(No Model.) 2 Sheets—Sheet 1.

A. CASSARD & A. DAMMAN.

WATER PROOF FLOORING.

No. 305,288. Patented Sept. 16, 1884.

Fig. 1.

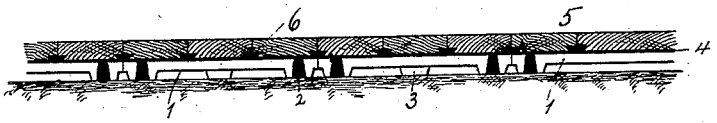


Fig. 2.

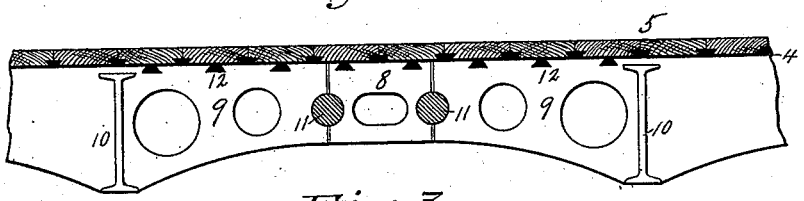
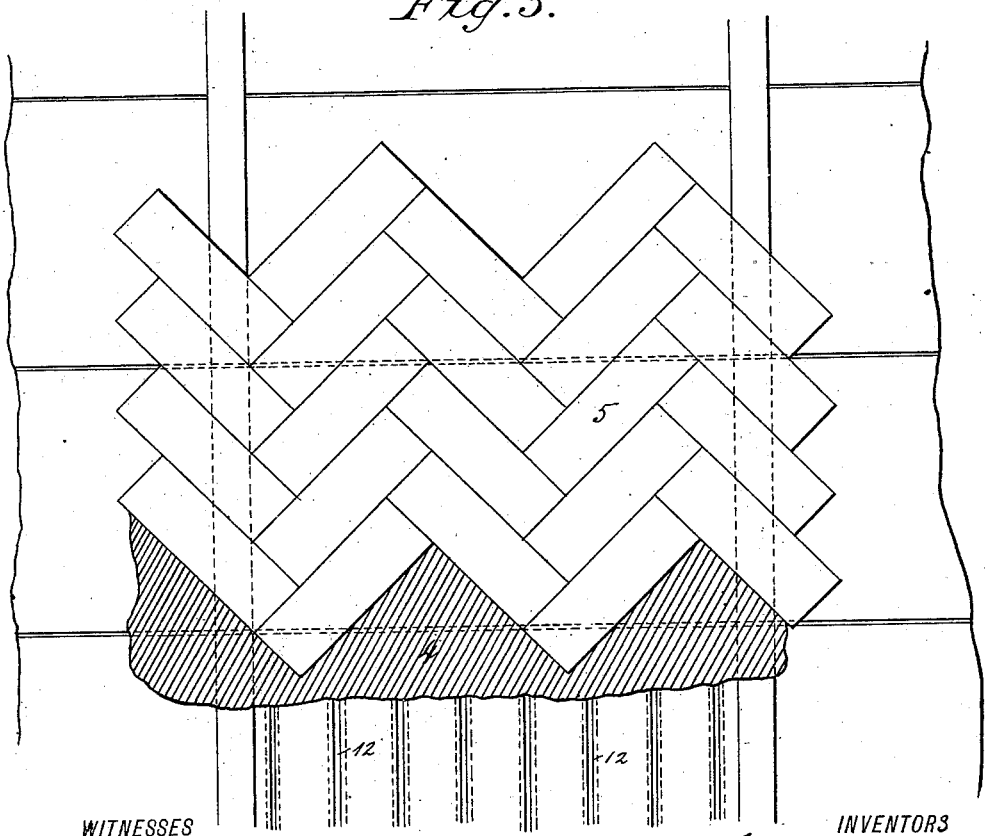


Fig. 3.



WITNESSES

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Fig. 4.

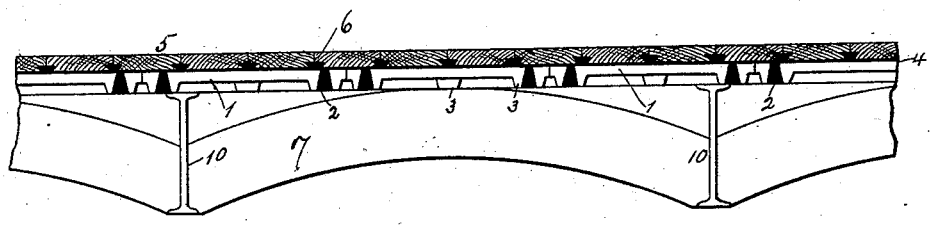


Fig. 5.

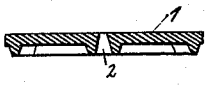
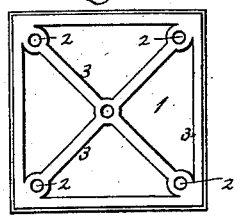


Fig 6.



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UNITED STATES PATENT OFFICE.

ANDRÉ CASSARD AND ACHILLE DAMMAN, OF BRUSSELS, BELGIUM.

WATER-PROOF FLOORING.

SPECIFICATION forming part of Letters Patent No. 305,288, dated September 16, 1884.

Application filed March 3, 1884. (No model.) Patented in Belgium April 15, 1881, No. 54,270; in England June 22, 1881, No. 2,686; in Austria August 14, 1881, No. 20,613; in France August 27, 1881, No. 143,339, and in Germany December 15, 1883, No. 1,649.

To all whom it may concern:

Be it known that we, ANDRÉ CASSARD and ACHILLE DAMMAN, subjects of the King of Belgium, residing at Brussels, Belgium, have invented certain new and useful Improvements in Water-Proof Flooring or Paving, of which the following is a specification.

The object of our invention is to provide a water-proof flooring or paving of an absolutely compact character without the possibility of disjunction of the different constituent parts.

We are aware that water-proof flooring or paving has been made in which the wood forming the surface layer has been separated from the cement or other foundation by a water-proof material; but we do not know that such floors or pavements have been constructed with a continuous layer of such cement, so that the several parts going to make up the structure are rendered practically inseparable.

We are also aware that paving-tiles have been formed with a base consisting of a block of wood grooved on its upper surface, a top or surface of stone, and an intermediate layer of cement for holding them together; but this is not the equivalent of our invention, as a water-proof floor cannot be constructed of such tiles.

In order that our invention may be fully understood, we will proceed to describe it with reference to the accompanying drawings, in which—

Figure I is a vertical sectional view of a floor embodying our invention. Fig. II is a similar view showing it applied to arched structures. Fig. III is a plan view of the floor. Fig. IV is a sectional view showing the floor supported on an arched basis, and Fig. V shows in vertical section and plan one of the foundation-tiles. Fig. VI is a bottom view of tile shown in Fig. V.

As shown in the drawings, the flooring, when placed upon the ground, is always arranged in the same manner; but when supported on an arched or vaulted basis it may be arranged in one of two manners—*i. e.*, the material of the vault may form part of the floor structure; or the floor may be complete in itself and merely laid over the vaulted foundation. In either case the floor consists of three distinct layers. The bottom layer consists of ceramic tiles 1, which may rest upon the ground, as shown in Fig. I, or upon an arched or vaulted basis, as shown in Fig. IV, or the very tiles themselves may be used to form the arch, the upper layers of the flooring being attached directly thereto, as shown in Fig. II. The tiles 1 are made rectangular, either square or oblong. The upper surface of the tiles is made flat, and each tile is pierced with a number of holes, 2, preferably one at each corner and one in the center. The holes are made to flare downwardly, and to give the holes greater depth, and at the same time to strengthen the tiles, ribs 3 are formed on the latter and the holes so located as to pass therethrough.

To construct the floor the tiles are laid side by side on a flat and very even surface, either of cement or mortar, care being taken to maintain the holes in the tiles perfectly free and open. Having thus formed a foundation the surface of which is as even as possible, a layer of bitumen is poured over the whole. The bitumen (shown in the drawings at 4) should be boiling, or at least heated to a sufficient degree to enable its penetrating every hole and fissure of the tiling underneath, and while the bitumen is yet liquid pieces of wood, 5, prepared beforehand for the purpose, are sunk into it. The wooden surface thus formed constitutes the upper or third layer of the flooring. Each block 5 is provided underneath with one or more dovetail grooves, 6, into which the bitumen enters in the same manner as into the holes in the tiles, and a perfectly compact flooring is thus formed.

Figs. II and IV show flooring laid after this improvement on vaults or arches. In Fig. IV the extrados 7, of brick-work or other material, is filled up so as to present an even surface, and upon the platform thus formed is laid the flooring in the same manner as when on a ground foundation. Fig. II, however, shows a more advantageous and simple method. According to this method, instead of vaults or arches of brick-work, we build vaults (either massive or hollow) of blocks 8 9, of cement, terra-cotta, or other substance. They are usually made with three pieces to the arch, as shown in Fig. II; but they may be made in two or even in one piece. The parts 9, placed against the beams 10, are all of one dimension

and of the width of the beams, the vaults being made of different breadth between the beams by the employment of keystones or intermediate blocks, S, of different sizes. The different blocks of the arch are joined in any suitable manner, perhaps the simplest being to provide them with corresponding semicircular grooves which are filled with cement, 11, after the blocks are placed in position.

The concave intrados of the vaults may be ornamented in any manner. The top is perfectly flat, and has dovetail grooves 12, to receive the layer of melted bitumen. The remaining layer of the flooring is then applied in the manner we have already described. This vaulted flooring is, it will be seen, the same as that first described, the foundation-blocks being merely made to form an arch or vault.

Having thus described our invention, the following is what we claim as new therein and desire to secure by Letters Patent:

1. A composite flooring made up of, first, a layer or foundation of tiles or blocks, grooved or pierced as shown; second, a continuous layer of waterproofing material, and, third, a layer of wood or other finishing material.

2. A vaulted flooring or pavement constructed of continuous blocks or tiles grooved on their upper surface, a continuous layer of waterproofing material over the same, and a finishing of wood or other surface, substantially as shown and described.

3. A composite floor formed of top and bottom layers of blocks or tiles, grooved or pierced substantially as shown, in combination with a continuous intermediate layer of cement entering said grooves, whereby the component parts are rendered inseparable, as explained.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

ANDRÉ CASSARD.
ACHILLE DAMMAN.

Witnesses:
ADOLF STEIN,
EMILE PICARD.