

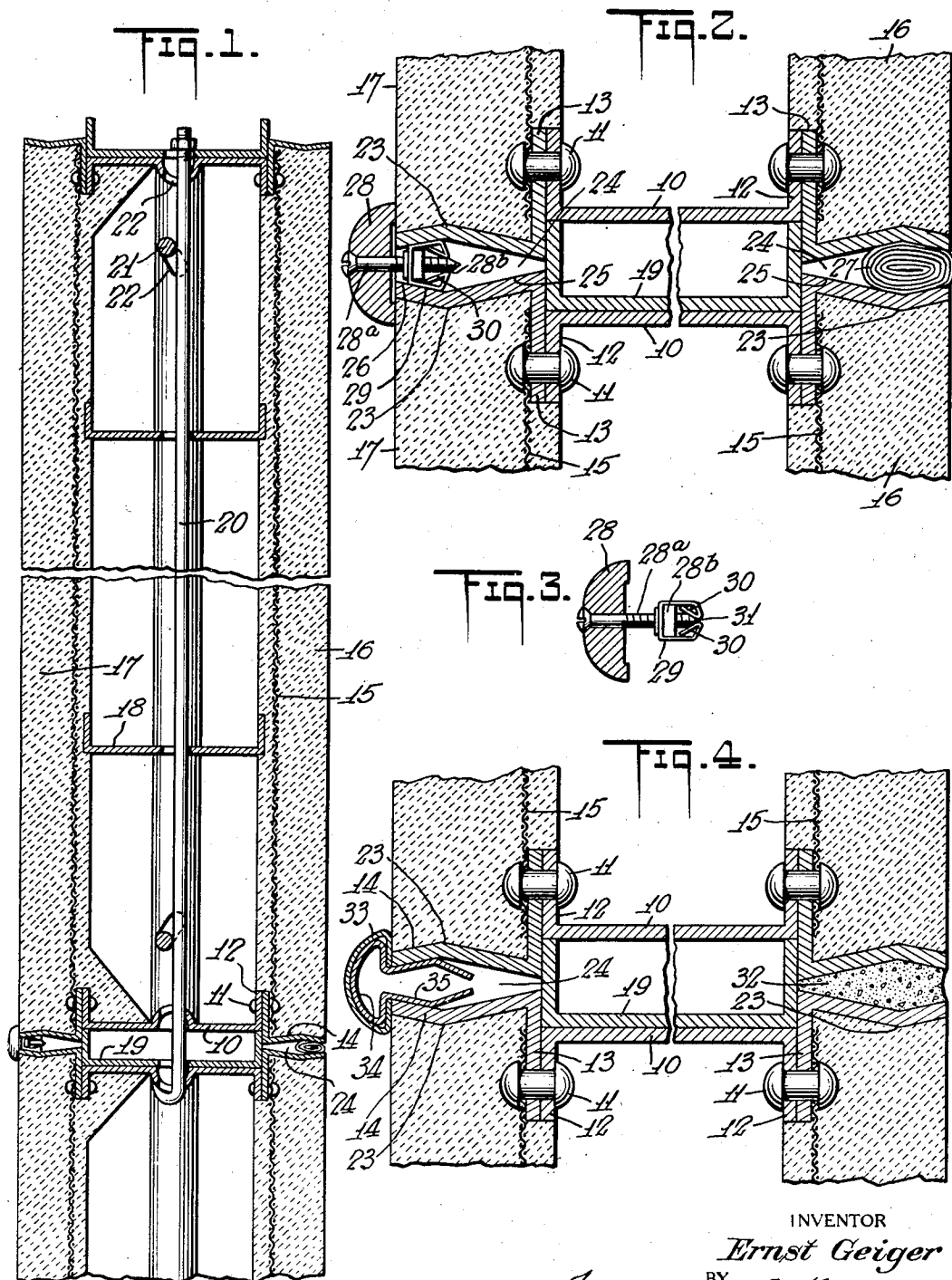
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BUILDING AND BUILDING SECTION

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BUILDING AND BUILDING SECTION

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The present invention is concerned with individual and assembled building units of the factory-fabricated slab type and particularly with an improvement in buildings and building units of the general character disclosed in my copending application Serial No. 122,666, filed July 15th, 1926.

It will be recalled that in such application there is shown a building unit consisting of a channel iron frame on which are mounted outwardly facing ledge-forming angle iron frames. Inner and outer wall sections of concrete, plaster, brick or other suitable material are molded or otherwise mounted in the angle iron frames, leaving an air space between them through which connective horizontal and vertical tie rods may be passed when a plurality of the slab-like sections are assembled to form a wall, ceiling or roof.

Fabricated slabs of this character are extremely heavy. They must be transported in substantially finished condition from the factory to the field where they are assembled and during the course of such transportation and assembly it is imperative that the inner and outer concrete walls be prevented from cracking or breaking. Even when carefully handled with hoisting machinery there is an ever-present danger of a sudden shock which may dislodge or crack the wall material.

In accordance with the present invention I have provided a construction in which the likelihood of breaking or knocking out the wall material at either side of the block is reduced to a minimum and the walls are very firmly and securely held and highly resistant to breakage or dislocation even under sudden shocks and stresses incidental to their handling and transportation.

Another object of the invention is to provide a slab construction which permits ready convenient attachment of ornamental moldings to the interior of the building, to conceal the joints of the slabs and produce a decorative panelled interior effect.

Another object is to provide a building in which the outside joints between the slabs are effectively packed with a material which not only renders them wind-proof but pre-

vents the passage of moisture from one section to another, and the entrance of rain or seepage into the hollow interior of the slab.

It is worthy of note that a relatively simple change in the frame construction serves the dual function of firmly anchoring the walls and properly providing for the accommodation of the joint packing and molding securing means.

Other and more general objects of the invention are to provide a building unit of simple, practical construction which will be rugged and durable and efficient in use and well suited to the requirements of economical manufacture and convenient assembly.

With the above noted and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts which will be more fully hereinafter described and pointed out in the claims.

The invention may be more fully understood from the following description in connection with the accompanying drawing, wherein:

Figure 1 is a broken longitudinal sectional view through a pair of superimposed fabricated building slabs constructed in accordance with the invention.

Figure 2 is an enlarged sectional view through the joints of two adjacent slabs.

Figure 3 is a detail view of the inner molding and its securing means, and

Figure 4 is a view similar to Figure 2 but illustrating a slight modification.

In the drawing I have shown the slabs only in section. It may be stated that they may be of any height and width in accordance with the demands of the trade, their dimensions being limited only by practical requirements of transportation and assembly.

Each fabricated slab-like building section is of rectangular shape and includes a rectangular inwardly facing channel iron frame 10. Lying against and riveted or otherwise secured as at 11 to the inwardly turned flanges 12 of the frame 10 are the flanges 13 of angle iron frames. The other flange 14 of the angle frame projects outwardly and

lies in substantial parallelism with the intermediate portion of the channel iron frame.

Wire mesh or other suitable reinforcement such as 15 may be attached to the outer faces of the flanges 13 and this mesh is molded within the concrete walls 16 and 17 which are cast within the mold-forming angle iron frames. These inner and outer walls are spaced apart a distance approximately equal to the distance of the channel iron frame and may be intermediately reinforced and backed by cross-pieces 18, also of channel iron connecting opposite sides of the frame 10.

The heel or angle of each angle iron extends beyond the adjacent channel iron so that when two of the blocks are placed in edge to edge relationship the adjacent channel iron frames are spaced apart. This spacing is preferably controlled by channeled spacing members 19 secured upon the top of one channel frame and abutting the bottom of a superimposed channel frame. The load of one fabricated slab section is thus transferred to a subjacent one directly through the spacers 19, which take the full strain of the building sections above them. Preferably the sections are connected to the sections above and below them and also to laterally adjacent sections by tie rods such as the tie rods 20 and 21, working through openings 22 in the channel frame and disposed in the central space between the inner and outer walls of the slab.

The sections as thus far described are disclosed in my copending application above referred to. A novel feature, however, is the use of angle irons the flanges 14 of which are bent along longitudinal lines to define a roughly V-shaped rib 23 projecting inwardly into the cast concrete. The effect of this rib entering all edges of the molded concrete walls is to firmly brace the concrete against displacement in an outward direction, flanges 13 of course substantially sustaining it against movement in an inward direction. By this arrangement the outwardly extending flanges 14 form an actual interlock with the edges of the walls.

The inwardly facing convexity of these flanges also produces a corresponding outwardly facing concavity. The opposed concave faces of two adjacent blocks define crevices designated at 24 at both the interior and exterior of the block. These crevices are widest at the apex of the ribs 23, narrow inwardly as at 25 toward the spacers 19 and narrow outwardly at 26 toward the exposed faces of the block.

The exterior crevices preferably contain a packing material such as the tarred fiber 27. This packing may be in the nature of a relatively heavy tarred rope firmly compressed between two adjacent flanges 14 as an incident of assembling the sections. This packing does not take any of the thrust of adjacent slabs as explained above. Conse-

quently possible rotting thereof cannot result in any sinkage of the building sections. The packing serves the three-fold purpose of excluding wind, preventing seepage between adjacent sections and preventing the seepage of moisture or driving of rain into the interior of any slab.

Inasmuch as the packing serves this purpose it will of course be evident that the spacer member 19 need not extend the full length or the full width of the adjacent channel iron frames and may be arranged at intervals along such frames to effect proper centering and spacing of adjacent slabs. These spacers, as well as the packing material, are present between laterally adjacent blocks as well as between superimposed blocks. In this latter instance the packing material is effectively compressed by tightening the tie-rods 21.

There is shown in Figures 2 and 3 a wooden molding strip 28 which may be used to conceal the crevices defined at the interior of the building by the non-abutting edges of adjacent slabs. This molding when secured in place will give the effect of panelling on the interior walls, the size and shape of the panels corresponding with the size and shape of the slabs.

One convenient method of securing the molding in place involves the use of screws 28a passed through the molding and carrying nuts 28b which mount expansible yoke members 29. The yokes at their ends terminate in rearwardly turned cam arms 30 adapted to coact with the pointed end 31 of the screw. The yoke is inherently spring held in the contracted position of Figure 3 in which position it may be inserted into the crevice 24. When the screw is tightened the walls of the crevice prevent rotation of the nut and associated yoke with the screw, with the result that the nut is fed toward the molding and the yoke is expanded by the engagement of cam surfaces 30 and 31 until it engages the tapered surfaces 26 of adjacent angle flanges 14 as seen in Figure 2. In this position the moldings are firmly held but may be readily removed and replaced by a reverse screwing action.

In Figure 4 I have illustrated a slight modification in which the external crevices defined by adjacent slabs are filled with cement or mortar as at 32 in order to give the exterior of the building the desired finish. In this case I have shown the use of a hollow metal molding 33 retained in position by spring clips which include hollow heads 34 housed within the molding and spring arms 35 of generally angular offset formation adapted to lie within the crevices of the inner wall. The angularity of these arms is such that their converging extremities provide cams which automatically compress the arms as the clips are forced into position.

The opposite ends of the arms, however, diverge from the head and lie snugly against the converging surfaces 26 of adjacent angle bar flanges 14 so that the metal molding is tightly held. This form of molding may be conveniently pried off the wall, when desired.

In conclusion it may be stated that while I have shown features of the present invention embodied in a hollow factory fabricated slab of the character disclosed in my prior application, certain of the inventive features are applicable to various other types of fabricated building blocks, slabs and monoliths.

It will thus be seen that there is herein described a device in which several features of this invention are embodied, and which device in its action attains the various objects of the invention and is well suited to meet the requirements of practical use.

As many changes could be made in the above construction, and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a pre-fabricated building section of the slab type, a metal frame, wall material within the frame, said frame presenting inwardly directed portions embedded in the edges of and interlocked with the wall material presenting concave channels at the exterior of the slab adapted to coact with the similar channel of an abutting slab to receive and clamp packing material.

2. In a pre-fabricated building section of the slab type, a metal frame, wall material in the frame, said frame being bent upon longitudinal lines to present an inwardly facing convexity interlocking with the wall material and an outwardly facing concavity adapted to cooperate with the similarly concaved face of an adjacent slab to receive and clamp waterproof packing material.

3. In a pre-fabricated building section of the slab type, a metal frame, wall forming material molded in the frame, said frame being bent upon longitudinal lines to present an inwardly facing convexity interlocking with the wall forming material, an outwardly facing concavity adapted to coact with the similarly shaped outer faces of the frames of adjacent sections to provide a space for the reception of sealing material.

4. In a pre-fabricated building section of the slab type, a metal frame, wall material cast within the frame, said frame being bent upon longitudinal lines to present an inwardly facing rib interlocking with the wall material and an outwardly facing groove adapted to coact with the similarly shaped

outer face of the frame of an adjacent section to provide a space for the reception of sealing material.

5. In a pre-fabricated building section of the slab type, a metal frame, wall material confined within the frame, said frame being bent upon longitudinal lines to present an inwardly facing rib interlocking with the wall material and an outwardly facing groove adapted to coact with the similarly shaped outer face of the frame of an adjacent section to provide a space for the reception of sealing material, said frame being of general V-shape in cross-section to provide the rib and groove.

6. In a pre-fabricated building section of the slab type a channel iron frame, outwardly facing ledge-forming angle iron frames secured to the flanges of the channel iron frame, inner and outer walls confined within the angle iron frames, one flange of the angle iron frames being bent upon longitudinal lines to provide an inwardly facing convexity with which the walls interlock.

7. In a pre-fabricated building section of the slab type a channel iron frame, outwardly facing ledge-forming angle iron frames secured to the flanges of the channel iron frame, inner and outer walls retained within the channel iron frames, one flange of the channel iron frames being bent upon longitudinal lines to provide an outwardly facing convexity adapted to coact with a similarly shaped concavity of an adjacent slab to provide a space for the reception of sealing material.

8. A building including a plurality of pre-fabricated slabs arranged in edge-to-edge superimposed relationship, each of the sections including metal frames and walls within the frames, said frames providing outwardly facing concavities and sealing material arranged within the concavities.

9. A building including a plurality of pre-fabricated slabs arranged in edge-to-edge superimposed relationship, each of the sections including metal frames and walls within the frames, said frames providing outwardly facing concavities and sealing material arranged within the concavities, said sealing material being compressed by the sections as an incident of assembling the building, and means independent of the sealing material for sustaining the thrust of one section against its fellows.

10. A building including a plurality of fabricated building sections of the slab type assembled in edge-to-edge relationship to define a wall, each section including a rigid central metal frame and inner and outer rigid frames connected thereto, inner and outer walls confined within the latter frames and spaced apart a distance equal approximately to the width of the central frame, the inner and outer frames providing in-

wardly facing convexities interlocking with the wall material and outwardly facing concavities, means sustaining the thrust of the block against each other and spacing the molding frames of adjacent blocks apart to provide exposed crevices in the inner and outer walls of the building and means filling said crevices.

11. A building of the class described in claim 10 and wherein moldings lying against the inner faces of the wall and concealing the crevices are retained in place by expansion securing devices entering the crevices.

12. A building of the class described in claim 10 and wherein packing material is housed within and seals the outer crevices and is compressed by the slabs between which it is confined as an incident of assembling the building.

13. A building including a plurality of pre-fabricated sections, each of the sections including metal frames and walls within the frames, said frames cooperatively providing outwardly facing concavities and sealing material arranged within the concavities of adjacent sections.

14. A building including a plurality of pre-fabricated sections, each of the sections including a metal frame and walls within the frame, said frames providing outwardly facing concavities, and means coacting with said concavities to seal the joints between adjacent sections.

15. A building section including a metal frame, inside and outside walls molded to the frame, the outstanding flanges of said metal frame being deformed to inwardly interlock with the walls and outwardly interlock with means to seal the joints between adjacent sections.

16. A building including a plurality of pre-fabricated sections assembled in edge-to-edge relationship to define walls, floors, and roof, each section including a metal frame and wall-, floor-, or ceiling forming materials molded therein, said frames supporting the superimposed loads without additional structural means, and means to seal the joints between adjacent sections.

Signed at New York city in the county of New York and State of New York this 21st day of September, A. D. 1928.

ERNST GEIGER.

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