

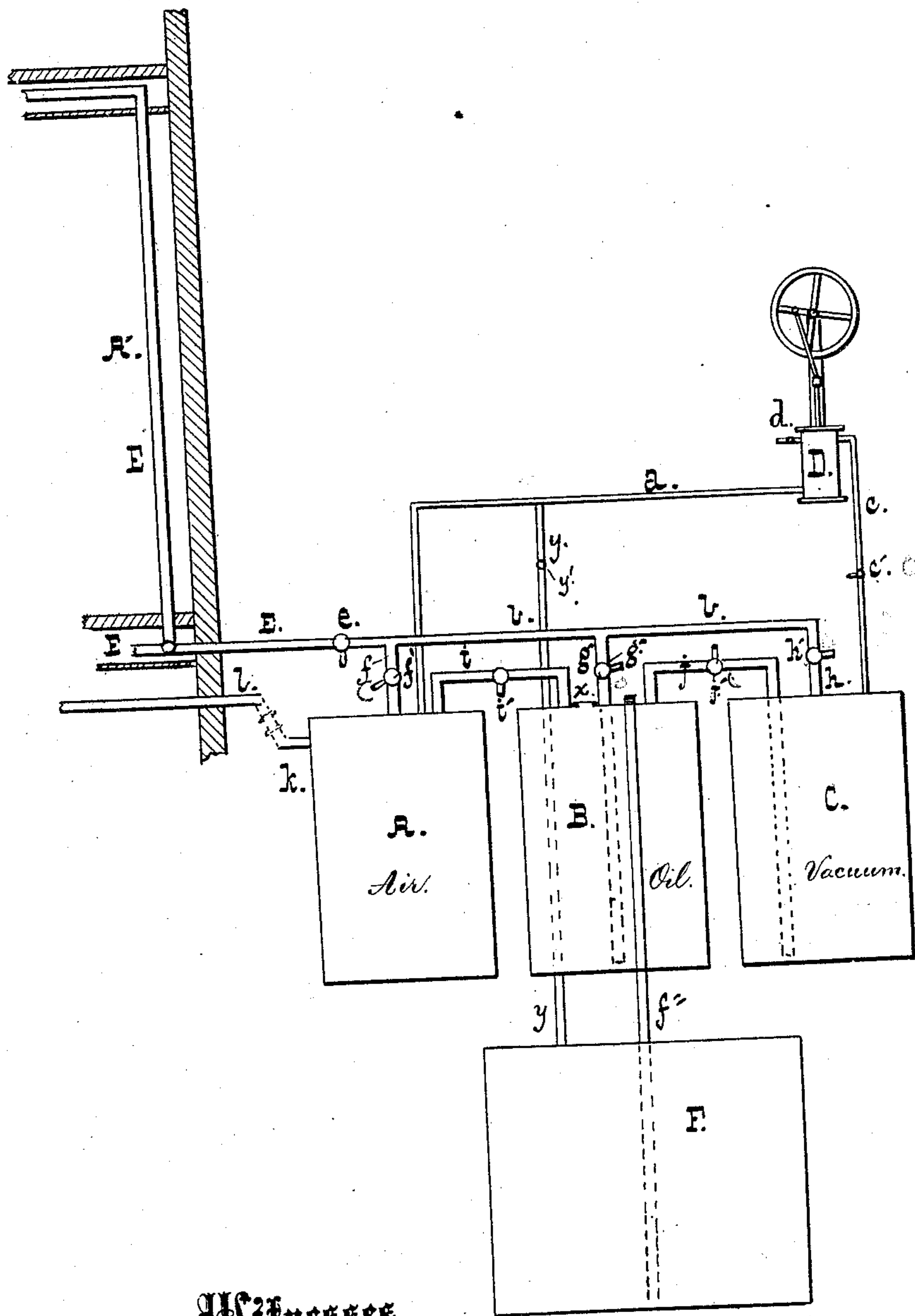
(No Model.)

J. S. HULL.

Apparatus for Supplying Hydrocarbon Oils to Buildings.

Patented June 29, 1880.

No. 229,316.



Witnesses,

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APPARATUS FOR SUPPLYING HYDROCARBON OILS TO BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 229,316, dated June 29, 1880.

Application filed March 31, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. HULL, of Baltimore city, State of Maryland, have invented certain new and useful Improvements in Apparatus for Supplying Hydrocarbon Oils to Buildings; and I hereby declare the same to be fully, clearly, and exactly described as follows:

My present invention consists in certain improvements upon that for which Letters Patent of the United States were granted to me October 23, 1877, No. 196,360. In the said Letters Patent is described an apparatus for supplying hydrocarbon oil to the various parts of a building, the said apparatus consisting, essentially, of a condensing air-pump, a receiver for compressed air, a receiver for the oil, and suitable pipes connecting these parts in the order named. From the oil-vessel, situated outside the building, led a series of pipes to the various stories and parts of the building to supply the oil to burners, where it was consumed for heating or illuminating purposes.

My present invention consists in the combination, with the necessary apparatus for supplying the oil, as described, of a vacuum-chamber connected with the supply-pipes, whereby the supply of oil may be almost instantaneously withdrawn from the building in case of fire.

Generically, the scope of the invention may be so expressed; specifically, it consists, further, in certain details of construction and arrangements of parts, as hereinafter more fully set forth.

In the accompanying drawing, in which is illustrated, in side elevation, a device embodying my invention, A' is the building, throughout which lead the oil-supply pipes, which feed the oil to any suitable burners; and A, B, and C are, respectively, the receiver for compressed air, the receiver for the oil-supply, and the vacuum-chamber.

D is an air-pump adapted to force air through the pipe *a* into the receiver A, and to create a vacuum in the tank C, through the medium of the pipe *c*, having the cock *c'*. The pipe *b* connects all three tanks, and is a continuation of the main supply-pipe E. It is furnished with a cock, *e*, and is connected with the tank

A by means of a pipe, *f*, having a cock, *f'*. With the tank B it is connected by means of a pipe, *g*, leading to the bottom of the tank, and having a cock, *g'*, and a pipe, *h*, having a cock, *h'*, connects it with the tank C.

The tanks A and B are independently connected by a pipe, *i*, provided with a cock, *i'*, and the top of the tank B and bottom of tank C are connected by a pipe, *j*, having a cock, *j'*.

Such are the construction and arrangement of parts.

In operation, the cocks *f'*, *h'*, *c'*, and *j'* being closed, and *e*, *i'*, and *g'* being opened, the pump is set in operation, and by exhaustion of the air from tank C a vacuum is created in the tank. The air exhausted from C is forced through the pipe *a* into tank A, and from the latter passes by the pipe *i* into the tank B, whence it drives the oil through the pipes *g* *b*, supplying the heating or illuminating burners. Should a fire break out in the building, or should it become, for any other reason, desirable to clear all the oil from the pipes, a cock in the remotest portion of the circuit (or in a pipe, *l*, communicating with the same) is opened, so as to open communication with said pipes and the air-compressor directly and admit the compressed air, and the cocks *e* and *h'* being opened, and the cocks *j'*, *i'*, *g'*, and *f'* being closed, the oil is thereby driven out of the pipes in the building by the compressed air, and is forced into the vacuum-tank C.

The tanks B and C are located at a safe distance from the building, and, by preference, under ground, so as to afford immunity from danger of their contents becoming ignited, or of the bursting of the tanks by the evolution of gas from their volatile contents.

The air-pump and tank for compressed air may be, and by preference are, located in the building, and the various pipes are so disposed as to make the cocks by which connection between them is set up or cut off readily accessible.

The tank A is provided with a pipe, *k*, adapted to be coupled with the pipe *l*, so that direct communication between tank A and the circuit of pipes may be had, and the compressed air in the tank may be thus used to force the oil out of the pipes; but inasmuch as the cubical contents of the tank C are so much greater

than the contents of all the pipes within the building, the latter may be completely emptied without materially impairing the approximation to a vacuum therein.

5 The assistance of the compressed air in clearing the pipes is not essential, though where it is desirable to empty them as quickly as possible it may be invoked, as set forth.

When it is desired to restore the oil thus
10 drawn from the supply-pipes into the vacuum-tank to the tank B, the cocks *c'*, *g'*, *i'*, and *e* are closed, and *f'*, *h'*, and *j'* are opened, as is also the vent *x* in the top of B.

The pump being now worked, the air enters
15 at *d*, and is forced into the tank C, through the pipes *a*, *f*, *b*, and *h*, causing the contents of the tank to pass through the pipe *j* into the oil-tank B.

Inasmuch as the vacuum-chamber C is only
20 used in case of emergency, and its supply of air being exhausted and pumped into the tank A would only suffice to discharge a part of the contents of B, as soon as the desired approximation to a vacuum is produced in C the
25 cock *c'* is closed, and a valve or cock, *d*, on the pump is opened, affording a supply of air to the tank A, in which any desired pressure may be maintained. Such usual and well-known adjuncts as pressure-gages and a gage-
30 glass to determine the level of oil in the tank B, I have not thought it necessary to show nor describe. They would, of course, suggest themselves.

It is furthermore obvious that the compressed
35 air in the tank A may be used for freeing the pipes of oil independently of the vacuum-chamber, it being only necessary to close the cocks *h'*, *f'*, and *i'*, and open those *e g'* and the vent in B, and connect *k* with *l*, when the com-
40 pressed air will force the oil out of the pipes and into the tank B.

F is a main supply-tank for the oil. It is coupled with the air-pump by a pipe, *y*, having
45 cock *y'*, and has a pipe, *f''*, leading from its bottom to the tank B. When it is desired to replenish the latter, it is only necessary to force air into the tank F through pipes *a* and *y*, when the oil will be driven over into B.

What I claim as new, and desire to secure
50 by Letters Patent, is—

1. In combination with a pneumatic apparatus for the delivery of hydrocarbons to burners, a vacuum-chamber in communication therewith, and adapted, as set forth, to clear the delivery-pipes of the oil, as and for the purpose described. 55

2. The combination, substantially as set forth, of a chamber for compressed air, an oil-reservoir provided with a delivery-pipe, and a vacuum-chamber in communication with the latter, whereby the delivery-pipes may be emptied into the vacuum-chamber, as described. 60

3. The combination, substantially as set forth, of an air-chamber, an oil-reservoir, and a vacuum-chamber, all provided with communication with one another in the order named, as and for the purpose set forth. 65

4. The combination of the air-chamber, the oil-reservoir, and the vacuum-chamber, each provided with communication with the others
70 and with the supply-pipe, as described.

5. The combination of the air, the oil, and the vacuum chambers and their connecting-pipes, provided with cocks, whereby communication is set up at will between the said
75 chambers, as and for the purpose set forth.

6. The combination, substantially as set forth, of the tank for compressed air, having coupling for connection with the terminus of the oil-supply pipes, with the oil-receiving tank
80 and supply-pipes, as described.

7. The method herein described of clearing the supply-pipes of a building which is fitted with a pneumatic hydrocarbon supply, by pneumatic pressure, substantially as set forth,
85 whereby the pipes are immediately cleared of their hydrocarbon contents, as described.

8. The herein-described method of clearing the supply-pipes of a building which is fitted with a pneumatic hydrocarbon supply, which
90 consists in forcing air from a compressed-air reservoir through said pipes, as and for the purpose set forth.

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