

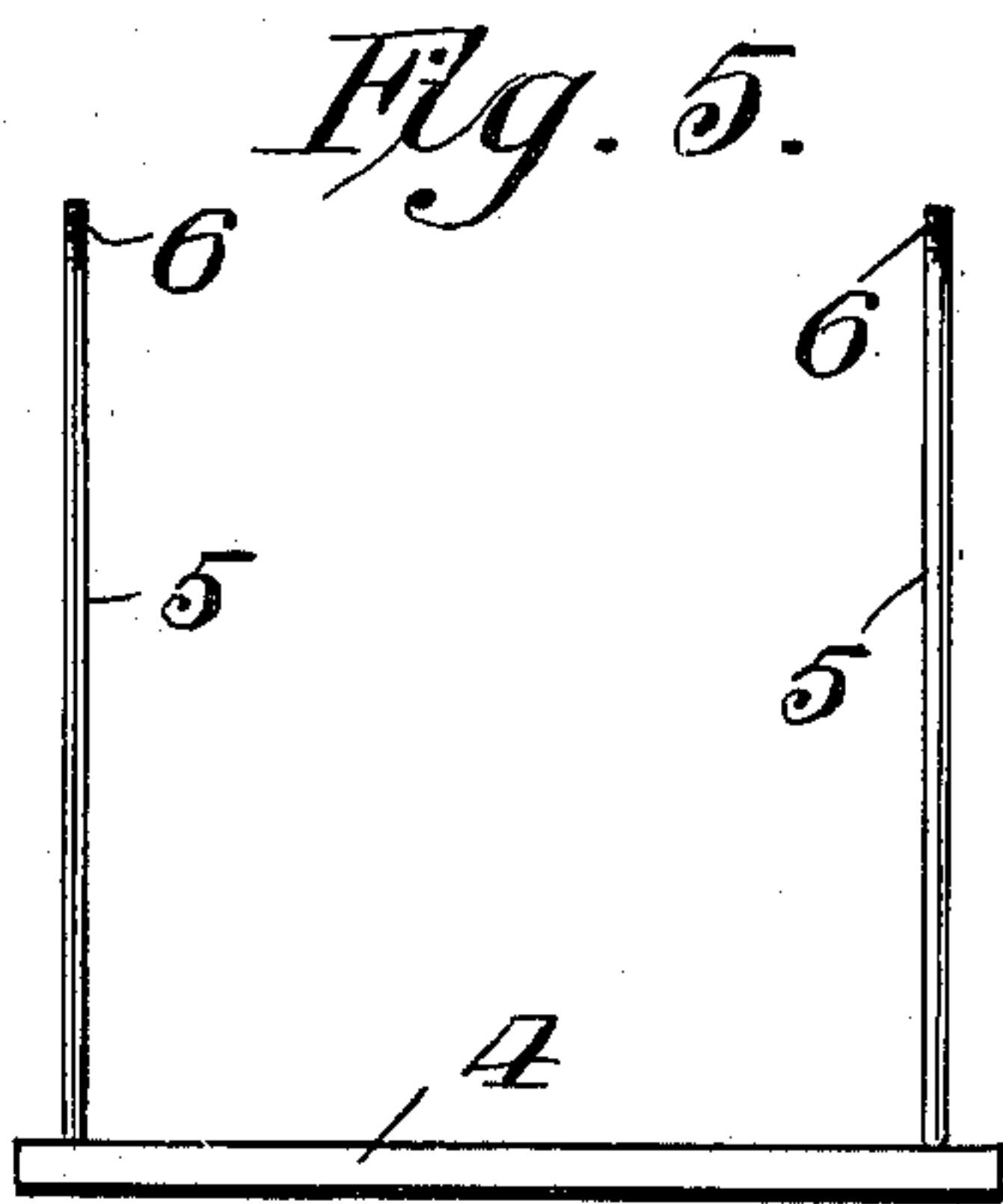
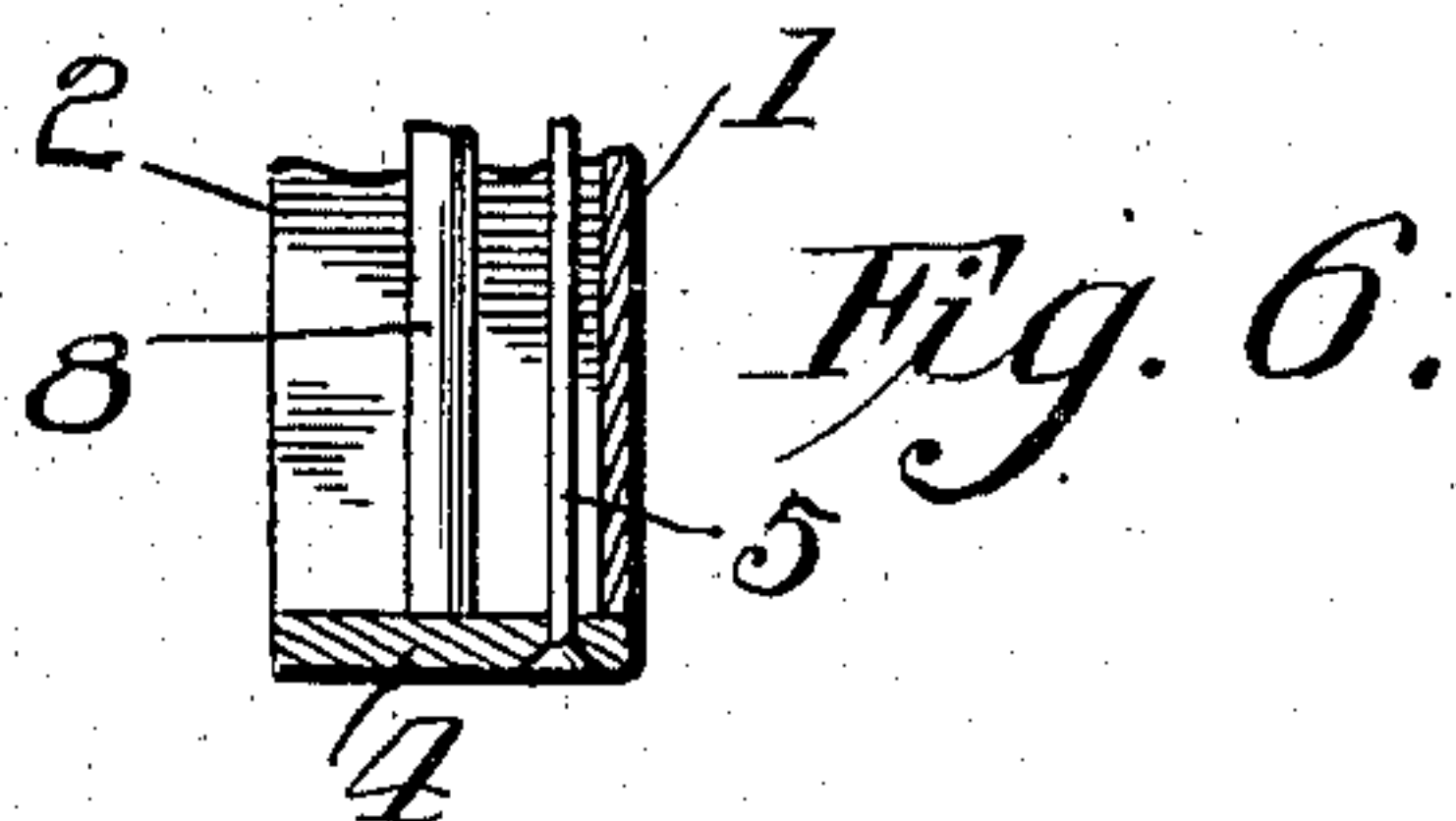
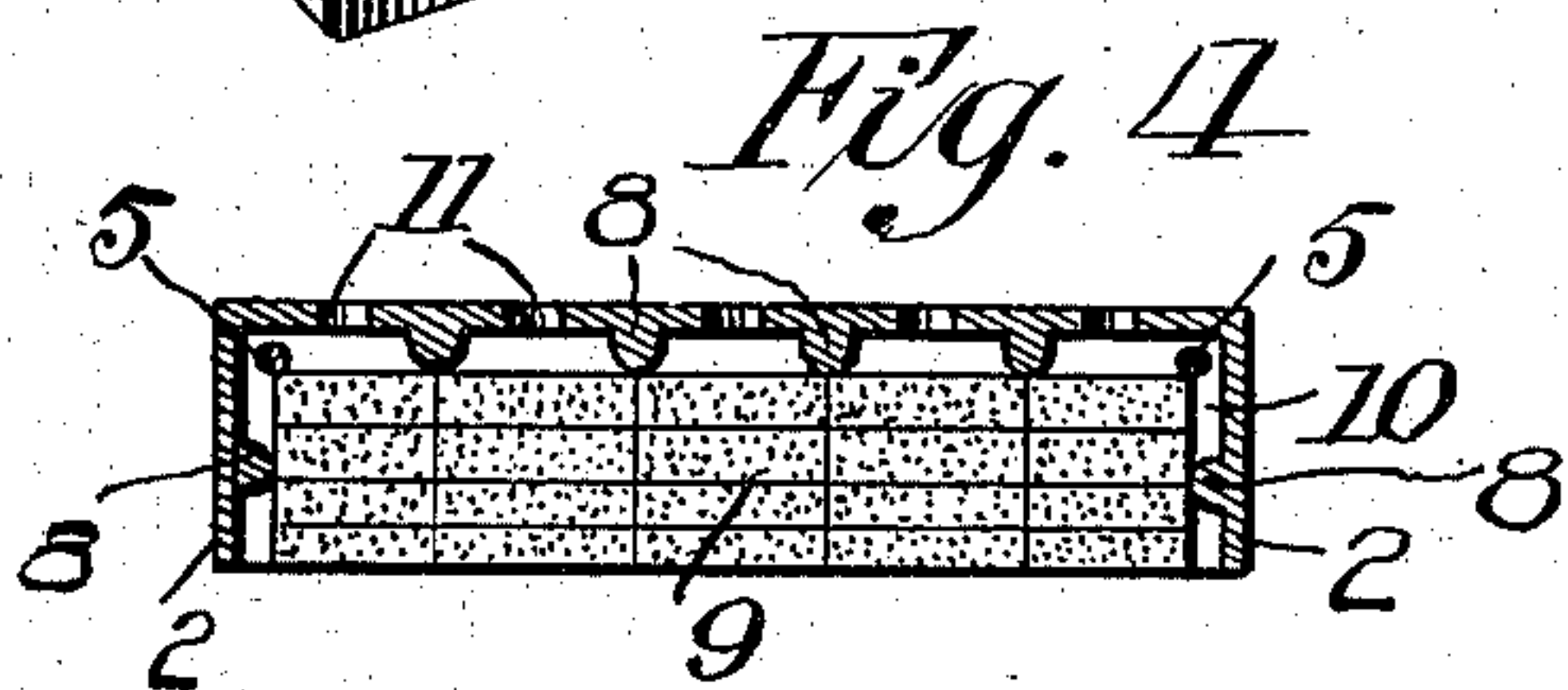
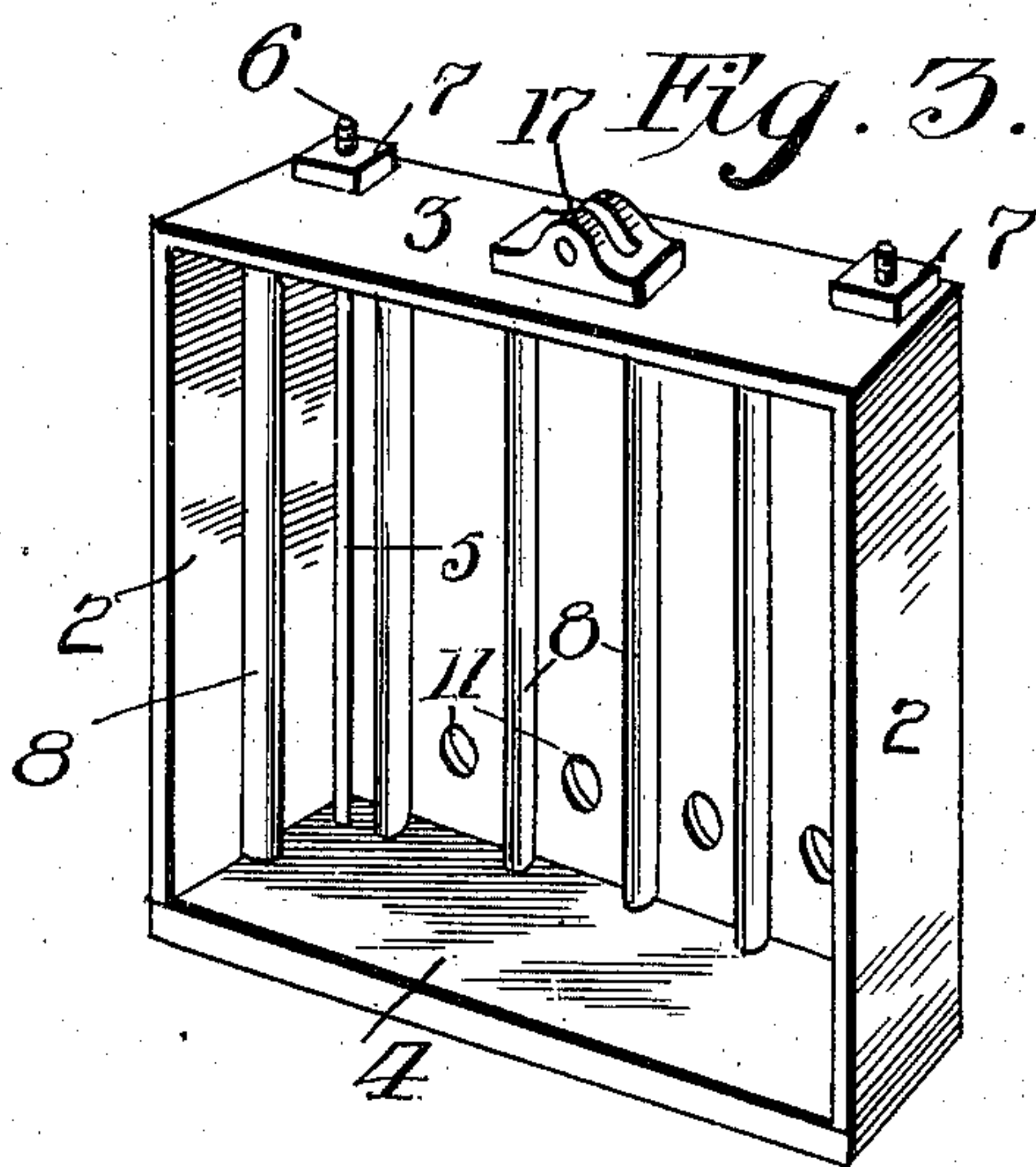
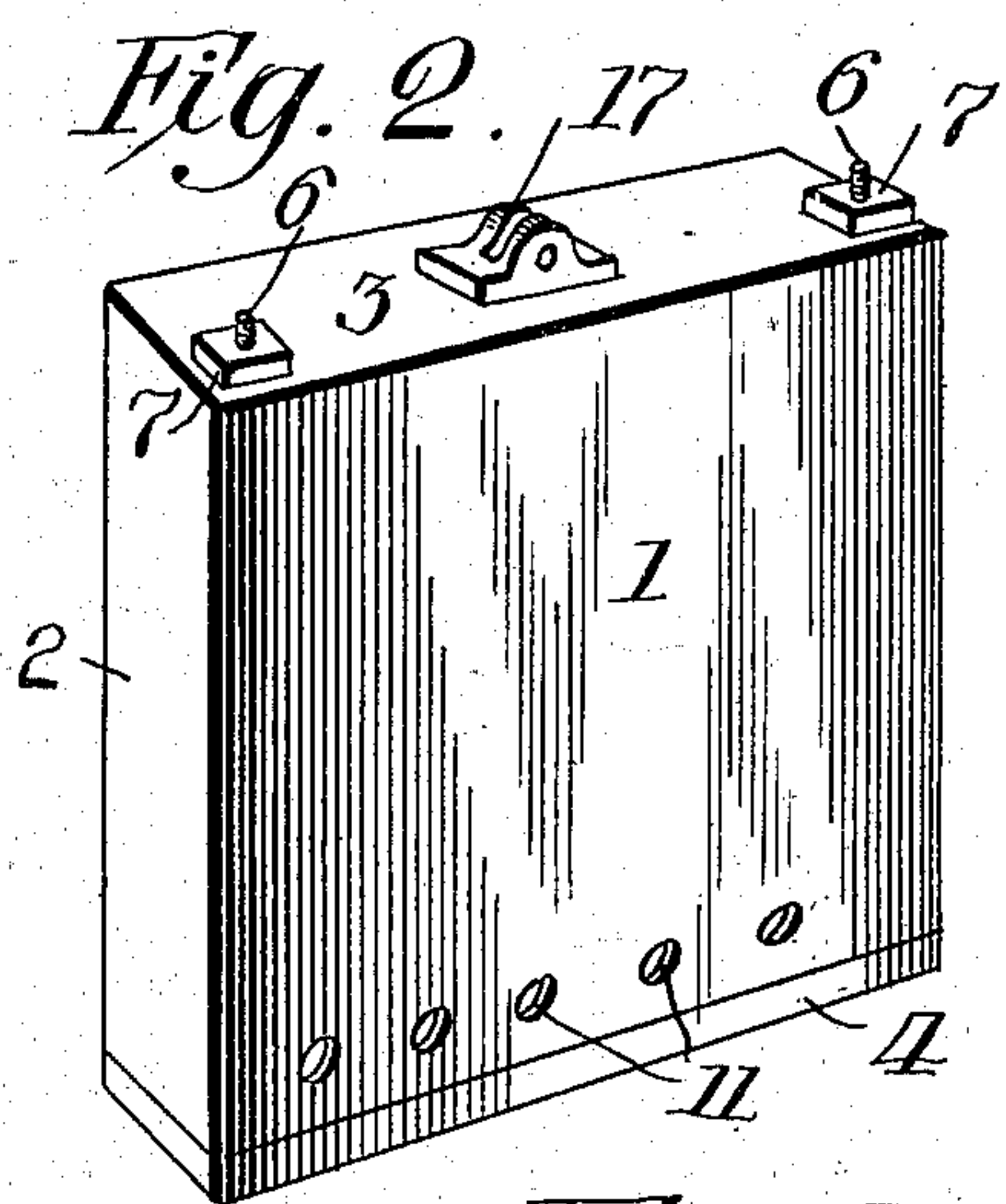
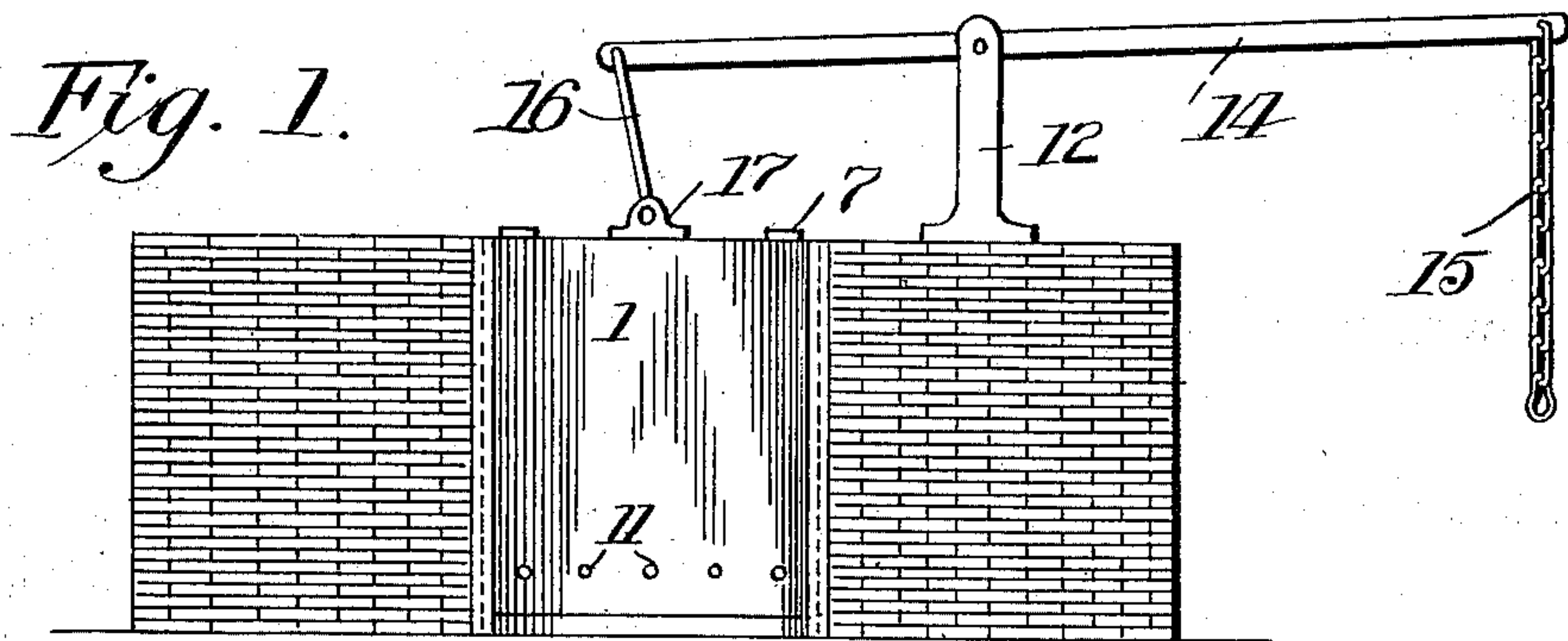
No. 736,222.

PATENTED AUG. 11, 1903.

J. S. COOPER.
FURNACE DOOR.

APPLICATION FILED MAY 9, 1903.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

JEREMIAH S. COOPER, OF PITTSBURG, PENNSYLVANIA.

FURNACE-DOOR.

SPECIFICATION forming part of Letters Patent No. 736,222, dated August 11, 1903.

Application filed May 9, 1903. Serial No. 156,386. (No model.)

To all whom it may concern:

Be it known that I, JEREMIAH S. COOPER, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Furnace-Doors, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in furnace-doors, such as are employed in connection with furnaces of various descriptions in the manufacture of iron and steel; and the primary object of my
15 invention is to construct a door of this type, in which the air is freely admitted in such a manner as to preserve the door whereby to permit the latter to withstand a very great degree of heat.

20 Briefly described, the invention comprises a door-casing, the front wall of which is provided adjacent its lower end with openings to admit the air into the interior of the casing. The casing is provided on the inner face of
25 its front wall with vertically-disposed ribs, and the rib is also provided on each of the side walls. In the casing is placed fire-brick or other refractory material, which is held away from the sides and front wall by the ver-
30 tically-disposed ribs, whereby to form an air-space between the fire-brick or other refractory material and the metallic door-casting. Suitable means is provided for operating the door, and all of the construction above noted,
35 together with other details entering into my invention, will be hereinafter more fully described, and specifically pointed out in the claims.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like numerals of reference indicate like parts throughout the several views, in which—

40 Figure 1 is a front elevation showing the door as applied to a heating-furnace. Fig. 2 is a detached detail perspective view of the door. Fig. 3 is a like view of the same, showing the fire-brick removed. Fig. 4 is a horizontal sectional view of the door. Fig. 5 is a detached
50 elevation of the bottom of the door and supporting-ribs therefor. Fig. 6 is a transverse

vertical sectional view of a part of the door-casing.

To put my invention into practice, I provide a door frame or casting embodying a
55 front plate or wall 1, side walls 2, and top wall 3, all of which are preferably cast integral. The bottom 4 is tied to the remainder of the frame or casting by vertical bolts or tie-rods 5, having their threaded ends 6 ex-
60 tending through the top wall 3, with nuts 7 thereon to hold the same in position. The inner face of the front wall 1 is provided with vertical ribs 8, and a vertical rib is also provided on the inner face of each of the side
65 walls 2. In the casing or frame is placed a plurality of layers of fire-brick 9 or other suitable refractory material, the ribs 8 holding the same some distance away from the front wall and side walls whereby to form an air-
70 space 10 between the frame and the fire-brick or other refractory material, the air being admitted into this space through openings 11 in the front wall 1. Suitable means is pro-
75 vided for actuating the door whereby to elevate the same in order that the condition of the furnace may be observed, a practical embodiment being the provision of a standard
80 12, in which is mounted an operating-lever 14, having a chain 15 or other suitable hand connection at its one end, with its other end connected by a link 16 with a plate 17, carried
85 by the top wall 3. The admission of the cool air from the exterior into the space 10 surrounding the refractory material serves to
90 keep the door in a comparatively-cool state and prevents warping of the metallic frame or casting, thereby materially increasing the strength of the door.

It will be noted that various changes may
95 be made in the details of construction without departing from the general spirit of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters
100 Patent, is—

1. In a furnace-door, a metallic frame or casting embodying an integral front wall, side walls and top wall, vertical ribs formed on the inner face of the front wall and side
100 walls, a bottom, and tie-bolts connecting the bottom to the top wall, a filling of fire-brick

or other refractory material within the frame or casting, and means connected to the top of the frame or casting for actuating the door, substantially as described.

- 5 2. In a furnace-door, a metallic frame or casting comprising an integral front wall, side walls and top wall, said front wall being provided with air-admission openings, vertically-disposed ribs on the inner face of the front
10 wall and side walls, a filling of refractory ma-

terial within the frame or casting, and a bottom tied to the frame or casting and supporting said filling, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

JEREMIAH S. COOPER.

Witnesses:

E. E. POTTER,
K. H. BUTLER.