No. 681,852. Patented Sept. 3, 1901.

T. GORDON.

INCANDESCENT VAPOR BURNER.

(Application filed Sept. 14, 1899.)

(No Model.)

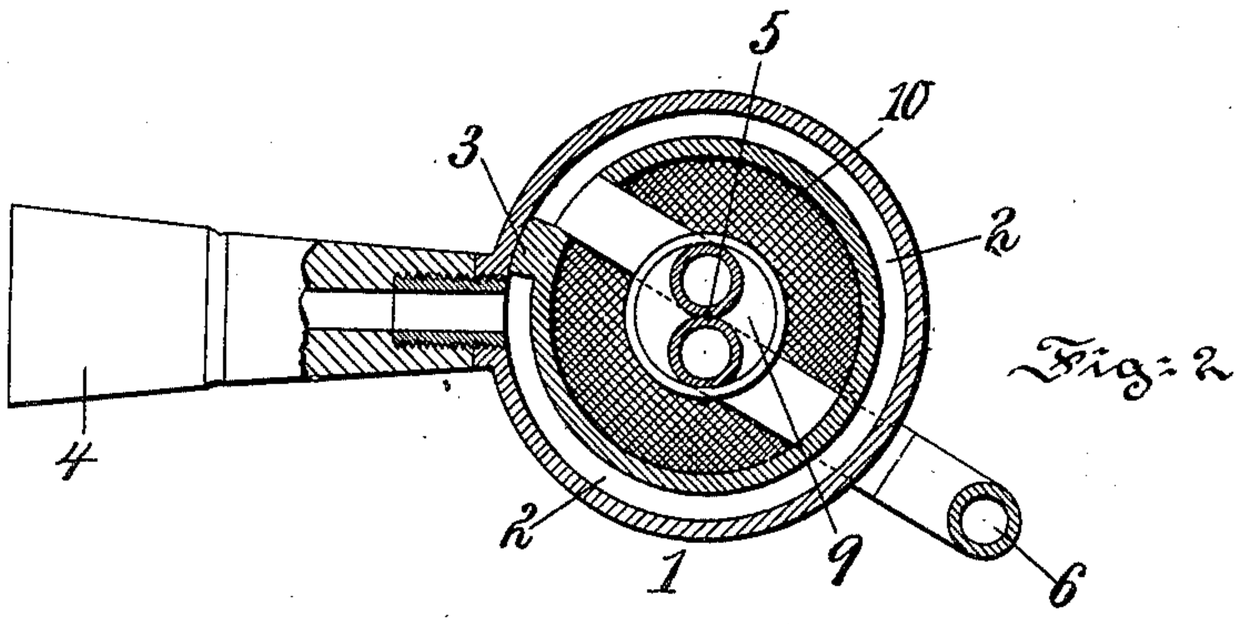

Fig. 2.

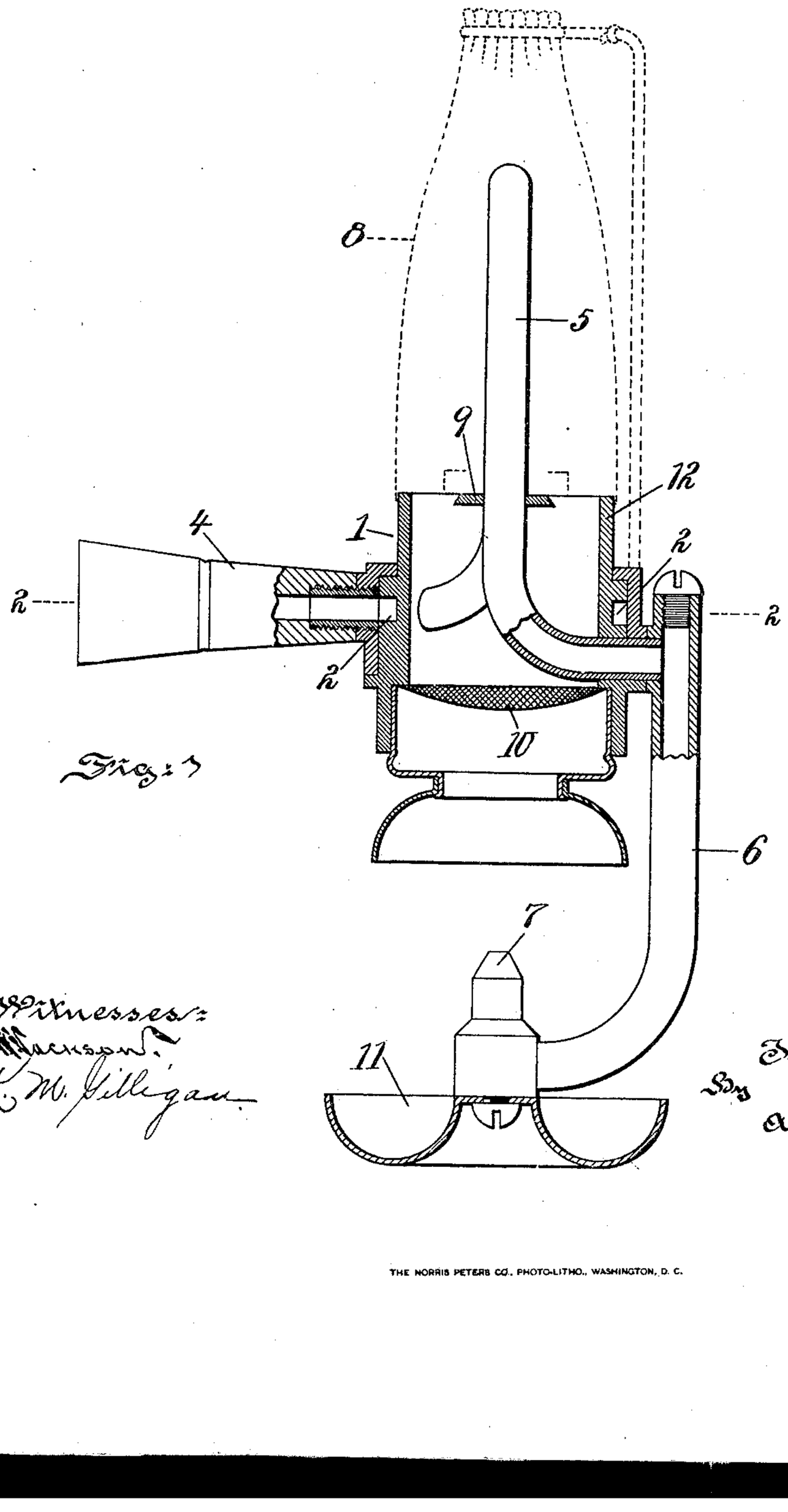

Fig. 3.

Witnesses:
[illegible]
K. M. Gilligan.

Inventor.
Thomas Gordon.
By
Augustus B. Stoughton.
Attorneys.

UNITED STATES PATENT OFFICE.

THOMAS GORDON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO PENNSYLVANIA GLOBE GAS LIGHT COMPANY, OF SAME PLACE.

INCANDESCENT VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 681,852, dated September 3, 1901.

Application filed September 14, 1899. Serial No. 730,394. (No model.)

To all whom it may concern:

Be it known that I, THOMAS GORDON, a citizen of the United States, and a resident of the city of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Incandescent Vapor-Burners, of which the following is a specification.

The principal object of the present invention is to provide a simple, reliable, and efficient hydrocarbon-burner adapted for use in connection with Welsbach and other incandescents or mantles and constructed to consume even low-test oil, such as is frequently designated "kerosene."

To this and other ends my invention comprises the improvements hereinafter described and claimed.

The nature, characteristic features, and scope of the invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a view, partly in central section, illustrating a hydrocarbon-burner embodying features of my invention; and Fig. 2 is a sectional view taken on the line 2 2 of Fig. 1.

In the drawings, 1 is a burner body or head provided within its walls with an internal passage, conduit, or channel 2, which operates as a primary vaporizer, as will be presently described. As shown, this passage 2 is annular in form and is interrupted, as by a partition 3.

4 is a supply-pipe which communicates with the passage 2 at one side of the partition 3.

5 is a superheater or secondary vaporizer, of which one end communicates with the passage 2 at the other side of the partition 3 and of which the other end is extended across to join the pipe or conduit 6, that leads to the tip 7. The superheater 5 is shown as located within the mantle or incandescent 8, and its ends range crosswise of the burner body or head 1.

9 is a deflector that may be employed, and 10 represents a gauze or other foraminous structure, which is a usual provision of such burners, and above which there is a chamber in which the combustion of the flame occurs.

Fluid entering by way of the supply-pipe 4 traverses the passage 2. From thence it passes through the superheater 5, from which it is delivered to the tip 7. Gas issuing from the tip 7 induces a current of air, and the mixture of air and gas burns and heats the mantle or incandescent 8 after the manner of a Bunsen burner.

The described construction possesses marked advantages, among which attention may be directed to the following: In starting the light access may be had to the passage 2 and superheater 5 for the purpose of preheating these parts in order to generate vapor and produce a supply at the tip 7. For this purpose alcohol may be burned in the cup 11 or the flame of a torch may be used, and in either case the flame effectively reaches the described parts which it is necessary to preheat. If this were not so, great difficulty would be encountered and much skill would be required to start the burner. To properly gasify heavy oil for use in a Bunsen burner arranged to heat mantles or incandescents requires conditions which are fulfilled in the described device. In the first place, the oil must be vaporized and the vapor must be heated, but not too highly, and yet sufficiently high to prevent its condensation prior to its escape in the form of a jet along with the air. In the operation of the described apparatus the oil is primarily vaporized and prepared for its passage through the part 5 while traversing the passage 2. To this passage heat is imparted from at or near the base or root of the flame which heats the mantle. The part 12 when present operates to conduct heat. The vapor so created and prepared is in its passage through the superheater 5 exposed to the heat of that part of the flame in which the temperature is comparatively low, and the vaporization is completely effective without deposition of carbon. The heating effect, due to the coaction of the passage 2 and the superheater 5, results in the production of gasified oil of such character that there is practically no deposition of carbon or condensation in or upon the passages and conduits and of such character that there is produced a most effective heating-flame.

It will be obvious to those skilled in the art

to which the invention appertains that modifications may be made in details without departing from the spirit thereof. Hence I do not limit myself to the precise construction and arrangement set forth, and illustrated in the drawings; but,

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a hydrocarbon-burner, the combination of a burner-head having within its wall a divided annular passage that encircles the root of the burner-flame for primarily heating oil, a supply-pipe in communication with one part of said passage, and a secondary or superheating vaporizing chamber or conduit in communication with another part of the passage and projecting into the body of the same burner-flame from within the burner-head, substantially as described.

2. In a hydrocarbon-burner, the combination of a burner-head having within its wall a divided annular passage that encircles the root of the burner-flame for primarily heating oil, a supply-pipe in communication with one part of said passage, a secondary or superheating vaporizing chamber or conduit communicating with another part of said passage and extending into the body of the flame and transversely of said combustion-chamber, substantially as described.

3. In a hydrocarbon-burner, the combination of a primary vaporizing passage or conduit that encircles the root of the main burner-flame, a mixing-chamber, a combustion-chamber adjacent to the mixing-chamber a foraminous diaphragm interposed between the two chambers, and a secondary vaporizer or superheater arranged in said combustion-chamber in position to be heated by the body of the main burner-flame, substantially as described.

4. In a hydrocarbon-burner, the combination of a burner-head, a foraminous diaphragm which divides said burner-head into an upper or combustion chamber and a lower or mixing chamber, an annular duct within the wall of the combustion-chamber for primarily heating oil, a supply-pipe in communication with said duct, and a secondary vaporizer or superheater communicating with said duct and projecting into the body of the main burner-flame from within the combustion-chamber and having a vapor-discharge opening arranged below the mixing-chamber, substantially as described.

5. In a hydrocarbon-burner, the combination of a centrally-located secondary vaporizer or superheater in contact with the flame, a mixing-chamber, a combustion-chamber adjacent to the mixing-chamber and surrounding said superheater, a foraminous diaphragm between the chambers, and a primary vaporizing-chamber surrounding the combustion-chamber and having one of its walls integral with the wall of the combustion-chamber, substantially as described.

6. A hydrocarbon-burner comprising the combination of a burner-head provided with a channel or passage for primarily vaporizing oil, a supply-pipe in communication with said channel or passage, a secondary vaporizer or superheater consisting of an inverted-U-shaped tube extending upward from within the burner-head, and having one of its ends in communication with said passage or channel and a pipe communicating with the other end of said tube and provided with a tip, substantially as described.

THOMAS GORDON.

Witnesses:
W. J. JACKSON,
DORA STERNBERGER.