(No Model.)

W. R. PARK.

VAPOR BURNER.

No. 378,713. Patented Feb. 28, 1888.

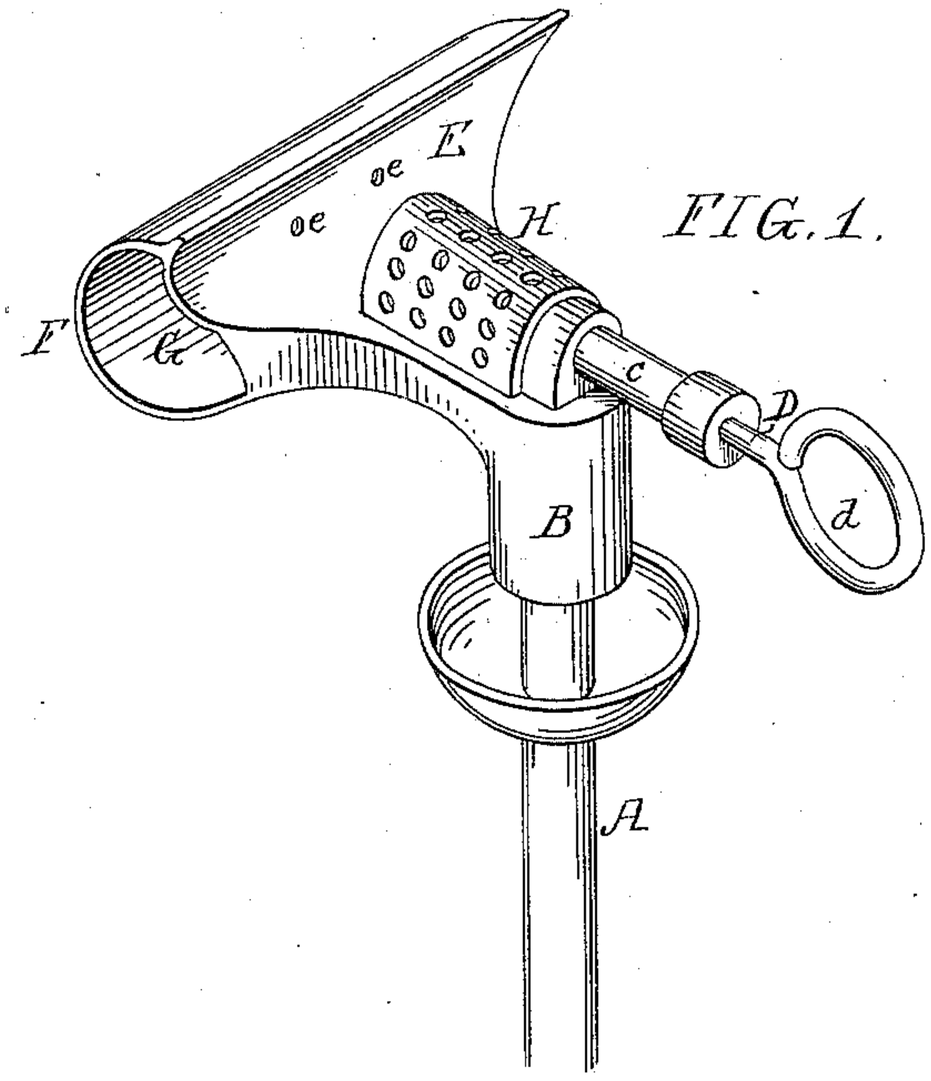


FIG. 1.

FIG. 2.

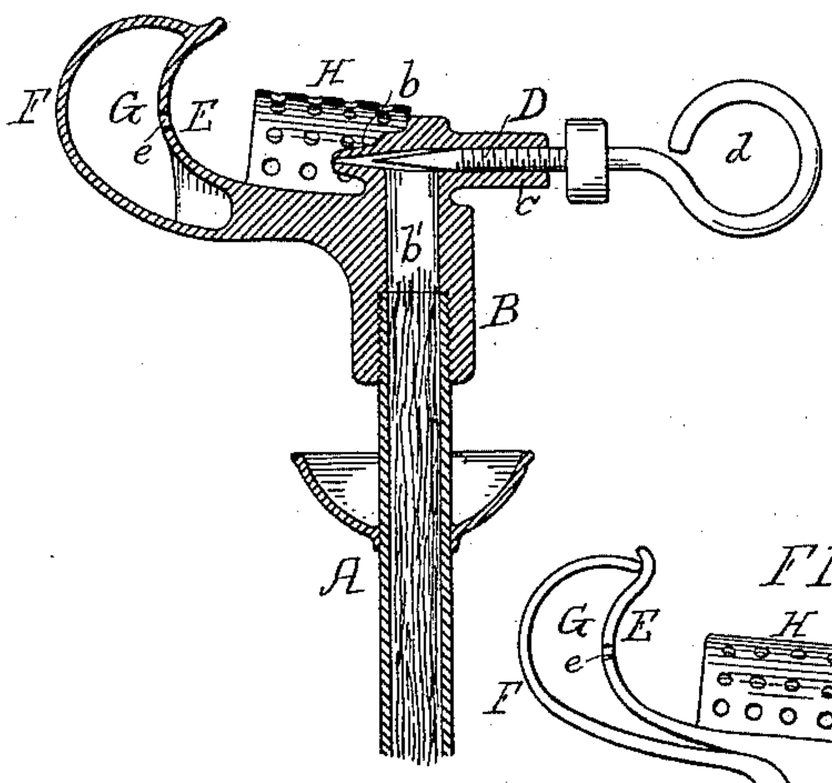


FIG. 3.

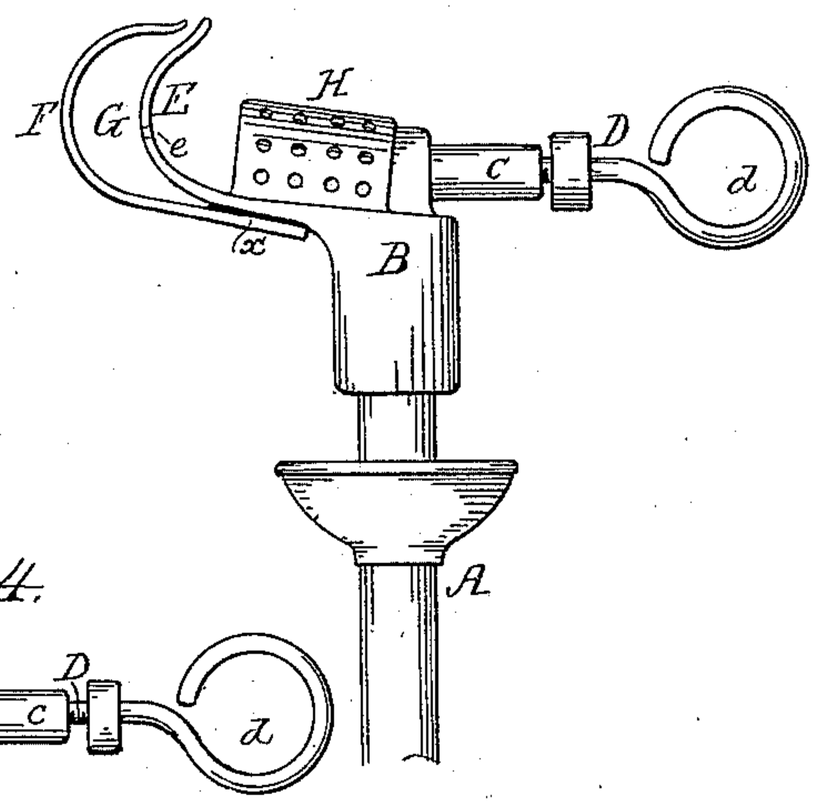
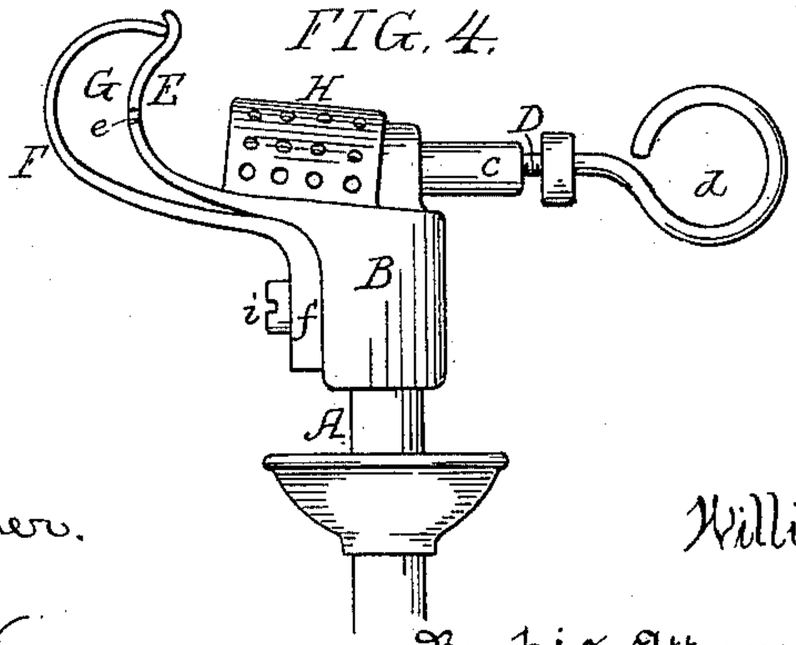


FIG. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM R. PARK, OF PHILADELPHIA, PENNSYLVANIA.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 378,713, dated February 28, 1888.

Application filed May 5, 1887. Serial No. 237,189. (No model.)

To all whom it may concern:

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

The main object of my invention is to so highly heat the spreader-plate of a vapor-burner of the style known as "plate-burners" that all of the oil or vapor issuing from the nozzle will be ignited and consumed, so that a lower grade of oil can be used in the burner than heretofore.

In the accompanying drawings, Figure 1 is a perspective view of my improved burner. Fig. 2 is a sectional view of the same, and Figs. 3 and 4 are views illustrating the mode of applying my improvement to existing burners.

Referring to Figs. 1 and 2, A is the tubular stem of the burner, to which is secured a head, B, having at its upper end a nozzle, *b*, which communicates with the tube A through a passage, *b'*, in the head. The nozzle *b* is tapered and provided with a tapering needle-pointed regulating-valve, D, having at its outer end a handle, *d*, said valve D being threaded and adapted to a threaded projection, *c*, of the head B, so that by turning the valve the flow of oil or vapor from the nozzle may be regulated.

Directly opposite the nozzle *b*, and carried by the head B, is a plate, E, of the form shown in Fig. 2, so that as the vapor passes from the nozzle it strikes the plate, the purpose of which is to spread the flame and insure the breaking up of the jet and the thorough admixture of air therewith.

The above description applies to plate vapor-burners of the usual construction; but in an ordinary burner the plate E is not heated to as high a temperature as is desirable, owing to the fact that cold air has free access to the rear of the plate, so that all of the vapor which escapes from the nozzle is not consumed, and as the vapor has an offensive odor this is a great objection to the burner; moreover, some of the oil may escape from the nozzle without being vaporized, and this oil drips from the burner and furnishes additional cause of complaint. To obviate these objections as much as possible, highly volatile and expensive oils are the only ones used with burners of this character.

In carrying out my invention I place in the rear of the spreader-plate E a plate, F, forming, with the plate E, a chamber, G, and I provide the spreader-plate E with one or more openings, *e*, so that a portion of the vapor will pass through said openings into the chamber G, where it is ignited. The spreader-plate E is thus subjected to the action of the flame on both sides, and thus becomes intensely heated, the plate F also becoming heated, and serving to confine the flame to the chamber G and concentrate its action upon the plate E.

Every portion of the vapor which escapes from the nozzle *b* is thus raised, by contact with the plate E, to such a temperature as will insure the ignition of the same, and any oil which issues from the nozzle is vaporized by contact with the plate, so that the operation of the burner is entirely free from the objectionable odor and drip of an ordinary burner, and I have found that a low grade of oil may be used with my improved burner with as good effect as results from the use of high-grade oil in the vapor-burners in common use.

The chamber G may be open at the top, as shown in Fig. 3, so as to allow the flame to escape from said chamber and join the main flame of the burner, and the chamber is open at both ends to permit sufficient inflow of air to insure proper combustion.

Instead of forming in the rear of the spreader-plate E a chamber closed or contracted at top and bottom, the plate F may simply be such as to form a deflector, whereby the heat of the supplementary rear jet is directed against the rear of the said spreader-plate.

It will be seen that while ordinary plate-burners aim to superheat the oil before it reaches the nozzle, my idea, on the contrary, is to heat the spreader-plate E to such an extremely high temperature as to insure the igniting of the vapor or oil, even though it may be comparatively cool when it issues from the nozzle.

A jacket, H, open at the front end, covers the nozzle *b* and extends some distance in advance of the same, and this jacket has a series of perforations, through which jets of air can

gain access to the vapor as it issues from the nozzle; but while these openings are large enough to supply air in sufficient quantities for proper combustion they are such that gusts of wind will not deflect the stream of vapor to one side, so as to clear the spreader-plate E, thus overcoming an objection to the ordinary burners, which, it should be understood, are generally used in the open air.

In Fig. 3 I have shown the plate F secured to the plate E by brazing it at the point *x*, and in Fig. 4 I have shown the plate F detachably secured to the burner-head B by a screw, *i*, passing through an extension, *f*, of the plate. Either of these plans provides for the ready application of the plate to an ordinary burner.

I claim as my invention—

1. In a plate vapor-burner, the combination of the vapor-nozzle with a spreader-plate perforated to permit a portion of the vapor to pass through the same and a supplementary deflecting-plate located beyond the said spreader-plate in the direction of the jet issuing from the nozzle, the said plates forming a heating-chamber, by which the spreader-plate is kept in a highly-heated condition, substantially as described.

2. The combination, in a plate vapor-burner, of the spreader-plate and nozzle with a finely-perforated and open-ended jacket covering the nozzle and projecting in advance and in the rear of the same, all substantially as and for the purpose set forth.

3. The combination of the nozzle and spreader-plate of the vapor-burner with a deflecting-plate located beyond the spreader-plate in the direction of the jet, forming with the spreader-plate a heating-chamber, the said deflecting-plate being detachably secured in position, all substantially as specified.

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

WILLIAM R. PARK.

Witnesses:
HENRY HOWSON,
HARRY SMITH.