Jan. 9, 1945. W. REICHERT ET AL 2,366,752

HOLLOW BUILDING WALL

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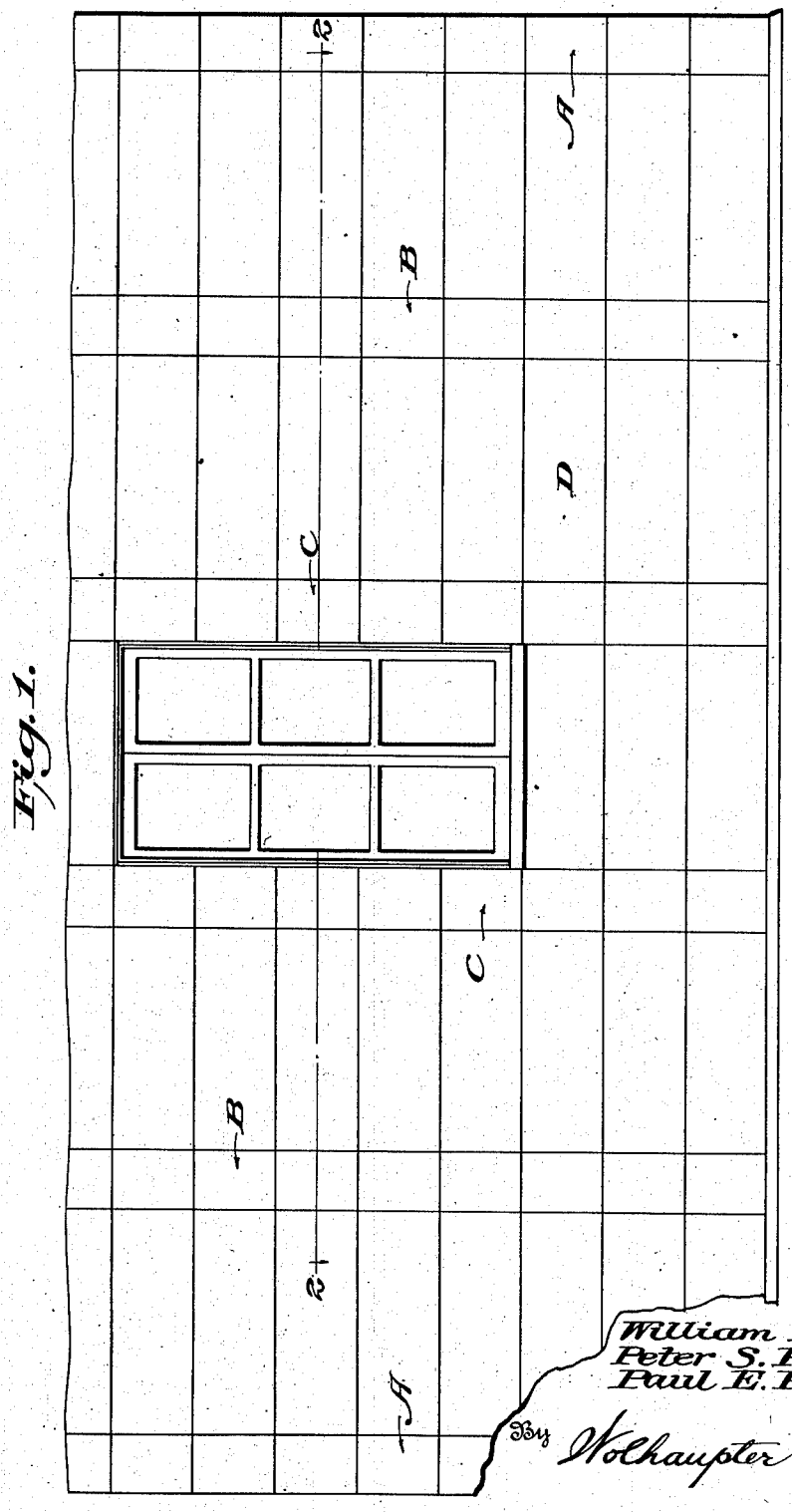


Fig. 1.

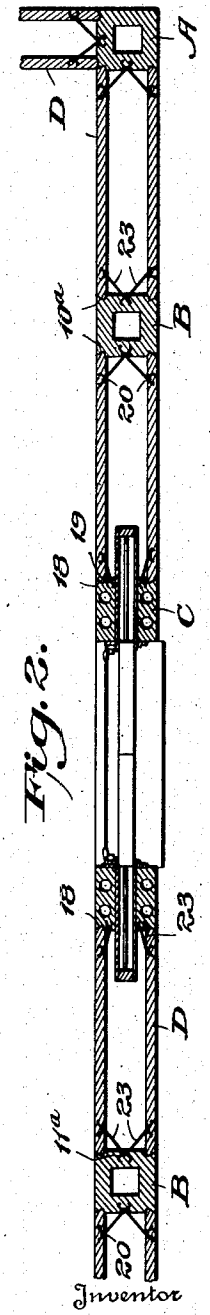


Fig. 2.

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Fig. 3.

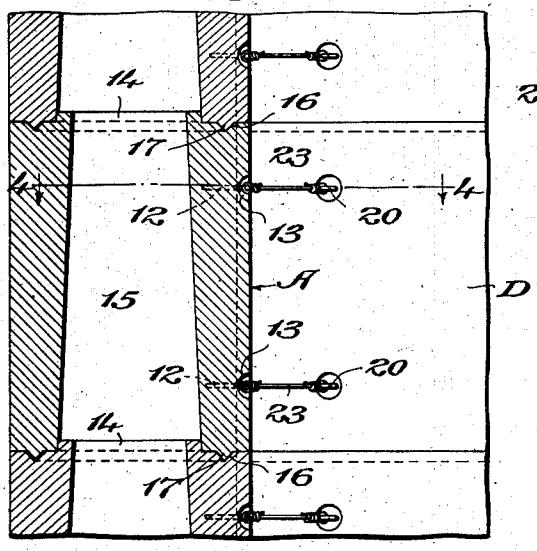


Fig. 5.

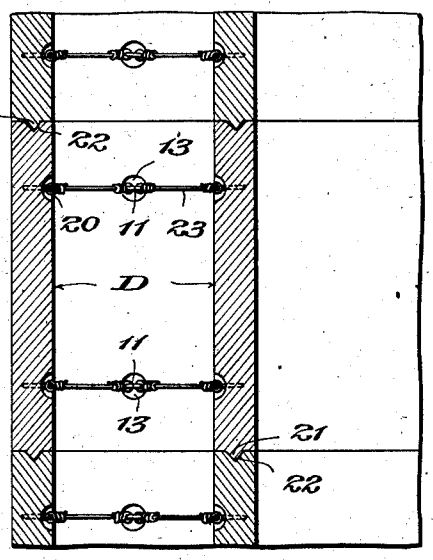


Fig. 4.

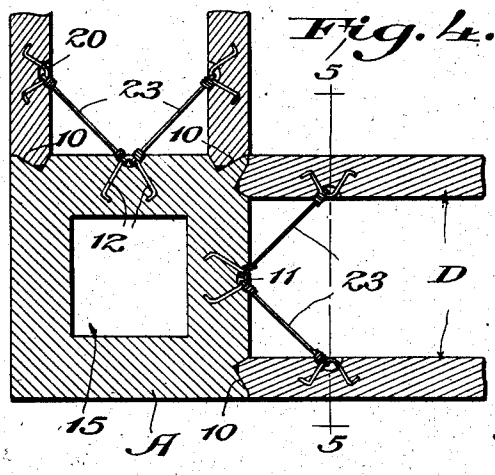


Fig. 6.

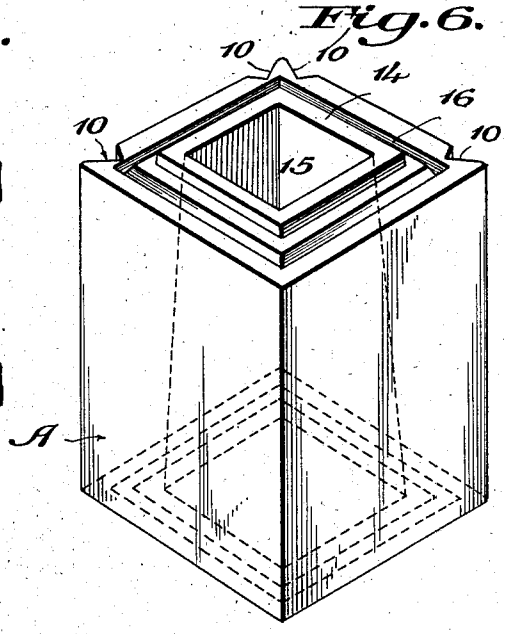
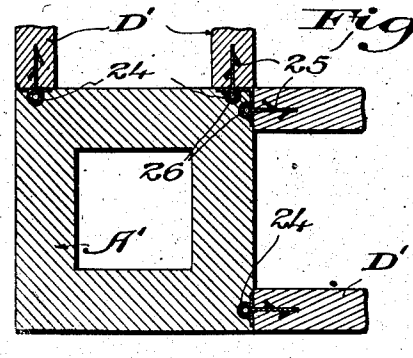


Fig. 7.



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HOLLOW BUILDING WALL

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4 Claims. (Cl. 72—16)

This invention relates to building blocks or units and to building structures formed therefrom, and has for its general object to provide simple, inexpensive pre-formed building blocks or units which may readily and rapidly be assembled and positively united with one another by unskilled labor and at low cost to readily and rapidly form strong, sturdy element-proof walls for dwellings, store houses and other building structures without the use of mortar, cement or mortar, cement or other plastic binding material between the blocks or units.

With the foregoing general object in view, the invention consists in pre-formed building blocks or units, and in means for binding or tying them together without the use of mortar, cement or other plastic material, and in walls formed therefrom, all embodying the novel features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings and defined in the appended claims.

In the accompanying drawings, wherein like characters of reference denote corresponding parts in the different views:

Fig. 1 is a front elevation of a wall erected from pre-formed blocks or units constructed in accordance with one practical embodiment of the invention.

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1.

Fig. 3 is a vertical section on an enlarged scale through superimposed corner blocks or units of the invention.

Fig. 4 is a horizontal section on the line 4—4 of Fig. 3.

Fig. 5 is a vertical section on the line 5—5 of Fig. 4.

Fig. 6 is a perspective view of one of the corner blocks or units; and

Fig. 7 is a view similar to Fig. 4 illustrating a means alternative in form from the means shown in Figs. 2 to 5 for securing the blocks or units in assembly with one another.

Referring to the drawings in detail, first with particular reference to the embodiment of the invention illustrated in Figs. 1 to 6 of the drawings, it will be observed that in the construction of a wall in accordance with the invention only four different types of pre-formed blocks or units are employed; viz., a corner block designated generally as A; intermediate blocks designated generally as B; semi-intermediate blocks designated generally as C for use in defining the sides of window or door openings in instances where it may be desired to employ window sash or doors which slide laterally into the wall, and facing slabs designated generally as D for use between the blocks A, B and C.

The blocks A, B and C and the slabs D may be formed from concrete or any other suitable material in any suitable manner, and they may be of any desired dimensions. Preferably, however, they are all of the same height and preferably, too, the corner, intermediate and semi-intermediate blocks are equal in width. Moreover the corner, intermediate and semi-intermediate blocks preferably are of hollow construction, although they may be solid if desired. On the other hand, the slabs D preferably are of comparatively thin, solid construction and may be of any desired width or length.

The corner blocks A are duplicates of one another and each of them is of rectangular shape in elevation as well as in horizontal section. Moreover, each of the two adjacent outer faces of each of said corner blocks is plain. On the other hand, each of the two remaining or inner adjacent faces of each of said corner blocks has formed therein a pair of channels 10, 10 which are of substantially V-shape in cross section and which extend from top to bottom of the block, the channels of each pair being laterally spaced apart and being located, preferably, one adjacent to each side of the inner face in which they are formed. In addition, each block A has suitably secured thereto and exposed at each of its two adjacent inner faces, preferably midway between the sides thereof, two or more vertically spaced apart eye elements 11 for a purpose which will later appear, the said eye elements being provided, for example, as shown in the drawings, by bending short-length pieces of metal rod into substantially V-shape and embedding the arms 12 of the rods in the concrete or other material from which the block is formed, leaving the eye-forming bight portions of the rods exposed at the inner faces of the blocks. Alternatively, said eyes 11 may be provided and may be secured to the blocks A in any other suitable manner, but in any event they preferably are protected against damage during handling of the blocks by being located inwardly of the planes of the inner faces of the blocks and access to them is afforded by depressions 13 formed in said inner faces.

At its top each block A is provided with a centrally located, upward projecting portion 14 the outer sides of which are spaced inwardly from the sides of the block, and if the blocks A are hollow, as shown, the bottom of the opening 15

in each of them is of the same cross sectional size and shape as the projection 14 so that when a series of said blocks are superimposed upon one another the projection 14 at the top of each block fits into the bottom of the opening 15 in the block thereabove and thereby the blocks are held against shifting laterally with respect to one another. If, on the other hand, the blocks A are of solid construction, each of them is at least provided with a bottom recess to accommodate the projection 14 of the next lower block to hold the blocks against superficial lateral movement relative to each other. The projections 14 and the openings or recesses 15 which accommodate them preferably are of rectangular shape in cross section to insure proper orientation of the blocks relative to each other, but said projections and openings or recesses may be of any other cross sectional shape if desired.

Preferably a channel 16 is formed in the top face of each block A in surrounding relationship to the projection 14 and preferably a downwardly projecting rib 17 corresponding in size and shape to the channel 16 is provided on the bottom of each block A so that when a series of said blocks A are superimposed upon one another said ribs and channels interfit to assist the projections 14 in providing element-tight joints between the ends of the blocks. Obviously, this arrangement might be reversed by providing ribs at the tops of the blocks and rib accommodating channels at the bottoms thereof. Obviously, too, a suitable sealing compound may be employed between the ends of the blocks A if desired.

The intermediate blocks B are duplicates of one another and are, or may be, of the same construction as the corner blocks A, except that two opposite outer faces thereof, instead of two adjacent outer faces thereof as in the case of the corner blocks, are plain, and the two remaining opposite outer faces thereof are provided with channels corresponding to the channels 10 of the blocks A and with eye elements corresponding to the eye elements 11 of the blocks A. Since the intermediate blocks B are, or may be, of the same construction as the corner blocks A, except in the particulars stated, the same reference characters, with the addition of the exponent *a* are employed to designate the parts of said blocks B corresponding to the described parts of the blocks A.

The semi-intermediate blocks C are equal in width to the blocks A and B, but in thickness are lesser by a suitable amount than one-half the thickness of said blocks A and B so that when a pair of them are disposed with their outer faces spaced apart a distance corresponding to the thickness of the blocks A and B a space of suitable width remains between them. These blocks C are used, as aforesaid, to define the sides of window or door openings in a wall in instances where it is desired to employ window sash or doors which slide laterally between closed and opened positions, the spaces between said blocks accommodating the window sash or doors when they are opened. However, ordinary swinging doors and vertically sliding window sash may be employed and in that case the blocks C are unnecessary and may be dispensed with in favor of blocks in all respects the same as the blocks A and B, except that they have three plain outer faces and channels in only one outer face thereof.

Each block C has three plain side faces and, in its remaining, narrower side face, a single vertical channel 18 corresponding to one of the channels 10 or 10*a* of a block A or B. Moreover, each block C preferably, though not necessarily, is provided with a top projection and a bottom recess, as in the case of the blocks A and B so that when a series of said blocks C are superimposed upon one another they interfit at their ends and thereby are held against superficial lateral sliding movement relative to one another. In addition, each block C is provided, at the narrower side face thereof in which the channel 18 is formed, with eye elements 19 corresponding to the eye elements 11, 11*a* of the blocks A and B.

The slabs D are chamfered or are of substantially V-shape in cross section at their ends to fit into the channels 10, 10*a* and 18 of the blocks A, B and C, respectively, and each slab additionally is provided at its inner side and adjacent to its chamfered ends with eye elements 20 corresponding to the eye elements 11, 11*a* and 19 of said blocks A, B and C, respectively. Furthermore, each slab D is provided at either its lower or its upper edge with a longitudinally extending rib 21 and in its opposite upper or lower edge with a channel 22 so that when a series of said slabs are superimposed upon one another said ribs and channels interfit and provide tight joints between the said edges of said slabs.

In erecting a wall by means of the blocks A, B and C and the slabs D, a suitable foundation F first is provided and then successive courses of the blocks A and B and the slabs D are laid upon this foundation, blocks D being employed to define the sides of window or door openings in instances where it may be desired to employ window sash or doors that slide laterally between closed and opened positions; otherwise, blocks B or, alternatively, blocks similar to the blocks B but having three plain sides as mentioned, may be employed to define the sides of window or door openings.

An erected wall, devoid of window or door openings, may comprise only superimposed corner blocks A, superimposed intermediate blocks B and inner and outer superimposed slabs C between the corner blocks A and the adjacent intermediate blocks B and, also between adjacent intermediate blocks, B, B, the upper and the lower ends of the blocks A and B being interfitted as described, the ribs and recesses at the upper and lower edges of the slabs being interfitted as described, the chamfered ends of the slabs being disposed in the vertical channels of the corner and the intermediate blocks, and the slabs being tied at their ends to the corner and the intermediate blocks by means of tie wires 23 connecting the eye elements 20 with the eye elements 11 and 11*a*.

Where, for example, a door or window opening is to be provided in a wall, the slabs D simply are omitted, and if it is desired to provide slots at the sides of the door or window opening so that the door or window sash may slide laterally into the hollow wall space between the inner and the outer slabs, the blocks C are employed at the sides of the door or window opening, said blocks C and the adjacent ends of the related slabs D interfitting and being tied together by tie wires 24 engaged with the eye elements 20 of the slabs and the eye elements 19 of said blocks C.

If desired, the chamfered ends of the slabs D may be blunted so that when they are engaged in the channels 10, 10*a* and 18 of the blocks A, B and C, spaces are left at the bottoms of said chan-

nels as shown in Fig. 4 wherein a suitable sealing compound may be used if desired.

The blocks and slabs need not be tied together vertically, but they may be tied together vertically if desired by tie wires similar to the tie wires **23** engaged with the same eye elements as said tie wires **23**. In any event, it will be apparent that by means of blocks and slabs constructed as shown and described, strong and sturdy element-proof dwelling and other building walls may rapidly be erected without the use of mortar or other plastic binding material and at low cost by unskilled labor.

Instead of chamfering the ends of the slabs D and providing in the blocks A, B and C channels to accommodate the chamfered ends of said slabs, and instead of employing eye elements and tie wires to secure the slabs D to the blocks A, B and C, the outer faces of said blocks may be plain or flat, the ends of the slabs may be flat to abut flatly against the plain or flat outer faces of the blocks, and in the blocks may be embedded vertically extending, longitudinally slotted metal tubes having their slots opening through the outer faces of the blocks, while in the end portions of the slabs may be embedded vertically extending metal plates having rolled or enlarged ends disposed beyond the flat end faces of the slabs to be engaged in the tubes of the blocks by vertical sliding movement of the slabs relative to the blocks. The plates and tubes thus cooperate to fasten the slabs to the blocks in a simple, positive element-proof manner and any necessity for the use of mortar, cement or other plastic binding material between the ends of the slabs and the blocks thereby is avoided. Moreover, the plates and tubes provide a means whereby the slabs and blocks may rapidly be assembled with each other in a secure, practical and efficient manner at low cost by unskilled labor. Such a construction is illustrated by way of example in Fig. 7 of the drawings wherein a corner block, designated as A', has embedded therein vertically extending, longitudinally slotted metal tubes designated as **24**, and slabs, designated as D', have embedded in the ends thereof metal plates, designated as **25**, which are provided with rolled ends **26** disposed in the tubes **24** whereby the slabs are securely held with their flat ends abutting flatly against the flat outer faces of the corner block.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

We claim:

1. A building wall comprising spaced apart blocks, inner and outer spaced apart slabs between said blocks and at their ends abutting said blocks, and metallic elements in the space between said slabs extending diagonally between the latter and said blocks and securing said slabs and blocks together.

2. A building wall comprising spaced apart blocks having vertically disposed channels in their adjacent faces spaced apart transversely of the wall, inner and outer spaced apart slabs between said blocks having their ends disposed in said channels, and tie wires in the space between said slabs extending diagonally between the latter and said blocks and fastening said slabs and blocks together.

3. A building wall comprising spaced apart blocks having laterally spaced apart vertically extending channels on adjacent faces thereof, inner and outer spaced apart slabs extending between said blocks and having their ends disposed in said channels, eye elements carried by said slabs at the inner sides thereof in spaced relationship to the ends thereof, other eye elements carried by said blocks and exposed at the said adjacent faces thereof intermediate the channels thereof, and tie wires within the spaces between said slabs connecting the eyes of said slabs with the eyes of said blocks and tying said slabs and blocks together.

4. A building wall comprising spaced apart blocks, inner and outer spaced apart slabs disposed between said blocks with their ends abutting said blocks, and tie elements in the space between said slabs extending diagonally between the latter and said blocks and acting in tension to hold said slabs against movement outwardly relative to each other and also longitudinally away from said blocks.

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