No. 698,543. Patented Apr. 29, 1902.

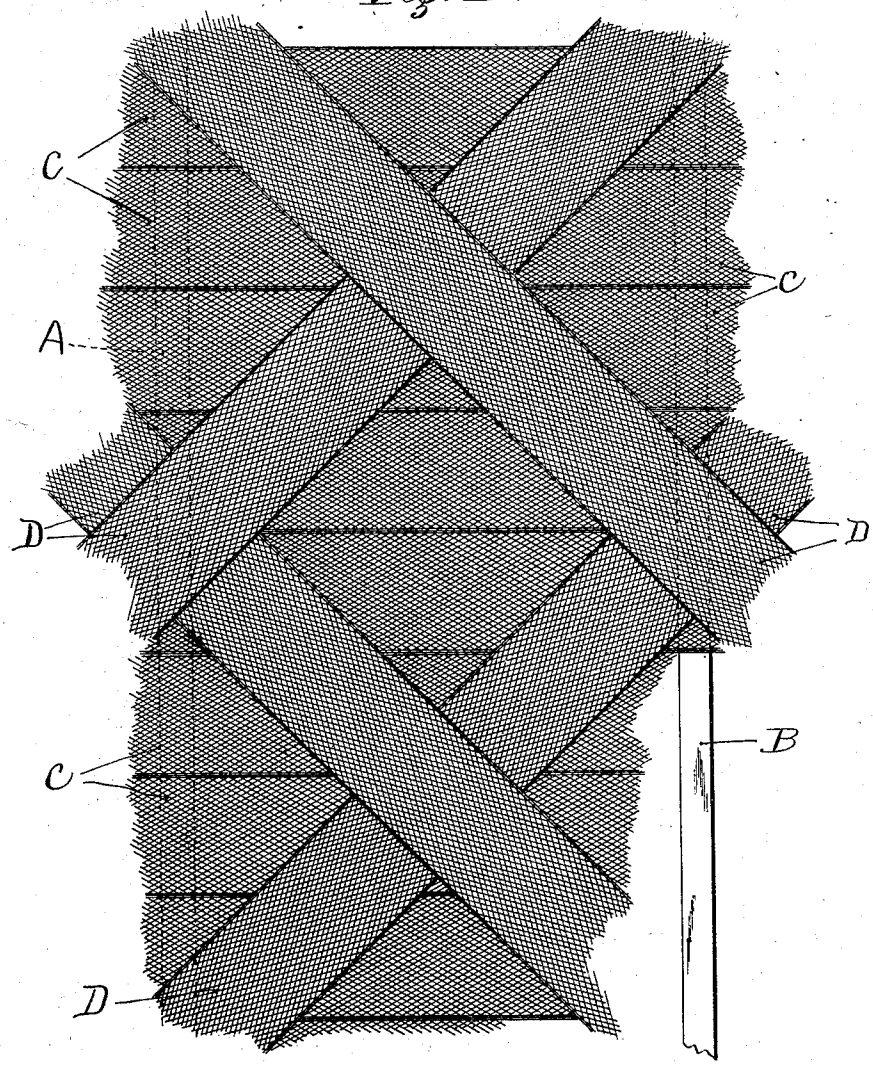
O. W. NORCROSS.

FLOORING FOR BUILDINGS.

(Application filed Dec. 23, 1901.)

(No Model.)

Fig. 1.



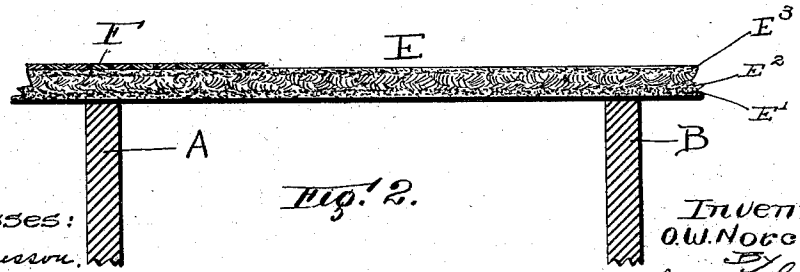


Fig. 2.

Witnesses:
C. F. Wesson.
M. E. Regan

Inventor:
O. W. Norcross.
By
Southgate & Southgate
Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ORLANDO W. NORCROSS, OF WORCESTER, MASSACHUSETTS.

FLOORING FOR BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 698,543, dated April 29, 1902.

Application filed December 23, 1901. Serial No. 86,878. (No model.)

To all whom it may concern:

Be it known that I, ORLANDO W. NORCROSS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Flooring for Buildings, of which the following is a specification.

This invention relates to a flooring for buildings which has been designed with a view of further carrying out the invention shown, described, and claimed in an application for patent for a flooring for buildings filed by me November 22, 1901, Serial No. 83,278.

The especial object of this invention is to apply the principles of construction of the flooring described in my aforesaid application for patent to a flooring which rests upon walls or longitudinal supports instead of being carried by separated posts, as illustrated in the application referred to.

To these ends this invention consists of the flooring and of the combinations of parts therein, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying drawings, Figure 1 is a plan view, partially broken away, illustrating the arrangement of metallic network in a section of flooring constructed according to my invention; and Fig. 2 is a fragmentary sectional view of a section of flooring constructed according to my present invention.

One of the most serious problems in erecting all classes of buildings is the selection of proper flooring. The defects of ordinary wooden floorings and the dangers from using the same are now almost universally recognized. The disadvantages of ordinary wooden floorings are not simply those arising from the danger of fire, but on sanitary grounds alone nothing could possibly be more opposed to the principles required in constructing a healthy dwelling than wooden floors of ordinary type, the inclosed tubes and passages of a wooden flooring offering a safe retreat in which rats, mice, cockroaches, and other vermin find perfect breeding-quarters, and in constructions where hollow bricks are employed for the ostensible purpose of admitting air for preventing dry rot from attacking the timbers, the filthy condition of the floor-spaces creates positive danger to human health and existence. For these reasons wooden floors are now approved by the best authorities for use only in the more flimsy classes of construction. On the other hand, a substitute for ordinary wooden floorings has heretofore never been devised which is sufficiently cheap, durable, and easily handled to be adapted for ordinary dwelling constructions, while even in the larger and more costly buildings many of the floor systems now employed are extremely defective. To overcome these defects, in my previous application I have shown and claimed a flooring for buildings which rests on separated posts or supports, and which consists, essentially, of a panel of concrete having metallic network incased therein, so as to radiate from the posts upon which the floor rests.

The especial object of my present invention is to provide a modified form of flooring constructed on the same principles as in my previous application for patent, but which instead of being supported upon separated columns or supports is designed to rest directly upon walls or other longitudinal supports.

To these ends a flooring constructed according to my present invention consists, essentially, of a panel of concrete arranged to rest directly upon the walls or other longitudinal supports, and having metallic network inclosed therein.

The metallic network of my flooring is formed by strips of suitable wire-netting. In practice I have used a hog wire fencing, which is a fencing of the same class as ordinary poultry wire fencing, except that it is made of considerably heavier wire.

In laying a flooring constructed according to my present invention a temporary staging is built up level with the tops of the walls or other longitudinal supports upon which the flooring is to rest. Strips of wire-netting are then laid directly across from wall to wall. These strips of wire-netting are preferably laid close enough together to cover the entire space which is to be floored, although where less strength is required spaces may be left between the strips of wire-netting. In addition to the strips of wire-netting which extend directly across from wall to wall I also preferably provide diagonal or bridging strips of wire-netting, which cross from wall to wall upon inclined or diagonal lines. The con-

crete is then spread upon or molded in place upon the staging to inclose the metallic network. The character of the concrete employed can be varied according to the supply of material which can be conveniently procured and according to the requirements to which the flooring is to be subjected. In practice I have sometimes laid the concrete in layers of different quality, the lower layer of the flooring, which incloses the metallic network, being laid with the best quality of concrete available. The center layer of the flooring may then be laid with cinder concrete or concrete employing some light material as an aggregate, and the upper surface of the flooring, if desired, may then be finished with a facing of neat Portland cement or the better grades of concrete. I have found this to be of advantage, because, although cinder concrete is not as strong as rock concrete, the lighter weight of cinder concrete more than compensates for the difference in its strength when laid as the center layer of the flooring, which center layer of the flooring being substantially at the neutral axis of the flooring is not called upon to resist as heavy strains as the top and bottom layers of the flooring.

In finishing floorings constructed according to my invention an ordinary wooden flooring may be laid directly upon the upper surface of the concrete or may rest upon and be supported by thin furrings, while the plastering may be directly applied to the under surface of the concrete or may be applied to wire lathing supported therefrom, as preferred.

In a completed flooring constructed according to my invention it will be seen that instead of resting or hanging the flooring in place upon beams or girders the flooring rests directly upon the walls or other longitudinal supports and consists of a single concrete panel having metallic network inclosed therein in proper position to support the tensile strains, the concrete itself on account of its well-known crushing strength having abundant strength for resisting all possible compressions—that is to say, if the forces acting upon a section of flooring supported between two walls be analyzed it will be found that the tendency of the floor-section to sag between the walls will cause the lower layers of the flooring to be under tension, while the upper layers of the flooring are under compression, these strains of course being greatest at the top and bottom layers, respectively, and diminishing to zero at the neutral axis near the center of the floor. In addition to this the weight of a section of flooring causes a shearing strain at its line of contact with its supporting-wall.

The principle upon which I have worked in constructing my flooring is to permit concrete alone to resist compressions and to supply a maximum amount of metal at points where the flooring is to be subjected to the greatest tensions and shearing strains.

Referring to the accompanying drawings by reference-letter for a detail description of my invention, A and B designate the walls or longitudinal supports for a section of flooring constructed according to my invention. Resting on top of the walls A and B is a flooring comprising metallic network consisting of strips of metal C, which are laid directly across from wall to wall, and diagonal or bridging strips of metallic network, which cross from wall to wall at angles with the strips C.

The concrete E may be of uniform character, if desired, although in some cases, as illustrated in Fig. 2, the bottom layer E' may be of best quality concrete, while the center layer E^2 may be formed of cinder concrete, and the top layer E^3 may be a facing of neat Portland cement or best quality concrete. Laid on top of the concrete E and, if desired, directly supported thereby is an ordinary wooden flooring F.

Considering now a completed flooring constructed according to my invention as compared with ordinary wooden floorings I have provided a fireproof construction which has no sanitary objections and which can be laid by unskilled labor, while compared with the ordinary fireproof floorings employed in the more expensive types of buildings I have provided a flooring which entirely dispenses with the use of girders, floor-beams, and, in fact, any class of rolled-iron work, while the strength of my flooring I have found by actual tests will compare favorably with any of the more common forms of terra-cotta or combination floorings.

In this application for patent I do not desire to cover a flooring consisting of concrete having metallic network inclosed therein, so as to radiate from separated posts or supports, as I have claimed such subject-matter in my application for patent, Serial No. 83,278, before referred to.

I am aware that numerous changes may be made in practicing my invention by those who are skilled in the art. In fact, in each flooring constructed according to my invention the amount of wire-netting in each instance is preferably proportioned to the requirements to which the flooring is to be subjected, the number of layers of wire-netting being varied accordingly. I do not wish, therefore, to be limited to the construction I have herein shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. The combination of walls or other longitudinal supports, and a flooring consisting of a panel of concrete having metallic network inclosed therein, said metallic network comprising strips of wire network, extending directly from wall to wall, and diagonal strips of wire-netting extending from wall to wall at angles with the first-named strips of netting.

2. The combination of walls or other longitudinal supports, and a flooring consisting of

a panel of concrete having a metallic network inclosed in its bottom layer, said metallic network comprising strips of wire-netting arranged crosswise with respect to each other.

3. The combination of walls or other longitudinal supports, and a flooring consisting of a panel of concrete having a metallic network comprising strips of wire-netting extending directly across from wall to wall, and laid side by side substantially into contact with each other, with diagonal or bridging strips of wire-netting crossing the first-named strips of wire network at angles thereto, the body portion of said concrete being of lighter material than the bottom layer thereof.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ORLANDO W. NORCROSS.

Witnesses:
JOHN R. BURGESS,
PHILIP W. SOUTHGATE.