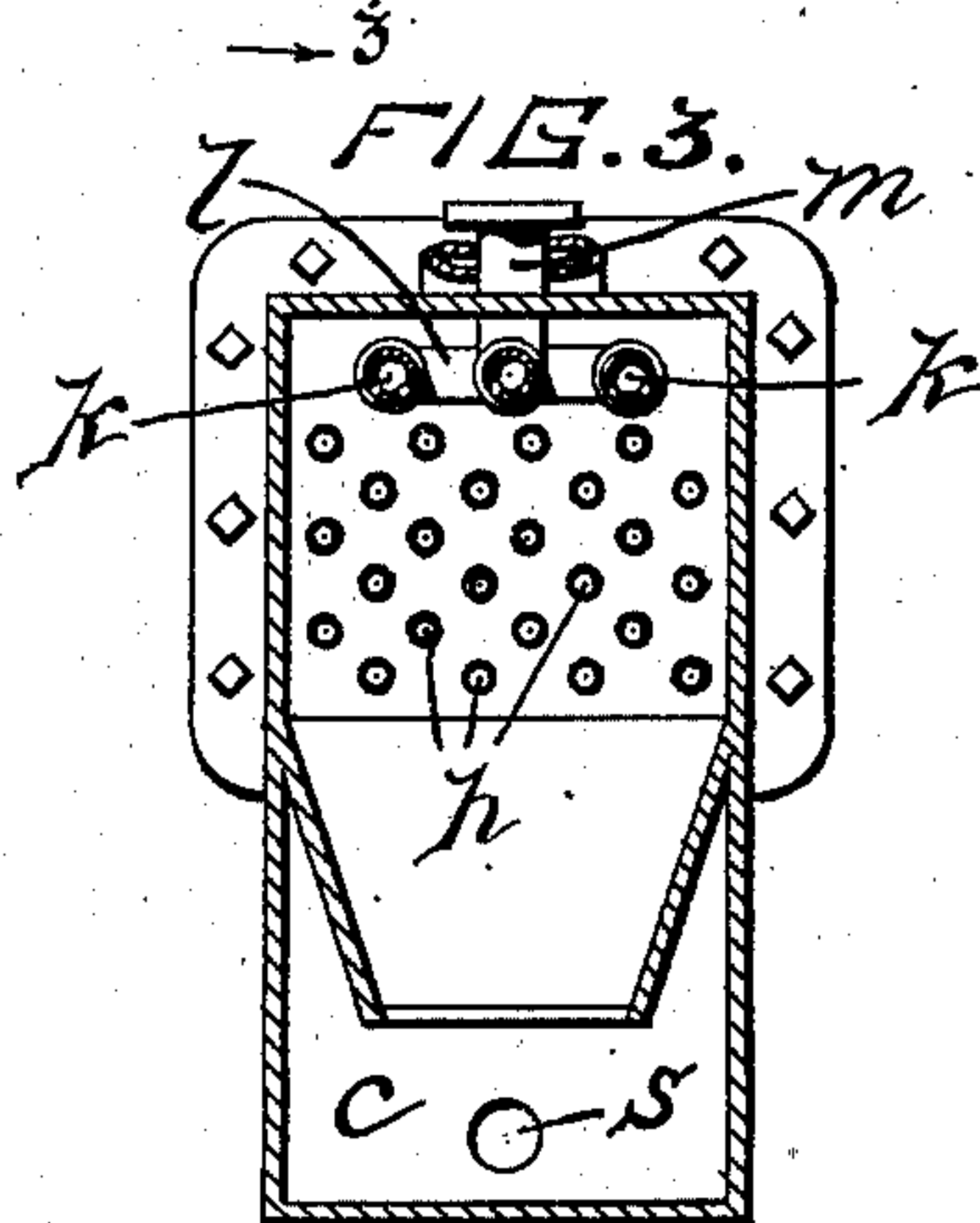
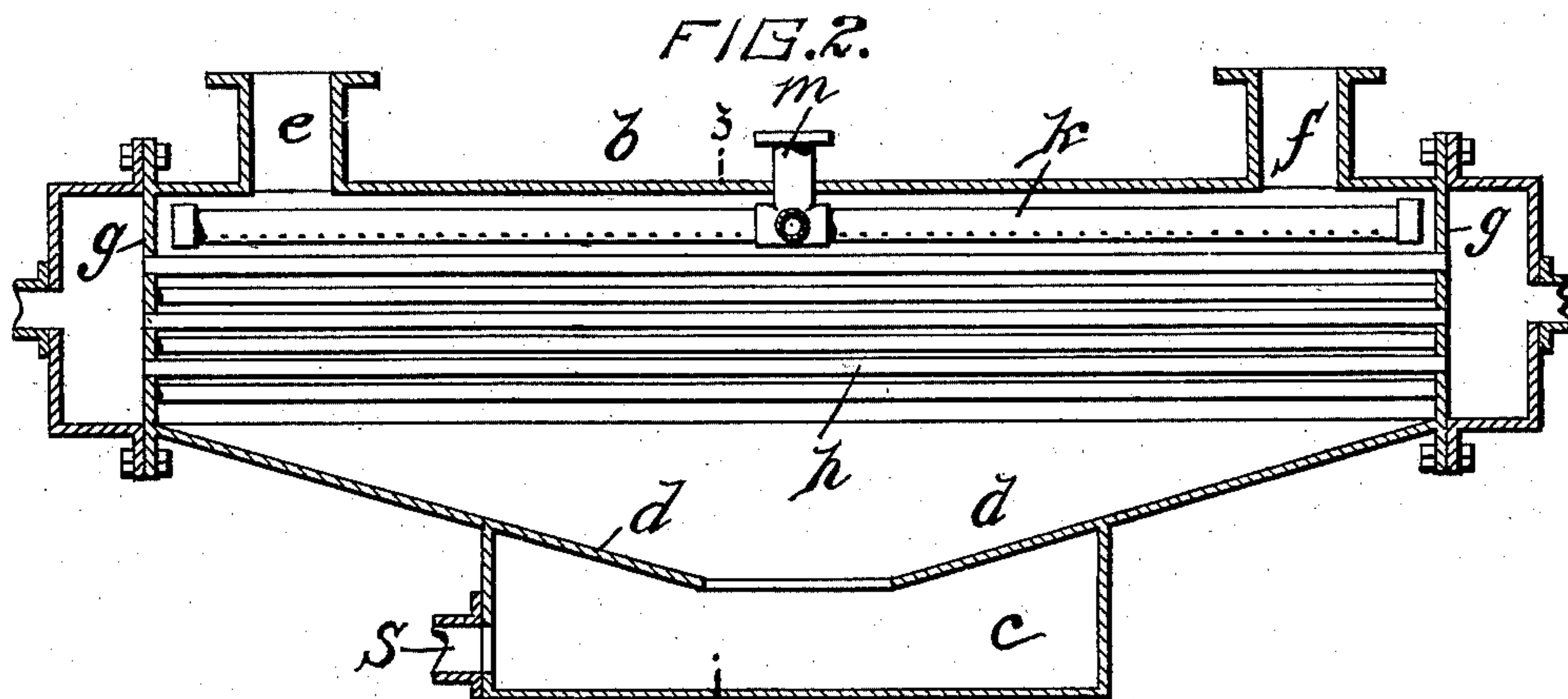
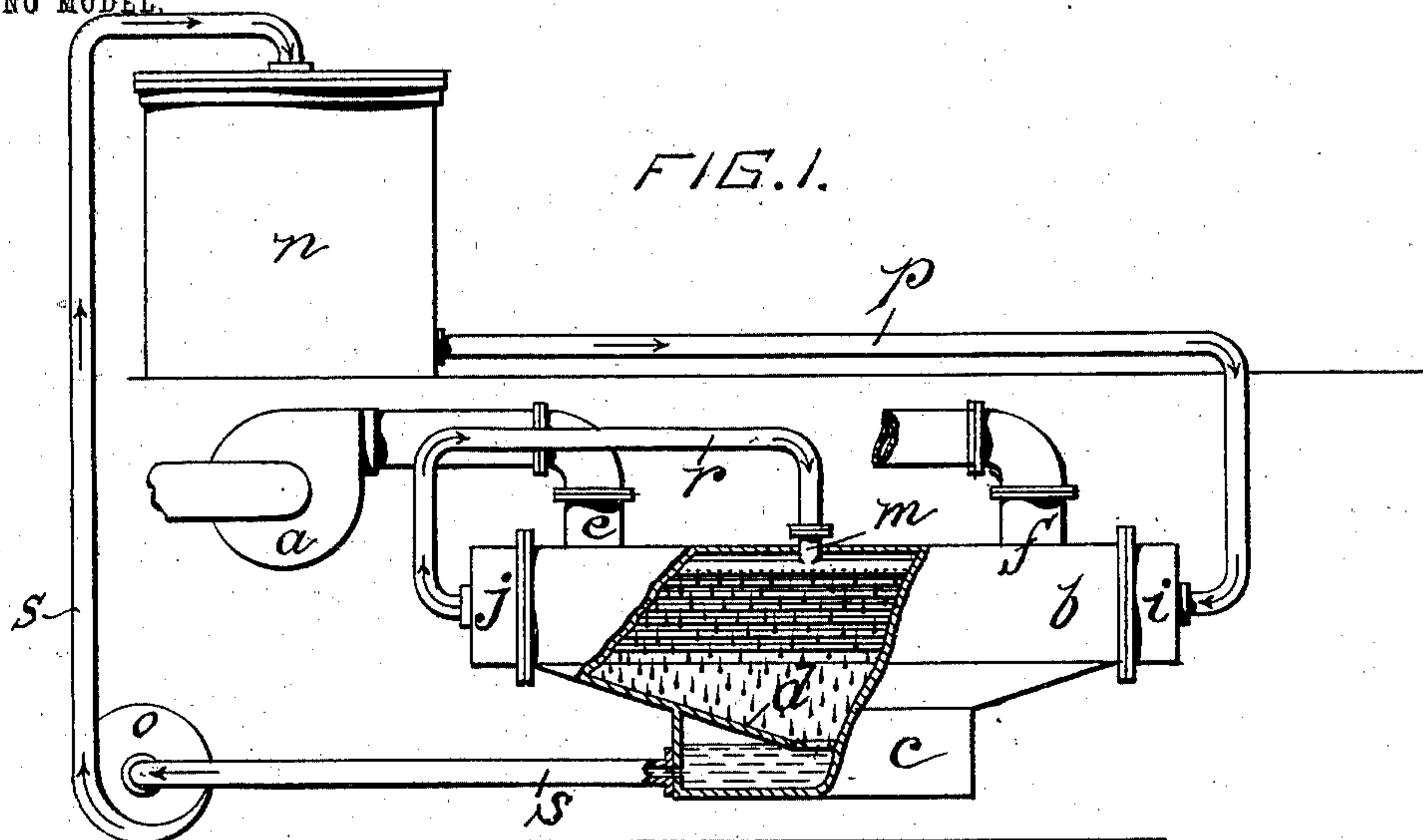


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REFRIGERATING AND PURIFYING APPARATUS.  
APPLICATION FILED OCT. 7, 1901.

NO MODEL.



Witnesses  
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## UNITED STATES PATENT OFFICE.

CARL WILHELM VOLLMANN, OF MONTREAL, CANADA.

## REFRIGERATING AND PURIFYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 741,855, dated October 20, 1903.

Application filed October 7, 1901. Serial No. 77,877. (No model.)

*To all whom it may concern:*

Be it known that I, CARL WILHELM VOLLMANN, manufacturer, of the city of Montreal, district of Montreal, and Province of Quebec, Canada, have invented certain new and useful Improvements in Refrigerating and Purifying Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates particularly to apparatus for use in the cooling and purifying of the holds of seagoing vessels, although it is applicable for use in other connections, such as in cold-storage buildings or, in fact, wherever it is desired to cool or purify air or other gases.

The invention may be said briefly to consist in providing a series of pipes and a spraying device within a closed chamber and forming a circuit to include said series of pipes, spray device, the interior of said closed chamber, a refrigerating-tank, pipe connections between all of said parts, and means for causing a fluid to circulate through said circuit, a supply to and exhaust from said closed chamber of the air or other gas to be purified and cooled being provided. For full comprehension, however, of my invention reference must be had to the accompanying drawings, forming a part of this specification, in which like symbols indicate the same parts, and wherein—

Figure 1 is a side elevation of my improved refrigerating and cooling apparatus with the refrigerating and cooling chamber partly in section. Fig. 2 is a longitudinal vertical sectional view of the refrigerating and cooling chamber proper; and Fig. 3 is a transverse vertical sectional view thereof, taken on line 3 3, Fig. 2.

I will first describe a novel cooling-chamber which comprises fluid conducting and spraying devices applicable to my improved apparatus.

The shell *b* of my improved chamber is preferably formed with a downwardly-extending receptacle *c*, divided therefrom by downwardly-inclined diaphragms *d*, and inlet and outlet pipes *e* and *f* are provided to feed the air to be cooled and purified and exhaust same through the action of the blower *a*. The ends of this shell are closed by plates *g*, each having a series of openings in which the

respective ends of a bank of pipes *h* are set, while a pair of hollow heads *i* and *j* are bolted or otherwise secured to the outside of said end plates, thereby inclosing the open ends of said pipes and constituting a pair of auxiliary chambers with the bank of pipes effecting a communication between them. A spraying device is arranged also within the chamber above the bank of pipes and consists of a series of pipes *k*, capped at both ends and having perforations in their under sides, branch pipes *l* connecting said pipes *k* together and a feed-pipe *m* being connected to about the middle of said series.

*n* is the refrigerating-tank, and *o* the pump for causing a flow through the circuit. A pipe *p* connects the lower end of the refrigerating-tank to the hollow head or auxiliary chamber *i*, and a curved pipe *r* connects the other hollow head *j* to the feed-pipe *m* of the spraying device, while a pipe *s* connects the receptacle *c* at the bottom of the cooling-chamber to the pump and thence to the upper end of the refrigerating-tank.

The circuit through this apparatus just described will be as follows: The chilled fluid, preferably brine, flows through pipe *p* from the refrigerating-tank to auxiliary chamber *i*, bank of pipes *h*, hollow head *j*, pipe *r*, to the spraying device, which sprays it through the interior of the chamber, and it collects in the receptacle *c*, the pump *o* causing it to flow back through pipe *s* to the refrigerating-tank.

This apparatus renders the air both pure and cool and is well suited to supply the general demand.

What I claim is as follows:

1. A cooling and purifying apparatus comprising a main chamber having an auxiliary chamber at each end of and divided from said main chamber; a supply to and exhaust from said main chamber of the air or other gas to be treated; a bank of pipes leading from and communicating with one of said auxiliary chambers through said main chamber to and communicating with said other auxiliary chamber; a spraying device within said main chamber above said bank of pipes; a receptacle at the lower end of said main chamber; a refrigerating-tank located above said main and auxiliary chambers; a pipe



leading from said refrigerating-tank to the first-mentioned of said auxiliary chambers; a pipe leading from the other of said auxiliary chambers to said spraying device; a pipe  
5 leading from said receptacle to said tank; and means for causing the fluid from said tank to flow through said circuit substantially as described and for the purpose set forth.

2. A cooling and purifying apparatus comprising a refrigerating-tank, a main chamber  
10 having an auxiliary chamber at each end of and divided from said main chamber, a supply to and exhaust from said main chamber of the air or other gas to be treated, a bank  
15 of pipes leading from and communicating with one of said auxiliary chambers through said main chamber to and communicating with said other auxiliary chamber; a spray-

ing device within said main chamber above said bank of pipes; a receptacle at the lower  
20 end of said main chamber; a pipe leading from said refrigerating-tank to the first-mentioned of said auxiliary chambers; a pipe leading from the other of said auxiliary  
25 chambers to said spraying device; a pipe leading from said receptacle to said tank; and means for causing the fluid from said tank to flow through said circuit, substantially as described and for the purpose set  
30 forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

CARL WILHELM VOLLMANN.

Witnesses:

WILLIAM P. McFEAT,  
FRED J. SEARS.