

(No Model.)

F. H. SMITH & J. W. WRIGHT.

PETROLEUM BURNER.

No. 398,352.

Patented Feb. 19, 1889.

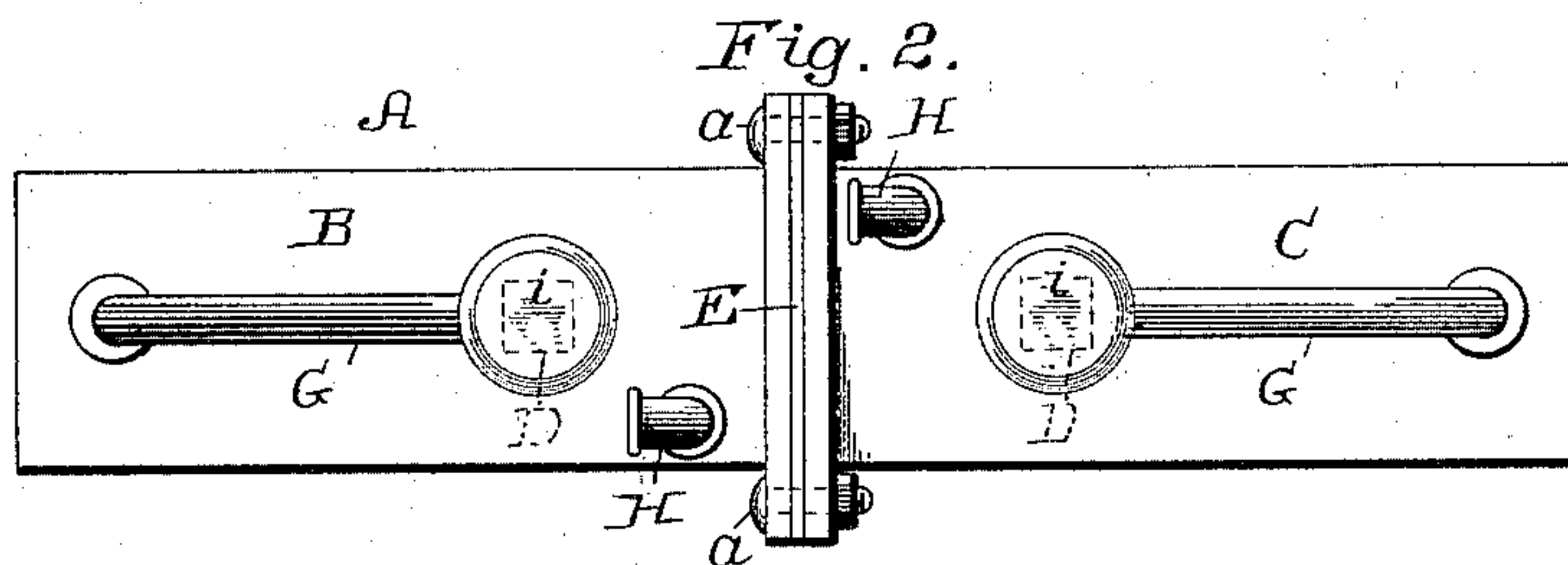
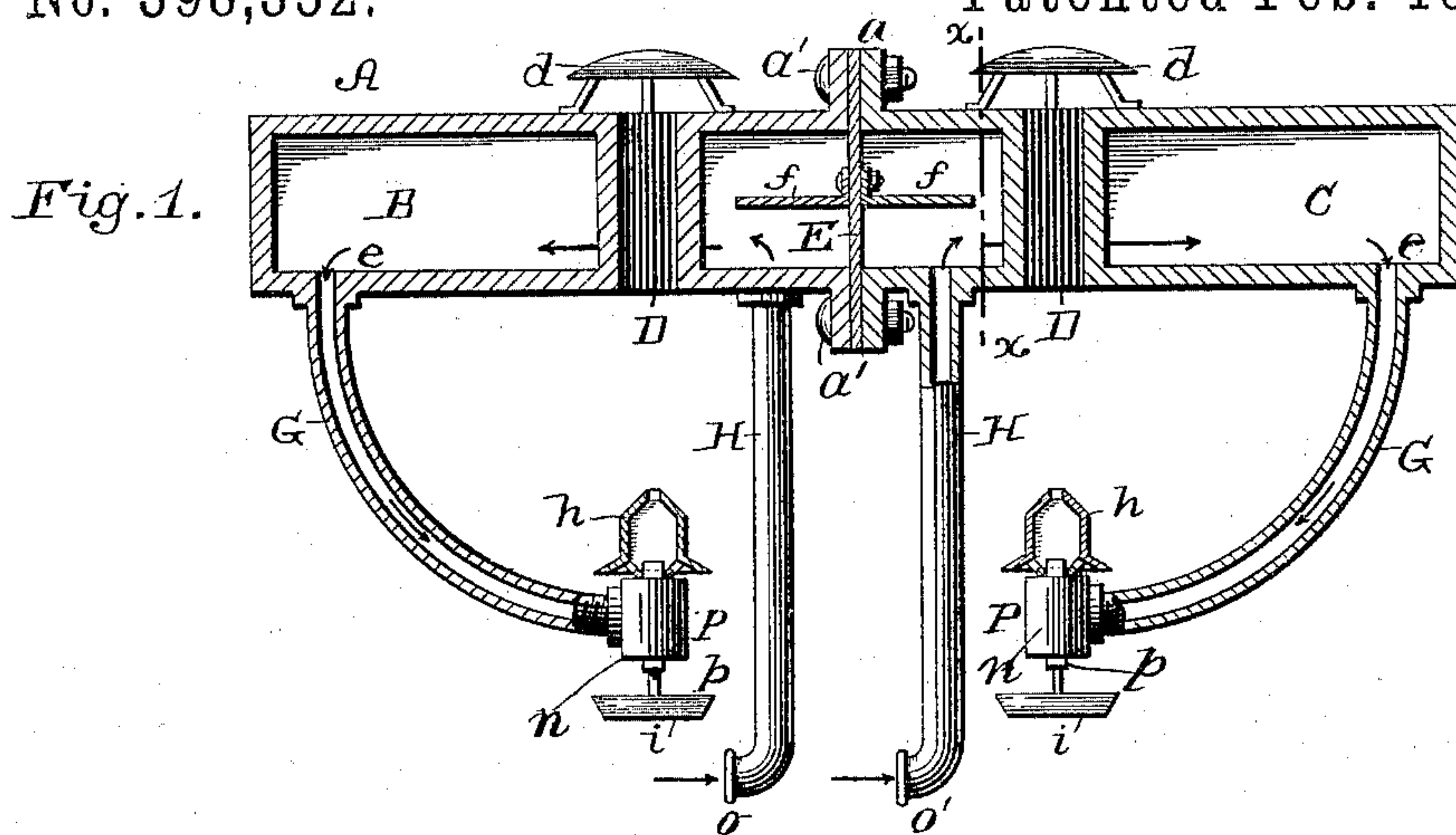


Fig. 3.

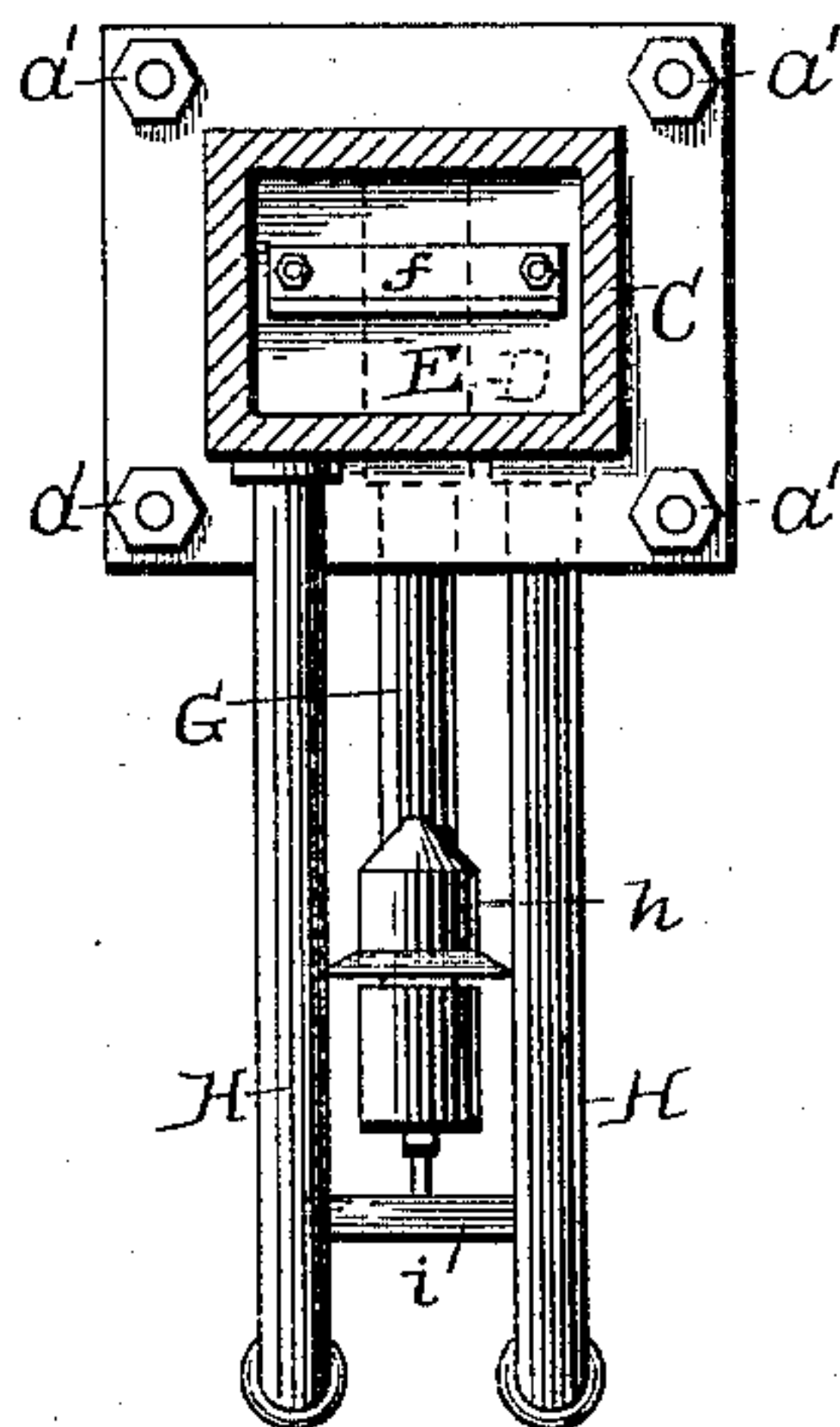
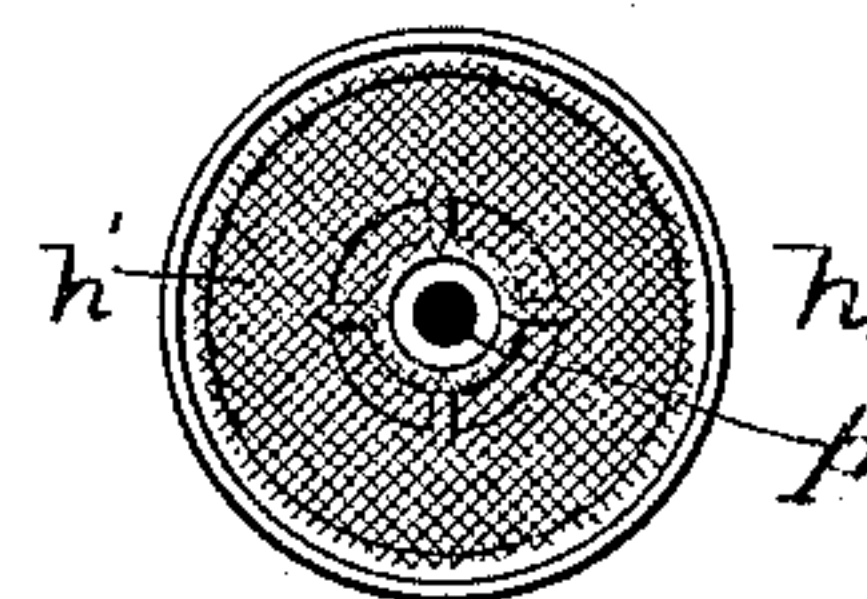


Fig. 4.



Witnesses

L. G. Fischer

A. A. Hugdon

Inventors

F. H. Smith and J. W. Wright

By their Attorney *J. C. Higdon*

UNITED STATES PATENT OFFICE.

FREDRICK H. SMITH AND JOHN W. WRIGHT, OF KANSAS CITY, MISSOURI,
ASSIGNORS OF ONE-THIRD TO SAMUEL E. STRANATHAN, OF SAME PLACE.

PETROLEUM-BURNER.

SPECIFICATION forming part of Letters Patent No. 398,352, dated February 19, 1889.

Application filed November 21, 1888. Serial No. 291,455. (No model.)

To all whom it may concern:

Be it known that we, FREDRICK H. SMITH and JOHN W. WRIGHT, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Petroleum-Burners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to an improvement in petroleum-burners, and more particularly to a retort with attached burners, which may be placed in a stove, range, or boiler-furnace to furnish heat for cooking, heating water, or other similar uses.

The object of our invention is to provide a simple and removable gaseous-fuel generator which may be readily inserted within the firepot or combustion-chamber of a stove, range, or furnace, and by proper connections with a source of oil-supply be adapted to generate a gaseous fuel from crude petroleum, refined coal-oil, or any other suitable carbonaceous liquid.

A further object is to provide the vapor-generating chamber or retort of the petroleum-burner with means for its ready cleansing on the interior surface when necessary.

A further object is to so construct the interior of the retort or vapor-generating chamber that the influx of oil or carbon liquid fed into the retort will be deflected from the upper surface of said retort when the burner is cold and the operation of starting a gaseous flame is about to be commenced.

A further object is to provide the vapor-generating retort with integral depending vapor-discharge pipes, which connect the retort with the gaseous fuel-burners, thus preventing leakage from the retort when in a heated condition.

With these objects in view our invention consists in certain features of construction and combinations of parts, which will be hereinafter described, and pointed out in the claims.

Referring to the drawings making a part of this specification, Figure 1 is a side elevation in section, taken on centerline longitudinally through the generator-chamber and integral burner-pipes, the burners and oil-feed pipes

being shown in perspective: Fig. 2 is a bottom plan view of the vapor-generating chamber and attached parts. Fig. 3 is a transverse section, in elevation, of the retort and attached parts, taken on the line *xx*, Fig. 1. Fig. 4 is an enlarged plan view of the bottom of one of the burners.

A represents the retort or vapor-generator chamber. This is preferably made of cast metal in two pieces, B C, which are flanged at *a* to permit them to be detachably secured together by the screw-bolts *a'*, and it is evident that when the portions B C are separated the chambers formed in them will be exposed and access had thereto through their open ends. The faces of the flanges *a* are rendered true and at right angles to the shell or body of each chamber, so that the joint plate or diaphragm E, when introduced between the flanges *a*, will coincide with their general surface and effect a tight joint, it being understood that the diaphragm-plate E is perforated near its edge at spaced intervals to register with the bolt-holes in the flanges *a*, and thus permit the screw-bolts *a'* to be inserted and adjusted to hold the two portions B C of the vapor-generator together.

The joint-piece E is preferably made of copper sheet metal of any desired thickness; but other material may be employed that is suitable to afford a tight joint, withstand the action of heat, and permit the connection to be severed without injury to the joint material.

Near the flanges *a* of the two retort sections or chambers B C, upon the lower surface of the same, the oil-feeding pipes H H are rigidly secured. These may be separable or be formed integral—that is to say, the portions shown may be so constructed. These depend from the bottom of the generator-chambers B C, and at their lower ends, *o o'*, are connected to extensions of the pipes, (not shown,) which latter may be projected to any suitable distance and attached to a proper source of oil-supply, which will supply the retort generating-chamber with graduated amount of carbon liquid under pressure of gravity, or any other proper manner to insure a regular feed of oil into the retort A.

At a suitable point on the lower surface of

the retort or vapor generator A, preferably near the outer ends of said retort, the pipes G are integrally formed, or may be suitably attached to the same.

5 The pipes G are curved and of a length as shown in Fig. 1, so that their lower ends will approach the center of length of the retort A, and on these ends are affixed the burners P, so secured that their top portions will be
10 located beneath the tubular orifices D, formed in the separated chambers B C of the retort A, as shown in Fig. 1.

Both of the burners P are provided with depending flash-pans *i'*, that from their position will be adapted to catch oil or other carbon liquid fed through the pipes G and bodies
15 of the burners P when the device is to be put into use.

It should be stated that the burners P may
20 be of any well known and approved form of Bunsen burner, which is capable of receiving carbon-vapor generated in the retort A, and by mixture of the same in proper volume with atmospheric air afford upon ignition of the
25 mixed gaseous fuel a blue intensely hot smokeless flame. The style of burner P represented is well adapted for the purpose, and consists of a vapor-chamber, *n*, on the upper surface of which is mounted the mixing-chamber
30 *h*.

The gauze diaphragm *h'* (see Fig. 4) is secured to the lower surface of this chamber *h*, and an air-pipe, *p*, is centrally projected through the vapor-chamber *n* to enter the
35 mixing-chamber *h* along with jets of carbon-vapor, also introduced under pressure from the retort A.

The mixed air and carbon vapor issues from the apex of the mixing-chamber *h*, and upon
40 ignition burns with intense heat and no smoke. The blue flames from the aero-carbon-fuel combustion effected in the burners P strike against the lower surface of the chambers B C of the retort A, and thence upward around
45 the retort-body and through the orifices or tubes D. Such flame as enters the tubes D is spread by the cap-pieces *d*, so as to direct the heat-currents laterally.

Upon each side of the diaphragm plate or
50 joint E the deflector-plates *f* are attached. These are projected horizontally over the inlet-orifices of the oil-feed pipes H, and serve to direct the oil or other carbon liquid over the bottom walls of the chambers B C toward
55 the orifices *e*, where the pipes G intersect the retort A to convey the oil down them to the flash-pans *i'*.

It is mainly intended to employ the gaseous-fuel-generating device as a means of furnish-

ing fuel for heating purposes to a stove or
60 range, and to this end the retort A and its burners are located within the fire-chamber of such a cooking stove or range, so that the heat evolved in the combustion of the gaseous
65 fuel will first envelop the retort-surface and then spread to the top plate of the stove or range in an obvious manner, heating the same or any vessel and contents thereof placed
70 to receive such heat.

In operation, the retort being supplied with
75 oil in graduated volume, the inducted carbon fluid spreads over the floor of the retort-chambers B C in a thin sheet and flows down the pipes G into the flash-pans *i'*. The oil being ignited in these pans creates sufficient
80 heat to vaporize the oil in the retort and produce a pressure of carbon vapor therein, which is fed to the burners P, and these, mixing with the inducted atmospheric air, furnish the heat-currents for cooking or other
85 purposes, as has been previously mentioned.

Having fully described our invention and its manner of operation and demonstrated its utility, what we claim as new, and desire to
90 secure by Letters Patent, is—

1. The combination, with a retort having
95 two joined chambers and a diaphragm-wall provided with two deflector-plates, as shown, of two curved depending oil and vapor conveying pipes, two aero-carbon-vapor burners,
100 and two oil-supply pipes, substantially as set forth.

2. In an aero-carbon gaseous-fuel generator, the combination, with a retort composed of
105 two chambers having open ends which abut against a joint-wall that is interposed between them, of two integral depending pipes and aero-carbon-vapor burners that are affixed to the lower ends of these pipes, substantially as set forth.

3. In an aero-carbon gaseous-fuel generator, the combination, with two chambers having
110 open ends, a diaphragm-plate that is a joint-wall between these chambers, and bolts to connect the chambers detachably, of two oil-feed pipes that are formed on the lower walls of the chambers, two depending curved oil and vapor conveying pipes, and two aero-carbon-vapor burners, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

FREDRICK H. SMITH.
JOHN W. WRIGHT.

Witnesses:

F. G. FISCHER,
A. A. HIGDON.