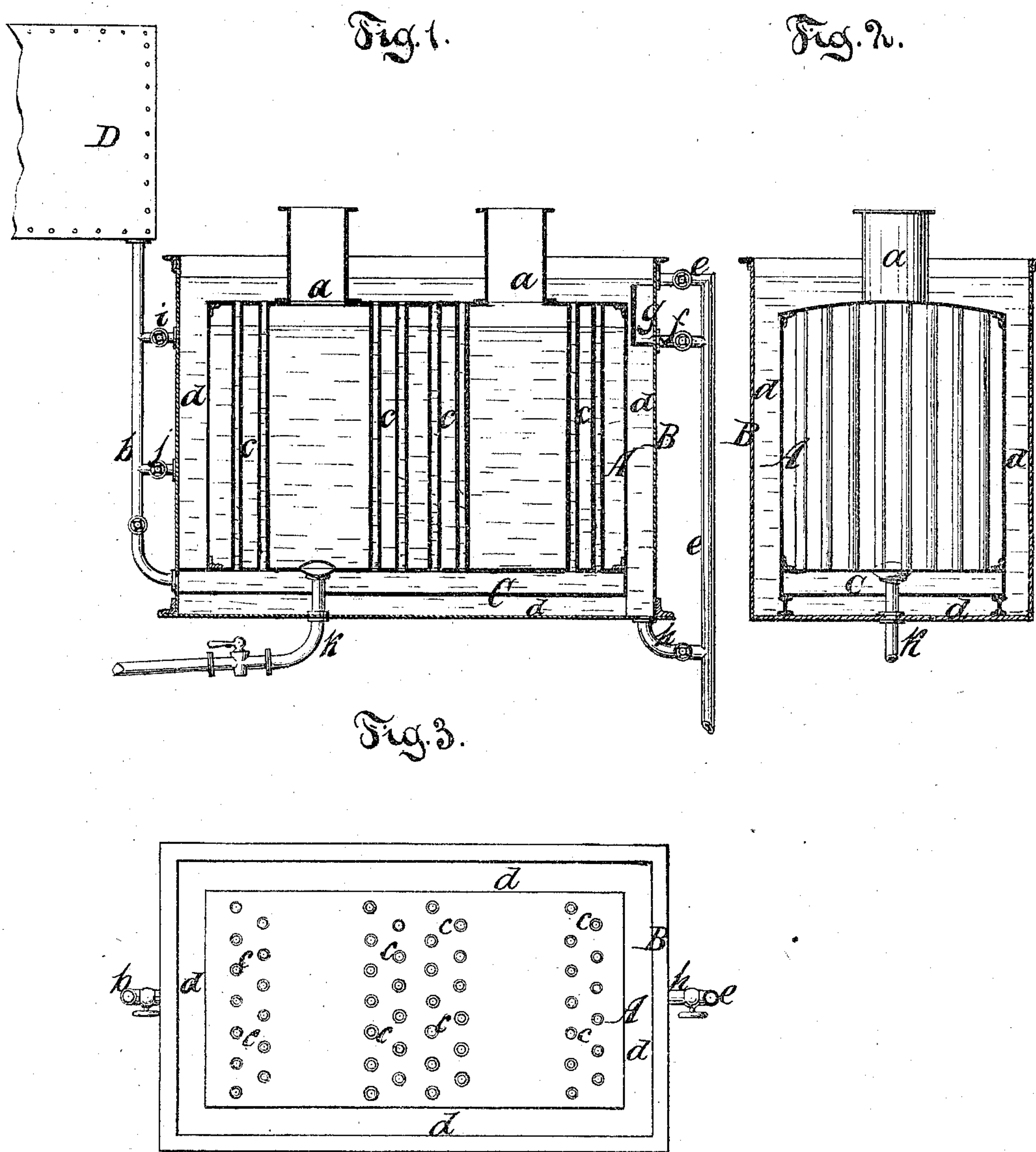


A. PFUND.
Beer-Coolers.

No. 140,073.

Patented June 17, 1873.



Witnesses.

Ernst Bilhuber.
Chas. Wickers.

Inventor.

Anthony Pfund
per
Vas Santwood & Hauff
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Fig: 4.

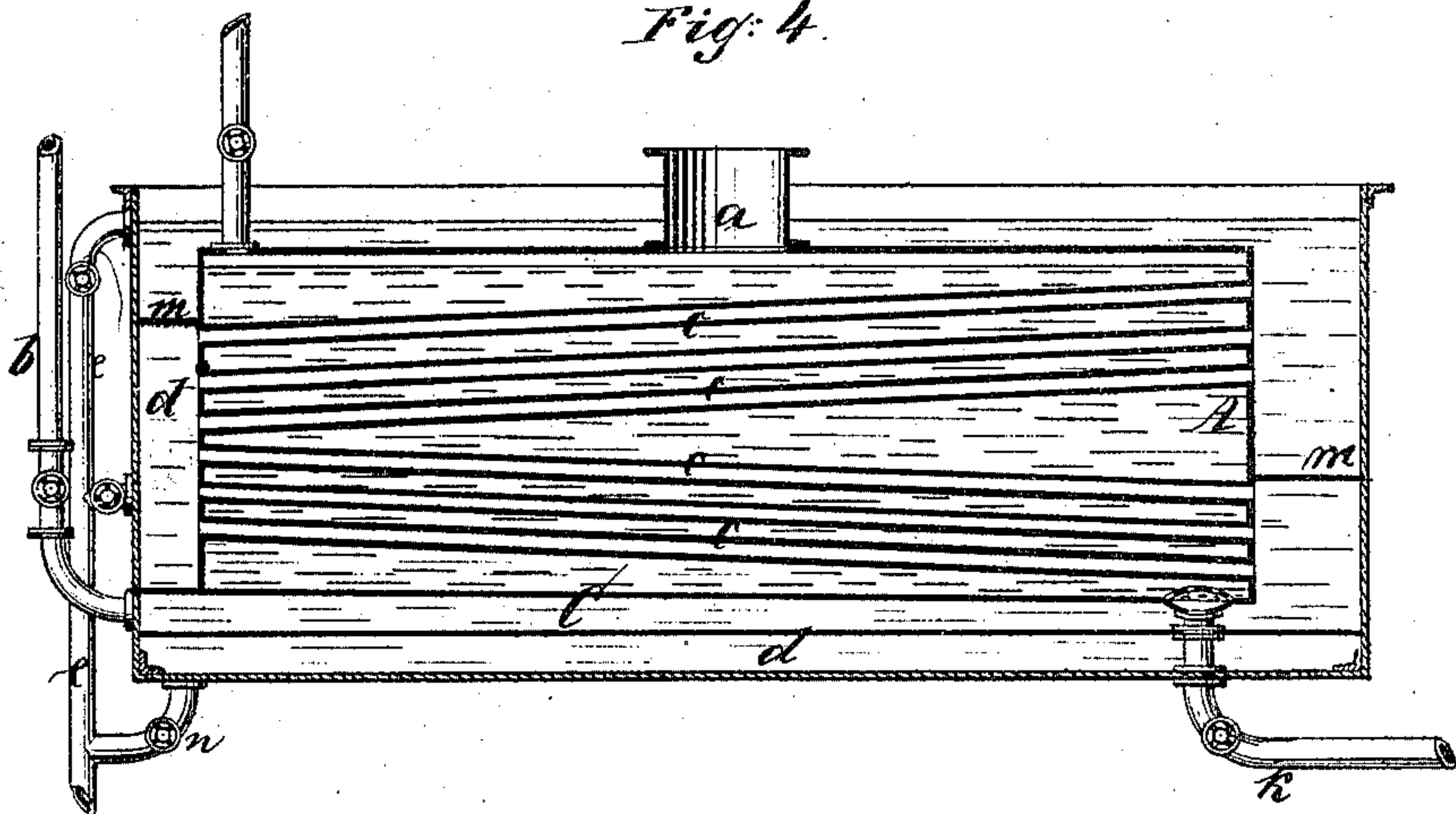


Fig: 5.

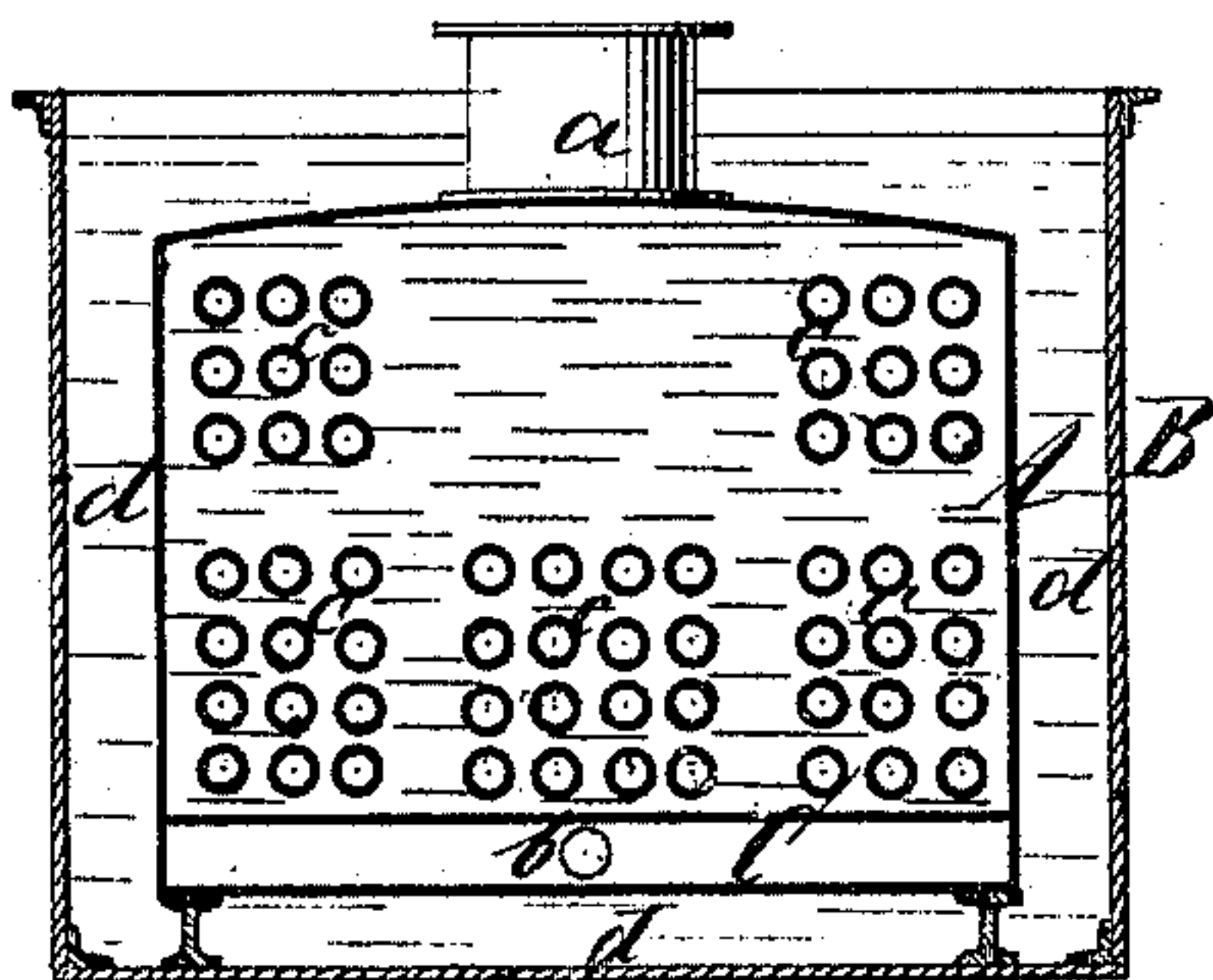
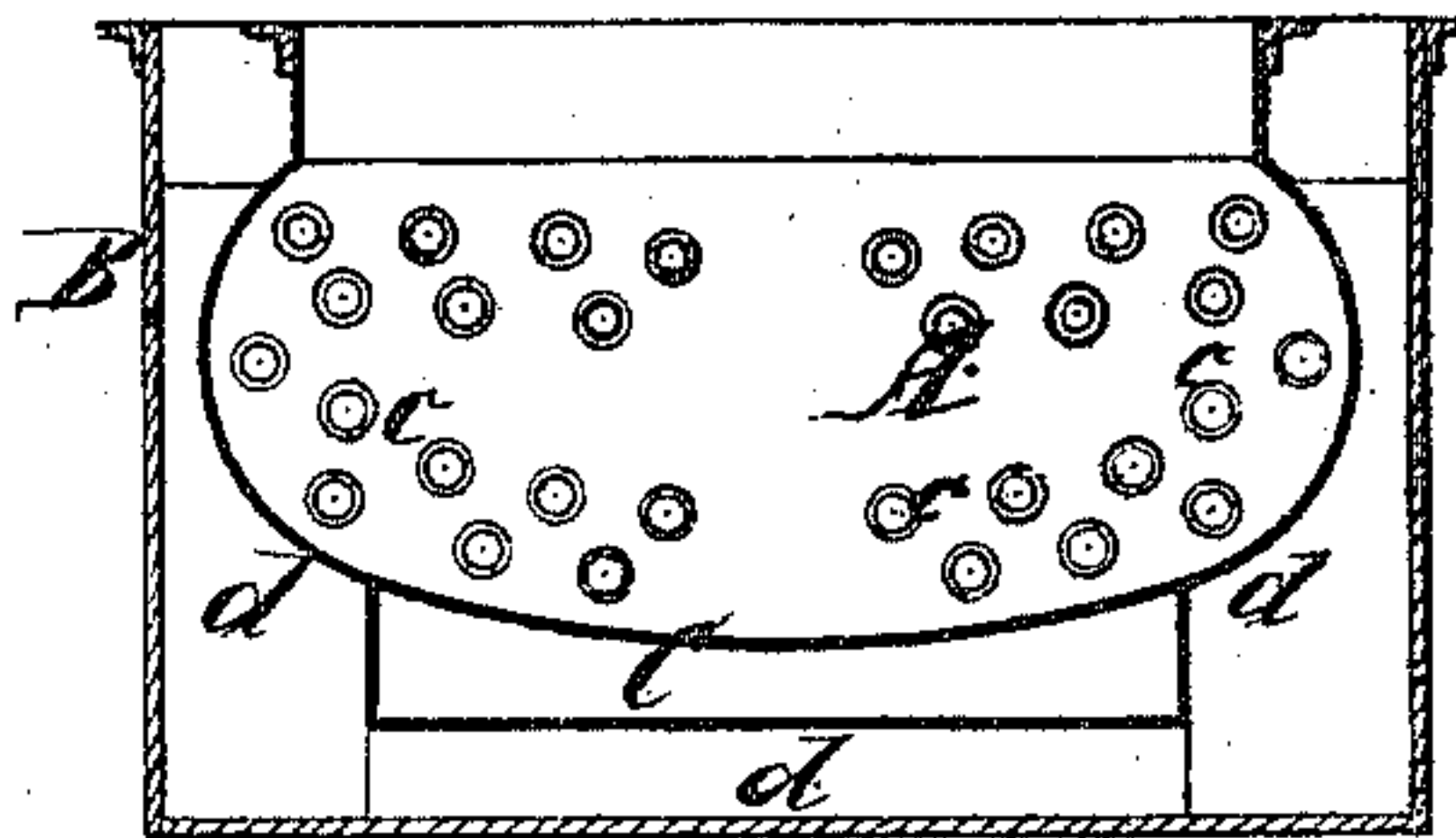


Fig: 6.



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UNITED STATES PATENT OFFICE.

ANTHONY PFUND, OF NEW YORK, N. Y.

IMPROVEMENT IN BEER-COOLERS.

Specification forming part of Letters Patent No. 140,073, dated June 17, 1873; application filed June 6, 1873.

To all whom it may concern:

Be it known that I, ANTHONY PFUND, of the city, county, and State of New York, have invented a new and useful Improvement in Coolers for Beer and other Liquids; and I 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 drawing forming part of this specification, in which drawing—

Figure 1 represents a longitudinal vertical section of my invention. Fig. 2 is a transverse vertical section of the same. Fig. 3 is a horizontal section of the same. Fig. 4 is a longitudinal vertical section of a modification of the same. Fig. 5 is a transverse section thereof. Fig. 6 is a transverse section of another modification of the same.

Similar letters indicate corresponding parts.

This invention relates to a cooler for liquids, which consists essentially of a closed tank made of sheet metal, or other good conductor of heat, and placed in a vat, through which passes a constant stream of cold water, the water being first conducted into a chamber which is formed in the lower part of said vat, and from which extend pipes through the closed tank, either in a vertical or in a horizontal or inclined position, so that the liquid contained in said tank is rapidly cooled by coming in contact with cold surfaces of the water-pipes, and with the cold walls of the tank. The cold-water pipes which extend through the closed tank are arranged in groups, which are distributed in such a manner that access can be had between them for the purpose of cleaning the tank.

In the drawing, the letter A designates a tank which is made of sheet-copper, or other good conductor of heat, and which is entirely closed, and which is provided with one or two man-holes, *a*, through which access can be had to its interior. When the tank is in action these man-holes may be open or closed. Said tank is situated in a vat, B, made of sheet metal, or any other suitable material, and under the tank is formed a chamber, C, which communicates, by means of a pipe, *b*, with a reservoir, D, containing cold water. Through the tank A extends a series of pipes, *c*, which

are open at both ends, and which may be situated in a vertical position, as shown in Figs. 1, 2, and 3, or in an inclined position, as shown in Figs. 4, 5, and 6. When said pipes are in a vertical position their lower ends communicate directly with the water-chamber C, so that the water admitted to said chamber passes up through the pipes, and this water, after running over the tank A, fills the annular space *d* between the walls of the tank and those of the vat. From the upper part of this space extends a pipe, *e*, through which the water is allowed to run off, so that a constant stream of water can be made to pass through the chamber C, the pipes *c*, and the annular space *d*. From the pipe *e* extends a branch pipe, *f*, into a chamber, *g*, formed in the upper part of the vat B. This chamber is open at the top, and its inner wall is lower than the outside wall of the vat, so that the water which accumulates in said vat will overflow into the chamber, whence it can be drawn off through the pipes *f* and *e*. By this arrangement the hot water which accumulates in the top of the vat B can be made to run off uniformly, and the cooling operation can be effected with economy in water. From the bottom of the vat B extends a pipe, *h*, which communicates with the waste-pipe *e*, and which serves to empty said vat whenever it may be desired. The water-supply pipe *b* communicates with the vat B by branch pipes *i j*, situated at different levels, so that cold water may be injected into said vat at different points. From the bottom of the tank A extends a pipe, *k*, through which the contents of said tank are discharged. When the cooling-pipes *c* are arranged in an inclined position, as shown in Fig. 4, horizontal partitions *m m* are placed in the annular space *d* which surrounds the tank A, so that the water which is admitted to the chamber C is compelled to circulate through the pipes *c* in a zigzag course. The pipes *c* are arranged in groups, either in the manner shown in Fig. 3, or in the manner shown in Figs. 5 and 6, so that room is left between the several groups for a man to move about, and that easy access can be had to all parts of the tank for the purpose of cleaning. The walls of my tank A can be made very thin, since the same are exposed to a uniform pressure of liquid from the inside

and from the outside, and the thinner these walls can be made the better is the cooling effect of the water or other cooling medium surrounding the tank. When my cooler is constructed as shown in Fig. 6 the tank A may be left uncovered.

What I do claim as new, and desire to secure by Letters Patent, is—

1. The arrangement of a tank, A, in a vat, B, which is provided with a cold-water chamber, C, from which extend pipes *c* through the tank A, said tank being surrounded by an

annular water-space, *d*, substantially as herein shown and described.

2. The arrangement of the cooling-pipes *c*, which pass through the closed tank A in groups so situated that access can be had to all parts of the interior of the tank, substantially as set forth.

This specification signed by me this 24th day of May, 1873.

Witnesses: ANTHONY PFUND.

W. HAUFF,

E. F. KASTENHUBER.