April 1, 1930. G. A. WRIGHT 1,752,583

BUILDING FLOOR

Filed Jan. 3, 1928

Fig. 1.

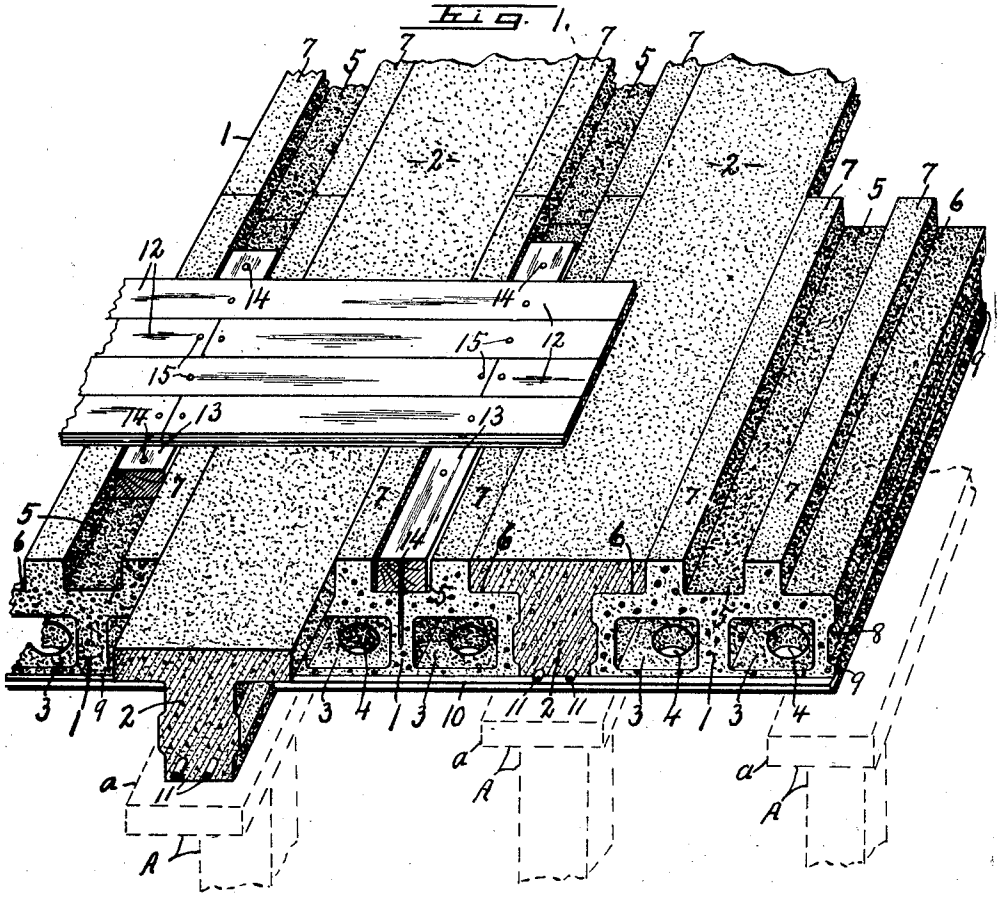
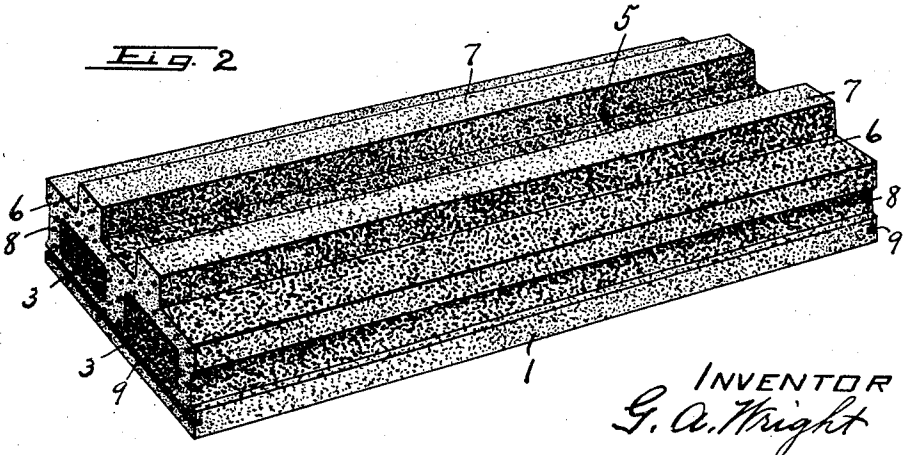


Fig. 2



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BUILDING FLOOR

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This invention relates to a composition flooring and to the method of making the same in which the base or sub-flooring layer is made of concrete adapted to receive a superposed layer of conventional wood flooring or equivalent material.

In the construction of flooring of this type it is desirable to finish the upper surface of the concrete base in a substantially flat plane and to bring the superposed wood flooring into direct contact with said surface to avoid the formation of intervening spaces which are always objectionable from a sanitary point of view, and also as an extra fire hazard by reason of the liability of breeding of vermin or accumulation of refuse therein, and also the liability of fire drafts in case of combustion of inflammable materials in the building.

The main object, therefore, of the present invention is to obviate these difficulties by providing means whereby the superposed wooden floor or other layer may be conveniently and expeditiously secured in place and against the upper surface of the concrete base without liability of splitting or otherwise injuring the superposed layer, and at the same time avoiding the objectionable spaces between the surface layer and concrete.

Another object is to produce a lighter, stronger and more durable floor construction of this type than has heretofore been practised and at the same time to avoid the transfer of moisture from the concrete to the wood, and thereby to reduce to a minimum the liability of decay of the wooden portions of the flooring.

A further object is to construct the concrete base in sections, some of which are preformed and hardened before being placed in operative position, and provided with means whereby the remaining sections may be molded in a plastic state upon and between the preformed sections in such manner as to form practically a homogeneous structure when the molded sections become set or hardened.

Other objects and uses relating to specific parts of the floor construction will be brought out in the following description.

In the drawings:—

Figure 1 is a perspective view of a portion of a floor showing the method of construction and the various parts used in such construction.

Figure 2 is a perspective view of one of the detached blocks.

As illustrated the concrete base of the floor structure is composed of similar preformed concrete blocks —1— arranged in parallel spaced relation, and concrete beam sections —2— filling the spaces between the blocks while in a plastic condition to cementitiously unite with the contiguous portions of the blocks and thereby to form a substantially homogeneous base, the lower and upper surfaces of the beams being finished substantially flush or coincident with the corresponding surfaces of the blocks.

The blocks —1— are made in suitable conventional sizes most convenient for handling and are identical in construction so that they may be formed or cast in one and the same mold, and then allowed to set, harden and cure before being installed in the flooring.

Each block is mainly rectangular in form and elongated in one direction so that its bottom and top sides, and also its opposite lengthwise sides, are substantially straight and parallel.

The main body of the block is hollow to reduce its weight and as illustrated is provided with lengthwise chambers —3— extending from end to end thereof and separated by an intervening partition for reinforcing purposes.

The bottom of the block is substantially flat and provided with apertures —4— extending therethrough and communicating with the chambers —3— for ventilating purposes if desired, or to form outlets for electric and other conduits which may be extended into or through the chambers —3— for concealing the same.

The top wall of each block is provided with a central lengthwise channel —5— and opposite lengthwise rabbets —6— along the corresponding corners and in equally spaced relation to the channel —5— to form intervening lengthwise ribs —7—, the channels —5—

and rabbets —6— being substantially rectangular in cross-section and of approximately the same depth for purposes presently described.

The opposite sides of each block are provided with similar lengthwise grooves —8— extending from end to end thereof substantially midway between the lower and upper faces thereof to receive corresponding ribs on the adjacent sides of the beams —2— when the latter are molded between or against the side edges of the blocks in a manner hereinafter described.

During the molding of the blocks —1— the opposite end edges thereof are formed with longitudinal grooves —9— near the bottom thereof for receiving one edge of a metal reinforcing bar —10— which, when the blocks are assembled in the base, serves to connect and partially support the blocks in the same horizontal plane, and also serves as a means for receiving and supporting suitable reinforcing rods —11— which are incorporated in the beam sections —2— in a manner hereinafter described.

The blocks —1— are preferably made of a mixture of high-grade cement, sand and a relatively large percentage of clean cinders to form what is now known as "cinder blocks" which are of considerably less weight than the ordinary cement blocks of the same construction and are readily penetrable by nails and equivalent fasteners.

When it is desired to use the blocks for constructing the concrete base of the floor they are placed in position upon temporary forms or supports —A—, indicated by dotted lines in Figure 1, in transversely spaced parallel relation so as to rest in the same horizontal plane, after which the reinforcing rods —1— are placed in the grooves in the ends of the blocks to not only tie the blocks together but also to enter similar grooves in the adjacent ends of other blocks which may be similarly installed to form continuations of those already installed.

The reinforcing rods —11— for the beams are then placed in parallel spaced relation in the spaces between the blocks so as to rest upon the reinforcing bars —1—.

The upper portions or templets —*a*— of the forms —A— are of sufficient width to extend across and beyond the spaces between the blocks —1— and to form the temporary bottoms of said spaces in which the beams —2— are molded.

That is, when the blocks —1— are arranged in uniformly spaced parallel relation upon the temporary supports —A—, the concrete, consisting of a mixture of high-grade cement, sand and preferably a large percentage of clean cinders or other suitable ingredients in a plastic or liquid state, is poured or otherwise placed in the intervening spaces between the blocks to entirely fill the same including the grooves —8— and rabbets —6— and are finally finished off at the upper surface flush or coincident with the upper surfaces of the adjacent portions of the blocks.

Under these conditions the beams and blocks are firmly united to form a substantially homogeneous floor base which, when the concrete of the beams is set or hardened after a reasonable period of time, is capable of not only supporting itself over large areas but is adapted to receive and support relatively heavy loads, after the temporary supports —A— are removed and the permanent supports are installed.

When the moisture from the concrete beams and the previously cast blocks is substantially removed by evaporation, the base is ready to receive any suitable superposed flooring such as the conventional wood flooring —12—.

In order to facilitate the securement of the superposed flooring —12— in operative position without liability of splitting or otherwise injuring said floor, suitable strips —13— of wood or equivalent material capable of receiving nails are placed within the channels —5— and are fastened to the bottom of said channels by nails —14— or equivalent fastening means.

These strips —13— may extend the entire lengths of several of the blocks across the adjacent ends thereof and are of approximately the same cross-sectional form and size as the channels to fit reasonably close therein without friction with the side walls thereof so that the upper surfaces of the strips will be substantially flush or coincident with the upper surface of the adjacent portions of the block —1— and beams —2—.

When the strips —13— are secured in their respective grooves —5—, the flooring —12— may be laid in the usual manner upon the upper surface of the concrete base, and nailed or otherwise secured in any well-known manner to the wooden strips —13— thereby firmly securing the superposed flooring to said base.

It is evident, however, that any other superposed covering may be placed upon the upper surface of the concrete base and similarly nailed or otherwise secured to the strips —13— and that the flooring —12— may be covered with any suitable material without departing from the spirit of this invention.

The process of constructing this flooring, briefly stated, consists in supporting the preformed channeled block —1— in a horizontal plane and in uniformly spaced parallel relation, then pouring or otherwise filling in the spaces with plastic or liquid concrete, and finishing off the upper surface of the same even with the upper surfaces of the adjacent portions of the blocks to form the beams —2—.

These beams, which are molded in the spaces between the blocks after the latter are

placed in operative position, are then allowed to set and thoroughly dry after which the strips —13— are secured in their respective channels —5—. The superposed flooring —12— is then placed in operative position directly upon the flat upper surfaces of the concrete base and strips —13— and nailed or otherwise secured to said strips thus completing the floor structure, it being understood that when the permanent supports are placed in operative position under the floor structure the forms —A— may be removed.

It is also evident that although the concrete blocks —1— may be relatively short as compared with the length of the floor and arranged end to end in alinement, the concrete beams may be made continuous across the end joints of the blocks thereby binding the latter together and forming therewith a substantially homogeneous concrete floor base capable of supporting heavy loads in addition to its own weight over extensive areas which are otherwise unsupported.

It is also to be understood that the reinforcing bars —1— and —11— assist in taking the tensile stresses and converting them into compression resistance due to the peculiar overlap and interlock connections between the beams and blocks.

What I claim is:

1. In a composite flooring, a substantially rectangular concrete block elongated in one direction and having a central lengthwise channel in its upper side for receiving a nailing strip, the opposite ends of said block being provided with transverse grooves therein in a plane some distance below the bottom of the channel for receiving reinforcing bars.

2. In a composite flooring, a substantially rectangular concrete block elongated in one direction and having its upper longitudinal corners rabbeted from end to end and its intermediate portion provided with a lengthwise channel parallel with the rabbets, said block having interior lengthwise chambers extending laterally under portions of the channel and rabbets, and a partition directly under the channel and separating said chambers.

3. In a composite flooring, a hollow rectangular concrete block elongated in one direction and having its upper longitudinal corners rabbeted from end to end and its intermediate portion provided with a lengthwise channel parallel with the rabbets, said rabbets and channel being of substantially the same vertical depth, said block having a lengthwise partition directly under the channel dividing the interior of the block into separate chambers, said chambers having vent openings in the bottoms thereof.

4. In a concrete flooring, similar hollow concrete blocks elongated in one direction and arranged in parallel spaced relation transversely in the same horizontal plane, said blocks having their adjacent upper corners rabbeted from end to end, said blocks having their opposite ends provided with transverse grooves near the bottoms therein, reinforcing members seated in said grooves and extending across the intervening space between the blocks, reinforcing rods extending lengthwise of and within said space and having their opposite ends resting upon the portions of the reinforcing members extending across said space, and a T beam filling the space between the blocks and having its top flanges seated in the adjacent rabbets, the lower portion of the beam being engaged with said reinforcing rods.

In witness whereof I have hereunto set my hand this 22nd day of December, 1927.

GORDON A. WRIGHT.