(No Model.)

F. RHIND.

GAS BURNER.

No. 475,800. Patented May 31, 1892.

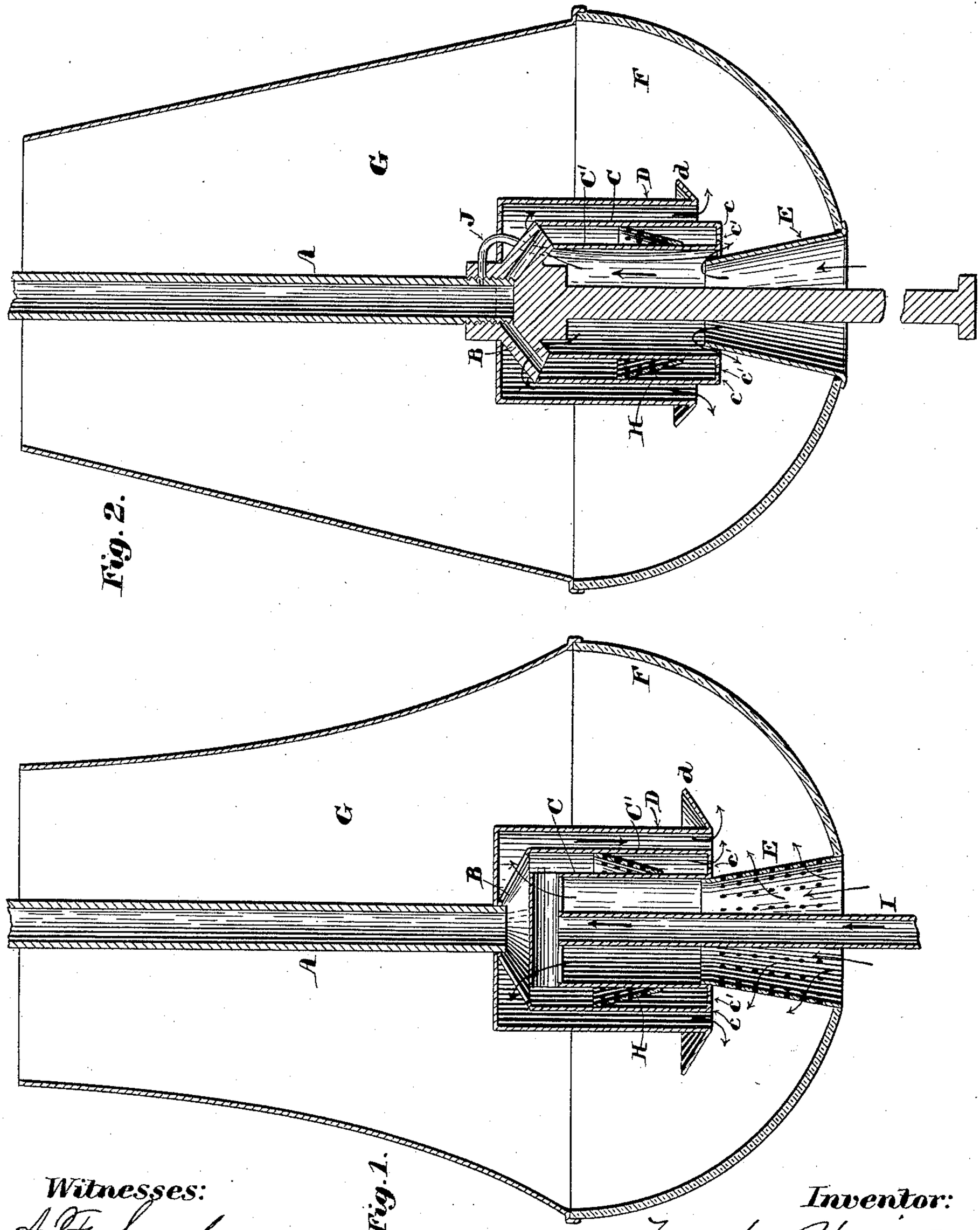

Fig. 2.

Fig. 1.

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UNITED STATES PATENT OFFICE.

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GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 475,800, dated May 31, 1892.

Application filed November 12, 1889. Serial No. 330,071. (No model.)

To all whom it may concern:

Be it known that I, FRANK RHIND, a citizen of the United States, residing at Meriden, New Haven county, Connecticut, have invented a new and useful Improvement in Gas-Burners, of which the following is a specification.

My invention relates, chiefly, to burners of the Argand or a similar type. It is advantageously applied to regenerative gas-burners and is adapted to burners where gas alone is consumed or where the gas is previously mixed with air, as in the Bunsen burner.

In the accompanying drawings, Figure 1 represents in vertical section an inverted Argand-Bunsen gas-burner. Fig. 2, also in vertical section, shows an inverted Argand burner modified in detail.

The same letters refer to like parts in the several views.

A designates a gas-inlet pipe; B, a connecting-tube; C, an inner and C′ an outer burner-wall; *c*, an emission-plate; *c′*, an orifice; D, an inclosing shell; *d*, a deflector; E, an air tube or shell; F, a globe; *f*, an aperture; G, a chimney; H, a foraminous baffle; I, a tube or handle; J, Fig. 2, an auxiliary gas-tube.

The example of my invention illustrated in Fig. 1 of the drawings is constructed and operated as follows: The gas-inlet pipe A, connecting-tubes B, concentric shells C and C′, emission-plate *c*, and orifices *c′* are of the usual construction. As shown, the emission-plate *c* is integral with the shell C. Fitting closely around the lower end of the pipe A is the inclosing shell D, to the lower edge of which is secured the deflector *d*. The upper end of the foraminous tube E is of a size to fit into the lower end of the inner shell C and may be secured therein in any desired manner. At its lower end the tube E is provided with a bead or projection adapted to support the translucent globe F, which is provided with a circular aperture *f* at its lower end, through which the tube E may pass. The globe F supports the chimney G, which may preferably be made of sheet metal. The air required to support combustion enters through the aperture *f* in the globe F. A portion of this air passes through the perforations in the tube E to the lower mantle of the flame. Another portion of the air passes up through the tube E and wall C, around the connecting-tube B, and downward between the wall C and the outer shell D to the upper mantle of the flame.

Within the tube E and wall C is the tube I, open at its lower end and connected at its upper end to the burner-body. Through this tube air passes upward and mixes with the gas in the annular space between the shells C and C′. To aid in this commixture and to prevent eddies of air or gas at the orifices *c′*, I place between the shells C and C′ a reticulate or foraminous baffle H, substantially in the form of a cone-frustum.

I am aware that flat annular disks of foraminous metal have heretofore been placed between the shells of an Argand burner to break up currents of gas. By making these "strainers" in the shape of a cone-frustum I greatly increase the foraminous surface and am consequently enabled to make the perforations smaller and to divide the gas more evenly without increasing the resistance to its flow.

In Fig. 2 of the drawings I have shown a device for cutting off the supply of gas from the burner and means for securing a perpetual or "day" flame. The lower end of the gas-inlet pipe A is externally screw-threaded. The connecting-tubes B are connected with a block internally screw-threaded to receive the threaded portion of the pipe A and provided with a solid end, against which the end of the pipe A may seat, thus effectually preventing the flow of gas from the pipe A when the block is screwed firmly on the pipe. It is obvious that the end of the pipe A and the seat in the block may be fitted to each other in any well-known manner. In practice, however, the square end shown in the drawings is found to make an efficient gas-tight joint.

I have shown a handle depending from the block, by which the block and burner-body may be conveniently rotated on the pipe.

When it is desired to make a burner of this description "self-lighting"—*i. e.*, to provide it with a small flame for relighting the principal flame—the side of the pipe A is provided with a small aperture adapted to register with a hole drilled through the side of the block when the block is screwed up tightly against the end of the pipe A. Connected with the hole in the block

is the auxiliary gas-tube or "thief" J, which passes between the connecting-tubes B and ends near the emission-plate *c* of the burner-body. When the gas is cut off from the burner-body by screwing up the block against the end of the pipe A, as shown in the drawings, a small stream of gas will pass through the aperture in the pipe A, through the hole in the block, and through the tube J. The gas issuing from the free end of the tube J being lighted serves to ignite the gas issuing from the orifices *c'* before it is itself cut off by the rotation of the block on the pipe A. In the same way the "torch" flame is relighted by the principal flame, so that both flames are never ignited at the same time, except during the instant when the block is being rotated on the pipe. The free end of the tube J being inclosed by the walls C and C' and the shell D, the torch-flame is effectually protected from the danger of being extinguished by cross-currents of air. In the drawings I have also shown the air-supply tube E as imperforate and of a diameter at its upper end less than that of the tube C. In this case air to supply the lower mantel of the flame will flow over the upper end of the tube E and outward between the tube E and burner-tube C.

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

1. In an Argand-Bunsen gas-burner, the combination of a burner-body consisting of interior and exterior walls, means for the admission of gas to the space between said walls, and a tube within the inner wall of said burner-body, adapted to convey air to the space between said walls, substantially as described.

2. In a gas-burner, the combination of a gas-inlet pipe screw-threaded near its end, a burner portion screw-threaded to engage with said pipe, a seat in said burner portion adapted to close the end of said pipe, and means for rotating said burner portion on said pipe, whereby the supply of gas to the burner may be regulated, substantially as described.

3. In a gas-burner, the combination of a gas-inlet pipe screw-threaded near its end, an aperture in the wall of said pipe also near its end, a burner portion screw-threaded to engage with said pipe, a hole in said burner portion adapted to register with the aperture in said pipe when the end of said pipe is closed by said burner portion, and an auxiliary gas-tube leading from said hole to or nearly to the gas-emission orifices of said burner, substantially as described.

4. In an Argand gas-burner, the combination of a gas-inlet pipe, a burner portion adapted to rotate on said pipe, and an auxiliary gas-tube adapted to rotate with said burner portion, substantially as described.

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Witnesses:
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