

(No Model.)

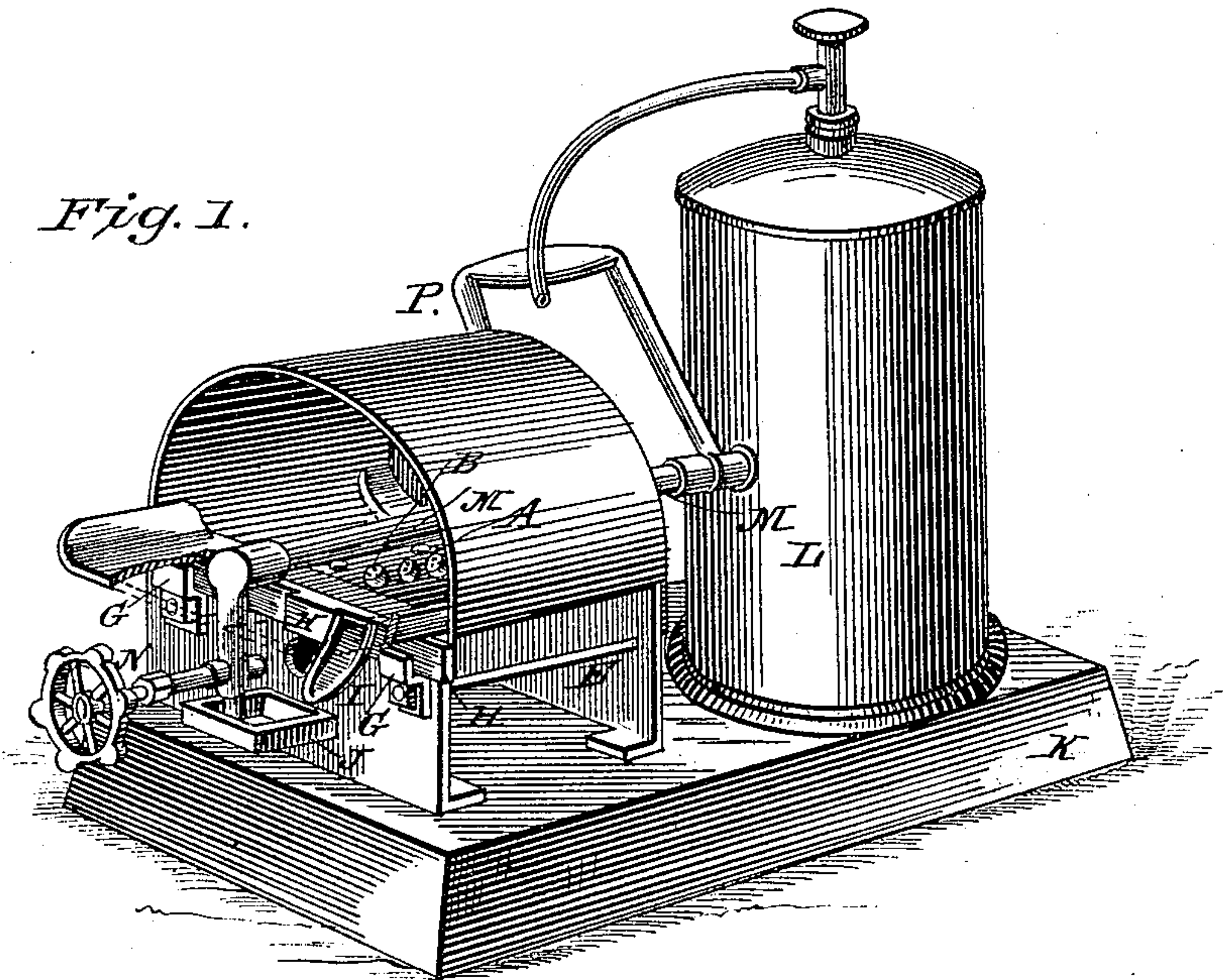
J. BURGESS.

GAS BURNER.

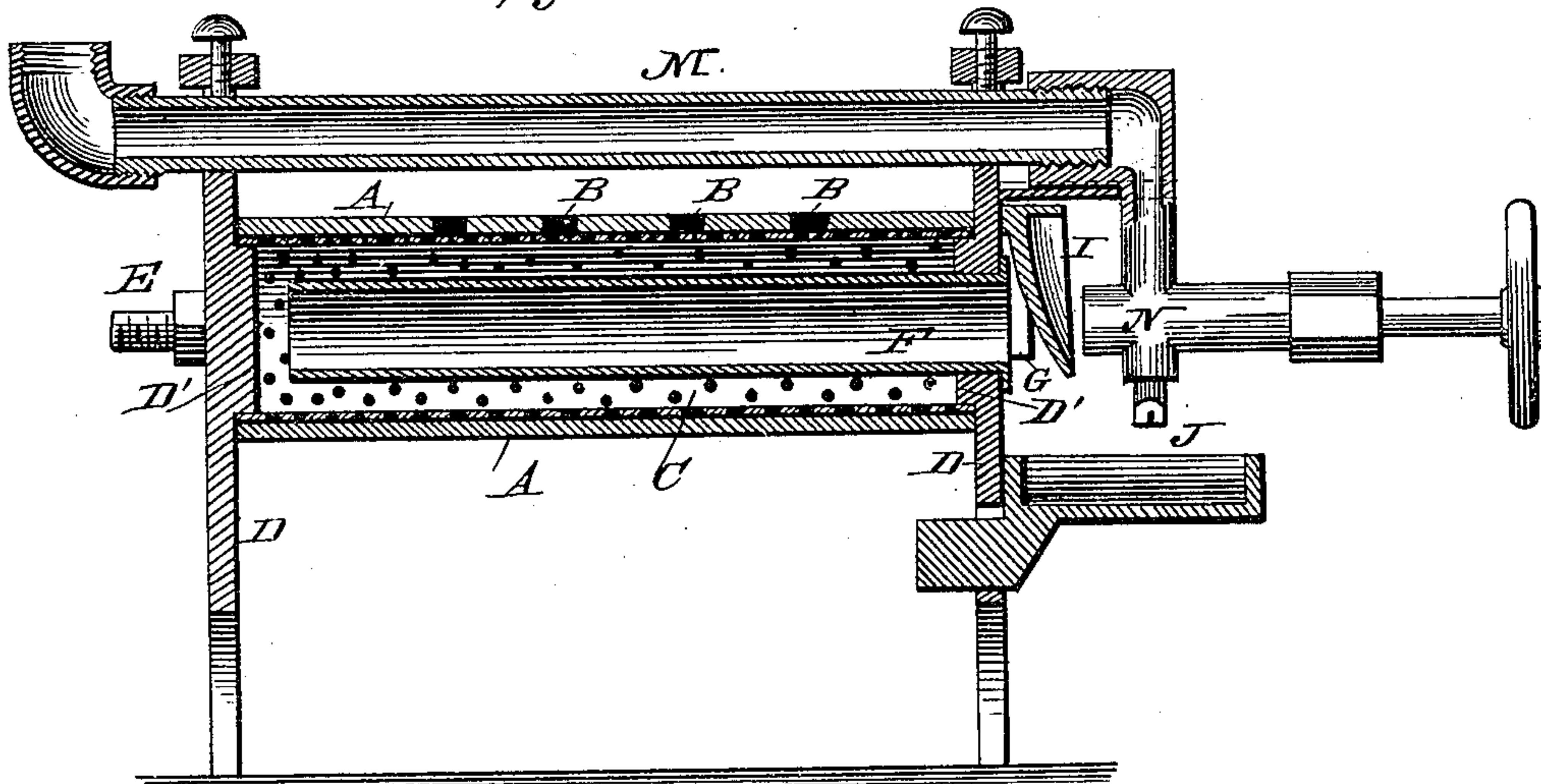
No. 364,986.

Patented June 14, 1887.

*Fig. 1.*



*Fig. 2.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOSIAH BURGESS, OF ZANESVILLE, OHIO.

## GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 364,986, dated June 14, 1887.

Application filed September 16, 1886. Serial No. 213,752. (No model.)

*To all whom it may concern:*

Be it known that I, JOSIAH BURGESS, of Zanesville, in the county of Muskingum and State of Ohio, have invented a new and useful Improvement in Gas-Burners, of which the following is a specification.

My invention consists in an improved burner for the production and combustion of gas from petroleum and its products, and also for the combustion of coal, water, and natural gases for heating and other purposes.

My improved burner will be hereinafter fully described and claimed.

Referring to the accompanying drawings, Figure 1 is a perspective of my improved gas-burner, and Fig. 2 is a central longitudinal section of the same.

The same letters of reference indicate corresponding parts in all the figures.

Referring to the several parts by letter, A represents the heavy metal outer cylinder or casing of my improved burner, this casing being of any desired length to suit the purpose to which it is to be applied, and being made square, round, or any other desired shape in cross-section, but preferably round, as shown in the drawings, and having the slots or perforations B B formed in its upper side, of any required size or number, according to the purpose for which the burner is to be employed.

Within this heavy outer cylinder fits closely the finely-perforated cylinder C, made of tin or other metal; or, instead of this complete cylinder C, which fits closely against the inner sides of the outer cylinder, a half-cylinder may be employed of sufficient size to extend completely over the perforations of the outer cylinder.

D D indicate the two ends or heads of the burner, which are formed on their inner sides with circular projections, one of them being of the annular variety D' D', which fit closely within the ends of the heavy outer cylinder and the finely-perforated cylinder, the end pieces, D, thus forming the ends of the cylinders, and being held in position by the headed rods E, having nuts on their rear ends; and the end pieces, after thus tightly closing the ends of the said cylinders to render them gas-tight, may be extended upward, downward, or to either side, being made of any desired size or

shape to answer for a frame to suit the particular purpose for which the burner may be designed. Within these cylinders A C fits centrally a hollow cylinder, F, which has no perforations, being secured at its forward end to the forward end piece, through which it passes, its rear open end extending to within a suitable distance of the rear end piece, leaving a space between it and the said end piece for the gas and air to escape from the said end of the solid cylinder and scatter in the space between the said cylinder and the outer cylinders.

To the front end piece D are secured the two brackets G G, which support a slide, H, which carries the downwardly-extending concave plate or deflector I, and the slide may be moved so that this deflector will stand directly in front of the open front end of the blank central cylinder, or may be slid to one side, so as to leave the said open end clear. Below this open end of the central cylinder is removably secured the oil-cup J. The end pieces, D D, may be secured upon a base, K, which also supports near its other end the gasoline or oil receptacle L, the supply-pipe M of which may extend either over or to one side or under the burner to its forward end, where the pipe is provided with a faucet, N, the discharge point or nozzle of which is directly opposite the center of the forward open end of the inner cylinder.

In operation, the deflector is slid directly in front of the forward end of the inner cylinder, and the faucet is opened so as to allow a small quantity of oil to escape, and this oil, striking against the deflector, falls down into the cup J, the faucet being then closed. The oil in the oil-cup is then lighted, and in a few moments heats the bulb of the faucet sufficiently to vaporize the oil which passes into it, when the deflector is pushed to one side and the faucet again opened, permitting the vapor or gas to escape into the forward open end of the inner cylinder, there being a sufficient space between the point of the faucet and the end of the cylinder to permit of a large quantity of air being drawn into the cylinder by the heated gas entering the same, and the gas and air pass through this solid cylinder and are therein thoroughly intermixed and com-



bined, and finally forced out of the rear open end of this blank cylinder into the space between this central cylinder and the outer cylinders, and the gas and air thus mixed are forced through the fine perforations of the finely-perforated cylinder C and out through the larger perforations of the thick outer cylinder, A, where it is ignited to heat the desired object or objects, the outer cylinder, A, being made of sufficient thickness to effectually protect the fine perforated cylinder inside from becoming warped and burned out by the immense heat generated as the gas, in a state of combustion, is carried off from the fine perforated cylinder C to the outside of the perforations in the outside cylinder, the heat, in consequence of the thickness of the outer cylinder at those points, being principally on the outside cylinder, which thus thoroughly protects the fine inner cylinder, C. It will be seen that the gas and air are thoroughly mixed, first, in passing through the inner cylinder, F, and, second, when forced through the fine perforations of the cylinder C, which most effectually mixes them together, insuring complete combustion and giving immense heat.

In Fig. 1 of the drawings I have shown the burner adapted for use as a soldering-furnace, the furnace and reservoir being mounted on the base K, and being provided with the handle P, for convenience in transportation. The number of perforations in the outer cylinder, and also their size, may be regulated, and the perforations arranged as thought most desirable, according to the purpose for which the burner is to be employed. The perforations are preferably round, as that form protects more fully the fine perforated cylinder C. In consequence of the large amount of air which is drawn into the central cylinder and becomes thoroughly mixed with the vapor, the quantity of gas consumed is very much less than would be otherwise required to produce a given degree of heat.

My improved burner can be made of any de-

sired length or diameter, with as many apertures in the outer cylinder as desired, the said apertures being arranged according to the purpose for which the burner is to be employed.

My improved burner may be used in laundries, for roasting coffee, &c., for heating stoves for plumbers' and tinner's use, and for a great variety of other purposes.

I am aware that a movable shield or deflector has been employed in burners of this class, the same having been arranged between the faucet of a supply-pipe and the mouth of a tube or cylinder, forming an attachment of the burner proper; also, that an oil-cup has been arranged below such deflector. Such combinations and arrangements of parts I do not claim.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the outer cylinder having the slots or perforations, the finely-perforated cylinder, the end pieces having the circular projections on their inner sides, and the hollow inner cylinder, as set forth.

2. The combination, with the end pieces, of the outer cylinder having the slots or perforations, the finely-perforated cylinder, the hollow inner cylinder, arranged as described, the slide carrying the deflector, the oil-cup, and the supply-pipe having the faucet, arranged as described, as set forth.

3. The combination, with the end pieces, of the outer cylinder having the slots or perforations, the finely-perforated cylinder, the hollow inner cylinder, arranged as described, the slide carrying the deflector, the oil-cup, the base, the reservoir, the supply-pipe having the faucet, arranged as described, and the handle, all constructed and arranged substantially as and for the purpose herein set forth.

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Witnesses:

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