

J. H. CONNELLY.

FIRE-EXTINGUISHING APPARATUS.

No. 170,060.

Patented Nov. 16, 1875.

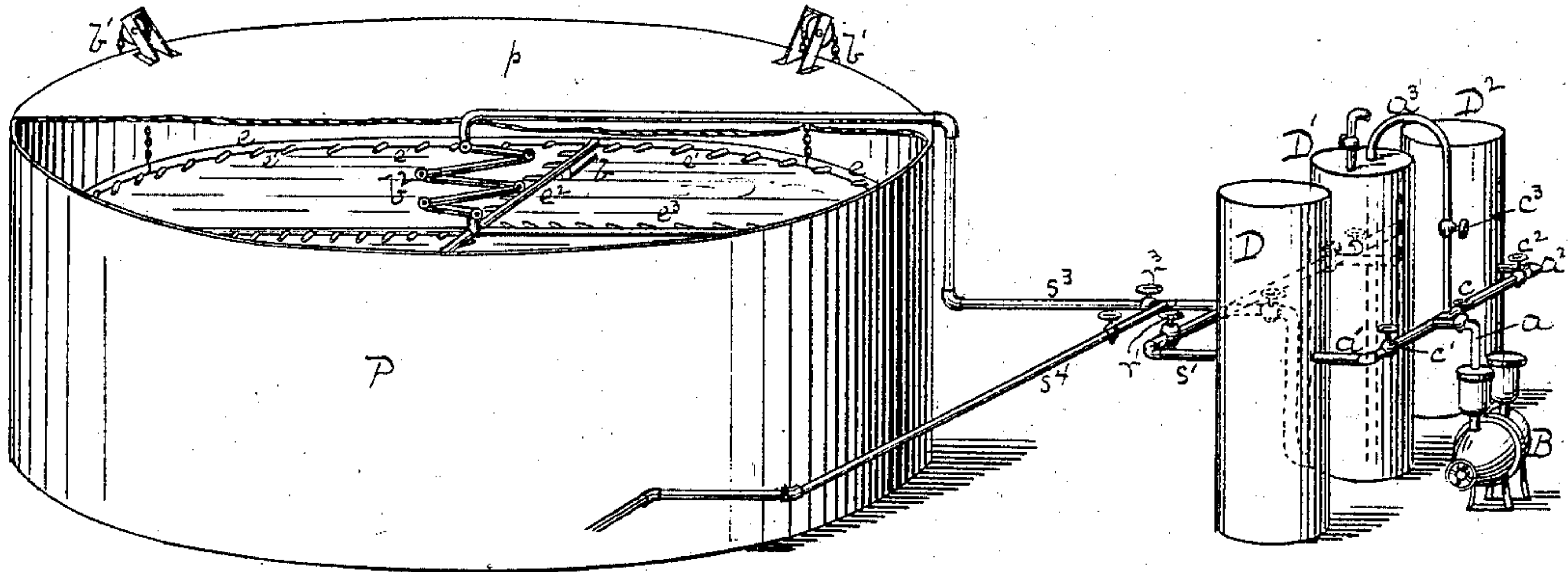


Fig. 1.

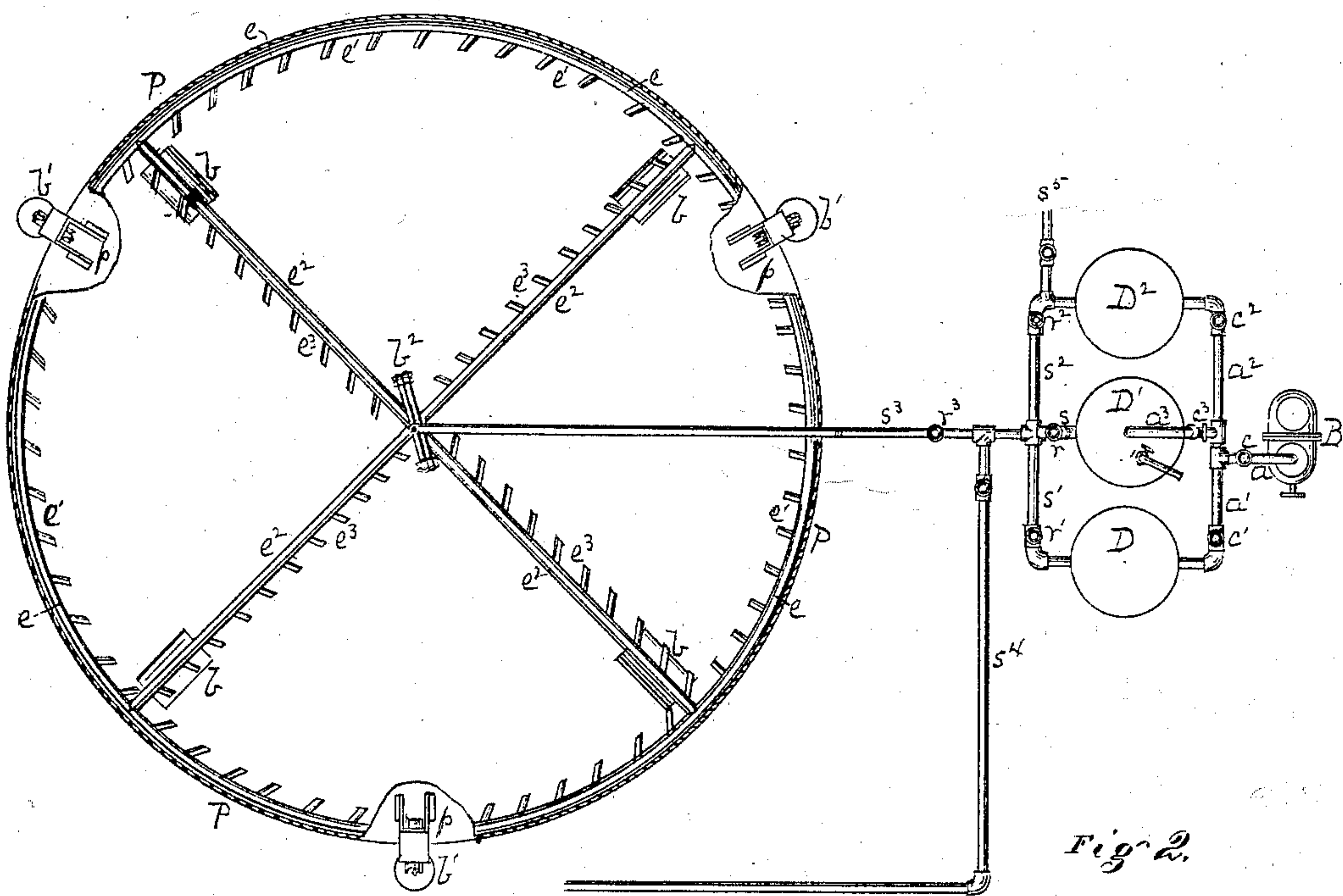


Fig. 2.

Witnesses: Claudius Parker
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UNITED STATES PATENT OFFICE.

JOSEPH H. CONNELLY, OF NEW BRIGHTON, ASSIGNOR TO JAMES L. HASTINGS AND WILLIAM H. HASTINGS, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN FIRE-EXTINGUISHING APPARATUS.

Specification forming part of Letters Patent No. 170,060, dated November 16, 1875; application filed September 4, 1875.

To all whom it may concern:

Be it known that I, JOSEPH H. CONNELLY, of New Brighton, county of Beaver, State of Pennsylvania, have invented or discovered a new and useful Improvement in Fire-Extinguishing Apparatus; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which like letters indicate like parts.

Figure 1 is a perspective view of my improved apparatus, but with a part of the tank-cover removed, the better to show the devices within; and Fig. 2 is a top or plan view of the same.

My present invention, while in some of its parts applicable to the uses and operations described in United States Patent No. 161,388, granted to me March 30, 1875, is more particularly designed for preventing and extinguishing fires in large tanks of oil or other fluid hydrocarbons. As such fluids burn readily and with great intensity, and as, when burning, the fire cannot be extinguished with water, and is ordinarily inaccessible to the use of other fire-extinguishers now in common use, and as such fluids, especially in a crude state, are commonly stored in immense tanks, it has generally been found impossible to extinguish such fires, and commonly they have been allowed to burn out. The danger arising from such fires to contiguous property is very great, especially when, as, frequently happens, the tank bursts or springs a leak, for then the burning oil runs in streams of flame, and communicates fire to all combustibles within reach.

By my improved apparatus I am enabled to apply carbonic-acid gas to extinguishing fires in such close tanks, and also to preventing them, and such gas may be used either as it comes from the generator, or mixed with water, air, or other gas or liquid.

At B I have shown an ordinary form of generator for the preparation of carbonic-acid gas by the use of any known suitable materials. At D D¹ D² I have shown a series of receivers, which may be prepared and fitted up in any desired number or order of arrangement; but for ordinary uses I prefer to employ D D²

as gas-receivers, and D¹ as a combined gas and water receiver. Preparatory to being used, it is filled nearly or quite full of water. From the gas-generator B the gas-conducting pipe *a* leads, by branches *a*¹ *a*², to the gas receivers or holders D D², in which, as they are made gas-tight, and as the discharge-cocks are closed, the carbonic-acid gas is stored to the desired pressure. From the pipe *a*, a third pipe, *a*³, leads into the receiver D¹ above the water-line, and extends down inside, and opens at or near the bottom, the discharge-cocks here also being closed. These pipes are fitted with known forms of supply and shut-off cocks *c* *c*¹ *c*² *c*³. At P I have shown a cylindrical oil-tank, partly filled with oil, made with a close cover, *p*; but the style or construction of the tank is not material, since my improvements may be applied to any form of tank. Around the inside periphery of the tank P, I arrange a pipe, *e*, which has on its inner side, and at short intervals, a series of small jet holes or perforations; but I prefer to insert therein a series of jet-nozzles, *e*¹, each discharging inwardly, and preferably at an angle to the radial line thereof, so that the gas discharged therefrom shall move in a kind of swirl toward the center. I also prefer to use, in very large tanks, two or more radial pipes, *e*², with like jets *e*³, discharging in the like direction; but in small tanks such radial pipes will not be required, unless it be to conduct the gas to the peripheral pipe *e*. These pipes are intended to rest on the surface of the oil in the tank by means of suitable floats *b*, or to be adjustable to that level by means of counterweights and chains *b*¹, in the manner ordinarily practiced with gas-holders, though other modes of adjustment may be employed, and like means of floating or adjusting the pipes may here be employed. And in order that the supply-pipe connection may also be adjustable, I employ a swinging gas-joint, as illustrated at *b*², or other like known suitable means for supplying the gas at varying distances. From the gas-receivers D D², I carry the gas by pipes *s*¹ *s*² *s*³ to pipes in the tank, such pipes being fitted with the usual cocks *r*¹ *r*² *r*³, as may be required. With the same line of pipe I connect a pipe, *s*, fitted with a cock,

r, from the water and gas receiver D¹. Then, in case the oil in the tank gets on fire from any cause, the gas is turned on by opening the proper cock or cocks, and the jets of gas, being projected horizontally across the face or level of the oil in the tank, introduce a layer or stratum of the gas directly onto the surface of the oil, so as effectually to cut off the flame above and deaden or destroy the combustion below; and the gas alone may be used from the receivers D D², or, by opening the cocks, gas and water commingled may be used; or the gas may be used in connection or intermingled with air or other gas, steam, or vapor under pressure. The pipes e, instead of being at the periphery or sides of the tank, may be arranged at a little distance therefrom, and discharge jets in both directions. The direction in which the pipes extend along the surface of the oil, as well as the order of their arrangement thereon, are not material. The receivers or holders D D¹ D² may be multiplied according to the amount of oil-surface to be guarded, and I prefer to arrange them alternately, first a gas-receiver, then a combined gas-and-water receiver, then a gas-receiver, and so on.

For ordinary purposes there should be two receivers at least, so that one may be recharged while the gas in the other is being used; but the gas may, by a suitable pump,

be forced into the receivers, where it is inconvenient or impossible to secure the requisite pressure direct from the generator.

The perforated jet-pipes may be employed for the introduction of other fluids, such as gases or vapors, which are incombustible or not supporters of combustion, or mixtures of such gases, or of air and salt-water under pressure; and the construction described I claim as of my invention without regard to the fluid used.

I claim herein as my invention—

1. In combination with a tank for containing oil or other hydrocarbon, a series of jet openings or perforations, automatically adjustable to the varying level of the oil, and having a jointed pipe for furnishing a supply of fluid without regard to the adjustment of the jets or perforations, substantially as set forth.

2. The gas and gas-and-water receivers D D¹ D², alternately arranged, in combination with a common supply and a common discharge, substantially as and for the uses set forth.

In testimony whereof I have hereunto set my hand.

JOSEPH H. CONNELLY.

Witnesses:

JNO. A. WILSON,
GEORGE H. CHRISTY.