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N. D. SMITH  
WEIGHT SUPPORTING TILE  
Filed Oct. 4, 1922

Fig. 3

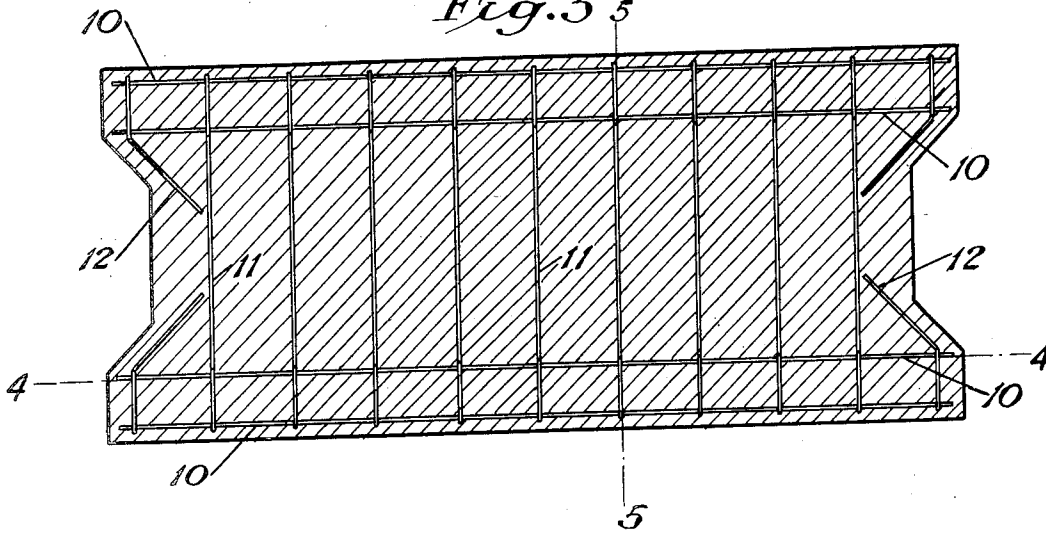


Fig. 4

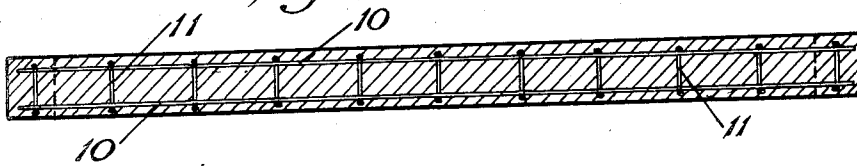


Fig. 2



Fig. 5

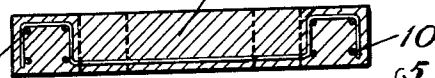
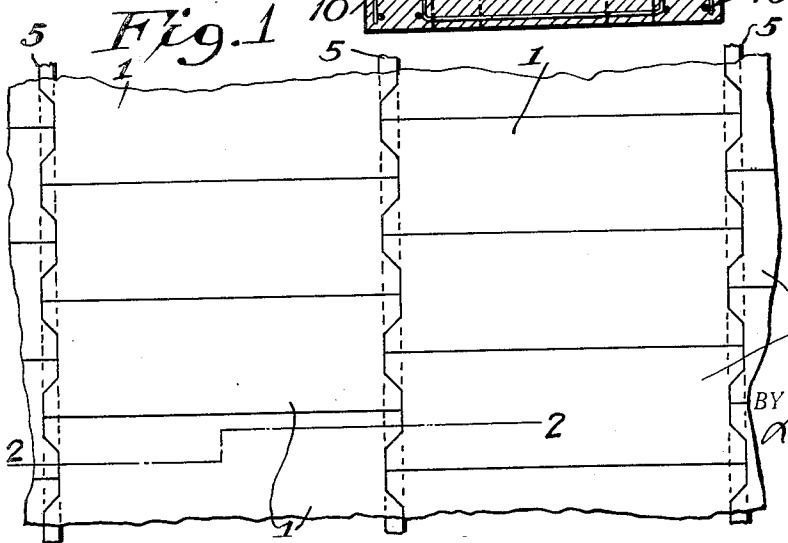


Fig. 1



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## WEIGHT-SUPPORTING TILE.

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This invention relates to improvements in building material and more particularly to an improved weight supporting tile.

Tile of this character are used in the construction of the roofs and floors of buildings of all kinds and can be made of stone, concrete, calcined gypsum and other materials or compositions. Such tile are particularly adapted for use in fireproof buildings and especially factories where large uninterrupted floor space is desirable. In the latter the tile of the floor and roof rest at their opposite ends on purlins of metal usually channel irons or I beams supported transversely upon the floor or roof beams, trusses or arches.

The objects of this invention are twofold, namely, to provide a weight supporting tile with peculiarly shaped ends each of which are adapted to interlock with the similarly shaped ends of the two next contiguous tile so that the joints between the tile in both directions will be staggered and at the same time from the conformation of the tile each will rest as firmly upon the supporting purlins as if the entire end were directly supported thereon and, secondly, to provide a load supporting tile of gypsum or other light weight material or composition which from its shape may be so reinforced as to possess maximum strength desired or required.

With these and other objects in view reference is made to the accompanying drawings illustrating this invention, yet it is to be understood that minor detail changes may be made without departing from the scope thereof.

In the drawings, in which like reference characters refer to like parts.

Figure 1 is a top plan view of a section of floor or roof employing this improved tile.

Figure 2 is a view in vertical section, taken on the line 2—2 of Figure 1.

Figure 3 is a top plan view of the preferred reinforcement with the outline of the tile indicated in full lines.

Figure 4 is a view in longitudinal section of Fig. 3.

Figure 5 is a cross section of Fig. 3 on line 5—5.

As seen from the drawing, the tile I is of general rectangular shape with the center of each end recessed so that lugs 2 are formed

at each corner projecting similarly from the body having interiorly converging sides 3 joined to parallel edges 4 of the main body which portions are slightly greater than the sum of the flat exterior end surfaces of the lugs 2. The depth or distance of the recessed body surfaces 4 from the ends of the lugs 2 on each end is usually equal to the standard width of the purlin to be employed and upon which the tile will be supported.

By referring to Figure 2 it will be seen that the tile are arranged side by side in rows with the ends of each row supported upon purlins 5 and from their conformation the contiguous lugs 2 of each row rest their full length upon the purlin and enter the recessed portion of the opposite tile in the adjoining row so that the joints between the sides of the tile in each row are in staggered relation to the similar joints of the tile in the adjoining rows and the joints between the ends of the tile along each purlin are also staggered.

The lugs 2 projecting similarly from each corner of the tile and resting upon the full width of the supporting purlins will resist all loads or weight exerting strains in a longitudinal transverse or diagonal direction, or in any combination of these directions, upon the upper surface of the tile in the same manner as if the entire end of the tile rested upon the full width of the same purlin. It is to be noted that in this construction the purlins need to be only one half the width of those required for supporting the ends of rectangular tile, providing the section is strong enough to support the load.

Floor and roof tile of the form above described can be of any material desired however if made of concrete, gypsum or other light weight cementitious materials or compositions, it is advisable to provide internal reinforcement. This shape tile lends itself particularly to reinforcement and a gypsum reinforced tile is of great advantage in floors and roofs of tile construction, combining strength with lightness in weight, and possessing the other qualities of being fire resisting and having a lower coefficient of heat conductivity.

One preferred form of reinforcement is illustrated in Figures 4, 5 and 6 which is preferably a net of wire having parallel longitudinal rods 10 arranged in two groups of four equally spaced rods, each connected to

each other and to each group by a plurality of parallel transverse rods 11 by spot weldings or any other permanent means of attachment. The longitudinal groups are arranged, as shown, to extend into the lugs extending in prolongation of each longitudinal side of the tile with the two central rods near the upper surface of the tile and the outer and inner rods near the bottom with the main body of the connecting transverse rods lying near the under surface of the tile and near each edge bent up, across and down over the longitudinal rods. It is preferable to cut at the center and bend inwardly the transverse rods 12, the outer ends of which enter the lugs, as shown in Figure 4. By this arrangement the longitudinal edges of the tile are reinforced by the longitudinal rods 10 from the end of one lug 2 to the end of the opposite lug 2 on the same side, which form in effect a beam along each longitudinal side, which beams the top rods 10 reinforce as compression members and the bottom rods 10 as tension members and the transverse rods 11 reinforce the body of the tile on the under side as tension members where the reinforcement is most desirable, and also give mechanical bend to longitudinal wires.

30 The tile of the shape and reinforcement above described is readily made from calcined gypsum, with or without an aggregate, as the gypsum mixed with water may be poured into moulds in which the reinforcement has been placed and the plastic mass set in a very short time, so that tile of this kind are readily "cast on the job" when it is desirable.

What I claim is:

40 1. A rectangular flat tile having a recess at each end with sides inclined outwardly forming lugs in prolongation of the opposite sides, reinforcing means extending lengthwise of the tile and into the lugs, and trans-

verse reinforcing rods in the lugs and bent parallel to the adjacent inclined face of the recess.

2. A flat tile having a recess at each end with sides diverging outwardly, and reinforcing means for the tile comprising transverse members in the rods bent angularly inward adjacent the proximate diverging side of the recess.

3. A rectangular tile having end recesses with diverging sides, reinforcements for the body and the end lugs formed by the recesses comprising lengthwise and cross rods imbedded in the tile and the end cross rods being bent inwardly to conform to the sides of the recesses.

4. A rectangular weight supporting flat tile comprising end recesses with diverging sides forming end lugs at the corners, groups of reinforcing rods extending lengthwise adjacent the upper and lower surfaces of the tile and into the opposite end lugs thereof, and transverse reinforcing rods engaging the rods of each group to hold them spaced apart, the transverse rods at the ends being bent inwardly parallel to the adjacent sides of the said recesses.

5. A rectangular flat tile having recesses at the ends with diverging sides and forming end lugs at the corners, each lug approximating half of the recess, and means for reinforcing the tile, said means extending close to the opposite surfaces of the tile and parallel with the diverging sides of the end recesses.

6. In a reinforced flat tile, groups of reinforcing rods rectangularly spaced and extending lengthwise thereof adjacent the opposite faces at the sides, and transverse reinforcing rods extending around and connected to the separate rods of each group to hold them rectangularly spaced apart.

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