

No. 656,951.

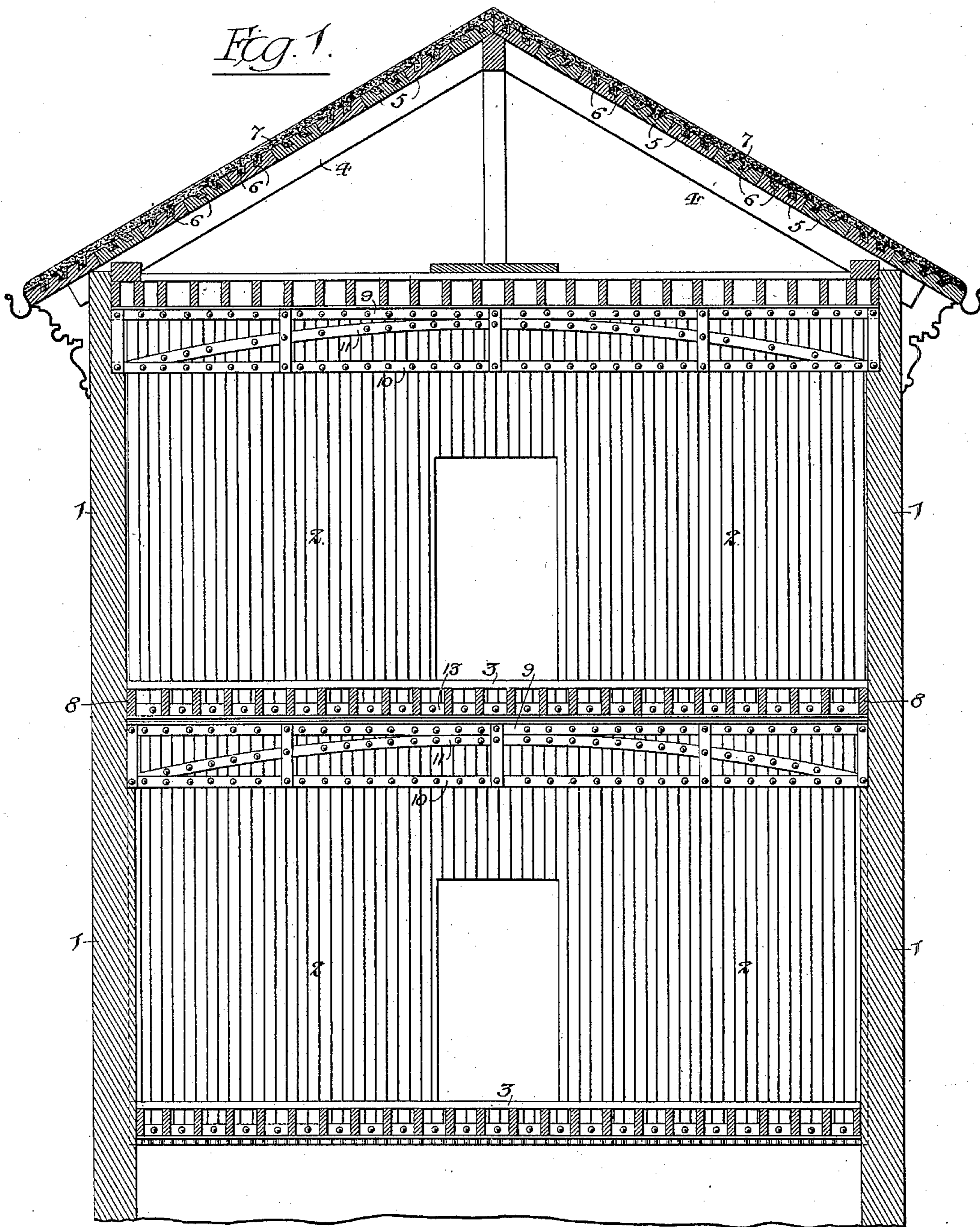
Patented Aug. 28, 1900.

C. F. W. DOEHRING.  
BUILDING.

(Application filed Apr. 13, 1900.)

(No Model.)

3 Sheets—Sheet 1.



*Witnesses:*

*Louis H. F. Lohscheidt.*

*Chas. W. Cory.*

*Inventor.*

*Charles F. W. Doehring.*

*By His Attorneys:*

*Housen & Housen*

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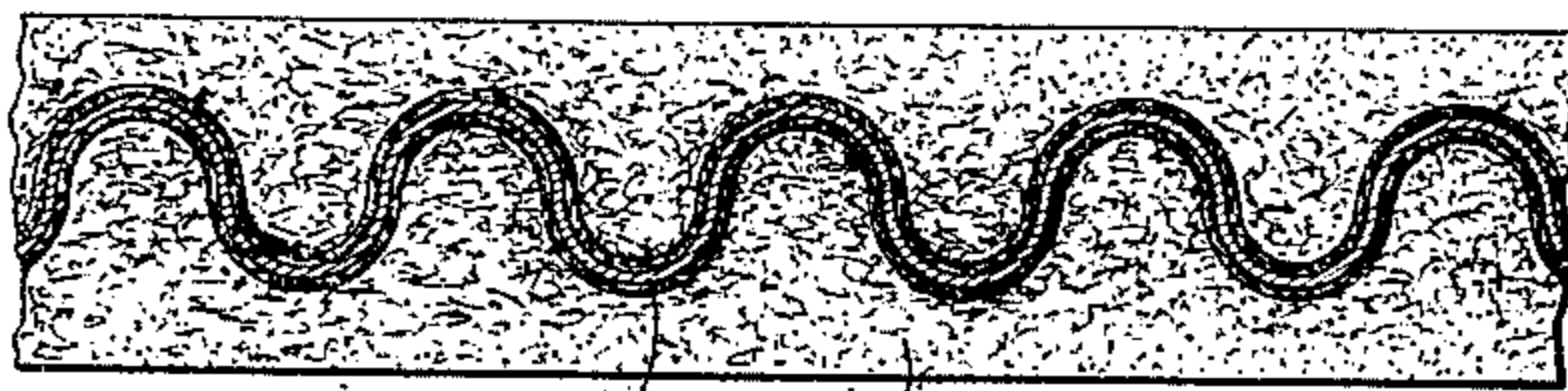
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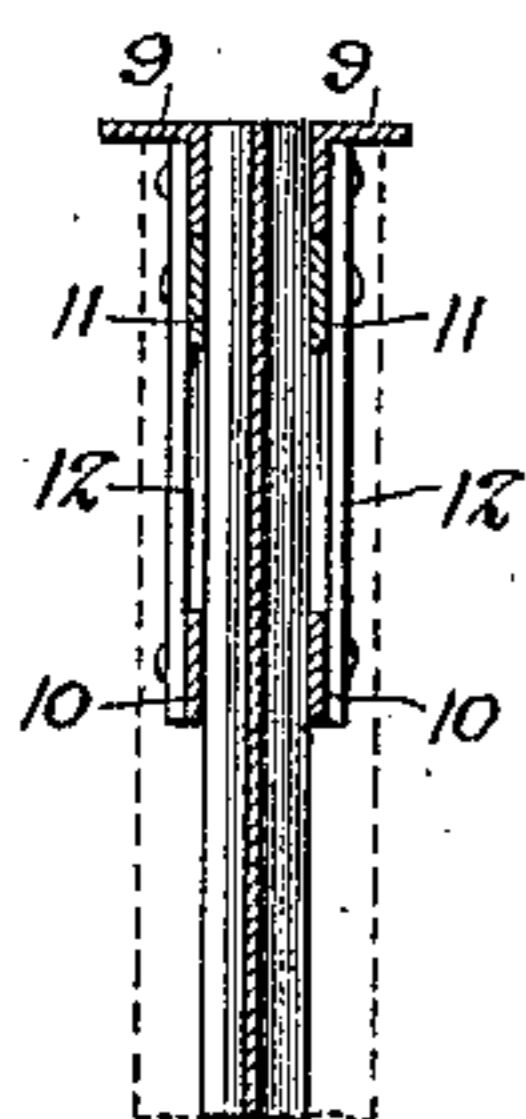
(No Model.)

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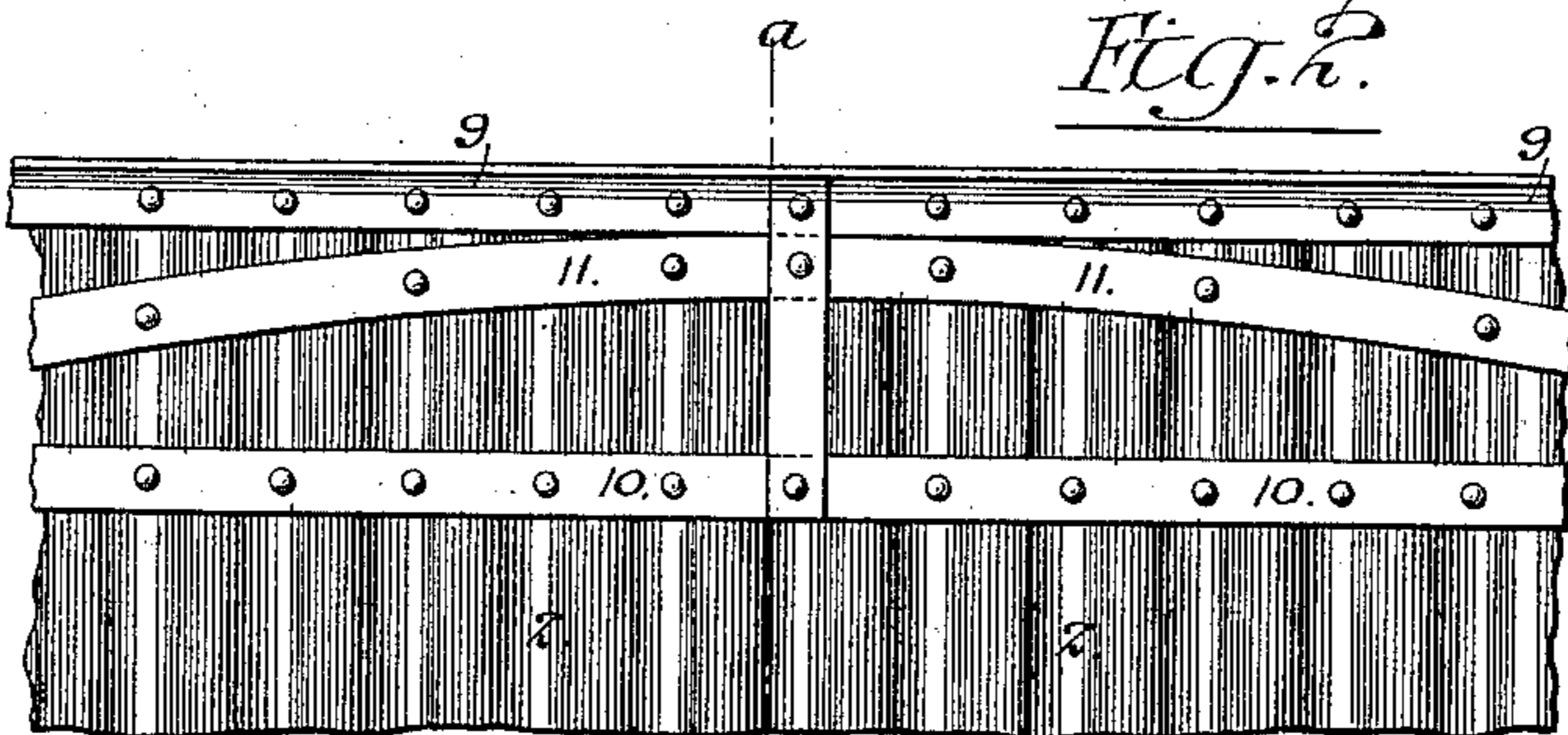
*Fig. 6.*



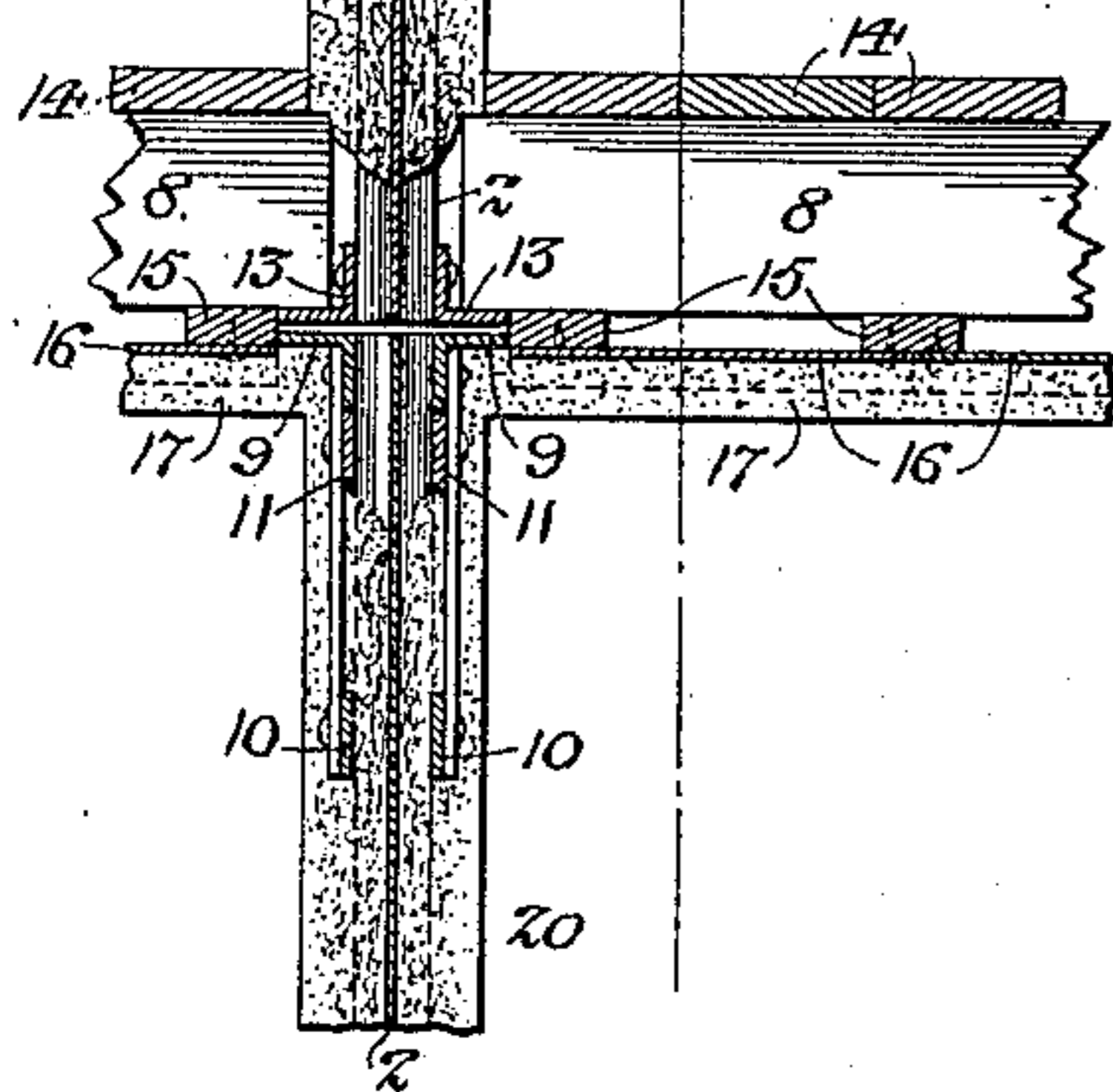
*Fig. 4.*



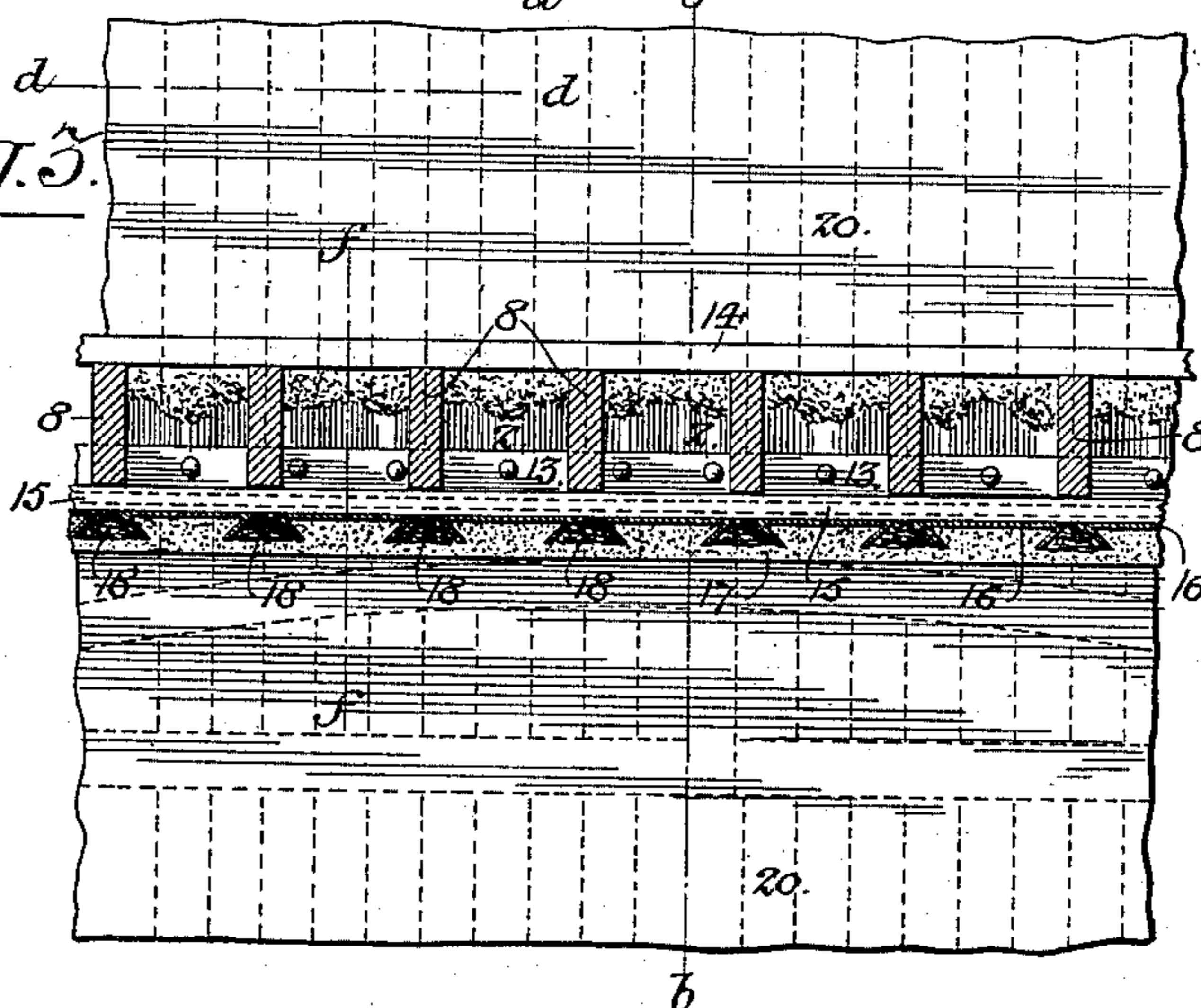
*Fig. 2.*



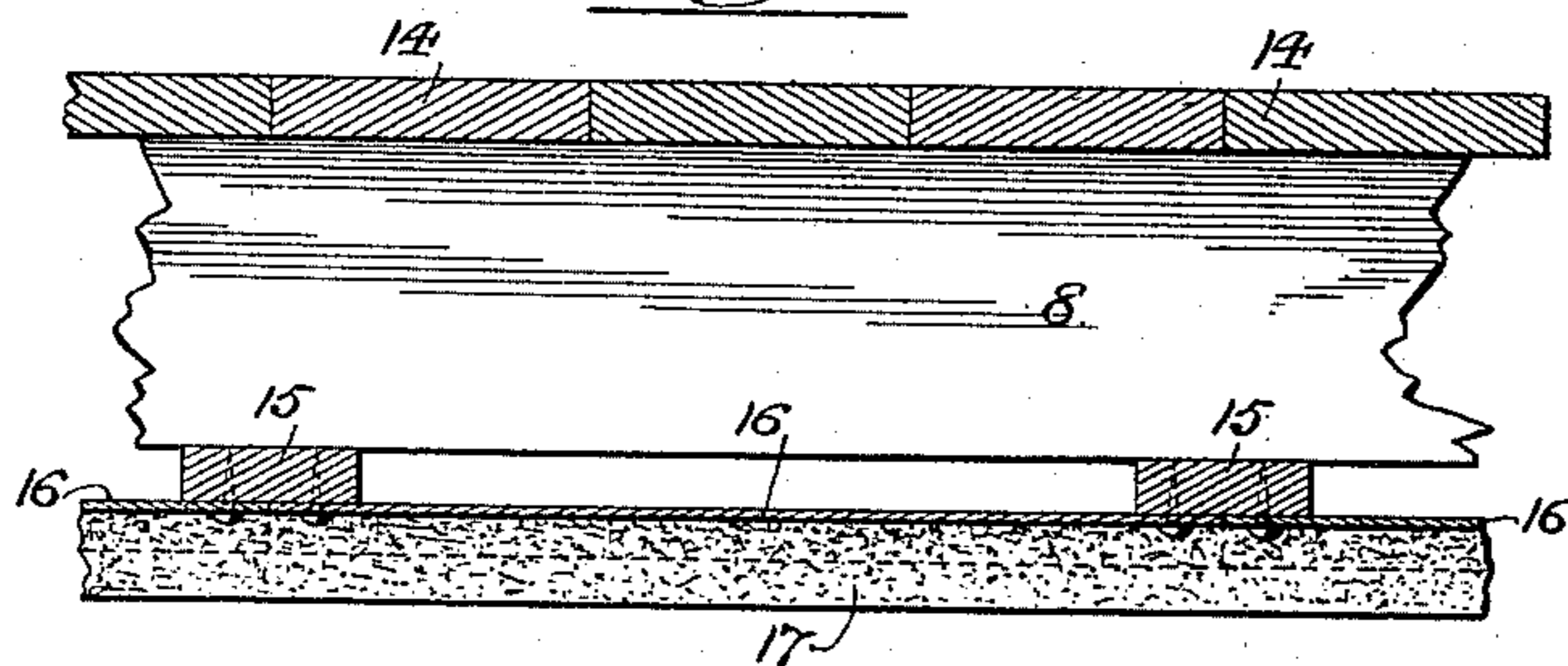
*Fig. 5.*



*Fig. 3.*



*Fig. 7.*



*Witnesses:*

*Louis M. T. Whitehead.*

*Chas. De Cour.*

*Inventor:*

*Charles F. W. Doehring.*

*by His Attorneys:*

*Howson & Howson*

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3 Sheets—Sheet 3.

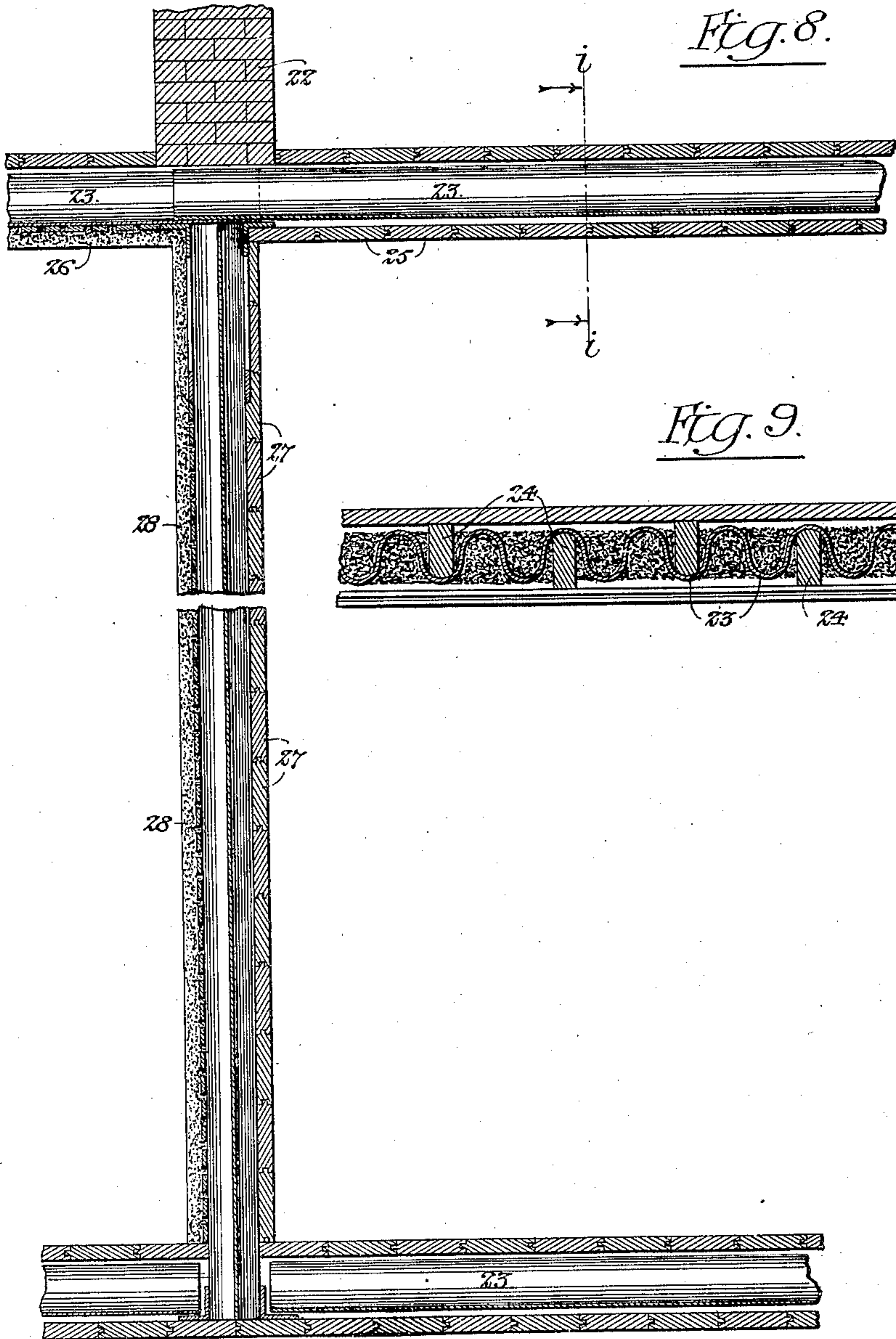


Fig. 8.

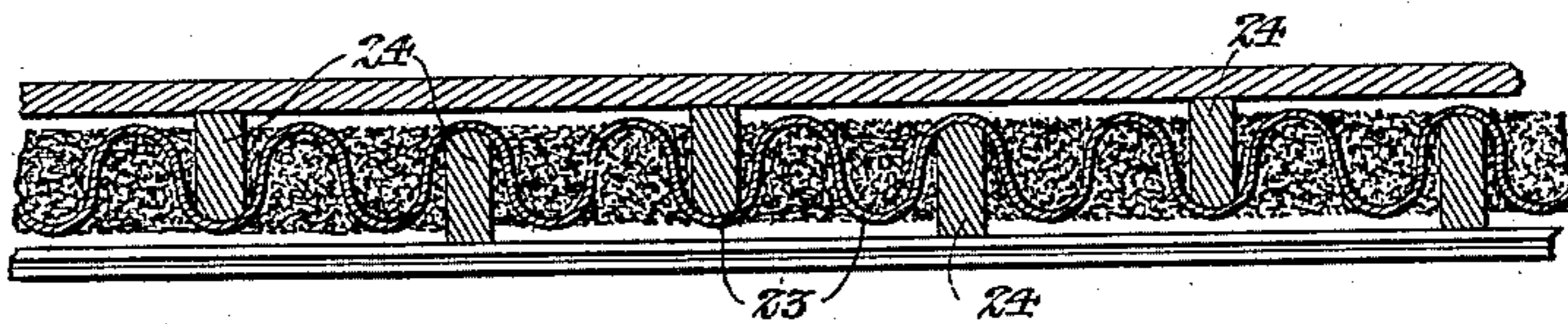


Fig. 9.

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by His Attorneys:-

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# UNITED STATES PATENT OFFICE.

CHARLES F. W. DOEHRING, OF PHILADELPHIA, PENNSYLVANIA.

## BUILDING.

SPECIFICATION forming part of Letters Patent No. 656,951, dated August 28, 1900.

Application filed April 13, 1900. Serial No. 12,756. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES F. W. DOEHRING, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Buildings, of which the following is a specification.

The object of my invention is to so construct the partitions, floors, ceilings, and roof of a building as to materially lighten the weight and cheapen the cost of the same, these parts being at the same time rendered fire and water proof. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional view of a building constructed in accordance with my invention, showing the two upper floors, attic story, and roof of the same so far as the walls and framework are concerned, the coverings of the partitions and ceilings being omitted. Fig. 2 is a side elevation, on an enlarged scale, of a part of one of the partition structures. Fig. 3 is a longitudinal section of the floor and ceiling with portions of the partition structure above and below the same, said partition structure and the ceiling having the coatings applied thereto. Fig. 4 is a transverse section on the line *a a*, Fig. 2. Fig. 5 is a transverse section on the line *b b*, Fig. 3. Fig. 6 is an enlarged sectional plan view on the line *d d*, Fig. 3. Fig. 7 is an enlarged transverse section on the line *ff*, Fig. 3. Fig. 8 is a vertical section illustrating certain modifications or special features of the invention; and Fig. 9 is an enlarged section on the line *i i*, Fig. 8.

In Fig. 1 opposite side walls are represented at 1 1, the space within these walls being divided into rooms or apartments by means of transverse partitions 2 and floor structures 3, the walls also supporting the roof-beams 4.

The roof consists of strips 5, placed closely together edge to edge and nailed or otherwise secured to the roof-beams 4, so as to form a complete sheathing for the roof. In these strips 5 are formed grooves or channels 6, some inclined in one direction and the others in the opposite direction, and to the wooden roof-sheathing thus provided I apply a water-proof cement 7, which may be of any desired composition, so long as it is plastic and can be spread over the roof-sheathing by means

of a trowel or other suitable implement to form a smooth and impervious coating of any desired thickness. Portions of the plastic mass enter the grooves or slots in the strips 5, and thus serve to firmly key or secure the cement coating to the roof-sheathing.

If desired, a coating of fireproof paint or plaster may be applied to the composition 7, so as to render the roof both fire and water proof.

The beams 8, which carry the floor of one story and the ceiling of the story below, are not seated upon the walls, as usual, but are supported upon the partition structures 2 of the building, and the latter are in turn hung upon beams or girders formed by securing to one or both sides of each partition structure bars, strips, or beams of metal which rest at the ends upon suitable seats formed on or in the side walls.

As shown in the drawings, the partitions consist of corrugated sheet metal of any desired degree of thickness and having the corrugations extending vertically, and in the structure shown in Figs. 1, 2, and 4 each of the supporting beams or girders consists of a pair of angle-irons 9, a pair of bars or straps 10, a pair of arched longitudinal bars or straps 11, and a number of vertical bars 12, one of each of the elements 9, 10, and 11 being disposed on each side of the partition and secured thereto by means of transverse bolts, rivets, or other appropriate fastenings, a series of the vertical bars 12 being also employed on each side of the partition. By this means an extremely stiff and rigid girder is produced with the employment of a minimum amount of material and possessing a minimum amount of weight, so that it serves not only to support the partition hung therefrom, but also the floor and ceiling structure hung upon the partition, the latter, owing to the corrugations of the metal, being very rigid against vertical strain, and hence amply qualified to perform its intended duty.

In plastering the partition structures a thin adherent coating 21 is first applied to the corrugated sheet metal, and the main body of the plastering is then applied to this first coating.

The floor-beams 8 are supported upon angle-irons 13, secured to the lower portion of each

partition, as shown in Fig. 5, and the flooring-boards 14 are secured to these beams in the usual manner. The ceiling structure, however, differs from an ordinary ceiling in several respects and consists of furring strips or bars 15, secured to the under sides of the beams 8 at suitable intervals, these furring-strips carrying sheet-metal laths 16, each consisting of a plate of sheet metal extending from center to center of adjoining furring-strips and suitably nailed or otherwise secured thereto, each of these metallic laths having inturned-edge flanges so as to properly engage with and key the mass of ceiling-plaster 17 applied to the under faces of the laths. In the spaces between the laths and to a depth preferably equal to the depth of the flanges of said laths I place masses 18 of a waterproof plastic composition, so that a waterproof filling for these spaces is provided and the ceiling is rendered impervious to water. Hence no injury to the plastering of a room below can result from an accidental escape of water in a room above, thus overcoming a well-recognized defect of ordinary plaster ceilings.

It should be understood that although I have shown in connection with the vertically-corrugated partition structures supporting beams or girders, each composed of a number of bars or strips on each side of said partition structure, this will not be necessary in all cases, as in small or light structures a single bar on each side of the partition—such, for instance, as the angle-bars 9—may suffice, or the supporting bars or strips may be on one side of the partition only instead of upon both sides, the latter construction, however, being preferred.

By relieving the partition structures of all compressive strain the same can be made extremely light, and economy is thus secured, while at the same time a partition which is impervious to fire or water is obtained. Hence the structure is much preferable to ordinary lath-and-plaster partitions, or even to those partitions which in modern fireproof structures are composed of plaster applied to wire-netting or perforated sheet metal, since these structures on the falling away of the plaster present no material obstacle to the sweep of flame, whereas a continuous partition, such as that which I propose, offers an effective bar to such progress.

The beams or girders of the partition structure may, if desired, be made strong and rigid enough to carry a brick partition or other wall, as shown, for instance, at 22 in Fig. 8, and continuous floor and ceiling structures may be made by the use of corrugated sheet-metal strips, as shown at 23 in said figure, beams being secured in the corrugations of the strips, as at 24, Fig. 9, for the attachment of the floor-boards or ceiling.

The ceiling may be composed simply of forming-strips, as at 25, or it may be a lath-and-plaster ceiling—such, for instance, as shown at 26—the laths being secured to the beams 24, and the partition may be covered in the same way—that is to say, with forming-strips, as at 27, or lath and plaster, as at 28.

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

1. A building having an internal wall or partition suspended from a transverse beam or girder, substantially as specified.

2. A building having an internal wall or partition composed of vertically-corrugated sheet metal, said partition being suspended from a transverse beam or girder, substantially as specified.

3. A building having an internal wall or partition suspended from a transverse beam or girder, and having a floor structure hung upon it, substantially as specified.

4. A building having an internal wall or partition consisting of vertically-corrugated sheet metal, and bars or strips extending transversely of said corrugations, and secured to said sheet-metal structure, so as to form a beam or girder from which the partition is suspended, substantially as specified.

5. A building having an internal wall or partition consisting of vertically-corrugated sheet metal, said partition having secured to its opposite sides metal strips or bars extending transversely of the corrugations and forming a beam or girder from which the partition is suspended, substantially as specified.

6. A building having a ceiling structure composed of metallic laths with inturned flanges for retaining the plaster, the spaces between said laths being filled with plastic masses of waterproof composition, substantially as specified.

7. A building having a ceiling structure composed of spaced furring-strips secured to the under side of the floor-beams, and metallic lathing-strips binding the spaces between said furring-strips and secured to the latter, the spaces between said metallic laths being filled with waterproof plastic composition, substantially as specified.

8. A building having a continuous partition composed of vertically-corrugated sheet metal, and a floor structure hung upon said partition and likewise composed of corrugated sheet metal, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES F. W. DOEHRING.

Witnesses:

F. E. BECHTOLD,  
JOHN W. TAGGART.