

After the bolts 70 have been engaged in the nuts 68 their heads are welded to the underside of channel bar 72, and a concrete flooring slab 74, including a steel matting framework of crossed rods 76 is poured in a manner similar to that previously described in connection with floor slab 58.

When the channel bar 72 is in place, panels such as 82, similar to those previously described at 14 are positioned in place between channel bar 72 and next upper channel bar 84, in similar fashion to that previously described. This build-up of stories continues until the desired height of the building is reached. The roof is provided on top of the upper story.

Although this invention has been described in considerable detail, such description is intended as being illustrative rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

1. A building construction assembly comprising a concrete base, a lower channel bar connected to said base, a first wall formation comprising a series of edge-to-edge abutted panels mounted between said lower channel bar and a second channel bar, the flanges of said first and second channel bars extending toward each other and engaging the lower and upper edges, respectively, of said panels, said panels being of pre-formed concrete and being connected by key-rods extending vertically through mating complementary edge-grooves on adjacent panels, said second channel bar having a plurality of nuts, in staggered relationship to each other, welded to the upper surface of the web, a concrete slab positioned horizontally between said second channel bar and a vertically spaced third channel bar, said third channel bar being in reversed position relative to said second channel bar, bolts screwed into each of said nuts and extending through said slab and into abutment with the undersurface of said third channel bar, the heads of said bolts being secured to said undersurface, said bolts supporting said third channel bar in spaced relation to said second channel bar, and a second series of edge-to-edge abutted concrete, pre-formed panels positioned between said third channel bar and a fourth relatively reversed channel bar forming a second story.

2. The assembly of claim 1 wherein a steel-webbed matting is embedded in said base and in said concrete slab positioned between said second and third channel bars.

3. The assembly of claim 1 wherein the inner surfaces of the flanges of each channel bar flare slightly outwardly, the edges of said panels engaged by said flanges being complementary thereto.

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