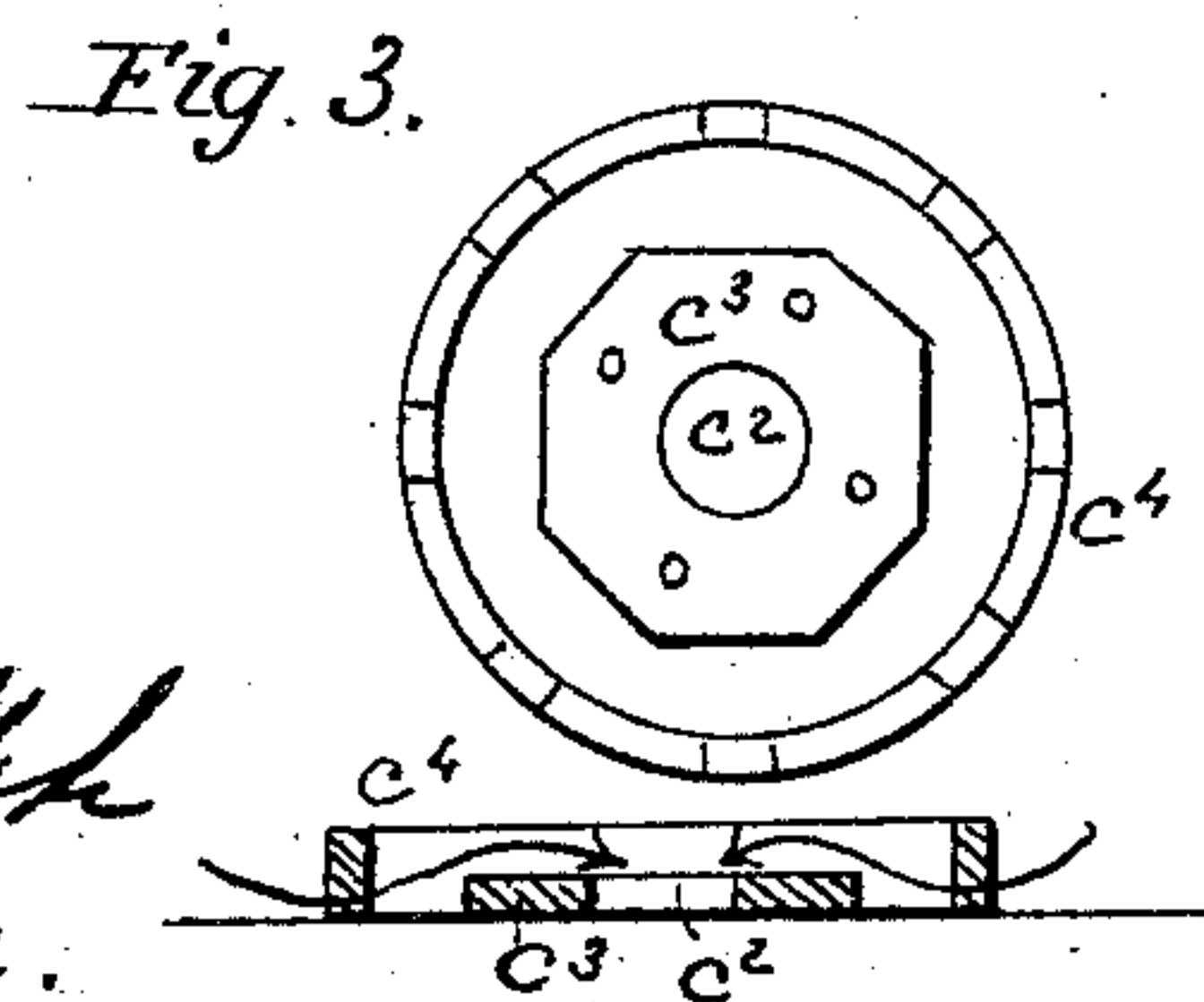
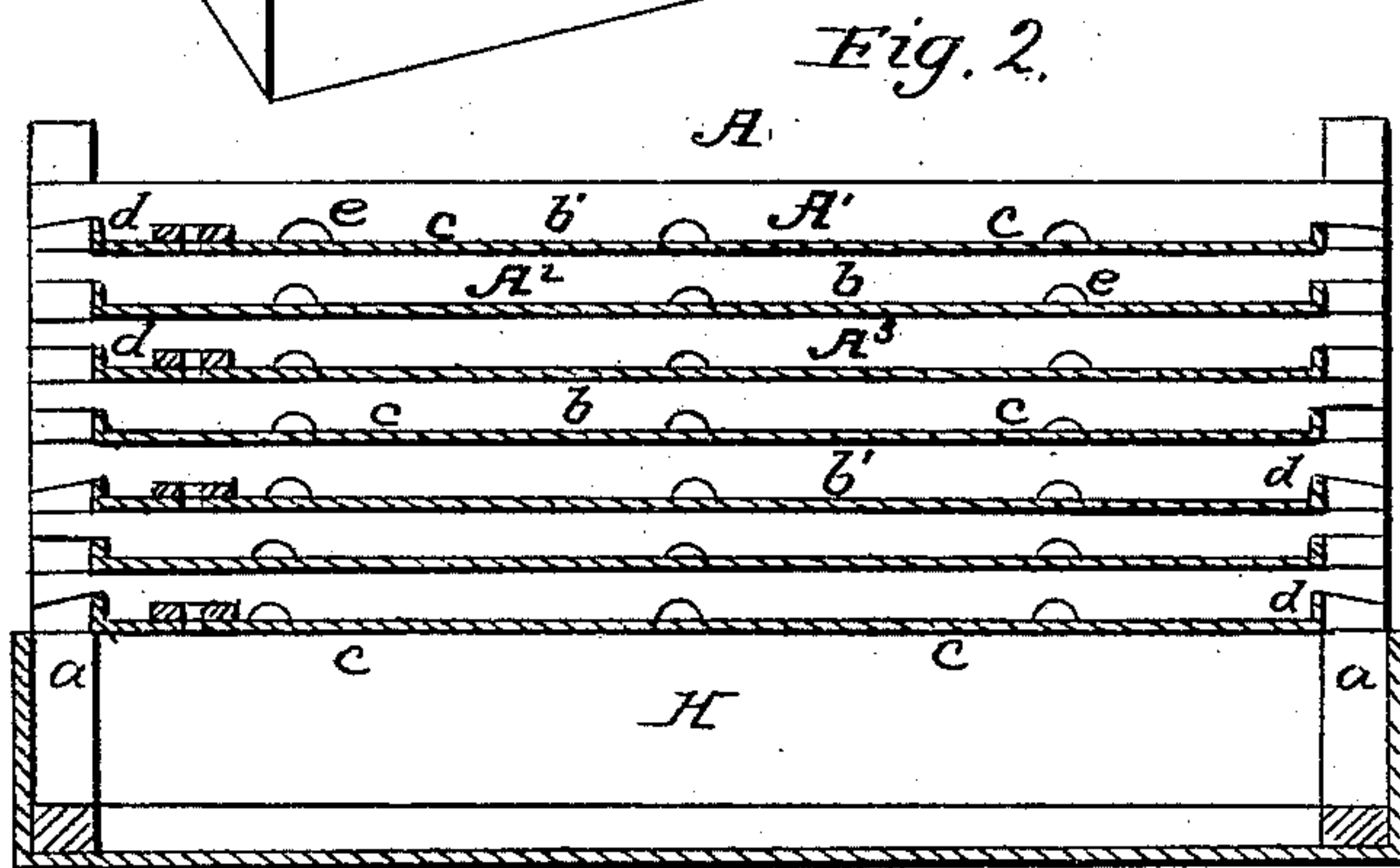
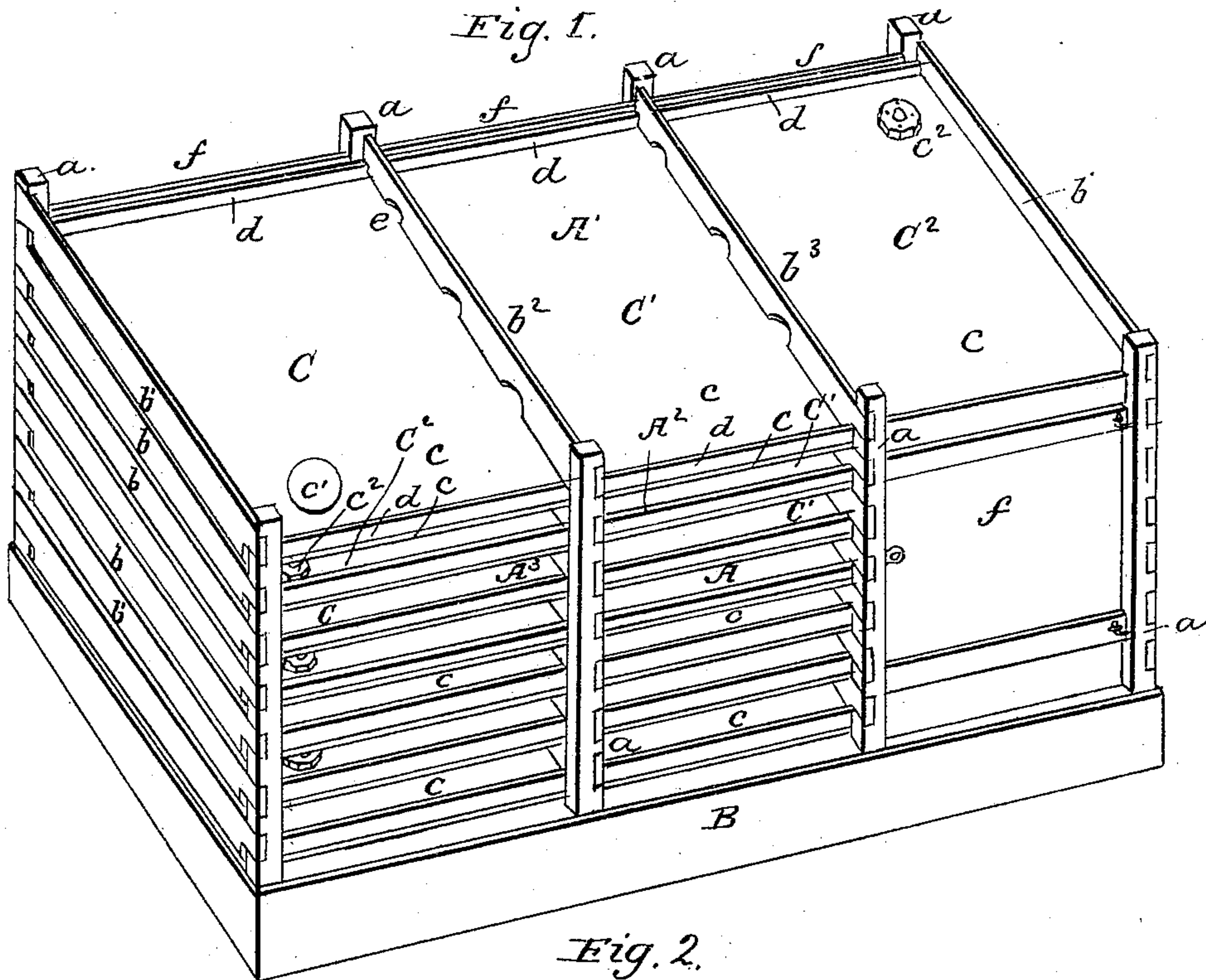


A. HOEPPNER.
Making Vinegar.

No. 58,823.

Patented Oct. 16, 1866.



Witnesses:
S. M. Randolph
Chas. H. Boyle.

Inventor:
A. Hoepfner by
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UNITED STATES PATENT OFFICE

ARNOLD HOEPPNER, OF ST. LOUIS, MISSOURI.

IMPROVED APPARATUS FOR MAKING VINEGAR.

Specification forming part of Letters Patent No. 58,823, dated October 16, 1866.

To all whom it may concern:

Be it known that I, ARNOLD HOEPPNER, of the city and county of St. Louis, State of Missouri, have invented a new and useful Vinegar-Generator or Acetifier; and I do hereby declare that the following is a full, and exact description thereof, and of its application, reference being had to accompanying drawings.

The nature of my invention is in the construction and application of an acetifier or generator of peculiar form and action in the fabrication of vinegar by the quick process.

It is known that recently fermented wort or acetifying mixtures contain gluten, and this will ordinarily remain even after acetification to some extent, and cause the vinegar to putrify. In the usual quick processes of manufacture the wash is passed through vessels holding shavings or chips of wood, or corn-cobs, &c., for the purpose of increasing largely the surface over which the wash is spread and affording easy access to air, thereby causing quick oxidation. Now, in this passage the wash deposits a part of its gluten and other nitrogenous impurities, such as the fungus of the vinegar-mother. Such deposits moreover increase largely by continued use of the generator. The subsequent pourings of wash then are actually contaminated by the impurities deposited by previous pourings, and this contamination is likely to be all the more extended because the generators cannot be cleansed except by a renewal of the filling or some still more laborious process of washing, &c. In order to compass the advantages of the quick process of acetification and at the same time avoid (or reduce most materially) the damage done by impurities in the acetifying mixtures as aforesaid, the nature of my invention is, in detail, in the construction of a series of flat vessels arranged with reference to one another to economize space and to permit the passage of the wash most advantageously, the same being furthermore constructed with devices for regulating the supply of air and combined with devices for securing a constant feed-flow of the wash. It will hereinafter more specially appear that in the construction here presented the process of cleansing is easy and can be effectively performed in short time.

To enable those skilled in the art to make

and use my said generator, I will now describe its construction and operation, referring to—

Figure 1, which is a perspective view, and Fig. 2, which is a vertical sectional elevation thereof, and to the letters of reference marked thereon.

I construct the entire apparatus of wood or other material not corroded by acetic acid, joining the parts in such wise as to use no nails, bolts, &c., of iron or other corrosive metals.

I place the generator A so as to rest within a tank or reservoir, B, which receives the acetified wash. I construct said generator by uniting a series of vertical posts, *a*, by transverse joists *b*; *a* and *b* usually join by a simple mortise, but every third or fourth joist, *b*¹, should be dovetailed or otherwise secured to *a* to prevent separation. Between the consecutive joists *b* and *b*¹, and between *a* and *a*¹, I construct a plain flooring, *c*, the single parts thereof being tongued and grooved together or otherwise fluid-tightly joined. The joists *b* are notched in such manner as to permit the side boards *d* to pass inside of *a*. Thus are formed a series of flat vessels, A¹ A² A³, &c., over one another, the same being divided each in a series of compartments, C C¹ C², &c., by the joists *b*² *b*³ *b*⁴, &c. The wash is received at one corner of compartment C, say, at *c*¹; it is spread over the surface of C, and passes through one or more apertures in the partition-joist *b*² into compartment C¹; moreover, the aperture *e* in *b*² may be placed so as to cause the wash to pass the greatest possible distance before its exit from C. In the same manner the wash passes from C¹ to C², &c., until it reaches the last compartment of each vessel A¹ A², &c. In order to pass the wash from one vessel to another, from A¹ to A², &c., the last compartment, C², is perforated at the corner of A¹ opposite diagonally to the point of receipt *c*¹, say, at *c*², a simple block of wood with a perforation corresponding to that at *c*² is placed there, being secured by wooden nails. The wash will stand in each vessel to the height indicated by the top of the overflow-block at *c*², and owing to the feed-flow the wash will flow in a continuous stream from the compartment C² in A¹ above to compartment C in A² just beneath. The wash passes over the surface of all compartments in A², and at the

diagonally opposite end of A^2 from the point of entrance it passes through a similar overflow in C^2 at c^2 to the compartment C in A^3 , &c.

It will be seen that an indefinite number of vessels, $A^1 A^2 A^3$, &c., may be used, and each vessel arranged with an indefinite number of compartments, $C C^1 C^2$, &c. Thus the surface of wash exposed to the oxygenating influence of the air may be indefinitely increased and the time of the process of acetification correspondingly shortened.

It may be desirable to take the wash overflow from some distance below the surface thereof, avoiding floating impurities. To achieve this I construct, as shown in detail, Fig. 3, around the overflow-block c^3 a second block, c^4 , higher, having perforations permitting the wash to pass between c^3 and c^4 , and overflow at c^2 . The top of the perforations in c^4 is below the top of c^3 ; hence surface impurities are excluded. This overflow might also be made by a siphon-tube.

In order to regulate the feed-flow of wash to the generator I use a siphon whose discharge end rests at c^1 , and whose influx end is secured to a float in such wise that as the level of the wash sinks in the reservoir containing the same preparatory to acetification the influx end may be always at the same distance below said level of fluid, thus insuring a constant head or height of pressure-column and a constant feed-flow.

In its passage from compartment to compartment and from vessel to vessel the wash is subjected to the oxygenating influence of the air. In order, however, that the acidification may ensue properly it is necessary to regulate the inflow of air between the vessels $A^1 A^2$, &c. To accomplish this I arrange between

the posts a a series of doors or shutters, f , the same being either hinged to a or arranged to slide vertically between said posts. By regulating the aperture by said doors f the influx of air is regulated not only between two vessels, A^1 and A^2 , but also between adjoining compartments, C and C^1 , &c.

In case it should be necessary openings may be made in the doors f , closed by adjustable slides, which may still more effectively regulate the air-influx.

For the purpose of cleansing the floors and side of the vessels here used from deposits, it self and causing impurities to flow over the is only necessary to raise one edge of the generator A , thereby canting the floors of all vessel side boards d ; moreover, the floors, &c., may then be easily cleansed by dashing water thereon.

Having thus fully described my invention, what I claim is—

1. The combination of a series of shallow vessels, in which by surface oxygenation the acetification of the wash is effected.

2. The combination of the vessels $A^1 A^2 A^3$, &c., their overflow-openings c^2 arranged at diagonally opposite ends, substantially as set forth.

3. The separation of each vessel $A^1 A^2 A^3$, &c., into compartments, $C C^1 C^2$, &c., the same connecting by apertures d , substantially as set forth.

4. The combination of the vessels, $A^1 A^2 A^3$, &c., with shutters f , as and for the purpose set forth.

ARNOLD HOEPPNER.

Witnesses:

H. SCHEFFER,

GEO. P. HERTHEL, Jr.