

No. 872,054.

PATENTED NOV. 26, 1907.

E. W. COOKE.

AIR DRIER.

APPLICATION FILED DEC. 21, 1906.

2 SHEETS—SHEET 1.

FIG. 1.

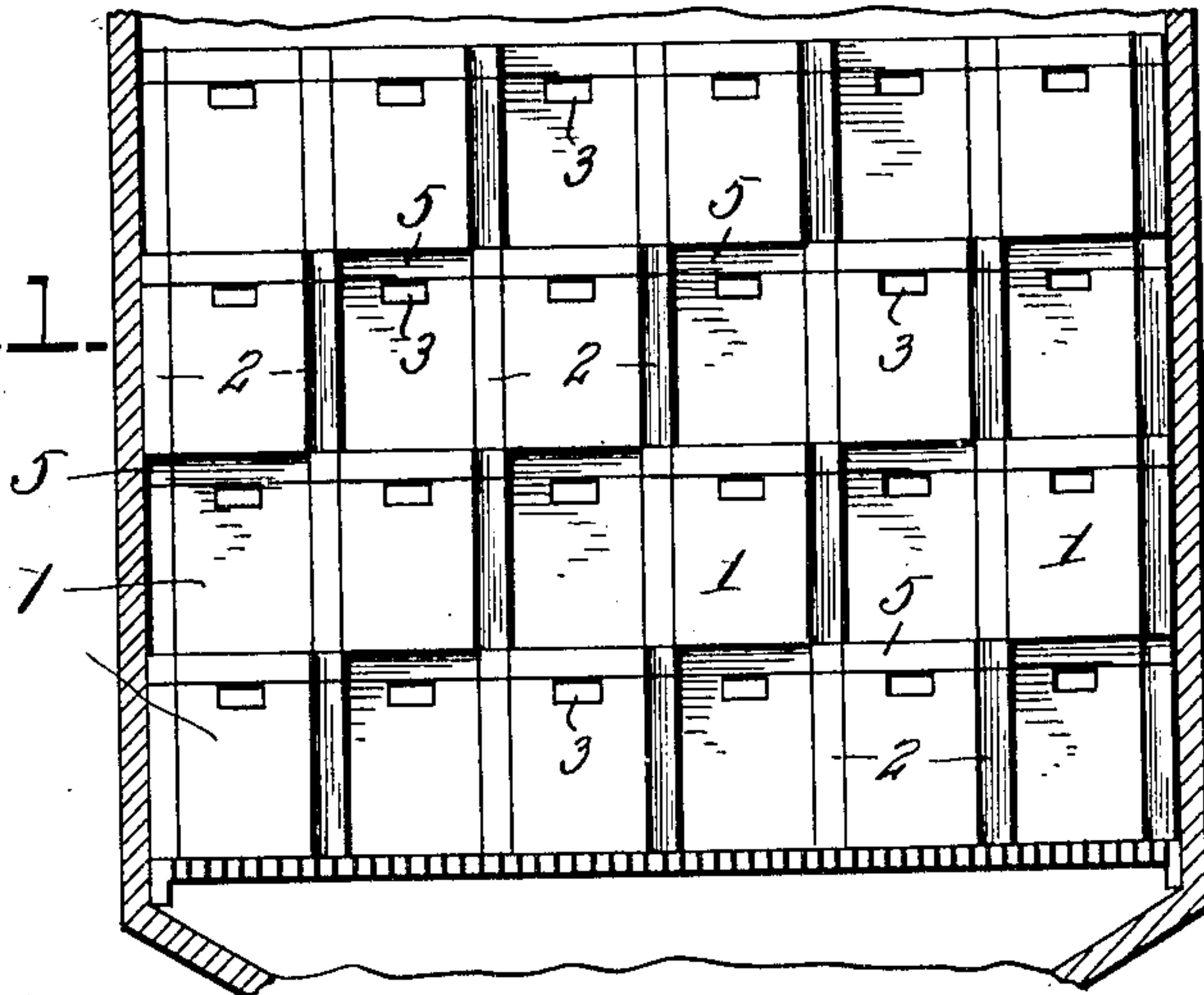


FIG. 2.

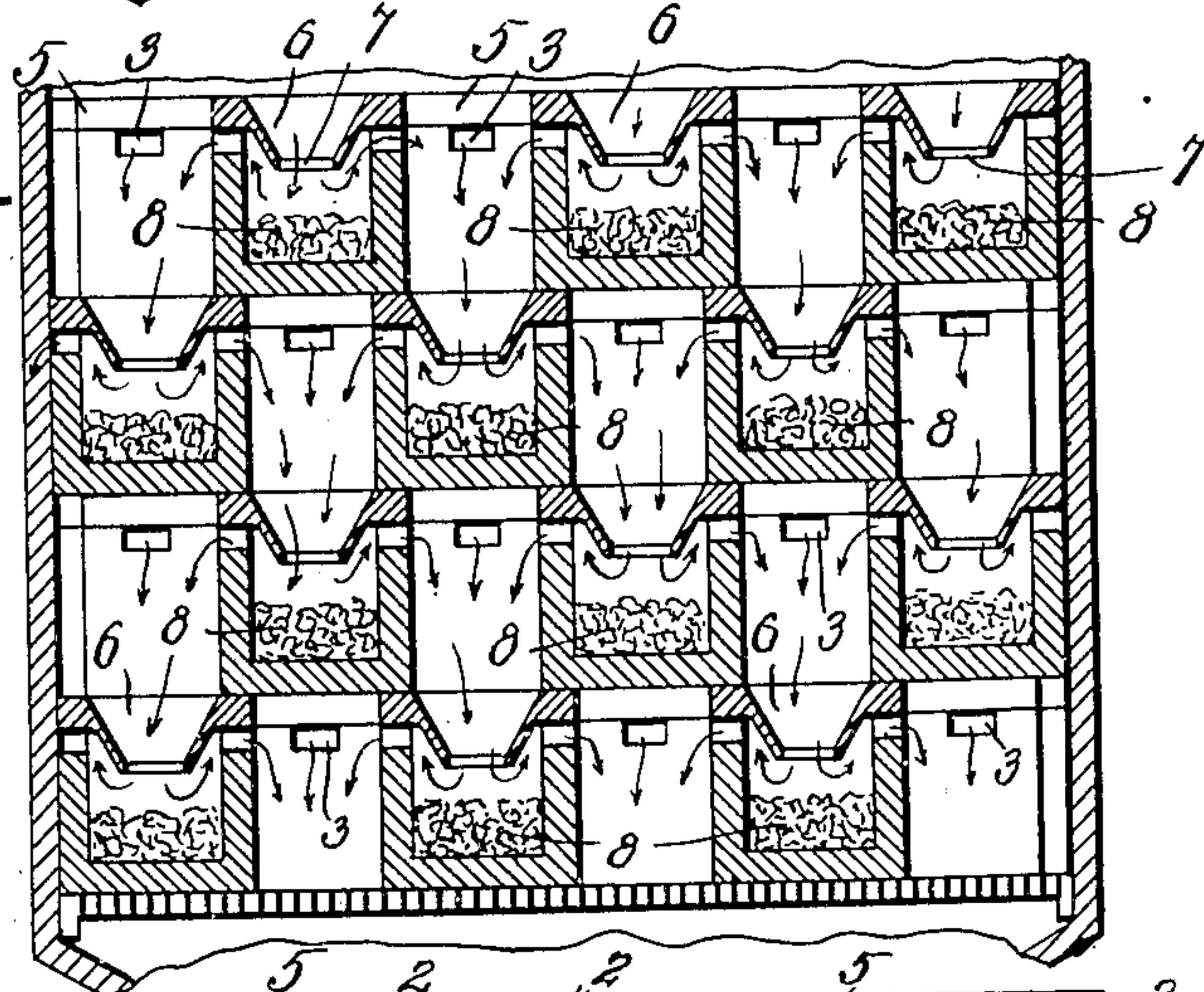
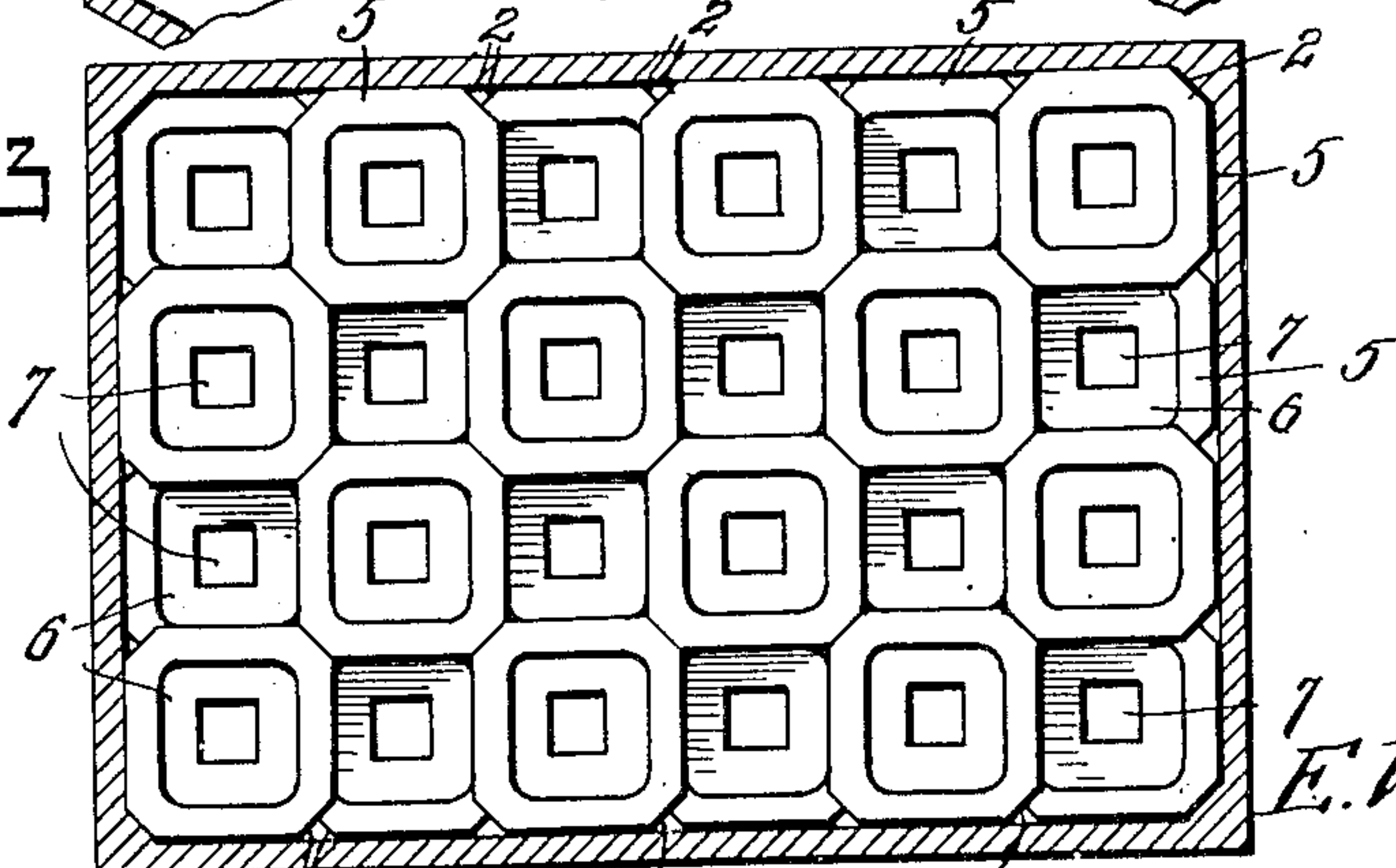


FIG. 3.



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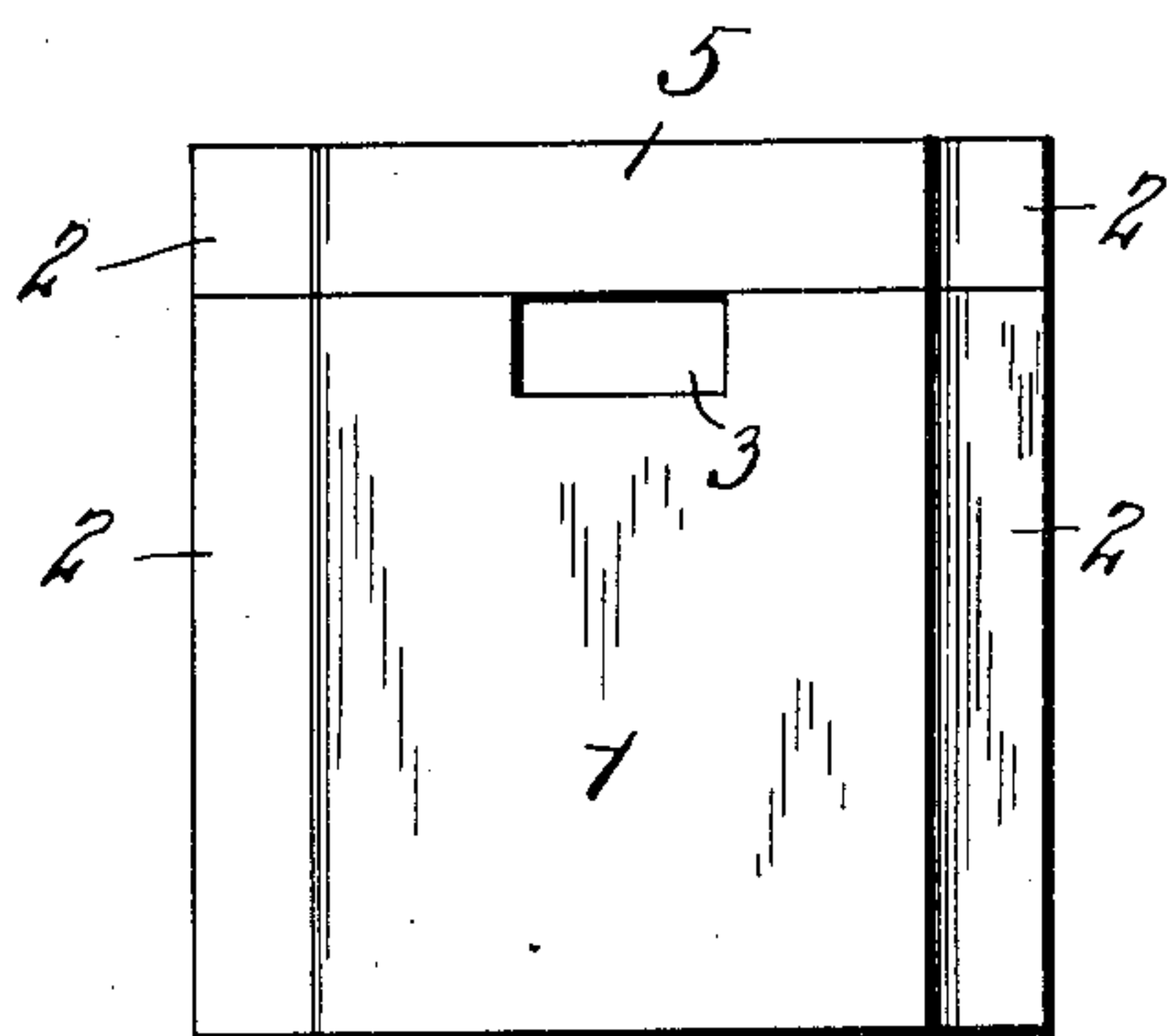


Fig. 4.

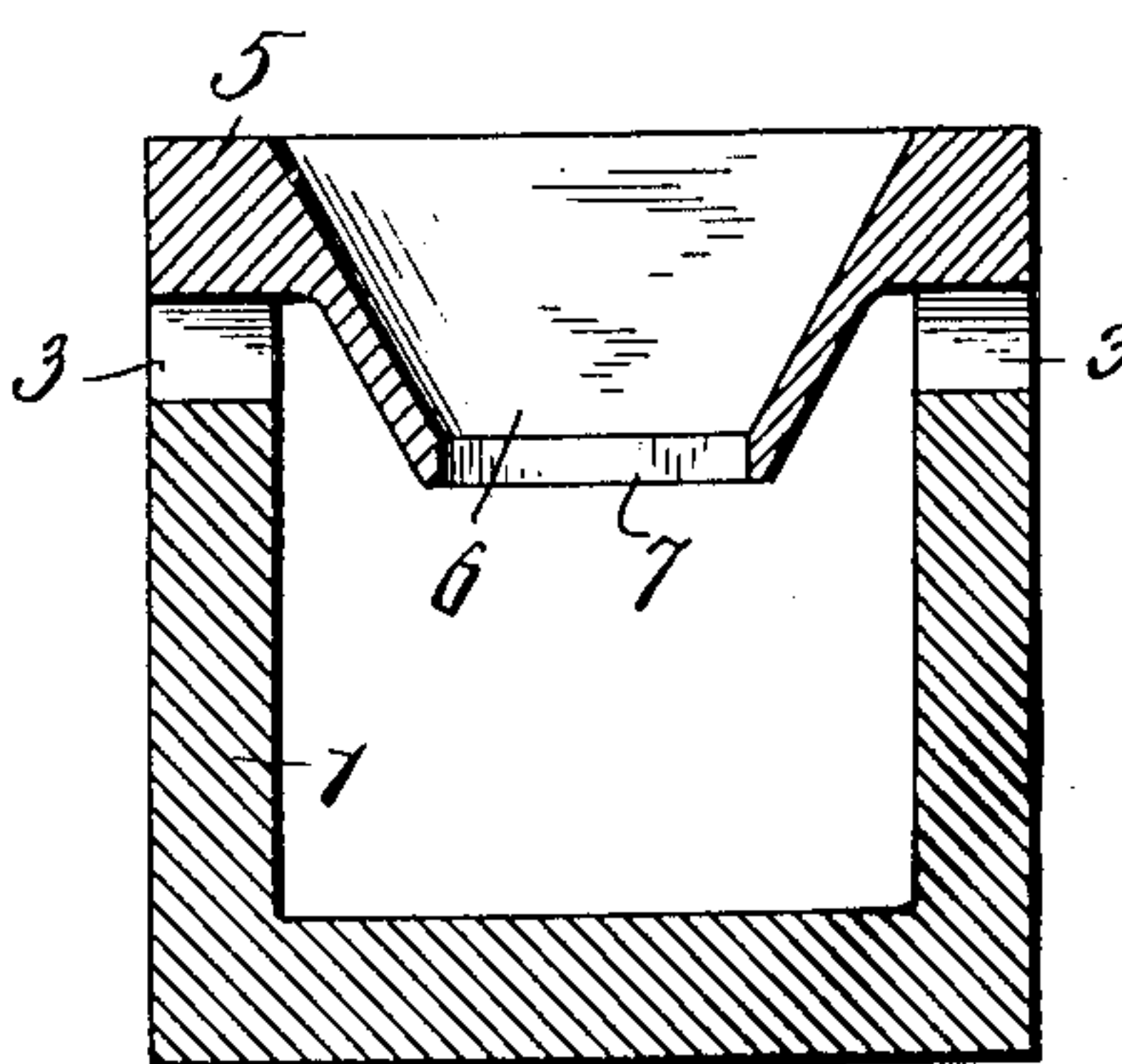


Fig. 5.

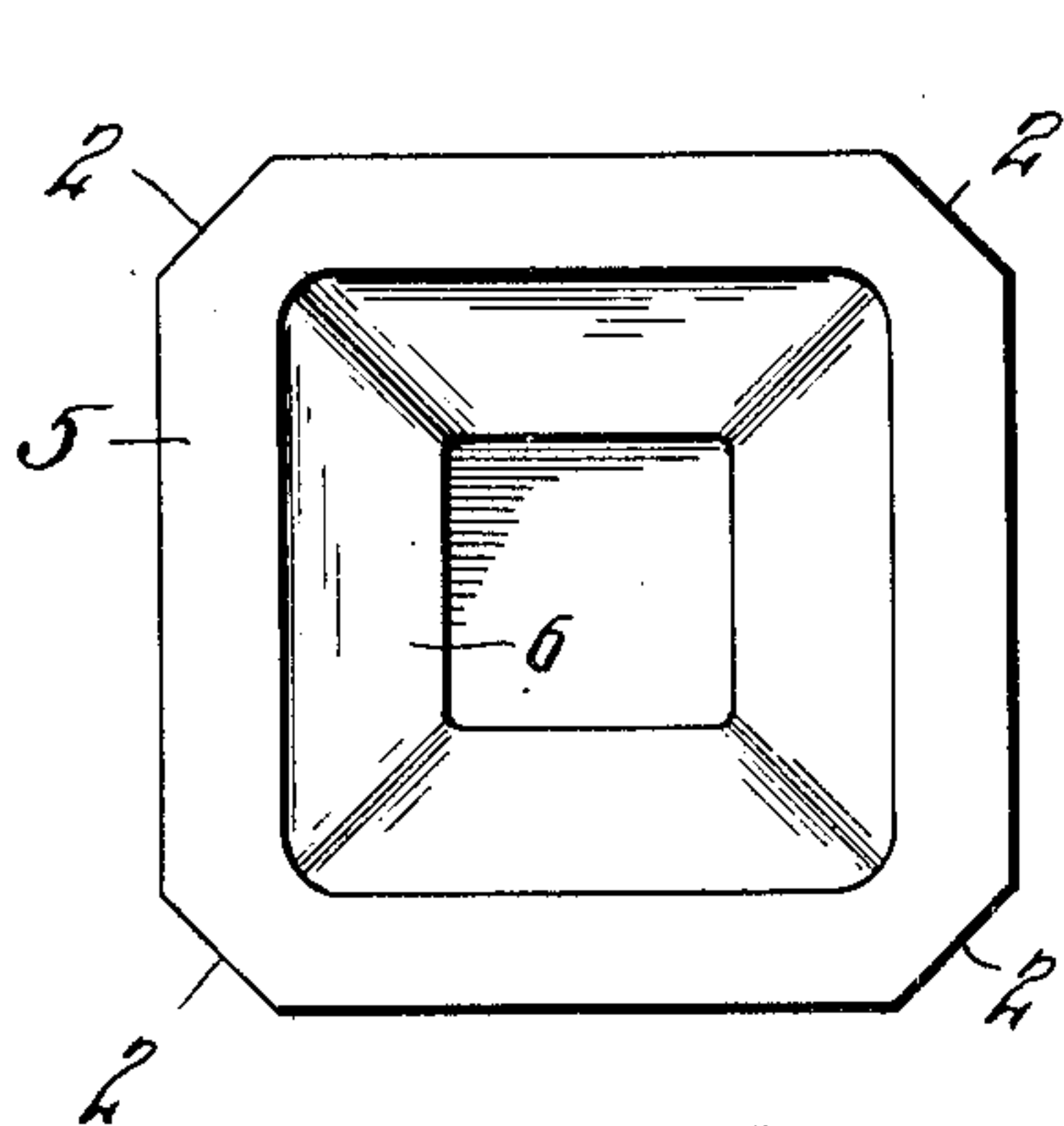


Fig. 6.

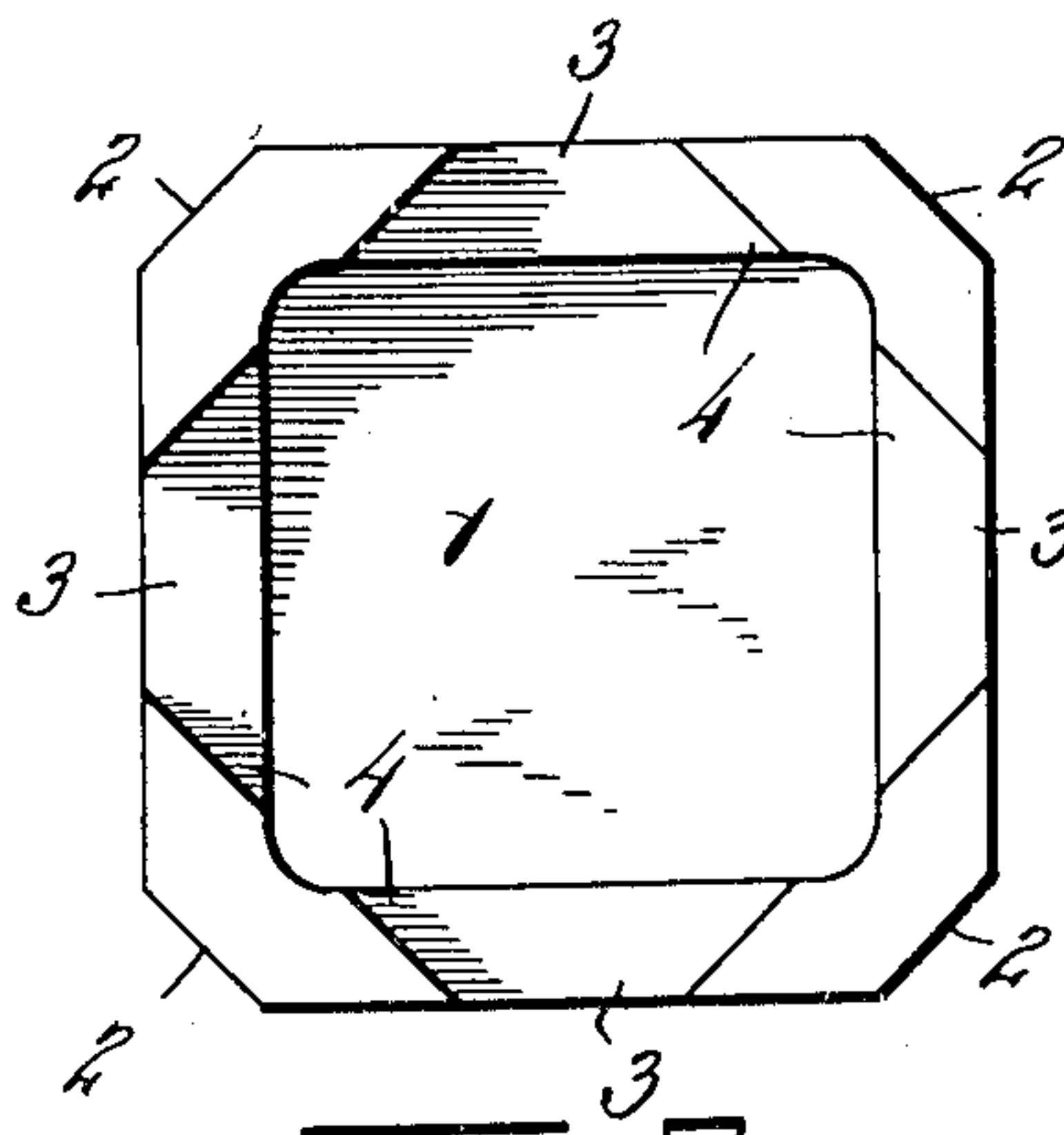


Fig. 7.

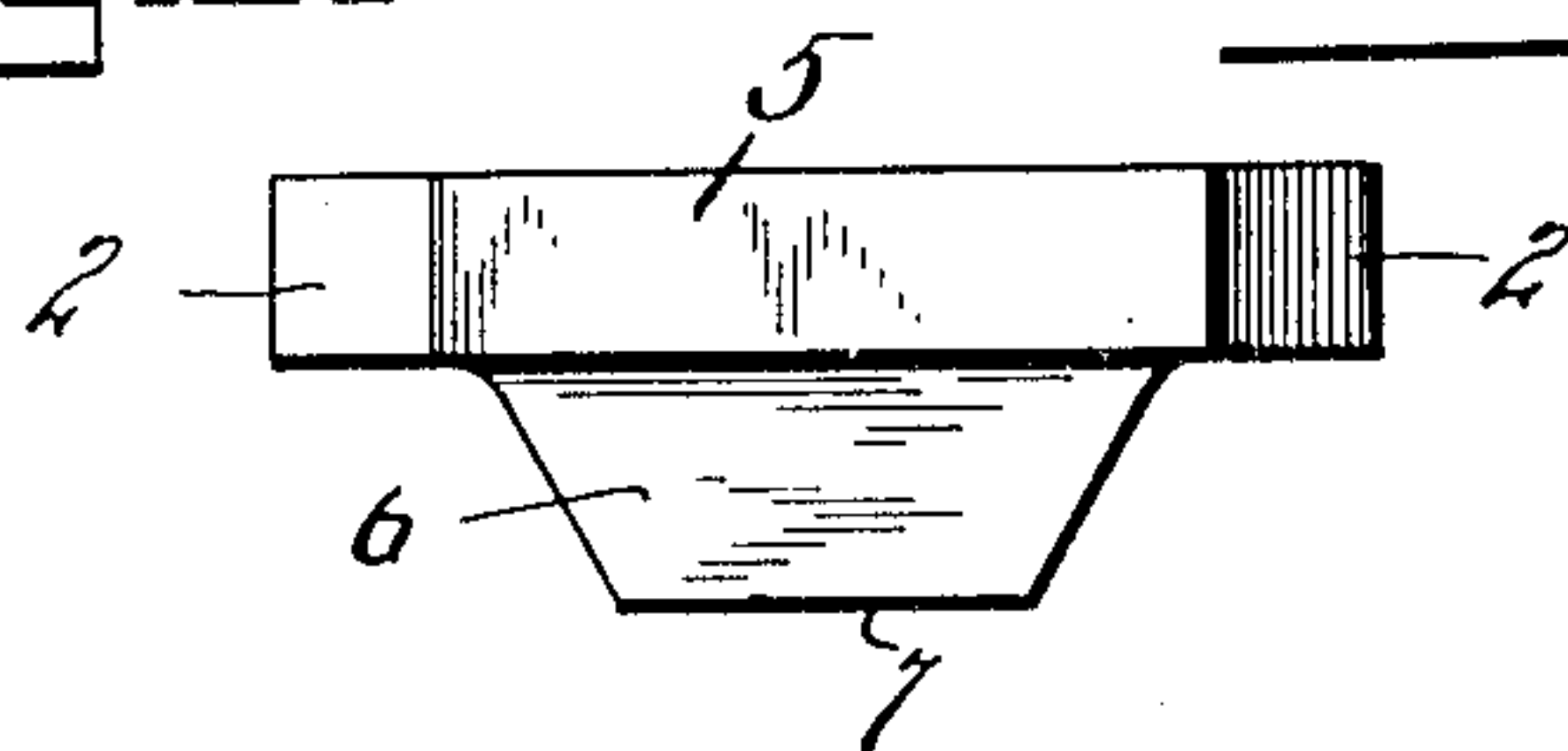


Fig. 8.

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UNITED STATES PATENT OFFICE.

ERNEST W. COOKE, OF WAUKESHA, WISCONSIN, ASSIGNOR TO AMERICAN DEHYDRATING COMPANY, A CORPORATION OF WISCONSIN.

AIR-DRIER.

No. 872,054.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed December 21, 1906. Serial No. 348,967.

To all whom it may concern:

Be it known that I, ERNEST W. COOKE, a citizen of the United States, residing at Waukesha, in the county of Waukesha and State of Wisconsin, have invented certain new and useful Improvements in Air-Driers, of which the following is a specification.

My invention relates to apparatus used in extracting moisture from air, or other vapor, or gas, and consists specifically in the construction of and in the arrangement of cups or receptacles in which the moisture-absorbing substance is placed and through which the air or vapor, from which moisture is to be extracted, is passed.

Heretofore it has been the custom, as far as I am aware, to place the moisture-absorbing substance used in air-driers, and the like, upon shallow iron trays or pans supported one above another in a chamber, or else to place the moisture-absorbing substance upon screens or gratings supported by the walls of the chamber.

The object of my invention is to provide a cup or receptacle adapted to contain moisture-absorbing substance, and a plurality of which can be superimposed in such a manner as to form an extremely efficient air drier, when inclosed in such a way as to cause the air to be dried to pass vertically down through the stack of cups. The construction by which this object is obtained will be best understood from the following detailed description, taken in connection with the accompanying two sheets of drawings, in which—

Figure 1 is an elevation of an air-drying apparatus composed of a plurality of superimposed layers of cups or receptacles constructed according to my invention, the inclosing means being partially shown in section; Fig. 2 is a vertical section of Fig. 1, showing the internal construction of the cups, containing a moisture-absorbing substance; Fig. 3 is a plan view of Figs. 1 and 2; Fig. 4 is a side elevation, on a larger scale, of one of the cups or receptacles; Fig. 5 is a central vertical section of Fig. 4; Fig. 6 is a plan view of Figs. 4 and 5; Fig. 7 is a plan view of one of the cups with the top portion removed, and, Fig. 8 is a side elevation of one of the top portions.

I will first describe a single cup, such as is shown in Figs. 4 to 8, and then explain how

the cups are arranged to form a complete air-drying stack.

Each cup, which may be molded of porcelain, clay or the like, or may be made of iron or steel, consists, as shown, of two parts, the main body portion 1 and the top portion 5. The top portion may, however, be cast integral with the body portion. These parts are of the same shape in outline, being here shown as square, and each portion has its vertical corners chamfered or beveled off as shown at 2. The top portion 5 has a central downwardly projecting hopper or funnel 6, the mouth 7 of which lies at some distance below the upper surface of the walls of the body portion 1. Each of the four walls of the said body portion has a recess or aperture 3 formed in its upper surface which increases in width from the outside to the inside of the wall, as shown at 4. Moisture-absorbing substance, such as calcium-chlorid for instance, is placed inside the cup, as indicated at 8 in Fig. 2, and the air to be dried passes downwardly through the mouth 7 of the hopper or funnel 6 of the top, strikes the calcium-chlorid and then passes upwardly and out through the openings 3. In arranging a series of these cups to form a complete air-drier, a layer is first formed by placing a number of the cups with their chamfered corners in contact with each other, thus leaving square spaces between each four cups of an area smaller than that of a cup by the thickness of the four walls inclosing each space, as is clearly shown in Fig. 3. Another layer of cups is then placed on the first layer so formed, the cups of this second layer being placed over the spaces of the first layer which, of course, causes the spaces of the second layer to come over the cups of the first. As many layers as may be required are thus built up and the stack of cups thus formed is then inclosed in a chamber or surrounding wall 9, having a supporting grating 10 and provided with suitable means, not shown, for conducting the air to be dried downwardly through the stack from the top and also for passing heated air upwardly through the stack when it is necessary to dry out the moisture-absorbing substance.

In use the air or other vapor to be dried passes into each cup of the top layer through the funnel-shaped opening 7, and, after

striking the calcium-chlorid 8, passes upwardly and out through the four openings 3 of that cup into the spaces between the cups of that layer and thence downwardly through the funnel tops of the four adjacent cups in the layer next below. In this way each cup of the layers below the top one receives air from four cups of the layer next above and in its turn delivers air into four cups of the layer next below it, whereby the air is widely distributed and thoroughly dried in its passage downwardly through the stack.

It will be obvious that the cups may be made of other shapes than square and that, if desired, the top portions 5 may be omitted entirely or be made integral with the body portion.

Having thus described my invention what I claim is—

1. As a new article of manufacture, a receptacle for moisture-absorbing substance consisting of a cup open at the top and closed at the bottom and having four diametrically opposite openings near the upper sides of its walls.

2. As a new article of manufacture, a receptacle for moisture-absorbing substance consisting of a cup having an opening at the top and closed at the bottom and rectangular in shape, having its upright corners chamfered off to permit of the assembling of a series of said cups in staggered relation and each vertical side having a recess or opening near the top.

3. As a new article of manufacture, a receptacle for moisture-absorbing substance consisting of a cup open at the top and closed at the bottom and rectangular in shape, having its upright corners chamfered off to permit of the assembling of a series of said cups in staggered relation and each vertical side having a recess or opening near the top, and a top portion of the same shape adapted to fit onto the cup and having a depressed funnel or hopper-like center projecting below the level of said openings.

4. In an air-drying apparatus, a plurality of cups adapted to contain moisture-absorbing substance, arranged in superimposed

layers with the cups of one layer resting over the spaces between the cups of the layer below, each cup being open at the top and having recesses or openings in its side walls.

5. In an air-drying apparatus, a plurality of rectangular cups or receptacles adapted to contain moisture-absorbing substance having their corners chamfered off and arranged in layers so that the cups of each layer rest over the spaces of the layer below and each cup having an opening in each of its walls.

6. In an air-drying apparatus, superimposed layers of cups open at the top and closed at the bottom and adapted to contain calcium-chlorid or the like, the corners of the cups being chamfered off and placed in contact with each other, the cups of one layer being located over the spaces between the cups of the layer next below and the sides of each cup being apertured to permit the passage of the air therethrough into the adjacent spaces.

7. In an air-drying apparatus, a stack of receptacles containing moisture-absorbing substance, all of said receptacles being of the same shape, the receptacles of each layer being arranged to leave spaces between each four of them and lying over the spaces of the layer below, each receptacle having an opening in its top and an opening in each of its side-walls.

8. In an air-drying apparatus, a stack of receptacles containing moisture-absorbing substance, each of said receptacles being square in shape with its corners chamfered off, the receptacles of each layer being arranged with their chamfered corners in contact, the receptacles of each layer being placed over the spaces of the layer below, each receptacle having a top-portion provided with an inwardly projecting funnel and each receptacle having an opening in each of its four walls.

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

ERNEST W. COOKE.

Witnesses:

HOWARD A. COOMBS,
L. L. ARMSTRONG.