Feb. 14, 1933. M. Y. SEATON 1,897,338

BUILDING CONSTRUCTION

Filed Oct. 2, 1929

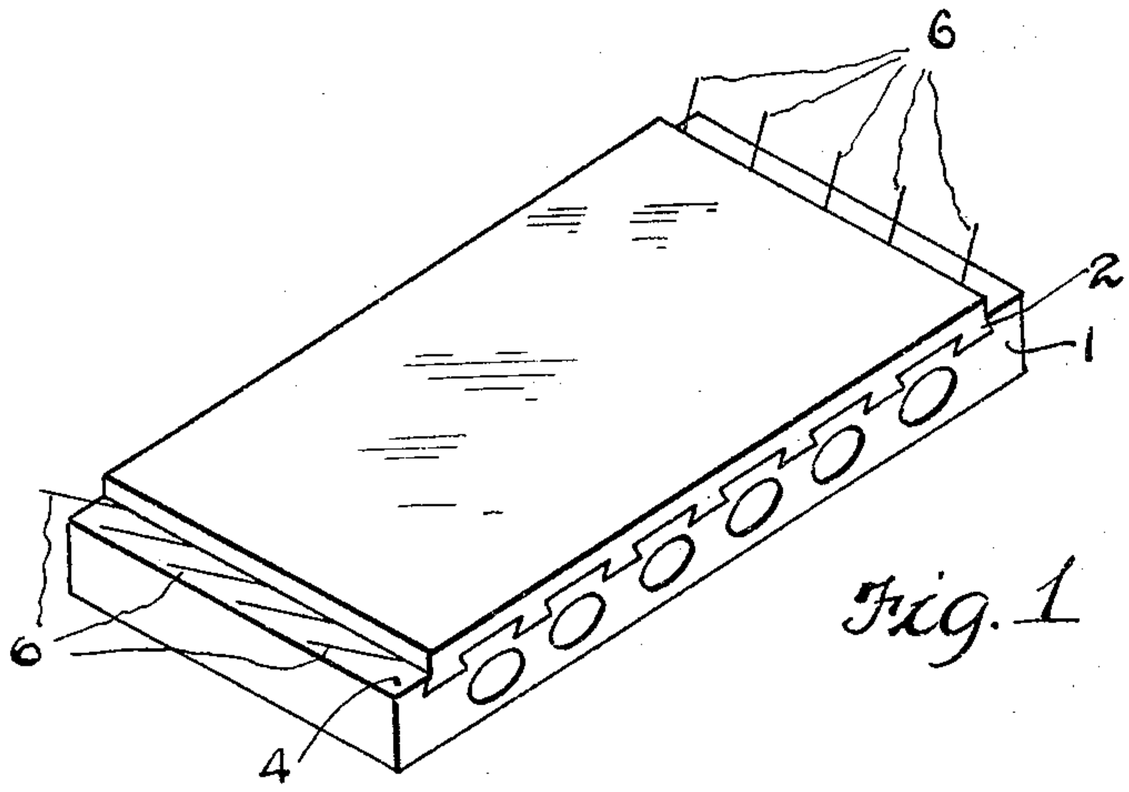

Fig. 1

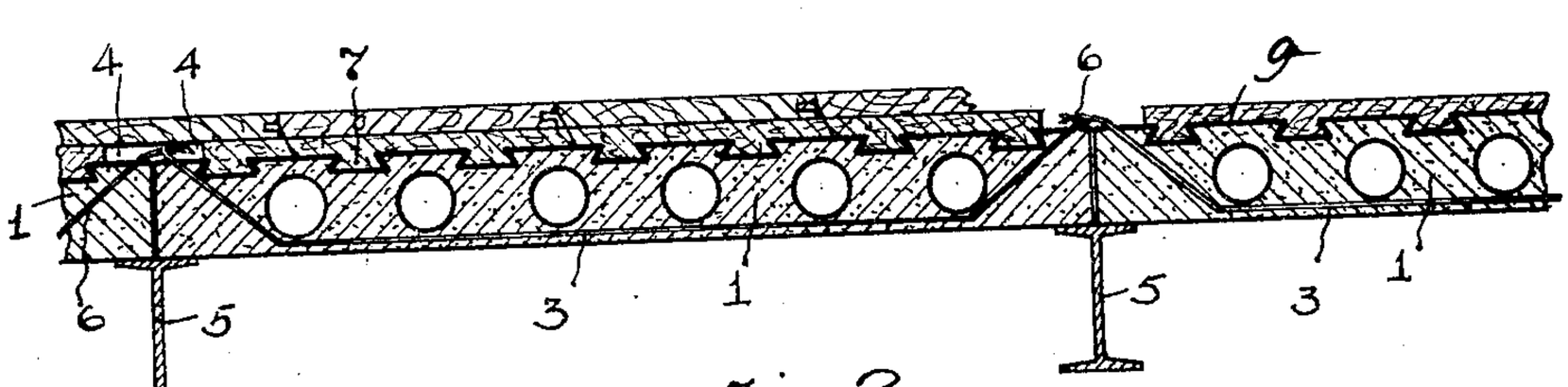

Fig. 2

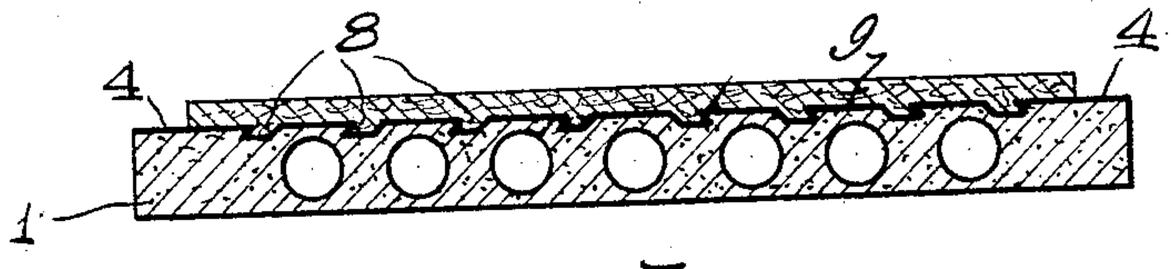

Fig. 3.

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UNITED STATES PATENT OFFICE

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BUILDING CONSTRUCTION

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In building construction a growing tendency is noted to the use of precast slabs of material, such as gypsum, in the construction of floors and roofs. These precast slabs are usually supported by suitable framework and may contain inserted steel reinforcing where a considerable load is to be carried, as in the case of floor construction.

In floor construction, after the slab has been laid on the supporting walls or steel framework, it is necessary to provide some sort of a flooring surface. Sometimes a normal concrete mix is poured on the surface of the gypsum slab and finished by trowelling to give a hard finish floor. More frequently in this type of construction, however, wood screeds approximately two inches thick and two to three inches wide are laid on the surface of the gypsum slabs and the spaces between such screeds are filled with a lean concrete mixture, ordinarily cinder concrete being employed. As this concrete sets it serves to support the screeds firmly in place and these screeds then serve as sleepers on which a final wood floor is nailed. This practice has the objection that it substantially adds to the weight of the floor without at all increasing the load-bearing strength of the floor. The cinder concrete has no effect from the load-carrying standpoint, being simply so much added dead weight. By making a composite slab, the major portion of which is of gypsum or like material as usual and attaching a nail-penetrable layer thereto, said layer composed of an oxy-chloride cement mixture of preferably three-quarters of an inch to one inch in thickness, a nail-penetrable floor surface will be attained without the addition of any dead load.

It is an object of my invention to provide a composite slab construction which shall have none of the undesirable features of the floor construction above referred to and still have a nailing surface throughout so that a suitable finishing floor surface of any desirable type can be nailed thereto. It is a further object of my invention to provide a building construction for floors and roofs consisting of a number of precast slabs so that when such slabs are laid in place a smooth surface is presented to receive the wearing surface usually laid upon such floors. Other objects of my invention will appear as the description proceeds. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:

Fig. 1 is an isometric perspective view of a precast slab showing the nailing surface and reinforcing means; Fig. 2 is a fragmentary sectional view of a plurality of precast slabs supported by suitable framework; and Fig. 3 is a sectional view of a precast slab showing one type of interlocking means.

Referring more specifically to the drawing and especially to Fig. 1, the precast slab 1 of the usual type made of gypsum or like material is shown with its upper surface serrated by dovetailed interlocking grooves 2, said slab 1 also having embedded therein suitable reinforcing means 3. The ends of the slab 1 are notched as shown at 4 so that when such slabs are laid upon the supporting steel work 5 the notches 4 will be adjacent each other and provide a recess within which the ends 6 of the reinforcing means 3 may be suitably joined. After adjacent slabs have been laid in place and the ends 6 of the reinforcing means 3 united within the recesses formed by the notches 4, these recesses may then be filled with oxy-chloride cement or other suitable material so as to present a level surface to the floor throughout. If the character of the reinforcing means is such that the ends 6 cannot be suitably united in the space afforded by the thickness of the layer of magnesium oxy-chloride cement mixture, the notches 4 can be formed deeper so as to extend into the body of the gypsum slab.

As before set forth, precast slabs composed usually of gypsum or like material have

the undesirable feature that a finished floor surface cannot be nailed thereto directly with any degree of security. In the slab shown in Figs. 2 and 3, the upper surface of this slab is covered with an oxy-cement mixture, preferably oxy-chloride. This oxy-cement mixture adheres to the slab surface and presents a suitable nailing surface to receive the finished floor. The slab 1 may have machined or otherwise formed in its surface a series of slanting or perhaps dovetailed grooves shown at 7 and 8, respectively, in Figs. 2 and 3, these interlocking grooves assisting in securing the nail-penetrable surface or layer to the precast slab. Oxy-chloride cement will adhere in quite satisfactory fashion to the surface of a gypsum slab which is only normally rough without the intermediary of any interlocking grooves. However, if the oxy-chloride cement mixture is to be applied directly to the gpysum, it will first be necessary to wet the gypsum thoroughly to prevent suction effects and accordingly the composite slab will require a long time for drying. Furthermore, in the after use of the composite slab it may on occasion be very desirable to have what might be considered as a suction barrier interposed between the oxy-chloride mixture facing and the gypsum body. A suitable suction barrier is provided by lightly coating the gypsum slab with a bituminous material such as asphalt, as shown at 9 in Fig. 2 and Fig. 3. Then to the slab, either while the asphalt is fresh or after it has dried, a mixture of magnesium oxide, e. g., burned magnesite, sawdust or other form of woody material and suitable additional aggregates all mixed to a plastic consistency with a magnesium chloride solution of suitable strength will be applied. The thickness of the added coating will vary according to the nail holding properties desired. This added coating may be mechanically held to the face of the gypsum slab by the slanting or dovetailed grooves. After setting a composite slab will result having the properties desired. Unless strictly mechanical methods of attachment are provided when the asphalt coating is used, it is normal experience that although satisfactory initial attachment will be obtained, the asphalt will eventually become dry and brittle and allow of parting between the oxy-chloride layer and the gypsum body.

In roof construction, such a composite slab can be laid in normal fashion and slate, tile or other types of roofing can be nailed directly thereto. When a normal gypsum slab is used in roof practice it must either be coated with a nailable composition of some sort or provision must be made to support wood nailing members on the gypsum slab, gypsum itself holding nails only in inferior fashion. When such a composite slab is used in floor construction, difficulty may be encountered in supporting the slabs so that the facings are sufficiently true to the desired level plane so that wood flooring can be directly nailed to them. However, but a minor amount of facing of the floor slab which will result from use of these composite slabs will be necessary in order that a smooth and true surface may be provided for the attachment of wood flooring. The final leveling up can be done either by use of an oxy-chloride nailable composition similar to the one already present on the face of the slabs applied in plastic form in the field and serving to fill up all hollows, or, if desired, such a material as gypsum itself can be used for this leveling up. This layer will be relatively thin and nails will readily penetrate through it engaging the oxy-chloride nail-penetrable layer and thus be held in position in satisfactory fashion.

The asphalt coating which is interposed between the oxy-chloride nail-penetrable layer and the gypsum body of the block functions particularly advantageously as a suction barrier when the leveling coat of either oxy-chloride mixture or of gypsum mix is applied to the surface of the floor. If no suction barrier were present it would be necessary to rather extensively wet the floor in order that the topping might set in proper fashion. When the asphalt suction barrier is present, however, suction effects are confined to the relatively thin oxy-chloride nail-penetrable layer and accordingly no particular preliminary preparation of the slab by prolonged wetting is necessary.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. As an article of manufacture for use in building construction, a precast slab formed of material unsuited for nailing, said slab having a bituminous coating on one face and attached to such face a layer composed of a nail-penetrable magnesium oxy-chloride cement mixture.

2. As an article of manufacture for use in building construction, a precast slab formed of material unsuited for nailing, said slab having an asphalt coating on one face and attached to such face a layer composed of a nail-penetrable magnesium oxy-chloride cement mixture.

3. As an article of manufacture for use in building construction, a precast slab formed of material unsuited for nailing, said slab having one face formed with dovetailed grooves, a coating of bituminous material on said face, and having attached to such face

a layer composed of a nail-penetrable magnesium oxy-chloride cement mixture.

4. As an article of manufacture for use in building construction, a precast slab formed of material unsuited for nailing, said slab having one face formed with slanting grooves, a coating of bituminous material on said face, and having attached to such face a layer composed of a nail-penetrable magnesium oxy-chloride cement mixture.

5. As an article of manufacture for use in building construction, a precast slab formed of a material unsuited for nailing, and having attached to one face a layer composed of a nail-penetrable magnesium oxy-chloride cement mixture, said layer leaving exposed margins of slab.

6. As an article of manufacture for use in building construction, a precast slab formed of a material unsuited for nailing, said slab having attached to one face a layer composed of a nail-penetrable magnesium oxy-chloride cement mixture leaving end recesses, and reinforcing means embedded in said slab and extending into such recesses.

7. In building construction, the combination of a plurality of slabs of a material unsuited for nailing precast with a facing layer of a nail-penetrable magnesium oxy-cement mixture and having the seams also covered with cement.

8. In building construction, the combination of a plurality of precast slabs formed of a material unsuited for nailing, a bituminous coating on said slabs, and a layer composed of a nail-penetrable magnesium oxy-chloride cement mixture attached to such slabs.

9. In building construction, the combination of a plurality of precast slabs formed of a material unsuited for nailing, and having a facing of a nail-penetrable magnesium oxy-chloride cement mixture attached, said slabs having their adjacent edges notched, and a nail-penetrable magnesium oxy-chloride cement mixture filling such notches.

10. In building construction, the combination of a plurality of precast slabs formed of a material unsuited for nailing, and having a facing of a nail-penetrable magnesium oxy-chloride cement mixture, said slabs having their adjacent edges notched, reinforcing means embedded in said slabs, said reinforcing means joined in such notches, and a nail-penetrable magnesium oxy-chloride cement mixture filling such notches.

11. As an article of manufacture for use in building construction, a slab of body material unsuited for nailing, precast with a facing of a nail-penetrable cement mixture, such nail-penetrable facing terminating short of the ends of the slab to leave recesses exposing the body material.

12. As an article of manufacture for use in building construction, a precast slab formed of a body material unsuited for nailing, and having attached to one face a layer of nail-penetrable material terminating short of the ends of the slab to leave recesses, and metal reinforcing means embedded in the slab and projecting into the recesses.

13. As an article of manufacture for use in building construction, a precast slab formed of a material unsuited for nailing, said slab having one face grooved, a coating of bituminous material thereon, a facing layer composed of nail-penetrable material terminating short of the ends to leave recesses, and metal reinforcing means embedded in the slab and extending into the recesses for connection therein.

Signed by me this 24th day of September, 1929.

MAX Y. SEATON.