(No Model.)

J. B. FOLEY.

GAS STOVE.

No. 421,258. Patented Feb. 11, 1890.

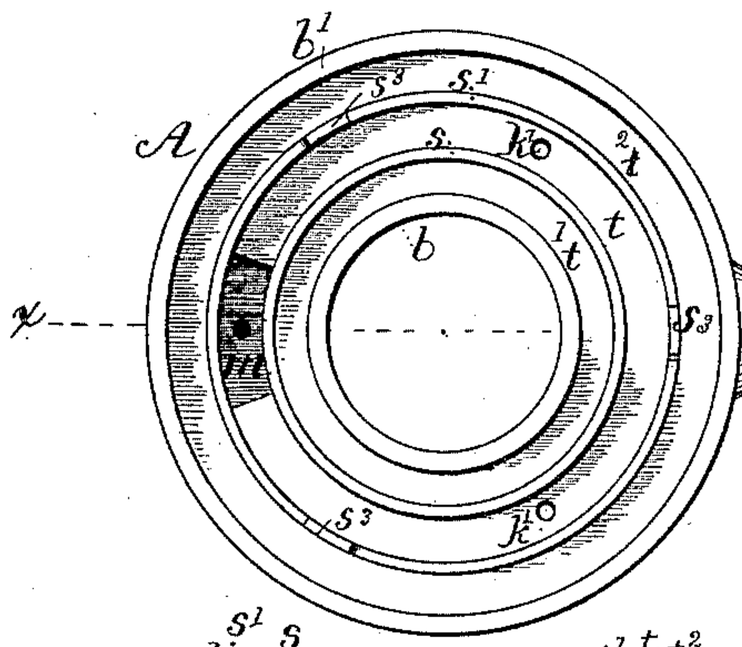


Fig. 1

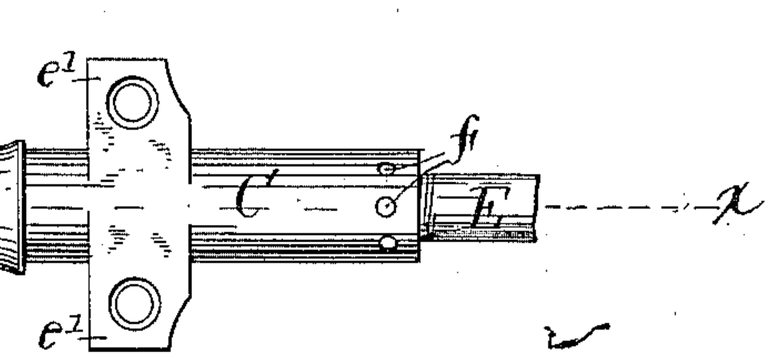


Fig. 2

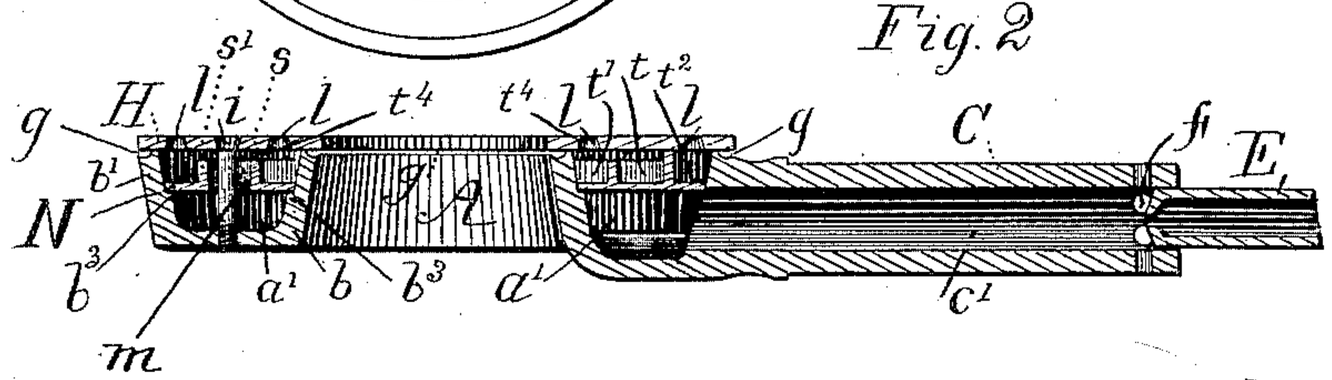
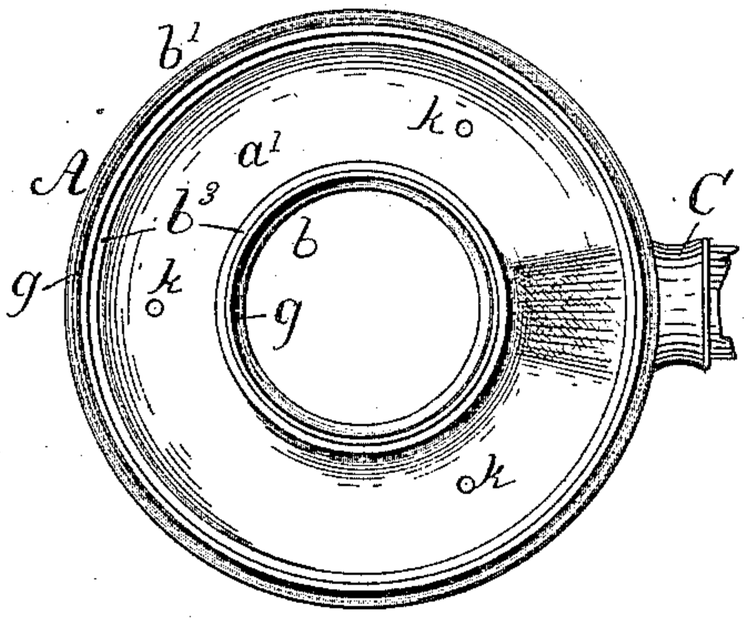


Fig. 3

Fig. 4



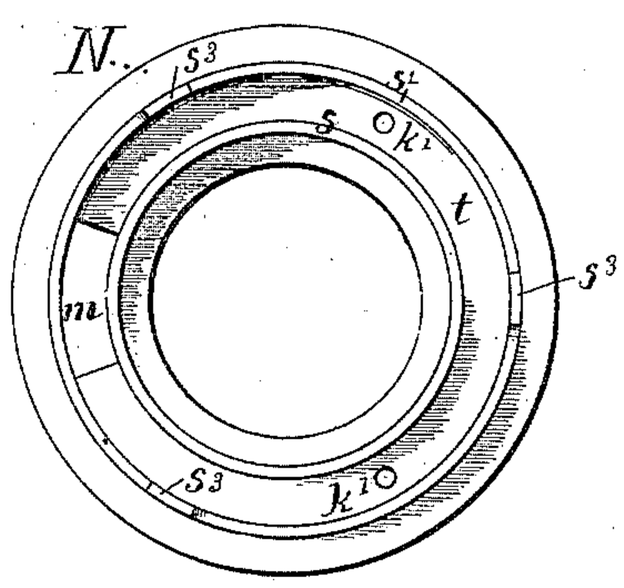
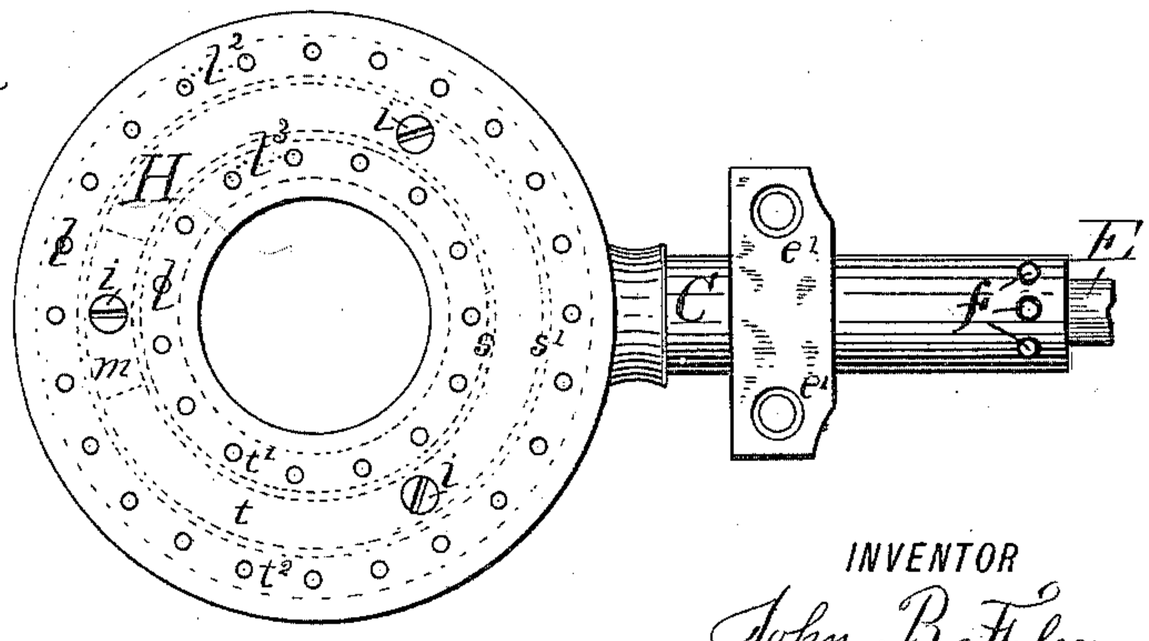


Fig. 5



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GAS-STOVE.

SPECIFICATION forming part of Letters Patent No. 421,258, dated February 11, 1890.

Application filed November 14, 1889. Serial No. 330,244. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. FOLEY, a citizen of the United States, residing at New Haven, in the town of New Haven and State of Connecticut, have invented certain new and useful Improvements in Gas-Stoves, of which the following is a specification.

My invention relates to gas-stoves, and has for its object to provide a gas-stove burner adapted to insure perfect mixing and heating of the gas and air elements and the uniform distribution thereof to the burner-apertures, free from the liability of igniting back into the gas-chamber and air-inlet.

The invention consists in the novel construction of the burner and peculiar arrangement and combination of the passages from the air-inlet to the burner-apertures, as hereinafter more particularly described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of my improved burner with the perforated cover removed, and Fig. 2 is a vertical section on the line *x*, Fig. 1. Fig. 3 is a plan view of the body of the burner. Fig. 4 is a view of the plate which forms the distributing-passages; and Fig. 5 is a plan view of the burner with the perforated cover in place, and having the passages shown by dotted lines.

Referring to the drawings, A designates the body or shell of my improved gas-stove burner, which is of annular shape, and has an annular space a' between its interior and exterior walls $b\,b'$. From the exterior wall b' a tubular part or inlet-pipe C projects radially, the passage c' through which communicates with the annular space a'. The outer end of the inlet-pipe C receives the end of the gas-supply pipe E, which is fitted tightly into the inlet-pipe, or preferably screwed therein. Perforations or air-inlets f are provided near the end of the pipe C, adjacent to the nozzle of the gas-pipe E, for the introduction of air into the gas-current. An annular cap or cover H is closed upon the shell A and fitted snugly against the edges of the walls $b\,b'$, which are slightly grooved out on the sides away from the space a' to form the crevices $g\,g$, (shown in Fig. 2,) for the purpose of receiving and retaining a film of cement or other suitable calking material to prevent leakage. The cover is secured to the plate by means of the screw-bolts i, which pass through the cover and are screwed into threaded perforations k in the bottom of the shell A. The cover is formed with a series of small burner-apertures l, through which the mingled gas and air issues and is burned in small flame-jets in the ordinary manner.

The parts of the burner so far described are old, and shown in Letters Patent No. 368,938, which were granted to me August 30, 1887.

The improvement in my present invention consists in the introduction within the shell A of an annular plate N, which fits between the walls of the shell just above the passage c' to divide the space in the shell into two compartments—viz., a burner-chamber and an initial mixing-chamber leading thereto—and is formed with a port m for connecting the said compartments at a point diametrically opposite the passage c', and is also further provided on its upper side with a series of curved or circular ribs, which form chambers or channels for the even distribution of the mingled gas and air to the burner-apertures in the cover.

Two rows of burner-apertures are shown in the burner here described—an exterior row l^2 near the outer wall b', and an interior row l^3 adjacent to the inner wall b. The outer rib s' on the plate N is placed just within the outer row of apertures, and the inner rib s is arranged just beyond the inner row of apertures, thus dividing the distributing chamber or space above the plate into three annular concentric channels. The central channel t between the ribs $s\,s'$ thus extends centrally between the two rows of apertures $l^2\,l^3$, and has the port m opening into it from the space a', and the other channels t' and t^2 extend around, respectively, under the inner and outer rows of apertures, as shown. The depth of the ribs $s\,s'$ is less than the depth of the space between the plate N and cover H, and thus spaces t^4 are left over the edges of the

ribs, which connect the outer channels t' t^2 with the central channel t all around. On the outer rib s' are three projections s^3, which are of such length that the cover will bear upon them to hold the plate securely in place. To further secure the plate in position and insure a tight joint at the edges thereof, annular shoulders b^3 are formed on the walls of the shell for the edges of the plate to rest upon, and cement may be spread upon the shoulders before the plate is laid in its seat, thus providing against leakage from the lower to the upper side of the plate. Suitable holes k' are provided in the plate for the screws i to pass through.

In use the burner is attached to a suitable base or frame, which may be of any desired pattern or style, and the tubular part C is here shown provided with perforated ears or flanges e' for securing the burner to such a frame; but the base forms no part of my invention, and need not here be shown.

The operation of my improved burner is as follows: The gas being admitted through the pipe E is projected into the tubular inlet c', and a supply of air is drawn into the gas-current through the perforations f. The stream of mingled gas and air then flows through the passage c' into the space a' in the shell below the plate N, where it is divided into two volumes, which pass around between the walls of the shell and reunite in opposing currents at a point diametrically opposite to the inlet-passage c'. This reuniting of the streams effectually mingles and combines the air and gas, which then flows upward through the port m, and is projected against the lower side of the cover and thus further broken up and again divided to flow in two streams around through the channel t. From this channel the thoroughly-mixed gas and air are uniformly distributed into the channels t' t^2 through the small spaces t^4 above the edges of the ribs s s', and then issue through the apertures l and is burned in jets at the outer side of the cover, in the usual manner.

By means of the described peculiar arrangement of the passages in the burner the gas and air elements are thoroughly mixed and combined and uniformly distributed, and also heated, by the protracted contact with the hot walls of the burner, to a temperature which is adapted to promote combustion. The gases are delivered into the channels t' t^2 under the burner-apertures without an appreciable current, thus insuring steady and uniform flame-jets and all of the same intensity, and the length and tortuous shape of the burner-passages preclude the possibility of the passage of flame through them, and the gas is prevented from igniting back from the burner-apertures to the air-inlet or "lighting back," as such effect is termed.

If more than two rows of apertures are provided in the cover, then there will be a corresponding increase in the number of ribs, as it will be preferable to provide a separate distribution-channel in each of the spaces between the rows of apertures.

I therefore claim—

1. In a gas-stove, the combination, with the burner-chamber, of a forked, branched, or divided compartment or passage between the air-inlet and burner-chamber having its separate passages or channels confluent and reunited in a common inlet to the burner-chamber for the purpose of dividing the gaseous volume into separate currents and remingling them in opposing streams to mix and thoroughly combine the gas and air elements.

2. An annular gas-stove burner having, in combination, an annular chamber around its central opening, a burner-chamber adjacent to the annular chamber and communicating therewith by a port, and a gas and air inlet opening into the annular chamber at a point opposite to such port, to divide the gaseous volume and reunite the separate streams in opposing currents to combine the gas and air elements.

3. A gas-stove burner having, in combination, an annular shell provided with a combined air and gas inlet, a plate or cover provided with a series of burner-apertures and fitted and secured upon the annular shell, and an annular partition dividing the space in the annular shell into a burner-compartment and an initial mixing-compartment, which are connected by a port or opening on the side opposite the gas and air inlet, which inlet opens into the initial mixing-compartment, whereby the gaseous volume is divided and reunited and distributed to the burner-apertures with its elements heated, thoroughly mixed, and combined.

4. A gas-stove burner having, in combination, an annular shell provided with an inlet for gas and air, a plate or cover provided with circular rows of burner-apertures and fitted and secured upon the annular shell, an annular partition dividing the space in the annular shell into separate compartments, with the lower of which the said gas and air inlet communicates, and ribs or flanges arranged in the compartment next to said cover to provide distributing-channels therein corresponding to the circular rows of apertures and the spaces between them, the channels being connected by spaces over the said ribs, and the channels corresponding to the spaces between the apertures being connected by an opening or openings with the compartment beneath the plate, for the purpose described.

5. A gas-stove burner having, in combination, an annular shell provided with an inlet for gas and air, a plate or cover provided with circular rows of burner-apertures and fitted and secured upon the annular shell, an annular partition dividing the space in the annular shell into separate compartments, with the lower of which the said gas and air inlet communicates, and ribs or flanges ar-

ranged in the compartment next to said cover to divide the said compartment into annular channels corresponding to the circular rows of apertures and the spaces between them, the channels being connected by spaces over the said ribs, and the channel under the space between the rows of apertures being connected with the chamber beneath by an opening or port diametrically opposite the gas and air inlet into said chamber, for the purpose described.

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