(No Model.)

G. W. PARKER.

FLOOR OR ROOF FOR BUILDINGS.

No. 477,147. Patented June 14, 1892.

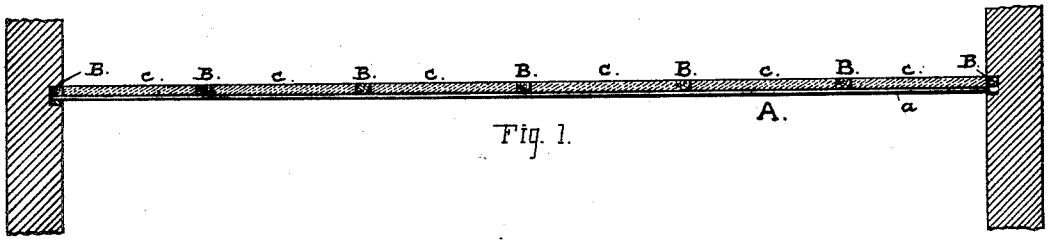

Fig. 1.

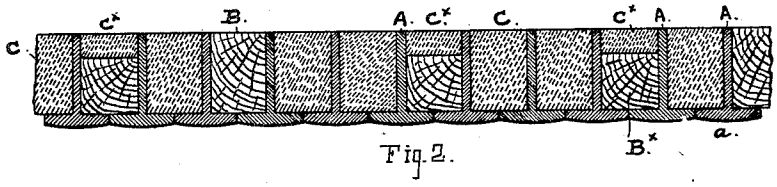

Fig. 2.

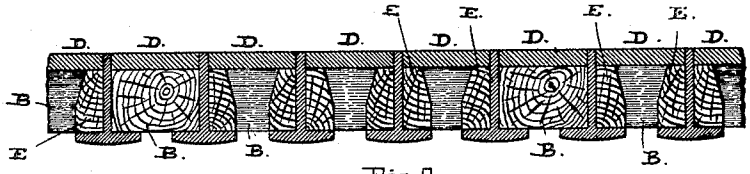

Fig. 3.

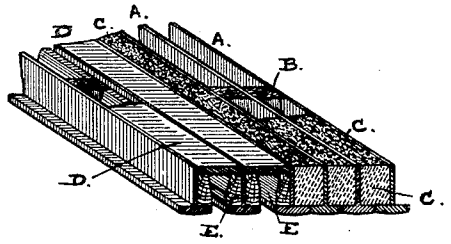

Fig. 4.

Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE W. PARKER, OF SAN FRANCISCO, CALIFORNIA.

FLOOR OR ROOF FOR BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 477,147, dated June 14, 1892.

Application filed July 10, 1891. Serial No. 399,076. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. PARKER, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in the Construction of Fire-Proof Roofs, Floors, and Ceilings, of which the following is a specification.

My invention relates to improvements in the construction of floors, ceilings, and roofs for buildings; and it has for its object to produce a water-tight and fire-proof floor or ceiling or a roof of the same character. It is also applicable to street sidewalks and coverings over vaults and cellars or subways extending under the street. In several respects it is an improvement upon the construction of street-pavements described in the Letters Patent of the United States No. 433,540, which were issued to me on the 5th day of August, 1890.

The nature of my said improvements and the manner in which I produce and apply the same to construct a floor, roof, or similar structure of the desired character will be fully understood from the following description, in which reference is had to the accompanying drawings.

Figure 1 represents a vertical longitudinal section of a floor constructed in accordance with my invention. Fig. 2 is a similar cross-section of the floor on an enlarged scale. Fig. 3 illustrates a section of floor or roof in which glass plates or slabs are substituted for the solid concrete filling. Fig. 4 represents in perspective a portion of a floor, partly in section and in course of construction, and is designed to show the relation of the several parts to one another and the manner of forming skylights or portions to transmit light.

The nature of these improvements consist in setting T-rails or beams of like form in an inverted position, so that the flanges form the ceilings or overhead surface of the apartment beneath, the rails or beams being laid with their flanges in close contact or at short intervals of space apart. Spacing-blocks placed between the rails and supported by the flanges serve to hold the rails in line and in an upright position, as well as to stiffen the structure. The floor or top surface is completed by filling in the space between the rails and the spacing-blocks with cement or other suitable composition to produce a hard, smooth, and tight surface. In place of such filling I sometimes set between the rails plates or slabs of thick glass, as where light is to be transmitted through a floor or a roof, and at such parts of the structure the rails are laid wider apart than in those parts where the solid filling is used. In some cases I use spacing-blocks of the full height of the web or upright part of the rail, so that the top face of the block comes flush with the surface, and in some cases, again, I use shorter blocks and fill them over with cement or with tiles.

A indicates the metal rails or beams with bottom flanges *a*.

B B are the spacing-blocks, and C is the filling of cement or other substance. The rails have broad bottom flanges, either flat or arched, on the bottom face. These faces may be left plain or may be ornamented in the operation of rolling the rails, if so desired. The edges of the flanges should be set quite closely together where the floor-surface is formed of cement filling; but for skylights in roofs and light-openings in flooring the distance between the rails is increased. The spacing-blocks should fit closely between the rails and rest squarely against the bottom flanges. They are made to the full height of the web or standing portion of the rail to set flush with the finished surface. These blocks furnish suitable nailing-surfaces for laying a temporary or ornamental flooring of wood over the cement and iron surface. Shorter spacing-blocks are used where the top surface is to be all cement, as represented in Fig. 2, where $C^{\times}$ is the filling laid over a short spacing-block $B^{\times}$.

In forming a section or portion of a floor or a roof to transmit light the rails are set wider apart to leave open space between the flanges, as shown in Figs. 3 and 4, and narrow supports E E, resting on the flanges, are set against the upright bar or web of the rails to form ledges for the glass slabs. These pieces E can be made of wood. Their height is governed by the thickness of the slabs which they are to bear, as they should hold the top surface flush with the rails. The joints between the rails and the slabs and supports are cemented or otherwise made water-tight

where the structure is required to turn water. All the blocks used in this structure can be made of hard wood without materially affecting or reducing the fire-proof qualities of the structure produced, as the blocks are too small and are too greatly isolated to burn even under condition of exposure to great heat. Floors of buildings constructed in this manner will be fire-proof and thoroughly water-tight, while at the same time they will be found to possess advantages over most of the constructions heretofore employed to obtain fire-proof qualities. There is also considerably less weight and less cost of material, especially in large spans, as light rails are substituted for heavy beams, and the form of the rails and the manner of spacing and holding them contribute to the strength of the structure. It will be obvious that a pitch roof or a curved roof can be formed in the same manner as an ordinary flat roof by suitably joining the ends of the rails along the ridge the same as in framing a wooden roof, or by bending the rails for a curved or arched roof. The bottom flanges furnish all the supporting-surface necessary for the filling between the rails and form the ceiling of the apartment beneath, and with proper support at the end of the rails a flooring of this character can be carried over a span of considerable width.

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

1. A roof, floor, or similar structure for buildings, consisting of the rails having bottom flanges laid in close relation and in spaced rows, the spacing-blocks, and a filling, of cement or composition, laid between the rails and between or over the spacing-blocks, substantially as hereinbefore described.

2. In a roof, floor, or similar structure, the combination of the rails having bottom flanges and laid in spaced rows and close order, the spacing-blocks, and a filling, of cement or composition, adapted to form a hard water-tight surface, laid in between the rails and between the spacing-blocks, as described, the flanges of the rails forming supports for the spacing-blocks and constituting the ceiling of the apartment beneath, as hereinbefore set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

GEORGE W. PARKER. [L. S.]

Witnesses:

EDWARD E. OSBORN,

J. C. SPENCER.