

No. 692,415.

Patented Feb. 4, 1902.

W. J. BAKER.

APPARATUS FOR SEPARATING GREASE FROM STEAM.

(Application filed Sept. 9, 1901.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 2.

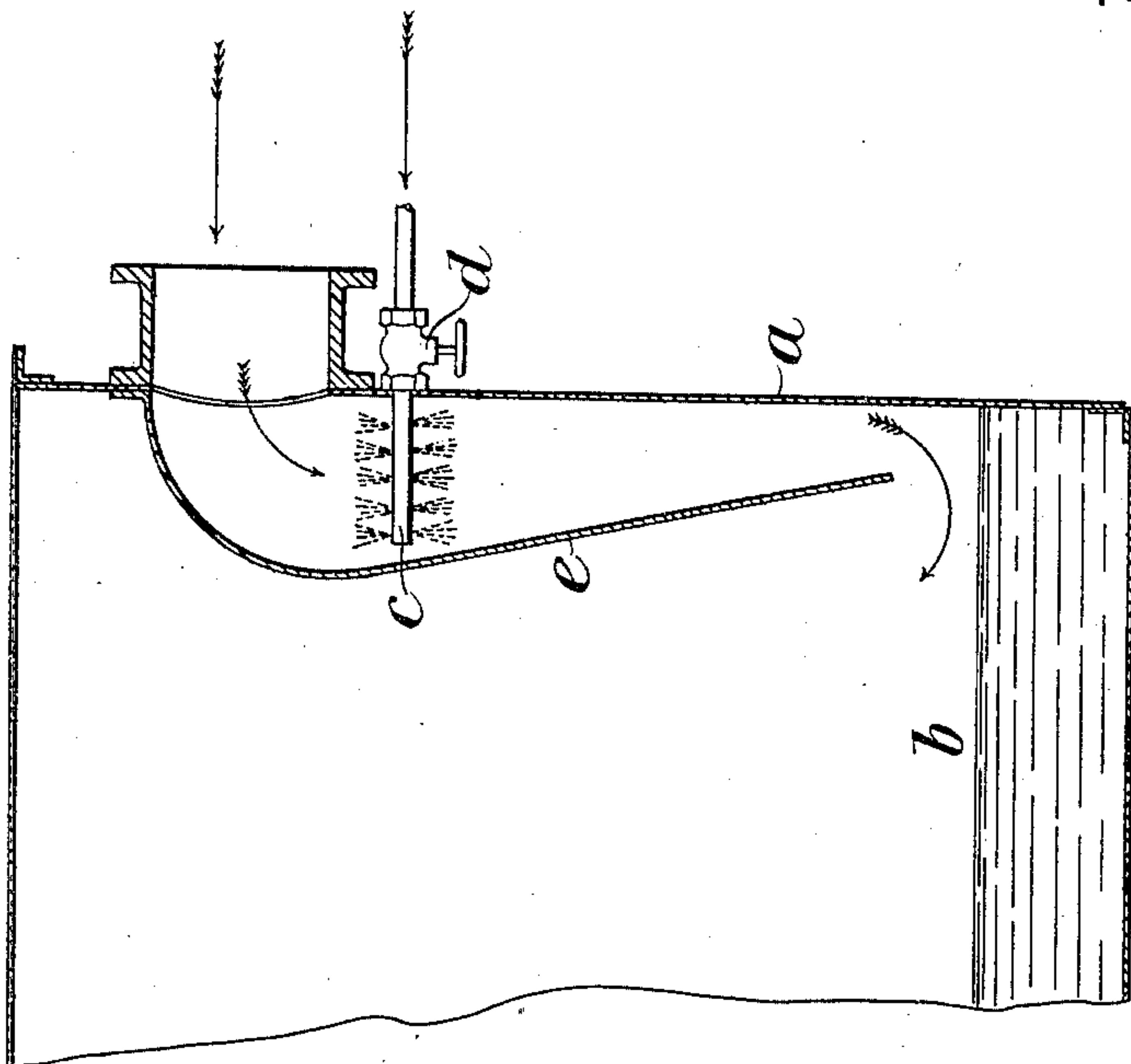
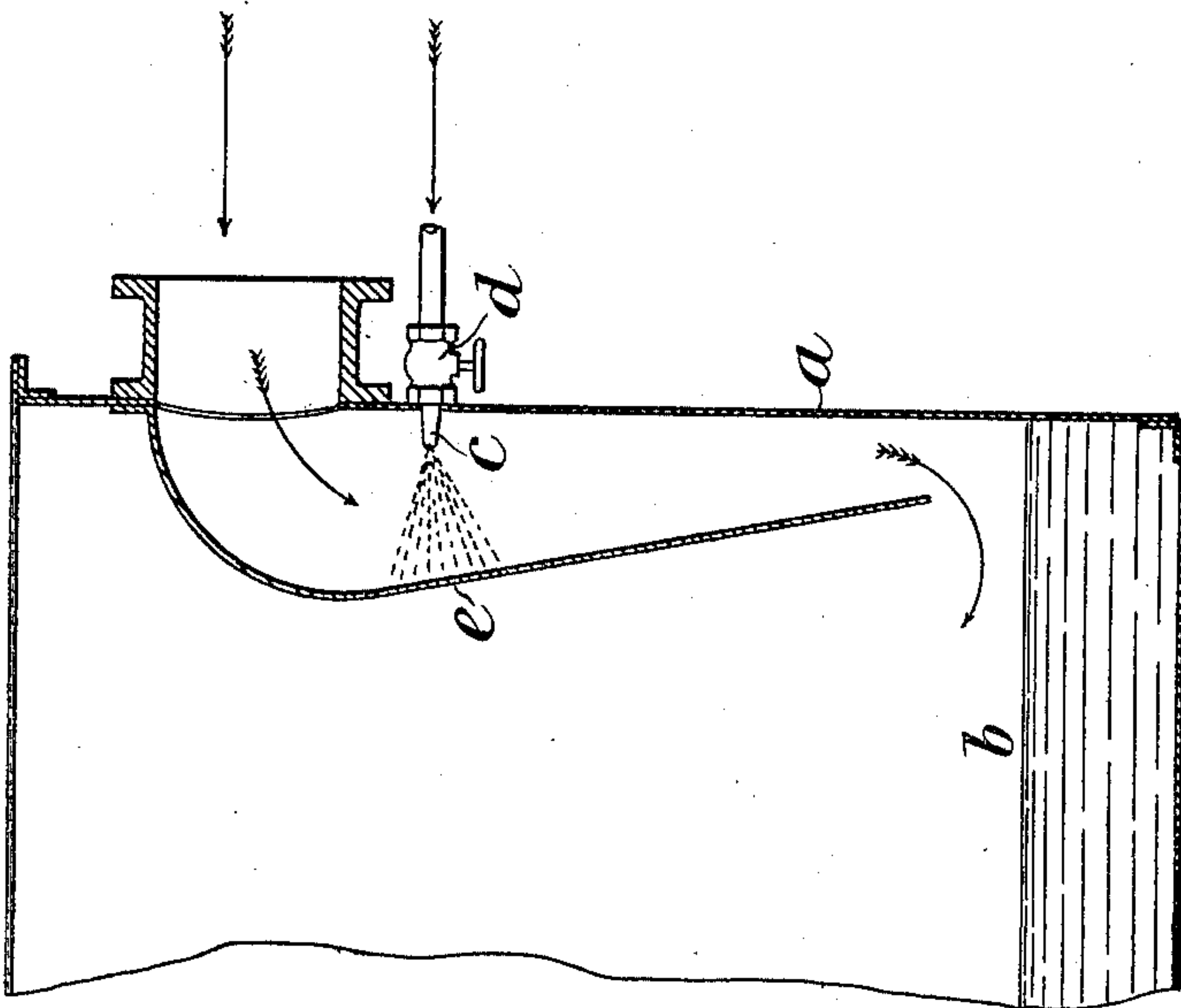


Fig. 1.



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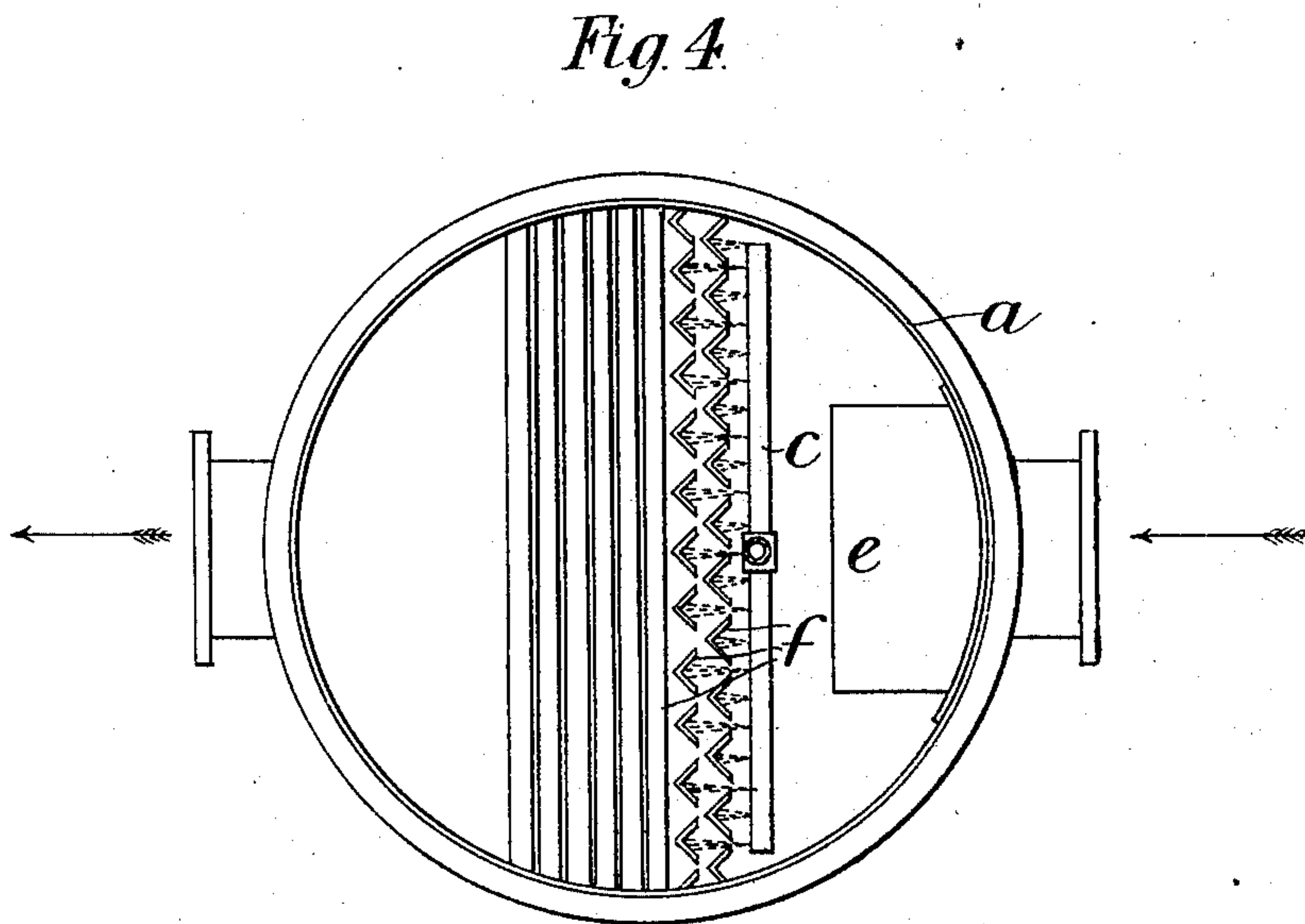
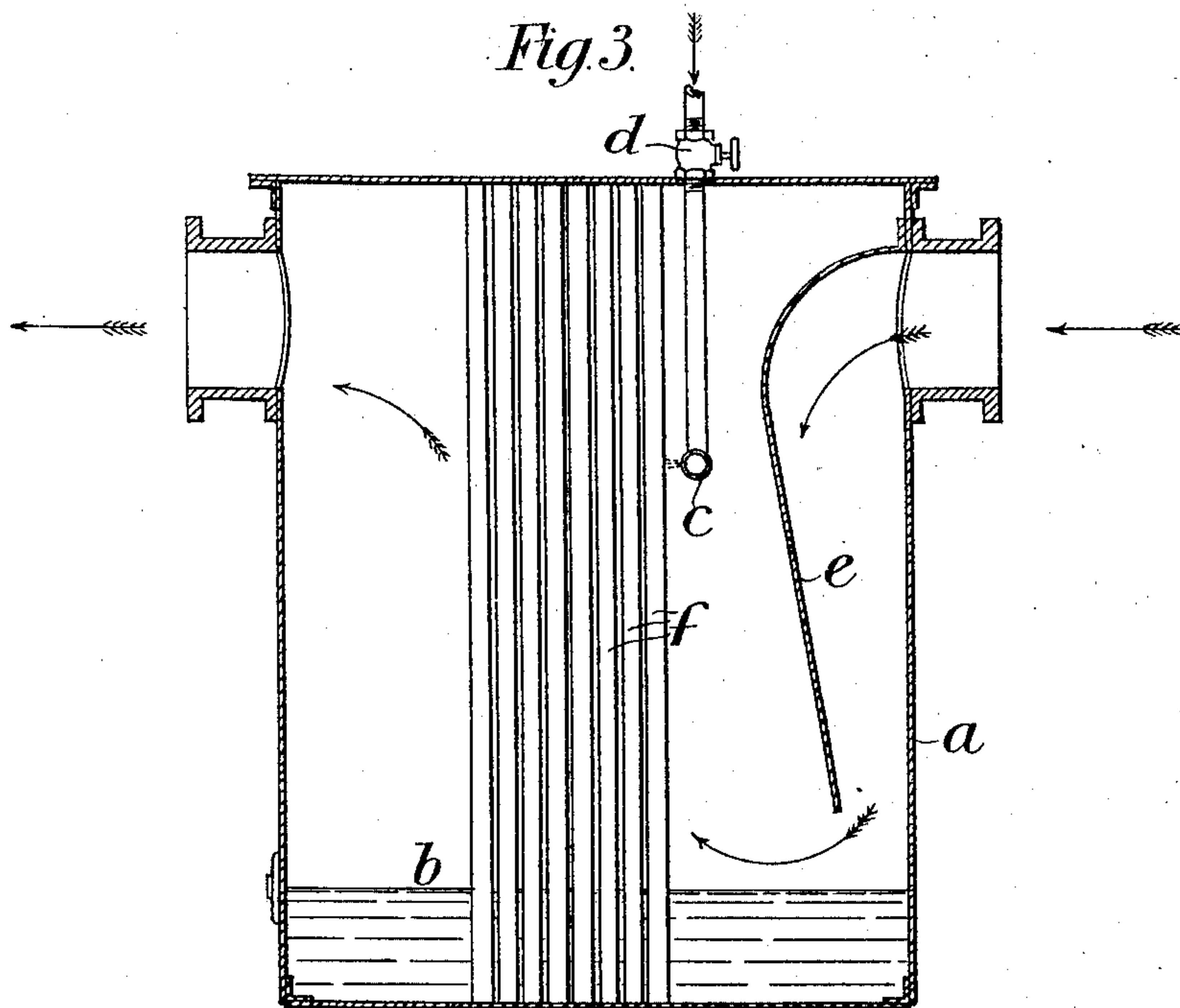
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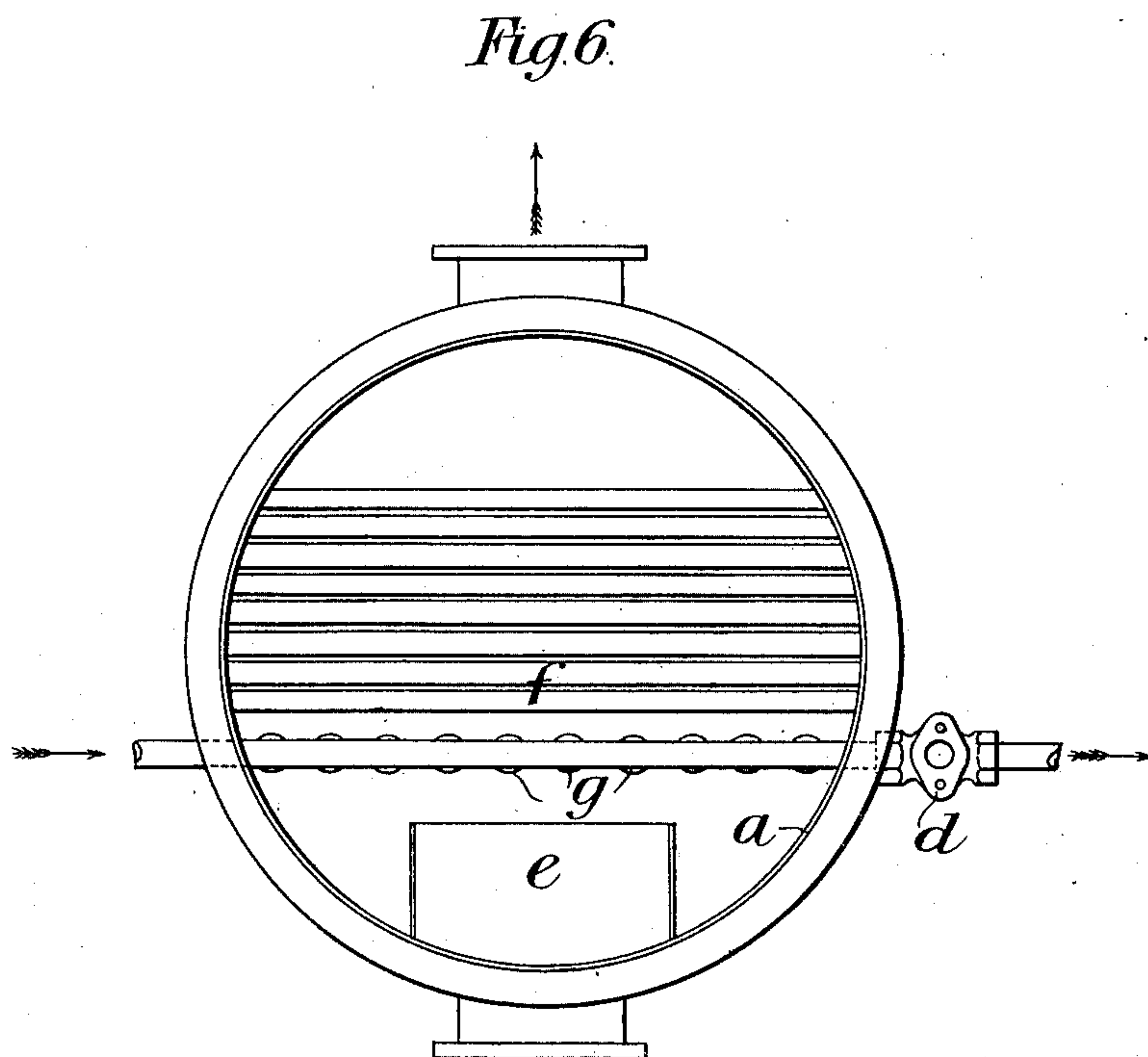
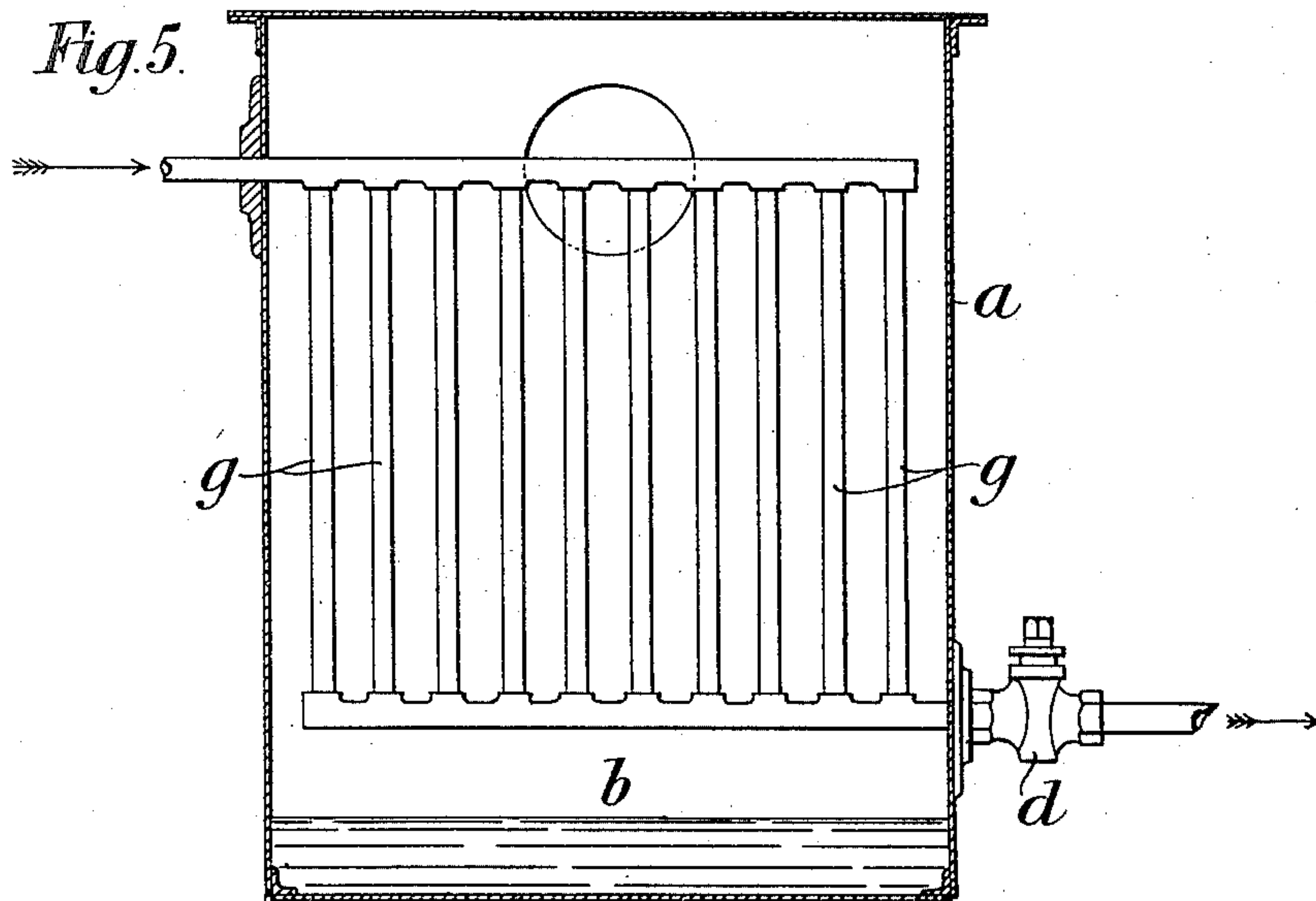
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(No Model.)

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Witnesses.

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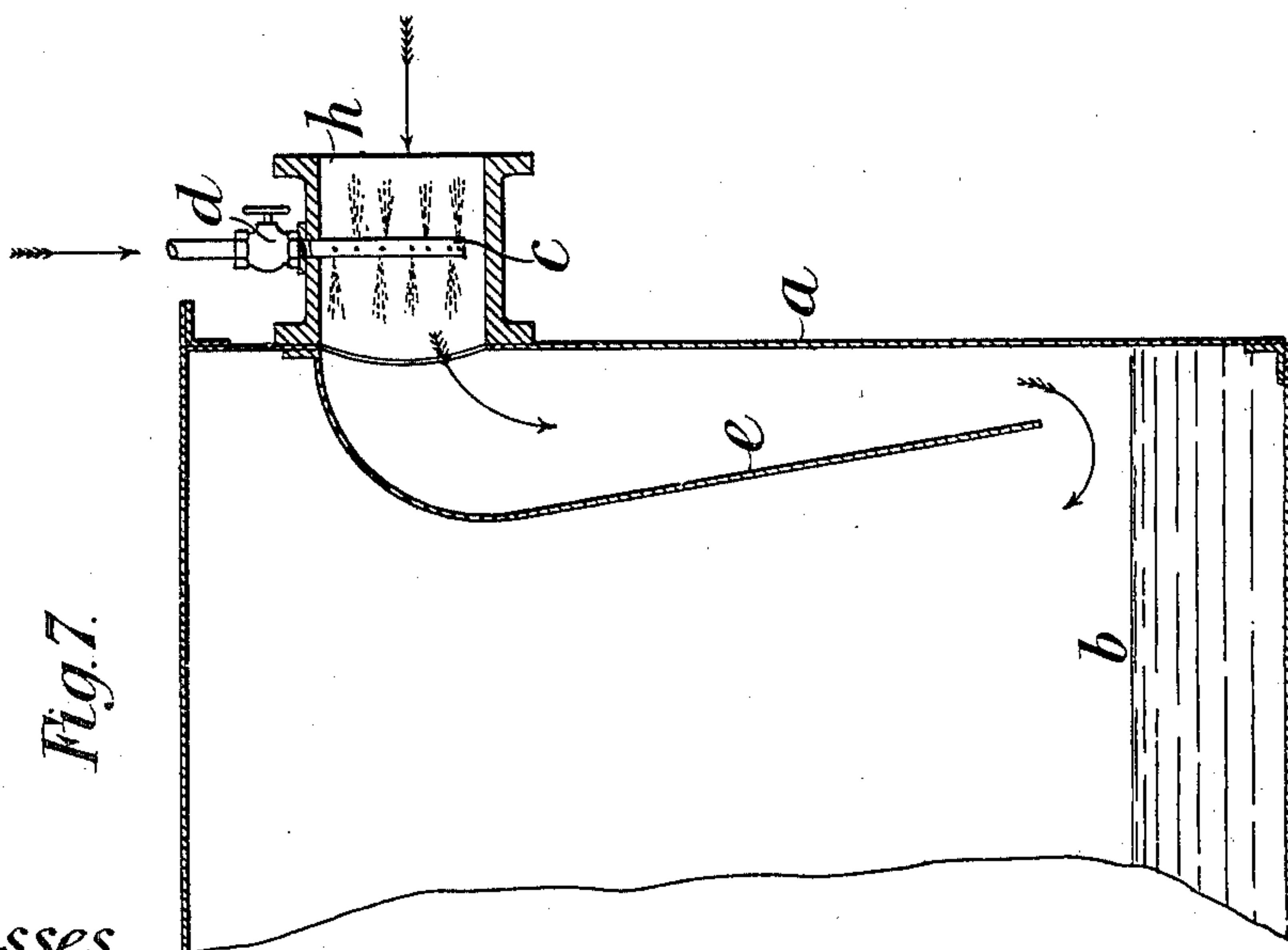
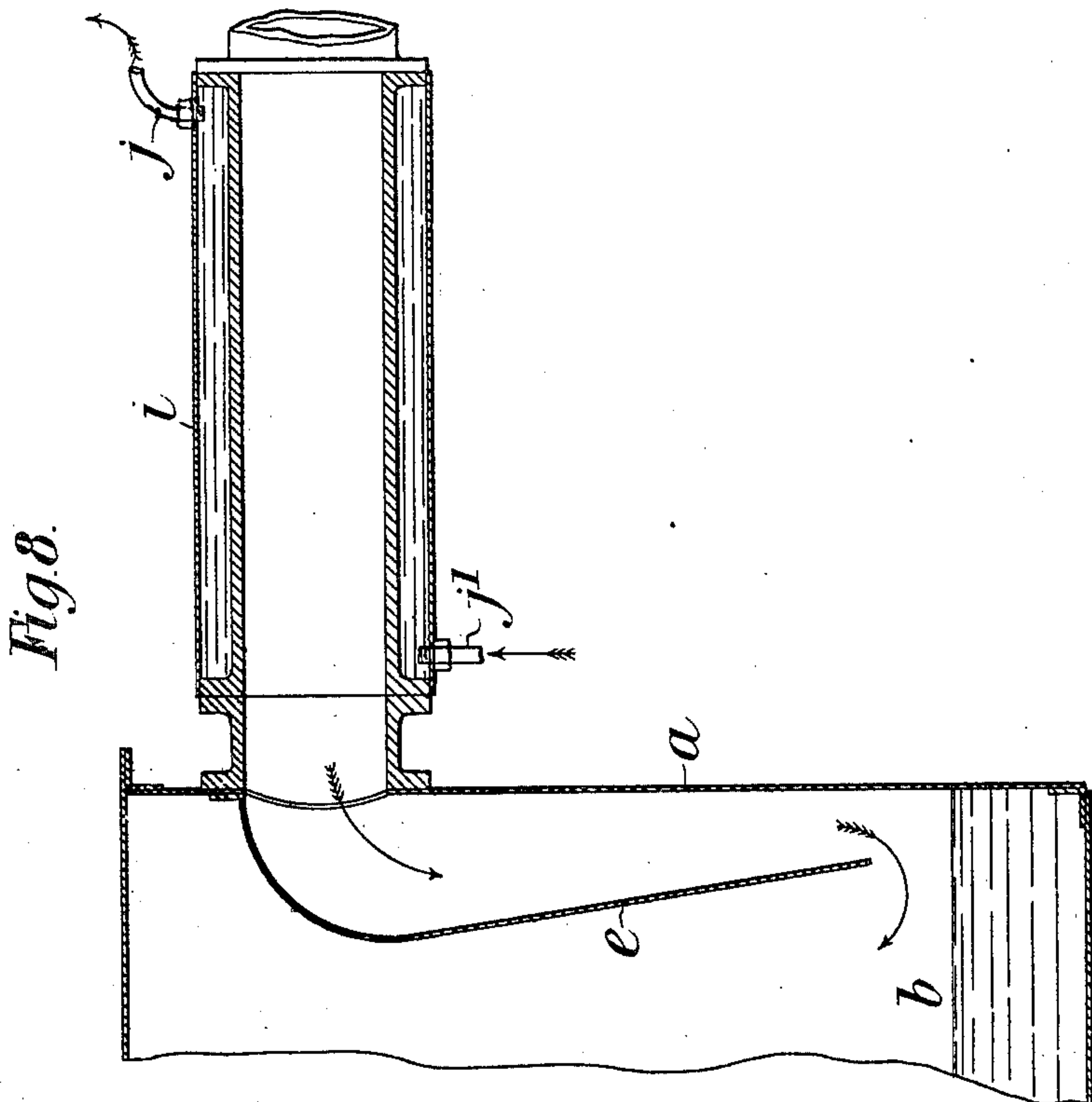
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4 Sheets—Sheet 4.



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# UNITED STATES PATENT OFFICE.

WILLIAM JAMES BAKER, OF SCARBOROUGH, ENGLAND.

## APPARATUS FOR SEPARATING GREASE FROM STEAM.

SPECIFICATION forming part of Letters Patent No. 692,415, dated February 4, 1902.

Application filed September 9, 1901. Serial No. 74,828. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM JAMES BAKER, a subject of the King of Great Britain, residing at Peasholme House, Scarborough, in the county of York, England, have invented new and useful Improvements in and Relating to Apparatus for Separating Grease from Steam, of which the following is a specification.

This invention relates partly to improvements upon the invention described in the specification of British Letters Patent granted to me and dated the 28th day of June, 1897, No. 15,384, and has for its object the cooling of superheated steam either immediately before it enters an oil-separator or as soon as it has entered and before coming in contact with the bafflers, to which the grease adheres.

When superheated steam at a high temperature is passed through a separator, especially when a vacuum exists therein, no condensation of the steam takes place and very little oil is separated, the heat of the gaseous steam being imparted to the shell and bafflers, and any liquid or vapor is dried up. By the introduction of a jet of cold water in the manner hereinafter described the temperature of steam entering or within the separator is lowered and resaturation of the steam with water or aqueous vapor takes place and the steam is brought into a more suitable state for the easy separation of the contained lubricating-oil. At the same time the sprayed water is converted into steam and adds to the bulk of water formed in the condenser, the impurities formerly existing in the water used for spraying being caught and drawn off with the greasy water from the bottom of the separator.

In the accompanying drawings, Figures 1 and 2 are sectional elevations of two forms of separators made according to the invention. Figs. 3 and 4 are respectively a sectional elevation and a plan of a further form of my separator. Figs. 5 and 6 are views similar to Figs. 3 and 4 of another modification. Figs. 7 and 8 are sectional elevations illustrating two further modifications.

In the arrangement shown in Fig. 1, *a* represents the shell of the separator, and *b* the separated grease and water. *c* is a plain jet, the flow of cold water through the said jet being regulated by means of the valve *d*. In

this case the stream of water also cools the deflector *e*, which assists in lowering the temperature of the steam, which passes in the direction shown by the arrows.

In Fig. 2 instead of a plain jet a perforated tube *c* is employed, the action being similar to that of the plain jet shown in Fig. 1.

In Figs. 3 and 4 the perforated spraying-tube *c* is carried across the front of the angle-iron bafflers *f* or other baffling surfaces which may be employed, the said bafflers being cooled by the spray from the tube *c*, whereby the temperature of steam coming in contact with them is lowered and a certain amount of resaturation of the steam takes place, which results in a larger volume of purified steam being available for condensation.

In Figs. 5 and 6 cooling-tubes *g g* are represented, between which steam passes to the bafflers. Through these tubes a current of cold water flows, the flow being regulated at the valve *d* and the temperature of the steam being reduced by coming in contact with the tubes. Other rows of tubes may be added if it is desired to further reduce the temperature of the steam, and the heated water passing out of these tubes may be used as boiler-feed water.

In the arrangements shown in Figs. 7 and 8 the temperature of the steam is reduced before it enters the separator—in Fig. 7 by means of a jet or spray *c*, which may be inserted in the branch *h*, attached to the separator, as shown, or in the exhaust-steam pipe near the branch, and in Fig. 8 by means of a cold-water jacket *i*, which cools the steam passing through the length of exhaust-steam pipe, the inlet for cooling-water being represented at *j'* and the outlet for the same water as it becomes heated and rises at *j*.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In apparatus for separating oil or other grease from steam, the combination with the casing into which the steam is introduced, provided with an inlet and outlet, and with means for deflecting the steam between said inlet and outlet, of a device for lowering the temperature of the steam located adjacent to the inlet to said casing to facilitate the sep-



aration of the oil or grease, substantially as described.

2. In apparatus for separating oil or other grease from steam, the combination with the casing into which the steam is introduced, provided with an inlet and outlet, and with means for deflecting the steam between said inlet and outlet, of a water-pipe located in the path of the steam adjacent to the inlet to said casing to reduce the temperature of the steam to facilitate the separation of oil and grease, substantially as described.

3. In apparatus for separating oil or other grease from steam, the combination with the casing into which the steam is introduced, provided with an inlet and outlet, and with means for deflecting the steam between said inlet and outlet, of a water-injecting device, located adjacent to said inlet and discharging directly into the steam, to lower the temperature of the steam and facilitate the separation of oil and grease, substantially as described.

4. In apparatus for separating oil and other

grease from steam, the combination with the casing into which the steam is introduced, provided with an inlet, an outlet and a deflecting device between the inlet and outlet, of a water-injecting device located adjacent to said inlet and discharging against said deflecting device, for cooling the steam and facilitating the separation of oil and grease therefrom, substantially as described.

5. In apparatus for separating oil and other grease from steam, the combination with the casing into which the steam is introduced, provided with an inlet, an outlet, a deflecting device adjacent to the inlet and a series of baffle-plates in the casing, of a water-injecting device located in said casing and discharging against said baffle-plates to cool the steam and facilitate the separation of oil and grease therefrom, substantially as described.

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Witnesses:

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