G. L. DAMON.

CONSTRUCTION OF VESTIBULES OF ARMOR PLATE VAULTS.

APPLICATION FILED SEPT. 16, 1907.

954,670. Patented Apr. 12, 1910.

3 SHEETS—SHEET 1.

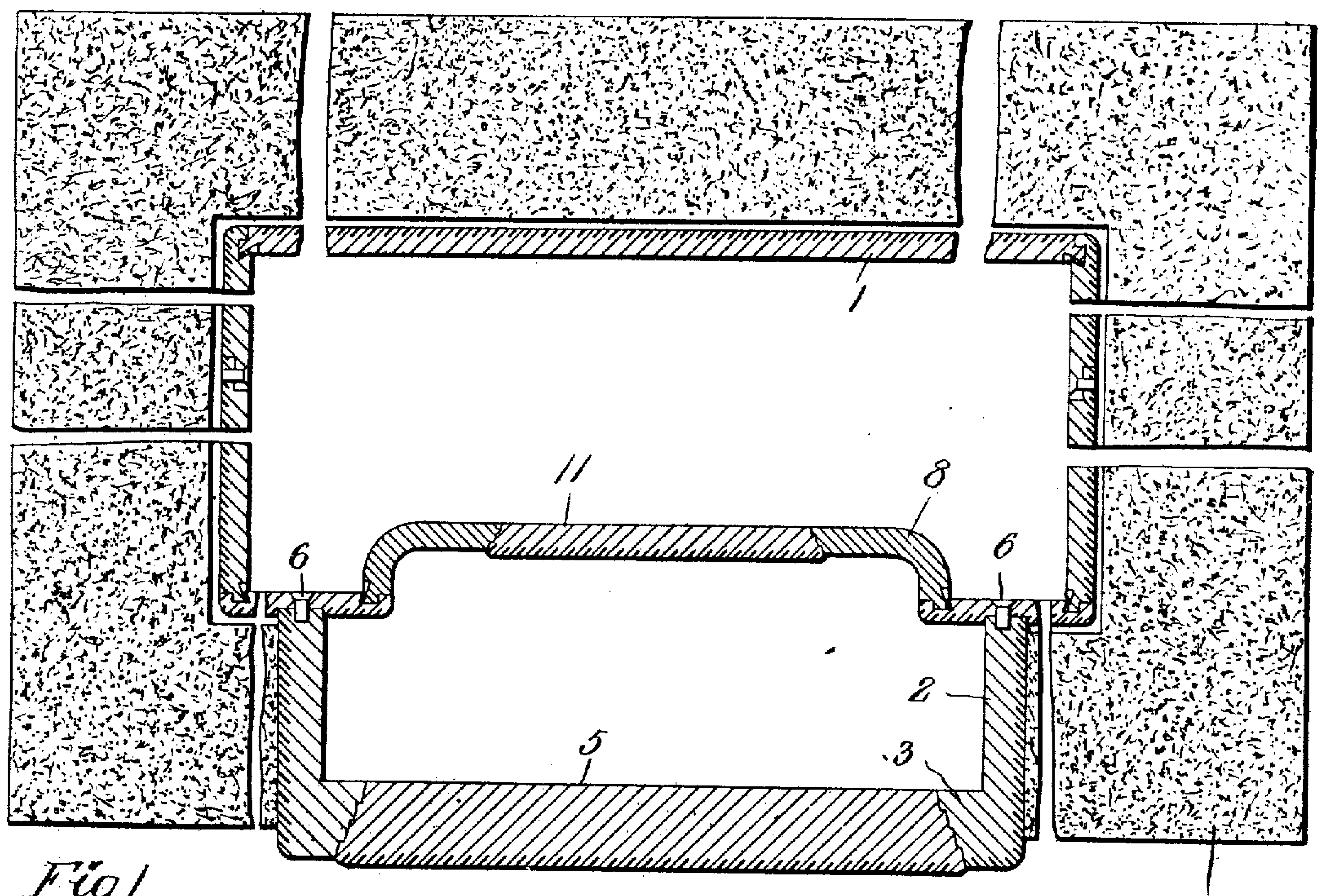

Fig 1

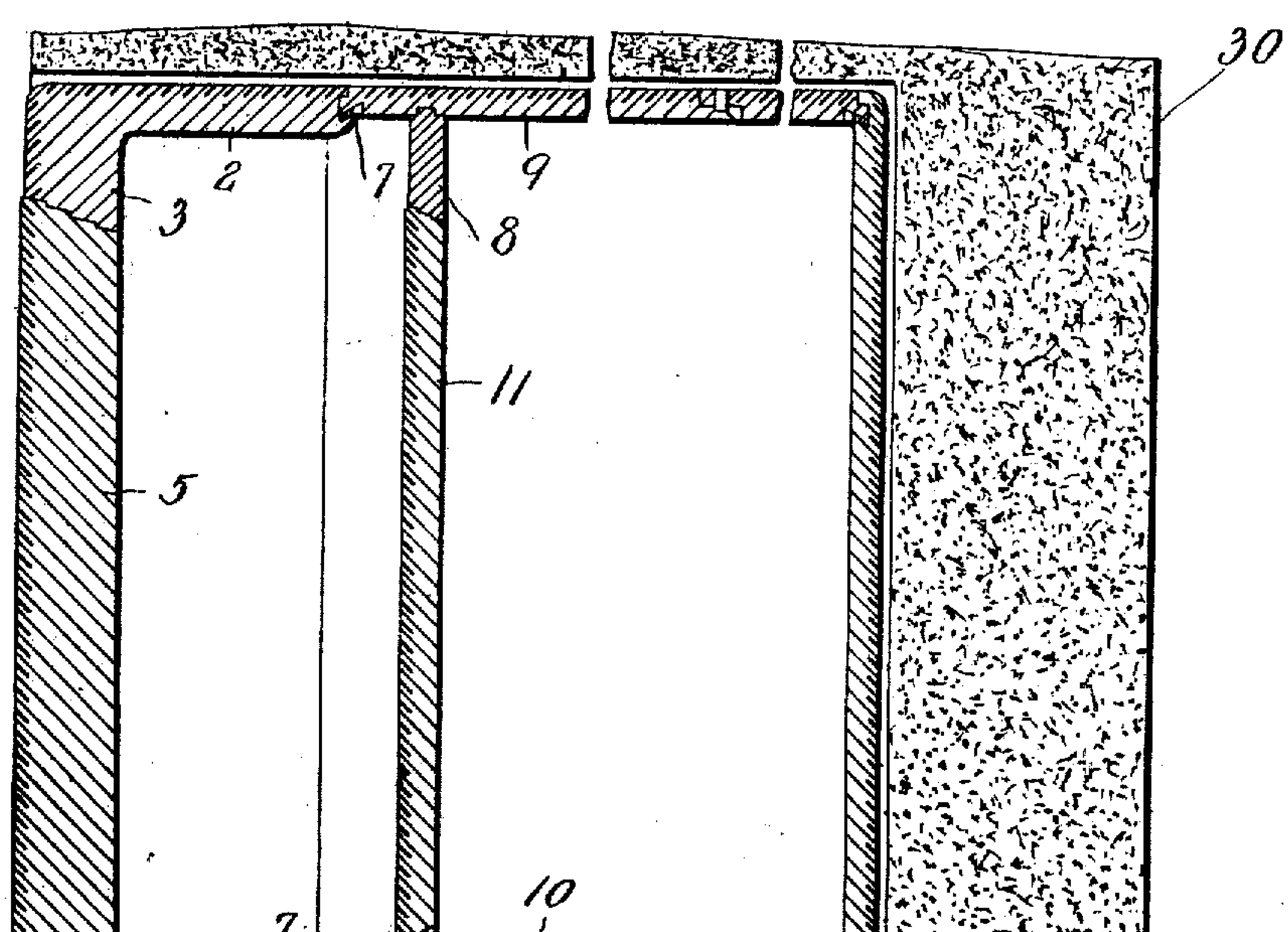

Fig. 2.

Witnesses

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Fig. 3.

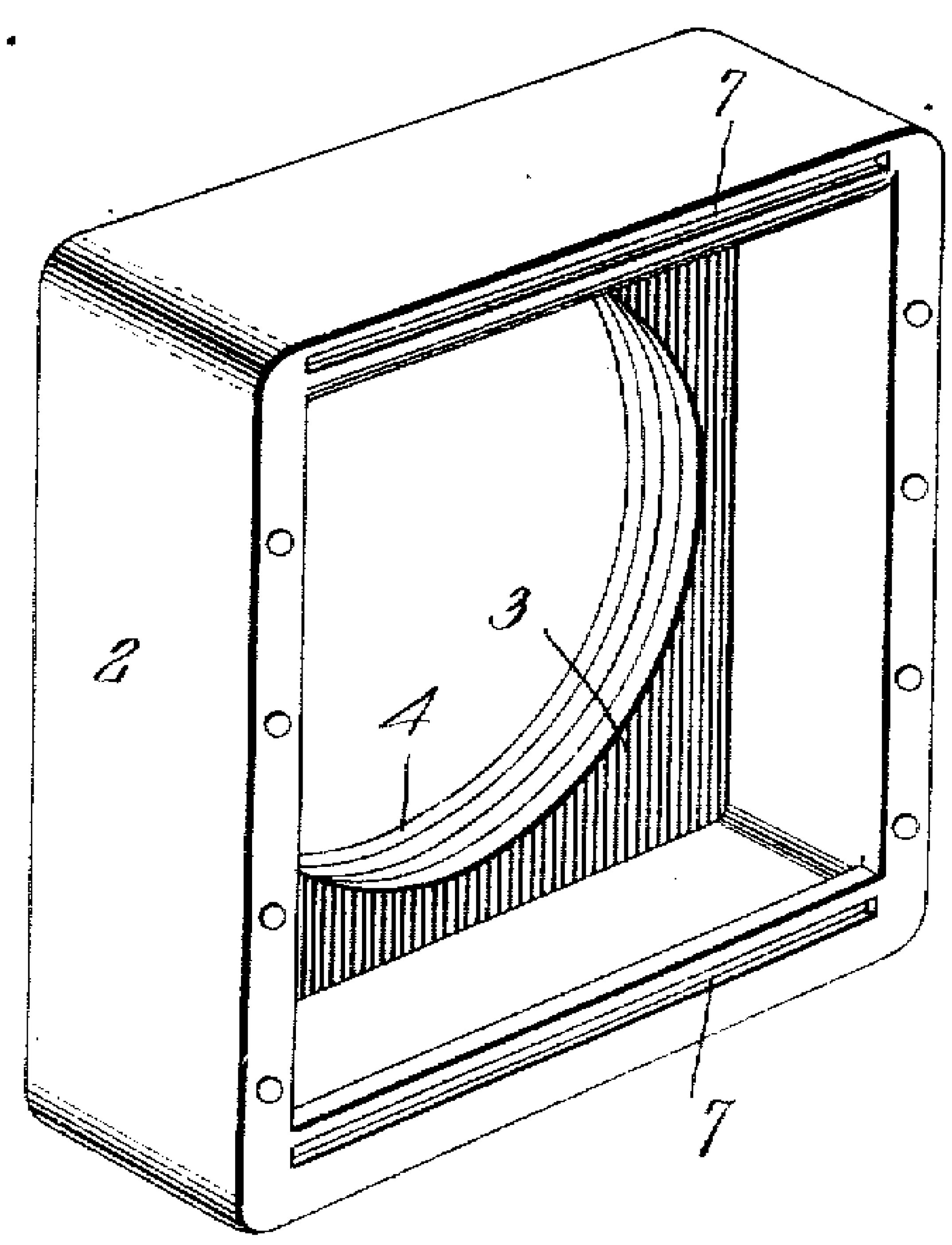
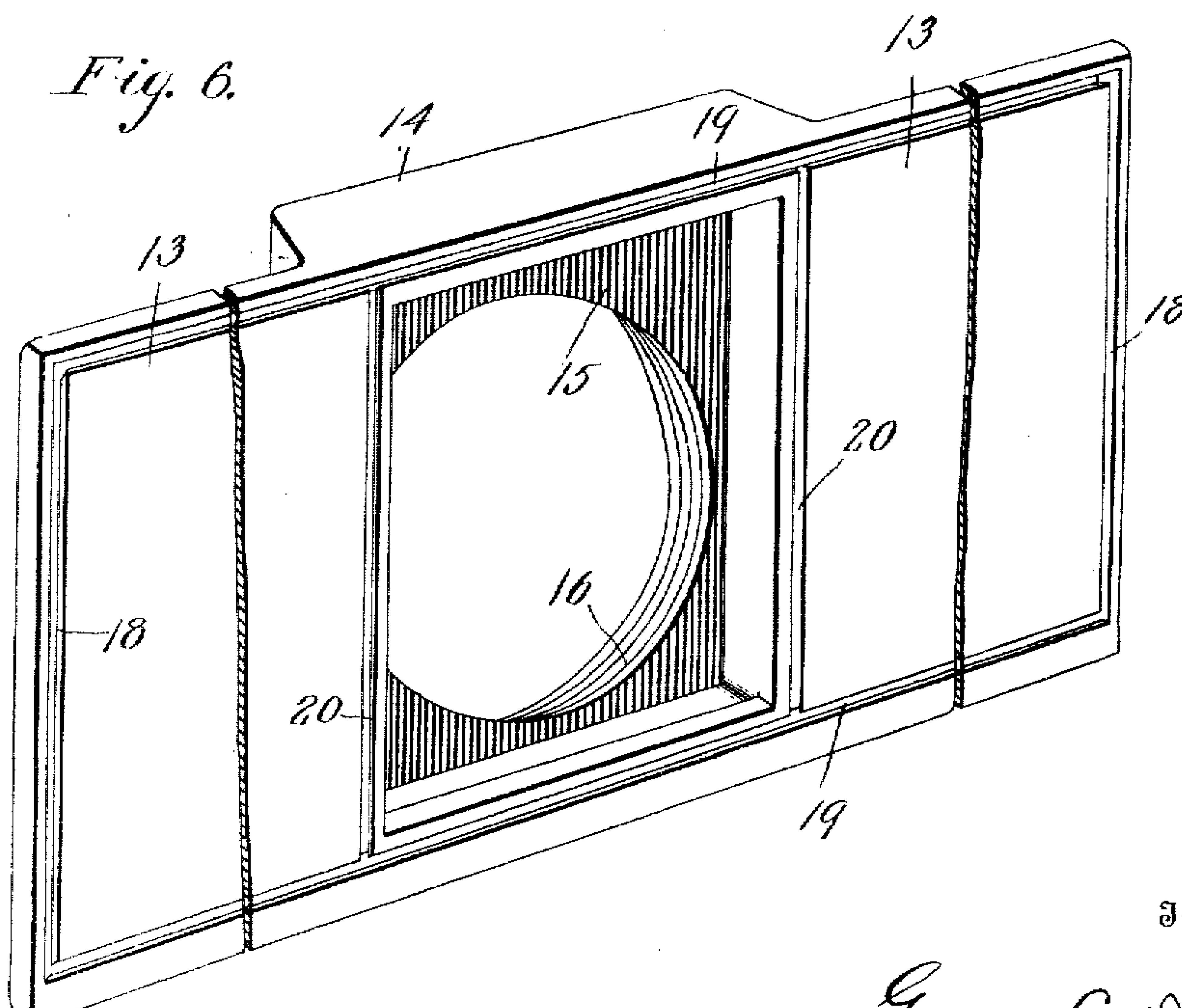


Fig. 6.



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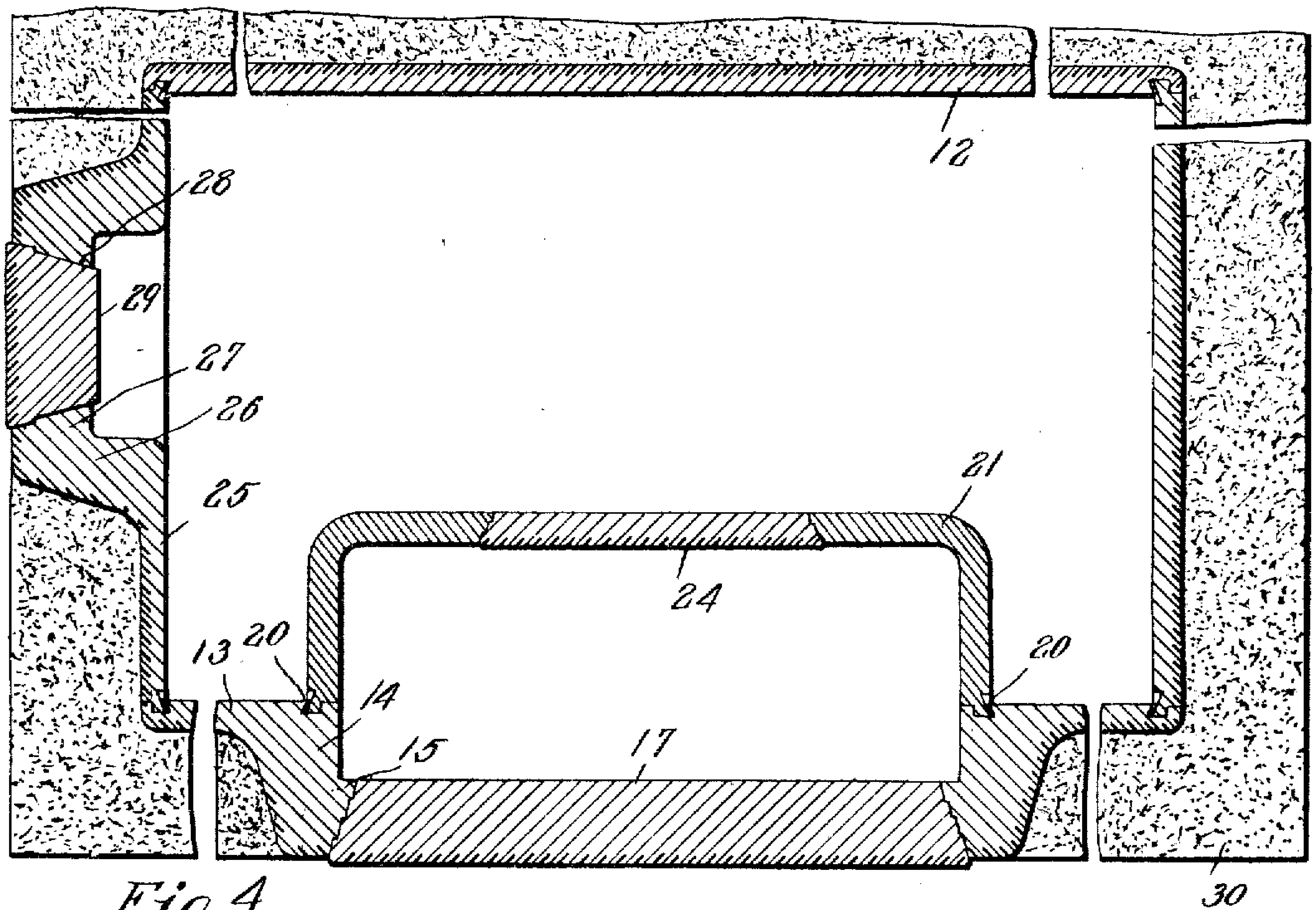

Fig. 4

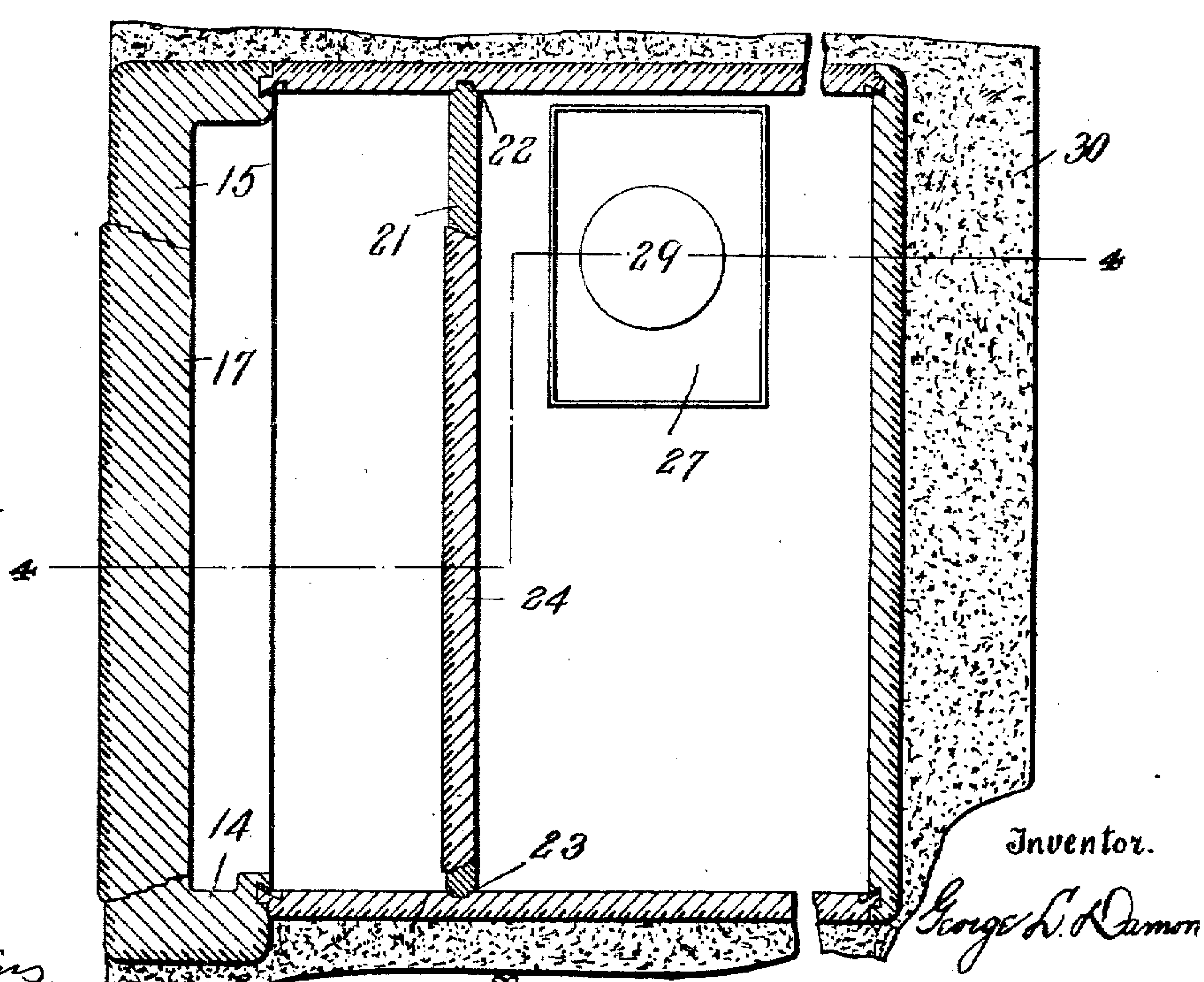

Fig. 5.

Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE L. DAMON, OF PITTSBURG, PENNSYLVANIA.

CONSTRUCTION OF VESTIBULES OF ARMOR-PLATE VAULTS.

954,670. Specification of Letters Patent. **Patented Apr. 12, 1910.**

Application filed September 16, 1907. Serial No. 393,179.

To all whom it may concern:

Be it known that I, GEORGE L. DAMON, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Construction of Vestibules of Armor-Plate Vaults, of which the following is a specification.

It is common in bank vaults to embody in connection therewith a vestibule, through which access to the vault is obtained. These vestibules, which are made up of a multitude of angle and flat bars each fastened to a preceding layer or angle bar by screws, have secured at their outer portions by suitable fastening devices a door frame composed of layers as above described, for receiving the main door of the vault. As this main door is very heavy, weighing in most instances many tons, twisting strains, due to the open position of the door, tend to loosen the seam between the layers forming the door frame and the vestibule sides, top and bottom to an extent admitting the introduction of explosives for forced entrance and the construction is expensive.

It has been ascertained that if the door frame and the vestibule are made in one integral piece, less expense is involved in the manufacture and the above objection will be obviated, as the weight of the vestibule will overbalance the weight of the door, thus taking the weight of the door off the fastening devices. It has also been ascertained that when the door frame is in the form of an integral inwardly-turned flange at the outer end of the vestibule, the rectangle forming the top, bottom and sides of the vestibule does not tend to move under the weight of the door in a manner to elongate one diagonal of the vestibule and shorten the other, as when these parts are separate, for the reason that the integral transverse flange, forming the door frame, stiffens the vestibule against such movements. I have further ascertained that the changing of the dimensions of the diagonals of the parallelogram forming the vestibule may be further prevented by forming outwardly extending transverse flanges at the inner end of the vestibule, these flanges being utilized to form the front wall of the vault, thus dispensing with the usual weakness of joints at the connection of the vestibule to the front of the vault. The making of the front wall and the vestibule integral has other advantages, which will be apparent from the following remarks. The weight of the top of the vault is supported by the front wall, and, when the front wall and vestibule are made in separate pieces, neither acts to support the other, except through the medium of fastening devices, and, as a consequence, the fastening devices are subjected to great strains. Not only this, but the front wall, being divided by the vestibule, leaves that portion of the top over the vestibule insufficiently supported, thus imposing excessive strains on the side walls of the inner end of the vestibule and the adjacent edges of the front wall. The effect of these strains will be obviated, if the front wall and the vestibule are integral, as each acts as a flange to the other and takes part of the strains thereof. These strains are also taken up by the inwardly-turned flange forming the door frame at the outer end of the vestibule.

It is advantageous to forge the vestibule-forming member rather than to cast the same for the reason that the door-frame when cast, will by reason of its central opening, be placed under severe strains of tension, which when there is sufficient external force applied to develop a fracture or weakness about the fastenings, will have a tendency to open such fracture into a large crack.

With these and other objects in view, the invention consists of the parts and combinations of parts hereinafter described, and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a central horizontal section through a vault, having a vestibule-forming member integral with the door frame. Fig. 2 is a central vertical section. Fig. 3 is a perspective view of the vestibule-forming member. Fig. 4 is a section on the line 4—4 Fig. 5, showing a vault with the front wall formed integral with the vestibule-forming member. Fig. 5 is a central vertical section of the embodiment shown in Fig. 4. Fig. 6 is a perspective view of the vestibule-forming member shown in Figs. 4 and 5.

Referring more particularly to the drawings and to the embodiment shown in Figs. 1 to 3, 1 indicates the vault body, from the front wall of which projects the outer vestibule, composed of an integral forged member 2, which is rectangular in form and is provided at its outer end with a transverse inwardly-turned flange 3 forming an integral door frame having an annular door seat 4 for a circular door 5. The inner vertical walls of the vestibule-forming member are secured to the front wall of the vault body by fastening devices, such for instance as bolts 6, while the upper and lower inner edges of the vestibule member are secured to the top and the bottom of the body respectively by wedge fastenings 7 of known construction.

Having its side walls secured to the inner face of the front wall by a suitable fastening device and projecting within the vault body is an integral inner vestibule-forming member 8, which is seated at its top and its bottom in the top 9 and the bottom 10 respectively of the vault body. This inner vestibule-forming member not only increases the length of the vestibule of the vault, but it serves to support the top of the vault adjacent to the opening in the front wall of the body. A seat for a circular door 11 is formed in this vestibule-forming member.

In the embodiment shown in Figs. 4, 5 and 6, 12 indicates the body, 13 the front wall thereof and 14 the vestibule-forming member. The front wall is integral with the vestibule-forming member and is in the form of two transverse flanges extending outwardly from the sides of said member. The outer end of the vestibule-forming member is provided with an integral inturned flange 15, which serves as the door frame, being provided with a door seat 16 for a circular door 17. The vertical edges of the front-wall flange of the vestibule-forming member is provided with fastening means 18 to coöperate with fastening means on the side walls to which it is secured, while the top and the bottom edges of the front wall and the vestibule-forming member are provided with fastening means 19 for securing the said parts to the top and bottom of the vault body. The inner face of the front-wall flange is also provided with fastening means 20 for coöperating with a fastening means on the vertical edges of the side walls of an inner vestibule-forming member 21. This member 21 is secured at 22 and 23 respectively to the top and the bottom of the vault body and acts like the similar member in the other embodiment to support the top of the vault. It is provided with a rectangular seat for an inner door 24. The idea of forming the door frame, vestibule and a wall of the vault in an integral structure is also employed in constructing the usual emergency door. The side wall 25 is in the form of an integral outwardly-extending flange about the emergency vestibule 26, which at its outer end is formed with an inturned integral flange 27 forming the emergency door frame and provided with a seat 28 for the emergency door 29.

In both embodiments, the vault body is surrounded by a fireproof wall 30 except at the door frames.

The method of forming each of the integrally flanged vestibule-forming members 14 and 27 which constitute the wall and vestibule structure either for the main door or for the emergency door, consists in providing a steel ingot of the thickness of the vestibule to be formed, forging said ingot to form the vestibule with a closed outer end, and, if the vestibule is to be integral with a wall of the vault body, with outwardly extending flanges. The blank is now cut or machined to provide the door opening and the fastening means, and is finally carburized or treated to make it harveyized nickel steel.

What I claim is:—

1. A carburized forged vault-member constituting the vestibule of the vault and provided with an integral inwardly turned flange having a door seat formed therein.

2. A vault comprising a vault body, a forged member constituting the vestibule and extending from the vault body, and having at its outer end an integral transverse flange formed with a door seat, said member being constructed separately from the vault body and suitably secured thereto.

3. In a vault, a carburized forged vestibule-forming member having integral outwardly-extending transverse flanges at one end for forming the front wall of the vault.

4. A carburized forged vault vestibule-forming member having integral outwardly-extending transverse flanges on opposite sides at one end thereof, and an integral inwardly-extending transverse flange at the other end, formed with a door seat.

5. In a vault, a front wall having a vestibule forged integral therewith, a top wall, and means for fastening the top wall to the front wall whereby said top wall is supported by the front wall.

6. In a vault, a front wall, a forged outer vestibule-forming member, extending forwardly from the front wall, and an inner vestibule-forming member extending rearwardly from the front wall.

7. In a vault, top and bottom walls, a front wall, a forged vestibule member, extending outwardly from said front wall, an integral inner-vestibule member extending inwardly from the front wall, and fastening means securing said inner vestibule member to the top and bottom walls and to the front wall.

8. In a vestibule vault construction, a combined wall, vestibule and door frame-forming member forged from an ingot, and comprising a rectangular vestibule portion having at one end an integral, inwardly

turned flange provided with a door seat, and said vestibule portion having at its other end an outwardly turned integral flange with fastening means and said vestibule portion provided at its top, its bottom and its sides, with fastening means adapted to support the top of the vault.

9. In a vault, a forged vault-forming member constituting the front wall and vestibule of said vault combined integrally, the front wall portion of said member being provided with fastening means at the top, bottom and sides.

The foregoing specification signed at Pittsburg, Pa., this 3rd day of April, 1907.

GEORGE L. DAMON.

In presence of—
L. T. Sanders,
J. C. Bily.