

J. J. RIDDLE.
Vapor Gas Burner.

No. 50,845.

Patented Nov. 7, 1865.

Fig. 1.

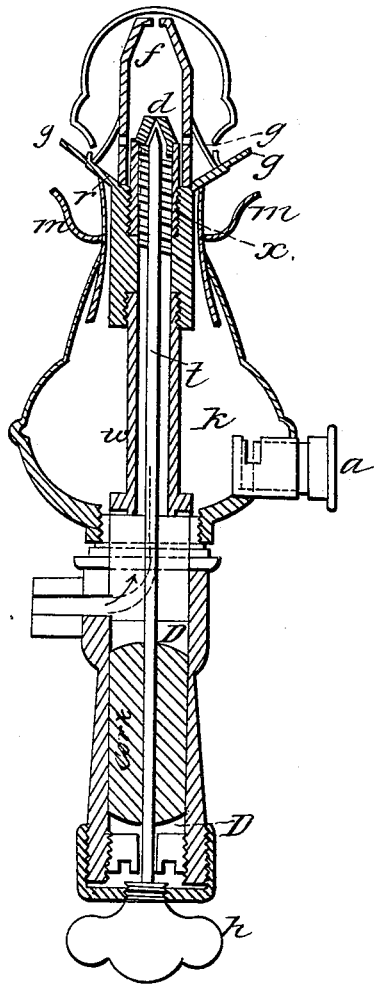
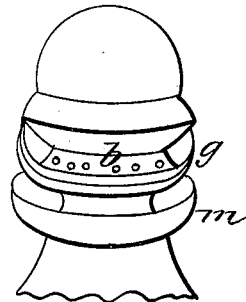


Fig. 2.



Witnesses:

Thomas Superb
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Inventor:

J. J. Riddle

UNITED STATES PATENT OFFICE.

JOHN J. RIDDLE, OF CINCINNATI, OHIO.

IMPROVEMENT IN VAPOR-GAS BURNERS.

Specification forming part of Letters Patent No. 50,845, dated November 7, 1865.

To all whom it may concern:

Be it known that I, JOHN J. RIDDLE, of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Vapor-Gas Burners; and I do hereby declare that the following is a clear, full, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a vertical section; Fig. 2, a perspective view of the top part of the burner.

Similar letters of reference indicate corresponding parts in the drawings.

This invention relates to a new and improved method of burning vapor-gas.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

The burner and the parts essential to the burner consist of the following: The shell of the burner fastened to plate *g*, Fig. 2, the flue and burner-stem *f*, Fig. 1, screwing onto tube *x*, holes *Q* in *f*, air-chamber *r*, perforated plate *g*, brazed onto flue or stem *f*, nipple *d*, screwed or brazed into tube *x*, alcohol-cup *m*, tube *W*, air-chamber *K*, needle *t*, and the heating-coil or meter-cloth around its upper end, stuffing-box *D*, into which *W* is screwed or soldered, and the lever *h*, on or into which needle *t* is fastened or worked. Needle *t*, the lower end of which is round, straight, and smooth, passes through the center of box *D* and tube *W*. Box *D* is filled with cork compressed around said needle, which is conical at the top, the largest diameter of the cone being less than that of the needle, thus leaving a shoulder which strikes against the lower end of nipple *d*. This shoulder is made to prevent the nipple from being enlarged. Needle *t* is worked to a very fine point and passes a short distance through nipple *d* for the purpose of keeping the nipple at all times clean. The hole in the nipple can never be enlarged, and is too small for flame to pass through. Being made of brass, it cannot corrode. The point of needle *t* cannot be oxidized, being always surrounded with vaporized oil. The said needle, which closes nipple *d* oil-tight, when desired, is worked up and

down by means of a screw, lever, cam, or other ordinary mechanical device attached to its lower end at the bottom of box *D*.

In case soot accumulates in the lower end of said coil it is necessary to remove it easily and speedily. This I do by making sufficient length of that part of the needle in said coil any shape which will cut the soot when the needle is turned round. Work needle *t* up and down a few seconds while gas is flowing through, and the soot is ground up and all forced out.

To burn coal-oil with perfect combustion not only a high heat but a proper quantity of air must be thoroughly mixed with the gas ascending in flue *f*. I pass a current of air through the air-regulator *a*, in any quantity desired, into the hollow chamber *k*, and up through the openings *c* in plate *g* into chamber *r*, and through holes *Q* in flue *f* over nipple *d*, when it ascends flue *f* with the vaporized oil, and both being thoroughly mixed, descend in the burner outside of chamber *r*, and are ignited at the holes or slots *b*. Chamber *r* fits flue *f* tightly just above holes *Q*. Plate *g* has one or more openings, *c*, through it into chamber *r*. The burner is first made hot enough to vaporize the oil by filling cup *m*, which should always be screwed or slipped up tight against plate *g*. When the cup *m* is lowered the alcohol-flame passes through openings *c* and *Q* to the inside of the burner, by which means the burner is sufficiently heated in a few seconds—in half the time it could be without the openings *c* and *Q*.

By means of the openings in plate *g* and flue *f* and hot-air chamber *r*, I am enabled to freely pass air over nipple *d*, placed as aforesaid in *x* at any point in the body of the burner. By this arrangement, *x* and *d* being very hot, soot or substances in the oil, which, for lack of heat, would otherwise be deposited in *x* and *d*, are prevented or consumed. The velocity of the gas is thus unimpaired and everything kept clean. The flue *f*, which is very essential for draft, is also, by its being tapered, a complete mingler of the air and gas.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The needle *t*, shaped and operated as aforesaid, for the uses and purposes before mentioned.

2. The holes *Q*, or their equivalent, placed at any point in the stem or flue *f* within the body of the burner.

3. The hot-air chamber *r*, or its equivalent, through which air freely passes to holes *Q* and mingles over nipple *d* with the gas issuing therefrom.

4. The plate *g*, or its equivalent, with one or

more openings, *e*, in it, for the uses and purposes mentioned substantially.

5. The flue *f*, or its equivalent, above the nipple, for draft and mingling purposes.

6. The tube *x*, passing into the body of the burner, for heating purposes.

J. J. RIDDLE.

Attest:

THOMAS BUSSERT,
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