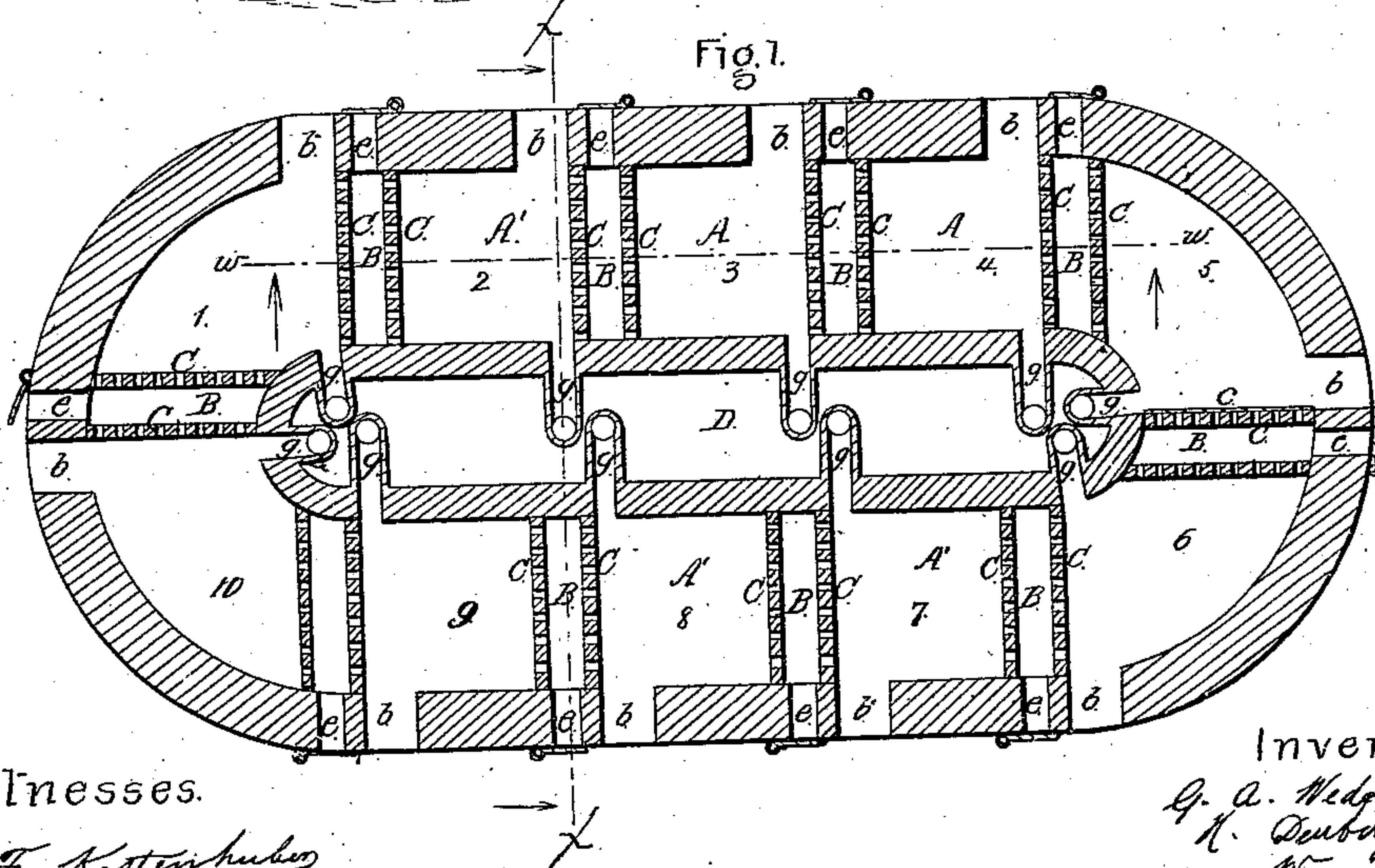
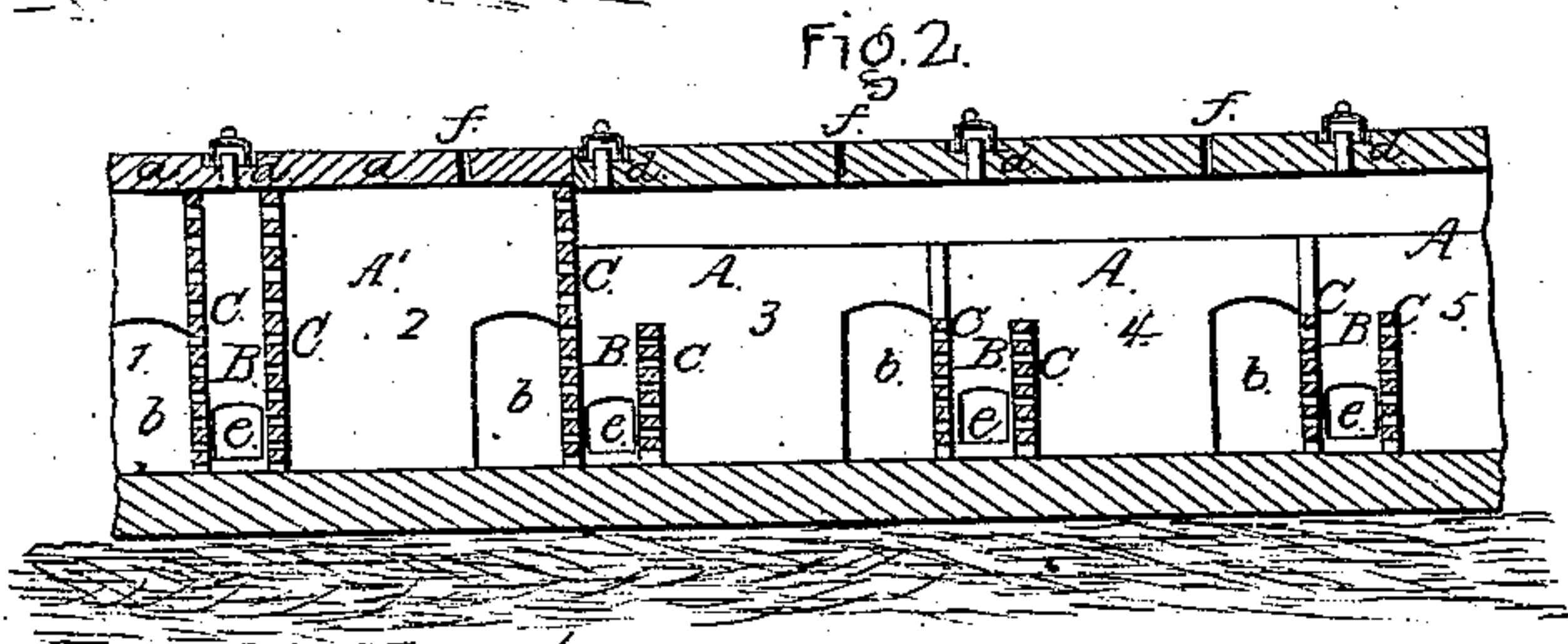
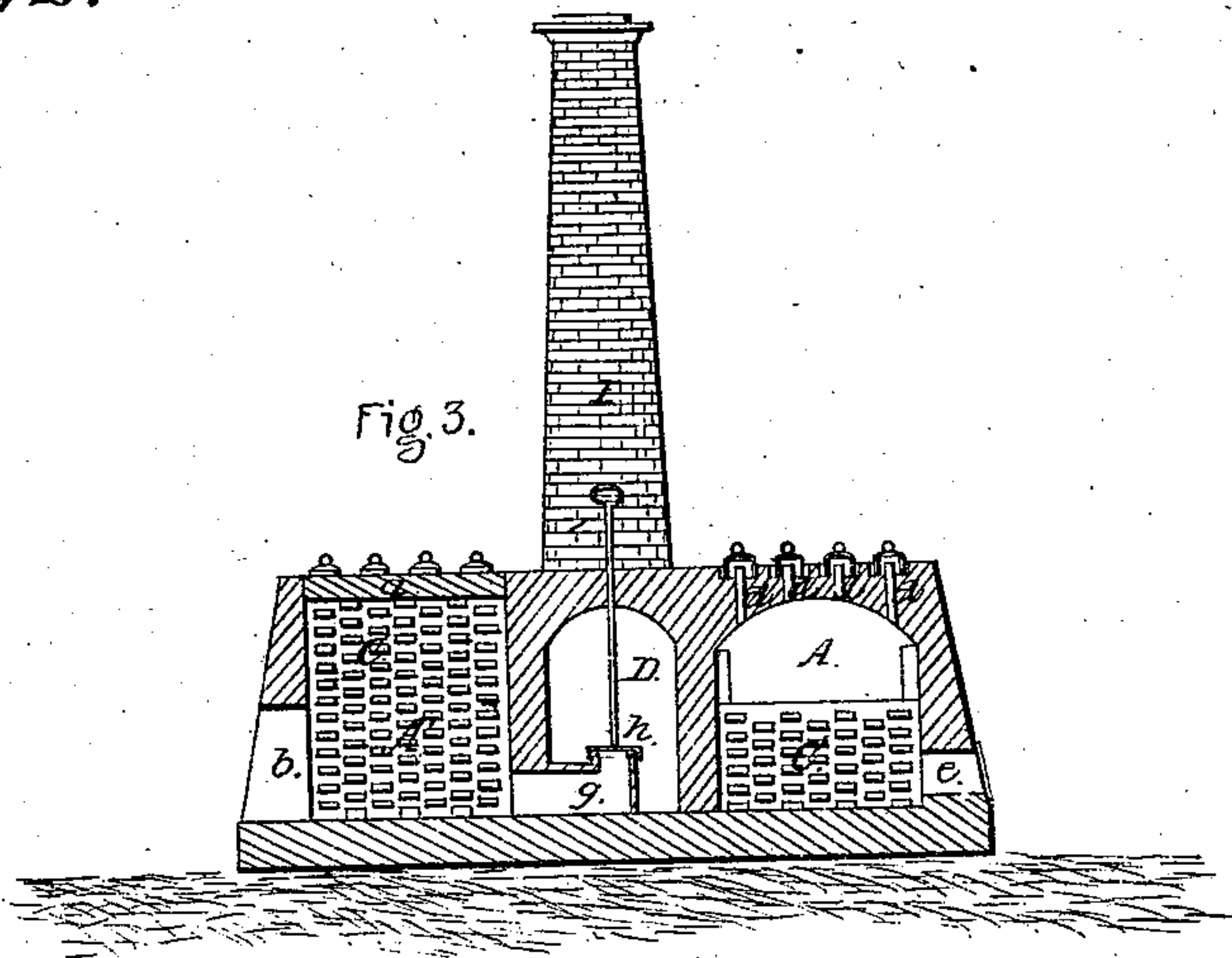


*Wedekind & Dueberg*

*Brick Mill*

*N<sup>o</sup> 85,042.*

*Patented Dec. 15, 1868.*



Witnesses.

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# United States Patent Office.

GUSTAV A. WEDEKIND AND HELMUTH DUEBERG, OF NEW YORK, N. Y.

Letters Patent No. 85,042, dated December 15, 1868.

## IMPROVED BURNING-KILN

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, GUSTAV A. WEDEKIND and HELMUTH DUEBERG, both of the city, county, and State of New York, have invented a new and improved Kiln for burning brick and other articles; and we do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which drawings—

Figure 1 represents a horizontal section of this invention.

Figure 2 is a longitudinal vertical section of a portion thereof, the line *ww*, fig. 1, indicating the plane of section.

Figure 3 is a transverse section of the same, taken in the plane indicated by the line *xx*, fig. 1.

Similar letters indicate corresponding parts.

This invention relates to certain improvements on that class of kilns which are known by the term "progressive kilns," and for which a patent was granted to F. E. Hoffman, June 13, 1865.

Our present improvement consists in the arrangement, within a progressive kiln, of permanent perforated walls at each side of the fire-chamber, as hereinafter more fully described.

Our progressive kiln, as represented in figs. 1, 2, and 3, is composed of a series of burning-chambers, A or A'; the chambers A being covered by arches, while the chambers A' are open at the top, and provided with temporary covers *a*, of bricks, clay, or other suitable material, placed on the top of the material to be burned, with which said chambers are filled.

After the material contained in one of the chambers has been burned and cooled, the cover *a* is removed, so that free access can be had to the interior of the burning-chamber, for the purpose of removing the burned material, and after the chamber has been recharged, the cover is renewed.

The chambers A', therefore, are open at the top during the time the material is brought in or taken out, and consequently it is much cooler therein, and more comfortable for the men working therein, than it is in the arched chambers.

Each of the chambers A is accessible by a door-way, *b*, in the outside wall of the kiln, which door-ways, however, are not required for the open chambers A', especially if the kiln is built under ground.

The burning-chambers can be temporarily separated from each other by a movable partition, *c*, consisting of one or more pieces of sheet-iron, or other suitable material. This partition is inserted either through the door-ways *b*, or, in case the chambers are open at the top, from above.

B are the furnaces or fire-places, which are situated inside the burning-chambers, and which receive the fuel either through the apertures in the top, or through openings *e* in the side wall of the kiln.

With open chambers, the apertures *d* are to be left in the temporary cover.

The apertures *d*, as well as the openings *e*, can be hermetically closed, the former by suitable covers, the latter by doors.

According to the kind of fuel, the furnaces are to be constructed in different ways.

For coal, an ash-pit covered with a grate may be provided, which is not required for wood.

If petroleum is used as fuel, the bottom of the furnace is to be covered with a layer of sand or some other porous substance, which will absorb the petroleum, until it is consumed by burning. The petroleum is introduced through the openings *d* in the top, by means of a syringe, or an equivalent device.

The furnaces or fire-places B are separated from the burning-compartments in the chambers, by perforated partitions or walls C, made of fire-brick, or other suitable material, and thereby the fuel is prevented from coming in direct contact with the articles to be burned.

By this separation of the furnaces from the burning-chambers, the quality of the burned articles is improved, and the articles to be burned can be promiscuously thrown into the burning-chambers, so as to save the time heretofore required to arrange or set up said articles in regular piles, and at the same time the progressive character of the kiln remains unchanged.

The perforated walls C are either built up only to about half the height of the chambers, or they extend clear up to the top thereof, so as to prevent such material, which is dumped into the chambers, from rolling into the furnace. For lime-kilns, open chambers are particularly adapted, as they can be very easily filled with limestone from above. In case the chambers of a lime-kiln are arched, a large opening is to be left in the arch of each chamber for said purpose. Small holes, *f*, in the arches serve as loop-holes for inspecting the burning-process in the chambers.

Each chamber communicates, by a flue, *g*, with a smoke-chamber, D, and chimney E. The flues are provided with dampers *h*, whereby they can be opened or closed at will.

The chimney may be placed inside the kiln, as shown in the drawing, or outside thereof, in which latter case it must be connected with the smoke-chamber by a flue, which may either be under or above ground.

In order to render the operation of our kiln intelligible, we have numbered the burning-chambers, 1 to 10. Now, suppose the burning-chambers 1, 2, 3, 4, and 5 are filled with fresh material, for instance, bricks or limestone, chamber 5 is separated from 6, by inserting the movable partition *c*, in case the kiln is constructed as shown in figs. 1, 2, and 3.

The door-ways *b*, of 1, 2, 3, 4, and 5, are closed, and the damper *h* of chamber 5 is opened, all others being closed, and the ash-pit of chamber 1 is opened.

When a fire is lighted in the furnace of chamber 1, the draught of air passes through the several cham-



bers, 1, 2, 3, 4, 5, to the smoke-chamber and chimney, and the waste heat, passing from chamber 1 through the succeeding chambers, serves to heat the material contained in these last-named chambers.

When the material in chamber 1 is sufficiently burned, fuel is fed into the furnace of chamber 2, which fuel is instantly ignited by the waste heat of chamber 1. At the same time, chamber 6 has been filled with fresh material, and the partition *c* is inserted between chambers 6 and 7. Then the damper *h* of chamber 5 is closed, and that of chamber 6 opened, allowing the waste heat to pass, also, through chamber 6, so as to heat the material contained therein.

The material contained in chamber 1 being now exposed to a draught of cold air, is gradually cooled, while the air, in passing through the heated material in this chamber, becomes heated before it enters chamber 2.

When the material in chamber 2 is burned, fuel is introduced into the furnace of chamber 3, and chamber 7, having been filled with fresh material, is annexed to the preceding chambers, by changing the position of the movable partition *c*, and by opening the damper *h* of chamber 7, and closing that of chamber 6.

When the material in chamber 3 is burned, fuel is introduced into the furnace of chamber 4; chamber 8 is annexed, and then the fuel is lighted in chamber 5, and chamber 9 is filled.

By that time the burned material contained in chamber 1 is sufficiently cooled to be taken out, while fresh material is introduced into chamber 10, and the draught of air passing through the burned material in the previous chamber, serves to cool the previously-burned material, and takes up the heat, so that it reaches the furnace of chamber 5 in a red-hot state.

While chamber 1 has been emptied, chamber 10 has been filled, and is then added to the foregoing chambers, and the burning of the material in chamber 5 has been completed, the fire is lighted in chamber 6, chamber 2 is emptied, chamber 1 is filled, and the fire advanced from 6 to 7.

In this way the process of burning, the taking out of burned goods, and the filling in of fresh material, goes on without interruption. All the chambers of

the kiln, except one or two, are always filled, one part with fresh material to be burned, which is gradually heated; another part with burned material that is gradually cooling off, and in one chamber the process of burning is just progressing, this chamber being situated between those containing burned material and those containing fresh material.

In the drawing, a kiln is shown containing ten burning-chambers, but it is obvious that this number can be increased or diminished. If the number of burning-chambers is very large, fire may be kept in two or more chambers simultaneously, the series of chambers being interrupted as often by movable partitions *c*.

The series of burning-chambers may also be limited, or arranged in a straight or curved line of limited length. The operation of such limited kilns, of course, cannot be continuous. After all the chambers of the series have been filled with fresh material, a fire is started in the first chamber, and successively made to progress through the succeeding chambers, until it reaches the last one, where it is left to go out. When the burned goods have been taken out, and the chambers have been filled with fresh material, a new fire is to be started in the first chamber of the series.

We are aware that the several parts composing our improvement are not, in themselves considered, new; therefore, we do not wish to claim them, either singly or in combination; but

What we do claim as new and of our invention, and desire to secure by Letters Patent, is—

The arrangement, within a progressive kiln, of the permanent perforated walls *C C*, one at each side of the fire-chamber, whereby heated air is permitted to pass from one chamber to another, while, at the same time, the material being burned is protected from the direct action of the fire, as set forth.

This specification signed by us, this 4th day of September, 1868.

GUST. A. WEDEKIND.  
HELMUTH DUEBERG.

Witnesses:

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