

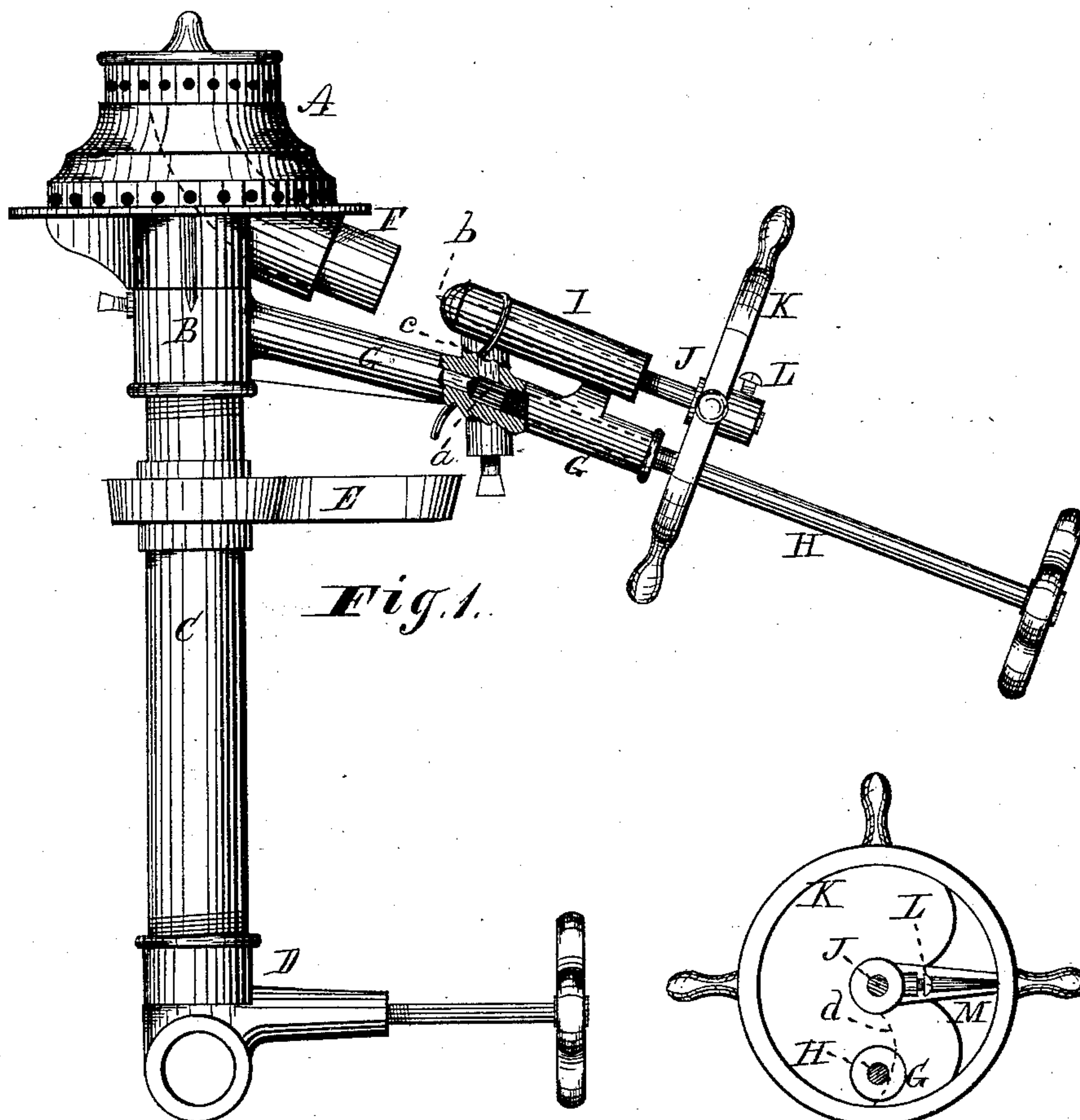
(No Model.)

D. A. DANGLER & E. H. WACKERMAN.

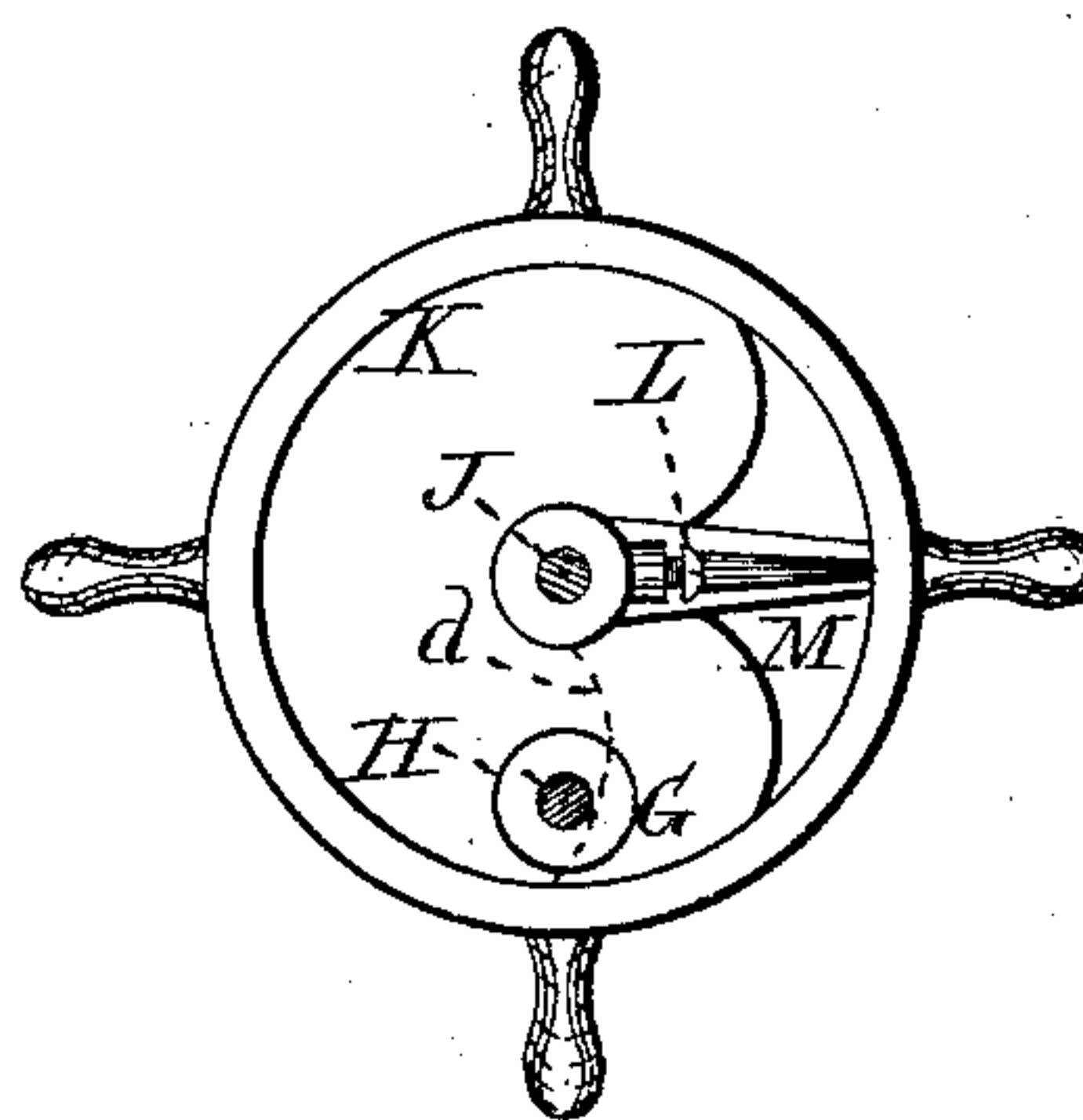
VAPOR BURNER.

No. 318,090.

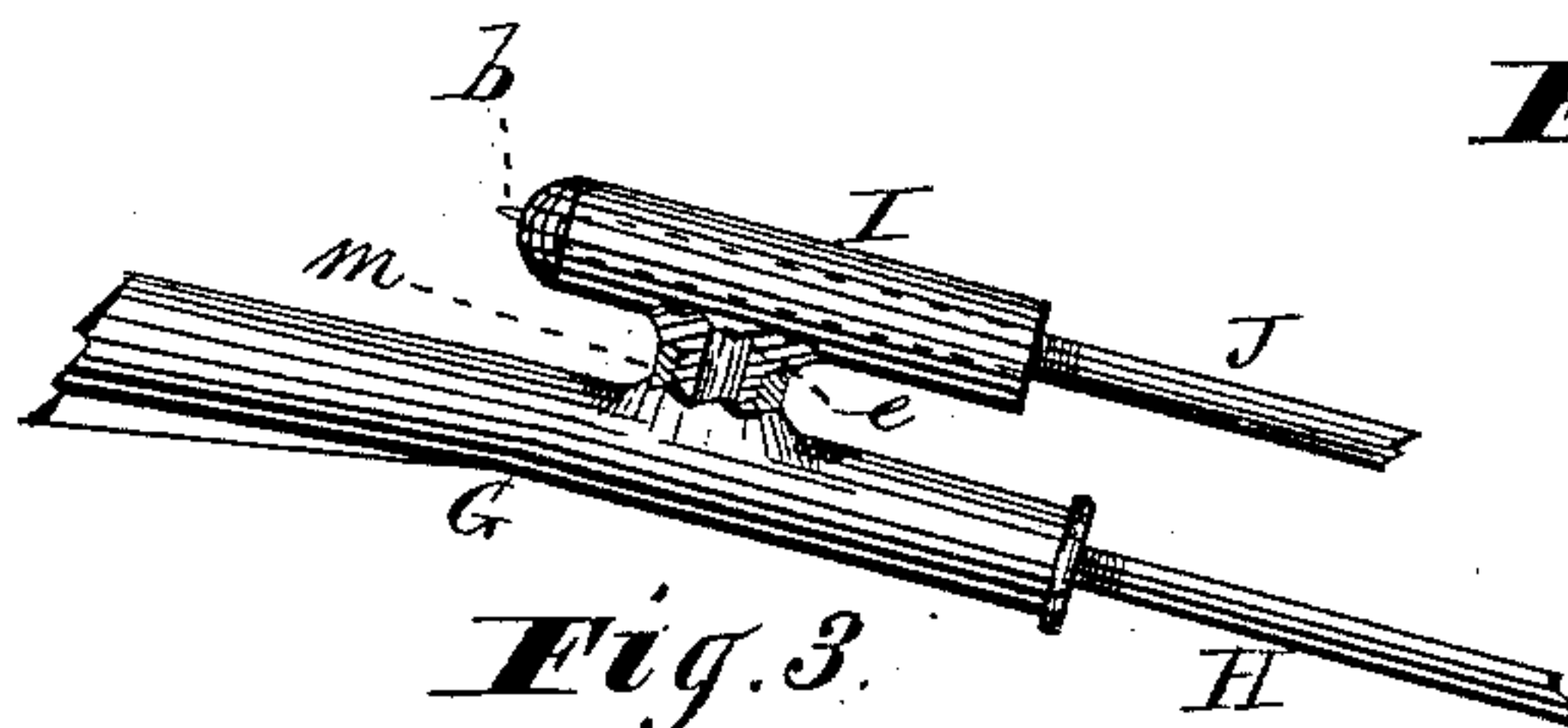
Patented May 19, 1885.



*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

*Witnesses.*

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# UNITED STATES PATENT OFFICE.

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SAID WACKERMAN ASSIGNOR TO SAID DANGLER.

## VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 318,090, dated May 19, 1885.

Application filed June 25, 1884. (No model.)

*To all whom it may concern:*

Be it known that we, DAVID A. DANGLER and EDWARD H. WACKERMAN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain Improved Vapor-Burner; and it relates to a device for adjusting the needle-valve to its seat, so that it cannot be forced so far therein as to injure the opening, or to become so tight that the valve and seat become leaky by the strain in closing and opening.

For a more full and complete description of the said invention, reference will be had to the following specification, and to the annexed drawings, making part of the same, in which—

Figure 1 represents a side view of the burner. Figs. 2 and 3 are detached sections.

Like letters designate like parts in the several drawings.

The vapor-burner above alluded to consists of the combustion-chamber A, generator B, oil-induction pipe C, coupling and valve D, firing-cup E, and induction vapor-pipe F, leading from the needle-valve into the combustion-chamber, all of which may be like vapor-burners in general use; hence a detailed description thereof is not essential in this place, as it is not held to be a part of the improvements claimed.

The valve mechanism of the burner consists of the tube G, having fitted therein a plug-valve, *a*, of which H is the stem for operating the same. On the upper side of the said tube G is the valve-chamber I, in which is the valve *b*, J being the stem thereof. To the stem is attached a hand-wheel, K, for operating the valve. This valve and chamber are arranged in alignment with the central vapor-pipe, F, and in open relation with the tube G, by means of the tubular neck *c*. It will be observed that the plug-valve *a*, before referred to, passes into the tube G, Fig. 1, beyond the base of the neck *c*, so that the valve, when screwed to its seat, closes the communication between the tube G and the base of the neck and needle-valve chamber, as shown in Fig. 1, thereby shutting off the flow of vapor from the generator to the needle-valve chamber, and consequently from the combustion-chamber A.

Practically, it is found in using the fine tapering point of the needle-valve that the valve

by constant use enlarges the valve-opening by being forced therein for shutting off the vapor to extinguish the burner. The valve also soon becomes worn thereby, causing the valve-opening to leak, and, furthermore, the slender point of the valve, by being forced into the valve-opening while the burner is in a heated condition, becomes fast therein by shrinking of the metal around the point of the valve; hence in order to open it great effort is at times required, and more than can be exerted by hand. To avoid this sticking of the valve in the valve-opening, and to relieve the valve from the objections above mentioned, is the purpose of the plug-valve *a*, which, in view of its blunt end, does not enter the valve opening or bore of the valve-seat, but simply abuts against the valve-seat, as shown in the drawings, so that on screwing the valve in it cannot enlarge the valve-opening, nor can it become fast therein, as it does not enter the bore of the tube G, as aforesaid.

By using the plug-valve for controlling the flow of vapor into the needle-valve chamber, the needle-valve need only be used simply to regulate the amount of vapor required to issue therefrom to the burner, according to the amount of heat needed, while the pressure is continued and a full volume of vapor is supplied to the needle-valve chamber, but which is wholly cut off, when necessary, by the plug-valve, while the needle-valve may be left open or gently screwed into its seat.

That the needle-valve may not be forced violently to its seat, but only far enough to close the valve-opening without straining it, is one purpose of the wheel K, which is adjustable on the stem J of the valve, and secured thereon by the set-screw L, or its equivalent means. The needle-valve being screwed close on its seat, the wheel K is adjusted on the valve-stem J, so as to bring the web M to the valve-stem H, said web being shown in Figs. 1 and 2 and indicated by dotted lines *d*, Fig. 2, which will prevent the needle-valve from being forced into the valve-opening with undue strain, and thereby prevent the usual wearing of the valve point and seat, and enlargement of the valve-opening, thus rendering the valve mechanism more durable and reliable in practical use, as before described.



As shown in Fig. 1, the needle-valve chamber I and the tube G and the generator are of one piece—that is to say, the needle-valve chamber is an integral part of the said tube G and generator. It is preferred, however, to have the needle-valve chamber a separate and distinct part of the mechanism, and detachably connected to the tube G, as shown in Fig. 3, in which it will be seen that the needle-valve chamber is provided with a tubular male screw, *e*, made to screw into a threaded boss or socket, *m*, in open communication with the tube G. (Shown in Fig. 3.)

In thus making the valve-chamber I a separate part of the burner mechanism, it can be easily detached therefrom for any needful purpose, and replaced or be substituted by another, thereby avoiding the expense of an entire new burner, which must be incurred if the needle-valve becomes imperfect or injured in any way when the valve-chamber is an integral part of the burner mechanism. By means of this construction the repairing of the valve opening or seat and the chamber I is readily done at small cost and little delay, as

the chamber I can be easily detached and another complete one screwed into place.

What we claim as our improvement, and desire to secure by Letters Patent, is—

1. In vapor-burners, the combination of the valve-chamber I, valve-stem J, the hub of the hand-wheel provided with the adjusting set-screw L, hand-wheel K, having web M, and the valve-stem H, whereby the movement of the valve-stem I is regulated, substantially as and for the purpose described.

2. In vapor-burners, the combination of the valve-chamber I, stem J, the hub of the hand-wheel provided with the adjusting set-screw L, hand-wheel K, with its web M, valve-stem H, valve-tube G, plug-valve *a*, and burner-tube F, all substantially as and for the purpose described.

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

DAVID A. DANGLER.

EDWARD H. WACKERMAN.

Witnesses:

J. H. BURRIDGE,

D. EDWARD DANGLER.