Nov. 11, 1924.

E. F. NEEDHAM ET AL

1,514,714

CONCRETE CONSTRUCTION

Filed Aug. 13, 1921

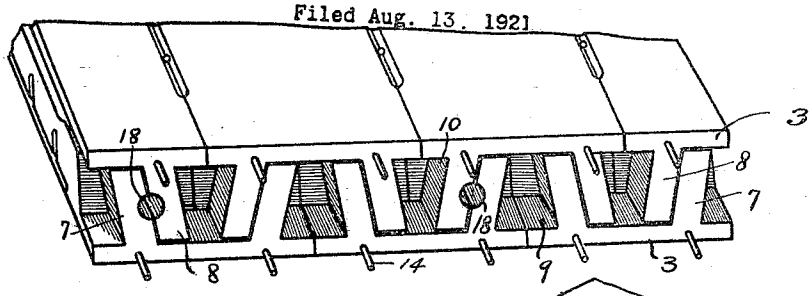


Fig. 2

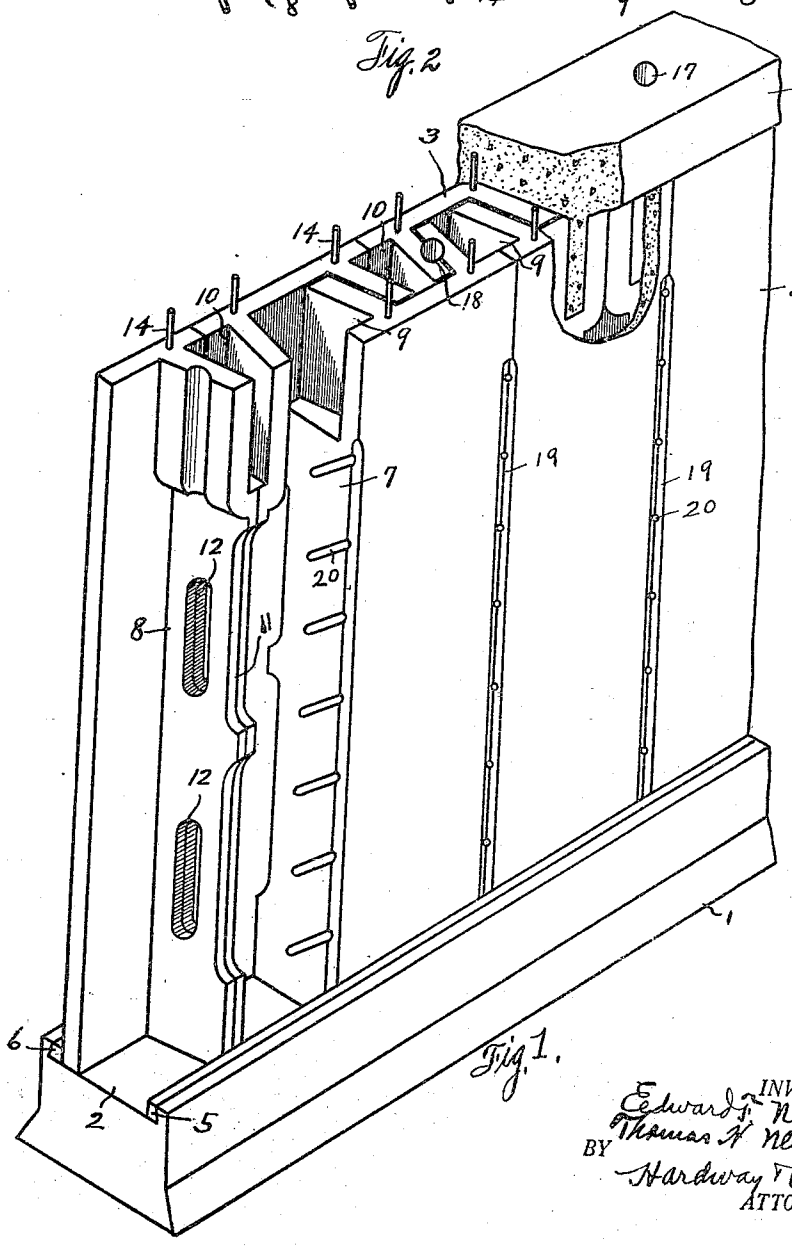


Fig. 1.

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UNITED STATES PATENT OFFICE.

EDWARD F. NEEDHAM AND THOMAS H. NEEDHAM, OF HOUSTON, TEXAS, ASSIGNORS OF ONE-HALF TO DON HALL, OF HARRIS COUNTY, TEXAS.

CONCRETE CONSTRUCTION.

Application filed August 13, 1921. Serial No. 492,027.

To all whom it may concern:

Be it known that we, EDWARD F. NEEDHAM and THOMAS H. NEEDHAM, citizens of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in a Concrete Construction, of which the following is a specification.

This invention relates to new and useful improvements in concrete construction.

One object of the invention is to provide a concrete wall construction formed of pre-cast concrete slabs which are suitably reinforced and of a form which permit them to be readily assembled together in an erected wall.

Another object is to provide a wall of pre-cast slabs which are so formed that when erected the wall will be hollow and air may freely circulate through the interior thereof.

A further feature of the invention resides in the provision of pre-cast slabs so formed that when erected into a wall the joints between the slabs will be rendered invisible.

A still further feature of the invention resides in the provision of a structure having walls formed of pre-cast concrete slabs anchored securely together, said wall being light and strong, provision being also made for securely anchoring the joists of the structure to the walls.

With the above and other objects in view the invention has particular relation to certain novel features of construction and arrangement of parts an example of which is given in this specification and illustrated in the accompanying drawings, wherein:—

Figure 1 shows a fragmentary perspective view of a section of the wall.

Figure 2 shows a fragmentary top view of the wall shown in perspective.

Referring more particularly to the drawings the numeral 1 designates the foundation, or base of the structure. This is moulded of concrete and its upper face has a wide dovetailed groove 2, therearound. The wall slabs, hereinafter described, have their lower ends set in this groove. These slabs are indicated by the numerals 3 and 4. The slabs 3 are set opposite the slabs 4 in said groove and are spaced a small distance from the respective sides of said groove and this space is then filled with plastic cement or concrete which when hardened forms the keys 5 and 6 which anchor the slabs to the base. The margins of the inner, or facing, sides of the respective slabs have the integral marginal flanges 7 and 8 respectively. The flanges 7, and likewise the flanges 8, fit closely together, when erected, from the lower to near their upper ends, but at their upper ends they curve apart thus forming keyways 9 and 10 which are dovetailed in form, as shown, and are closed at their bottoms. These marginal flanges span the space between the walls formed by the opposing slabs 7 and 8 but intermediate their ends they have coinciding cut away portions 11, or coinciding openings 12 forming air passage ways which permit the circulation of air throughout between the outer and inner slabs of the wall.

When the slabs are erected into a wall a concrete beam 13 is poured. The slabs have embedded in them suitable reinforcing rods 14 extending lengthwise through them from their lower ends. The upper ends of some of these rods are free when the beam is poured and said beam hardens or sets around said rods which thereby securely anchor the beam to the wall.

The outwardly curved ends of the flanges 7 of the slabs fit closely against the outwardly curved ends of the corresponding flanges of the slabs 8 so as to form a closed joint to prevent the material of the beam when poured, from falling down between the outer and inner wall.

In order to permit free circulation of air from the air spaces within the wall of one story to the spaces of the adjacent walls the beam 13 is provided with the vertical openings 17 in alignment with similar openings 18 formed between the adjacent outwardly curved upper ends of the flanges 7 and 8. Free circulation of air is thus permitted throughout the walls of the entire structure.

The adjacent edges of the slabs 3 and 4 are formed with quarter round lengthwise grooves the two grooves forming a half round groove 19 when the slabs are erected, and the adjacent faces of the flanges 7 and 8 have the coinciding declining grooves leading from said quarter round grooves and forming keyways 20. Mortar is troweled into the groove 19 and keys into the keyways 20 and is finished off flush with the wall to form invisible joints between the wall slabs.

What we claim is:—

1. A construction of the character described including a base, opposing wall slabs mounted thereon and spaced apart forming a double wall, marginal flanges integral with said slabs and extending across the space between the opposing slabs, the adjacent flanges of adjoining slabs fitting together but having their upper ends spaced apart to form a keyway whose bottom is closed, the spaced ends of said flanges fitting closely against the corresponding spaced ends of the opposing slabs.

2. A construction of the character described including a base, opposing wall slabs mounted thereon and spaced apart forming a double wall, marginal flanges integral with said slabs and extending across the space between the opposing slabs, the adjacent flanges of adjoining slabs fitting together but having their upper ends spaced apart to form a keyway whose bottom is closed, the spaced ends of said flanges fitting closely against the corresponding spaced ends of the opposing slabs, and a beam mounted on the upper ends of said slabs and keyed into said keyways.

3. A construction of the character described including a base, opposing wall slabs mounted thereon and spaced apart forming a double wall, marginal flanges integral with said slabs and extending across the space between the opposing slabs, the adjacent flanges of adjoining slabs fitting together but having their upper ends spaced apart to form a keyway whose bottom is closed, the spaced ends of said flanges fitting closely against the corresponding spaced ends of tht opposing slabs, reinforcing rods embedded in said slabs and whose upper ends project above them, a beam mounted upon the upper ends of the slabs, which is keyed into said keyways, and in which said upper ends of said rods are embedded.

4. A construction of the character described including a base, opposing wall slabs mounted thereon and spaced apart to form a hollow wall, marginal flanges carried by said slabs which project across from slab to slab and are provided with air passageways through them, said flanges being spaced apart at their upper ends to form keyways which are closed at the bottom, the spaced ends of said flanges of the slabs on one side lying closely adjacent the corresponding spaced ends of the flanges of the opposing slabs.

5. A construction of the character described including a base opposing wall slabs mounted thereon and spaced apart to form a hollow wall, marginal flanges carried by said slabs which project across from slab to slab and are provided with air passageways through them, said flanges being spaced apart at their upper ends to form keyways which are closed at the bottom, the spaced ends of said flanges of the slabs on one side lying closely adjacent the corresponding spaced ends of the flanges of the opposing slabs, and provided with an air passageway between them.

6. A construction of the character described including a base opposing wall slabs mounted thereon and spaced apart to form a hollow wall, marginal flanges carried by said slabs which project across said space and are provided with air passageways through them, said flanges being spaced apart at their upper ends to form keyways which are closed at the bottom, the spaced ends of said flanges of the slabs on one side lying closely adjacent the corresponding spaced ends of the flanges of the opposing slabs, but formed with an air passageway between them, a beam mounted onto the upper ends of said slabs and keyed into said keyways and formed with air passageways in alignment with the air spaces between the slabs.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

EDWARD F. NEEDHAM.
THOMAS H. NEEDHAM.

Witnesses:
W. H. DUNLAY,
E. V. HARDWAY.