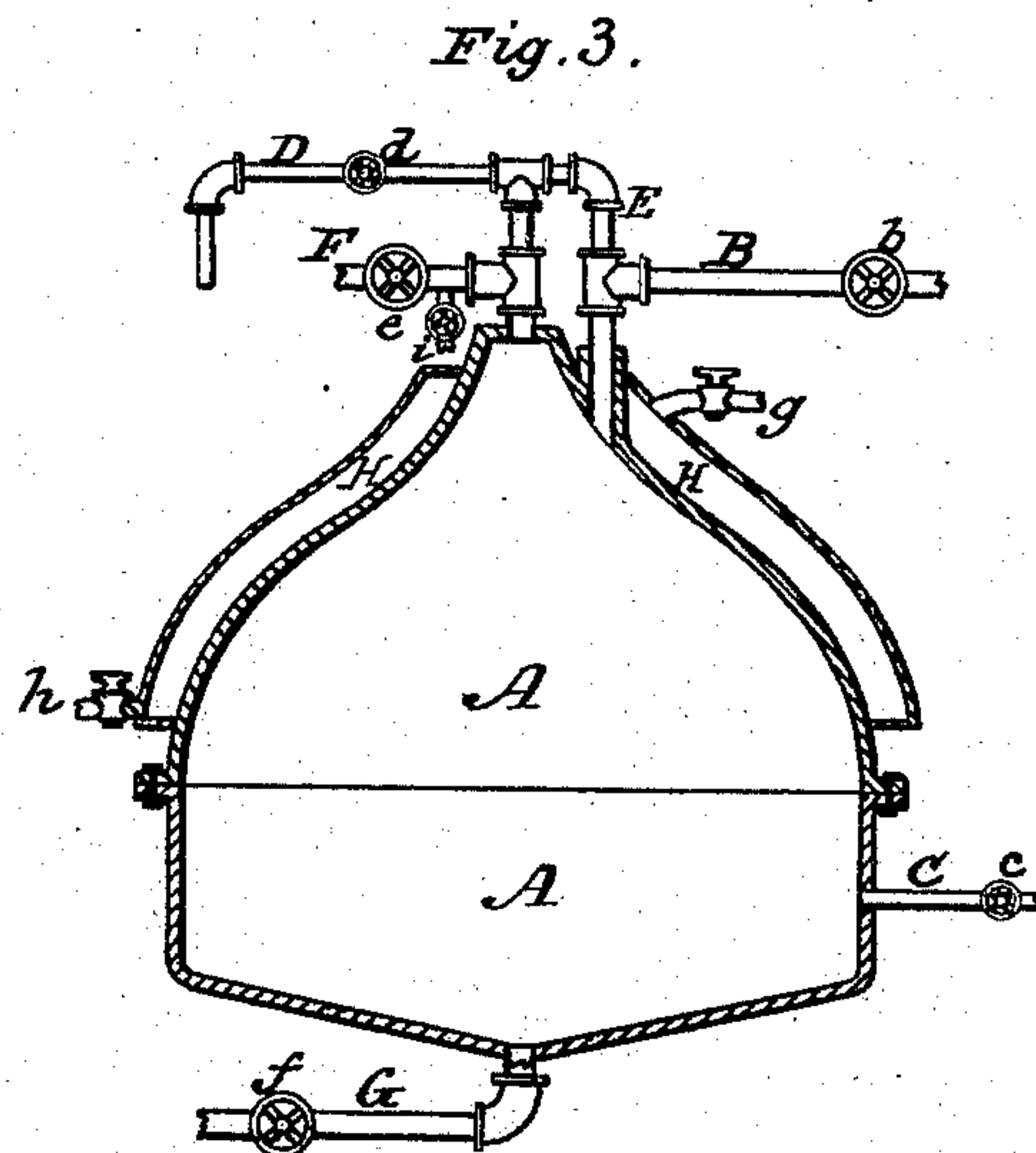
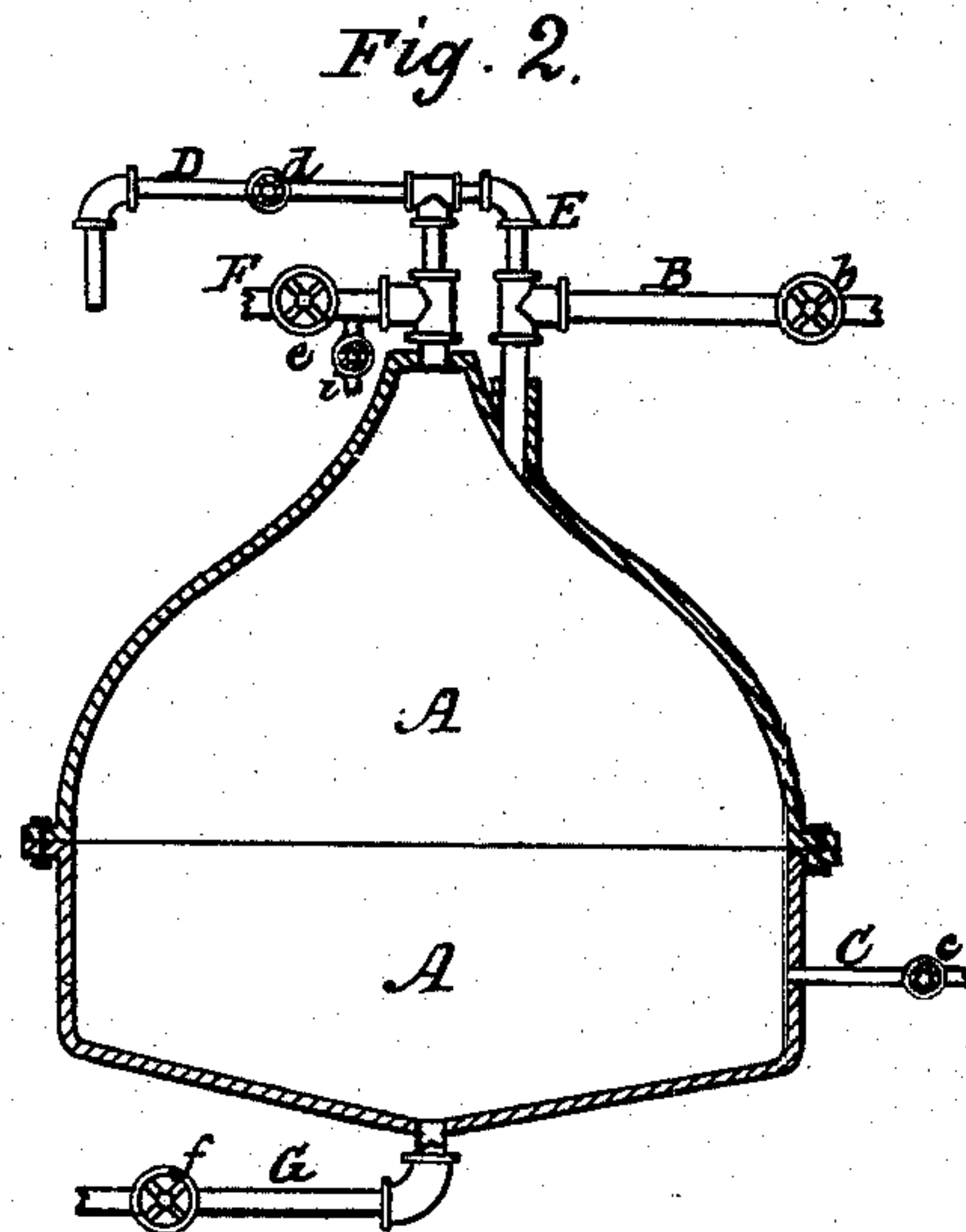
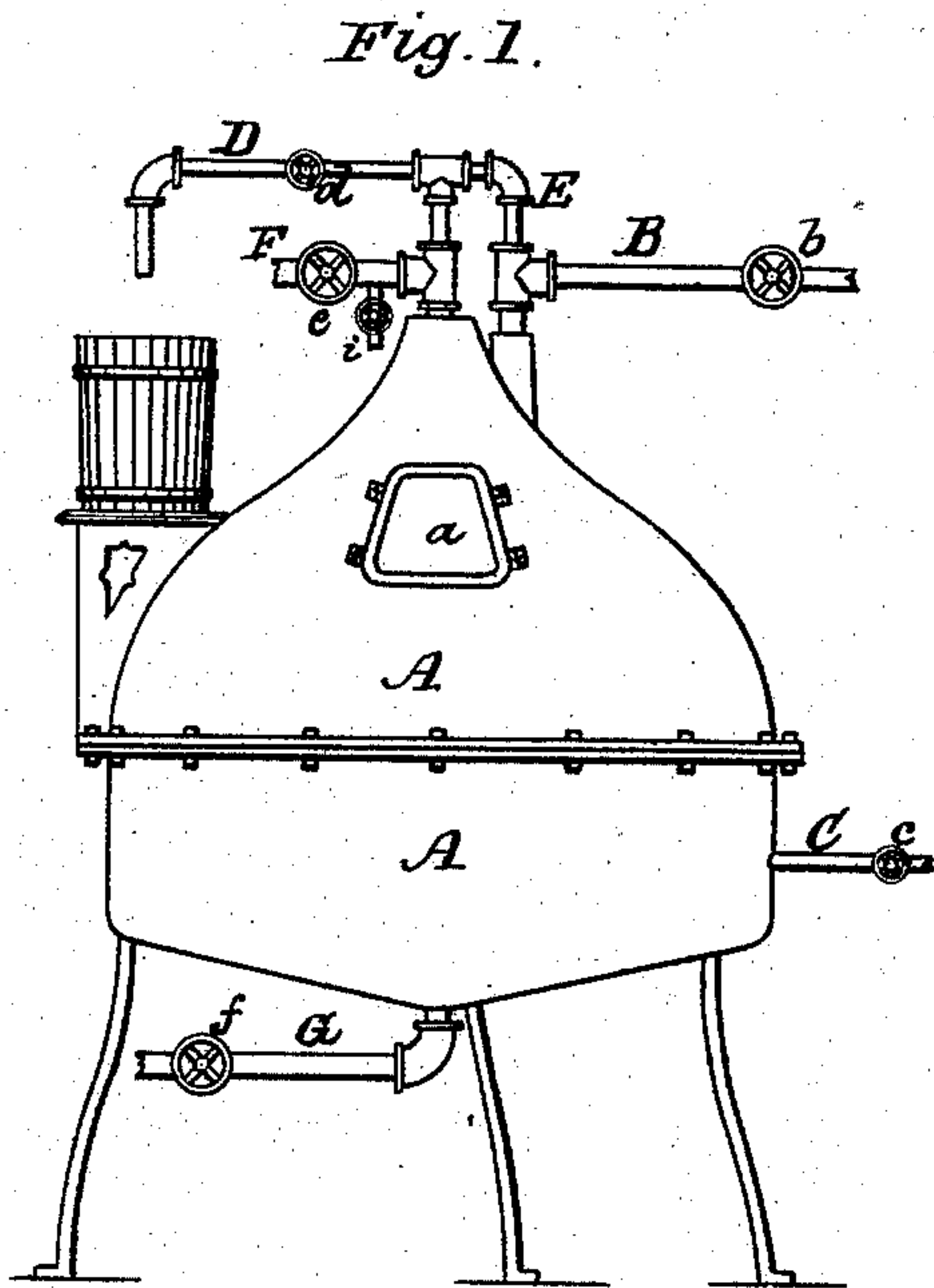


I. C. BATES.
Apparatus for Separating Oil and Fatty Matter
from Water, &c.
 No. 156,751. Patented Nov. 10, 1874.



Witnesses
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ISAAC C. BATES, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN APPARATUS FOR SEPARATING OIL AND FATTY MATTERS FROM WATER, &c.

Specification forming part of Letters Patent No. **156,751**, dated November 10, 1874; application filed August 5, 1874.

To all whom it may concern:

Be it known that I, ISAAC C. BATES, of the city and county of Providence, in the State of Rhode Island, have invented a certain new and useful Apparatus for Separating Oils and Fatty Matter from Water, &c.

In establishments for the rendering of lard and tallow, or for the manufacture of soaps and oils, whether steam and water be employed for boiling the material from which oils or fats are obtained, or whether water be employed simply as a cleansing medium about the establishments, it is of great practical value that all the oily or fatty matter which would otherwise be floated or carried off thereby into drains or cess-pools be retained and so treated as to render it of mercantile value. By means of my invention this object may be practically accomplished.

My invention consists of a close receiver of novel construction, having a vertically-diminished interior capacity, and in combining therewith a system of pipes and cocks, whereby the watery mixture may be conveyed to the receiver, other water may be entered therein, and the fatty matter floated away duly separated from the water; and also in combining therewith a duct, properly controlled, for the conveyance therefrom of offensive vapors, and a duct for the discharge of the waste-waters therefrom; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear and accurate description of an apparatus embodying my invention.

Referring to the drawings, Figure 1 represents a complete apparatus in perspective. Fig. 2 represents the same in cross vertical section. Fig. 3 represents, in vertical section, a modification of my tank or receiver.

In all of the figures, A denotes the tank or receiver. It will preferably be composed of plate or sheet iron, or other metal, although good results may practically be attained with a wooden tank if properly constructed. The essential features of this tank are a water-tight capacity, sufficient strength for the purpose, and an interior sectional area which is gradually decreased vertically until terminating in a discharge-duct. In the drawings, the top of the receiver is represented as of general conical form

with sides slightly curved. This latter feature is, however, non-essential. It may or may not be provided with a man-hole and plate, as illustrated at *a*. If one be employed, however, it will be essential that suitable clamps and packing be used, in order that it may be made water-tight, and readily applied and removed on occasion. B denotes the induction-pipe through which the watery mixture is conveyed to the receiver, whether by means of pumps or its own gravity, from an elevated vat or tank. It is provided with a cock, as at *b*, for cutting off connection with the tank from time to time. C denotes a pipe with cock, as at *c*, through which water may be admitted for driving off the fat. This pipe may be connected with conduits containing water under pressure, or it may be so connected with the tank containing the watery mixture that a supply may be forced from thence into the tank. D denotes the fat or oil discharging duct, which is located at the apex of the top of the receiver, and is provided with a cock, as at *d*. E denotes a supplementary oil-duct, which connects the main duct D with the induction-pipe B, whereby oil or fat may be driven from the latter into the former. F denotes a vapor or stench pipe, with a cock, as at *e*. A small pipe and cock, as at *i*, may be inserted in the stench-pipe for determining when the receiver is filled. G denotes a waste-pipe with cock, as at *f*, which, communicating with the receiver at the base, admits of the withdrawal of the waste-water from the tank.

Having thus described said apparatus, I will explain its mode of operation. It is to be understood that cocks at *f*, *c*, and *d* are closed, and the cock at *e* in the stench-pipe is open. The cock at *b* in induction-pipe B is then opened, and the combined fat and water allowed to fill the receiver. All vapors and air pass freely through the stench-pipe F, preferably thence to a flue or suitable deodorizing apparatus. When the tank is filled it may readily be determined by occasionally opening the cock at *d* and closing that in the stench-pipe, or the small pipe and cock at *i* may be used as an indicator. The cocks at *b* and *e* are then closed, and the contents allowed to stand for a short time. The oil and fat will naturally rise to the top, and by the gradually-

decreasing sectional area of the upper portion of the receiver it will be well concentrated. When practicable, warm water will preferably be injected under pressure at pipe C, although cold water will produce practicable results. As water is thus applied the oil and fat are forced upward through oil-duct D, the cock of which is opened. From this pipe it may be drawn into suitable vessels or conveyed to a strong tank, from which it may be from time to time withdrawn and treated for market or for subsequent uses. When all the oil has been thus floated off and water appears instead, the cocks in duct D and pipe C are closed; the cocks in oil-duct D and waste-pipe G are then opened, and the receiver promptly discharged and made ready for repeating the operation.

It will be seen that more or less of the oil or fat will be forced into the pipe B at its junction with the receiver, and that the supplemental oil-duct E will admit of its free passage into the main duct D. It will, however, be seen, although the pipes so arranged with the tank constitute a complete and desirable apparatus, that a simple change therein could be made and yet admit of desirable results. For instance, the pipe B could be dispensed with, and the entire induction be made by means of pipe C, and no other water employed save that charged with the fatty matter, it being only necessary in that case to inject it slowly after the tank had been once filled and the oil in process of discharging. Whenever, however, the waste-water was drawn off, there would be a greater loss of fat than would be the case if pure water were employed. For small establishments, where the complete system of piping would not be deemed advisable, the man-hole might be opened and the charging of the receiver up to that point effected through it.

In Fig. 3 I have represented the upper portion of the receiver as if incased within a steam-jacket, as at H, with steam and condense-water pipes at *g* and *h*, respectively. By having the upper portion of the walls of the receiver thus heated, there would be no tendency for the fat to unduly adhere thereto, and it would also result in giving the fatty matter greater fluidity.

I desire it to be distinctly understood that I am aware that the several pipes may be variously arranged and located with reference to each other without materially affecting the operation of the apparatus, and that I do not, therefore, confine myself to the precise arrangement shown.

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

1. An apparatus adapted and arranged to separate oils and fatty matter from water, consisting of a close receiver having a vertically-decreasing interior capacity, an oil-discharging duct located adjacent to the highest part of the receiver, and guarded apertures for the introduction of fluid to the receiver, substantially as described.

2. The combination of a close receiver, having a conical top, with the induction-pipes B C, the oil-duct D, and waste-pipe G, substantially as described.

3. The combination of the induction-pipe B with the oil-ducts D E, substantially as described.

4. The combination of the receiver with the induction pipe or pipes, the oil-ducts, the waste-pipe, and stench-pipe, substantially as described.

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