C. G. SPENGLER.

OIL GAS BURNER.

No. 191,381. Patented May 29, 1877.

Fig. 1.

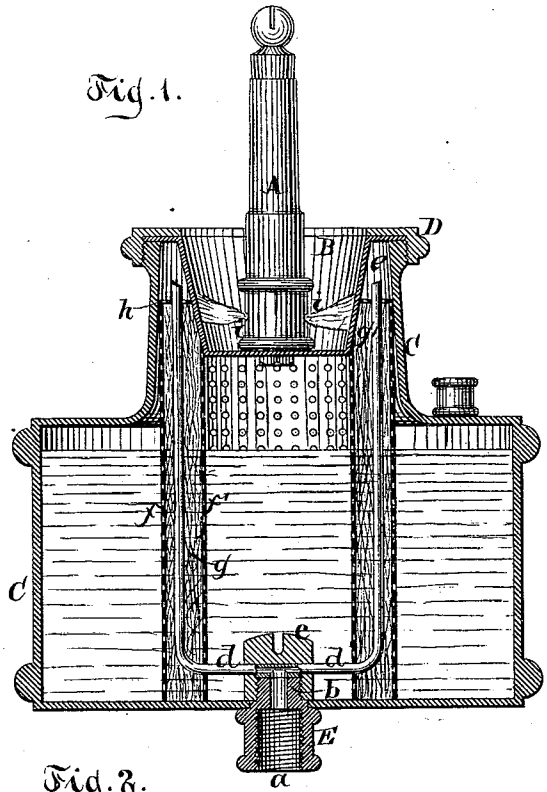
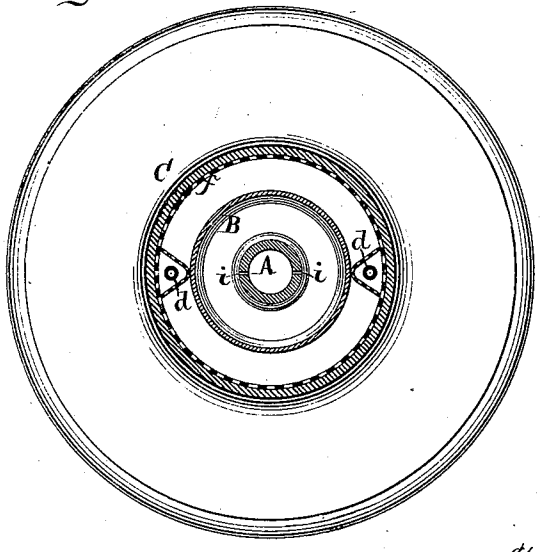



Fig. 2.




Witnesses.
Chas. Wahlers.
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Inventor.
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per
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# UNITED STATES PATENT OFFICE.

CHRISTIAN G. SPENGLER, OF HOBOKEN, NEW JERSEY.

## IMPROVEMENT IN OIL-GAS BURNERS.

Specification forming part of Letters Patent No. **191,381**, dated May 29, 1877; application filed November 16, 1876.

*To all whom it may concern:*

Be it known that I, CHRISTIAN G. SPENGLER, of Hoboken, in the county of Hudson, and State of New Jersey, have invented a new and useful Improvement in Oil-Gas Burners, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a vertical central section. Fig. 2 is a horizontal section.

Similar letters indicate corresponding parts.

This invention relates to a gas-burner with which is combined a cistern containing petroleum, oil, or other suitable hydrocarbon liquid, an oil-vaporizing chamber, a gas expanding and heating chamber, and one or more gas-jets for maintaining this chamber at the proper temperature, so that the expended gas and the vapor of the hydrocarbon liquid mingle in said chamber, and the mixture, after having been heated, passes to the burner, whereby a brilliant flame is produced with great economy in gas.

In the drawing, the letter A designates a gas-burner of any suitable construction. This burner is secured on the bottom of a cup, B, which is struck up of sheet copper, or made in any suitable manner of a material which is a good conductor of heat and not liable to be destroyed by the flames, to the action of which the same is exposed.

This cup is placed on the top of a cistern, C, being secured in position by a screw-cap, D, as shown in Fig. 1 of the drawing. The cistern is made of cast-iron, or any other suitable material, and in its bottom is secured a coupling-piece, E, which is provided with a screw-socket, *a*, for the reception of the gas-supply pipe and with a screw-nipple, *b*, which is passed through a hole in the bottom of the cistern, and which is made to fit a screw-cap, *c*, so that by means of this cap the coupling-piece can be firmly secured in position. In this cap are secured two or more small pipes, *d d*, which are bent at right angles and extend up into the gas expanding and heating chamber *e*, formed between the outer surface of the cup B and the inner surface of the neck of the cistern C. The nipple *b* is bored out, so that the gas-supply pipe secured in the socket *a* communicates with the pipes *d d*.

In the interior of the cistern C is situated a perforated cylinder, *f*, which incloses another perforated cylinder, *f'*, of smaller diameter, leaving an annular space, *g*, for the reception of suitable material capable of raising the oil by capillary attraction, which may properly be called the "wick." The annular space *g* is closed at its top by a perforated partition, *h*, and it extends up into the chamber, between the cup B and the neck of the cistern C. The lower portion of the burner A is provided with two or more small openings, *i*, forming gas-jets for the purpose of heating the cup B. The upper portion *g'* of the annular space *g* I designate the oil-vaporizing chamber.

The gas which is admitted through the pipes *d d* passes up into the chamber *e*, and thence down through the vaporizing-chamber *g'* and up into the burner A. As soon as the jets *i* are lighted the cup B becomes highly heated, and the gas, as the same reaches the chamber *e* and passes down on the outer wall of the cup B, becomes heated and expanded, so that its volume is materially increased, but its illuminating power is correspondingly decreased. At the same time the oil which is carried up into the vaporizing-chamber *g'* by the action of the wick is also exposed to the action of the heat radiating from the cup B, and the hydrocarbon vapors thus produced mingle with the gas in the chamber *e*, and as this mixture passes to the burner a brilliant flame is produced, the illuminating power of the gas which is reduced by the expansion being more than restored by the hydrocarbon vapors embodied with the same.

By this arrangement I am enabled to use heavy hydrocarbon liquids for the purpose of carbonizing the illuminating-gas, and since the volume of the gas is materially increased by the expansion in the chamber *e*, while its illuminating power is fully restored by the hydrocarbon vapors, I am enabled to produce

a bright flame with great economy in the consumption of gas, and at the same time all danger of an explosion is avoided.

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

1. The combination, with a gas-burner, of a cistern, C, a heating-cup, B, and a wick-tube, *f f'*, substantially as and for the purpose herein shown and described.

2. The combination of the gas-jets *i* with the burner A, cup B, cistern C, gas-expanding chamber *e*, and vaporizing-chamber *g'*, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 6th day of November, 1876.

CHRISTIAN G. SPENGLER. [L. S.]

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.