

No. 792,379.

PATENTED JUNE 13, 1905.

H. A. ABENDROTH.  
AMMONIA STILL.

APPLICATION FILED OCT. 3, 1904.

Fig. 1.

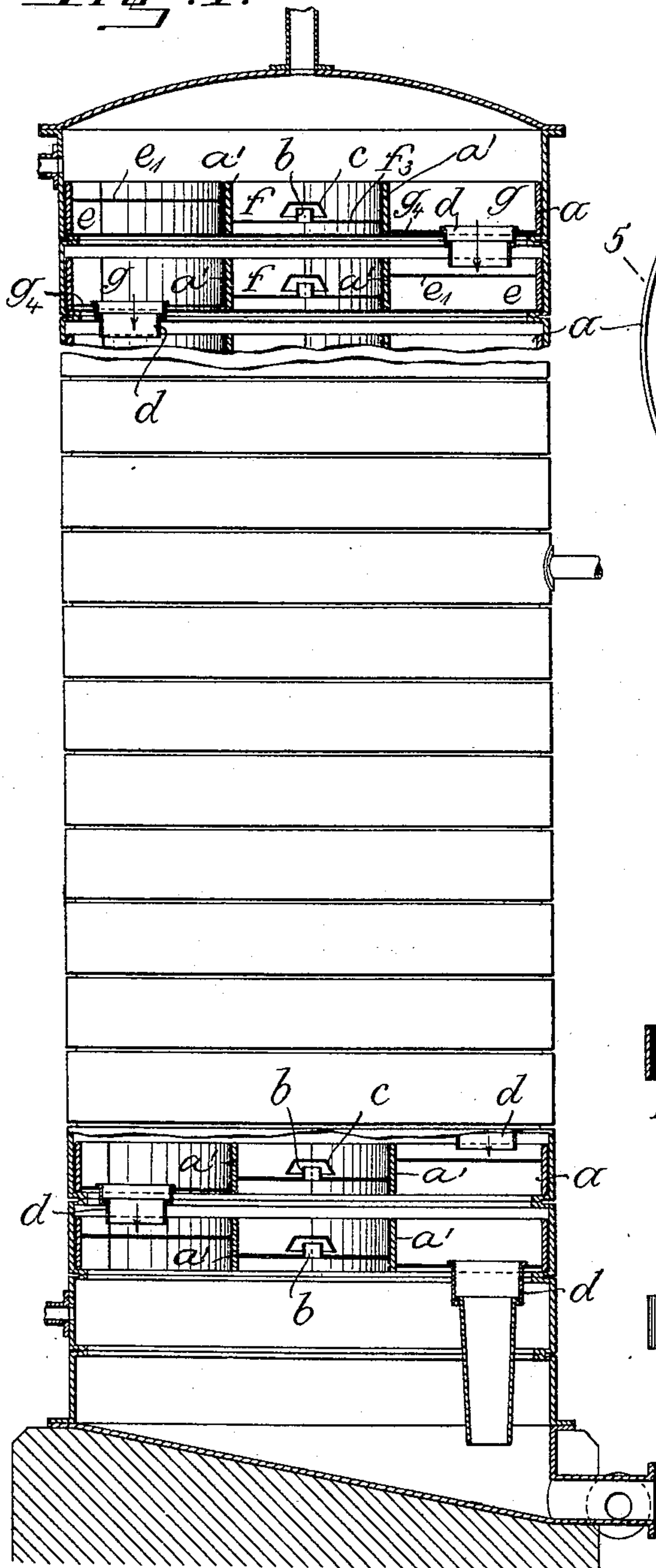


Fig. 2.

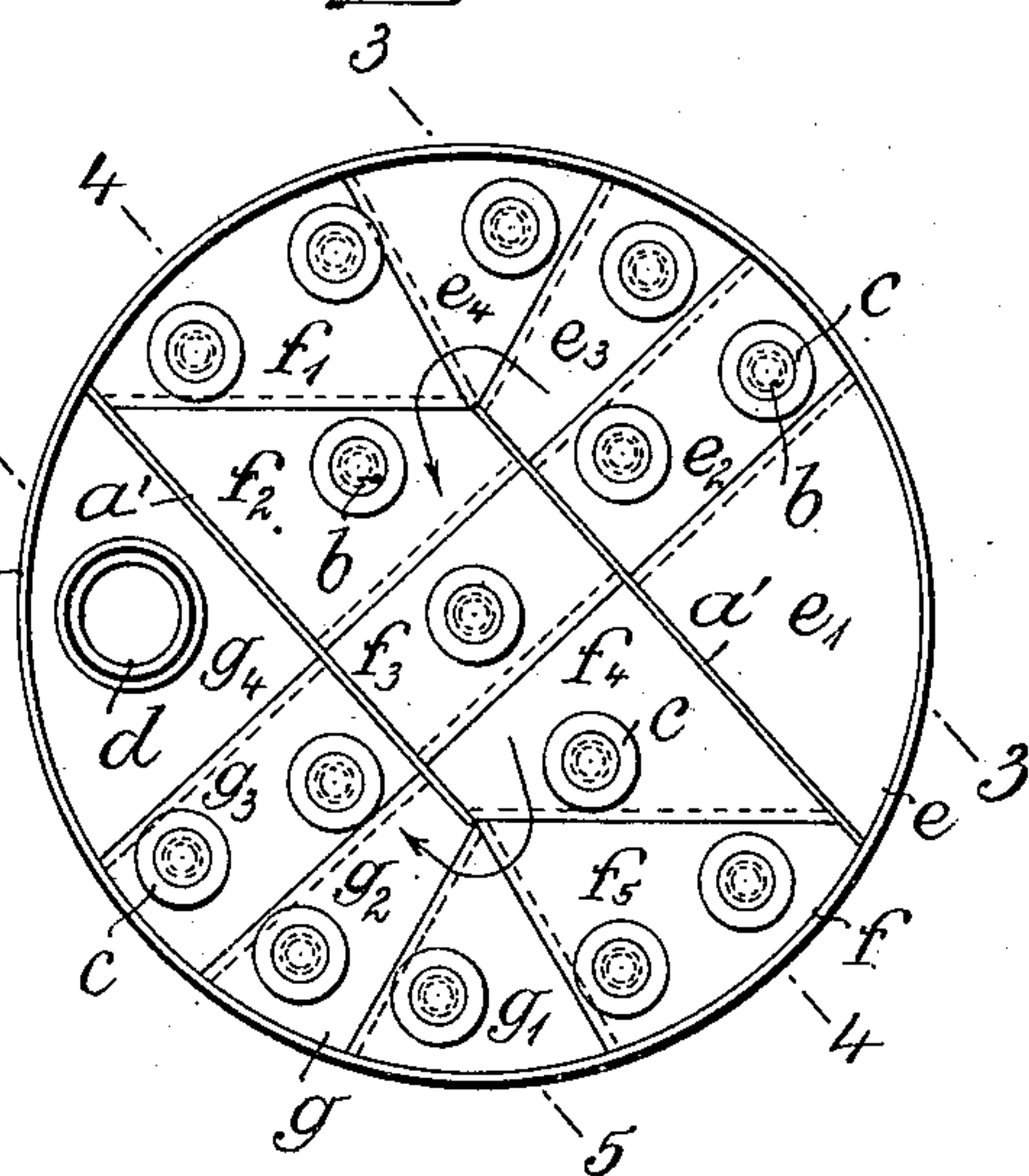


Fig. 3.

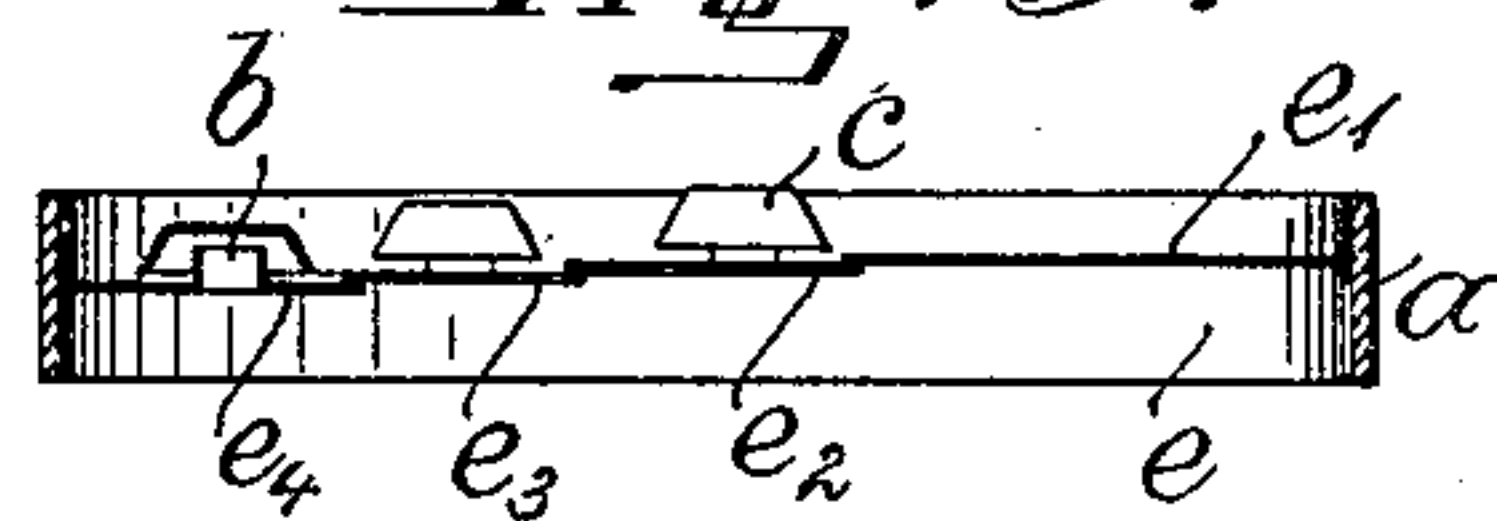


Fig. 4.

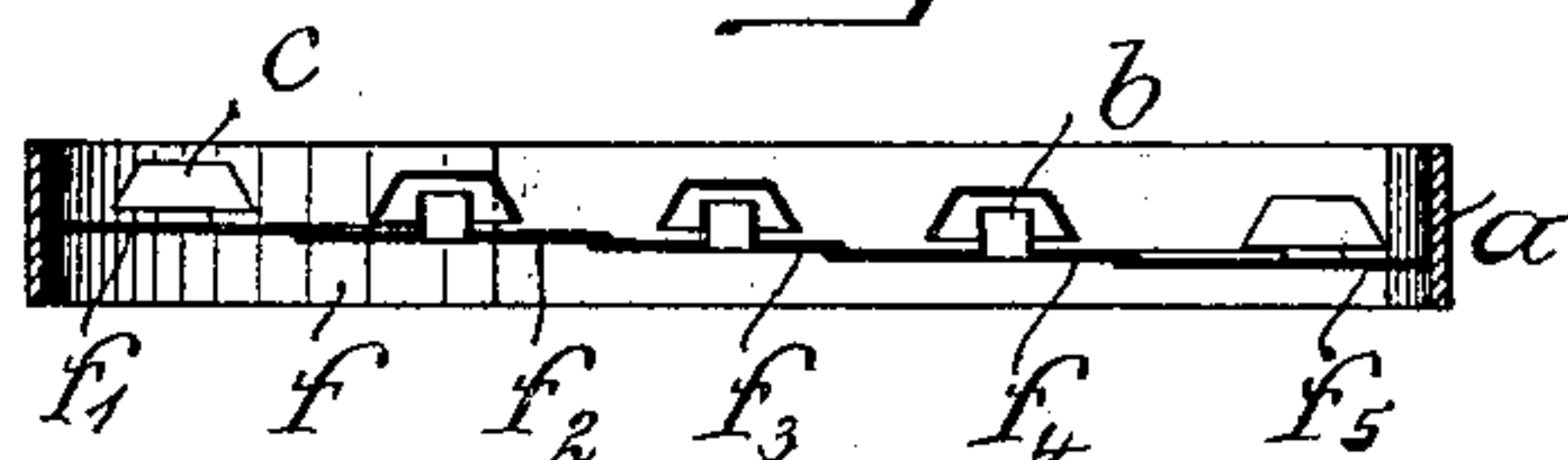
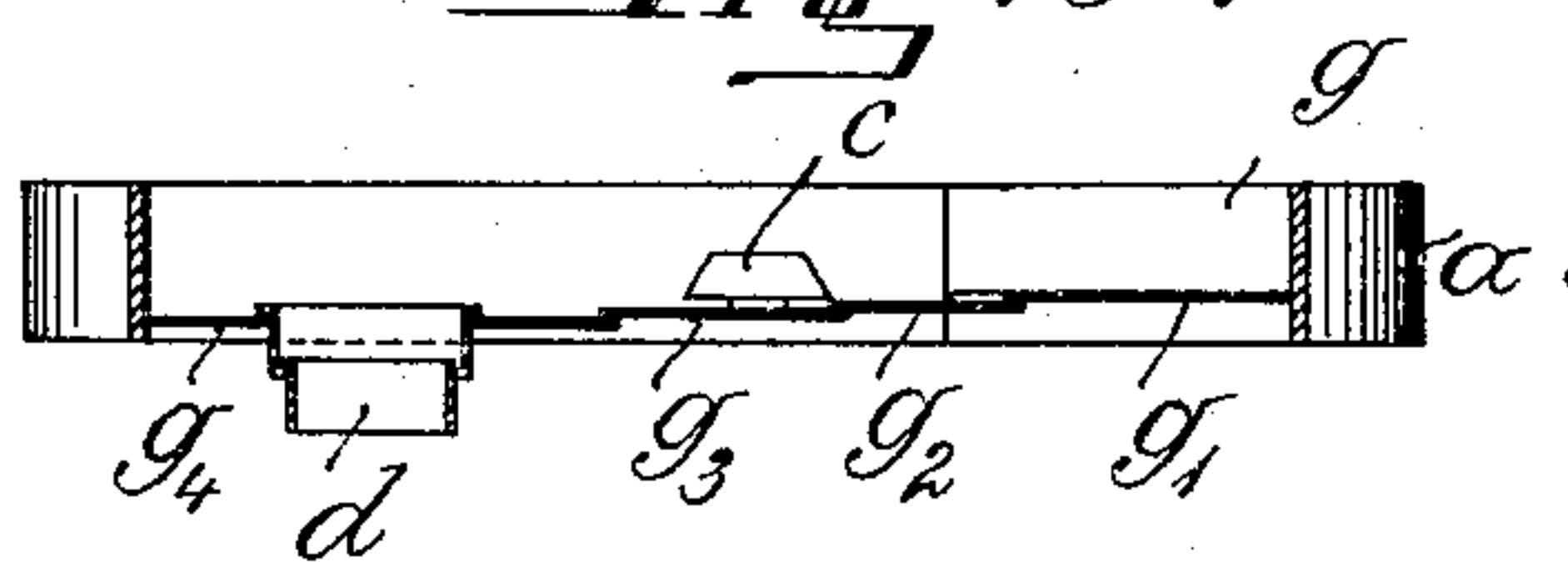


Fig. 5.



Witnesses

W. M. Avery.

A. H. Davis

Inventor  
Herrmann A. Abendroth  
by

M. M. M.

Attorneys



# UNITED STATES PATENT OFFICE.

HERRMANN ARTHUR ABENDROTH, OF BERLIN, GERMANY.

## AMMONIA-STILL.

SPECIFICATION forming part of Letters Patent No. 792,379, dated June 13, 1905.

Application filed October 3, 1903. Serial No. 175,571.

*To all whom it may concern:*

Be it known that I, HERRMANN ARTHUR ABENDROTH, a subject of the German Emperor, and a resident of Berlin, Germany, have  
 5 invented a new and Improved Ammonia-Still, of which the following is a full, clear, and exact description.

The invention relates to ammonia apparatus or stills, substantially as will hereinafter more  
 10 fully appear.

The principal object of the invention is to provide a new and improved ammonia-still which is economical in construction and effective in use or operation.

15 The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter, and then pointed out in the claim.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the improvement practically on the same line of Fig. 2 on which Fig. 5 is taken. Fig. 2 is a horizontal sectional view. Fig. 3 is a sectional elevation of one of the cells on the line 3 3 of Fig. 2. Fig. 4 is a similar view of the  
 30 same on the line 4 4 of Fig. 2. Fig. 5 is a like view of the same on the line 5 5 of Fig. 2.

In apparatus of the class described as heretofore constructed the free flow of the ammonia-water through the cells of the stills was  
 35 frequently interrupted by the water backing up from the discharge toward the inflow, so that the hoods over the steam-inlets extend deep into the water to prevent the steam from passing uniformly from the hood through the  
 40 surrounding water into the cell, the steam then passing into the water at the point of least resistance—that is, at the point of the hood least immersed in the water. To insure an even flow of the water through the cells  
 45 and a uniform contact of the steam with the water, the following improvement is provided: The superimposed cells *a* are provided with the steam-inlet pipes *b*, over which extend

hoods *c* for the steam to pass in an upward direction from one cell to the next one above, 50 while the ammonia-water flows from one cell to the next one below by way of the overflow-pipes *d*. The steam (which is derived from any suitable source) is admitted to the cells at one or more places by means of pipes, shown 55 broken off at different elevations at the sides of the preferred form of the apparatus or still in Fig. 1. Each cell *a* is provided with a number of vertical partitions *a'* to form a zigzag passage for the ammonia-water to flow in the 60 direction of the arrows shown in Fig. 2. The bottom of each cell, as shown, is divided by the partitions into three sections or fields *e f g*, connected with each other, and each section or field is formed into terraces *e' e'' e''' e''', f' f'' f''' f''', g' g'' g''' g''',* and the terraces are so arranged that the lowest terrace *e''* of the first section or field *e* is adjacent to the highest terrace *f'* of the next section or field *f*, the lowest terrace *f'''* is adjacent to the highest terrace *g'* of the section or field *g*, and from the lowest terrace *g''* the water passes by way of the overflow-pipe *d* into the next cell below—that is, onto the terrace *e'* of this cell. The several terraces in each cell with the exception of the inflow-terrace *e'* and the outflow-terrace *g''* are provided with one or more steam-inlet pipes *b* and corresponding hoods *c*, as will be readily understood by reference to Fig. 6. Now by the arrangement described the ammonia-water flowing by its own gravity over the terraces, as described, is not liable to back up from the point of outflow (at the terrace *g''*) to the point of inflow, (at the terrace *e'*), and hence the hoods on the several terraces 85 extend uniformly deep into the ammonia-water to insure a uniform outflow of the steam from a hood into the surrounding water, thus producing a contact of the steam with all the flowing water, thereby increasing the efficiency of the apparatus. 90

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

An ammonia-still of the character described, comprising superimposed cells having inlets 95 and outlets for ammonia-water, the bottoms

of said cells being constructed to form declining sections, and each section being constructed of terraces declining from the point of inflow to the point of outflow of the ammonia-water, 5 said terraces, with the exception of the highest and lowest of them, being provided with steam-inlet pipes having hoods.

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

HERRMANN ARTHUR ABENDROTH.

Witnesses:

HENRY HASPER,  
WOLDEMAR HAUPT.