

No. 680,611.

Patented Aug. 13, 1901.

E. W. PARISH.

APPARATUS FOR SUPPLYING HOT LIQUIDS.

(Application filed Oct. 20, 1900.)

(No Model.)

2 Sheets-Sheet 1.

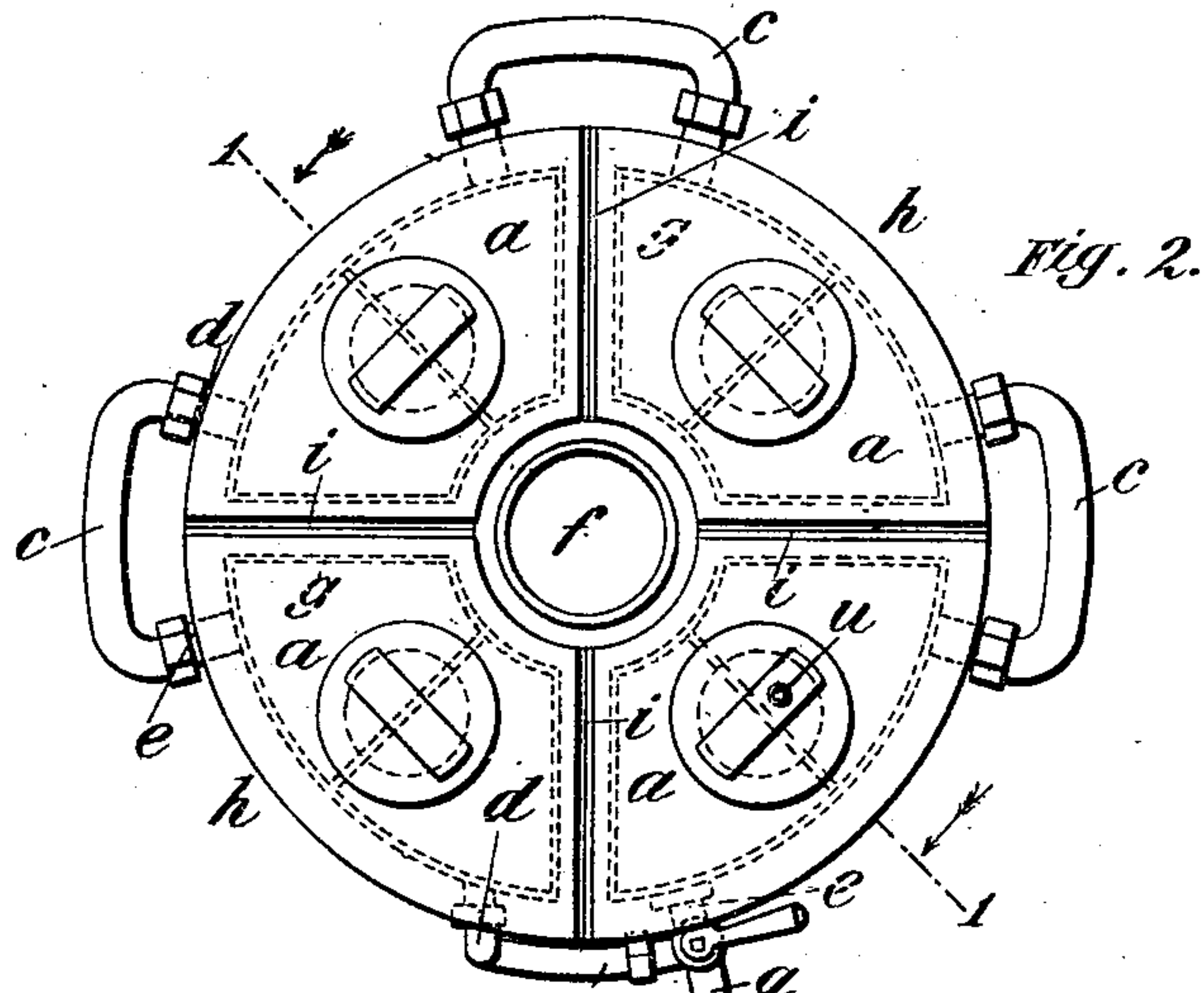


Fig. 2.

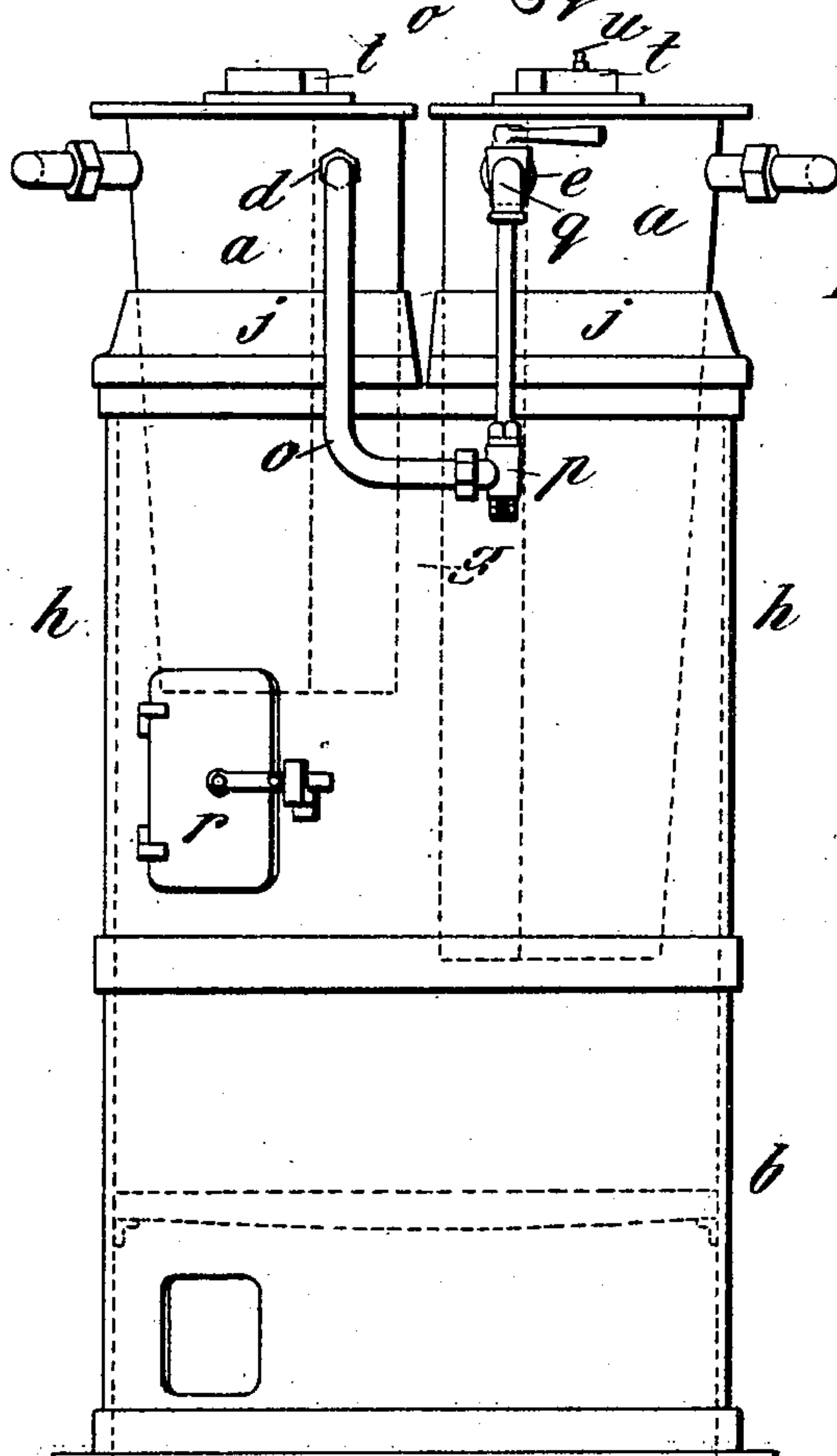


Fig. 1.

Witnesses

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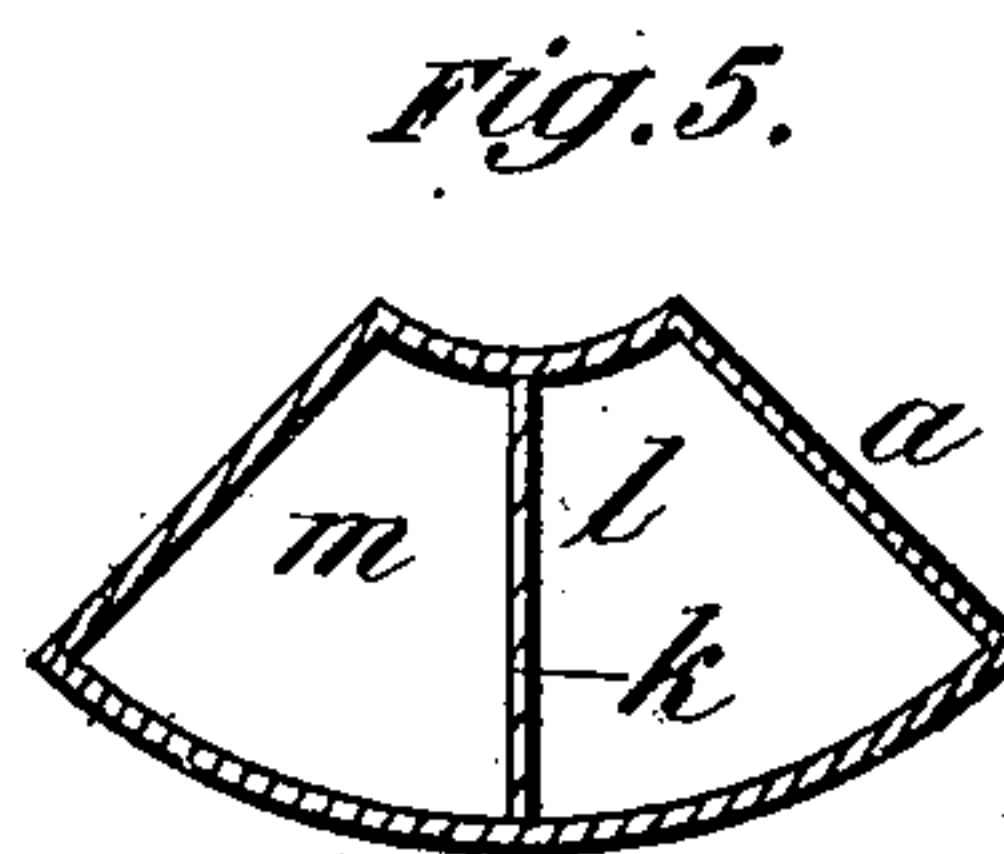
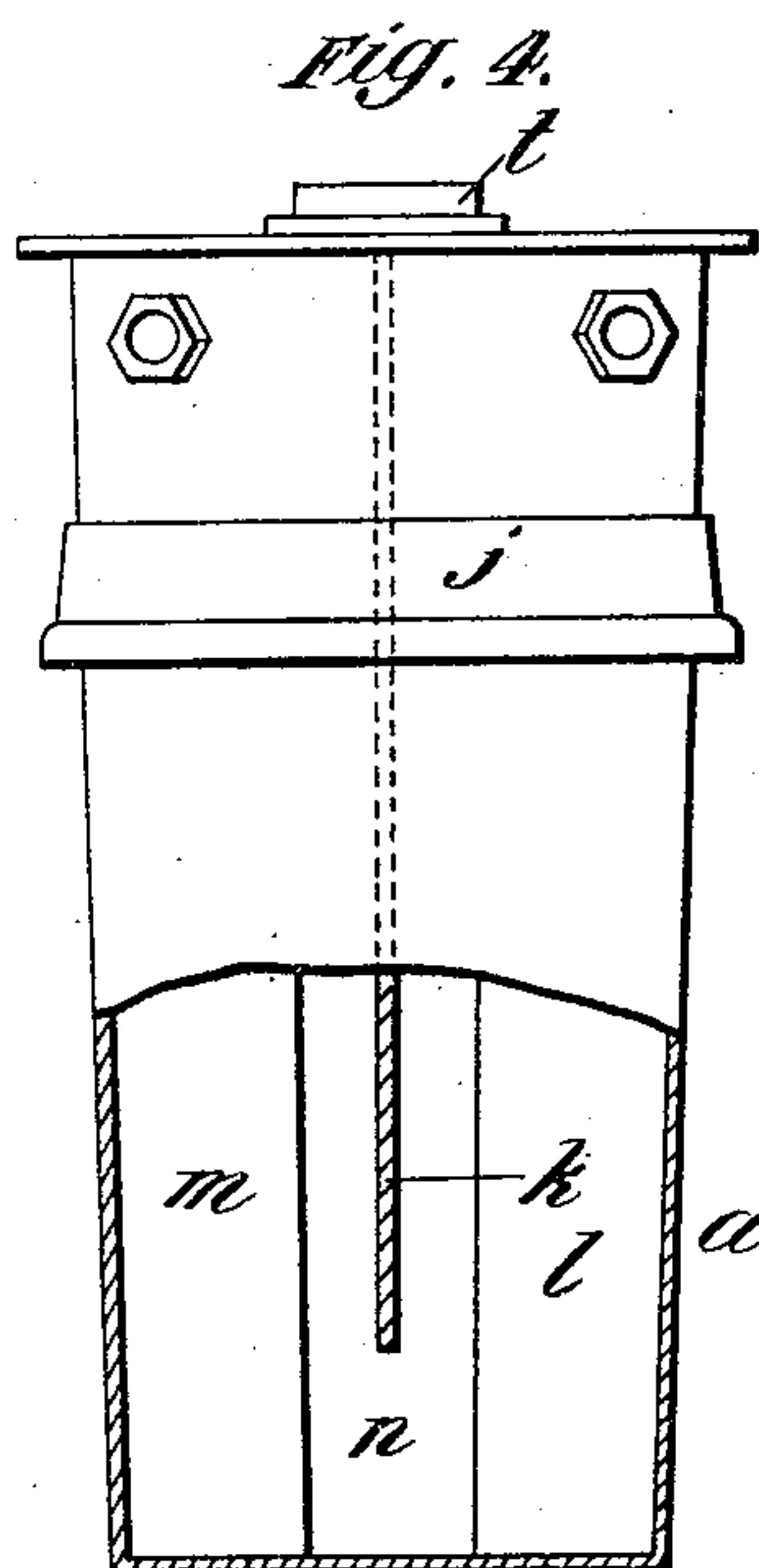
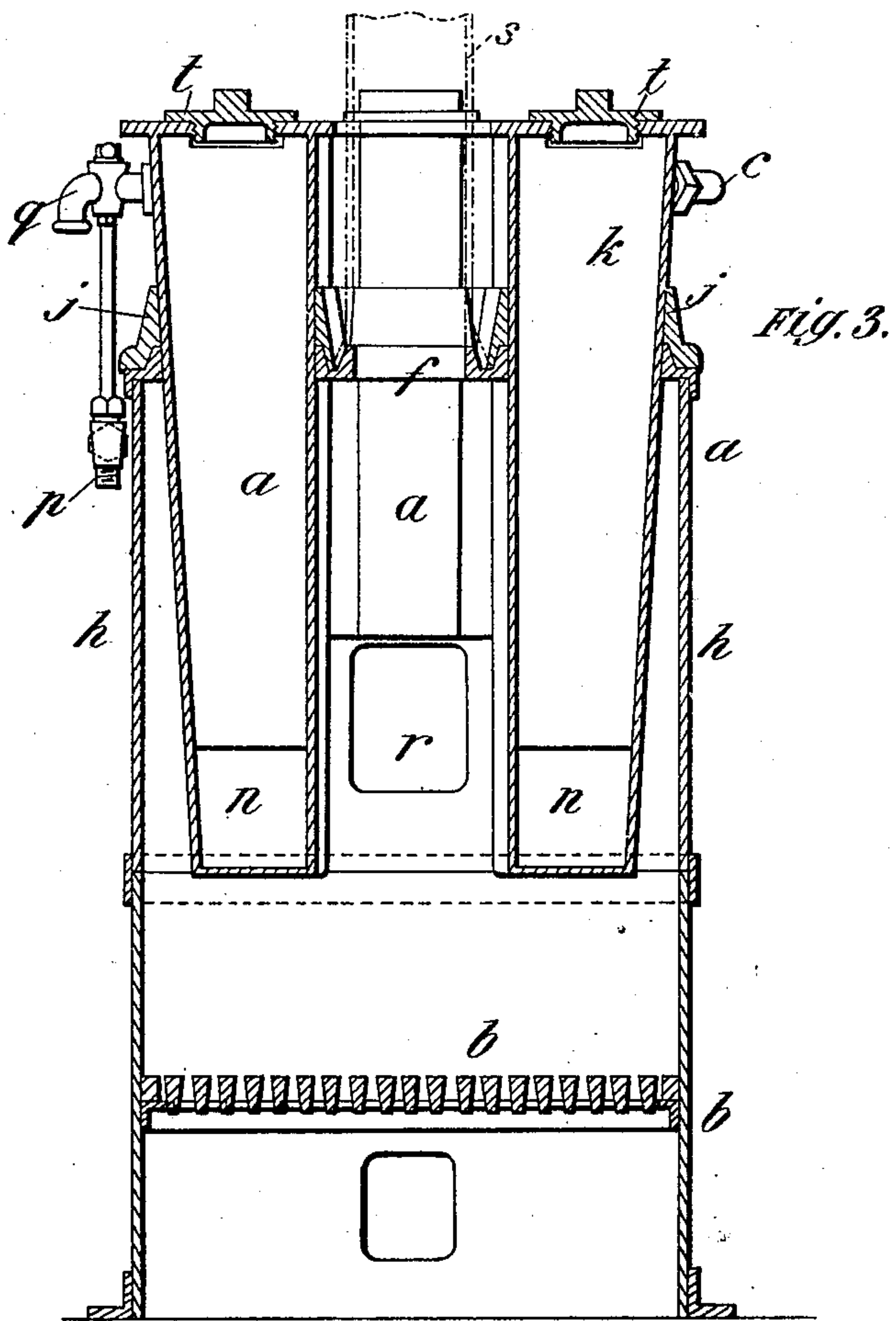
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2 Sheets—Sheet 2.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWARD W. PARISH, OF LONDON, ENGLAND.

APPARATUS FOR SUPPLYING HOT LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 680,611, dated August 13, 1901.

Application filed October 20, 1900. Serial No. 33,772. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WILLIAM PARISH, commercial traveler, a subject of the Queen of Great Britain, residing at 97^a Queen Victoria street, London, England, have invented certain new and useful Improvements Relating to Apparatus for Supplying Hot Liquids, of which the following is a specification.

This invention has reference to apparatus for supplying hot liquids, and has for its chief object to so construct such apparatus that the introduction of the cold liquid thereto shall not materially reduce the temperature of the liquid in the portion of the apparatus from which the hot liquid is withdrawn, so that, provided the cold-liquid inlet be properly regulated with regard to the hot-liquid outlet, a constant supply of hot liquid from the apparatus can be insured. For this purpose I construct the apparatus with a number or series of sections arranged side by side and heated from beneath by a gas or other furnace. These sections are preferably detachable and are divided into compartments communicating one with another in such a manner that the liquid contained in one compartment can pass from the upper part thereof to the lower part of the next compartment, and so on through the series. The first and last compartments of the series do not communicate directly with each other, the first compartment being provided with an inlet for the cold liquid supplied to the apparatus and the last compartment being provided with an outlet for the hot liquid. By thus constructing the apparatus the cold liquid before finally reaching the outlet from the apparatus has to pass through several compartments, each containing liquid of a temperature higher than that of the preceding compartment, and consequently by the time the liquid reaches the outlet of the last compartment it has become heated to the required degree.

In order that my invention may be clearly understood and readily carried into effect, I will proceed to describe the same more fully with reference to the accompanying drawings, on which—

Figure 1 is a front elevation, and Fig. 2 a plan, of one form of apparatus constructed according to my invention; Fig. 3, a vertical

section on the line 1 1 of Fig. 2. Fig. 4 is a sectional elevation, and Fig. 5 a transverse section of one of the sections shown separately. *a a* are the various sections, each divided into compartments.

b is the furnace.

c c are pipes or conduits connecting one section to another.

d is the inlet-opening for the cold liquid, and *e* the outlet-opening for the heated liquid.

The form of apparatus shown on the drawings comprises four closed vertical sections *a a*, tapered in form toward their lower end and so arranged and connected together as to form a cylindrical vessel with a central vertical passage *f* and with spaces *g g* between contiguous sections for the hot gases or products of combustion from the furnace to pass into and satisfactorily heat the various sections. The sections are situated in a cylindrical casing *h*, provided with an upper perforated plate *i* for supporting collars or flanges *j*, with which each of the sections is provided, these collars or flanges being so constructed that they form with the said plate a joint through which smoke or fumes from the furnace cannot pass. Within each section is a vertical partition *k*, extending from the top almost to the bottom thereof, so as to form a longitudinal passage or compartment *l*, constituting what I term a "displacement-chamber," and the other passage or compartment *m* constitutes what I term a "heating-chamber." The incoming liquid passes down the compartment *l* and through the opening *n* at the lower part of the section *k* to the bottom of the heating-chamber *m* of the said section, causing the hotter liquid therein to flow into the next section through the pipe *c*, when said liquid flows through the compartment *l* of this section into the succeeding section, and so on through the other sections of the apparatus until it reaches the hot-liquid outlet. A quantity of hot liquid corresponding to that of the cold liquid entering the apparatus by the inlet-opening *d* can thus be delivered through the outlet-opening *e* from the last section of the series.

The inlet-opening *d*, communicating with the upper part of the compartment *l* of the first or inlet-section, is connected by a pipe *o* to a valve or cock *p*, communicating with the

water-main or other source of liquid-supply, and the outlet-opening *e* on the last or outlet section is provided with a valve or cock *q*, through which the hot liquid may be withdrawn from the apparatus when required. The plugs of the cocks *p q* are connected together by means of a rod or spindle or otherwise in such a manner that while permitting each of the said plugs to be independently adjusted on its seat both plugs can be simultaneously operated, so that the quantity of cold liquid equal to the quantity of hot liquid withdrawn through the valve *q* is allowed to enter the apparatus, or the inlet-opening may be provided with a funnel-shaped passage through which cold liquid may be poured into the apparatus.

The furnace *b*, or the portion thereof carrying the fire-bars, is formed separately from the cylindrical casing *h*, which detachably fits on the top of the said furnace. *r* is a door in the said cylindrical casing through which the fuel for the furnace is supplied, one of the aforesaid sections *a* being made shorter than the others to permit of the admission of the fuel through said door. The products of combustion, as aforesaid, pass up the central passage formed by the circular arrangement of the sections and pass away through a flue *s*, detachably attached to the upper perforated plate *i* of the said cylindrical casing.

In some cases—as, for instance, when the apparatus is heated by gas—the door in the casing would be dispensed with and all the sections would be of the same length.

Each of the sections is provided with an opening closed by a screw-cap *t* for facilitating the cleansing of the said sections. The cap *t*, which can be removed, of the last or outlet section is provided with a steam-escape nozzle *u* or relief-valve. The pipes *C* are attached to the sections by screw-unions *e'* or other suitable means for enabling them to be rapidly disconnected from said sections to permit of the latter being removed from the cylindrical casing and from each other when desired.

I do not wish to confine myself to the form of apparatus herein described, and illustrated by the accompanying drawings, as it will be obvious that the number and arrangement of the detachable sections or compartments may be varied in accordance with requirements without departing from the essential nature of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In an apparatus for supplying hot liquids, the combination of a series of a vertical sections so shaped that when fitted together, they form a cylindrical vessel having a vertical central passage, of a chimney connected with said central passage, of a cylindrical chamber surrounding the lower parts of said series of vertical sections, of means for supporting said section loosely but smoke-tight in place, of detachable pipes for connecting

one section to another, and an inlet and outlet pipe for the entrance of the cold liquid and escape of the hot liquid, substantially as and for the purpose set forth.

2. In apparatus for supplying hot liquids the combination of a series of closed vertical sections, so shaped that when connected together they form a cylindrical vessel having a vertical central passage and spaces between the contiguous sections, of a displacement-chamber communicating at its lower end with the heating-chamber of each section, of an inlet-opening at the upper part of each displacement-chamber, of an outlet-opening at the upper part of each section, of a pipe connecting the said inlet-opening with the said outlet-opening of the contiguous sections, of an inlet for cold liquid on the inlet-section of the apparatus, of an outlet for hot liquid on the outlet-section of the apparatus, of a cock connected with the said cold-liquid inlet, of a cock on the said hot-liquid outlet and situated vertically over the said inlet-cock, of means for connecting the plugs of said cocks together, of a furnace located beneath said sections, of a furnace-floor in said cylindrical casing and of a flue-pipe connected to the top of said casing for the purpose specified.

3. In an apparatus for supplying hot liquids, the combination of a cylindrical casing, a perforated plate mounted on the top thereof, a series of closed sections extending through said plate and forming a cylindrical vessel, and a flanged collar surrounding each of said sections, and engaging said plate to form a smoke-tight joint.

4. In apparatus for supplying hot liquids the combination of a series of closed vertical sections, so shaped that when connected together they form a cylindrical vessel having a vertical central passage and spaces between the contiguous sections, of a displacement-chamber communicating at its lower end with the heating-chamber of each section, of an inlet-opening at the upper part of each displacement-chamber, of an outlet-opening at the upper part of each section, of a pipe connecting the said inlet-opening with the said outlet-opening of the contiguous sections, of an inlet for cold liquid on the inlet-section of the apparatus, of an outlet for hot liquid on the outlet-section of the apparatus, of a cock connected with the said cold-liquid inlet, of a cock on the said hot-liquid outlet and situated vertically over the said inlet-cock, of means for connecting the plugs of said cocks together and of an opening in the top of each section closed by a screw-cap for the purpose specified.

5. In apparatus for supplying hot liquids the combination of a series of closed vertical sections, so shaped that when connected together they form a cylindrical vessel having a vertical central passage and spaces between the contiguous sections, of a displacement-chamber communicating at its lower end with the heating-chamber of each section, of an

inlet-opening at the upper part of each displacement-chamber, of an outlet-opening at the upper part of each section, of a pipe connecting the said inlet-opening with the said
5 outlet-opening of the contiguous sections, of an inlet for cold liquid on the inlet-section of the apparatus, of an outlet for hot liquid on the outlet-section of the apparatus of means for simultaneously opening and closing
10 said inlet and outlet; of a furnace located beneath said sections, of a furnace-door in

said cylindrical casing and of a flue-pipe connected to the top of said casing for the purpose specified.

In testimony whereof I have hereunto set
my hand, in presence of two subscribing witnesses, this 6th day of October, 1900. 15

EDWARD W. PARISH.

Witnesses:

THOMAS SELBY WARDE,
WM. J. DOW.