

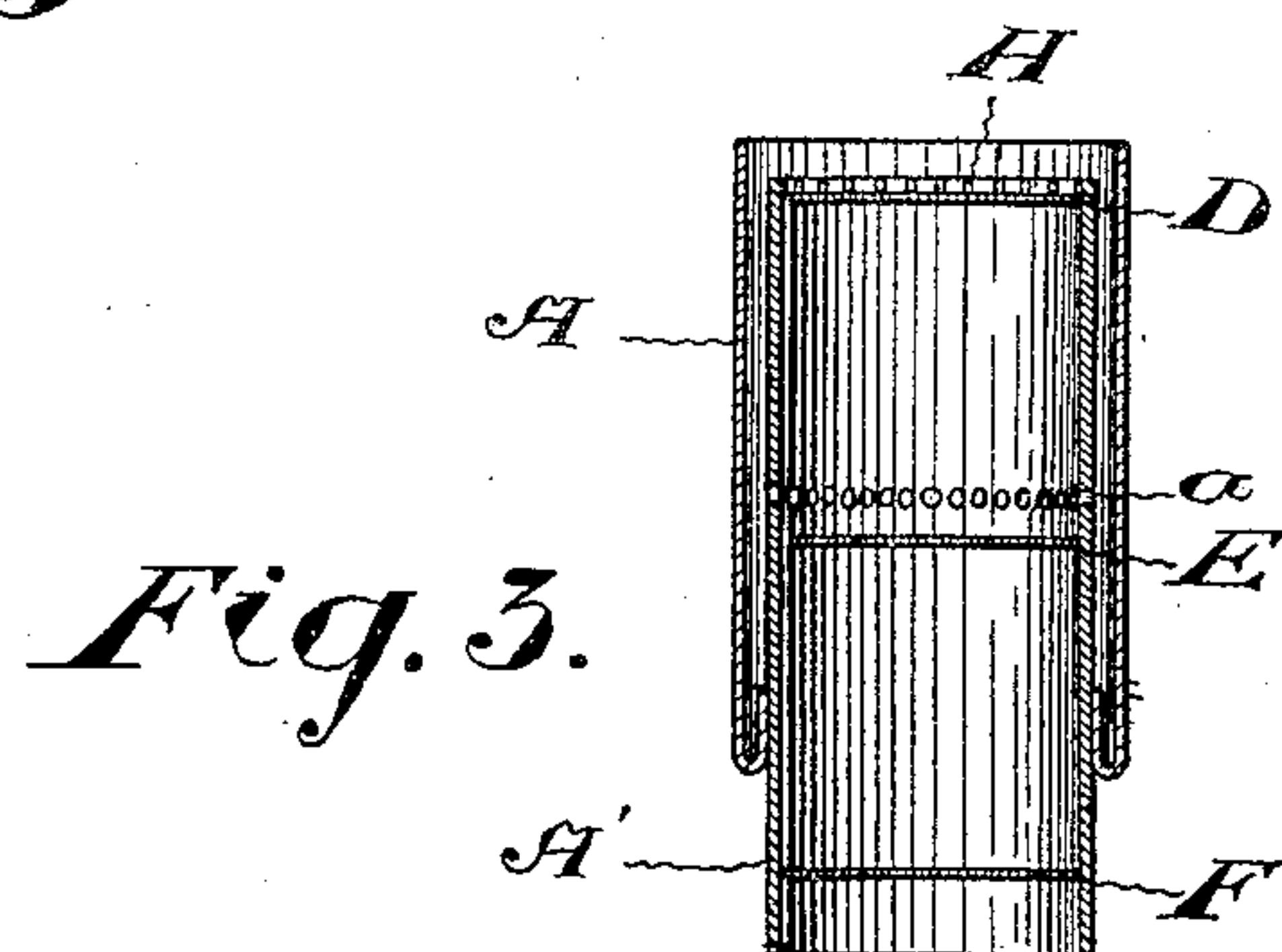
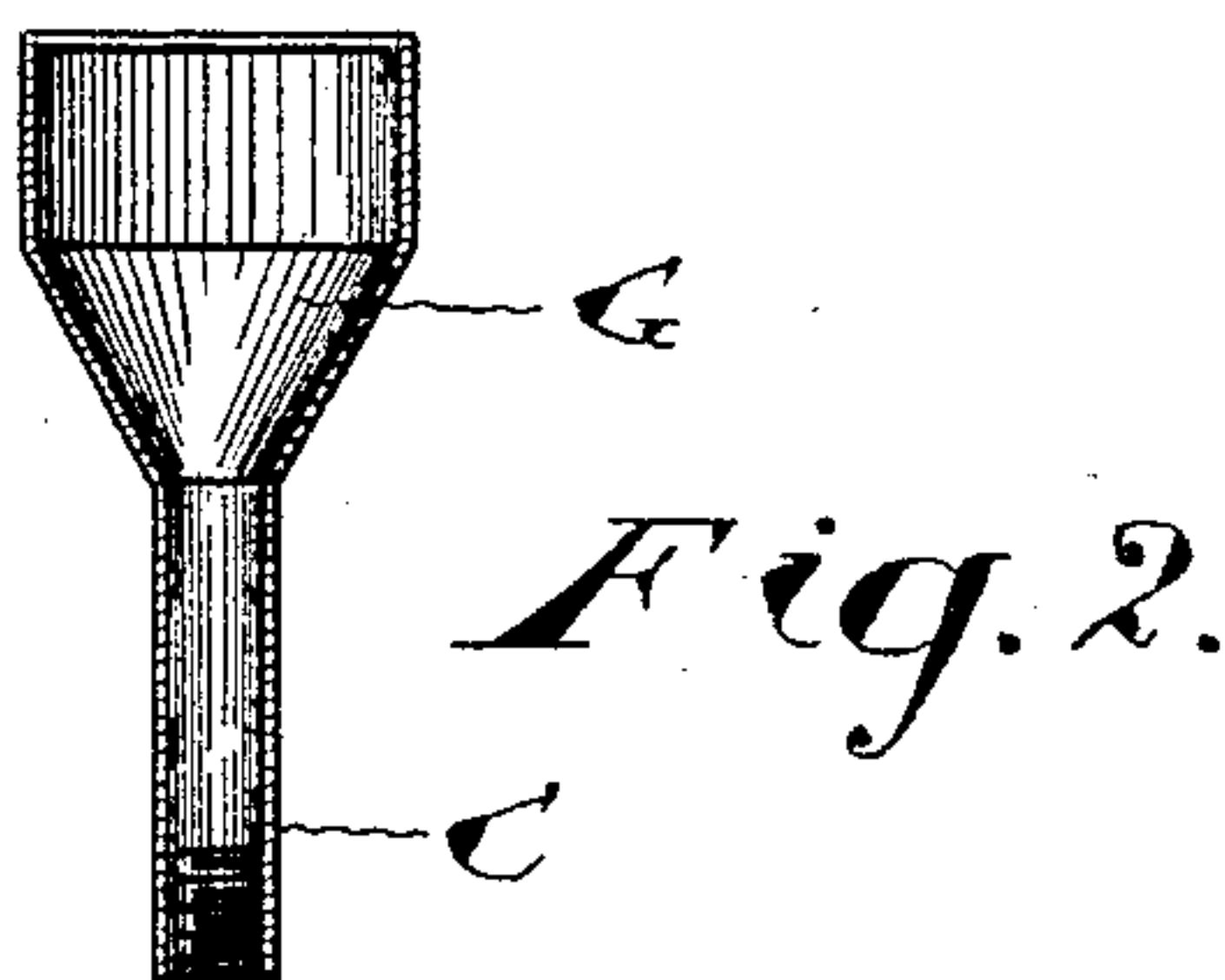
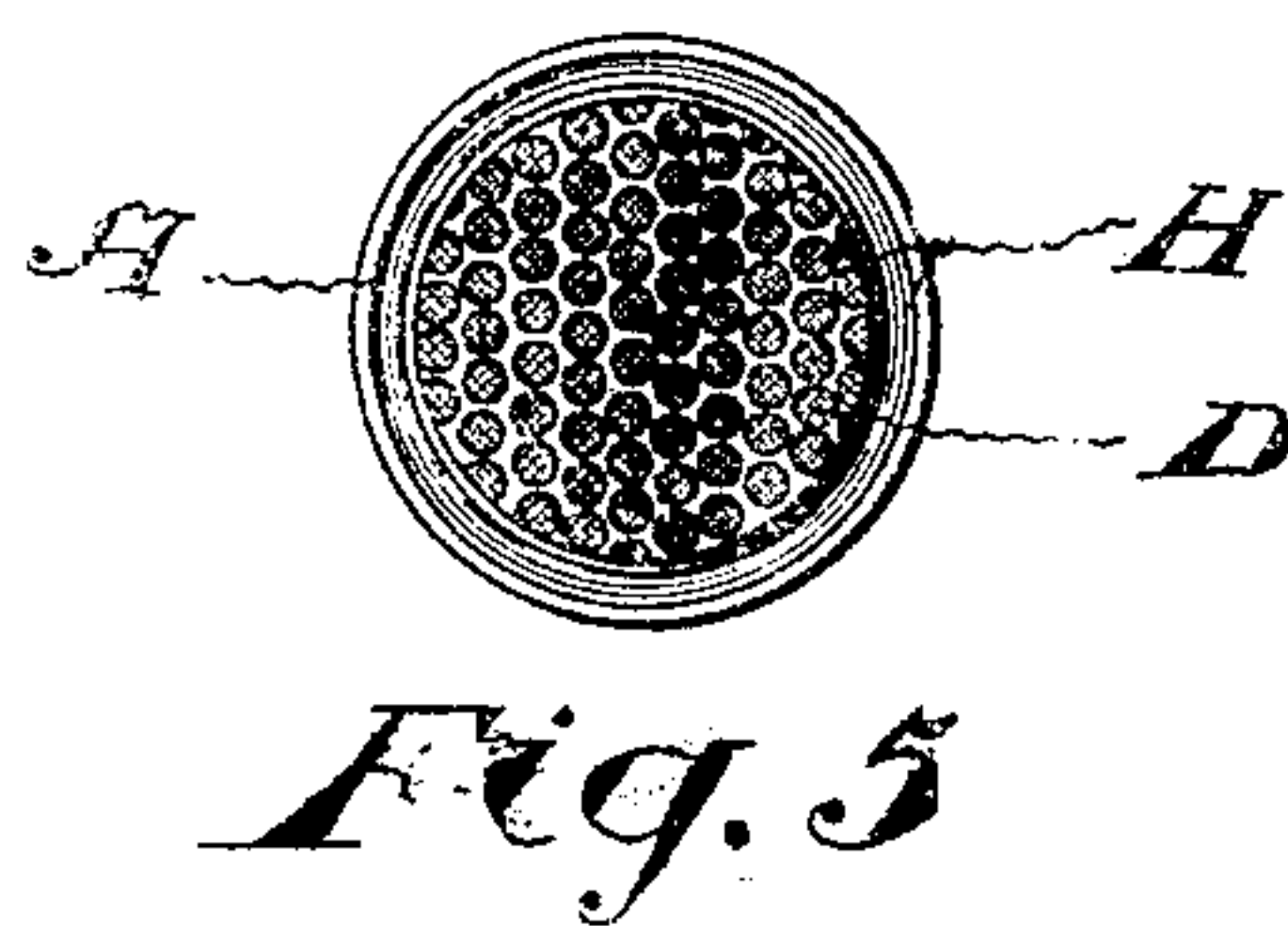
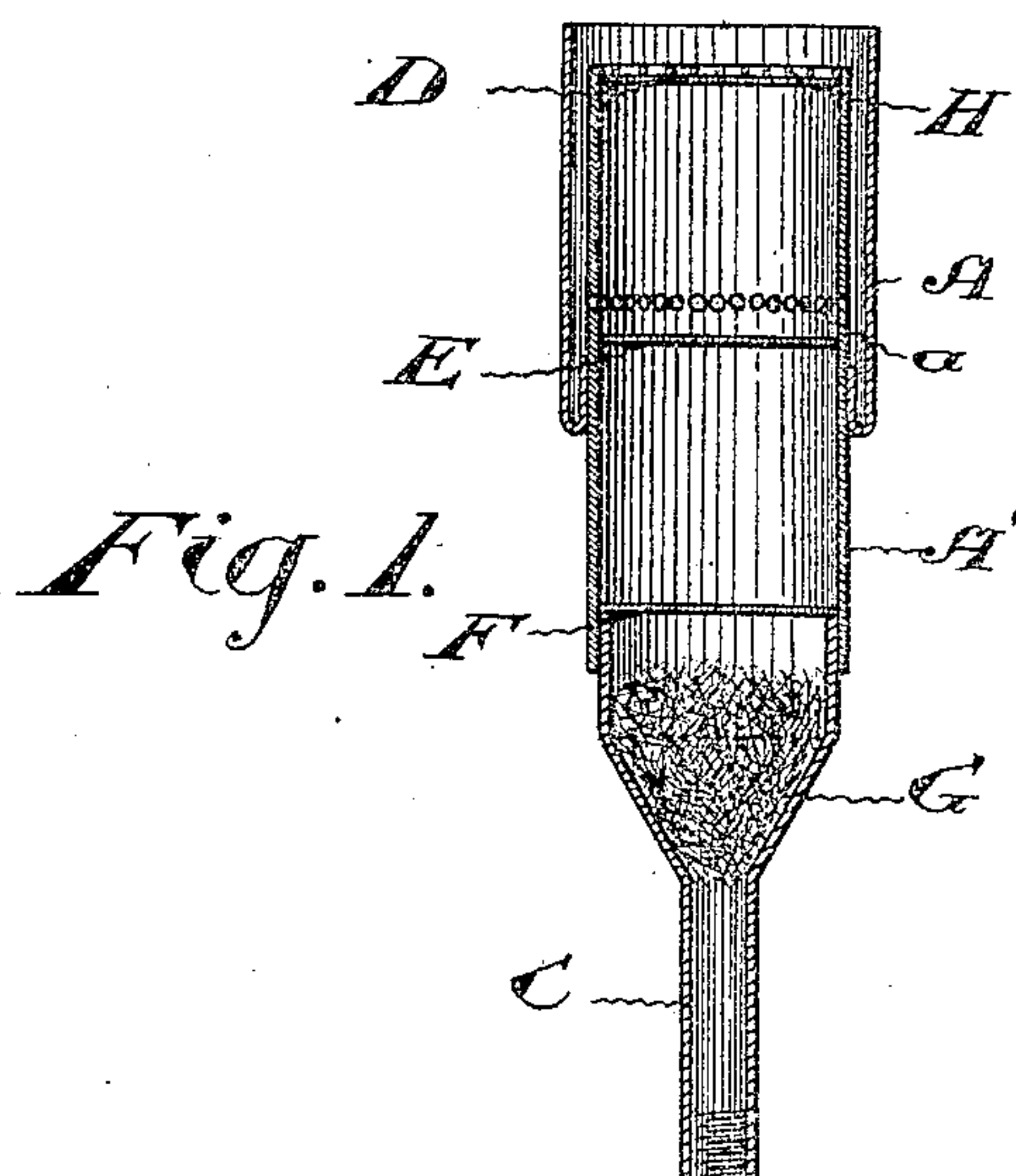
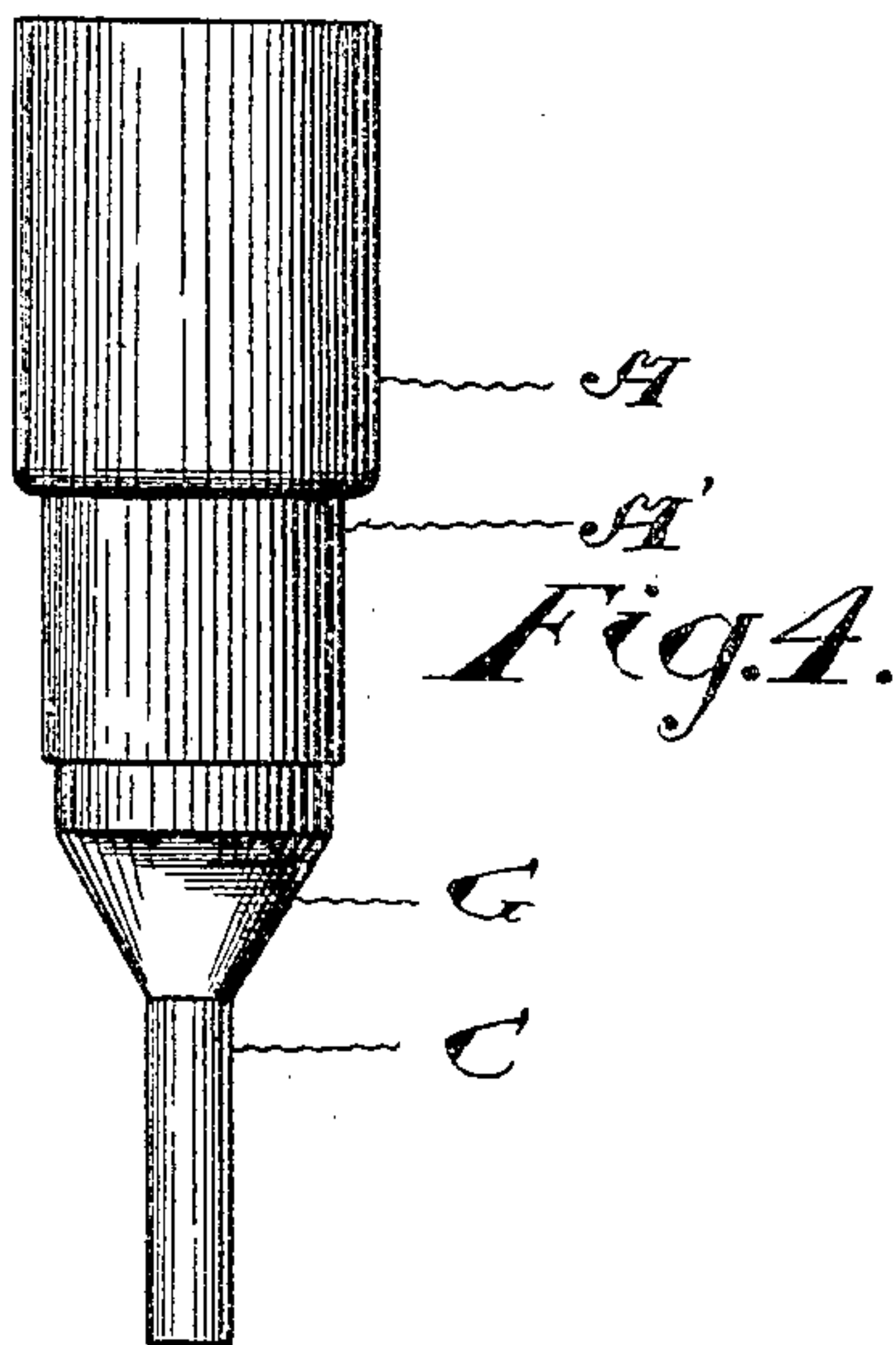
No. 824,361.

PATENTED JUNE 26, 1906.

O. M. HUDSON.

CARBURETED AIR BURNER FOR HEATING, COOKING, &c.

APPLICATION FILED NOV. 18, 1904.



WITNESSES:

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UNITED STATES PATENT OFFICE.

OSCAR MURRAY HUDSON, OF TORONTO, CANADA.

CARBURETED-AIR BURNER FOR HEATING, COOKING, &c.

No. 824,361.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed November 18, 1904. Serial No. 233,335.

To all whom it may concern:

Be it known that I, OSCAR MURRAY HUDSON, of the city of Toronto, in the county of York, Province of Ontario, Canada, have invented certain new and useful Improvements in Carbureted-Air Burners for Heating, Cooking, and for Use with Incandescent Mantles for Lighting Purposes, of which the following is a specification.

My invention has for its object the production of a burner which can burn non-explosive and non-poisonous combustible vapor consisting of a mixture of ordinary air charged with one and one-half to two and one-half per cent. of hydrocarbons too attenuated with regard to the latter to admit of its being burned in ordinary burners, so that the said vapor can be utilized for incandescent lighting, cooking, and heating.

According to my invention the improved burner is constructed of a stem, a head, and distributing and retarding media. The said stem is preferably a plain cylindrical tube, either expanding gradually to a larger diameter or otherwise increased in the area of its cross-section at the upper end.

The head is a tube cylindrical or otherwise, according to the shape of the top of the stem, and of such diameter as will enable it to be sleeved over or into the upper portion of the stem. This head is preferably fitted with three wire-gauze diaphragms or their equivalents and a distributor formed of a perforated platinum plate or disk or of platinum wire-gauze. The lowest of the former diaphragms is so situated that when the burner is connected in position for use it will come down to or near to the top of the stem aforesaid. The intermediate diaphragm, of a mesh thirty by thirty apertures to the square inch, is preferably fixed equidistant between the upper and the lower diaphragms. The upper diaphragm is of a mesh fifty by fifty apertures to the square inch or finer.

The top distributor is either a plate or disk with perforations from one sixty-fourth to eight sixty-fourths of an inch placed as closely together as possible without absolute junction or a platinum wire gauze from fifty by fifty to ten by ten apertures to the square inch. The upper wire-gauze diaphragm must be situated immediately below and touching the aforesaid disk or platinum diaphragm.

The main wall of the head is surrounded by

an outer movable wall projecting above the main wall when used in incandescent lighting and lowered to the level of or slightly below the main wall when used for heating purposes, the main wall being perforated by small holes, permitting the gas to pass into the outer passage formed by the two walls, thus insuring the delivery of unignited gas to the base and outside of the mantle.

The upper extended portion of the stem forms a chamber within which is placed a medium for retarding the momentum and promoting the distribution of the illuminating vapor and is held in the position by the lower diaphragm of fifty by fifty apertures to the square inch, or finer, immediately superimposed.

To enable the invention to be fully understood, the ordinary form of the improved burner will now be described by reference to accompanying drawings, in which—

Figure 1 is a vertical sectional elevation of a burner made according to my invention. Fig. 2 is a separate vertical sectional elevation of the stem. Fig. 3 is a separate vertical sectional elevation of the head. Fig. 4 is a side elevation of the burner. Fig. 5 is a plan view of the same.

A is the outside wall or head, bent inwardly at its lower edge and sleeved on the head A' to form an exterior passage receiving unignited gas through the small apertures *a* and delivering it to the base and outside of mantle. The head A' is secured to the stem C and contains the distributing-plate or disk of platinum, together with the three wire-gauze diaphragms D E F or their equivalents, as above described. The stem C terminates in a screw, whereby it may be attached to the screw of any ordinary tap or bracket. D, the upper retarding and distributing diaphragm, is situated touching the disk plate or platinum gauze H at the extreme upper end of the head. The flame of the ignited gas is so intensely hot that no ordinary gauze will stand it; hence the use of the platinum distributor. This will not, however, prevent a flash-back, so the fine gauze is used in contact with the platinum, which prevents the gauze burning.

G is the chamber in the upper part of the stem, in which the medium, such as asbestos wool, for retarding and distributing the flow of vapor is placed and held in position by the lower wire-gauze diaphragm.

I find that to secure satisfactory results with a mixture so low in hydrocarbons as those I am working with substantially all the features I employ are necessary, though for heating purposes the outer passage is not essential. For lighting I find that the outer wall excludes air; which would otherwise unduly dilute the mixture to be burned, and also serves to form a passage-way to lead a combustible mixture into contact with the base of the mantle, which is thus fully illuminated. I find, further, that to secure combustion of the mixture employed it must at the point of ignition be expanding from a small aperture into a large. If, for example, the apertures of the top diaphragm are made larger than the apertures of the distributor, the mixture after passing through the lower apertures is contracted by the upper and fails to burn properly or in some cases even to ignite. On reference to Figs. 3 and 5 it will be seen that the mixture after passing through the fine gauze diaphragm expands into the larger apertures of the distributor and ignites on top of the latter. I also find that to secure proper results the diaphragm and distributor must be substantially in contact with one another.

What I claim as my invention is—

1. In a burner for carbureted air the combination of a stem provided with a chamber for a retarding and distributing medium; a head secured thereto; three gauze diaphragms secured therein; an apertured distributor of refractory material immediately superimposed on the uppermost diaphragm; and an outer wall forming an external annular passage-way and having a communication with the interior of the burner, substantially as described.

2. In a burner for carbureted air the combination of a stem provided with a chamber for a retarding and distributing medium; a head secured thereto; a mixing and discharging medium secured therein; an apertured distributor of refractory material immediately superimposed on the retarding media; and an outer wall forming an external annular passage-way and having a communication with the interior of the burner.

Toronto, October 26th, 1904.

OSCAR MURRAY HUDSON.

In presence of—

JOSEPH COTTERILL,
JOSEPH ROSS COTTERILL.