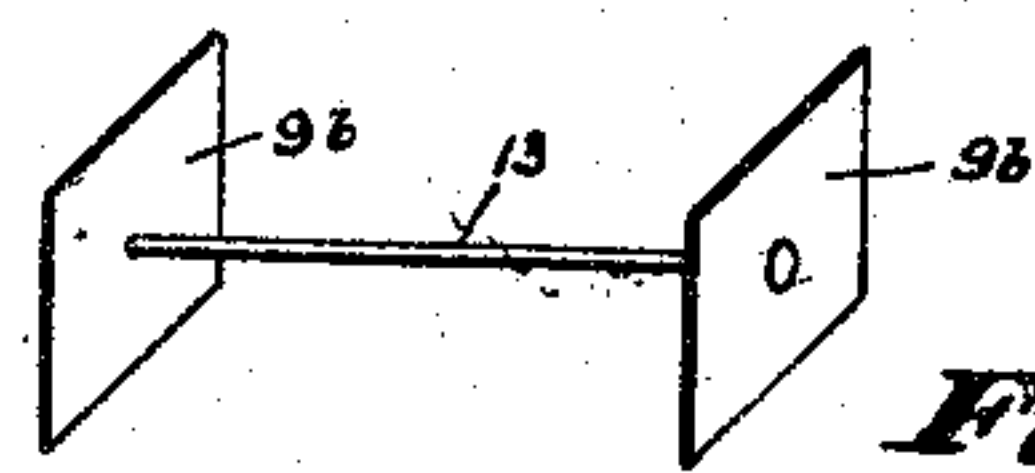
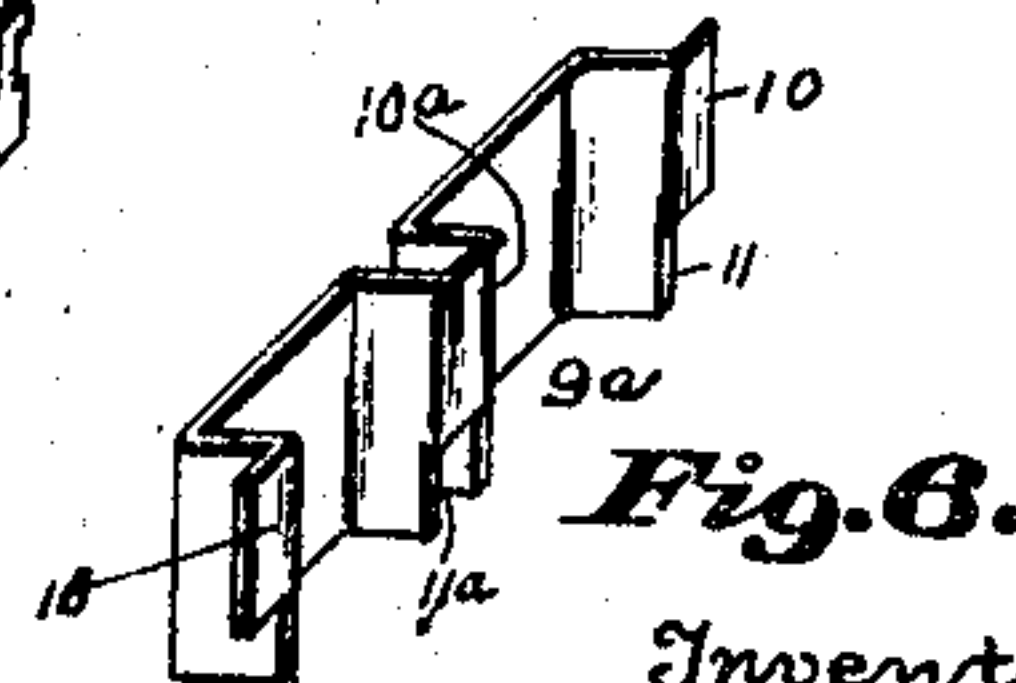
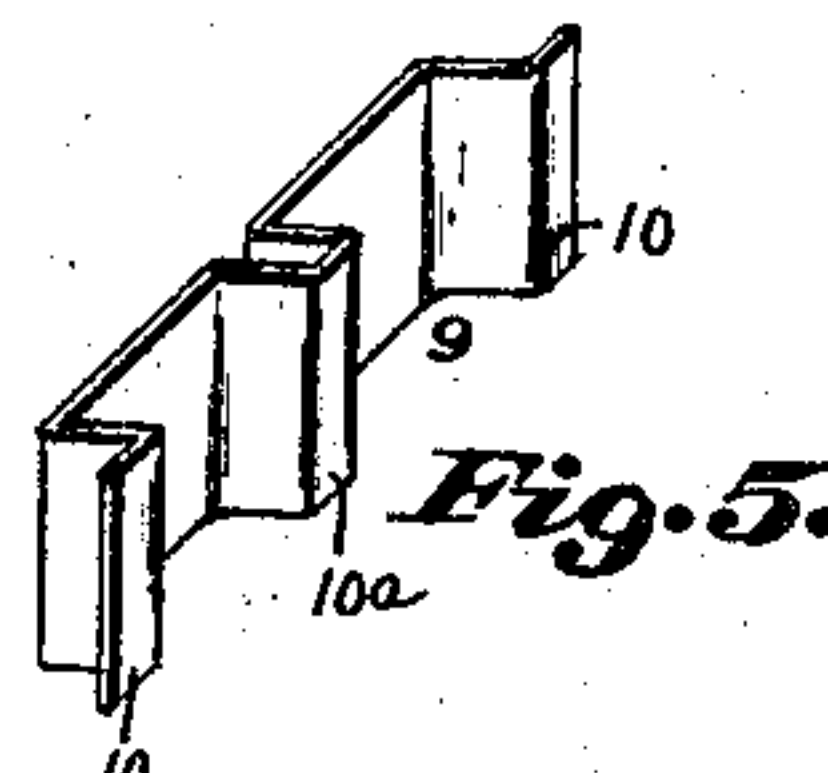
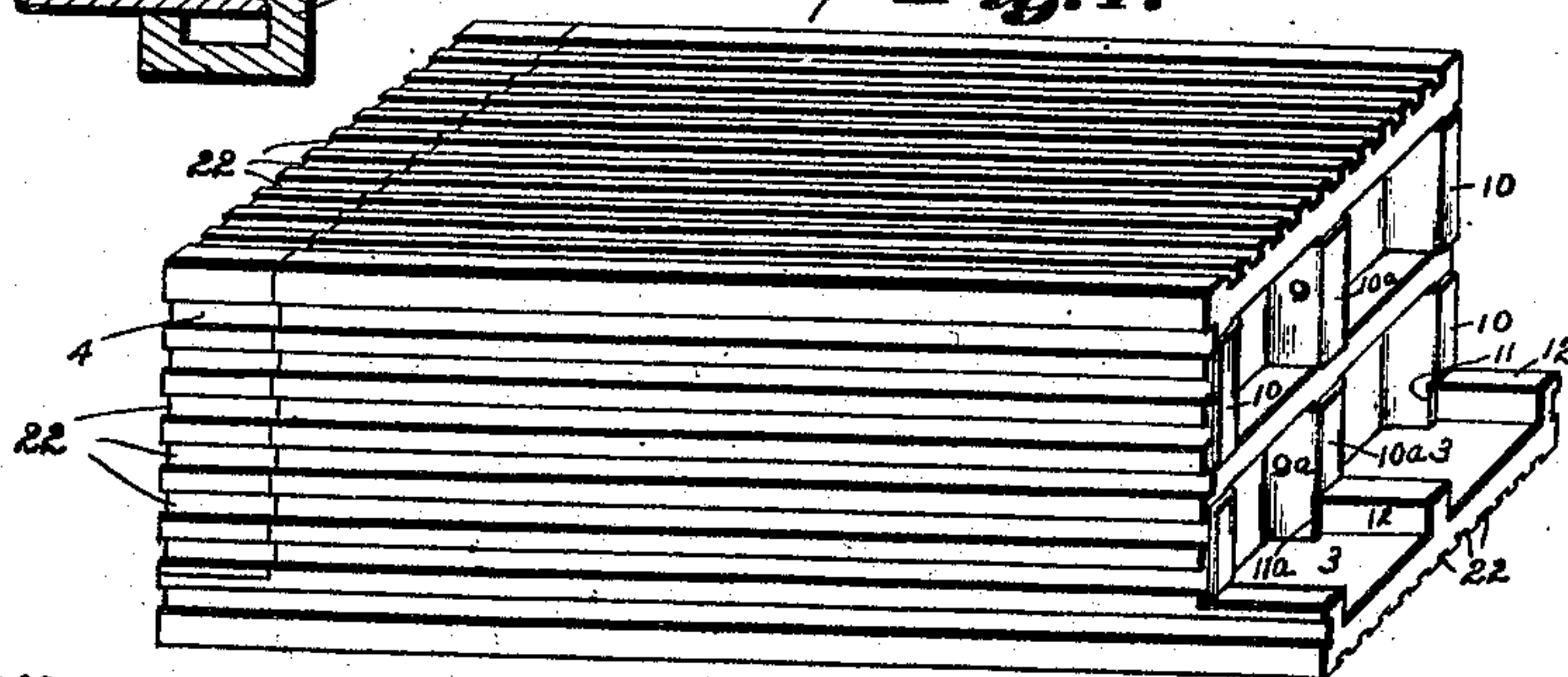
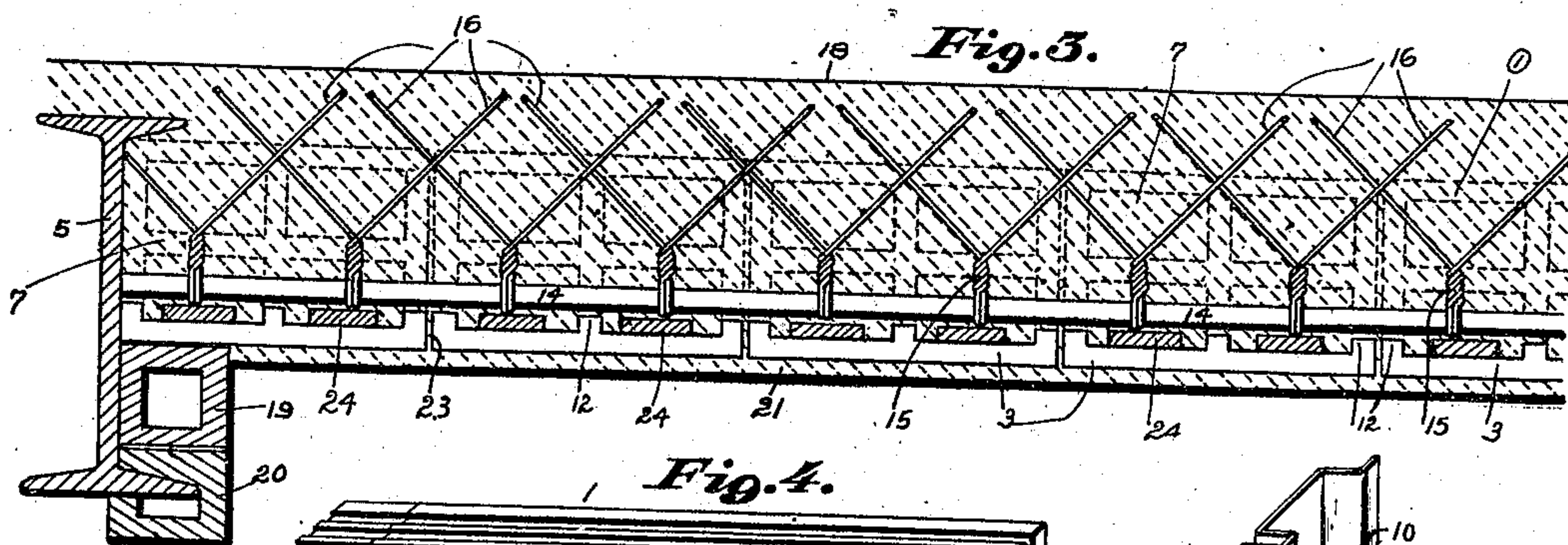
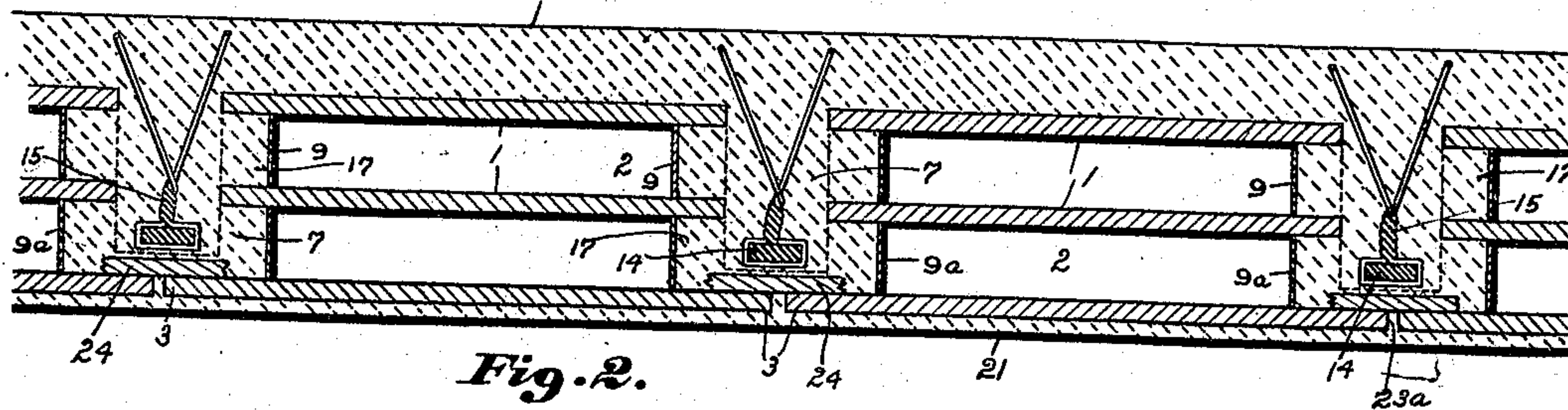
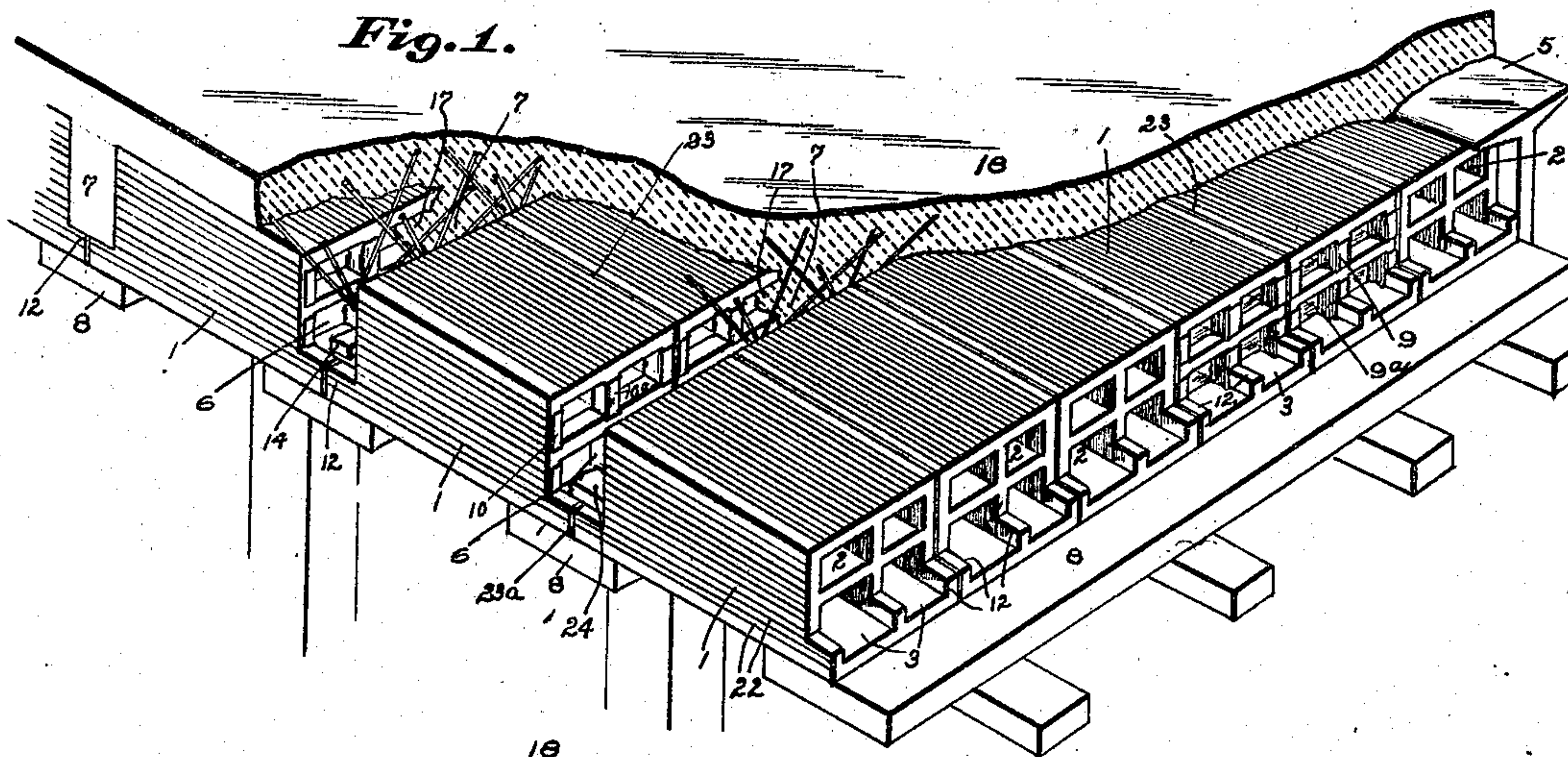


J. J. WHITACRE.
FLOOR CONSTRUCTION.
APPLICATION FILED FEB. 20, 1908.

899,776.

Patented Sept. 29, 1908.



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FLOOR CONSTRUCTION.

No. 899,776.

Specification of Letters Patent.

Patented Sept. 29, 1908.

Application filed February 20, 1908. Serial No. 416,839.

To all whom it may concern:

Be it known that I, JOHN J. WHITACRE, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Floor Construction, of which the following is a specification.

The invention relates to the construction of fireproof floors out of terra cotta blocks and reinforced concrete.

The general object of the improvement is to construct a floor with a series of rows of terra cotta blocks located side by side and parallel with the main floor girders, and a series of transverse reinforced concrete beams extending from one girder to another and formed between the adjacent ends of the blocks, the beams being formed with projections extending into the ends of the longitudinal cavities of the blocks.

A further object of the improvement is to extend the lower walls of the blocks beyond the ends of the upper walls, so that when these extended ends are butted together, the lower side of the concrete beam will be entirely incased.

Further features of the invention relate to the use of terra cotta plates for the purpose of bridging the joints between the extended ends of the lower walls of the blocks, for the purpose of strengthening these joints and furnishing additional protection to the under side of the concrete beam; and to the use of transverse partitions in the longitudinal cavities of the blocks adjacent to the ends thereof to act as abutments against which the ends of the projecting lugs of the concrete beams are adapted to be formed.

These various objects and other accompanying advantages are attained by the construction and arrangement illustrated in the annexed drawings, in which—

Figure 1 is a fragmentary perspective view showing the general form of the improved construction; Fig. 2, a detail section of the same parallel with the floor girders and across the concrete beams; Fig. 3, a detail section of the same in the middle line of one concrete beam; Fig. 4, a parallel perspective view of one of the terra cotta blocks employed in the improved construction; Fig. 5, a detached perspective view of a preferred form of the closure for the upper cavities; Fig. 6, a similar view of a preferred form of the closure for

the lower cavities; and Fig. 7, a detached perspective view of an alternate form of closure for the cavities.

Similar numerals refer to similar parts throughout the drawings.

The blocks 1 are provided with one or more longitudinal cavities 2, and have the end portions 3 of the lower walls extended beyond the ends of the upper walls. This extension of the lower wall may be made by molding the blocks in this form; but the blocks are preferably originally made with square ends, and while green the sections 4 of the upper portions of each end are partially severed from the body of the block, which severed sections are readily knocked off the ends of the blocks by the blow of a hammer, after the blocks have been burned and shipped to the place of use.

A series of rows of blocks —1—, located side by side and parallel with the floor girders 5, are laid on suitable scaffolding, and each row extends from one girder to another. The extending ends of the lower wall of the blocks in each row are butted endwise against the similarly extending lower walls of the blocks of adjoining rows, thus forming the channels 6 between the cut off ends of the upper walls of the respective blocks, in which channels the concrete beams 7 are adapted to be formed. It is evident that in this form of construction the deck of the scaffolding need only be made with the separated planks 8 located under the ends of the blocks of the several rows, as shown in Fig. 1, instead of with a continuous deck of planks as is required in other forms of construction. The transverse partitions 9 and 9^a are then placed in the longitudinal cavities of the blocks. These partitions are located within the cavities a short distance from the ends of the blocks and at an interval within the ends of the upper and the vertical walls thereof, and they may be made of strips of sheet metal cut in width equal to the vertical opening of the cavities and bent as at 10 and 10^a around the ends of the vertical walls of the blocks. The notches 11 and 11^a are provided in the lower edges of the partitions 9^a to fit over the portions 12 of the vertical walls of the blocks which are preferably left as ribs to strengthen the extended portions of the lower walls thereof. Another form of partitions may be used, as shown in Fig. 7, which

consists of two plates 9^b of sheet metal or other suitable material, connected together by one or more rods as 13, the plates being made the same size and shape as the longitudinal cavities. The metallic reinforcements for the concrete beams are then placed in the channels 6 formed between the ends of the blocks, and as shown these reinforcements are composed of the main members 14, located longitudinally and preferably near the lower parts of the beam channels, and the subordinate members 15 connected at intervals on the main members. The subordinate members are each composed of a number of wires, preferably four, which are wrapped around the main member from below upward and brought together in the middle of the upper side, whence they are twisted upward a short distance, whence the respective wires 16 are separated and individually inclined upward in various directions as may be desired. A preferred manner of disposing the free ends of the wire is to incline them in slightly diverging directions toward the ends of the beam, and to locate the several subordinate members so that the two diverging wire ends of one member will overlap the diverging wire ends of the adjacent member, by means of which the beam is thoroughly bound together in various directions throughout its body.

The transverse partitions and metallic reinforcements having been placed in position, the concrete beams are formed in the channels between the ends of the blocks, and in so doing the concrete is run into the ends of the longitudinal cavities 2 and tamped against the transverse partitions 9 and 9^a therein, thus forming the separate projecting lugs 17 in the respective ends of the cavities which lugs constitute substantial and positive supports for the blocks. The floor surface 18 is made of a layer of concrete in conjunction with the beams and consequently forms a monolith therewith, and it will be understood that the floor is suitably sustained either directly on the girder flanges or, as shown, on supplemental terra cotta blocks, as 19 and 20, resting on the girder flanges; and that after the concrete beams and floor surface have been set and hardened, the scaffolding is entirely removed, whereupon the ceiling surface is preferably finished, as with the layer of plaster 21. The outer surfaces of the respective blocks are preferably provided with the longitudinal grooves 22 to increase the adhering surface of the cement which is laid in the joints 23 and 23^a and of the concrete and the plaster.

It is evident that the concrete beams will span the distance between the floor girders and constitute a positive support for each individual block in the floor, and the metallic reinforcements, having the longitudinal main member in the lower part and the subordi-

nate members reaching in various directions upward through the beams and into the concrete layer of the floor surface, will rigidly stiffen and sustain the beams. By this construction, the abutting extending portions of the lower walls of the blocks completely cover and protect the lower sides of the concrete beams so that they cannot be chipped off by the action of fire to expose the metallic reinforcement therein. As a further means of protecting the lower side of the reinforced beam, the cut off portions of the ends of the blocks can be broken into pieces to form the plates 24, which are laid on the extended lower walls of the blocks and span the joint 23^a between the same.

It will be understood that the use of the transverse partitions in the longitudinal cavities is not essential to the other features of the improvement although the same are very desirable in connection with the use of a thin concrete, and also to form an abutment against which the projecting lugs can be tamped in the formation of the beam. The general idea of floor construction including a series of rows of blocks having longitudinal cavities therein, the blocks of each row being located side by side with channels between the ends of blocks of respective rows, and concrete beams in the channels and having lugs projecting into the ends of the block cavities, and a monolithic concrete layer on the blocks, and metallic reinforcements binding the beams and layer together which is illustrated and described, but not claimed herein, is made the subject-matter of another application for Letters Patent, filed December 23, 1907, Serial No. 407,733: of which former application this application is a substitute in so far as its subject-matter is disclosed therein. And the particular form of the metallic reinforcement for the concrete beams, which is illustrated and described, but not claimed, in said former application and also herein, is made the subject-matter of a divisional application for Letters Patent, filed February 21, 1908, Serial No. 416,958.

What I claim herein as my invention and desire to secure by Letters Patent, is—

1. A floor structure including a series of rows of blocks with longitudinal cavities therein and having the ends of the lower walls extending longitudinally beyond the ends of the upper portions of the blocks, the blocks of each row being located side by side and the extended ends of the lower walls of the blocks of adjacent rows being butted together to form a channel between the ends of the upper portions thereof, and concrete beams in the channels and having lugs projecting into the ends of the block cavities.

2. A floor structure including a series of rows of blocks with longitudinal cavities therein and having the ends of the lower walls extending longitudinally beyond the

ends of the upper portions of the blocks, the blocks of each row being located side by side and the extended ends of the lower walls of the blocks of adjacent rows being butted together to form a channel between the ends of the upper portions thereof, concrete beams in the channels and having lugs projecting into the ends of the block cavities, and metallic reinforcements in the beams.

3. A floor structure including a series of rows of blocks with longitudinal cavities therein and having the ends of the lower walls extending longitudinally beyond the ends of the upper portions of the blocks, the blocks of each row being located side by side and the extended ends of the lower walls of the blocks of adjacent rows being butted together to form a channel between the ends of the upper portions thereof, terra cotta plates spanning the joints between the ends of the lower walls, and concrete beams in the channels and having lugs projecting into the ends of the block cavities.

4. A floor structure including a series of rows of blocks with longitudinal cavities therein and having the ends of the lower walls extending longitudinally beyond the ends of the upper portions of the blocks, the blocks of each row being located side by side and the extended ends of the lower walls of the blocks of adjacent rows being butted together to form a channel between the ends of the upper portions thereof, terra cotta plates spanning the joints between the ends of the lower walls, and concrete beams in the channels and having lugs projecting into the ends of the block cavities, and metallic reinforcements in the beams.

5. A floor structure including a series of rows of blocks with longitudinal cavities therein and having the ends of the lower walls extending longitudinally beyond the ends of the upper portions of the blocks, the blocks of each row being located side by side and the extended ends of the lower walls of the blocks of adjacent rows being butted together to form a channel between the ends of the upper portions thereof, transverse partitions in the longitudinal cavities at an interval within the ends of the upper and the vertical walls thereof, and concrete beams in the channels and having separate projecting lugs formed

thereon in the ends of each block cavity and abutting the partitions.

6. A floor structure including a series of rows of blocks with longitudinal cavities therein and having the ends of the lower walls extending longitudinally beyond the ends of the upper portions of the blocks, the blocks of each row being located side by side and the extended ends of the lower walls of the blocks of adjacent rows being butted together to form a channel between the ends of the upper portions thereof, transverse partitions in the longitudinal cavities at an interval within the ends of the upper and the vertical walls thereof, concrete beams in the channels and having separate projecting lugs formed thereon in the ends of each block cavity and abutting the partitions, and metallic reinforcements in the beams.

7. The combination of a block having a longitudinal cavity therein, and a sheet metal partition adapted to be entered in the longitudinal cavity and having portions bent outwardly along the walls of the block and thence transversely across the ends thereof.

8. A floor structure including a series of rows of blocks having longitudinal cavities therein, the blocks of each row being located side by side with intervals between the ends of the blocks of adjacent rows, transverse partitions in the longitudinal cavities at an interval within the ends of the upper and the vertical walls thereof, and concrete beams in the intervals and having separate projecting lugs formed thereon in the ends of each block cavity and abutting the partitions.

9. A floor structure including a series of rows of blocks having longitudinal cavities therein, the blocks of each row being located side by side with intervals between the ends of the blocks of adjacent rows, transverse partitions in the longitudinal cavities at an interval within the ends of the upper and the vertical walls thereof, concrete beams in the intervals and having separate projecting lugs formed thereon in the ends of each block cavity and abutting the partitions, and metallic reinforcements in the beams.

JOHN J. WHITACRE.

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