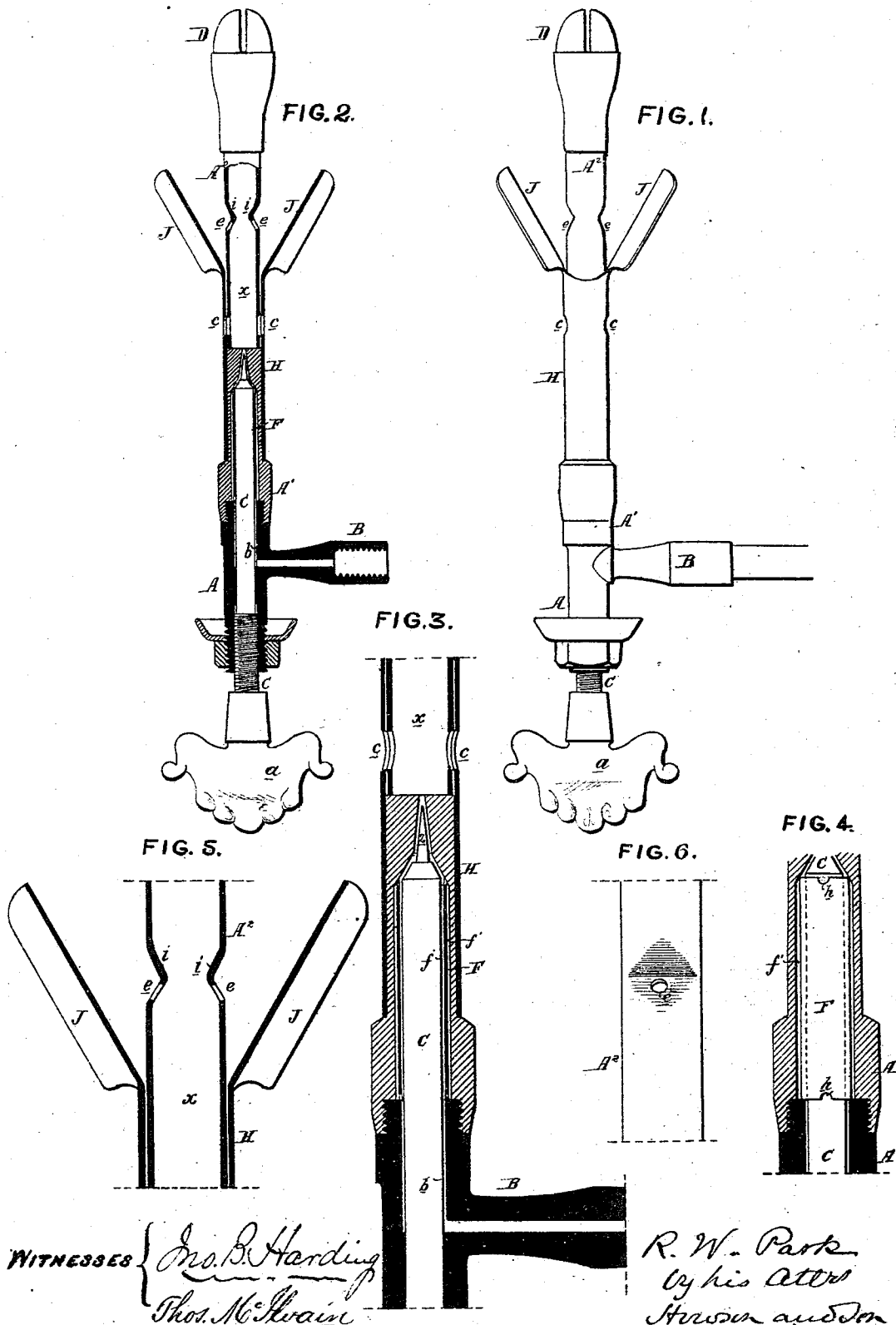


R. W. PARK.
Vapor Burner.

No. 123,506.

Patented Feb. 6, 1872.



UNITED STATES PATENT OFFICE.

ROBERT W. PARK, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN VAPOR-BURNERS.

Specification forming part of Letters Patent No. 123,506, dated February 6, 1872.

Specification describing an Improved Vapor-Burner, invented by ROBERT W. PARK, of Philadelphia, Pennsylvania.

Improved Vapor-Burner.

My invention consists of certain improvements, too fully explained hereafter to need preliminary description, in vapor-burners, the said improvements being especially applicable to the burner for which Letters Patent were granted to me on the 31st day of January, A. D. 1871.

In the accompanying drawing, Figure 1 is an exterior view of my improved vapor-burner; Fig. 2, a sectional view of the same; and Figs. 3, 4, 5, and 6, enlarged views of part of the burner.

The base or body of the burner consists of a tubular stem, A, furnished at one side with a branch, B, the latter communicating with a reservoir containing naphtha, benzine, or light oil, which can be vaporized by the application of heat so as to form an ignitable gas. A screw-valve, C, furnished at its lower end with a handle, *a*, extends upward through a packed joint in the stem A, through an enlargement or annular passage, *b*, of the latter, and through an annular chamber formed in a tubular stem, A¹, which is screwed onto the stem A, the said valve terminating at its upper end in a "needle-point," *z*, adapted to a similarly-shaped seat in the stem A¹. A tube, F, open at each end, is fitted over the valve-rod C within the annular chamber of the stem A¹, as best observed in Figs. 3 and 4, and is of such internal and external diameter that a narrow passage, *f*, shall intervene between the said tube and the valve-rod and a similar passage, *f'*, between the same and the stem A¹, the object of which will be hereafter described. The tube has notches *h* (Fig. 5) cut in its upper and lower edges, in order to afford free communication between the annular passages at each side of the same. A sleeve, H, furnished at its upper end with outwardly-inclined wings J J, is fitted over the stem A¹ in such a manner that it can be readily detached therefrom, the said sleeve, which is intended to convey heat to the body of the burner, extending downward to a point considerably below the upper end of the tube F and oil or vapor passages *f* and *f'*. (See

Figs. 2 and 3.) A tube, A², within which is the air and vapor-mixing chamber *x*, is fitted within the sleeve H, rests upon the upper end of the stem A¹, and is surmounted by the tip or burner proper D. Holes *c c* formed in the opposite sides of the sleeve H and tube A², close to the bottom of the chamber *x*, admit air into the latter to be mixed with the vapor before the ignition of the same. Apertures *e e* are formed in the tube A² at points directly opposite the wings J J, through which jets of ignited gas are directed onto the latter, and the said tube is indented or bent inward at points just above these apertures, so as to form internal deflectors *i i*, Figs. 5 and 6, for directing outward through the said apertures and toward the wings J a sufficient volume of gas. This is an important feature of my invention. When the burner is not in use the annular passage *b* communicating with the branch B, and the annular passages *f* and *f'* within and surrounding the tube F, will be filled with the light oil or other fluid from the reservoir, with which they freely communicate. This oil is partially vaporized before lighting the burner by heating the latter by means of an ignited match or otherwise, and the valve C is then lowered from its slot in order to permit this vapor to rise into the chamber *x*, there to be mixed with air entering the said chamber through the apertures *c c*. A portion of this mixed air and vapor passes through the apertures *e e* and is ignited, the jets striking the wings J J and heating the latter. This heat is transmitted to the sleeve H, which conveys it to the body of the burner, the whole of the latter soon becoming highly heated, so that the oil, which is caused to pass in thin films through the narrow annular passages *f* and *f'* in contact with these hot metal surfaces before it can reach the outlet aperture, becomes also highly heated and completely vaporized, escaping finally into the mixing-chamber *x* with a considerable degree of pressure. A portion of the mixed air and vapor, in passing upward, strikes the internal deflectors *i i* and is deflected by the same through the apertures *e e* and onto the inclined wings J J, playing upon the latter throughout almost their entire length and heating them almost to redness. The remainder and greater portion of the volume of

mixed air and gas emerges from the burner proper or tip D, and when ignited forms a broad flame, closely resembling an ordinary gas-jet.

Among the advantages of my improved burner may be mentioned the fact that access can readily be had to its interior for purposes of cleansing, as all of the parts are detachable from each other. The sleeve H also, instead of being permanently secured to the burner, as in my aforesaid patent of January 31, 1871, is rendered detachable, as before mentioned, so that it can be readily removed and replaced by another in case of the burning out of the wings J, after a long period of use.

I claim as my invention—

1. The loosely-fitting tube F adapted to the exterior of the valve-rod C and to the interior

of the tubular stem A¹, so as to form narrow annular passages *f* and *f'* communicating with each other at the top and bottom of the said tube, as specified.

2. The internal deflectors *i i* formed in the tube A² at points adjacent to the apertures *e*, substantially as and for the purpose specified.

3. The sleeve H, formed in one piece, with the wings J, and arranged to be fitted over the body of the burner so as to be readily detached therefrom, as described.

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

Witnesses:

ROBERT W. PARK.

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HARRY SMITH.