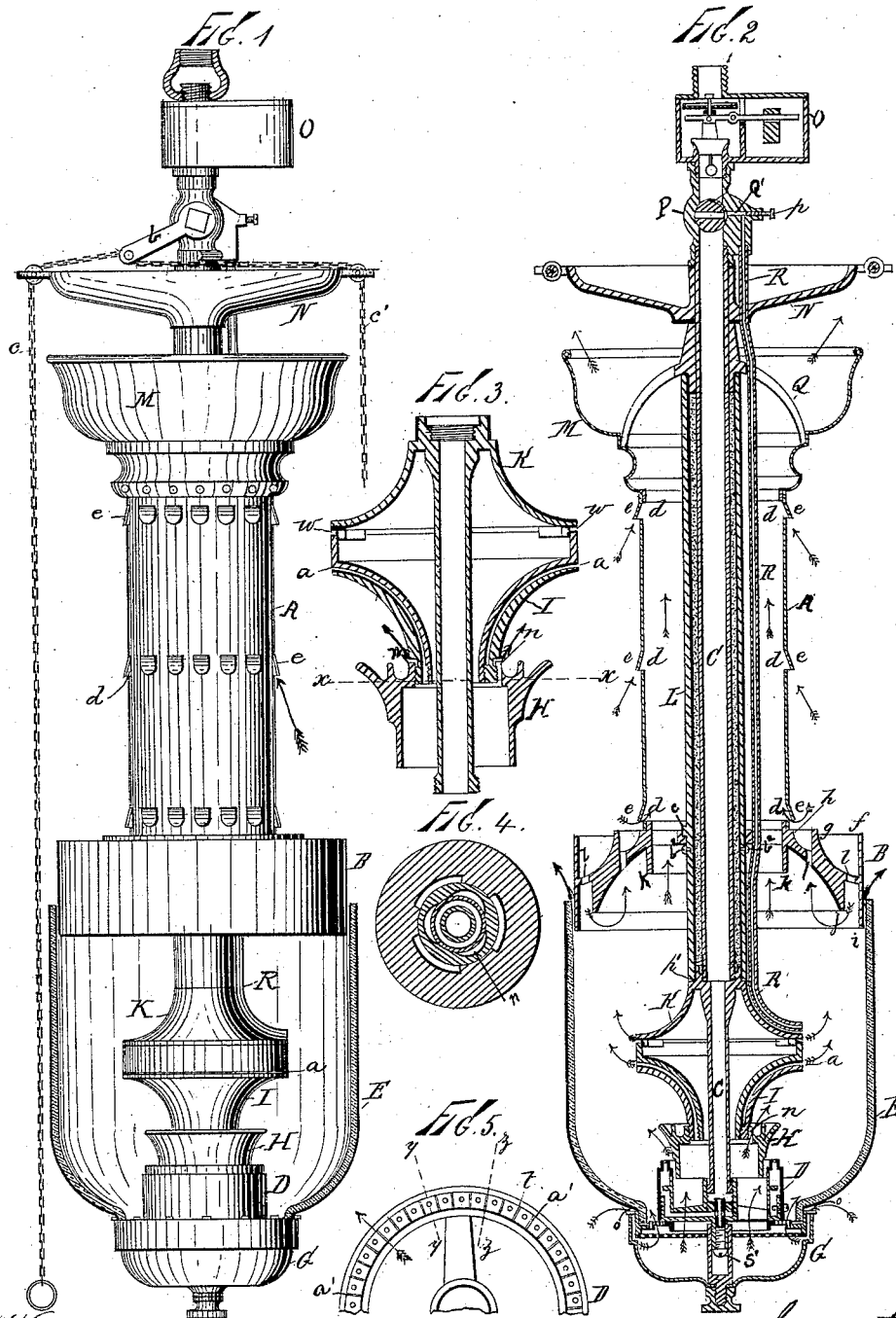


(No Model.)

W. S. MEAD.
GAS BURNER.

No. 419,784.

Patented Jan. 21, 1890.



Witnesses:
John Buckler,
William H. Hargent.

Fig. 6. Fig. 7.

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UNITED STATES PATENT OFFICE.

WILLIAM STODDARD MEAD, OF NEW YORK, N. Y.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 419,784, dated January 21, 1890.

Application filed June 23, 1888. Serial No. 277,987. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM STODDARD MEAD, of the city of New York, in the county and State of New York, have made certain new and useful Improvements in Gas-Burners, not heretofore known or used; and I hereby declare the following specification to be a full and clear description of the same, reference being had to the accompanying drawings.

My invention relates to that class of gas and vapor burners which are usually located at the end of a depending stem or pipe and generally surrounded by a glass globe, the air being admitted from the base of the globe or burner, and one of the objects I desire to accomplish by my improvements is to produce a clear and steady light with the smallest possible quantity of gas or vapor. I also desire by my new arrangement of the different parts of the burner and lamp to keep the pipe leading the gas to the burner at a comparatively low temperature, and thereby prevent the accumulation of carbon in such pipe and the other parts of the apparatus.

My invention comprises new and improved forms and arrangements of the different parts of the burner and lamp, which are more particularly shown by the drawings, and will be described hereinafter, and specifically set forth in the claims.

Figure 1 is an elevation of my burner, showing its exterior appearances. Fig. 2 is a central section of Fig. 1. Fig. 3 is a detached sectional view of the deflector and inverted bell. Fig. 4 is a cross-section through an imaginary line at X X, Fig. 3. Fig. 5 is a plan view of a portion of the burner D, and Figs. 6 and 7 are views of sections taken through the lines Y Y and Z Z of Fig. 5.

In the drawings, A is a casing or hollow cylinder, which is preferably made of thin sheet metal of any ornamental design, and may be nickel-plated. This exterior cylinder is open at the top and bottom, and rests upon a "canopy," so called, which is designated by the letter B.

C is an inner pipe, which conducts the gas or vapor to the burner D. This burner may be of the general usual construction of Argand burners, which I adopt for use in my appara-

tus by tapping a hole through the outer shell into the flange held by the radial arms, and providing such hole with either a screw or a pin, so that when the burner is screwed on or off from the pipe all the parts of the burner will move together. In the center of the bottom of the burner I tap a hole, into which is inserted the hollow screw S', which extends nearly to the open base of the gas-supply pipe C. The hollow screw S' has outlets on its circumference which correspond with the openings in the arms of the Argand burner, so that the gas or vapor will pass through the hollow screw to the outer portion of the burner when the outlets from the hollow screw are opposite the opening of the radial arm; but when the hollow screw is given a slight turn all supply of gas to the burner is cut off.

E is a glass globe resting on a base or support G, which is arranged to be readily attached to and detached from the burner when it is desired to remove the globe. The glass globe is large enough to fit around the canopy B, but not to touch it, leaving an annular space between the two for the hot air to pass out.

H is a circular double-flanged spreader, above which is a double-walled inverted-bell-shaped device I, an air-passage *a* being provided between the two walls and an air-passage also being provided into its hollow interior, which is shown in Fig. 4. Above the inverted bell I is arranged the cap K, on which rests a casing L, surrounding the inner pipe C throughout its length to the top of the casing A. At the base of the inverted bell I are provided slots *n*, formed by cutting away portions of the top of the double-flanged spreader H, through which fresh air will be fed to the flame. The casing A has a separate and enlarged top, so as to form a capital or dome M, and resting on its inner circumference, so as to hold it in place, is a three-armed piece Q, which slides over or is screwed to the central gas-pipe and supports a cap or spreader N, which serves to spread the heat arising and prevent it injuring the ceiling or heating the supply-valve and governor, which are above it.

O is a governor secured to the upper end

of the gas-pipe C. The lamp in practice is attached to a service-pipe at a point above the governor. The construction of the governor O is the subject of a separate patent.

5 P is a cock by means of which the supply of gas to the burner may be regulated, and is operated by the arm *b*, to which are attached cords or chains *c c'* for convenience of operation.

10 In the exterior casing A are the apertures *d d*, partially covered by the overhanging hoods *e e*, so that an additional supply of air will be admitted at these points in an upward direction when the burner is in operation and tend to keep the inner parts cool as well as the casing.

The canopy B is shown in section at Fig. 2 and has six flanges, three of which *f, g*, and *h* are on the upper or outside, and three *i, j*, and *k* depending from the under or inner side. A number of holes or slots *l* are made at the base of the flange *f*, which is outside the casing A, and another circle of holes *m* at the base of the flange *h*. This construction of the canopy B with projecting flanges and holes is to provide a supply of cool air to the inside of the globe at this point without causing a draft or current which would interfere with the blaze or flame from the burner. The cool air is drawn in through the outer series of holes *l* by the flow of heated air coming in at the bottom and up through the interior of the casing A and out of the inner row of holes or slots *m*, as shown by the arrows. By this additional supply of cool air through the holes *l l* in the canopy the heat of the air passing up around the supply-pipe is decreased and the accumulation of carbon in the different parts prevented. By this construction and arrangement of parts some of the heated air produced by the flame will pass out through the annular space or opening between the globe and canopy.

45 The side wall of the cock has a hole *Q'*, so drilled that gas will be admitted to the small pipe R, that extends from the side of the cock down inside the casing A to a point near the lower edge of the cap K. By this arrangement, except when it is shut off by the small screw *p*, the gas flows continually down the pipe R to provide a small flame, which will ignite the gas at the burner when it is turned on and prevent the necessity for removing the globe for lighting.

55 Fresh air is supplied to the lamp by entering through the openings *o* around the periphery of the globe-holder and passes down underneath the globe and under the burner. As the air comes up through the center of the burner, a portion strikes the double-flange spreader H and is forced outward through the small radial slots *a'* between the gas-openings in the annular burner, thereby producing better combustion and preventing the blue flame that is seen in gas-burners. Part of the air passes out through the opening *n n*

in the top of the double-flanged spreader H and is supplied at these points to the flame. A portion of the air is also carried up and passes out at the annular opening *a* around the circumference of the inner and outer walls of the inverted bell, so as to provide an additional supply of air at this point to facilitate the more perfect combustion of the gas or vapor. The air from the interior of the inverted bell also passes out through the annular opening *w* at the base of the cap K. By this arrangement the gas-pipe C is kept comparatively cool by the supply of fresh air passing through the compartment formed by the inverted bell and cap K. In order to prevent the accumulation of carbon on the interior surface of the gas-supply pipe C, I line it with zinc, tin, lead, solder, aluminum, or silver, or their equivalent. Between the central gas-pipe C and the surrounding pipe or casing L, I interpose a filling of mineral wool, slag wool, asbestos, prepared paper, prepared wood, prepared fiber or carbon, so that the pipe C will not be heated and produce the deposit of carbon from the gas passing through it. The pipe or casing L, I also cover with enamel on the outside, which acts as a non-conductor of heat. The double-flanged spreader H, the inverted bell I, and cap K, I prefer to have made of porcelain; but they may be made of iron or copper and covered with porcelain. The cap K and a section of the central pipe C are made in one piece and screwed to the main portion of the pipe C, presenting a shoulder *p*, on which the casing L rests. At the proper point on the casing or pipe L provision is made for the suspension of the canopy B, which rests on one or more offsets or screws *b² b²* to keep it from sliding down. On one side of the pipe L is an offset or pin *c*, which sets into a notch in the inner ring of the canopy and hold it from turning when other parts of the burner are screwed together or unscrewed.

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

1. The combination, in a burner in which gas is supplied from above and air is supplied from below, of a spreader surrounding the downwardly-leading gas-pipe and having a double wall, and an inlet for the air into the passage below said double wall, and an outlet for air above said double-wall passage, and a surrounding globe for inclosing the flame, thereby spreading the flame toward the globe and at the same time protecting the inner gas-supply pipe from overheating, substantially as described.

125 2. The combination, in a gas-burner, of a downwardly-leading gas-pipe passing within an annular flame and surrounded by a globe, a canopy within said globe and surrounding the gas-supply pipe, an exterior casing above said canopy and around the gas-supply pipe, a passage from above the flame into the exterior casing, a passage through said canopy from above for the passage of air into the

combustion-chamber, and hooded openings through the exterior casing, whereby the supply of air is delivered into the combustion-chamber through the canopy and then passes upward within the exterior casing, where it is mingled with additional supplies of air passing through the hooded openings for the purpose of reducing the temperature of the gas-supply pipe, substantially as described.

3. The combination, in a gas-burner in which the gas supplied passes downward through a vertical pipe and the products of combustion pass upward around said pipe, of a pipe exterior to the supply-pipe, an intermediate insulating-jacket placed between the two pipes, and an interior lining of a different metal within the gas-pipe, whereby the excessive heating of the interior pipe is prevented and a consequent deposit upon it of particles of carbon, substantially as described.

4. The combination, in a gas-burner, of an annular burner, a cylindrical globe surrounding the same, a canopy of diameter of less than the said globe and arranged at the open end thereof, whereby there is left an opening between the globe and canopy, the said canopy containing openings for the passage of external air directly into the upper part of the globe, a draft casing or chimney connected with the said canopy inside of the aforesaid openings through the same for drawing upward the products of combustion and the air which has passed into the globe through the openings in the canopy, and a central gas-supply pipe communicating with the burner and passing downward through the draft-

casing, the said elements co-operating to pass upward and outward the products of combustion, while at the same time the gas-supply pipe is kept sufficiently cool by the external air entering through the canopy, substantially as set forth.

5. The combination, in a gas-lamp having an annular burner burning within a globe, of the double spreader H I, the lower spreader H having slots or openings passing therethrough and immediately in contact with the exterior surface of the upper spreader I, and an air-supply for delivering air through said slots and within the flame and between it and the upper spreader I, substantially as described.

6. The combination of a gas-burner burning within a globe and supplied with gas by a vertically-extending pipe, a spreader surrounding said gas-pipe within the flame and at the bottom of the gas-supply pipe and provided with a draft-opening for air therethrough and within the flame, a cap above said spreader and likewise supplied with an air-opening therethrough, and a pipe surrounding the gas-supply pipe and connecting with the air-passage within the cap of the spreader, thereby forming an inner current of air within the flame and the products of combustion for the purpose of preventing the too great heating of the gas in the gas-supply pipe, substantially as described.

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Witnesses:

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