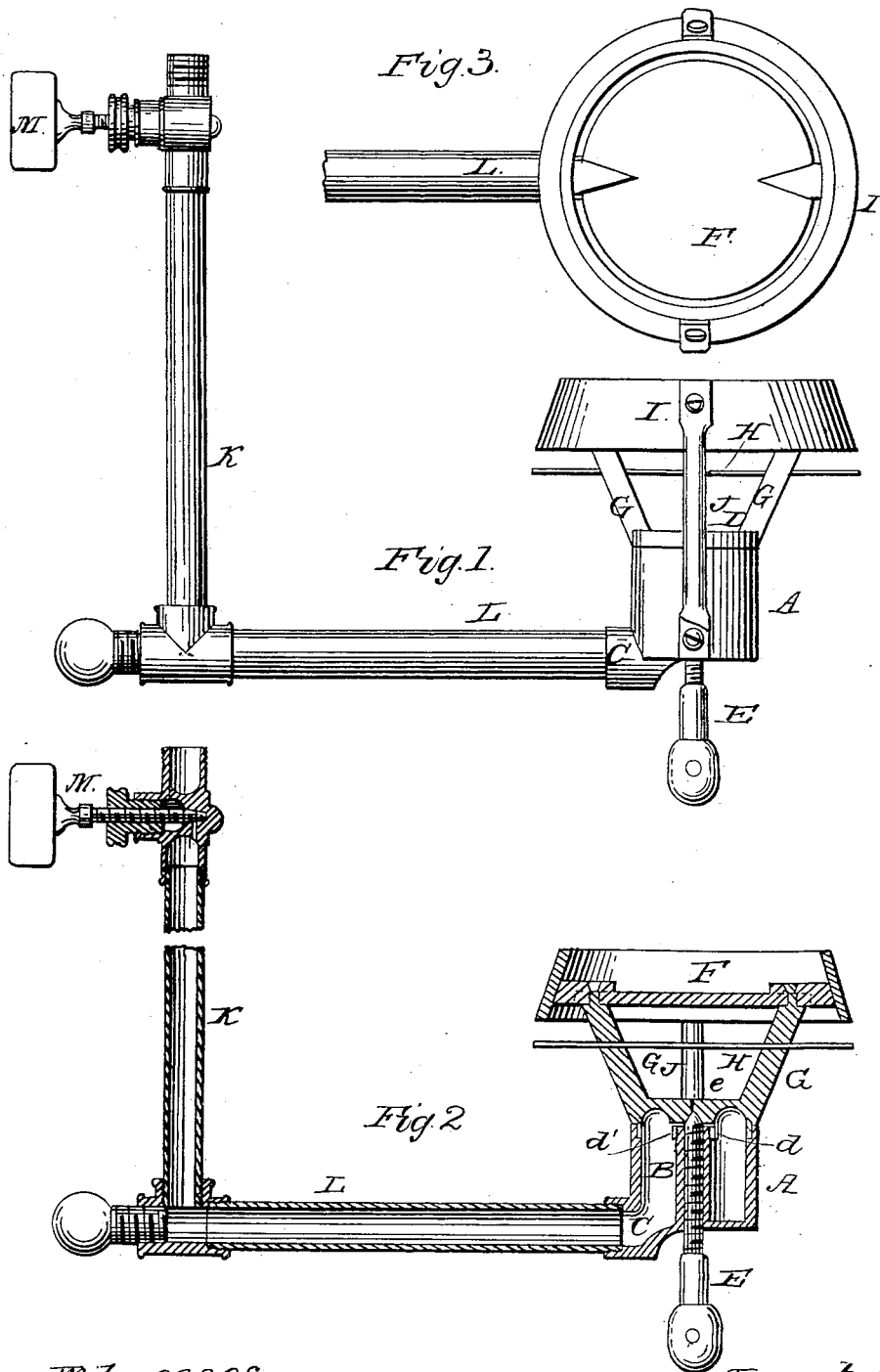


J. S. GRAY.
Vapor Burner.

No. 45,600.

Patented Dec. 27, 1864.



Witnesses
Th. Lang
Fr. Schmidt.

Inventor
James S. Gray
by his attorney
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UNITED STATES PATENT OFFICE.

JAMES S. GRAY, OF NEW YORK, N. Y.

VAPOR-BURNER.

Specification forming part of Letters Patent No. 45,600, dated December 27, 1864.

To all whom it may concern:

Be it known that I, JAMES S. GRAY, of the city, county, and State of New York, have invented a certain new and useful Improvement in Vapor-Stoves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 represents a view in elevation of so much of a vapor-stove embracing my improvement as is necessary to illustrate my invention. Fig. 2 represents a vertical central section through the same, and Fig. 3 represents a plan or top view of the ring and heater-cap.

It is the object of my invention to provide a vapor-stove capable of burning the heaviest kerosene or the heaviest naphtha, and of producing an intense heat, while avoiding the hissing noise of the escaping vapor and the overflow of the fluid-chamber; and the improvement herein claimed consists, first, in a conical ring or supplementary heater encircling the heater-cap, so as to deflect the heated products of combustion escaping round its edges and concentrate them upon the article to be heated; secondly, in so combining a solid heater-cap and a supplementary ring with a fluid-chamber that the heat conducted from one shall be conducted to the top and the other to the bottom of the fluid-chamber; thirdly, in placing a fine wire or thin strip of metal, or its equivalent, between the jet and heater-cap, to divide the jet and prevent the hissing of the escaping vapor; fourthly, in a novel mode of combining a fluid-chamber, two or more conductors or supporting-standards, a division-wire, and a heater-cap, as hereinafter more fully shown; fifthly, in a novel mode of combining a fluid-chamber, division-wire, conductors, heater-cap, and supplementary ring, as hereinafter more fully shown; sixthly, in constructing the fluid-chamber with a central tube, to prevent the residuum from leaking from the chamber; seventhly, in constructing the fluid-chamber with a central tube screwing into a perforated thimble on the under side of the cap.

In the accompanying drawings, which exemplify one mode of carrying out the objects of my invention, a fluid-chamber, A, is shown

as constructed of a cylindrical form, with a tube, B, in its center, extending to the top of the chamber, and an aperture, C, for the admission of the fluid. A solid cap or cover, D, fits the top of the fluid-chamber, and has a thimble, *d*, on its under side, provided with a female screw, to receive the screw on the upper end of the central tube B, and with apertures *d'* for the passage of the vapor to the jet *e*, the flow of the vapor being regulated by the screw valve E. A solid heater-cap, F, is supported above the fluid-chamber by the standards or conductors G in the usual way. A fine wire, H, or other equivalent, is inserted in the conductors G, so as to be about midway between the fluid-chamber and heater-cap and parallel to them. The escaping vapor impinges upon this wire, which divides it, and thus prevents the hissing incident to such burners, as heretofore constructed.

In order to produce a more intense heat and to adapt the stove to burn effectively the heavier hydrocarbons, I encircle the heater-cap F with a conical ring, I, supported upon conductors J, attached to the fluid-chamber near its bottom, an annular space being left between the ring I and cap F for the passage of the products of combustion.

The operation of the burner is as follows: The fluid is supplied from an elevated reservoir in the usual way, and enters the fluid-chamber A through the pipes K L, its flow being regulated by a stop-valve, M. When the fluid is heated in any well-known way sufficiently to volatilize a portion of it, the vapor escapes through the jet *e*, and impinges upon the division-wire H, which divides the jet and prevents its hissing. The vapor then strikes the heater-cap, where it is ignited, and burns upon its under surface, the heated products of combustion escaping through the annular space between the heater-cap and ring I, which latter deflects and concentrates them at a point just above the heater-cap, thus producing an intense heat there. The cap and ring soon become very hot, and conduct the heat to the fluid chamber to continue the volatilization, the conductors of the cap being connected to the top of the fluid-chamber, while those of the ring are connected to the bottom thereof. By this means an intense heat is produced and the heaviest fluids can

be used. When burning lighter fluids, the supplementary ring may be dispensed with. As the tube B rises as high as the top of the fluid-chamber, it is obvious that no fluid can drip through the hole for the screw-valve E, unless the chamber itself be flooded, which rarely happens, and thus a frequent source of annoyance is avoided. The tube, moreover, serves as a heat-conductor, to aid in volatilizing the fluid.

It is deemed unnecessary here to show or describe the other parts of the stove, as they form no part of the subject-matter herein claimed, and their mode of construction is well known to skillful stove-manufacturers.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. The conical ring or supplementary heater encircling the heater-cap, substantially in the manner described.

2. The combination of a heater-cap and ring-heater with a fluid-chamber, by means of conductors arranged and operating so as to

communicate heat both to the top and bottom of the fluid-chamber, as described.

3. The division-wire H, or its equivalent, to divide the jet and prevent hissing, as set forth.

4. The combination of a fluid-chamber, conductors, division-wire, and heater cap, substantially as described.

5. The combination of a fluid-chamber, division-wire, heater-cap, and ring, substantially in the manner described.

6. Constructing the fluid-chamber with a central tube for the screw-valve, to prevent overflow and impart heat, as described.

7. The combination of the fluid-chamber, central tube, and perforated screw-cap, when constructed, arranged, and operating as described, for the purposes specified.

In testimony whereof I have hereunto subscribed my name.

JAMES S. GRAY.

Witnesses:

S. W. ROWELL,
H. F. FIELD.