C. W. YOUNG.

FLOOR CONSTRUCTION.

APPLICATION FILED APR. 21, 1913.

1,068,090.

Patented July 22, 1913.

2 SHEETS—SHEET 1.

Fig. 1

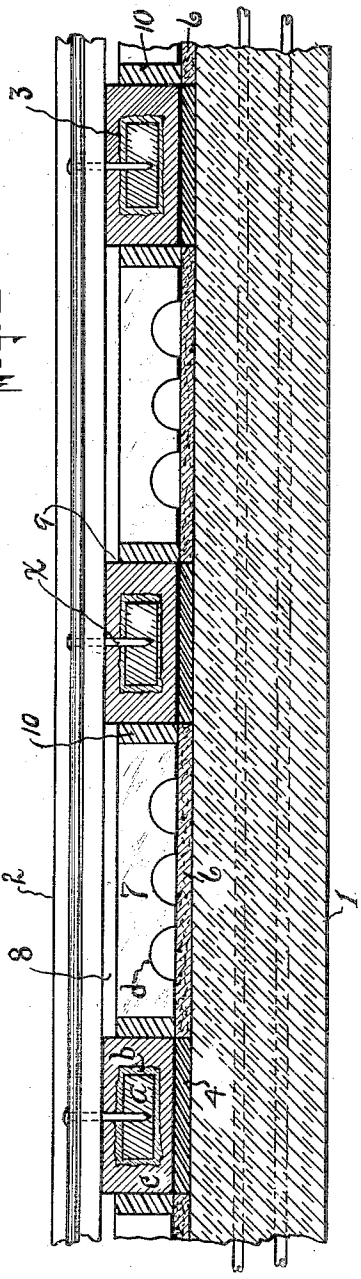


Fig. 2

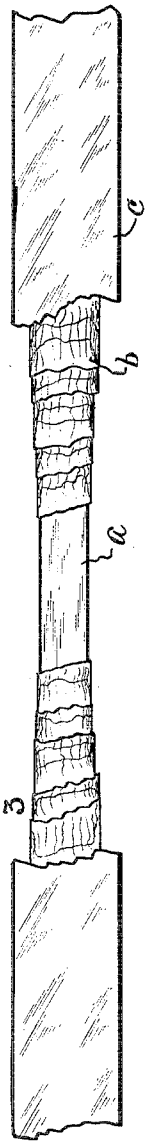


Fig. 4

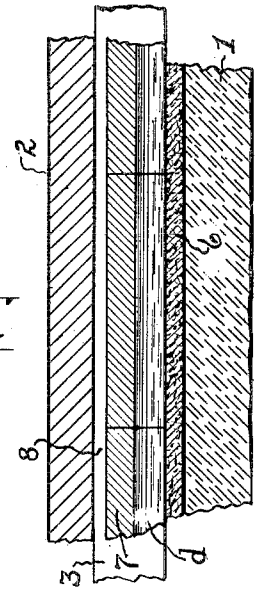
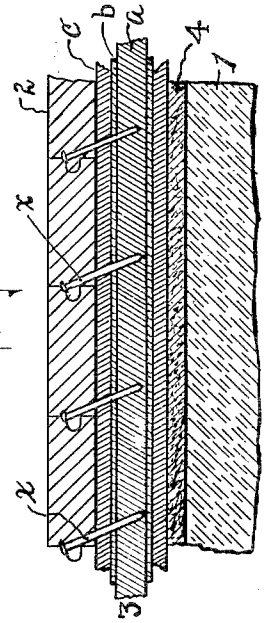


Fig. 3



Witnesses

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2 SHEETS—SHEET 2.

Fig. 5

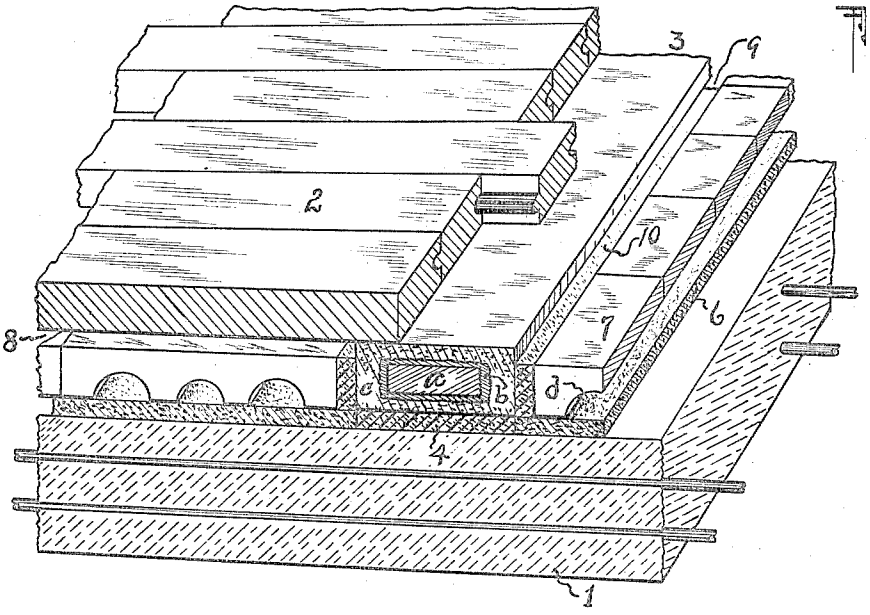
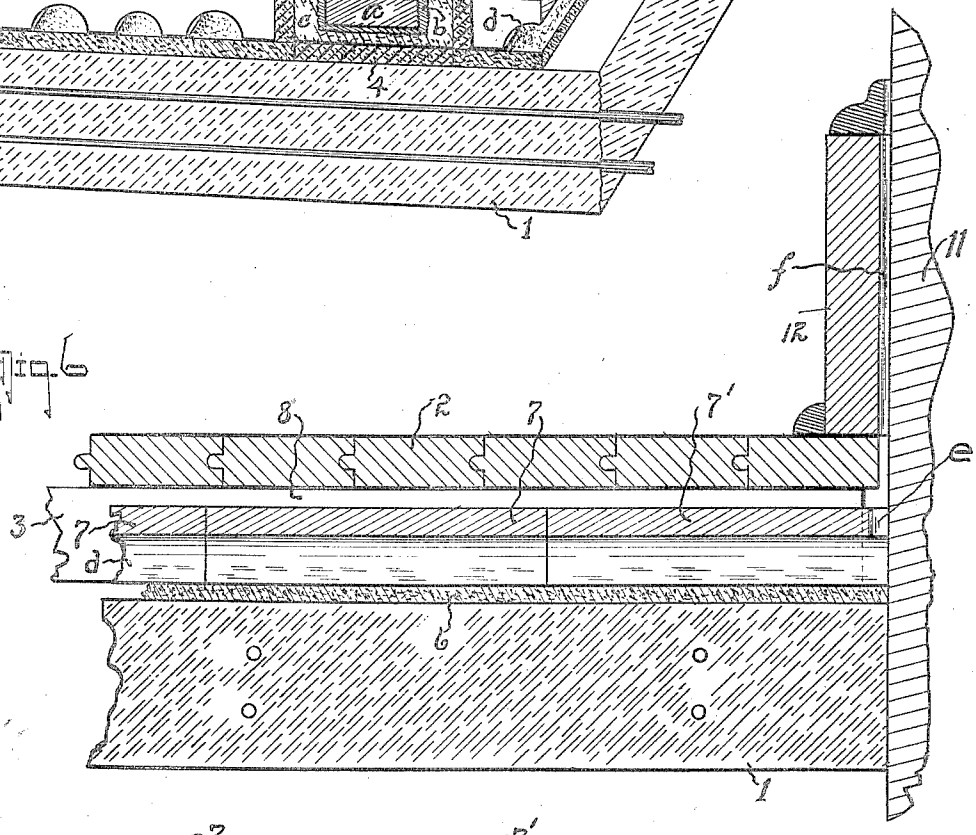


Fig. 6



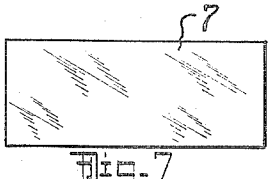


Fig. 7

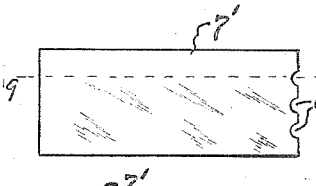


Fig. 8



Fig. 9

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UNITED STATES PATENT OFFICE.

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FLOOR CONSTRUCTION.

1,068,090. Specification of Letters Patent. Patented July 22, 1913.

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To all whom it may concern:

Be it known that I, CHARLES W. YOUNG, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Floor Construction, of which the following is a specification.

This invention relates to an improvement in floor construction providing a fire-proof layer or filler between a concrete floor-base and the wood flooring.

The invention is illustrated and described in connection with a reinforced, concrete floor base employed to prevent fire from communicating from one story of a building to another, and where wood, supported by the concrete base is used as a material for the flooring. Wood binders or floor-screeds are generally employed between the floor-boards and base for holding the nails, and to operate as spacing members, so that the floor when laid, will present a smooth or flat surface. It is desirable in the construction of floors of this class, that screeds be provided which will hold the floor nails, and will not be injured by fire, also that they be so constructed that they will not communicate fire from one part of the floor to another, and will not rot or decay from action of the acid contained in the concrete, and that they be so arranged that they will not be moved in any direction to permit vibration of the floor boards or strips. Also it is desirable that a contact be prevented of the wood floor with the concrete base, and that all parts of the base, adjacent to the floor strips or boards, be covered, to prevent decay of the wood; and to prevent decay, it is an advantage to provide an air space below the wood floor.

The invention includes a floor construction wherein a binder or screed is employed which may be conveniently molded as a finished article before being laid, of fire-proof material, will be nonfragile and adapted to "hold" the nails of the flooring, and of such construction that it will adhere to the mortar which embraces its sides and bottom, and will not cause rot or decay of the wood flooring with which it makes contact; also to the provision of grooved plates for covering the greater part of the cement or concrete base, in the channels between the screeds, and which may be conveniently molded of fire-proof material, and adapted to be disposed end-to-end with their grooves in register to provide conduits or air-passageways extending the entire width or length of the concrete base.

By use of the construction to be described, the floor may have a lighter weight than ordinary, and a considerable saving of time is effected in completing the floor since the movement of air through the grooves of the plates conveys all moisture from the base, and the parts employed are practically devoid of moisture, except the plastic mortar, of which, however, only a limited amount is used.

In the accompanying drawing, Figure 1 is a sectional view of a concrete floor base, with my improved floor-filler applied thereto, the screeds and grooved plates between the base and floor boards being in transverse section. Fig. 2 is a plan view, partly broken, showing a part of a floor screed. Figs. 3 and 4 are sectional views of the floor-filler, Fig. 3 showing the screed in longitudinal section, the floor boards and a part of the concrete base being added in each instance. Fig. 5 is a perspective view showing my improved floor filler interposed between the concrete base and the floor strips. Fig. 6 is a sectional view of parts, the grooved plates being in longitudinal section to illustrate the function of the grooves in providing conduits for ventilation, a part of a base-board and wall of a building being added. Figs. 7 and 8 are plan views of the grooved plates. Fig. 9 is a sectional view on line 9 9 of Fig. 8, showing a recess opening upon the groove of a filler-plate.

Referring now to the drawing for a more particular description, numeral 1 indicates a cement or concrete floor-base, having any desired thickness or area; and to provide a suitable filler between the base and wood floor-boards or strips 2, which will be fire-proof and will be adapted to conduct moisture from the base, and will not become injured or decayed from action of the acid contained in said base, the construction now to be described is employed.

To construct the herein described filler, a plurality of floor-screeds 3 are disposed substantially parallel upon adhesive layers 4, said layers consisting of mortar made, preferably, of one part gypsum cement plaster and one part sand, mixed with water so that the plastic mass will adhere to the concrete base and to the surface of the floor-screeds.

The floor-screeds, best shown in Fig. 2,

may have any desired length, and each consists of a wood core *a* upon which, hemp or jute *b* is loosely wound, or light wire may be used as a wrapper therefor, and a coating *c* is then applied, consisting of gypsum or gypsite heavily mixed with sisal jute, sisal hemp or other fine, flexible, heavy binder, the screeds being preferably formed in molds so that they will be substantially rectangular in cross-section and of substantially uniform width and thickness. The wood cores operate as holders for the nails *x* which are used when the floor is secured to the screeds, the adhesive element 4 operating to connect the screed with the base and to hold them in rigid relation. While the nails penetrate the coating, they will not cause fracture or breakage thereof. The screeds are disposed on the mortar beds 4 while the latter are plastic, so that their upper surfaces will be disposed in a horizontal plane to provide a suitable contact with the floor boards; and on account of the construction of the screeds as described, they operate to prevent the destructive acids contained in the base from being conveyed to the wood boards or strips of the floor. A porous layer 6 is then disposed upon the base between the screeds, this preferably being of sand and of a thickness equal to that of the mortar 4. At 7 are indicated rectangular plates, each being formed on one of its sides with substantially parallel grooves *d*. These plates may be molded, and any non-conducting or fire-proof material of light weight may be used in their construction, such as gypsum, plaster of Paris, or gypsite; also Portland cement with a limited percentage of saw dust may be used for molding these plates. The grooved plates 7 have a thickness less than that of the screeds and are disposed adjacent to and between the screeds to form air spaces or chambers 8 between the plates and floor strips 2, and to form recesses 9 at the sides of the screeds. After these parts have been arranged as described, and before the wood floor strips have been secured to the screeds by nails *x*, mortar 10 in plastic form is deposited in recesses 9, and as the parts with which it comes in contact are practically devoid of moisture, said mortar will readily become dry and hard; also, this mortar being of the same constituent parts as that of layers 4, it will adhere to the base, plates 7 and to the screeds; and plates 7 will be securely held in their positions as shown in the drawing.

As thus described, a filler is provided between the wood parts of the floor and the base, which will adequately support the floor strips and protect it from a contact with the base. It will be understood that the coatings of the screeds protect their cores from action of the acids contained in the concrete base, and that the adhesive members 4 and 10, cause the screeds to cling, respectively, to said base and to the grooved blocks 7, and these are important features, since vibration of the floor strips will be prevented, and the construction will be durable.

It will be seen that if the wood floors are injured or destroyed by fire, the screeds may remain uninjured, and will not cause fire to be communicated in chambers 8 from one part of the floor to another. The grooves *d* of plates 7 which communicate with each other when said plates are disposed end-to-end, provide conduits for the ventilation of damp air emanating from the concrete base, and by use of the herein described filler, the floors of buildings may be laid without waiting for evaporation.

In order that the air may have a free movement in the conduits formed by groove *d* for purposes of ventilation, terminal grooved plates 7′ may be employed, these being in all respects the same as those already described, except that they are provided at one of their ends with recesses *e*. As shown in Fig. 6, plates 7′ may be used adjacent to the wall 11 of a building, and the air from said conduits may move upwardly through suitable grooves *f* formed in the base-boards 12, adjacent to the wall of a building.

Having fully described my invention, what I claim and desire to secure by Letters Patent is,—

1. In combination with the concrete base and wood strips of a floor, a filler interposed therebetween consisting of a plurality of adhesive layers disposed substantially parallel upon the said base, screeds disposed on the adhesive layers for engagement with the wood floor-strips; porous layers disposed upon the base intermediate the screeds, grooved plates formed of non-conducting material disposed end-to-end with their grooves in register and forming recesses at the sides of the screeds; an adhesive element disposed in said recesses, said grooved plates having a thickness less than the thickness of the screeds to provide a chamber between the grooved plates and said wood floor strips.

2. In combination with the concrete base and wood strips of a floor, a filler interposed therebetween consisting of a plurality of adhesive layers disposed substantially parallel upon said base; a plurality of screeds, each consisting of a wood core, a flexible wrapper encircling the core, and a coating of non-conducting material encircling said wrapper; said screeds being disposed on the adhesive layers for engagement with the wood floor-strips; grooved plates formed of non-conducting material disposed end-to-end with their grooves in register and

forming recesses at the sides of the screeds; an adhesive element disposed in said recesses, said grooved plates having a thickness less than the thickness of the screeds to provide a chamber between the grooved plates and said wood floor strips.

3. An improvement in floor construction, comprising in combination, a concrete base; wood floor-boards; a plurality of floor-screeds disposed substantially parallel in engagement with the floor-boards and adhesively secured to said base, each of said screeds consisting of a longitudinal core provided with a flexible wrapper and a coating of non-conducting material encircling said wrapper; and a plurality of grooved plates disposed end-to-end between and having their edges adhesively connected with said screeds.

In testimony whereof I have affixed my signature in presence of two witnesses.

CHARLES W. YOUNG.

Witnesses:
A. EDWARD WINTER,
HIRAM A. STURGES.