J. BELLINGHAM.

WALL CONSTRUCTION.

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Fig. 1.

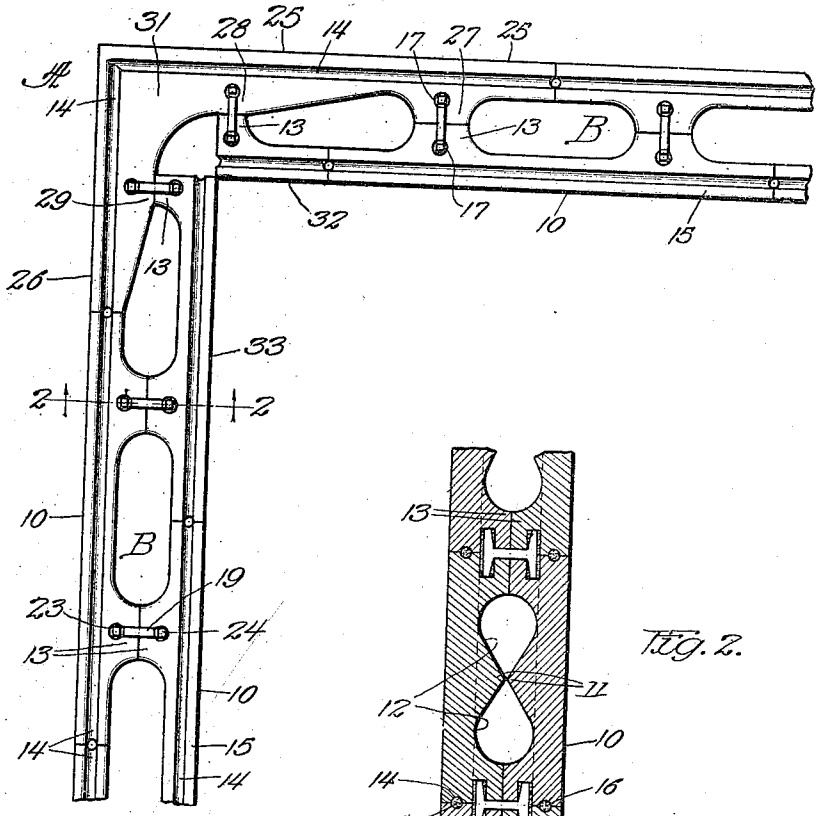
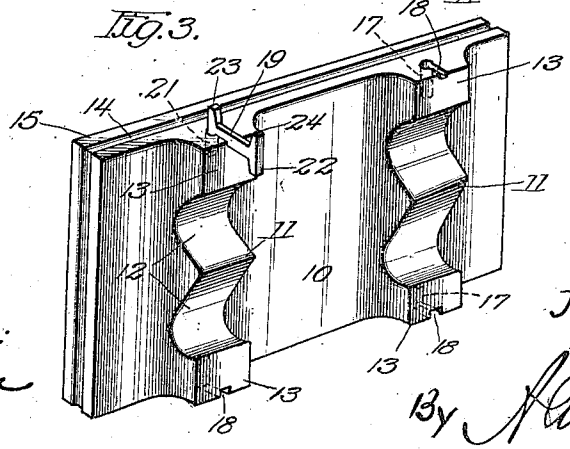


Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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WALL CONSTRUCTION.

1,294,225. Specification of Letters Patent. Patented Feb. 11, 1919.

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To all whom it may concern:

Be it known that I, JOHN BELLINGHAM, a citizen of the Dominion of New Zealand, (whose permanent address is Masterton, in the Provincial District of Wellington, in the Dominion of New Zealand,) and temporarily resident at 4312 Kenmore avenue, Chicago, Illinois, have invented certain new and useful Improvements in Wall Construction, of which the following is a specification.

My invention relates to the construction of walls and has for its primary object the provision of walls of maximum strength built of very light slabs which are joined in such an improved manner and by such novel elements as will unite them into an extremely rigid body.

A further object is the provision of wall slabs reinforced in an improved manner.

A further object is to improve the bond between each slab and all those adjacent to it in the walls.

Another object is the simplification of all the parts forming the walls whereby their manufacture and assembling are facilitated, this object embracing the provision of an improved form of tie which shall permit the uniform spacing of the tie holes from the faces and ends of slabs.

From the following description and the accompanying drawings, which form a part of this specification, other objects and advantages of the invention will become apparent.

In the drawings:

Figure 1 is a plan view of the corner of a building and portions of two walls constructed in accordance with my invention:

Fig. 2 is a fragmentary section on line 2—2 of Fig. 1; and

Fig. 3 is a perspective view of my improved slab taken from the reverse or inner side thereof. This figure also illustrates in perspective the tie which I employ.

Various means have hitherto been employed for reinforcing wall slabs such, for instance, as edge flanges, or solid ribs traversing the slabs at intervals. The edge flanges, if continuous, add greatly to the weight of the slab, as do the solid ribs; and if the edge flanges are only at the ends of the slab, as in some constructions, the reinforcements are disadvantageously positioned in the wall, where they are alternately juxtaposed and spaced a full slab length apart.

As best seen in Figs. 2 and 3 I form integrally on the back of the slab 10 two parallel, substantially triangular, reinforcing projections 11, which are each spaced one-fourth the length of the slab from its respective ends and lie at right angles to its length. The base of each projection, which is preferably its longest side, lies in the reverse surface of the slab and terminates considerably short of its upper and lower edges as at 12.

In order to provide proper spacing between the inner and outer slabs of a wall, I form integrally on the reverse side of the slab four spacing studs 13 respectively positioned at the upper and lower extremities of the truss-shaped projections 11 and having their outer surfaces flush with the upper and lower peripheral surfaces of the slab. Thus each stud is at the edge of the slab and one-fourth of a slab length from its end. These studs also materially strengthen the slab.

A groove 14, preferably semi-circular in cross section, is formed in the peripheral surface 15 of the slab, continues completely around the slab, and is uniformly spaced from its obverse face. As the slabs are assembled edgewise, in building the walls, the grooves of juxtaposed edges form key sockets which receive keys 16—see Fig. 2—preferably formed of hardened cement. This key makes a complete bond between each slab and its surrounding slabs and prevents relative horizontal movement of the slabs. Also the key 16, by locking adjacent edges of superposed blocks together, rigidifies each slab against breakage along a central vertical line, and each projection 11 reinforces the slab against cracking along a central horizontal line.

Paralleling the obverse face of the slab and extending at right angles to its length are tie holes 17 let into the peripheral surface of the slab, one at the center of each spacing stud 13. Tie channels 18 extend in each stud from its reverse face to the hole 17 to accommodate one-quarter of the shank of an H-shaped tie 19, the lower legs 21 and 22 of the tie fitting the upper holes of two opposite slabs in the wall, the upper legs 23 and 24 fitting the lower holes of two respectively superposed slabs, and the shank of the tie holding these four slabs against separation. In a completed wall it will be seen

that the inner and outer webs of the wall are tied together and reinforced every half of a slab length, leaving unbroken vertical spaces B running from bottom to top of the wall. Also the spaces between upper and lower abutting studs 13 materially reduce conduction of heat from one web of the wall to the other from that which would occur were the spacing projections carried solidly from top to bottom of the slab. The studs 13 of one slab abut those of an opposite slab to maintain the proper spacing between inner and outer slabs. It is to be noted that the tie 19 is a true H member having no offset portions so that the whole tie is contained between the parallel vertical planes which define the obverse and reverse surfaces of any of its four legs. Also the holes 17 are made round and the legs of the tie 19 angular in cross-section so that segmental spaces are left for the insertion of liquid cement.

In joining angularly disposed walls of a building I provide strong, light corner blocks or angle-pieces generally indicated at A in Fig. 1. These comprise each a full length slab 25 integrally united at one end to an end of a half-length slab 26. The long slab carries two integral spacing studs 27 and 28 similar to the studs 13 and the shorter slab has a single spacing stud 29. An integral gusset 31 unites the slabs 25 and 26 and their adjacent studs 28 and 29. The groove 14 is also provided in the periphery of the corner block, following the angular contour of the block without breaking either of its outer surfaces. Tie holes 17 and grooves 18 are formed in the projections 27, 28 and 29, it being understood that these projections are provided at both top and bottom edges of each corner block.

In building the outer webs of the double walls shown in Fig. 1, each superposed course of slabs is staggered one-half of a slab length to break joints in the ordinary manner thus leaving at the vertical edge of the walls alternate vacant spaces equal in vertical area to one-half of a slab. In forming the corner the two outer walls are completed by alternating full and half length legs of successive corner blocks, the full length legs entering and filling these vacant spaces. In finishing the inner web of each wall, spacing projections 13 of inner web slabs stand against the projections 27, 28 and 29 of the corner block A and are tied thereto. As the entire thickness of the completed walls is preferably equal to one-quarter of a slab length, the inner web of each wall is completed at the corner by alternated one-quarter and three-quarter length slabs 32 and 33 respectively.

Obviously concrete is a suitable material for carrying out the present invention, and, if used, the slabs, corner blocks and ties should be laid together with liquid cement in the customary manner. It is noted also that the peripheral groove on my improved slab leaves intact the inner and outer margins of the peripheral surface. As these margins are in a common plane which lies at right angles to the obverse or outer surface of the slab, it is evident that the work of the mason in alining the outer surfaces of adjacent slabs in a wall is facilitated over what that work is when edge rabbeted slabs are being laid.

I claim:

1. In a wall unit, the combination with a slab; of a pair of spacing studs integral with the slab and protruding from the same surface thereof, there being one of said studs at each longitudinal edge of the slab, said studs being equidistant from a given end of the slab; and a substantially triangular reinforcing projection integral with the slab, extending at right angles to the length thereof, alined vertically with said spacing studs and protruding from the slab the same distance as the studs are from said given end.

2. In a wall unit, the combination with a slab; of a pair of substantially triangular, parallel, reinforcing projections integral with and on the same side of the slab, traversing the slab at right angles to its length at one-fourth the length of the slab from its respective ends, and terminating remote from the longitudinal edges of the slab; and four spacing studs integral with the slab and respectively positioned opposite the ends of said projections at the longitudinal edges of the slab.

In testimony whereof I have affixed my signature in the presence of two witnesses.

JOHN BELLINGHAM.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."