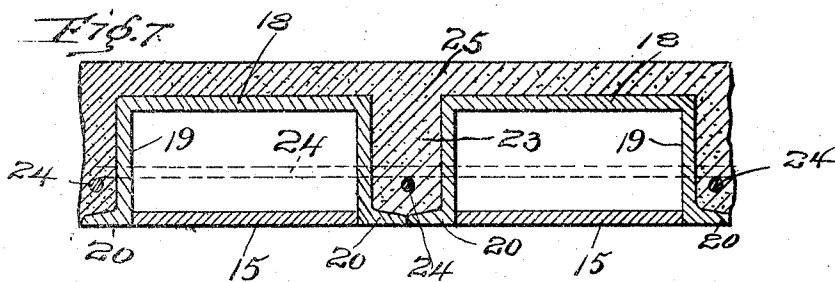
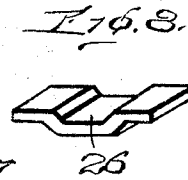
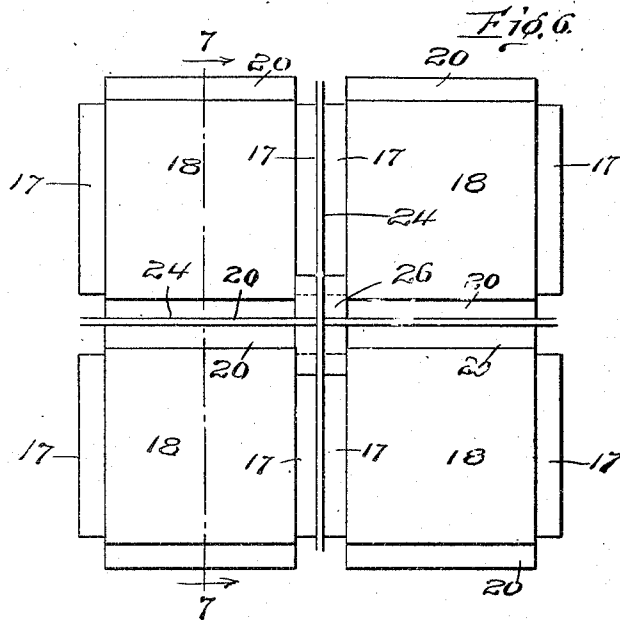


1,025,536.

2 SHEETS-SHEET 2.



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TILE CONSTRUCTION FOR CONCRETE FLOORS.
APPLICATION FILED JAN. 11, 1911.

1,025,536.

Patented May 7, 1912.

2 SHEETS-SHEET 1.

Fig. 1.

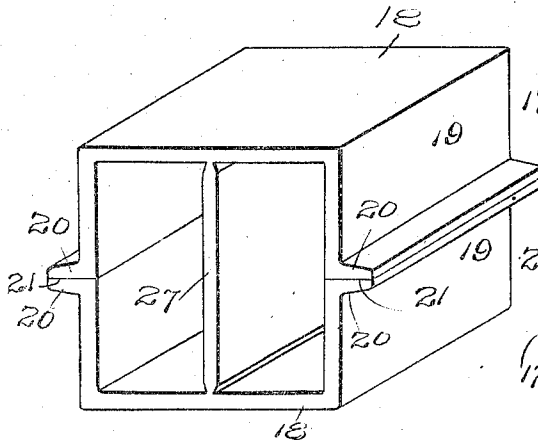


Fig. 2.

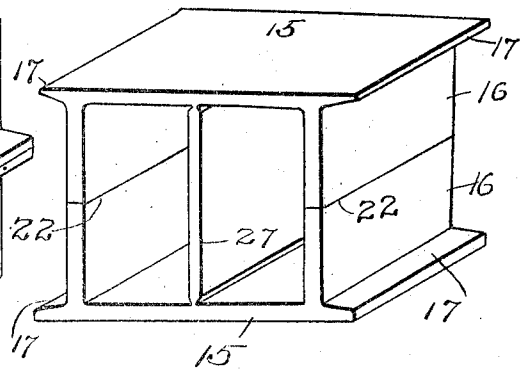


Fig. 3.

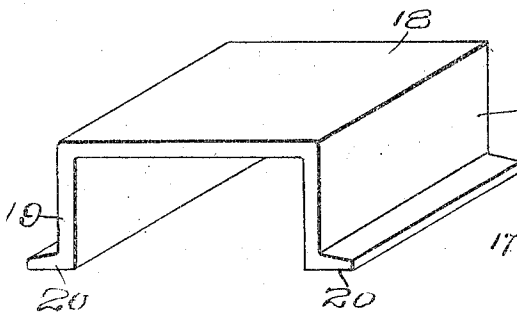
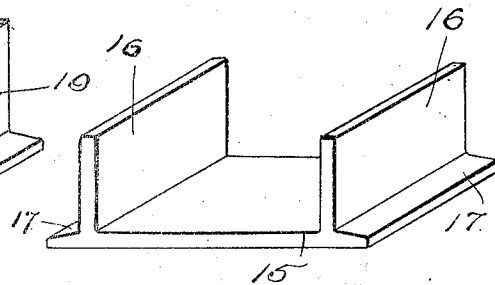


Fig. 4.



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UNITED STATES PATENT OFFICE.

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TILE CONSTRUCTION FOR CONCRETE FLOORS.

1,025,536.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed January 11, 1911. Serial No. 602,081.

To all whom it may concern:

Be it known that I, JULIAN ST. JOHN NOLAN, a citizen of the United States, residing at Highland Park, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Tile Constructions for Concrete Floors, of which the following is a specification.

My invention relates to a tile construction adapted to form a part of a reinforced concrete floor in which the tiles constitute a mold or form for the concrete when poured and, in the finished floor, lighten the structure in the tension region; and the invention has for its primary object to provide a tile construction of this character adapted to permit a two-way reinforcement of the floor and to provide an all tile, or substantially all tile, ceiling or plastering surface on the under side of the structure, which construction is made up of a plurality of hollow completely closed box like units, of novel and improved form, and arranged so as to provide the necessary channels, closed at the bottom, for the metal reinforcement and for the bodies or beams of concrete in which the latter are embedded.

The invention has for a further object to provide a completely closed hollow structural unit consisting of parts which can be cheaply and conveniently manufactured and which are of a form insuring the complete closure of the structure even when, as is likely to be the case in practice, the parts of the unit are not made with perfect exactness or have become somewhat warped or distorted in the kiln or other step in the manufacture.

The invention has for further objects the several novel and improved constructions, arrangements and devices to be hereinafter described and claimed.

The invention is illustrated in a preferred embodiment in the accompanying drawings wherein,

Figure 1 is an isometric view of a pair of upper or top members of the unit illustrating a preferred method of manufacture. Fig. 2 a similar view of a pair of lower or bottom sections. Figs. 3 and 4 similar views of respectively single top and bottom sections. Fig. 5 a similar view showing the top

and bottom section put together to form a complete unit. Fig. 6 a plan view showing the relation of the units in a concrete floor. Fig. 7 a sectional view taken on line 7—7 of Fig. 6, looking in the direction of the arrows, showing however, the body of concrete which has been omitted from Fig. 6; and Fig. 8 a view in perspective of a preferred form of filling block interposed between the corners of four adjacent units.

Like characters of reference indicate like parts in the several figures of the drawings.

Referring to the drawings, the unit is shown as consisting of what may be termed a lower member or section and an upper member or section, these terms having reference to the preferred use of the unit in the floor construction shown in Figs. 6 and 7. The lower member consists of a base 15, side pieces 16 in parallel relationship, and, the flanges 17 which are by preference in alignment with the base. The top member consists of a base or top 18, the side pieces 19, and, preferably, flanges 20 at the extremities of the side pieces. The top and bottom members are in effect U-shaped in cross section, although this term is not intended to be used in a narrow sense. The top member is designed to extend over the bottom member standing at right angles thereto so that its side pieces 19 cover the spaces between the side pieces 16 of the bottom member. Flanges 20 aline with flanges 17. This interlocking of the members in superposed transverse relation is shown particularly in Fig. 5.

Figs. 1 and 2 illustrate a preferred method of making the sections of the tile or other unit. In accordance with this method the sections are made in pairs, the top pieces in one machine or by one operation, the bottom pieces in another machine or by another operation. That is, the material is forced out by the auger machine through a die or mouth piece suitably constructed so as to form a hollow tube-like structure such as those shown in Figs. 1 and 2. If the top sections are being formed the die is so constructed as to produce flanges at opposite sides of the tube and centrally thereof. Cutters are arranged in the path of the material as it comes from

the dies which make the cuts designated 21, in Fig. 1. The transverse cuts are made in the familiar manner. The upper and lower parts of the structures severed along the lines 21 are not separated. There will be enough adherence at these places to enable the tiles to be handled in pairs throughout the burning or baking step. After this has been accomplished the two parts may be easily separated. The bottom sections may be made in the same way. In this case, however, the die forms two pairs of flanges at opposite edges of the structure. The structure as it comes from the die is severed along the lines 22.

It will be readily understood that the structural invention involved is not limited by the method of manufacture just described. The units may be made in any desired manner. It is one of the advantageous features of the units of my invention, however, that they may be manufactured in the simple and economical manner described. In some cases it may be necessary to support the double structure while it is green to prevent sagging and distortion. When this is necessary the dies or mouth pieces may be so constructed as to form the central webs 27 which are made so weak at top and bottom that when the baking of the tile is complete these webs may be knocked off.

When the units so constructed are to be used in a concrete floor construction they are placed with their flanges abutting. This leaves spaces or channels 23 between the blocks which run at right angles one to another. The arrangement permits the use of a two-way reinforcement. In Figs. 6 and 7 the reinforcing elements are shown as consisting of the metal rods 24 located in the channels. The channels 23 are filled with a body of concrete 25 which also preferably extends for some distance above the upper surfaces of the tiles so as to completely embed them. It will be seen that there results in effect a concrete panel supported on longitudinal and transverse beams which are reinforced at the proper places by metal reinforcements, the lower surface of the structure consists entirely of tile to which plastering will readily adhere. With the tiles constructed as shown rectangular spaces will intervene between the corners of adjacent units. These spaces may be filled in any suitable manner. For example, spacing blocks 26 of the character shown in Figs. 6 and 8 may be employed. The lower surface of the spacer in question is flush with the lower surfaces of the tiles. It is supported on the flanges 17 of the bottom sections. The tile structure described is a completely closed box-like structure. No cement can get into its interior.

I have described the structural unit of

my invention as a tile. It will be evident that the element instead of being made of clay might be made of other material such as concrete for example.

While I have described a preferred form of structural unit and a preferred arrangement of such units to form a composite structure it will be understood that there might be some modifications in form and arrangement without departure from my invention. Therefore, I do not limit myself to the particulars described except so far as the same are made limitations on certain of the claims herein.

I claim:

1. A tile construction for concrete floors comprising a plurality of units each consisting of members which are substantially U-shaped in cross section and interlocked in superposed transverse relation, so that they form together a closed box-like structure and formed on the bottom of the box-like structure with laterally projecting flanges; said units being arranged contiguously in parallel rows so as to provide channels for metal reinforcements and concrete which are closed at the bottom by said projecting flanges.

2. A tile construction for concrete floors comprising a plurality of units each consisting of members which are substantially U-shaped in cross section and interlocked in superposed transverse relation, so that they form together a closed box-like structure each of said members being formed on the bottom of the box-like structure with laterally projecting flanges; said units being arranged contiguously in parallel rows and so that each of said box-like structures is spaced away from those adjacent thereto to provide two sets of channels running transversely with respect to each other which are closed at the bottom by said projecting flanges and are adapted to receive metal reinforcements and concrete.

3. A tile construction for concrete floors comprising a plurality of units consisting each of a lower channeled member composed of a base and side pieces spaced apart and formed with flanges in the same plane with the base, and an upper channeled member composed of a top and of side pieces spaced apart, and formed with flanges at the extremities of its side pieces, the upper channeled member having a greater vertical dimension than the lower one so that it incloses the same and said members being fitted together so that the side pieces of each member close the openings between the side pieces of the other members to form a closed box-like structure with projecting flanges on its four sides, lying in substantially the same plane; the said units being arranged with said flanges abutting so as to provide two

sets of channels disposed transversely with respect to each other and adapted to receive metal reinforcements and concrete.

4. A tile construction for concrete floors comprising a plurality of units consisting each of a lower channeled member composed of a base and side pieces spaced apart and formed with flanges in the same plane with the base, and an upper channeled member composed of a top and side pieces spaced apart and formed with flanges at the extremities of its side pieces; said members being fitted together so that the side pieces of each member close the channels of the other member so as to form a closed box-like structure; said units being arranged with the flanges abutting so as to provide two sets of channels disposed transversely with respect to each other and adapted to receive metal reinforcements and concrete; and filling blocks for the spaces at the corners of said blocks being provided with flanges adapted to support said blocks upon the flanges on said units.

5. A hollow structural element consisting of two members which are substantially U-shaped in cross section and interlock in superposed transverse relation to each other so as to form a completely closed box-like structure, said unit being provided with projecting flanges on all four sides of the same.

6. A hollow structural unit comprising a lower member consisting of a base and side pieces spaced apart; and an upper member consisting of a top and depending side pieces the side pieces of each member closing the openings between the side pieces of the other member; the lower member being formed with flanges at the sides in alignment with the base and the upper member with flanges at the extremities of its side pieces.

7. A hollow structural unit comprising two superposed interlocking members each consisting of a base and side pieces spaced apart, one of said members being formed with flanges at the sides in alignment with the base thereof, and the other member being formed with flanges at the extremities of its side pieces, the dimension of the latter member perpendicular to the base thereof being greater than the corresponding dimension of the former so that the latter incloses the former, and forms therewith a closed box-like structure having projecting flanges on all four sides in substantially the same plane.

8. A tile construction for concrete floors comprising a plurality of units each consisting of members which are substantially U-shaped in cross section and interlocked in superposed transverse relation so that they form together a closed box-like structure each

member being formed on the bottom of the box-like structure with laterally projecting flanges the length of which is in each case the same as the corresponding dimension of the side of the member from which it projects; said units being arranged contiguously in parallel rows so as to provide channels for metal reinforcements and concrete which are closed at the bottom by such projecting flanges except at the corners of said units, and filling blocks which close said spaces at the corners of the units provided with flanges adapted to sustain said blocks on the flanges formed on said units.

9. A tile construction for concrete floors comprising a plurality of hollow completely closed box-like units composed each of a plurality of coengaging members and formed on all sides at the base with projecting flanges, the length of the flanges being, in each case, the same as the corresponding dimension of the side of the unit from which the flange projects; said units being arranged in parallel rows with their projecting flanges abutting and so that two sets of intersecting continuous, straight channels are provided adapted to receive metal reinforcements and concrete which are closed at the bottom except at the corners of said units; and filling blocks to close the spaces at the corners of the units provided with flanges adapted to sustain said blocks on the flanges formed on said units.

10. A tile construction for concrete floors comprising a plurality of hollow completely closed box-like units consisting each of a plurality of coengaging members and formed at the base with projecting flanges the length of the flanges being, in each case, the same as the corresponding dimension of the side of the unit from which the flange projects; said units being arranged in parallel rows one against the other so that continuous, straight channels are provided adapted to receive metal reinforcements and concrete which are closed at the bottom except at the corners of said units; and filling blocks to close the spaces at the corners of the units adapted to project over upon and be sustained by the flanges formed on said units.

11. A tile construction for concrete floors comprising a plurality of units each consisting of a pair of members substantially U-shaped in cross section which are interlocked so as to form a closed box-like structure, said units being provided, at the bottom of said box-like structures, with laterally projecting flanges and being arranged in parallel rows so as to provide channels for metal reinforcements and concrete which are closed at the bottom by said projecting flanges.

12. A tile construction for concrete floors

comprising a plurality of units, each unit
comprising a pair of members substantially
U-shaped in cross section which are inter-
locked so as to form a closed box-like struc-
5 ture, said units being arranged in parallel
rows and having, at the bottom of said box-
like structures, spacing elements which

space the box-like structures apart and pro-
vide channels for metal reinforcements and
concrete which are closed at the bottom.

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