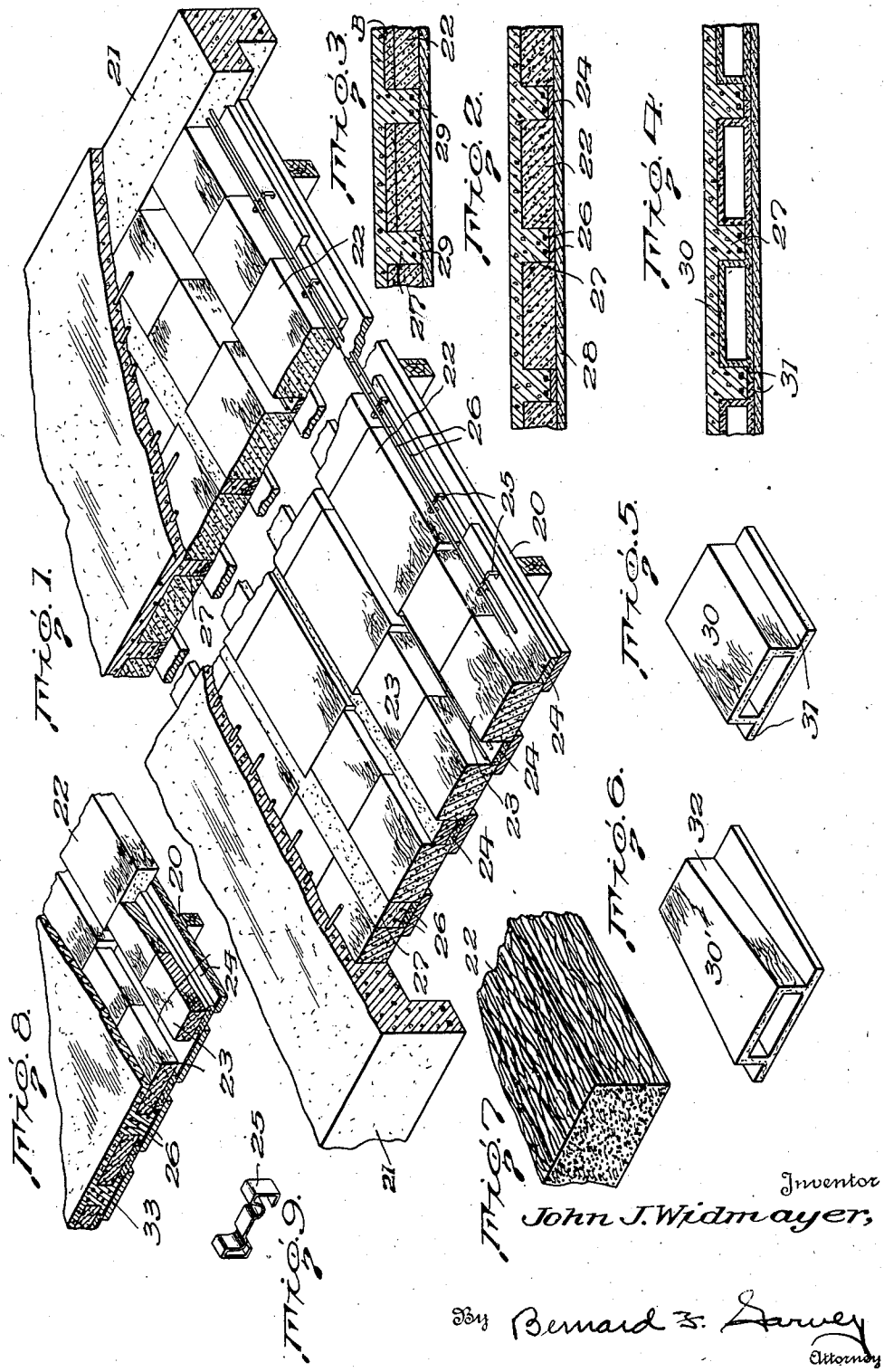
Oct. 28, 1941. J. J. WIDMAYER 2,260,425

PLASTIC FLOOR OR ROOF

Filed April 21, 1938 2 Sheets-Sheet 1



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Fig. 10.

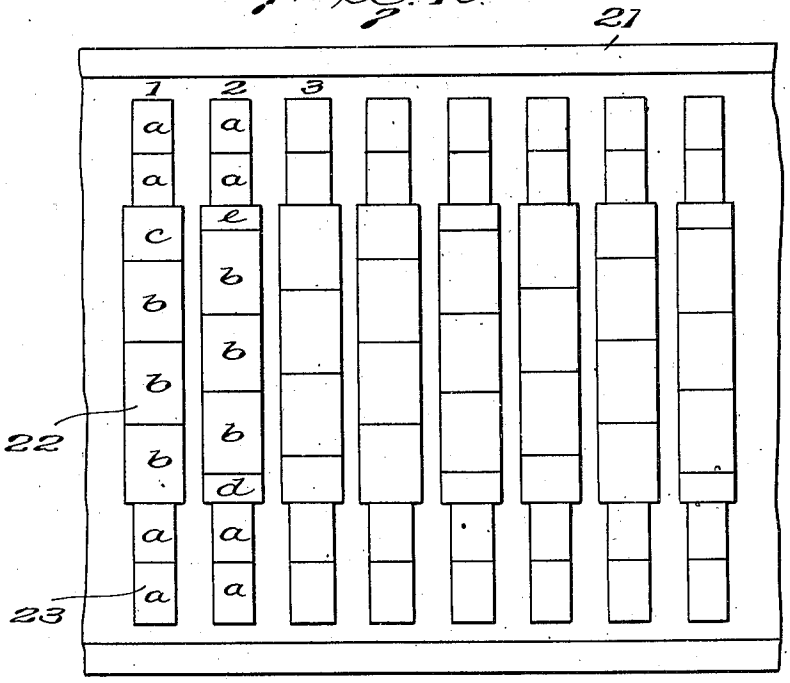


Fig. 11.



Fig. 12.

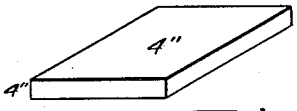


Fig. 13.

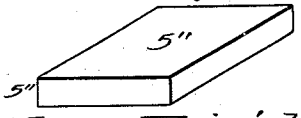


Fig. 14.

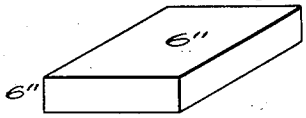


Fig. 15.

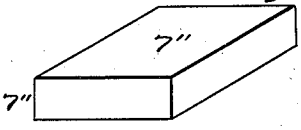


Fig. 16.

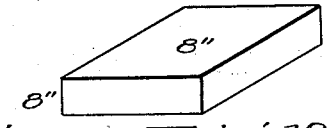


Fig. 17.

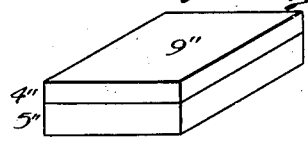


Fig. 18.

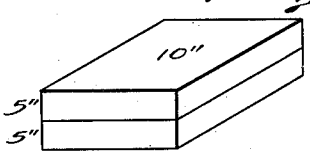


Fig. 19.

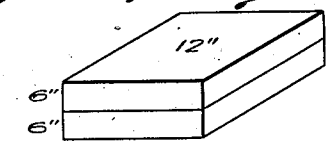
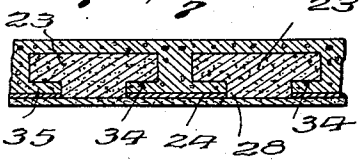


Fig. 20.



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PLASTIC FLOOR OR ROOF

John J. Widmayer, Washington, D. C.

Application April 21, 1938, Serial No. 203,395

6 Claims. (Cl. 72—66)

The present invention consists of a plastic floor or roof and method of making the same.

In the construction of buildings which embody reinforced concrete floors and roofs, various means have been used to provide voids in the floor or ceiling for economizing in the use of concrete. The void producing agents now usually employed are hollow tiles and metal pans, both of which are attended by many recognized disadvantages although generally considered, up to the present time, as the best available medium for this purpose. Hollow tiles, among othe disadvantages, are highly frangible, with resultant substantial loss by breakage in transportation, as well as on the job; they are incapable for use as a nailing base, undesirable as a plaster base and ineffective as a sound deadener. While the metal pans are not frangible, they are otherwise characterized by the same disadvantages, above referred to, which attend the use of hollow tile, and in addition the pans are more costly, and because of their weight, are more difficult to install. From time to time other media have been provided for this purpose, such for instance as the heavy, highly frangible gypsum blocks, but they have failed to supplant either the clay tile or metal pan. In the present invention, I employ, in the construction of the floor or roof, a filler block which combines the advantages of the clay tiles, gypsum blocks, metal pans and other devices heretofore used, the present block additionally being extremely light in weight, an effective sound deadener, may be nailed and hand sawed, provides an excellent plaster base, and is for all practical purposes, infrangible.

In carrying out my invention, I preferably employ light weight fiber boards composed of relatively long strands of wood shavings loosely assembled into a board or block form and retained in such relation by suitable cementitious substance such as sodium silicate, known magnesite compounds and the like, made up in units or slabs of predetermined length, width and thickness capable of use singly, in multiple or fractionally for variable adaptation to permit optional variation of the depth and thickness of the concrete rib.

Wood fiber blocks or slabs, commercially known as Thermax, are now used for the walls or partitions of buildings and are desirable for this purpose because of their manifold advantages in that they are fire-proof, may be nailed to, hand sawed, etc., but these blocks have never been used as a void producing form for plastic floors or ceilings. When used as a void producing form, it is, of course, manifest that a high density block is unnecessary, since it is called upon to support no portion of the load after the floor has set. Furthermore, experiment has now proven that the same amount of materials used for the manufacture of a commercial Thermax block of given dimensions may be employed for the manufacture of a block of approximately twice the size. Manifestly, the larger block is of lighter or less density, weighing approximately 12.8 pounds, per cubic foot, as against a weight of approximately 25 pounds per cubic foot in an ordinary Thermax block, but it is ample for use as a filler block, because it will sustain any load which it is called upon to carry during the construction of the floor and minimizes dead load in the floor. After completion of the floor, these blocks are useful as a nailing or plaster base.

The method employed in the present invention includes the use of blocks, as above described, which are arranged in contiguity between opposite beams or walls of the building, where one way concrete ribs are to be employed, the blocks being susceptible of separation at intervals where the two way system is used, that is the ribs run at right angles to each other and are supported on four sides by beams or walls, a standard length block being divisible to permit use of fractions thereof, especially at the ends near the supporting beams or walls where increased width and/or depth of the concrete rib is necessary to take care of end shear.

It is also within the contemplation of this invention to provide fibre blocks aligned in rows with concrete channels which extend below the planes of the block rows and also extend beneath the sides of said rows, with the reinforcing elements disposed at the top of the channel to meet negative moment conditions which occur principally at the supports of continuous spans. By this construction the compressive stresses which occur in the lower concrete channels are taken care of.

Other objects of the invention will be better understood from the description of the present preferred forms of the invention taken in connection with the drawings, wherein—

Fig. 1 is a fragmentary perspective view of a floor constructed in accordance with my invention showing the false supports beneath the floor and portions of the floor being shown incomplete to disclose details,

Fig. 2 is a detail fragmentary sectional view taken transversely through parallel rows of blocks and intervening concrete ribs in a completed floor,

Fig. 3 is a similar view of a modified form of the invention wherein the filler blocks are used in multiple and metal laths are employed as soffit pieces in the channel bases,

Fig. 4 is a similar view of still a further modification of the invention wherein hollow fibrous filler blocks are used the bases of the blocks being laterally extended to provide integral soffits for the bases of the concrete channels,

Fig. 5 is a perspective view of the block per se, shown in Fig. 4,

Fig. 6 is a perspective view of another form of fibrous hollow block,

Fig. 7 is a detail enlarged fragmentary sectional view of a block especially constructed for use in the present invention,

Fig. 8 is a detail fragmentary sectional view of a modified form of floor constructed in accordance with the present invention wherein the concrete channels extend below the opposite margins of the block rows,

Fig. 9 is a perspective view of a reinforcing rod supporting chair used in the present invention,

Fig. 10 is a fragmentary plan view of a floor constructed in accordance with the present invention wherein is illustrated the method of using standard length and width blocks and fractions thereof,

Figs. 11 to 16, inclusive, each is a perspective view of a standard size of block as used in the present invention,

Figs. 17 to 19, inclusive, are perspective views of multiples of the blocks illustrated in Figs. 11 to 16, and

Fig. 20 is a detail fragmentary sectional view of a modified form of floor, illustrated in Fig. 8.

In the drawings to illustrate the method of employing my invention and also the application thereof, I have illustrated a portion of a false supporting structure generally designated **20** which is of standard design. Arranged in rows between building walls **21** on the structure **20** are blocks or slabs **22** all of which are preferably of standard predetermined length and width, but may vary in depth, in a manner more fully hereinafter set forth. The blocks included in the present invention preferably consist of light weight fiber boards loosely assembled in any suitable manner into block or slab form and composed of strands of wood shavings held together by suitable adhesive chemical agents, such for instance as the blocks now commercially known as Thermax. As shown to advantage in Fig. 7 of the drawings, the fibers preferably extend longitudinally through the block, the fibers being plasticised either before or during the fabrication of the block. The commercial Thermax block is denser, weighing approximately 25 pounds per cubic foot, and consequently heavier and more costly than is necessary for use as filler blocks, and I have found that the same amount of material used for making a block of predetermined dimensions may be used for the manufacture or fabrication of a block of twice the size, which is better adapted for use in accordance with the teaching of my invention. By following this course a very light weight block, the weight being approximately 12.8 pounds per cubic foot, is provided which is not frangible and will support any load which it is called upon to withstand in the normal use of the block, preparatory to and during the laying of the floor. Of course, after the floor has hardened, the filler block ordinarily is not called upon to perform any function, but in the present invention, because of its peculiar characteristics, may be used as a plaster and nailing base, and also as a sound deadener between floors. The inherent construction of a block of this character is such that crevices or fissures are provided in the surfaces thereof which effects a key between the concrete and the blocks with obvious beneficial results. In addition the under face of the block provides an excellent plaster base with the result that the scratch coat may be eliminated and the brown coat applied directly thereto.

The blocks **22** may be layed endwise in contiguity, as shown in Fig. 1 of the drawings, and in certain jobs the same block may be used throughout the row from one side wall to the other. In other jobs, it is necessary to widen the plastic channel at the ends of the rows and to produce this result terminal blocks **23** of less width are provided. A pair of the blocks **23** results from cutting a standard size block **22** in half and turning the same through an arc of 90° so as to bring one side of the divided block into contiguity with one end of the standard block, the remaining half of the block being arranged in end to end relation with the first half, as illustrated advantageously in Fig. 1.

In the openings between the parallel rows of blocks, I preferably mount soffit members or bases **24**, made of the same material as the blocks **22**, the bases being superimposed on and supported by the structure **20**. The soffit members form the bottom bases of the receiving channel and automatically control the width of the base between the block rows, correspondingly determining the width of the concrete receiving channel. In the channels, I also mount reinforcing rod supporting chairs **25** which are carried by the soffit pieces or members **24** in the form of invention shown in Fig. 1. The chairs carry reinforcing rods **26**. Concrete is poured in the channels over the reinforcing rods, in a manner well known in the art, the solidified concrete forming the concrete supporting ribs **27** of the floor.

It will be noted, especially upon reference to Fig. 2 of the drawings, that the bottom faces of the soffit members **24** are uniplanar with the bottom faces of the blocks **22** providing a plain uninterrupted plaster base to which plaster **28** may eb directly applied.

As shown in Fig. 3 of the drawings, when it is desired to increase the depth of the plastic rib **27** various multiples of block may be used. In Figs. 11 to 16 of the drawings, blocks varying in thickness from three inches to eight inches are illustrated. For the purpose of this invention, it has been found unnecessary to make blocks of any greater or lesser thickness. Three inches is the minimum thickness of block which would be required under modern building conditions and by using the multiple system of block, any desired depth of channels may be obtained from three to sixteen inches. It will be noted, of course, that all of the blocks, regardless of thickness are of the same length and width. The illustration in Fig. 3 shows a relatively thick base block having superimposed thereon a block B of less thickness. Also in Fig. 3, I have shown a slight modification of the invention, wherein I substitute a metal lath **29** in the base of each of the concrete channels for the soffit members **24**. In some jobs this type of soffit member may be preferred.

In Figs. 4 and 5 another modification of the

invention is illustrated consisting of a hollow block 30 made of the same materials as the blocks 22 and 23, having lateral extensions 31 at the base thereof which are adapted to abut so as to provide soffits in the bottoms of the channels between the block rows.

Fig. 6 shows a further modification of block wherein a hollow block 30' is illustrated which is used in the same manner as the block 30 but is tapered at one end, as indicated at 32 to provide for channel widening. This type of block may be used at the end of a row where an increase in the width of the rib is necessary to take up end shear.

In Fig. 8 a still further modification of the invention is provided wherein a channel 33 is provided, the base of which is below the lower faces of the block rows and extends beneath the adjacent edges of said rows to permit the concrete poured into the channels to flow beneath the blocks. This broadens the base of the channel and is a construction which is preferred in certain jobs. Where this construction is employed, the reinforcing rods are preferably mounted in the top of the ribs. I prefer to employ this method to meet compressive stresses developed by negative moment conditions which usually occur at the supports of continuous spans.

In Fig. 10 of the drawings, I have shown blocks designated *a*, *b*, *c*, *d*, and *e* for the purpose of illustrating fractional use of blocks constructed in accordance with this invention, without any loss of materials. Here the standard length of blocks, *b*, are used with a fractional length block *c* in row No. 1, the remaining portion of the block *c* being block *d* in row No. 2, the row No. 2 also including a fraction of a block designated *e*, the remaining portion of which block is carried over to row No. 3. Of course, the blocks *a*, as already described, are formed by dividing standard size block *b* and giving said portions a quarter turn in a manner already described. In this way the width of the channels is automatically increased at their terminals.

In the modified form of invention shown in Fig. 20, instead of superimposing one block on top of a narrower block, as is done in the form of invention shown in Fig. 8, I undercut or recess the sides of each block 23 at the bottom thereof to provide grooves 34. In this way the channel bases are widened to correspondingly increase the width of the bases 35 of the concrete ribs with the same advantages, which flow from the use of the form of invention illustrated in Fig. 8.

While I have herein shown and described preferred forms of my invention, it is nevertheless to be understood that various changes may be made therein within the scope of the claims hereto appended.

What is claimed is:

1. A floor comprising parallel rows of blocks all of the faces of which are closed, the blocks being arranged in end to end relation, the rows of blocks being spaced to provide concrete receiving channels therebetween, the blocks being composed of spaced fibers thereby providing surface voids.

2. A floor comprising rows of solid blocks having concrete receiving channels therebetween for forming concrete ribs between the blocks, the channels extending beneath portions of the block rows on each side of and at each end only of the latter to resist compressive stresses developed in the lower parts of the ribs.

3. Floors for buildings including Thermax blocks aligned in rows between the sides of the building and spaced to provide plastic receiving channels, and Thermax soffit members arranged between the lower adjacent faces of the blocks and uniplanar with the bottom faces of the latter.

4. In floor construction, low density fiber blocks arranged contiguously in rows and spaced to provide intervening concrete channels, the surface fibers of the block being twisted and undulated at intervals to provide concrete receiving crevices and depressions for keying the concrete to the blocks.

5. A floor comprising rows of parallelly arranged blocks spaced to provide concrete receiving channels, the blocks consisting of light weight fibrous bodies of sufficient stability to prevent crushing resultant from the application of external forces during floor construction, the block surfaces being fissured to key the concrete of the channels to the rows of blocks.

6. A floor comprising parallel rows of Thermax blocks spaced to provide concrete receiving channels, the concrete being poured into said channels and on top of the blocks for engagement in the surface interstices of the latter.

JOHN J. WIDMAYER.