

(No Model.)

W. R. PARK.  
Vapor Burner.

No. 229,454.

Patented June 29, 1880.

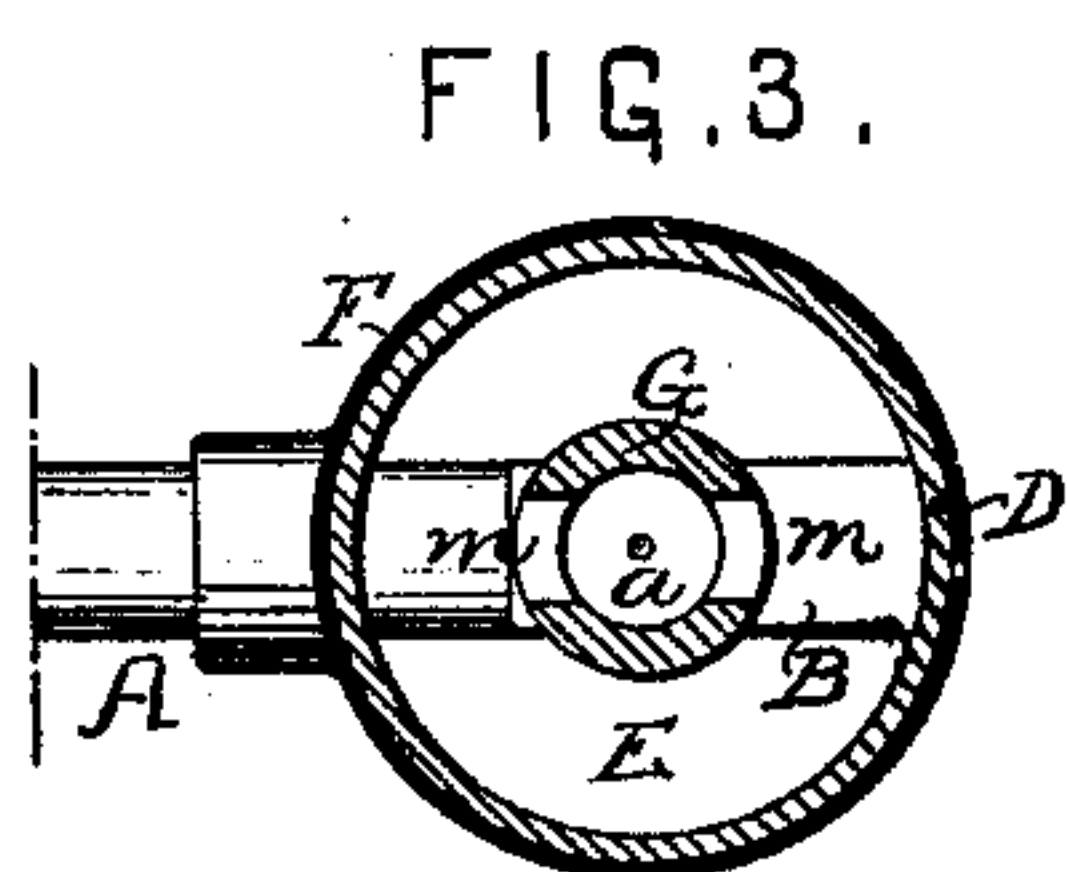
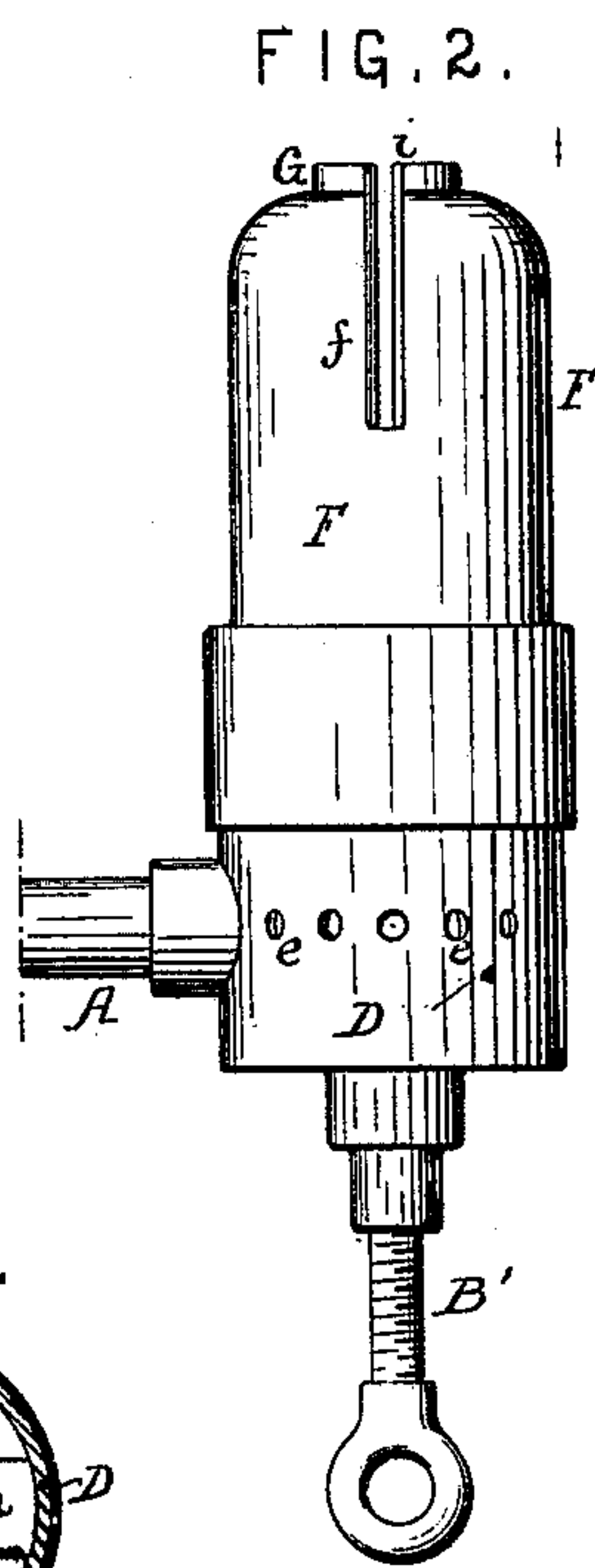
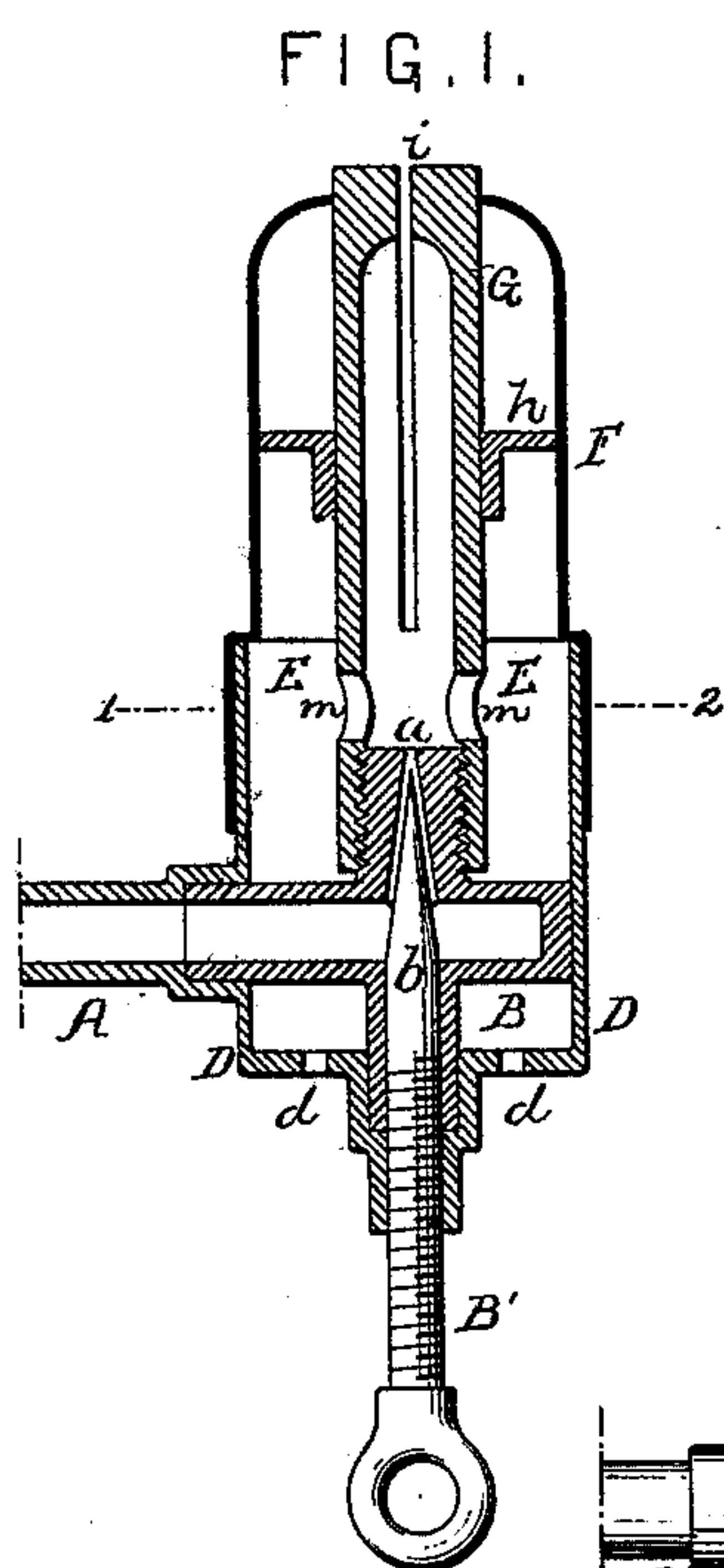
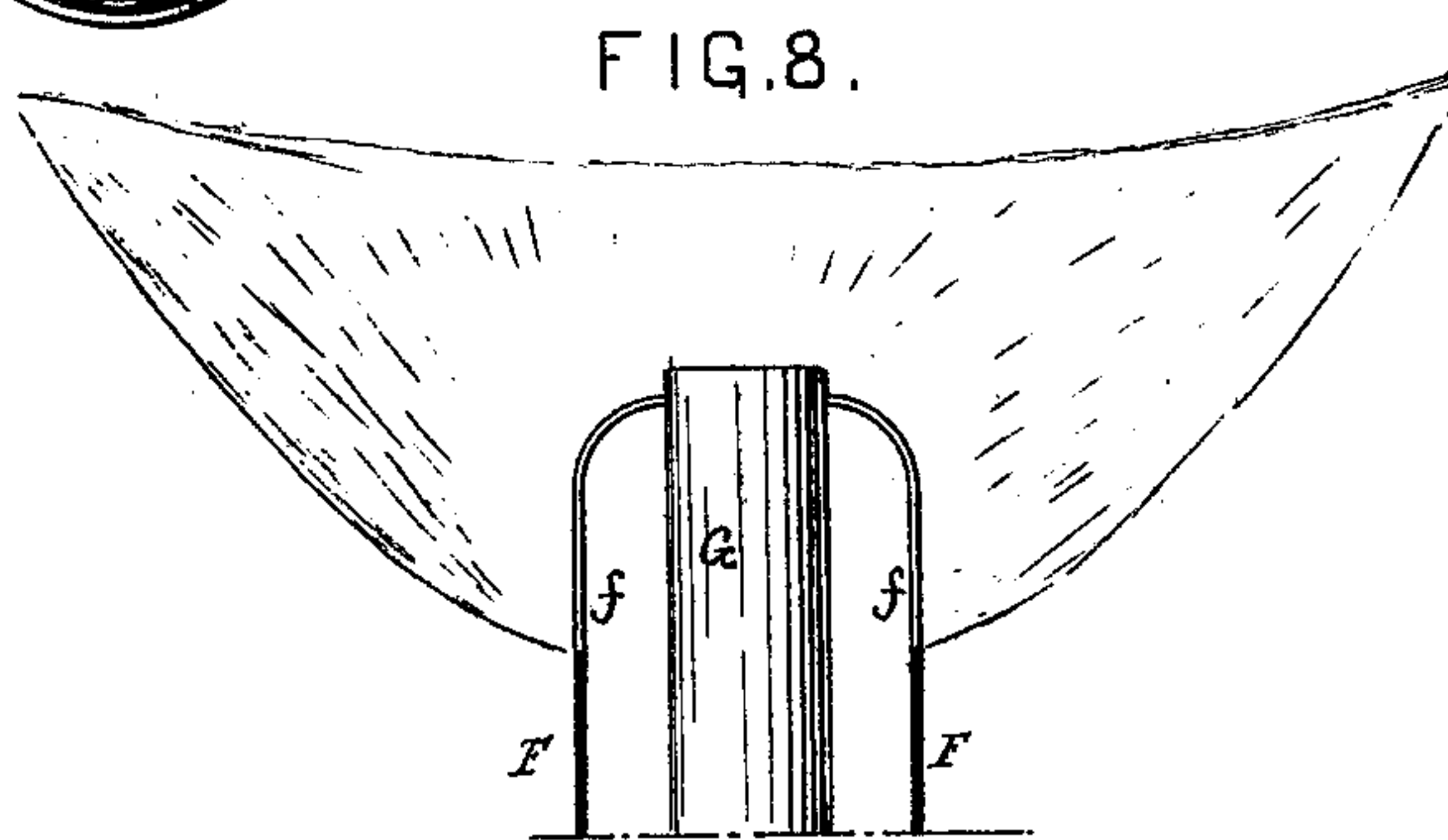
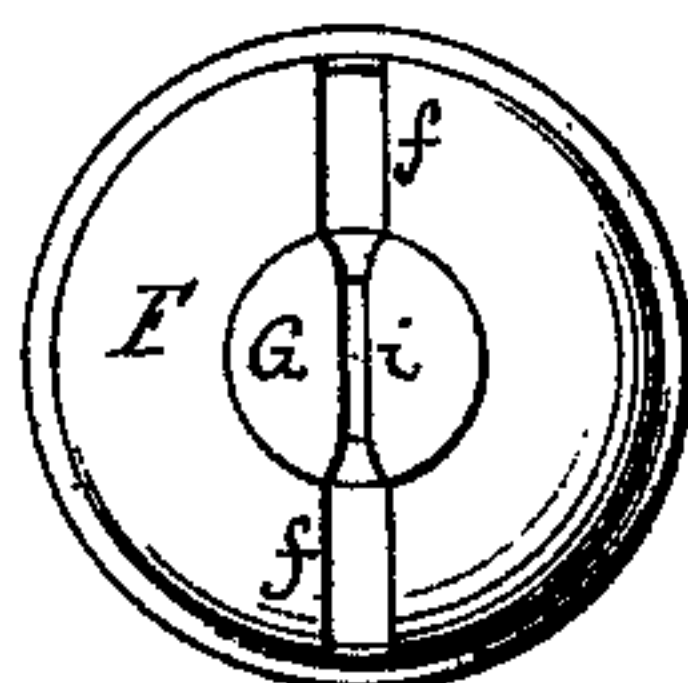
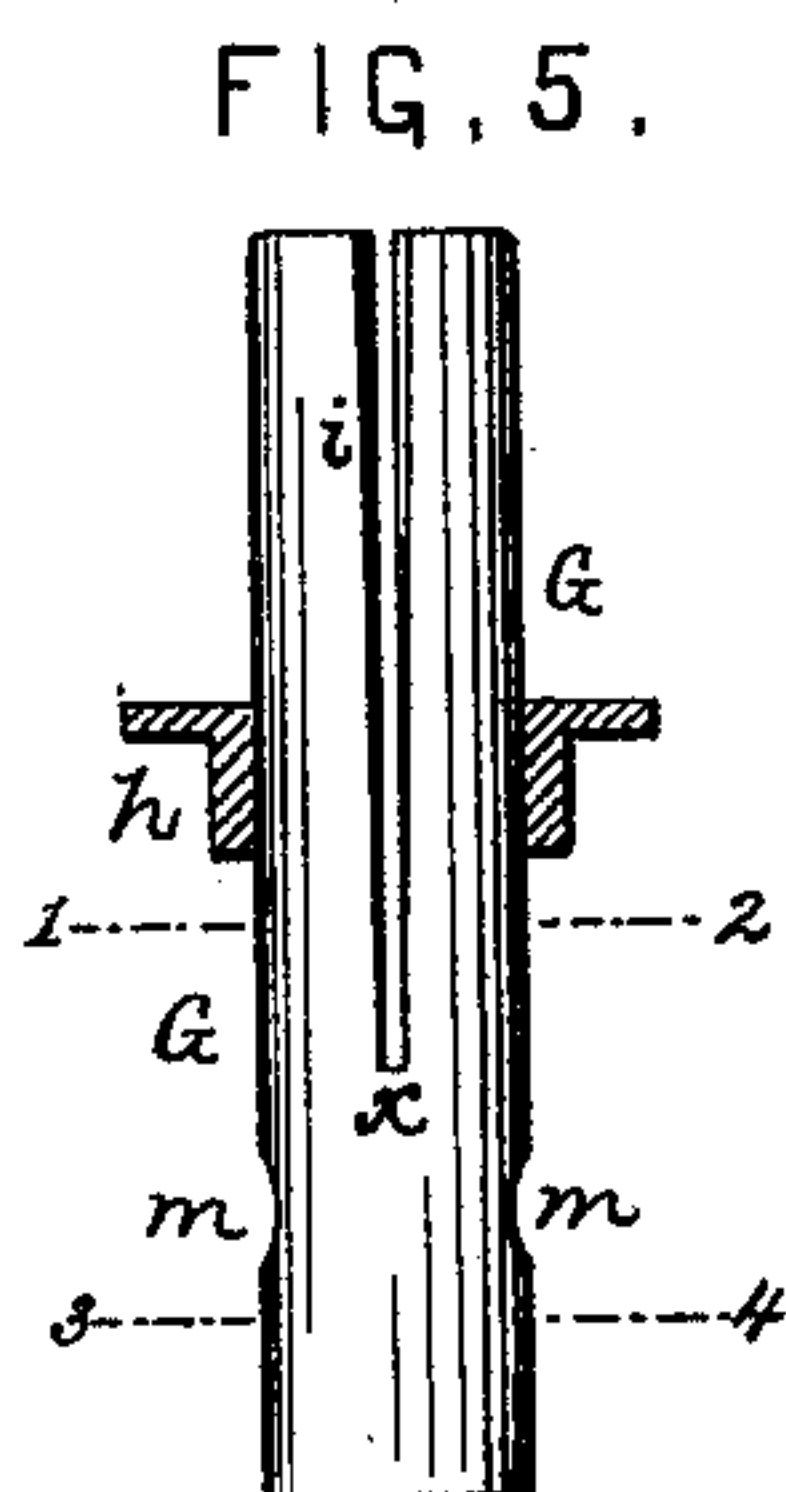


FIG. 4.



WITNESSES

Harry Smith  
Henry Howson Jr

INVENTOR.

William R. Park  
by his attorneys  
Howson and Howson



# UNITED STATES PATENT OFFICE.

WILLIAM R. PARK, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO ROBERT W. PARK, OF SAME PLACE.

## VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 229,454, dated June 29, 1880.

Application filed April 26, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM R. PARK, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain  
5 Improvements in Vapor-Burners, of which the following is a specification.

My invention relates to that class of burners in which liquid and volatile hydrocarbon is vaporized by the heat of the flame produced  
10 by the combustion of a mixture of the vapor with air; and the object of my invention is to construct a burner of this class in the peculiar manner fully described hereinafter, so that an extended and brilliant flame may be produced  
15 even when benzine of an inferior character is used.

In the accompanying drawings, Figure 1 is a vertical section of my improved vapor-burner; Fig. 2, an exterior view of the same; Fig. 3, a  
20 sectional plan on the line 1 2, Fig. 1; Fig. 4, a top view of the burner; Fig. 5, a detached view of part of the same; Fig. 6, a section on the line 1 2, Fig. 5; Fig. 7, a section on the line 3 4, Fig. 5; and Fig. 8, a view of the dome,  
25 showing the character of the flame.

The tube A communicates with the interior of a chest, B, a branch, *a*, of which has a vertical orifice adapted to a valve, *b*, formed on  
30 and constituting a part of the screw-stem B', by adjusting which more or less vapor may be permitted to escape through the orifice, or the latter may be entirely closed by the valve.

To the chest B is secured, in any appropriate manner, a casing, D, which is preferably of  
35 cylindrical form, and which has a number of openings, *d*, in the bottom and a number of similar openings, *e*, in the sides.

To the upper portion of the casing D is snugly fitted the detachable dome F, across  
40 the top and partly down the opposite sides of which extends the elongated slot *f*.

The lower end of a tube, G, is screwed onto the branch *a* of the chest, and this tube extends upward through the dome and projects  
45 to the limited extent shown above the same. The upper end of this tube constitutes the tip of the burner, and is closed at the top, with the exception of an elongated slot, *i*, which, when the dome is in place, coincides with the  
50 slot *f* of the said dome.

A ring or partition, *h*, is fitted to the tube, preferably in such a manner as to be adjustable thereon, this ring being a trifle less in diameter than the interior of the dome.

The air-chamber E is partly within the dome 55 and partly within the casing D, and is bounded at the top by the above-mentioned ring or partition *h*. The mixing-chamber is within the tube G, and communicates, through opposite openings *m m*, with the air-chamber E. 60

The slot *i* of the tube G extends from the top of the tube to about the point *x*, and each edge of the slot on both sides of the tube, at and near the upper end of the latter, is so beveled that the elongated outlet, viewed from 65 above, as in Fig. 4, shall be flared at each end for the purpose of spreading the flame.

Heat is, in the first instance, imparted to the dome F and casing D by a flame or otherwise, and this heat is consequently communicated 70 to the chest B, which is in close metallic contact with the said casing; after which the benzine or other volatile hydrocarbon is admitted through the tube A to the interior of the chest, where it is vaporized, the vapor passing through 75 the orifice in the branch *a* and into the mixing-chamber within the tube G at the same time the heated air from the chamber E passes through the openings *m m* into the tube, within which it becomes intimately mixed with the 80 vapor, the two forming an illuminating-gas which can be ignited where it escapes from the tip, a flame substantially like that shown in Fig. 8 being produced. This flame maintains the dome, the casing D, and chest B at 85 such a temperature as to continue the vaporizing of the liquid admitted to the interior of the chest.

I have found that a very brilliant flame can be produced by the above-described burner 90 from a cheap benzine of low gravity, a result which I attribute mainly to the inclosing of the chest, or the greater portion of the same, within a chamber bounded by a metallic casing, to which the heat of the flame is imparted, 95 and to the combination of the chest and casing with the tube G, within which a thorough admixture of air and gas takes place.

A permanent partition for separating the air-chamber from the interior of the dome 100



might be substituted for the adjustable ring or partition *h*; but I prefer the latter for the following reasons: Air from the chamber enters the interior of the tube *G* through the slot *i*, and I have found that the brilliancy and extent and proper shape of the flame depend, in a great measure, upon the air admitted at this point, and the amount of air admitted depends upon the adjustment of the partition, for the area of opening afforded by the slot will be contracted on lowering the partition and expanded on raising the same. Hence, on testing a new burner, the partition may be adjusted until a flame of the desired character is obtained.

The partition may be made to fit snugly, but so as to slide freely, on the tube *G*, and may be secured by a set-screw or otherwise after adjustment; or the tube *G* may be threaded externally and the partition internally, so that the latter may, by turning, be raised or lowered at pleasure.

It is not essential that the dome should be made separable from the casing *D* at the point indicated. The casing, for instance, may be carried upward to a higher point than is shown, so that the whole of the air-chamber will be contained within the limit of the said casing. It is essential to my invention, however, that there should be a continuous metallic casing extending nearly from the tip of the burner to the chest or to a point below the same; but it

is immaterial what number of pieces the casing, including the dome, may be composed of.

I claim as my invention—

1. The combination, in a vapor-burner, of the vaporizing-chest *B* and the outer casing, of which the dome forms a part, with the tube *G*, extending through and above the slotted top of the dome and communicating with the vapor-outlet and with the air-chamber in the casing, substantially as specified.

2. The combination, in a vapor-burner, of the vaporizing-chest, the exterior casing, the tube *G*, and the adjustable partition or ring *h*, substantially as specified.

3. The combination of the tube *G* with a dome or casing, *F*, surrounding the said tube and serving to direct the heated air thereto, the said dome being constructed, as described, so that an upward draft of air through the same is prevented, as set forth.

4. The tube *G*, having air and vapor inlets and a slot, terminating at the top in an elongated outlet, which is enlarged or flared outwardly at each end, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM R. PARK.

Witnesses:

JAMES F. TOBIN,  
HARRY SMITH.