Oct. 28, 1930. W. H. SMITH 1,779,755

WALL STRUCTURE

Filed Aug. 6, 1928

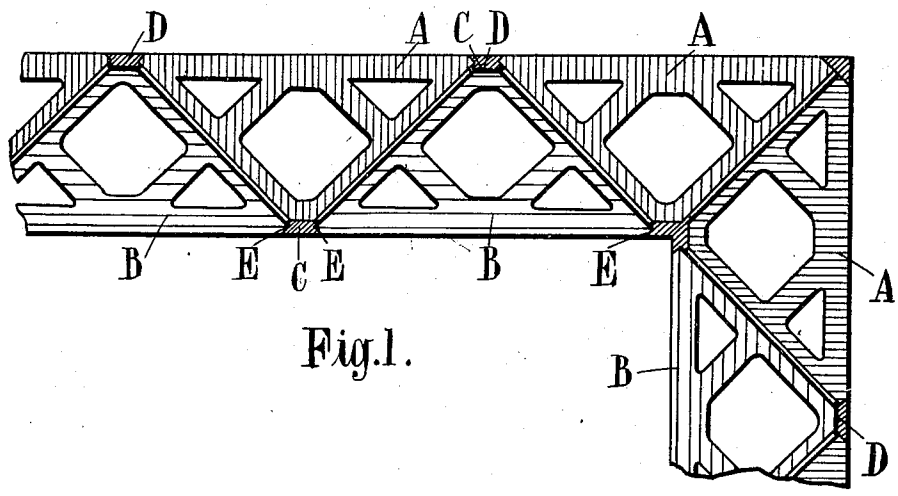



Fig.1.

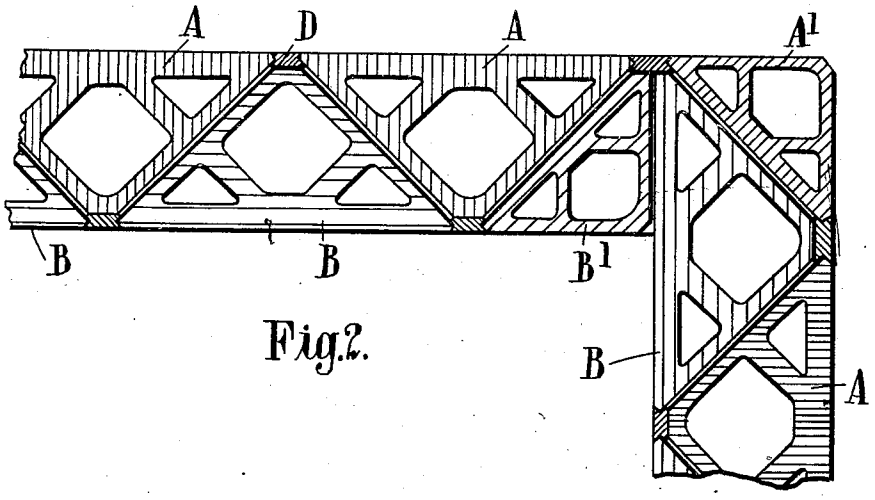



Fig.2.

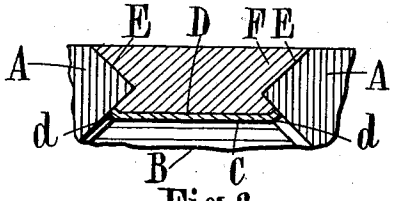



Fig.3.

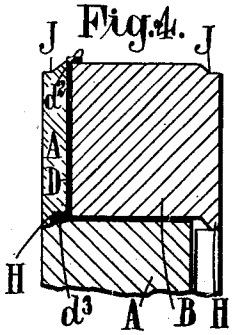



Fig.4.

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# UNITED STATES PATENT OFFICE

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## WALL STRUCTURE

Application filed August 6, 1928, Serial No. 297,763, and in New Zealand August 16, 1927.

This invention relates to wall structures and has for its primary object to provide an improved form of construction comprising blocks of right angled isosceles triangle shape in plan, in which the right angled edges of the triangle are chamfered and the blocks are placed so that succeeding hypotenuses are on opposite sides of the wall and water-resisting material is introduced into the tapering apertures between adjoining blocks.

A further object of the invention is to provide a hollow block for use in wall construction having for external shape on plan a right angled isosceles triangle and provided at the bottom with depending lips, and at the top with corresponding recesses to form rain-resisting horizontal joints.

With these and other objects in view, the invention consists in the improved blocks and wall structures hereinafter described in detail, the novel features of which are set out in the accompanying claims.

In the preferred form of construction employing blocks of this shape, the blocks on the outer surface of the wall of a building are formed of hard impermeable concrete while the blocks on the inner surface of such wall are formed of porous concrete; the outer surface of the wall is therefore able to resist ingress of rain while the inner surface is a bad conductor of heat and thus ensures absence of the "sweating" or deposition of moisture from the atmosphere in certain conditions which was found to be objectionable in the earlier forms of concrete constructions.

The inner porous blocks come close to the outer surface of the wall at their apices and there is thus some danger of moisture finding its way into the porous blocks through the pointing.

In the improved construction is accordance with the present invention the blocks are formed with chamfered edges at the right angle apex and waterproof vertical damp courses are provided to prevent ingress of water to the porous blocks.

The acute-angled edges of the blocks which abut the chamfered right-angled edges of the blocks on the other side are preferably also chamfered thus leaving a space between the abutting blocks which first reduces in width and then increases and the vertical damp-course material is introduced into this space.

In the accompanying drawings which illustrate the invention,

Fig. 1 represents a sectional plan of a portion of a wall containing a corner, employing vertical damp courses of sheet material.

Fig. 2 represents a corresponding sectional plan at an alternate course.

Fig. 3 represents to enlarged scale an external joint.

Fig. 4 represents a cross-section illustrating a depending lip to prevent ingress of water at the horizontal joint.

In Figs. 1 and 2 external impermeable blocks are indicated by close vertical shading lines while porous blocks are indicated by more widely spaced horizontal shading lines; in these figures the preferred form of hollow block—each block comprising one substantially square cavity and two triangular cavities—is illustrated and is to be understood that it is preferred to provide similar cavities in the blocks illustrated in the other figures.

In the drawings the vertical damp course is shown on the outer or weather surface of the wall only but I wish it to be understood that a similar damp course may be provided on both sides if preferred.

Referring first to Figs. 1 to 3, the wall is built up of impermeable blocks A on the outside of the wall and porous blocks on the inside, the blocks being of section on plan right-angled isosceles triangles with the edge at the right angle formed with a chamfer C. Smaller chamfers E are formed at the other edges.

On alternate courses half blocks $A^1$, $B^1$ are employed at the corners to give true bonding; each of these blocks is geometrically similar to the larger blocks. The vertical damp course in the form illustrated in these figures is provided by metal strips D which bear against the chamfered edges C of the porous blocks; the edges *d* of the strips are turned back as shown clearly in Figure 3 to close the gap between the blocks.

As will be seen from the figures this leaves a space F between the blocks with a narrow

portion a short distance in and this space is then filled with pointing mortar.

Although strips of metal are preferred they may also be of any other impervious material and in some cases the vertical damp course may be provided by a plastic material, filled into the space F, which becomes impermeable on drying or setting.

In the construction shown in Fig. 4, the fronts of the blocks are provided with depending lips H on their lower surfaces and corresponding grooves J on their upper surfaces thus breaking the horizontal joint and the ends $d^2$, $d^3$ of the strips are bent over as shown.

It is to be understood that the invention is not restricted to the exact details shown and described but embraces such modifications as come within the ambit of the accompanying claims.

I claim:—

1. A wall structure comprising in a horizontal course blocks of horizontal triangle shape in plan with chamfered edges so arranged that the hypotenuses of succeeding blocks are on opposite sides of the wall, vertical damp course strips placed at external vertical joints abutting the chamfered right-angled apex of blocks having hypotenuses facing internal surface of the wall, and damp-proof plastic material filling the space between adjoining blocks and abutting the damp course strips.

2. A wall structure comprising in a horizontal course blocks of horizontal triangle shape in plan with chamfered edges so arranged that the hypotenuses of succeeding blocks are on opposite sides of the wall, vertical damp course strips placed at external vertical joints abutting the chamfered right-angled apex of blocks having hypotenuses facing internal surface of the wall, bent up portions of said strips abutting the inclined sides of blocks having hypotenuses facing external surface of the wall, and damp-proof plastic material filling the space between adjoining blocks and abutting the damp course strips.

3. A wall structure comprising in a horizontal course blocks of horizontal triangle shape in plan with chamfered edges so arranged that the hypotenuses of succeeding blocks are on opposite sides of the wall, a depending lip on the lower hypotenuse side of each external block, a recess on the upper hypotenuse side of each external block to accommodate the ledge of the block of the upper course, and damp-proof material filling the space between adjoining blocks and preventing egress of moisture to blocks having hypotenuses facing the internal surface of the wall.

4. A wall structure comprising in a horizontal course blocks of horizontal triangle shape in plan with chamfered edges so arranged that the hypotenuses of succeeding blocks are on opposite sides of the wall, the blocks forming the outside facing of the wall being of impermeable concrete and the blocks forming the inside facing of the wall being of permeable concrete, and comprising also water-resisting plastic material inserted in the space between impermeable blocks adjoining at their acute angles and the chamfered right angle of the permeable block lying between said adjoining impermeable blocks, said space first reducing in width and then increasing.

In testimony whereof I affix my signature.

WILLIAM HERBERT SMITH.