H. A. BRADLEY.

Burner for Liquid Hydrocarbons.

No. 217,259. Patented July 8, 1879

Fig: 1

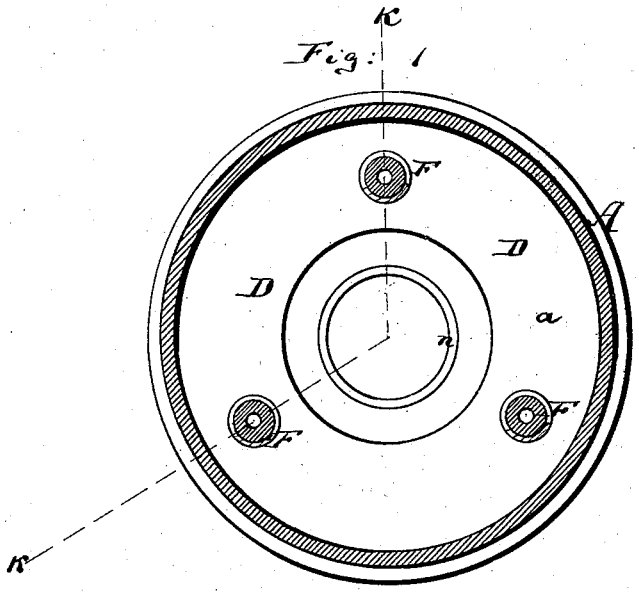
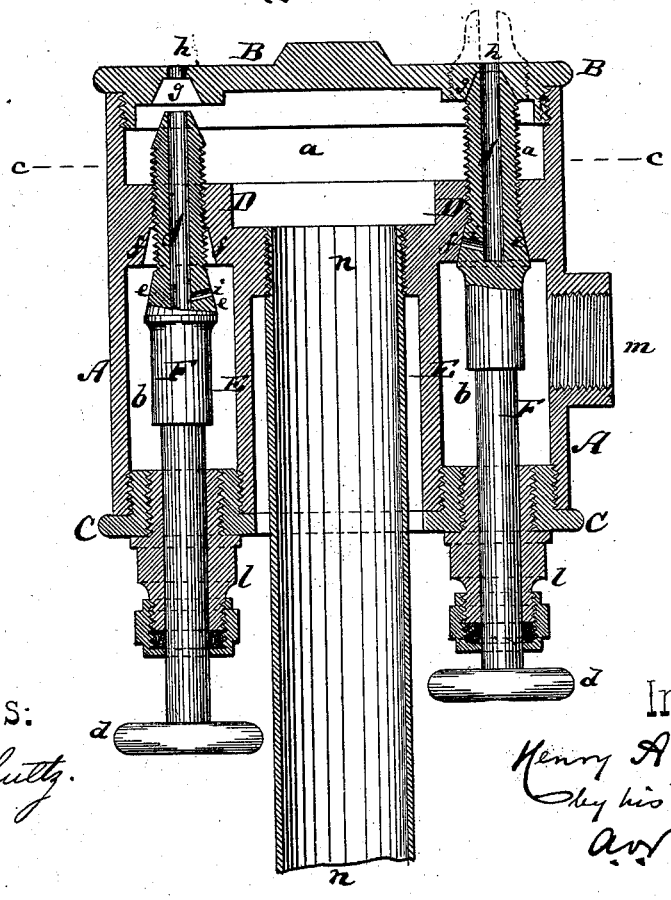


Fig: 2



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UNITED STATES PATENT OFFICE.

HENRY A. BRADLEY, OF NEW YORK, N. Y.

IMPROVEMENT IN BURNERS FOR LIQUID HYDROCARBONS.

Specification forming part of Letters Patent No. **217,259**, dated July 8, 1879; application filed May 9, 1879.

To all whom it may concern:

Be it known that I, HENRY A. BRADLEY, of New York city, in the county and State of New York, have invented a new and Improved Burner for Liquid Fuel, of which the following is a specification.

Figure 1 is a horizontal section of my improved burner for liquid fuel, taken on the line *c c*, Fig. 2. Fig. 2 is a vertical section thereof on the line *k k*, Fig. 1.

Similar letters of reference indicate corresponding parts in all the figures.

This invention has for its object the production of a burner to be used in steam-boilers and for other heat-generating purposes with liquid fuel and steam; and consists, principally, in the combination of a shell which has an outlet and contains two chambers, adapted, respectively, for the admission of liquid fuel and steam, with a spindle-valve which is hollow above its valve portion and communicates with one of the chambers.

The invention also consists in the details of improvement hereinafter more fully pointed out.

In the accompanying drawings, the letter A represents the shell of my improved burner. This shell, which may be circular or of other form, is provided with a top plate, B, and a bottom plate, C, and with an inner horizontal partition, D.

A pipe, E, extends from the partition D to the bottom plate, C, as shown in Fig. 2, and is, preferably, concentric within the shell. Thus there is within the shell an upper circular or large chamber, *a*, and a lower annular chamber, *b*. Through the bottom plate, C, are inserted the valve-spindles F F, which extend upward through the partition D, and into or against the top plate, B. Part of each valve-spindle F, which passes through the partition D, is screw-threaded and matches a thread in the partition, so that by turning each spindle by means of a hand-wheel, *d*, at its lower end it will be screwed up or down at pleasure.

Directly below the screw-threaded part above referred to each valve-spindle forms an enlargement or valve, *e*, which, when the spindle is screwed up, as shown at the right-hand side of Fig. 2, bears against a corresponding valve-seat, *f*, that is formed at the lower part of the partition D. The uppermost end of each spindle *f* is tapered to fit a tapering cavity, *g*, in the lower part of the top plate, B.

The discharge nozzle or aperture *h*, for the escape of the fuel and steam from the burner, communicates in each instance with the cavity *g*, as shown, there being as many discharge nozzles or openings *h* as there are spindles F.

Each valve-spindle is solid below its valve *e*, but tubular above the same, as shown, a passage, *i*, leading through the body of the valve *e* into the inner bore, *j*, as shown.

Where each valve-spindle passes through the bottom plate, C, it extends through a suitable stuffing-box, *l*.

Steam is supplied to the annular chamber *b* through a pipe, *m*. The liquid fuel is supplied to the chamber *a* through an inner pipe, *n*.

When the apparatus is to be used the spindles F are screwed down to admit steam through the passages *i* into the inner bores, *j*, whence it escapes through the orifices or nozzles *h*, creating sufficient suction while escaping to insure the proper discharge of liquid fuel from the chamber *a* through the same nozzles *h*.

The farther the valve *e* is moved down to make a larger opening for the escape of steam, the larger is also at the same time the opening for the discharge of the liquid fuel. Thus I can regulate with nicety the discharge-openings for steam and fuel, and yet always insure their equal relation to each other.

If the pressure of steam is excessive, a slight turn of the wheel *d* will suffice to reduce its effect on the burner. In every respect full adjustment of parts is provided for.

The same burner can be made with a suitable number of valve-spindles, of which any desired number can be used at one time. Thus the same apparatus can be used for the furnaces of large or small engines or boilers.

I claim—

1. The combination of the shell A, containing chambers *a* and *b*, and outlet *h*, with the spindle-valve F, which is hollow above its valve portion, and provided with the aperture *i* at its valve portion, substantially as herein shown and described.

2. The combination of two or more spindle-valves, F F, with the shell A, having partition D and two or more outlets, *h*, substantially as herein shown and described.

3. The shell A, having partition D and inner pipe, E, and provided with one or more valve-seats, *f*, in the partition, and with an outlet, *h*, above each valve-seat, for combined action with one or more spindle-valves, F, having aperture *i* and inner bore, *j*, substantially as herein shown and described.

HENRY A. BRADLEY.

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