(No Model.) 3 Sheets—Sheet 1.

# S. DANIELS.

## VAPOR STOVE.

No. 568,018. Patented Sept. 22, 1896.

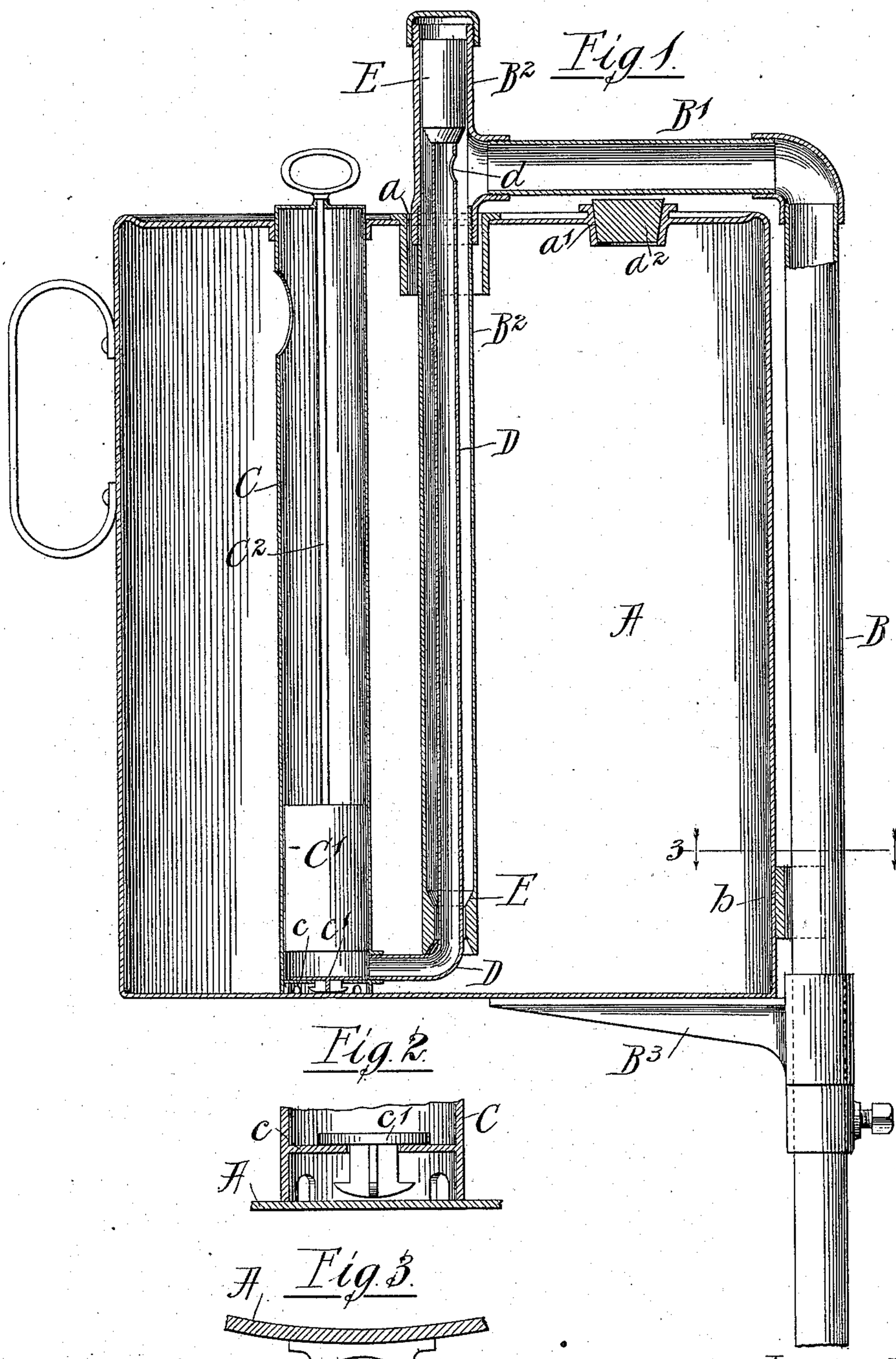


Fig. 1.

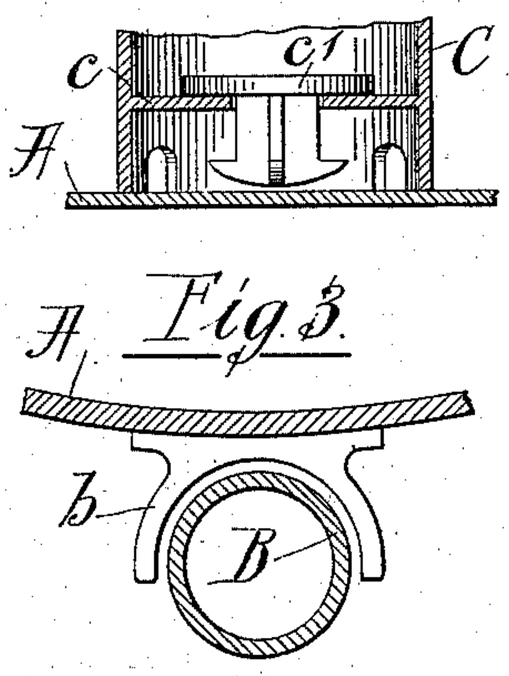


Fig. 2.

Fig. 3.

Witnesses:-
Jno. W. Adams.
Clinton Hamlink

Inventor:-
Samuel Daniels.
by:- Dayton, Poole & Brown
his Attorneys.

(No Model.) 3 Sheets—Sheet 2.

# S. DANIELS.

## VAPOR STOVE.

No. 568,018. Patented Sept. 22, 1896.

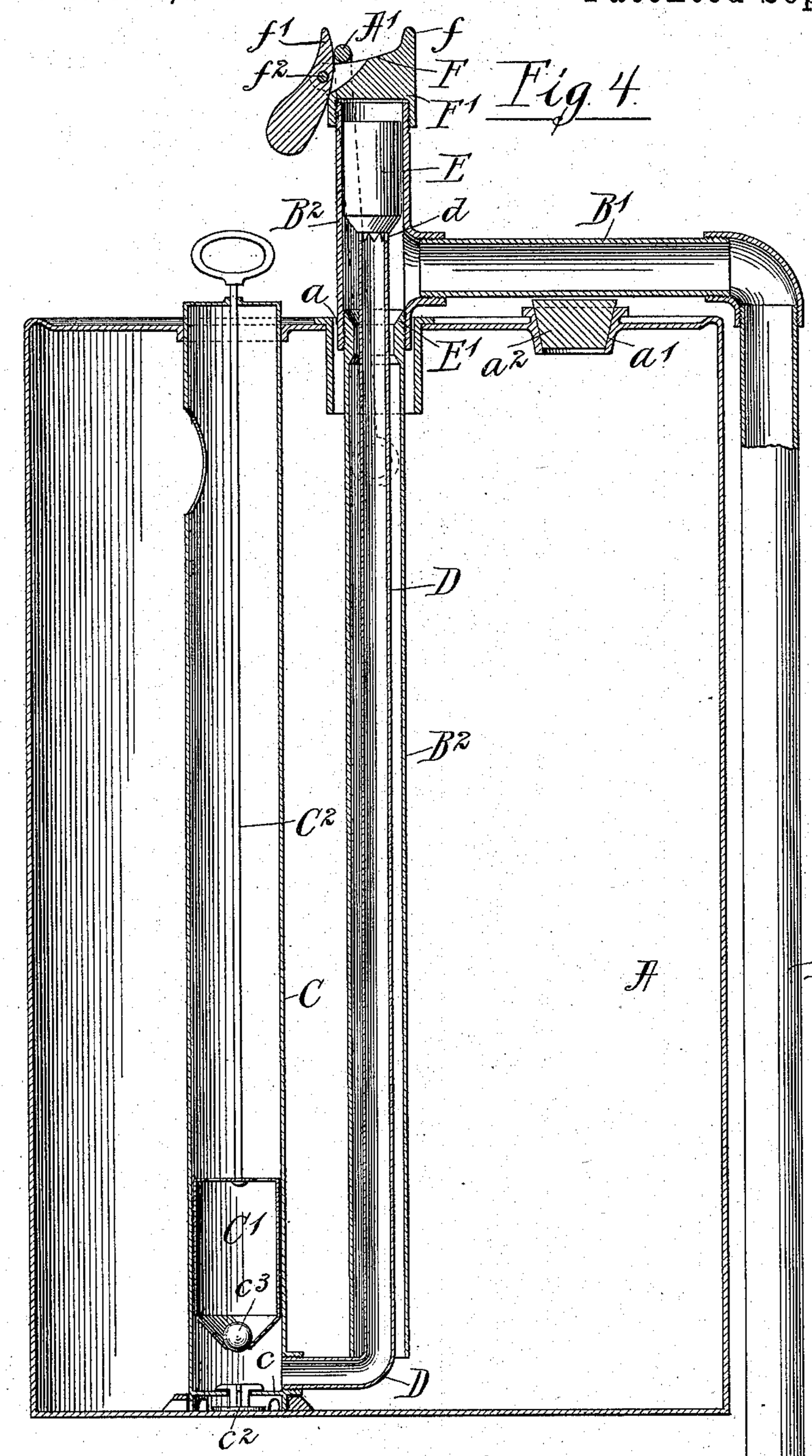


Fig 4.

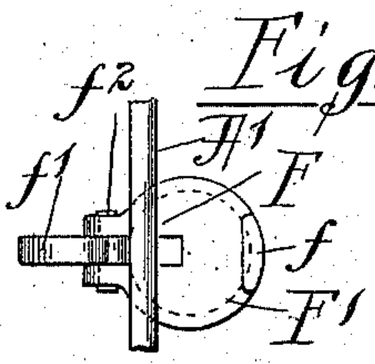


Fig. 5.

Witnesses:-
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(No Model.)

3 Sheets—Sheet 3.

# S. DANIELS.

## VAPOR STOVE.

No. 568,018. Patented Sept. 22, 1896.

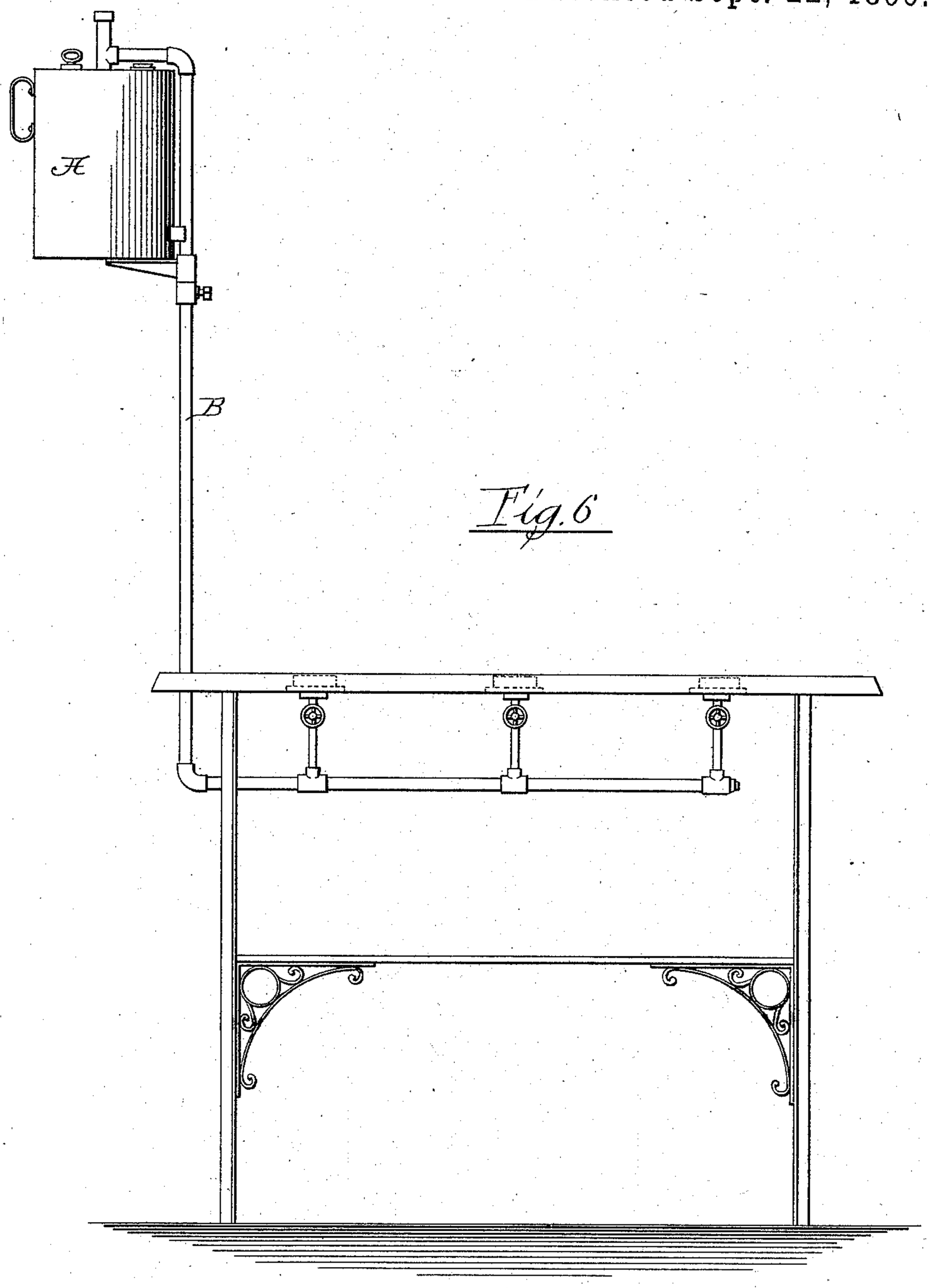


Fig. 6

Witnesses:-
John W. Adams.
Clinton Hamlink

Inventor:-
Samuel Daniels.
By:- Dayton, Poole & Brown.
his Attorneys.

# UNITED STATES PATENT OFFICE.

SAMUEL DANIELS, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO MELVILLE E. DAYTON, OF SAME PLACE.

## VAPOR-STOVE.

SPECIFICATION forming part of Letters Patent No. 568,018, dated September 22, 1896.

Application filed May 25, 1894. Serial No. 512,462. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL DANIELS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Vapor-Stoves; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to elevated supply-tanks of gasolene-stoves; and it has for its principal objects, first, to provide a construction permitting the gasolene to be taken to the burners through the top of the tank; second, to so take the gasolene from the tank by means of a siphon; third, to provide means for charging the siphon when necessary, and, fourth, to make the tank removable, whereby it can be taken down or to a distance from the stove to be refilled.

A gasolene-stove is well known to have one or more vapor-generators from which vapor is supplied to a burner or burners, and the supply-tank, when elevated, is freely open to the atmosphere and delivers gasolene to the vapor-generator through a "stand-pipe," which is a pipe of such height as will, under such exposure of the liquid contents of the tank to the atmosphere, afford a hydraulic head suitable to give the desired pressure at the generator or generating-burner, these familiar facts and features of construction being understood.

The accompanying drawings are believed to sufficiently illustrate all the various features of the present invention in practical form.

Figure 1 is a central vertical section of the tank applied to a stand-pipe of a gasolene-stove. Fig. 2 is an enlarged detail of the charging-pump valve as shown in Fig. 1. Fig. 3 is a detail in horizontal section in the line 3 3 of Fig. 1, showing in top view a guide on the tank for engaging the stand-pipe. Fig. 4 is a section corresponding with Fig. 1, but showing certain modifications in details. Fig. 5 is a top view of the catch seen in section at the top of Fig. 4. Fig. 6 is a front elevation of a gasolene-stove provided with my improvement.

Describing the particular construction or embodiment of my invention shown in these drawings, A represents a gasolene-tank, and B the stand-pipe of a gasolene-stove, which stand-pipe supports the tank A in a sufficiently-elevated position to give a desired pressure at the stove-burners. The tank A is provided with a hole *a* in its top wall, and the stand-pipe B has a laterally-extended portion B′, from which depends a hollow leg $B^2$, open at its lower end, that enters the hole *a* and extends downwardly into the tank to a point as near to the bottom of the latter as may be desired. The tank A is adapted to be raised into or lowered from the position shown and may be sustained in its elevated position by any suitable means, as, for example, by a bracket $B^3$, Fig. 1, which is rotatably mounted on the stand-pipe B, so that it may be brought beneath the tank to uphold it or to one side, so as to be out of the way of the tank in raising and lowering the latter. Another form of sustaining device is shown in Fig. 4, consisting of a bail A′, pivoted to the tank and swung over a suitable shoulder, as F. The tank may be filled, when detached, through the hole *a*, but is preferably provided with a separate filling-hole *a′*, stopped by a suitable plug $a^2$, and to prevent an attempt to fill the tank while connected with the stand-pipe a guide *b*, Fig. 1, may be provided on the tank to engage the stand-pipe and bring the filling-hole *a′* beneath the horizontal portion of the stand-pipe, so as to prevent the filling-hole plug from being removed when the tank is in place.

The stand-pipe B, with its lateral and depending portions B′ and $B^2$, manifestly forms a siphon of which the open-ended pipe $B^2$ constitutes the shorter leg and the main pipe B the longer leg. As a practicable means for taking the air from the elevated part of the siphon, so as to give a continuous body of liquid therein and a proper operation of the siphon to continuously supply the liquid to the burners, I show the following devices:

In Fig. 1, C is a vertical pump-tube having an apertured diaphragm *c* near its lower end, provided with an upwardly-opening valve *c′*, said pump-tube having communication with the interior of the tank A below the diaphragm

*c* and also near its upper end, as shown. C′ is a piston in the tube, provided with a rod $C^2$, which protrudes above the tank, said piston being shown in this case as solid. D is a pipe connecting at its lower end with the interior of the pump-tube C above the diaphragm *c* and having a vertical portion which slides up within the siphon-leg $B^2$, within which it communicates with the interior of the siphon through an open top or through a lateral opening *d*. By reciprocating the piston C′ liquid will be forced up the tube D and over into the longer leg of the siphon, the displaced air descending through the leg $B^2$ into the tank, to the top of which it of course rises through the liquid. When the siphon is filled with liquid, it takes liquid from the tank in a familiar manner and supplies the generator or generating-burners until the tank is exhausted. The valve E, which is lifted from its seat E′ by the tube D in raising the tank to its place, descends again to its seat when the tank is removed and prevents dripping from the siphon in the absence of the tank.

In Fig. 4 the aperture in the diaphragm *c* of the similar pump-tube C has a valve $c^2$, which opens downwardly, and the piston C′ is provided with a passage which is closed by a downward movement of a valve $c^3$. In the operation of this construction of the pump the air is drawn from the siphon through the pipe D (having the elevated opening *d*) and the liquid ascends the leg $B^2$ by atmospheric pressure upon the body of liquid within the tank.

Any other form of pump or other suitable device may be employed to insure the charging of the siphon, the devices shown, however, being simple, cheap, and effective.

The piston of the pump may in any case be adapted to operate as a float and to indicate, by the elevation of the piston-rod $C^2$, the quantity of liquid at any time present in the tank.

I prefer that the removable tank A be provided with a bail A′, by which it may be conveniently carried, and when such bail is present it may serve to suspend the tank in its operative position on the stand-pipe. If the bail be so used, I prefer to employ a safety-catch by which to retain it in its suspending position, as, for example, shown in Figs. 4 and 5. In these figures the upward prolongation of the vertical leg $B^2$ of the siphon presents a shoulder or surface F, (which in this instance is the top of a screw-cap F′, but which may be otherwise provided,) upon which the bail A′ may rest to support the tank. This shoulder or surface F is shown as being limited at one end by the fixed stop *f* and at the other by the movable stop *f′*, the latter being adapted to tilt to allow the bail to pass over it in suspending the tank and to rise behind it automatically by reason of its being pivoted at $f^2$ and having its opposite end weighted. Any other form of catch may obviously be substituted with the same effect.

As a special improvement made practicable by the method of taking the liquid from the tank through its top, I propose that the tank be of glass, with or without exterior protection, whereby the quantity of its contents may be observed easily at any time. In this case the top of the tank may also be of glass and may be made integral with its sides and bottom, if desired, though, if preferred, it may be separate and of metal.

Manifestly many variations from the construction shown may be made in the details of the invention, and it is to be understood that said invention, as stated in either of the appended claims, is not restricted to the particular forms of the devices shown. For example, a pump similar to that shown may be placed in either leg of the siphon instead of in a separate tube, as illustrated; and, again, for the general purpose of charging the siphon with liquid from the tank the latter may be made air-tight, or approximately so, and air-pressure produced in the tank by a rubber bulb or some other of the similar and familiar devices for giving such pressure in such vessels. It is, however, believed to be better to employ a pump of the character shown in connection with a tank open to the atmosphere, so that the pressure at the burners will be substantially uniform, and that due to the hydraulic head afforded by the stand-pipe.

I claim as my invention—

1. In combination with a vapor-stove, a stand-pipe for the delivery of gasolene to the stove burner or burners, a siphon connected with the upper end of the stand-pipe and a removable supply-tank having an opening in its top to receive the short leg of the siphon, the construction being such that the tank is lifted to its place in applying it to the siphon and is lowered in detaching it, substantially as described.

2. In combination with a vapor-stove, a stand-pipe for the delivery of gasolene to the stove burner or burners, said stand-pipe having its upper end bent downwardly to form the short leg of the siphon, and a removable supply-tank having an opening at its top to receive said short leg of the siphon, the construction being such that the tank is lifted in connecting it with the siphon stand-pipe and is lowered in detaching it, substantially as described.

3. In combination with a stand-pipe of a gasolene-stove, a siphon connected with the upper end of the stand-pipe, a removable supply-tank adapted, by means of an opening in its top, to receive the short leg of the siphon, and a pump, connected with the tank, for charging the siphon with liquid from said tank, substantially as described.

4. In combination with a siphon stand-pipe of a gasolene-stove, a removable tank admitting the short leg of the siphon through its

top, and movable means for temporarily supporting the tank in such connection with the stand-pipe.

5. In combination with a siphon stand-pipe having a laterally-projecting portion, a removable supply-tank having a filling-hole which normally stands beneath the laterally-projecting part of the stand-pipe, whereby filling of the tank when on the stand-pipe is prevented.

6. In a siphon stand-pipe for a gasolene-stove adapted to be detachably connected at its shorter leg with a supply-tank, an automatically-closing valve in the stand-pipe which closes when the tank is being removed.

7. In combination with the short leg $B^2$ of the siphon stand-pipe, and a tank having the tube D, a rising and falling valve E adapted to be carried upwardly by said tube D, and to follow said tube downwardly to the seat E′ upon the withdrawal of the tube from the siphon.

8. In combination with a siphon stand-pipe, a vertically-movable supply-tank provided with a pump and with a vertical tube connected with the pump, said tube being adapted to be inserted loosely into the short leg of the siphon and provided with an opening within the latter, whereby the siphon may be charged from the tank.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

SAMUEL DANIELS.

Witnesses:
HENRY W. CARTER,
ALBERT H. GRAVES.