W. A. TURNER.

Gas-Stove.

No. 222,610. Patented Dec. 16, 1879.

Fig. 1.

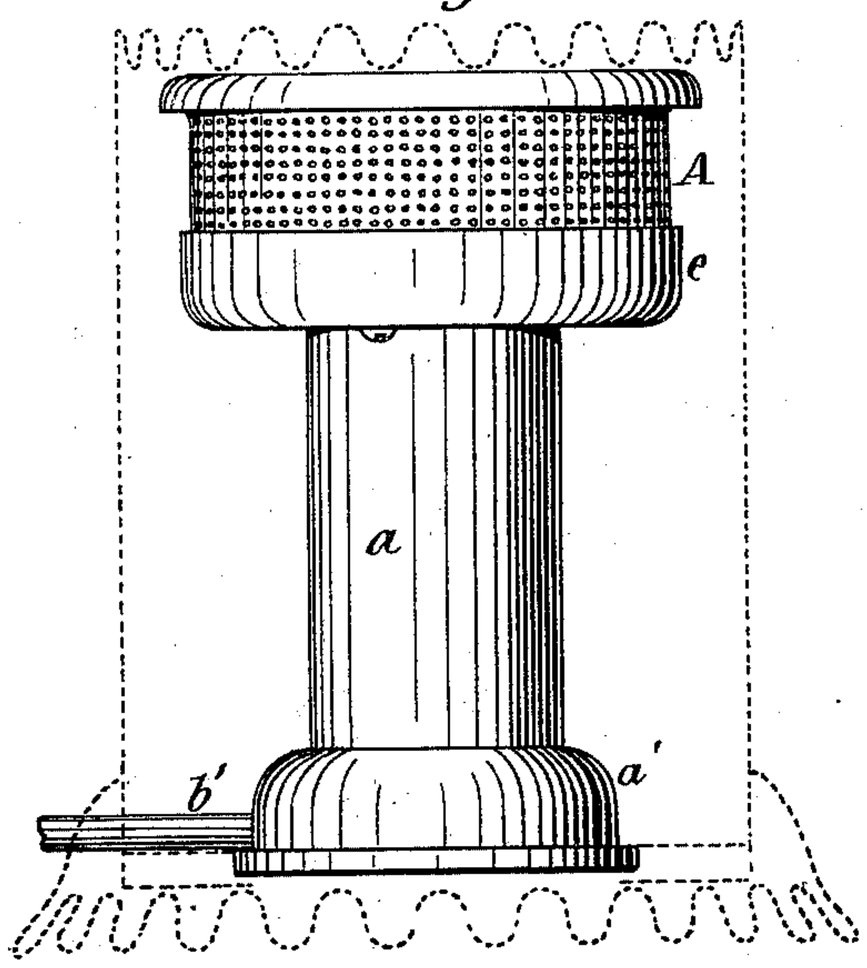


Fig. 3

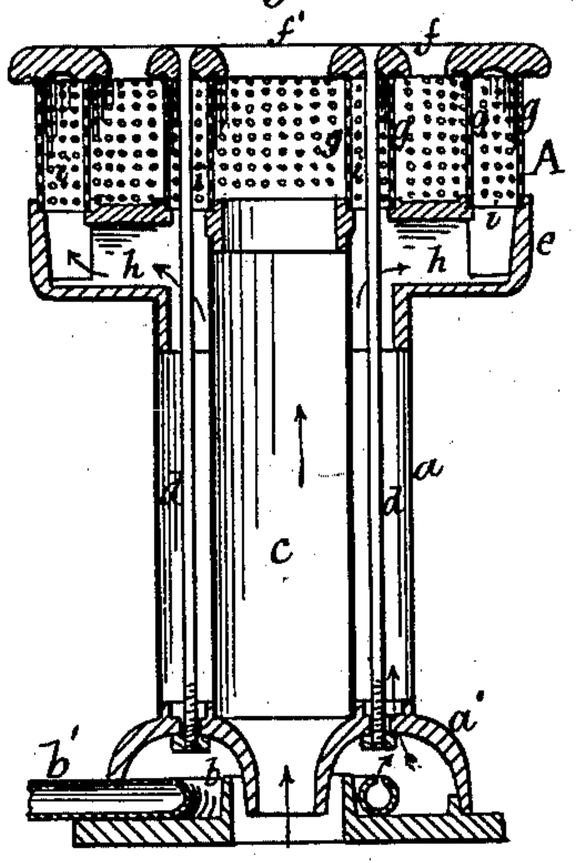


Fig. 2

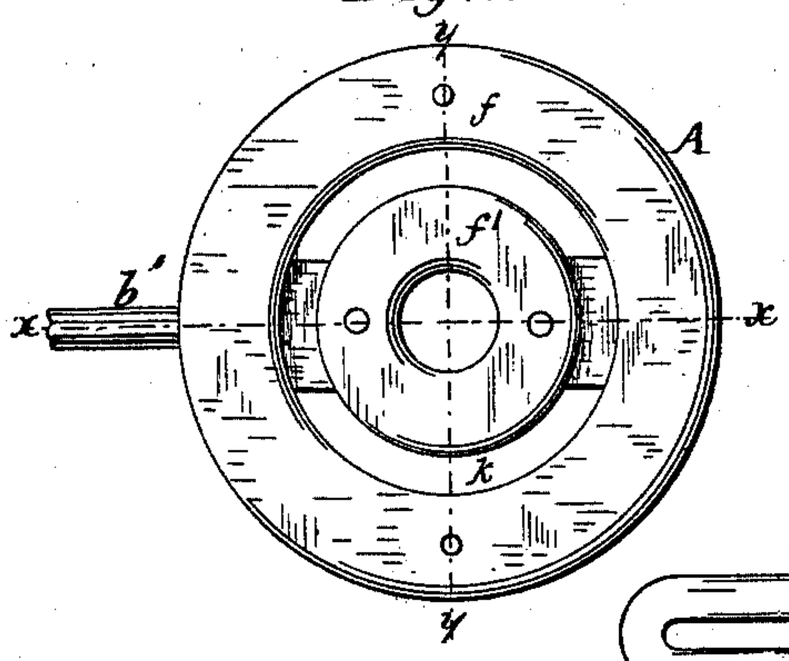


Fig. 4.

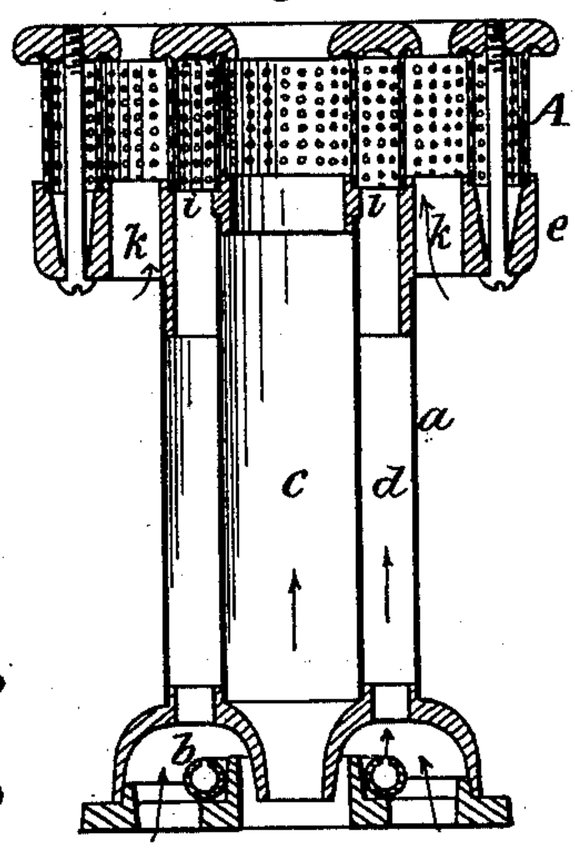
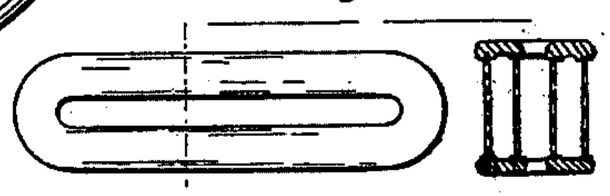


Fig. 5.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN GAS-STOVES.

Specification forming part of Letters Patent No. **222,610**, dated December 16, 1879; application filed October 8, 1879.

To all whom it may concern:

Be it known that I, WILLIAM A. TURNER, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Gas-Stoves; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part thereof, is a clear, true, and complete description of my invention.

The main object of my improvements is to attain, in a stove for burning gases on the well-known Bunsen principle, a widely-varying capacity for burning gas with equally perfect combustion, whether operating at minimum, maximum, or at any intermediate capacity.

It is well known that gas-stoves for domestic uses are practically gaged to a certain number of feet of gas per hour, and that as gas-pressures vary it is difficult in general use to attain uniform results so far as relates to completeness of combustion and its attendant economy, because, for instance, if a gas-cock, when fully opened at a low pressure of gas, should supply the stove to its maximum capacity for burning with complete combustion, the same opening of the cock at a higher pressure would result in the delivery of gas in a quantity greater than could be properly burned, and the proper adjustment of the cock to varying pressures would involve the exercise of more skill and the necessity for greater knowledge of the subject than is common among users of gas-stoves.

My stoves being constructed with special reference to an abundant supply of oxygen, and being provided with an extensive area of gauze or perforated plate for the passage of gas to ignition, are capable of perfect operation at a higher rate of gas per hour than would generally be required, so that, regardless of the delivery of gas in varying quantity, the combustion will be as perfect, and the gas consumed be as fully utilized, as if the delivery of gas to the stove were never varied.

My invention mainly consists in the combination, with a standard containing a central air tube or duct, an annular mixing-chamber for air and gas, and an annular gas-delivery pipe below the entrance to the mixing-chamber, of one or more distributing-chambers connected with the mixing-chamber, having a closed top, and on each side of each chamber a practically vertical wall of perforated plate or gauze.

The form of the distributing-chambers may be varied, but I prefer that they be annular or ellipsoidal; and another portion of my invention consists in the combination, with a standard containing a central air-duct, an annular mixing-chamber, and an annular gas-delivery jet, of two or more concentric annular distributing-chambers, connected by radial ducts with each other, communicating with the mixing-chamber, and provided with closed tops and practically vertical walls of perforated plate or gauze.

I am aware that separate distributing-chambers are not new; but I know of none which have been heretofore employed with a standard having the central air-duct, or which have been connected by radial ducts for securing a uniform distribution of the gaseous mixture within said chambers, by which I attain, when desired, a perfect combustion throughout the full area of perforated plate or gauze.

To more particularly describe my invention, I will refer to the accompanying drawings, in which—

Figure 1 represents, in side elevation, a gas-stove embodying my invention with the usual inclosing-shell, shown in dotted lines. Fig. 2 represents the same in top view. Fig. 3 represents the same in central vertical section on line *x x*, Fig. 2. Fig. 4 represents the same in central vertical section on line *y y*. Fig. 5 represents an ellipsoidal stove-head in top view and section.

Referring to the stove shown in Figs. 1, 2, 3, and 4, it will be understood that a casing (indicated in dotted lines) is employed, as usual, for surrounding the stove proper, and that the latter is supported thereby at proper elevation to allow for free entry of air beneath it, and to also afford a support for cooking utensils immediately above the stove-head A, which is mounted upon the top of standard *a*. The standard has a suitable base, *a'*, and this contains an annular gas-jet pipe, *b*, with a straight arm, *b'*, for connection with flexible gas-tubing. The standard contains a central vertical tube, the interior of which constitutes

an air-duct, *c*, and the space intervening between said tube and the interior of the standard constitutes a passage or mixing-chamber, *d*, in which the gas from the annular gas-jet pipe *b* and air from below mingle and rise to the stove-head.

The air passes upward on both sides of the annular jet-pipe, thus surrounding each jet of gas, and the oppositely-curved surfaces above the jet-pipe are conducive to the admixture of air with the gas as it enters the mixing-chamber *d*.

The stove-head A is in this instance composed of a bed-plate, *e*, two annular cap-plates, *f f'*, and four annular vertical walls, *g*, of perforated metal. The bed-plate *e*, on its upper side, has two annular recesses or channels, one within and concentric to the other, and these are connected by radial passages *h*, which communicate with the top of the mixing-chamber *d* within the standard. The circular vertical perforated walls *g* are fitted to the bed-plate and cap-plates, and are firmly clamped in position by means of screws, which extend from the under side of the bed-plate through the outer cap-plate, *f*, and also by screws which extend from the base of the standard through the mixing-chamber *d* to the inner cap-plate, *f'*. When the parts are thus united two annular distributing-chambers, *i*, are formed, having closed tops and vertical perforated walls, through which mixed air and gas will be delivered to ignition from both the inner and outer sides of the chamber. The space between the two distributing-chambers is obstructed only by the presence of the radial passages *h*, which convey gas and air to the outer distributing-chamber, and said annular space *k* constitutes an air-duct, through which air freely rises from below the head to supply oxygen to the two flames, which are fed by gas and air delivered from the inner and outer coincident perforated plates of the two distributing-chambers.

When gauze or the equivalent perforated plate is arranged in a position practically vertical, for the lateral delivery of gas and air to ignition, only a limited height thereof can be practically utilized. For instance, in the stove described, of ordinary size, I have four perforated plates, each three-quarters of an inch wide, from all of which, to their full capacity, gas and air can be delivered to ignition; but if a single vertical perforated plate were employed of the same diameter as either one of the plates, and having an area equal to the aggregate of the four plates, as shown, it would be practically impossible to utilize the lower portion of said perforated plate; and if this should be therewith accomplished, the flame and heat would be wastefully distributed in a long vertical plane from the lower portion of the plate to its top, whereas in my stove the heat and flame are economically concentrated at the point where they are applied for the purposes for which these stoves are intended.

It will be readily seen that a stove having a single annular chamber with the outer and inner perforated plates, central air-passage, and a closed cap, would embody the main feature of my invention; and such stoves are as desirable for many purposes as those having two or more of such chambers.

I deem it important that two flames from coincident plates of separate chambers unite as one flame above the center of a free air-passage, as in the stove shown in Figs. 1, 2, 3, and 4, and this feature is attained with a single ellipsoidal chamber, as illustrated in Fig. 5, in which case the inner perforated plate presents parallel surfaces, from which the gas and air are delivered laterally and the flames unite as one over the intervening air-space.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the standard containing a central air-duct, the annular mixing-chamber, and the annular gas-delivery pipe, of one or more distributing-chambers communicating with the mixing-chamber, and provided with a closed top and practically vertical walls of perforated plate or gauze, substantially as described.

2. The combination, with a standard containing a central air-duct, an annular mixing-chamber, and an annular gas-delivery pipe, of two or more concentric distributing-chambers connected by ducts communicating with the mixing-chamber, and provided with closed tops and practically vertical walls of perforated plate or gauze, substantially as described.

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