

(No Model.)

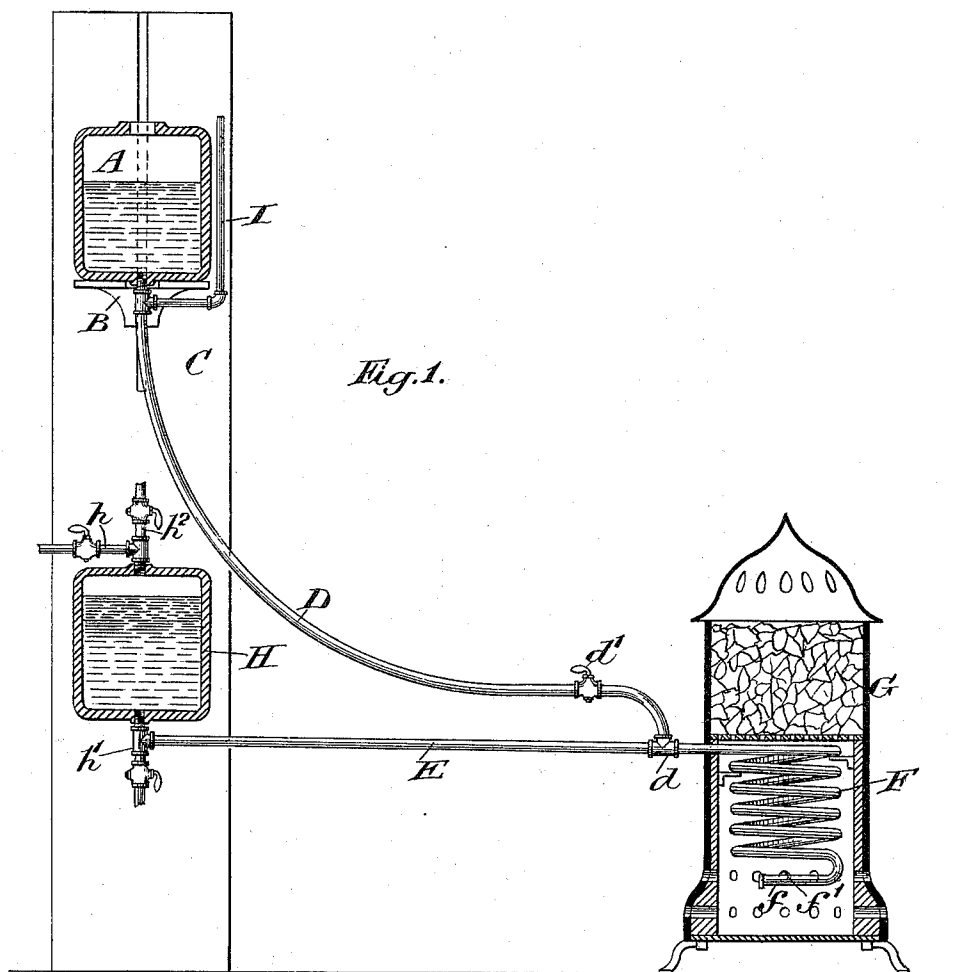
2 Sheets—Sheet 1.

S. TURNER.

APPARATUS FOR SUPPLYING LIQUID FUEL TO BURNERS.

No. 537,948.

Patented Apr. 23, 1895.



*Witnesses:-*  
*George Barry,*  
*C. Sundgren*

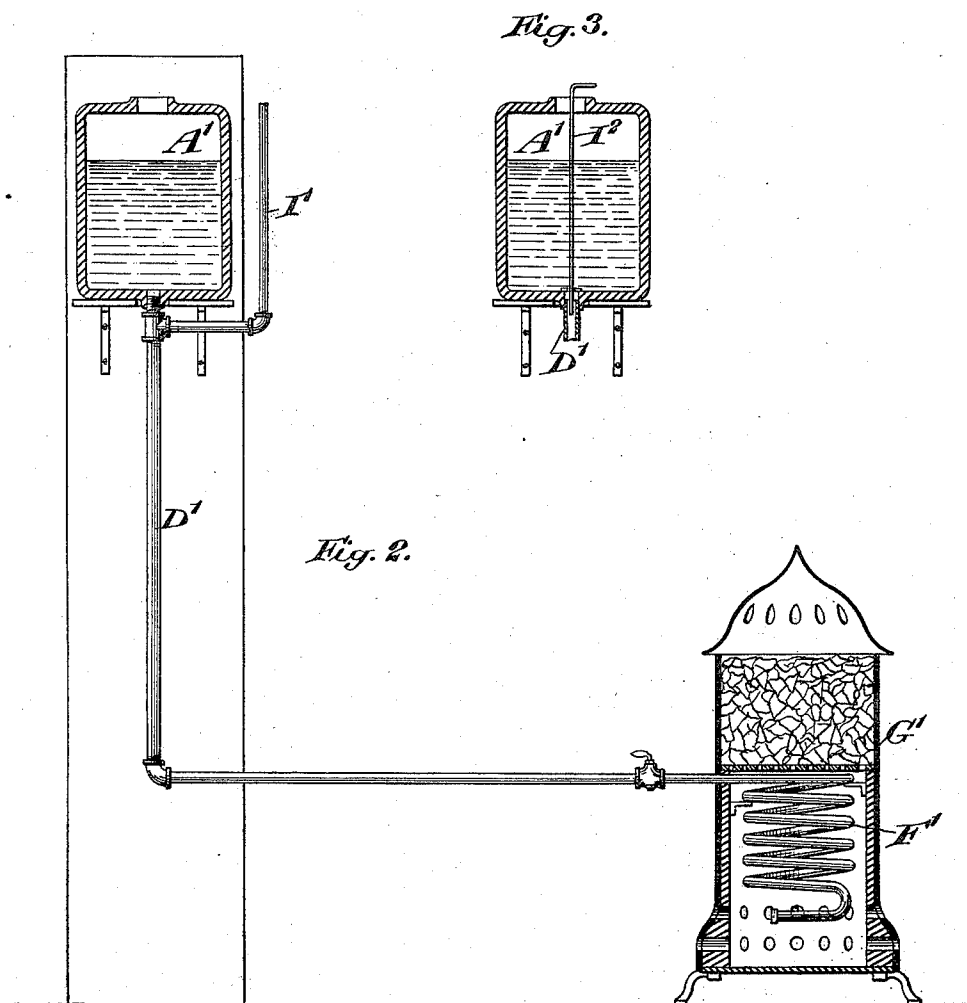
*Inventor:-*  
*Samuel Turner*  
*by attorneys*  
*Brown & Dewar*

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# UNITED STATES PATENT OFFICE.

SAMUEL TURNER, OF NEW YORK, ASSIGNOR OF ONE-HALF TO CORA L. TURNER, OF NEW BRIGHTON, NEW YORK.

## APPARATUS FOR SUPPLYING LIQUID FUEL TO BURNERS.

SPECIFICATION forming part of Letters Patent No. 537,948, dated April 23, 1895.

Application filed February 21, 1895. Serial No. 539,217. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL TURNER, of the city and county of New York, in the State of New York, have invented a new and useful  
5 Improvement in Apparatus for Supplying Liquid Fuel to Burners, of which the following is a specification.

My invention relates to an improvement in apparatus for supplying liquid fuel to a burner  
10 and more particularly to apparatus for feeding a fluid hydrocarbon, either alone or mingled with water.

In feeding a liquid hydrocarbon, such for example as crude kerosene oil, to a burner, it  
15 has been found that when the burner or the coil in proximity to the burner becomes highly heated by the flame issuing from the burner, there is a tendency of the vaporized or gasified oil to blow in puffs which are liable to  
20 extinguish the flame at the burner. I have found that this tendency to puff can be avoided by flushing the oil feed pipe with oil under sufficient head to prevent the pent up gas from relieving its pressure backwardly or in  
25 the direction of the oil-feed pipe. I have further found that the oil feed pipe may be flushed with oil from the oil supply by providing the said pipe with an air vent at a point below the supply tank or at or below the point  
30 where the oil supply enters the oil feed pipe.

My present invention therefore consists in providing the oil feed pipe, which conducts the oil from the supply tank to the burner, with an air vent at or below the point where  
35 the said oil supply enters the feed pipe.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents, in elevation, partly in  
40 section, an oil feed pipe in connection with a water feed pipe and their respective oil and water supplies leading to the burner beneath a coil within a heater. Fig. 2 represents a similar view, in which the oil alone is fed to  
45 the burner; and Fig. 3 represents the air vent formed by means of a pipe extending through the oil supply tank, instead of exterior thereto.

A represents the oil tank, shown in the present instance supported upon a bracket B  
50 made vertically movable along a support C,

for the purpose of increasing or diminishing the head under which the oil is fed.

D represents the oil feed pipe leading from the bottom of the oil supply A to a connection  
55 d with a water feed pipe E; and thence to a coil F within a heater G, the said coil F terminating at its lower end in a portion f, provided with a nipple f' through which the vaporized oil escapes to be ignited.

The water feed pipe E connects with the  
60 bottom of the water supply tank H, provided in the present instance with a filling pipe h and with a discharge pipe h' and air vent pipe h<sup>2</sup>, the several pipes being provided with stop  
65 cocks of any well known or approved form, located in convenient positions for cutting off and permitting the flow of liquid or air there-through, as may be desired.

The air vent pipe I connects with the oil feed pipe D at a point just below the bottom of the oil supply tank A and extends thence laterally and upwardly to a point above the level  
70 of the oil within the supply tank A.

In the form shown in Fig. 2, the oil tank A' is provided with an oil feed pipe D', leading  
75 to the coil F' within the heater G', without any connection with a water supply, the arrangement being that adapted for burning a fluid hydrocarbon without mixture therewith of water. The feed pipe D' is here shown as  
80 provided with an air vent pipe I' leading from it at a point just below the bottom of the tank A' and upwardly to a point above the surface of the oil supply within the tank A' in a manner quite similar to that shown in Fig. 1.

In Fig. 3, the air vent pipe I<sup>2</sup>, instead of branching from the oil feed pipe at a point below the bottom of the tank A', extends  
85 downwardly through the tank A' and enters the receiving end of the pipe D' at the bottom 90 of the tank A'.

In operation, as the oil leaves the supply tank A or A' and passes along down the feed pipe, the air from said feed pipe will escape through the vent pipe I, I' or I<sup>2</sup>, thereby per-  
95 mitting the oil feed pipe to become filled with oil and the said feed pipe will continue filled as long as the supply in the tank A or A' holds out. This will keep such a head of oil at all times between the oil supply tank and the hot 100

burner or coil that the expanding gases within the burner or coil will not be able to relieve their pressure against such body of oil and the pressure at the burner will continue, as  
5 experience has proven, steady and the size of the flame may be regulated with great accuracy by increasing or diminishing the feed of the oil by a suitable stop cock *d'* in the oil feed pipe.

10 What I claim is—

1. The combination with an oil feed pipe for directing the oil from an oil supply to a burner, of an air vent pipe communicating with the said oil feed pipe at or below the

point where the oil feed pipe receives its supply, substantially as set forth. 15

2. The combination with an oil feed pipe, a water feed pipe and a pipe into which the said oil and water feed pipes merge for conveying mingled water and oil from suitable supplies 20 to a burner, of an air vent pipe communicating with the oil feed pipe at or below the point where the said oil feed pipe receives its supply, substantially as set forth.

SAMUEL TURNER.

Witnesses:

FREDK. HAYNES,  
IRENE B. DECKER.