July 13, 1943. C. W. STONE 2,324,039

PREFABRICATED CONSTRUCTION UNIT

Filed May 31, 1941 2 Sheets-Sheet 1

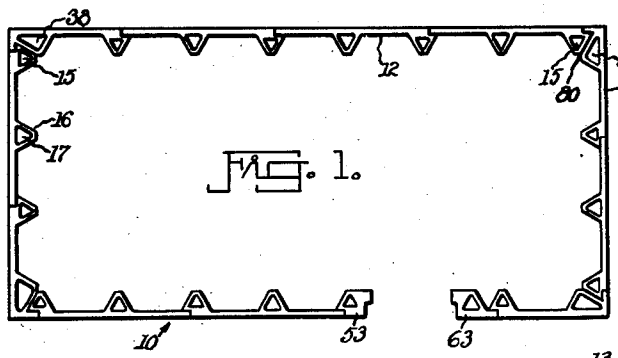



FIG. 1.

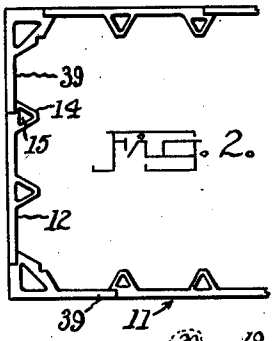



FIG. 2.

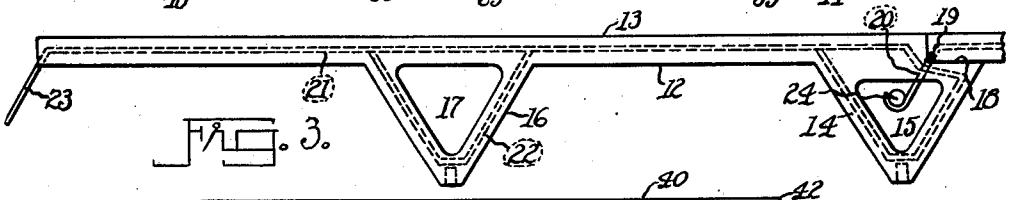



FIG. 3.

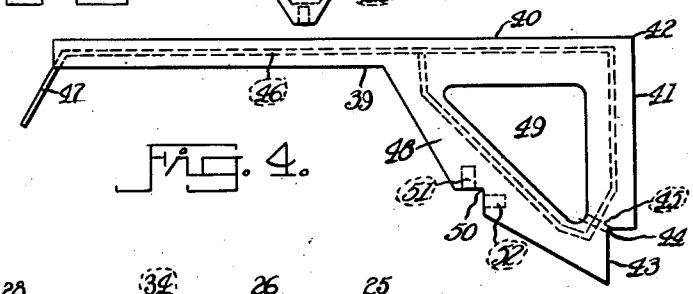



FIG. 4.

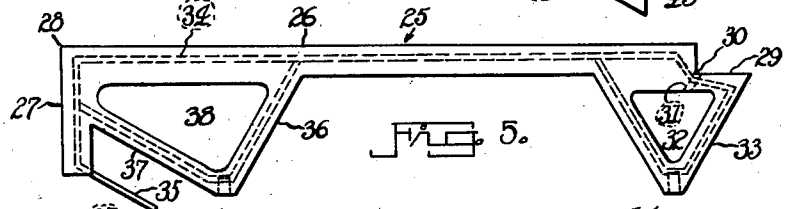



FIG. 5.

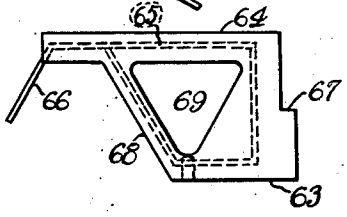



FIG. 6.

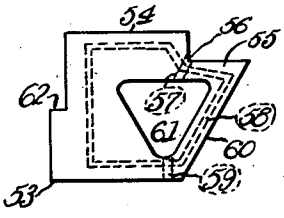



FIG. 7.

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PREFABRICATED CONSTRUCTION UNIT

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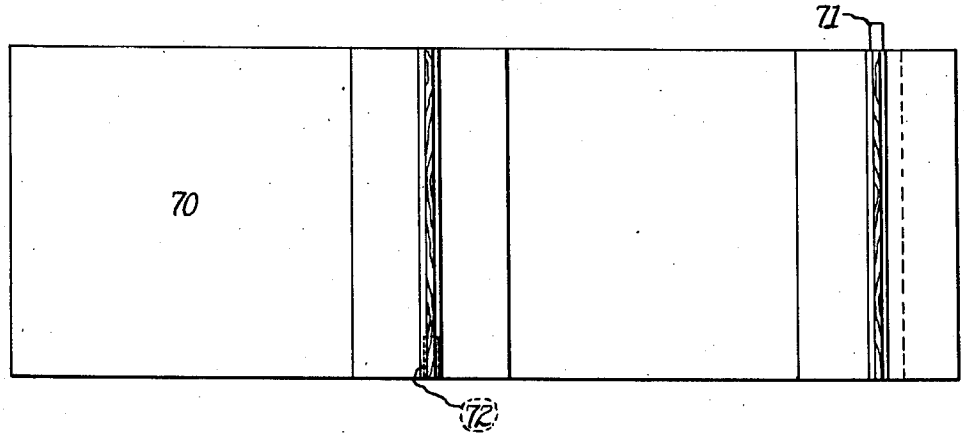



FIG. 8.

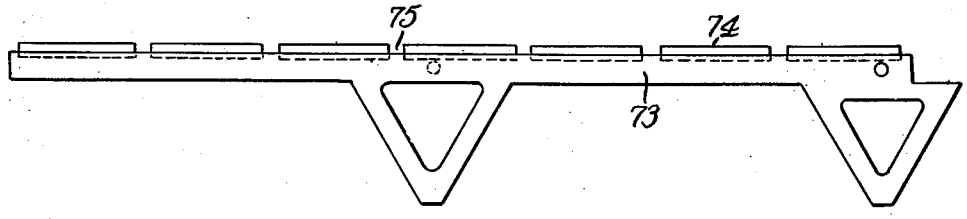



FIG. 9.

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# UNITED STATES PATENT OFFICE

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## PREFABRICATED CONSTRUCTION UNIT

Charles W. Stone, Mooresville, Ind.

Application May 31, 1941, Serial No. 396,103

8 Claims. (Cl. 72—30)

The present invention relates to prefabricated construction units; and a primary object of the invention is to provide a series of such units which may be used to erect a wall quickly and with a minimum of effort; which shall be relatively light and yet sufficiently strong, which shall be so constructed as to make it possible to lock superimposed horizontal runs of such units rigidly together with poured concrete; and which shall be of such character as to facilitate a rigid locking of adjacent units in each run. Further objects of the invention will appear as the description proceeds.

To the accomplishment of the above and related objects, my invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that change may be made in the specific construction illustrated and described, so long as the scope of the appended claims is not violated.

Fig. 1 is a plan view of one run of my prefabricated units assembled to form a wall with a space left for a window or door frame;

Fig. 2 is a fragmentary plan of the next superjacent or subjacent run of such wall;

Fig. 3 is an enlarged plan of the primary unit used in constructing a wall;

Fig. 4 is an enlarged plan of one corner unit;

Fig. 5 is an enlarged plan of another corner unit;

Fig. 6 is an enlarged plan of a door or window frame-receiving unit;

Fig. 7 is an enlarged plan of a mating door or window frame-receiving unit;

Fig. 8 is a rear elevation of a slightly modified primary unit; and

Fig. 9 is a plan view of a primary unit having its front face modified in a manner later to be described.

Referring more particularly to Figs. 1 and 2, it will be readily seen that one horizontal run 10 of units 12, with associated corner units and door frame-receiving units, is formed by lapping units over rabbetted or stepped ends of the next adjacent units. Each unit 12 comprises a slab of reinforced concrete or other material which is originally plastic and which hardens after it has been formed. Each such unit is formed to provide a plane front face 13 and two ribs 14 and 16 which project rearwardly from the rear face of the unit and which are preferably triangular in horizontal section, as is clearly illustrated in Fig. 3. Each of those ribs defines a hollow 15 or 17, said hollows extending entirely through the ribs upon axes parallel with the plane front face 13. Preferably, the hollows 15 and 17 are not of equal cross sectional area. At one end, the unit 12 is formed with a rearward step providing a surface 18 parallel with the surface 13 but spaced rearwardly therefrom by a distance equal to the thickness of the body of the unit 12. In the corner 19 of that step is formed a hole 20 leading from the step corner into the interior of the hollow 15.

Embedded within the unit 12, and parallel with the surface 13, is at least one reinforcing rod 21, one end portion of which may be bent to extend through the wall of the triangular rib 14, as illustrated. A reinforcing rod 22 is likewise embedded in the walls of the rib 16. The opposite end of the rod 21 projects angularly rearwardly and outwardly from the unstepped end portion of the unit 12, as at 23; and it will be noted that said portion 23 of the reinforcing rod is parallel with the axis of the hole 20.

In asembling two adjacent units 12, the unstepped end portion of one unit is laid in the step of the next adjacent unit, with its rear surface resting against the surface 18, and with the reinforcing rod projection 23 of one unit extending through the hole 20 of the adjacent unit into the interior of the hollow 15. A reinforcing rod 24 is disposed within the hollow 15, and the end of the rod projection 23 is preferably hooked around the rod 24 to establish a firm connection. After a plurality of runs of units have been superimposed upon each other, concrete will be poured into the hollows 15 to embed therein the rods 24 and the extensions 23 crooked therearound.

At each corner of the run illustrated in Fig. 1, there is substituted for a unit 12, a unit 25. The unit 25 is formed to provide a plane surface 26 and a second plane surface 27 perpendicular thereto, said plane surfaces meeting at 28 in a right angle. At the end opposite the corner 28, the unit 25 is formed with a rearward step providing a surface 29 parallel with the surface 26 but spaced rearwardly therefrom a distance equal to the thickness of the body portion of the unit 25. In the corner 30 of the step so formed, there is provided a hole 31 extending into the hollow 32 defined by a rearwardly projecting triangular rib 33 similar to the rib 14. Embedded in the slab 25 is a reinforcing rod 34 one end of which is bent to lie within the walls of the rib 33, and the other end of which is bent to lie parallel to the surface 27. Said rod 34 projects, as at 35, from the extremity of the portion of the slab defining the surface 27. The axis of the portion 35 lies perpendicular to the axis of the hole 30.

Walls 36 and 37 projecting rearwardly from the inner wall of the unit 25 define a triangular hollow 38. It will be noted that, when the portion 27 of the unit 25 is laid into the step of the next adjacent unit 12, the extension 35 will project through the hole 20 of said unit 12 into the hollow 15 defined by the rib 14 thereof; where it can be hooked around a reinforcing rod corresponding to the rod 24. It will also be noted that, when the two elements are thus associated, the hollow 38 and the hollow 15 together form a divided, substantially triangular, hollow, for a purpose later to become apparent. The two ribs defining those hollows cooperate to form a notch 80, likewise for a purpose later to be described.

In the next superjacent run of units, the units 12 are so arranged that the hollow 15 of each superjacent unit registers with the hollow 17 of the previously laid run. The corner construction must, therefore, be different; and Fig. 4 illustrates the form of corner construction used in the run illustrated in Fig. 2.

The corner unit 39 is formed to provide a plane surface 40 and a second plane surface 41 perpendicular thereto, said surfaces meeting in a right angle at 42. A rearward step is formed at the extremity of the surface 41, to provide a surface 43 parallel with the surface 41 but spaced rearwardly therefrom a distance equal to the body thickness of the unit. From the corner 44 of said step extends a hole 45 leading to the interior of the hollow 49 defined by a wall 48 extending between the two perpendicularly related arms of the unit. A reinforcing rod 46 is embedded in the unit, and one end thereof is bent to lie in the three walls which define the hollow 49, while the other end thereof projects rearwardly and outwardly as at 47.

The wall 48 is formed with a notch 50 defining perpendicularly related surfaces which are respectively parallel with the surfaces 40 and 41; and cast in said wall and extending flush with said perpendicularly related surfaces are blocks of wood, or the like, 51 and 52. Wall board or the like may be laid up against the ribs 14 and 16 and can be cornered in the notch 50, being secured to the construction units by fastening means passing through the wall board and into the blocks 51 and 52. It will be noted that each of the ribs 14 and 16, and the walls 36 and 37, is provided with a similarly cast block of wood or the like.

In assembling the corner unit 39, it will be noted, from a comparison of Figs. 1 and 2, that the unit 39 is so arranged in the wall that its hollow 49 registers with the divided hollow formed by the hollows 15 and 38. Then the next adjacent unit 12 receives the rod projection 47 through its hole 20, and has its rib 14 and hollow 15 disposed in registry with the rib 16 and hollow 17 of the subjacent unit 12.

A unit 53, for use in forming a socket for the reception of a door frame or a window frame, is formed to provide a plane front surface 54 and a rearward step having a surface 55 parallel with the surface 54 but spaced rearwardly therefrom a distance equal to the body thickness of the units 12. In the corner 56 of the said step is formed a hole 57 leading to the triangular hollow 61 formed within the block 53. A reinforcing rod 58 is embodied in the block, having portions lying substantially parallel with the various surfaces of the unit; and it will be noted that the unit 53 likewise carries a wood block 59. A surface 60, formed on the block 53, is substantially parallel with the end wall of a rib 14 of the primary units 12; and at the opposite end of the block, it is formed with a deep step 62 for the reception of a door or window frame. The unit 53 is intended for association with an unstepped end of a unit 12, the rod projection 23 of such unit 12 being adapted to pass through the hole 57 into the hollow 61.

For the other side of the door or window frame, I provide a unit 63 which is formed to provide a plane outer surface 64. A reinforcing rod 65 is embedded in said unit and has an end 66 projecting angularly outwardly and rearwardly therefrom. At the end opposite the projection 66, the unit 63 is formed with a deep step 67; and an angular wall 68 aids in defining a triangular hollow 69.

In use, the unit 63 is intended to cooperate with the stepped end of a unit 12, the projection 66 extending through the hole 20 of a unit 12 into the hollow 15 thereof.

Preferably, reinforcing rods are received in vertically registering ribs of all of the units, whereafter concrete is poured into the registering hollows to lock the construction firmly together. The fact that the hollows 15 are smaller than the hollows 17 results in the production of steps in the vertical concrete posts which are formed by pouring concrete into the registering ribs, whereby the units are vertically locked together, as well as being horizontally locked.

In Fig. 8 I have shown an alternative form of locking means to replace the projections 23 and holes 20. On the upper surface of the unit 70, there is provided an upstanding pin 71, adjacent the stepped end of the slab. Intermediate the ends of the lower ends of the slab is formed a socket 72 adapted to receive the pin 71 of the next subjacent run of units 70. It will be clear that the pin 71 and socket 72 will be so positioned with relation to each other that, when the pin 71 of one unit is received in the socket 72 of the next superjacent unit, the end rib of one unit will register with the intermediate rib of the other unit. Obviously, the relative positions of the pin 71 and socket 72 could be reversed without departing from the scope of my invention.

In Fig. 9, I have shown a unit 73 similar to the unit 70 in all respects, except for the fact that blocks 74 of some other material have been cast into the surface 75. The primary units of the present invention are cast with the ribs extending downwardly, so that the front plane surface is the top surface of the plastic material. Obviously, blocks 74 of brick, stone, or any other desired material, may be cast into the upper plane surface of the unit; and these pieces of material may be very thin. In the completed structure, such pieces of material, although very thin, will lend to the unit the appearance of an aggregation of pieces of material such as brick, stone, and the like.

I claim as my invention:

1. A prefabricated construction unit comprising a slab of hardened, originally plastic, material having a substantially plane front face, a hollow rib projecting from the rear face of said slab and defining a chamber having its axis, substantially parallel with said front face, a rearward step formed at said end of said slab to provide a surface parallel with said front face and spaced rearwardly therefrom a distance equal to the thickness of the body of said slab, a port leading from the innermost edge of said last-mentioned surface rearwardly and inwardly into said cham-

ber, and a reinforcing rod disposed within the body of said slab, one end of said rod projecting angularly from the opposite end of said slab, the axis of said port being parallel with the axis of the angularly projecting end of said rod.

2. A prefabricated construction unit comprising a slab of hardened, originally plastic, material having a substantially plane front face, two hollow ribs projecting rearwardly from the rear face of said slab, each of said ribs being triangular in outline in a plane perpendicular to said plane face, and the external dimensions of said outlines of said two ribs being substantially identical, each of said ribs further defining an internal chamber substantially triangular in said last-mentioned plane, but the chambers in said two ribs being of unequal dimensions, one of said ribs being disposed substantially at one end of said slab, and a rearward step formed at said end of said slab to provide a surface parallel with said front face and spaced rearwardly therefrom a distance equal to the thickness of the body of said slab, and the other of said ribs having its axis disposed nearer to the other end of said slab than to said first-named end by a distance substantially equal to the basal width of said first-named rib reduced by the width of said step.

3. In combination, three prefabricated construction units, one of said units being formed to provide two plane surfaces arranged perpendicularly and meeting in a right angle, a web extending across said angle to define a triangular chamber having its axis parallel with said surfaces, another of said units being formed to provide two plane surfaces arranged perpendicularly and meeting in a right angle, means arranged within said angle defining a triangular chamber having its axis parallel with said surfaces, one of said surfaces having an extension beyond said means, and the third one of said units being formed at one end with a step receiving said extension and being further formed at said end with walls defining a triangular chamber, said walls mating with said means of said second-mentioned unit to define a divided triangular chamber of substantially the dimensions of the triangular chamber of said first-mentioned unit, said first-mentioned unit being superposed on said second- and third-mentioned units, and the chamber of said first-mentioned unit registering with the divided chamber formed by said second- and third-mentioned units.

4. A prefabricated construction unit comprising a slab formed to provide a plane front face, a rearward step formed at one end of said slab to provide a surface parallel with said front face and spaced rearwardly therefrom a distance equal to the thickness of the body of said slab, a hole extending rearwardly and inwardly from the inner corner of said step through said slab, and an element projecting rearwardly from the other end of said slab and parallel with the axis of said hole, said element being projectible through the hole formed in an adjacent, similarly-formed slab.

5. A wall comprising a plurality of superimposed horizontal courses made up of prefabricated units, each of said units having a substantially plane front face, two ribs projecting rearwardly from the rear face of said unit, each of said ribs being substantially triangular in outline in a plane perpendicular to said plane face and the external dimensions of said outlines of said two ribs being substantially identical, each of said ribs further defining an internal chamber substantially triangular in said last-mentioned plane, one of said ribs being disposed substantially at one end of said unit, and a rearward step formed at said end of said unit to provide a surface parallel with said front face and spaced rearwardly therefrom a distance equal to the thickness of the body of said unit, and the other of said ribs having its axis disposed nearer to the other end of said unit than to said first-named end by a distance substantially equal to the basal width of said first-mentioned rib reduced by the width of said step, the first-named rib of each unit in each course registering with the second-named rib of a unit in the superjacent course, and a poured concrete filling disposed in the chambers defined by registering ribs to lock said units into a solid wall.

6. A wall comprising a plurality of superimposed horizontal courses made up of prefabricated units, each of said units having a substantially plane front face, two ribs projecting rearwardly from the rear face of said unit, each of said ribs being substantially triangular in outline in a plane perpendicular to said plane face and the external dimensions of said outlines of said two ribs being substantially identical, each of said ribs further defining an internal chamber substantially triangular in said last-mentioned plane, one of said ribs being disposed substantially at one end of said unit, and a rearward step formed at said end of said unit to provide a surface parallel with said front face and spaced rearwardly therefrom a distance equal to the thickness of the body of said unit, and the other of said ribs having its axis disposed nearer to the other end of said unit than to said first-named end by a distance substantially equal to the basal width of said first-mentioned rib reduced by the width of said step, the first-named rib of each unit in each course registering with the second-named rib of a unit in the superjacent course, a reinforcing element extending vertically through a plurality of the chambers defined by registering ribs, and a poured concrete filling disposed in said chambers and embedding said reinforcing elements to lock said units into a solid wall.

7. A wall comprising a plurality of superimposed horizontal courses made up of prefabricated units, each of said units having a substantially plane front face, a first rib and a second rib projecting rearwardly from the rear face of said unit, each of said ribs being substantially triangular in outline in a plane perpendicular to said plane face and the external dimensions of said outlines of said two ribs being substantially identical, each of said ribs further defining an internal chamber substantially triangular in said last-mentioned plane, first rib being disposed substantially at one end of said unit, and a rearward step formed at said end of said unit to provide a surface parallel with said front face and spaced rearwardly therefrom a distance equal to the thickness of the body of said unit, and said second rib having its axis disposed nearer to the other end of said unit than to said first-named end by a distance substantially equal to the basal width of said first rib reduced by the width of said step, a reinforcing rod embedded in each of said units and projecting rearwardly and outwardly from said other end of each unit, said other end of each unit being received on said step of the next adjacent unit, and said rod projection extending through a hole in said next

adjacent unit into the chamber defined by the first rib of said next adjacent unit.

8. A wall comprising a plurality of superimposed horizontal courses made up of prefabricated units, each of said units having a substantially plane front face, a first rib and a second rib projecting rearwardly from the rear face of said unit, each of said ribs being substantially triangular in outline in a plane perpendicular to said plane face and the external dimensions of said outlines of said two ribs being substantially identical, each of said ribs further defining an internal chamber substantially triangular in said last-mentioned plane, said first rib being disposed substantially at one end of said unit, and a rearward step formed at said end of said unit to provide a surface parallel with said front face and spaced rearwardly therefrom a distance equal to the thickness of the body of said unit, and said second rib having its axis disposed nearer to the other end of said unit than to said first-named end by a distance substantially equal to the basal width of said first rib reduced by the width of said step, a reinforcing rod embedded in each of said units and projecting rearwardly and outwardly from said other end of each unit, said other end of each unit being received on said step of the next adjacent unit, and said rod projection extending through a hole in said next adjacent unit into the chamber defined by the first rib of said next adjacent unit, a reinforcing element disposed in said last-mentioned chamber, said rod projection being hooked about said reinforcing element, and a poured concrete filling embedding said reinforcing element and rod projection within said chamber.

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