

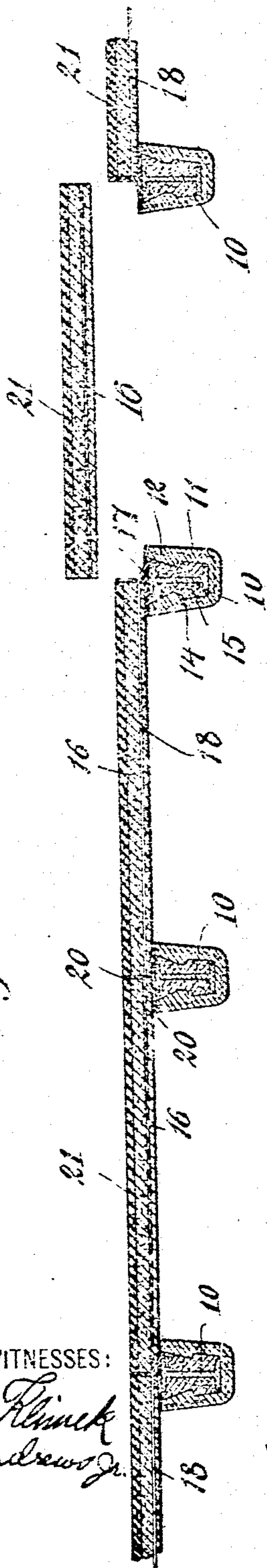
C. F. FRANSON.
CEILING AND FLOOR CONSTRUCTION.
APPLICATION FILED JAN. 3, 1908.

Patented Jan. 25, 1910.

2 SHEETS—SHEET 1.

947,590.

Fig. 1.



WITNESSES:
G. Q. Klineck
L. S. Andrews Jr.

Fig. 5.

Fig. 6.

Fig. 7.

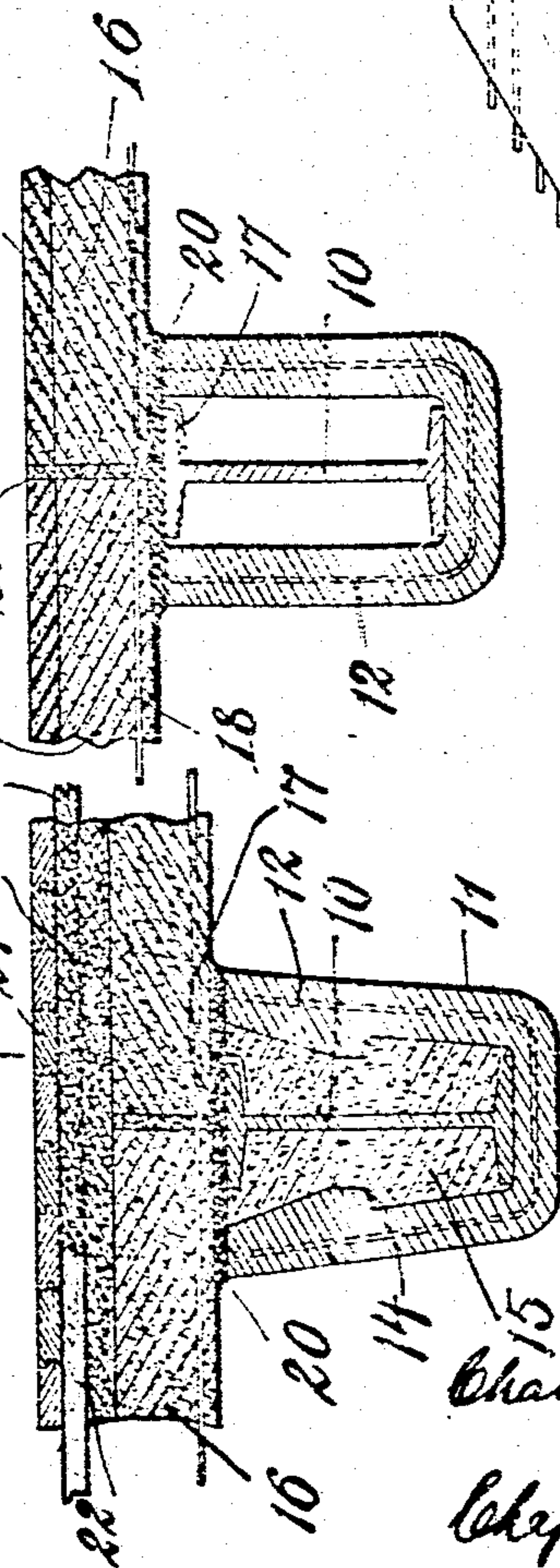
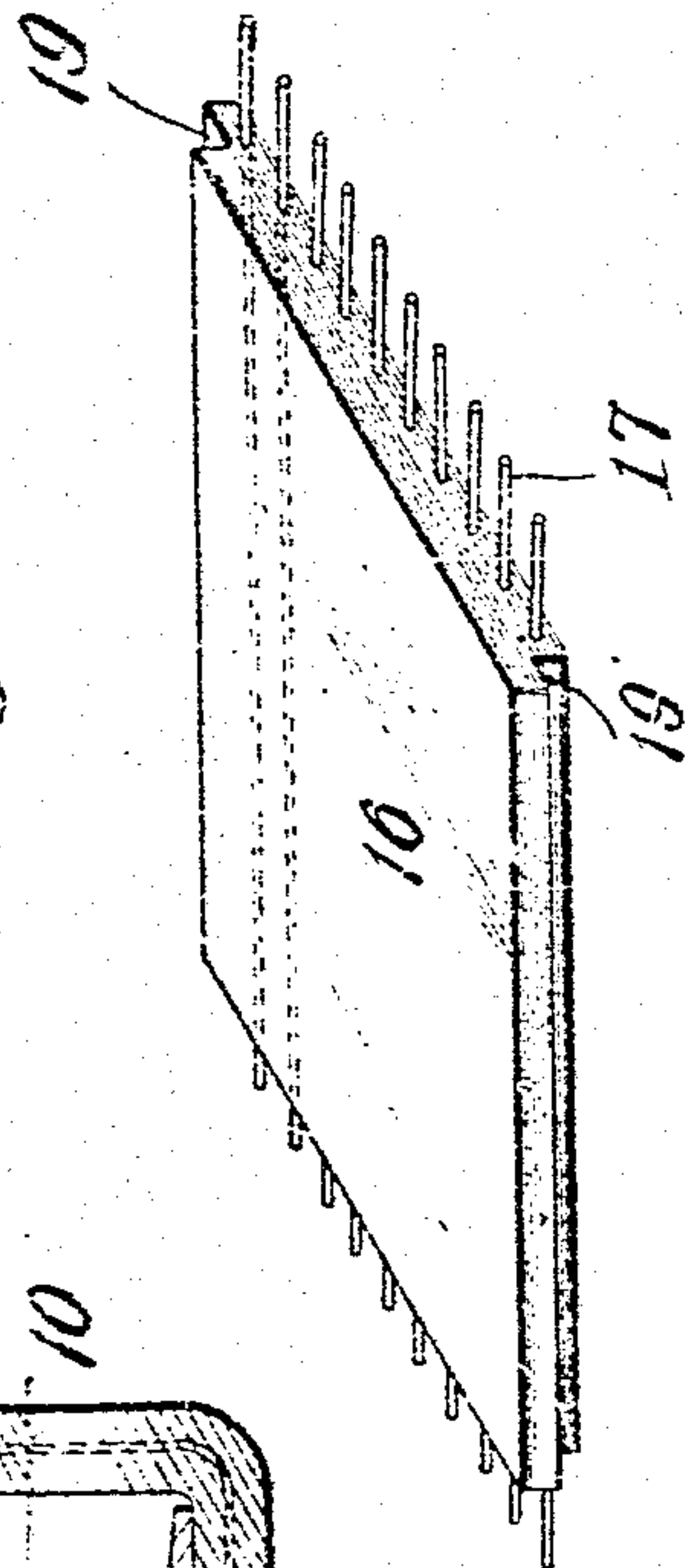


Fig. 4.



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2 SHEETS—SHEET 2.

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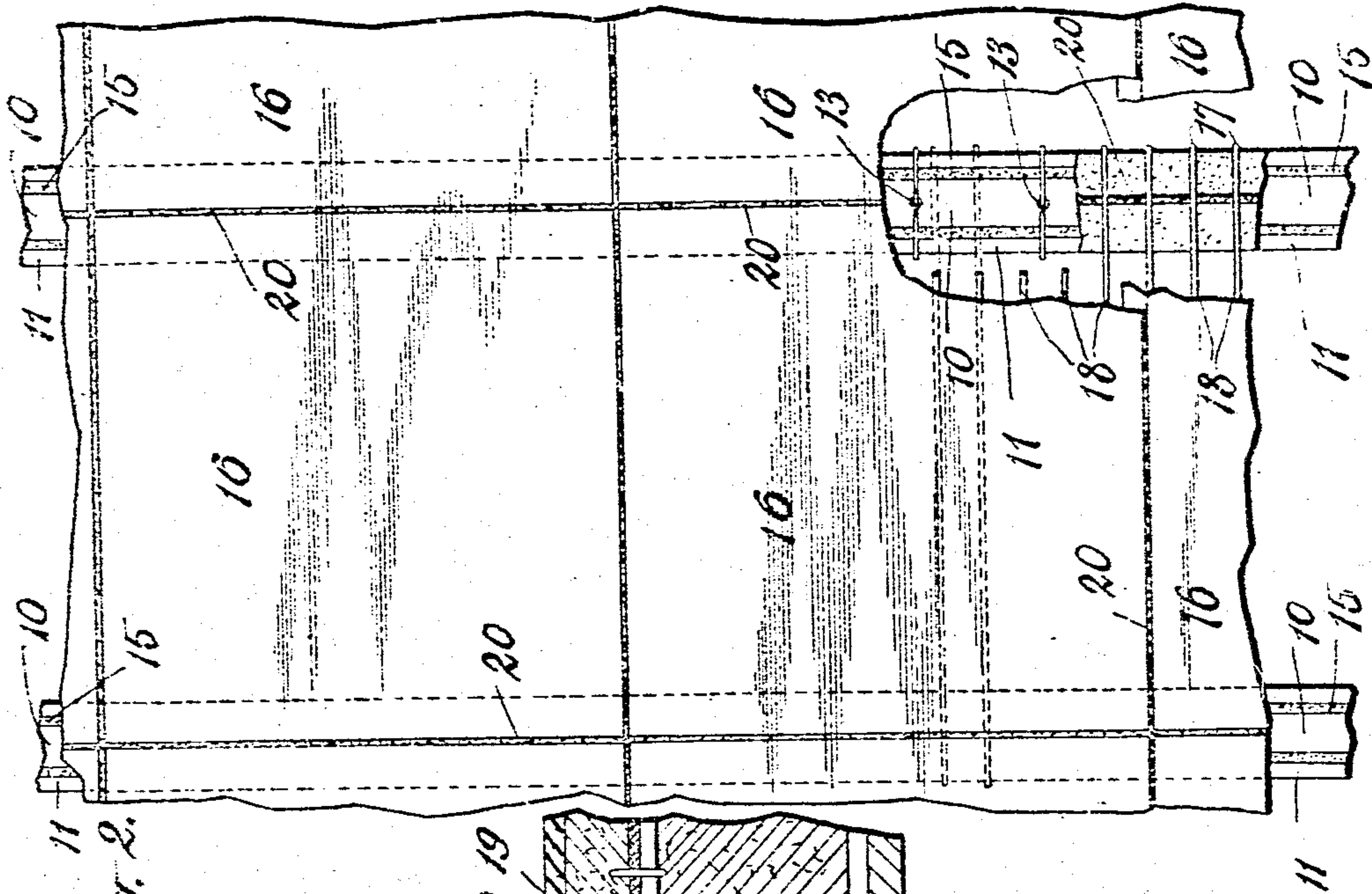


Fig. 2.

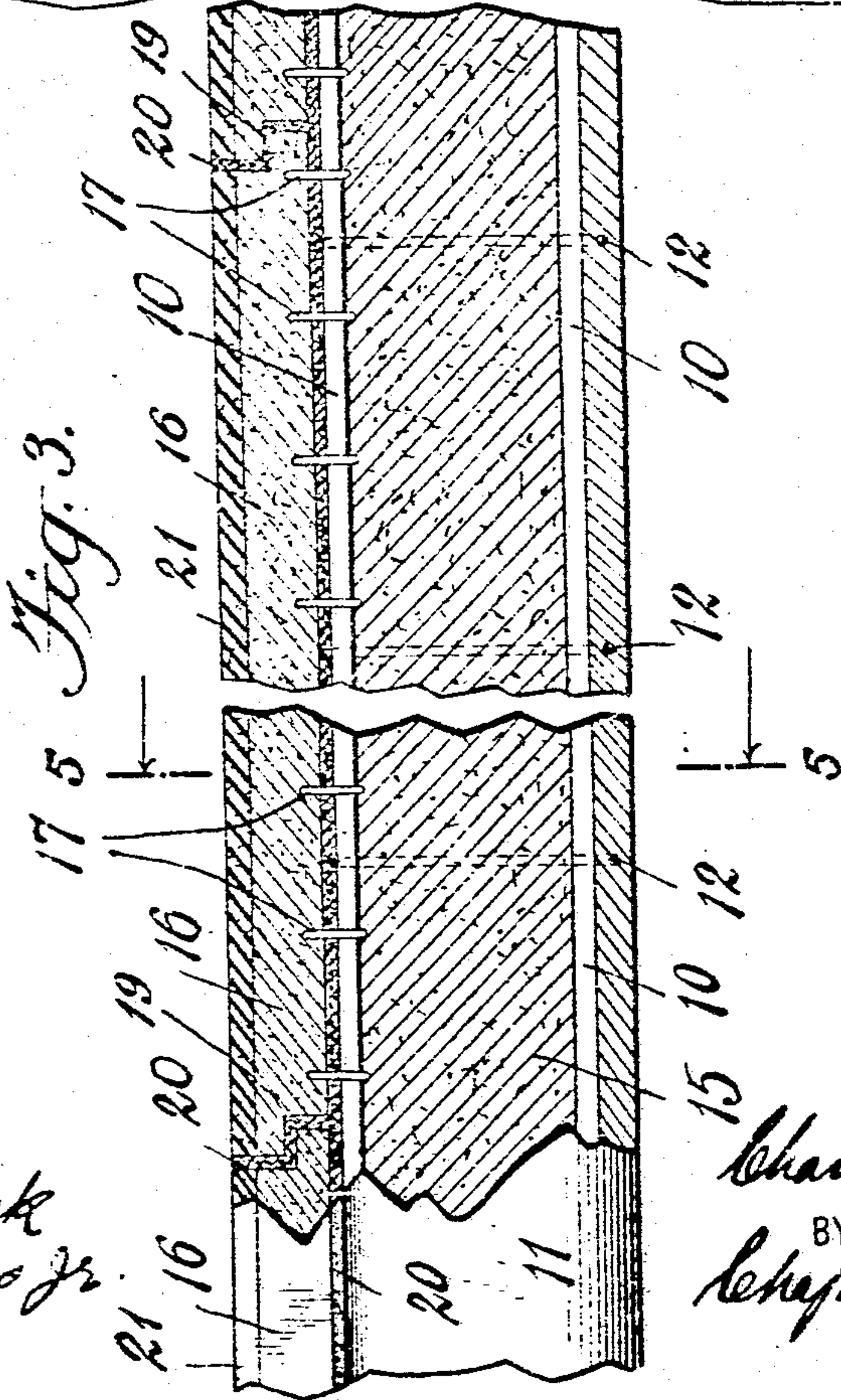


Fig. 3.

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UNITED STATES PATENT OFFICE.

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CEILING AND FLOOR CONSTRUCTION.

947,390.

Specification of Letters Patent.

Patented Jan. 25, 1910.

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To all whom it may concern:

Be it known that I, CHARLES F. FRANSON, a citizen of the United States of America, and a resident of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Ceiling and Floor Construction, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to ceiling and floor construction of the type employed in so-called fire-proof buildings, such construction also being sometimes designated as "fire-proofing".

The metallic structure of the building includes a number of beams usually of I-form, arranged parallel to one another in the various horizontal planes which constitute the dividing lines between the several stories of the building. It is common at the present time to employ reinforced concrete between and surrounding the said I beams to form generally the ceiling of one story, and the floor of another, said concrete being cast in position in forms which are supported temporarily by the beams. This method is necessarily both slow and laborious, and furthermore, it is quite expensive. The forms employed being knocked about in the building under construction are soon destroyed; furthermore, a large number of these forms have to be employed because it is necessary to leave them in place quite a while owing to the time it takes for the concrete to set properly. Even when a very large number of forms are employed, so that the work may be carried on continuously without waiting for one portion to set in order to remove the forms therefrom to employ them again, this method occasions delay in the building operations generally, because the various floors cannot be used for other purposes until the concrete becomes set and hard.

It is the purpose of my present invention to overcome the defects above noted, whereby the expense of the forms will be to a large extent saved, and whereby there will be no necessity to wait any length of time after one floor, or one part thereof, has been finished, such floor or part thereof being immediately capable of supporting weight. To these ends I prepare reinforced concrete blocks at any suitable place, such for instance, as at a factory at a distance from the

building, such reinforced blocks being of a suitable size and shape to be supported upon the beams, and provide them with flexible metallic straps extending laterally therefrom which may be employed to embrace flanges of the beams, whereby to hold the blocks firmly in any position in which they may be placed. Blocks of this character may be prepared in any number before they are required for use and when so required may be shipped to the point of use and quickly placed in position. This obviates the employment of forms at the building, and the blocks being already set hard and rigid will support weight immediately they are put in position. I also supply blocks of various shapes for surrounding the different portions of exposed metal in the building, and I provide these blocks with similar flexible straps by which they may be suspended in place. I also provide a peculiar construction for supporting U-shaped blocks upon horizontal flanged beams, which blocks may be held temporarily in position by means of the straps and then supported permanently by means of an interlocking concrete filling, such as I will presently describe. The various blocks or slabs are of course connected together by means of cement, mortar, or the like, so as to make a tight joint and the floor slabs may be halved together or otherwise joined in any suitable manner.

In order that my invention may be fully understood, I will now proceed to describe an embodiment thereof, having reference to the accompanying drawings illustrating the same, and will then point out the novel features in claims.

In the drawings: Figure 1 is a view in vertical transverse section through a floor or ceiling construction embodying my invention. Fig. 2 is a top view of a portion thereof. Fig. 3 is a detail sectional view of the construction at right angles to the point of view of Fig. 1. Fig. 4 is a detail view in perspective of one of the floor slabs employed. Fig. 5 is a detail transverse sectional view showing the construction with a filling and wooden floor superposed upon the concrete construction. Fig. 6 is a detail transverse sectional view showing a modified form of block employed for surrounding the horizontal I beams.

In Fig. 1 is shown a plurality of horizontally disposed I beams 10, which are a part

of the general building construction. From these I beams I suspend substantially U-shaped reinforced concrete blocks 11, which are made preparatory to setting them in place and are delivered at the building in their ready-made condition. These blocks are reinforced by means of metal straps 12 and these metal straps project beyond the upper edges of the blocks and are employed for the purpose of suspending the blocks in position. These ends of the straps are bent over and connected together as at 13 above the top flange of the I beam and serve to hold the blocks temporarily in position. These blocks have shouldered portions 14 upon their inner walls and inclose a space between them and the I beams, which may be filled with concrete, as at 15. As the concrete sets in position it forms a key which locks the block securely in position, the shouldered portion 14 of the block being directly supported by the said key. After these U-shaped blocks 11 are in position the floor slabs 16 may be put in place. These floor slabs (of which one is shown in detail in Fig. 3) comprise reinforced cast concrete blocks with end straps 17 protruding laterally therefrom. These straps may be conveniently formed as extensions of the reinforcing strips 18 which are employed in the construction of blocks or slabs. The width of the slabs is such as to permit the said slabs to be directly supported by two I beams, the said width being preferably just equal to the distance between the centers of the I beams. When the slabs are set in position the straps are hammered over the top flange of the I beams and in this way the slabs may be maintained securely in position. Preferably I employ an equal number of slabs with extending straps 17, and without them, and I first set such alternate slabs in position as have these straps and hammer the straps in position. I then drop other slabs, such as do not employ these straps, in position between the said slabs, the whole structure being connected securely together by the interlocking of the various slab members. In a direction transverse with respect to the I beams the said blocks may be shouldered or halved as at 19, whereby to make an effective joint, and I connect the various edges and contacting surfaces of the parts together by

means of cement, as at 20, as will be well understood.

The slabs 16 may be provided with a smooth cement finish, as at 21, if desired, so that the surface thereof may itself directly form the surface of the floor, or if preferred, I may leave the surface of the slabs 20 rough finished and may add the usual furring strips 22 and sleeper fill 23 upon which may be superposed a board flooring 24, as is shown in Fig. 5. This construction permits the space between the wood floor and the top of the concrete slabs to be utilized for the purpose of containing piping, electric wires, etc.

In Fig. 6 I have shown a modified form of U block for surrounding the I beam in which no cement or concrete filling is employed. In this case the blocks will be supported almost entirely by the metal straps and the straps must hence be proportionately stronger than would be necessary in the construction shown in the other figures.

What I claim is:

1. In building construction the combination with parallel horizontal supporting elements, of substantially rectangular reinforced concrete slabs supported at their opposite side edges thereby, the alternate slabs being provided with flexible ties which project from said side edges for engagement with the said supporting elements, and the said slabs having a shouldered joint connection with each other along the sides at right angles to the sides at which they are supported.

2. In building construction, the combination with a plurality of horizontally disposed I beams, of a plurality of individual separate reinforced concrete slabs the body portions of which rest upon the upper flanges of the said I beams and are supported thereby, said slabs having a shouldered joint connection with each other in a direction transverse with respect to the I beams and the alternate slabs being provided with flexible projecting ties, by which they may be fastened to the I beams, substantially as set forth.

CHARLES F. FRANSON.

Witnesses:

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