

No. 677,322.

Patented June 25, 1901.

A. PARKER-SMITH.  
OIL SUPPLY SYSTEM FOR BURNERS.

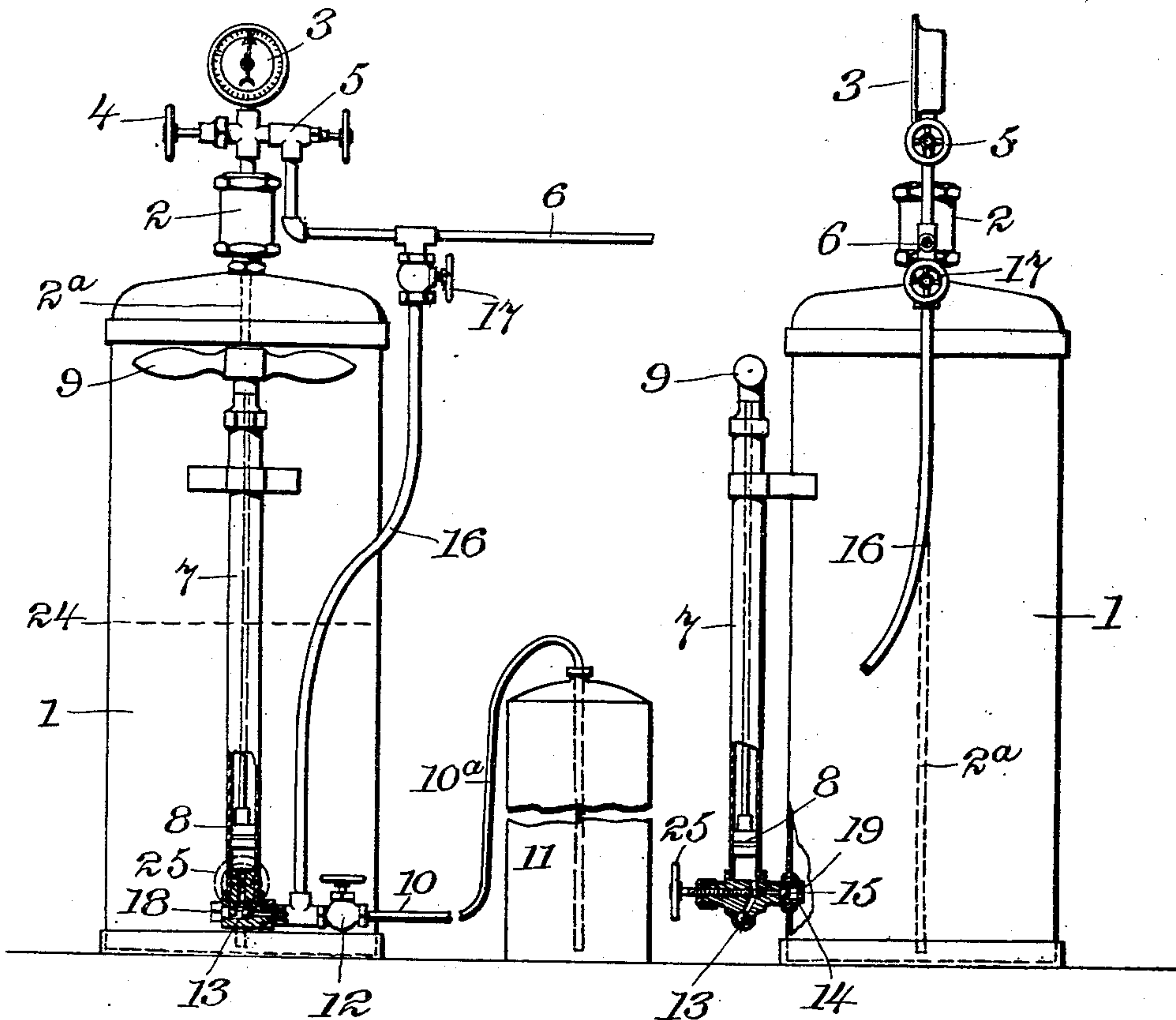
(Application filed Oct. 12, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

Fig. 2.



WITNESSES:

James A. O'Connell  
W. H. Humphrey.

INVENTOR

Augustus Parker Smith

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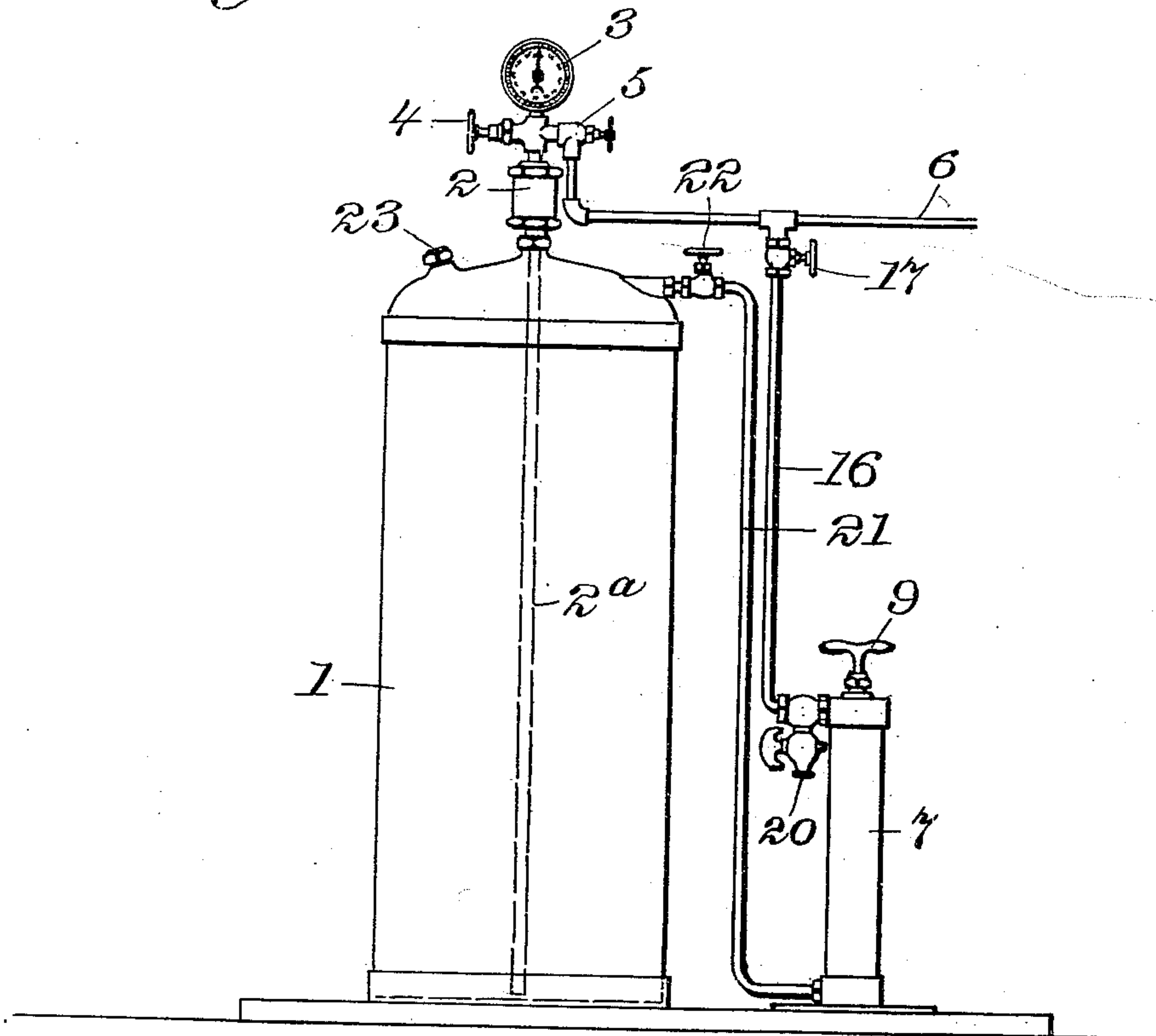
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2 Sheets—Sheet 2.

Fig. 3.



WITNESSES:

INVENTOR

James A. Cavanagh.  
W. H. Humphrey.

Augustus Parker Smith



# UNITED STATES PATENT OFFICE.

AUGUSTUS PARKER-SMITH, OF NEW YORK, N. Y., ASSIGNOR TO THE  
KITSON HYDROCARBON HEATING & INCANDESCENT LIGHTING COM-  
PANY, OF PHILADELPHIA, PENNSYLVANIA, AND CHARLESTON, WEST  
VIRGINIA.

## OIL-SUPPLY SYSTEM FOR BURNERS.

SPECIFICATION forming part of Letters Patent No. 677,322, dated June 25, 1901.

Application filed October 12, 1900. Serial No. 32,868. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUSTUS PARKER-SMITH, a citizen of the United States of America, and a resident of New York, county of New York, State of New York, have invented certain new and useful Improvements in Oil-Supply Systems for Burners, of which the following is a specification.

My invention relates to liquid-pressure systems; and it more specifically consists of an improved means for supplying liquid, such as fluid hydrocarbon, through a system of piping for vapor-burning apparatus and promptly freeing said system of piping from the contained liquid whenever the supply has been shut off.

In systems of vapor-burning apparatus it is customary to supply one or more lamps or stoves from a tank containing fluid hydrocarbon under pressure. This pressure is usually produced by pumping a quantity of compressed air into said tank, so that it will force the hydrocarbon through the system of piping to the consuming apparatus. One means of producing this compressed-air pressure is an ordinary pump operating either upon the liquid or upon the air and forcing either or both into the tank until a sufficient quantity of each is in the tank to generate the desired pressure. In some cases the oil is introduced into the tank otherwise than through the pump, and the latter is merely used for forcing in the necessary amount of air in the ordinary operation; but my invention applies to both of the above-described arrangements of apparatus.

The preferred form of apparatus embodying my invention is illustrated in the accompanying two sheets of drawings, in which—  
Figure 1 is a front elevation, with parts broken away, showing my invention applied to an apparatus in which the pump is used for handling both fluid hydrocarbon and air.  
Fig. 2 is a side elevation of the same with parts broken away.  
Fig. 3 is a modification in which the pump is primarily designed to force in air only.

Throughout the drawings like reference-figures refer to like parts. A storage-tank 1, usually formed of steel, contains the air and

hydrocarbon, the latter being normally at or about the level of dotted line 24. The air-pressure in the upper portion of the tank forces oil up through the pipe 2<sup>a</sup>, through a filter 2 usually employed, and out through valve connection 5 to a system of piping fed by the pipe 6. A pressure-gage 3 is usually employed, the connection with which is controlled by the valve 4.

In the preferred form of apparatus the force-pump 7 is supported from one side of the tank, said pump having a double-acting plunger 8, manipulated by the usual piston-rod and handle 9. A connection 10 extends from the lower end of the pump-cylinder, to which a flexible tube 10<sup>a</sup> may be attached, the end of which may be inserted in an oil-can 11 or other source of liquid-supply. This connection 10 is controlled by the valve 12.

13 is a ball-valve acting as a check-valve to the suction connection from the pipe 10.

The discharge-orifice 14 of the pump is connected with the storage-tank 1 and controlled by the ball-valve 15, which is retained in position by the cage 19 and acts as a check-valve to prevent the pressure within the tank from being transmitted back to the pump-cylinder. The hand-valve 25 serves to positively close this discharge-orifice, if desired.

The tube 16, of small diameter, approximately of the same diameter as tube 6, as shown on the drawings, is connected to a branch of the suction-pipe of the pump and extends to the system of piping 6, being controlled by the hand-valve 17.

18 is a plug closing an opening in the bottom casting of the pump, through which access to the valves may be had and which also serves for limiting the motion of the ball-valve 13.

In the construction shown in Fig. 3 the pump 7 is not rigidly connected to the storage-tank and is primarily used for forcing air into said tank, the oil being poured in or otherwise forced into the tank through the plug-closed opening 23. In such second construction the suction-inlet to the pump has a valve-controlled opening 20 to the atmosphere and a branch connection through the tube 16, of small diameter, to the system of piping 6,



as before, said connection being controlled by a valve 17. The connecting-pipe 21 extends from the discharge-orifice of the pump to the tank 1 and is controlled by the valve 22.

5 The method of operation of my invention is as follows: In the form shown in Figs. 1 and 2 the valve 12 is opened and the valve 17 closed when the tank is to be charged. The tube 10<sup>a</sup> being inserted in the source of  
10 the oil-supply and the pump operated, oil is forced into the tank until the necessary quantity has been introduced. The tube 10<sup>a</sup> is then withdrawn from the oil-can 10, and further operation of the pump forces in air,  
15 which rises to the top of the storage-tank and is there compressed until the desired pressure is shown upon the gage 3. The valve 12 is then closed and the system ready for operation, when the valve 5 is opened, oil be-  
20 ing then forced into the system of piping 6. When it is desired to shut off the lamps, the valve 5 is closed, the valve 17 opened, and one stroke of the pump will then usually suffice to suck back from the system of piping  
25 6 all the contained oil and return the same to the storage-tank 1. In the construction shown in Fig. 3 the operation is the same except that oil is introduced through the opening 23 into the tank and then air pumped in  
30 by the pump 7, the air connection 20 being open and the valve 17 being closed. When it is desired to shut off the lamps and pump back the oil, the valve 5 and the valve 20 are closed and the valve 17 opened, and one stroke  
35 of the pump will then draw the oil back from the system of piping 6 and force it into the tank.

The advantages of my invention reside in the fact that there is direct connection from  
40 the pump to the system of piping, consisting only of a short tube of small diameter, which can be easily and readily pumped out at a

fraction of a stroke of the pump, the capacity of the pump being large relative to the capacity of the system of fine tubes 6 and the fine tube 16; but a portion of the stroke is necessary, usually, to complete the emptying operation and draw back all of the oil from the piping into the pump, where a second stroke of the piston will immediately force it  
50 into the tank.

A further advantage of the form shown in Figs. 1 and 2 resides in the fact that the arrangement can be attached to the present standard form of pump by the simple addition of short pipe 16, valve 17, and the two T  
55 connections at the ends of said pipe 16.

Having therefore described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. The combination of a liquid-storage tank, a system of piping to which liquid is supplied from said tank, and a pump which has its discharge-orifice connected to said tank, said pump having a direct valve-controlled suction connection with the first-mentioned system of piping, said connection consisting of a tube of approximately the same diameter throughout as the tubing of the system of piping first above mentioned.

2. The combination of a liquid-storage tank, a system of piping to which liquid is supplied from said tank, and a pump which has its discharge-orifice connected to said tank, said pump having branch valve-controlled suction connections, one of said connections extending to a source of fluid-supply and the other to the first-mentioned system of piping.

Signed at New York this 22d day of September, 1900.

A. PARKER-SMITH.

Witnesses:

W. H. PUMPHREY,  
JAMES A. CAVANAGH.