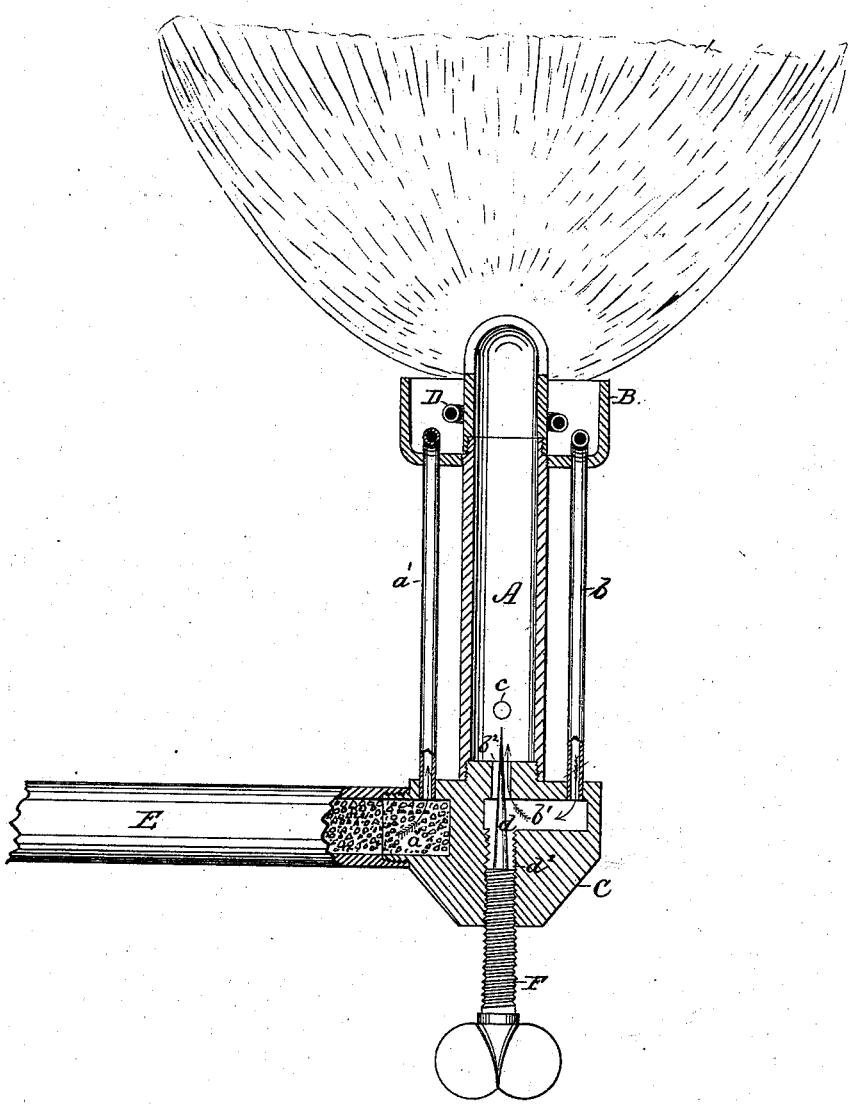
W. H. RUSSELL.
Gas-Burner.

No. 214,710. Patented April 22, 1879.



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UNITED STATES PATENT OFFICE.

WILLIAM H. RUSSELL, OF SEDALIA, MISSOURI.

IMPROVEMENT IN GAS-BURNERS.

Specification forming part of Letters Patent No. **214,710**, dated April 22, 1879; application filed March 21, 1879.

To all whom it may concern:

Be it known that I, WILLIAM H. RUSSELL, of Sedalia, in the county of Pettis and State of Missouri, have invented a new and Improved Gas-Burner; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which the figure is a vertical section.

My invention is an improvement in gas-burners, which relates more particularly to that class of burners that are employed for burning gasoline, naphtha, &c., for illuminating purposes; but it is applicable to and has value for burning any ordinary permanent gas.

The improvement consists of a burner-tube having a cup near its upper end and a base-piece at its lower end, together with a coil of tubular wire wound around the upper end of the burner and concealed in the cup, the ends of which tubular coil are then extended down to the base-piece and communicate the one with the inlet supply-pipe and the other with a chamber leading into the center of the burner-tube, so that the heat of the flame serves to generate gas in the tubular coil by reason of the proximity of the coils to said flame.

In the drawing, A represents a burner-tube, about the upper end of which is arranged a cup, B, and which at its lower end is connected to the base-piece C. D is a coil of tubular pipe wound around the upper portion of the burner-tube in close proximity to the flame-space, the said coil being concealed from view by the cup. The ends of the coil are extended down through the bottom of the cup and beside the burner-tube to the base-piece C. One of the branches, a', of the pipe enters a chamber, a, of the base-piece, which communicates with the inlet supply-pipe E, and the other of the branches, b, enters a chamber, b^1, in the base-piece, which communicates through orifice b^2 with the interior of the burner-tube. With this construction it will be seen that the gasoline, naphtha, or similar volatile burning-fluid enters through the inlet-pipe E, and passes thence up to the coil D through branch a', at which point it becomes highly heated by the proximity of the flame, and is converted into gas, which passes down the other branch, b, and then rises through the burner-tube and burns at the top of the latter.

To give a steady, bright, and smokeless flame I form in the burner-tube just above the orifice b^2 two or more holes, c, arranged opposite each other, which permit a certain amount of air to enter and become mingled with the gas in the burner-tube to render its combustion more perfect.

With respect to the use of the cup at the top of the burner this serves not only to conceal the coils, but it concentrates the radiated heat, and serves also to collect and hold any surplus liquid that might escape at the burner.

For regulating the burning of the fluid employed there is arranged in the bottom of the base-piece C a set-screw, F, having a thumb-piece on the outside for turning the same. This screw has a tapering pin, d, which rises through the orifice b^2, and at the point of juncture between the pin and the screw-threaded end said screw has a shoulder, d^2. Now, by raising or lowering the screw it will be perceived that the tapering pin is made to increase or diminish the annular space of the orifice b^2, which furnishes means for accurately regulating the amount of fluid burned or light evolved.

For shutting off the light entirely it is only necessary to turn the screw up to its limit, in which position its shoulder d^2 seats itself upon and covers the lower end of the orifice b^2, thus shutting off all communication between the coil and the burner. In arranging this adjusting-screw it need not enter the base-piece from the bottom, as shown, but may be arranged in the side of the same.

For increasing the generation of gas, and also preventing the too rapid flow of the fluid, there is arranged in the inlet-tube, and also in the chamber a of the base-piece, a packing, which consists of small particles, chips, or clippings of metal (preferably copper) or a packing of wire-cloth. This, it will be seen, not only retards the flow of the fluid, but in presenting great surface for the transmission of conducted heat warms the fluid and facilitates the generation of gas.

In using my burner for the ordinary permanent gas, the regulating-screw may be dispensed with, and the gas is then introduced

into the chamber *a*, and made to first traverse the coils before being burned. The effect of the heat is to expand the gas, thus economizing its use, and also to bring it into a better condition for a perfect combustion and brilliant light. When thus used the gas need not be introduced at the side, but communication with chamber *a* may be made through the bottom of the base-piece, so that the burner can be seated upon one of the connections of an ordinary gas-bracket.

Having thus described my invention, what I claim as new is—

A gas-burner consisting of a central tube having a cup at its upper end and a base-piece at its lower end, together with a coil arranged around the burner within said cup, and having its ends extended down and communicating the one with the inlet supply-pipe and the other with the interior of the burner-tube, substantially as described.

The above specification of my invention signed by me this 20th day of March, 1879.

W. H. RUSSELL.

Witnesses:
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CHAS. A. PETTIT.

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