W. M. JACKSON.
Gas-Stove.

No. 205,391. Patented June 25, 1878.

Fig. 1.

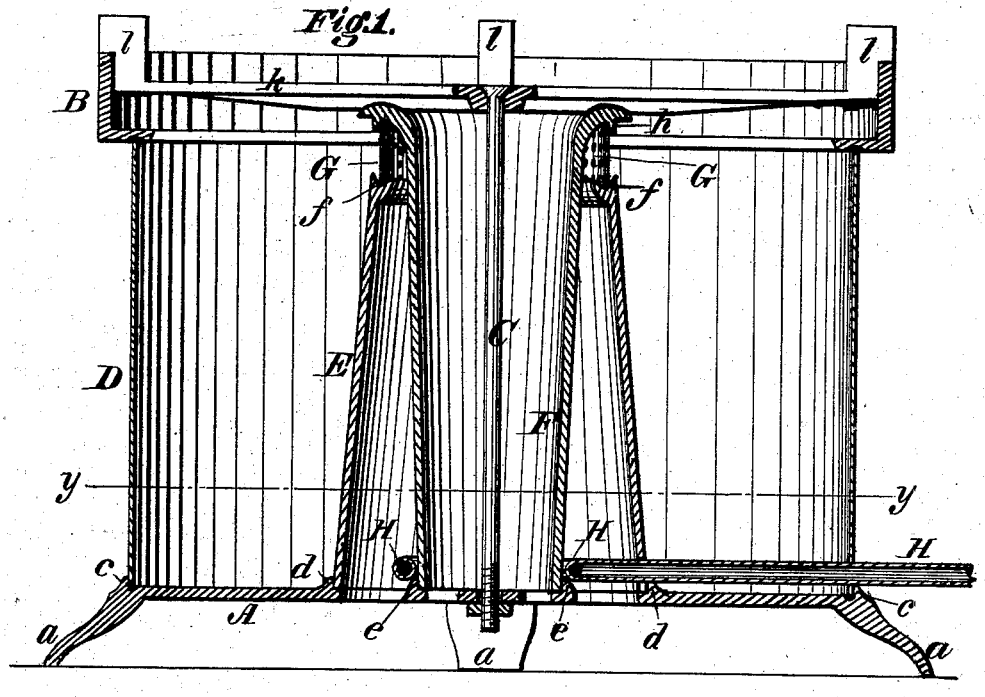


Fig. 2.

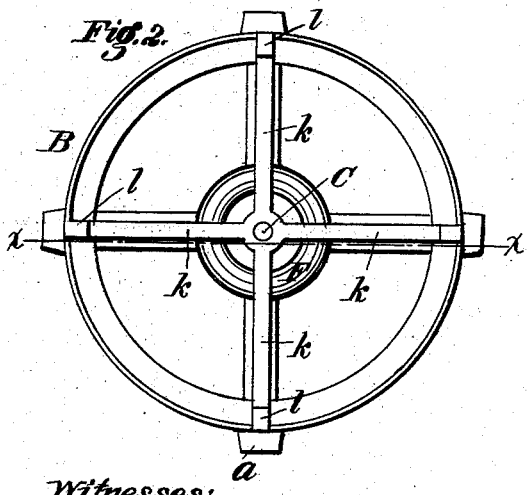
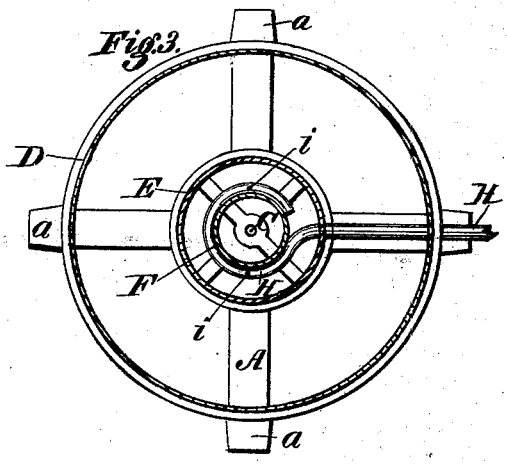


Fig. 3.



Witnesses;
Donn S. Twitchell.
S. M. Madden

Inventor.
W. M. Jackson
By his attys.
Dodger & Son

UNITED STATES PATENT OFFICE.

WALTER M. JACKSON, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN GAS-STOVES.

Specification forming part of Letters Patent No. **205,391**, dated June 25, 1878; application filed March 20, 1878.

To all whom it may concern:

Be it known that I, WALTER M. JACKSON, of Providence, in the county of Providence and State of Rhode Island, have invented certain Improvements in Gas-Stoves, of which the following is a specification:

This invention relates to an improved method of securing the combustion of gas and the production of a high temperature thereby, and to an improved construction of the stove or burner.

The invention consists in the peculiar construction and arrangement of parts hereinafter described.

Referring to the accompanying drawings, Figure 1 represents a vertical transverse section of my stove on the line *x x* of Fig. 2; Fig. 2, a top-plan view of the stove; Fig. 3, a horizontal cross-section of the same on the line *y y* of Fig. 1.

Referring to the drawing, it will be seen that the stove consists, essentially, of base and top plates A B, united by a central vertical bolt, C, and of three upright tubes, D E F, held in position by and between the top and bottom plates. The base-plate A consists of a circular skeleton-plate, provided with supporting legs or feet *a*, and with three annular concentric flanges, *c d e*, the first at the outer edge and the other two at points near the center. The top plate consists of a circular skeleton-plate, corresponding in size to the base, and provided in its under face with an annular groove, and with other peculiarities, which will be hereinafter described.

The outside tube D is made of a cylindrical form, of thin sheet metal, and serves as an outer body for the apparatus.

The tube E is made of a flaring or conical form, and of diminishing diameter toward its upper end, and is seated at its lower end within the flange *d* of the base-plate, by which it is retained firmly in position. In its upper edge the converging tube E is provided with an annular groove, *f*, to receive the lower edge of the annular vertical ring of gauze or perforated metal G, in the manner shown in Fig. 1.

The central tube F has its lower end seated upon the flange *e* of the base-plate, and, diverging gradually as it rises, it terminates at the upper end in a flaring or trumpet-shaped mouth, having a flange, *h*, turned outward, and arranged to bear firmly upon the upper edge of the gauze ring G in the manner shown in Fig. 1, the upper end of the trumpet-mouth bearing against the under side of the cross-bars in the skeleton top plate, which serves to hold the tube down firmly in position upon the base-plate and upon the gauze.

In order to prevent lateral movement of the central tube, the cross-bars of the top plate will be provided on the under side with notches or shoulders to engage with the tube, in the manner shown.

From the above description it will be seen that the single central bolt retains the top and bottom bolts in place, and that the latter in turn hold firmly the three tubes and the wire-gauze.

H represents the gas pipe or tube, extending inward through the side of the apparatus immediately above the base-plate, closely encircling the end of the central tube F, and provided around the tube with a suitable number of small perforations, *i*, through which the gas is discharged into the base of the apparatus. The bottom of the apparatus being open, air may enter freely at the base into the three tubes D E F and the spaces between them.

In operation, the gas, entering through the pipe H, is discharged upward through the perforations around the foot of the tube F, causing an inward draft or suction of atmospheric air, which combines evenly and thoroughly with the gas in the spaces between the tubes E and F.

The mixture of gas and air, ascending between the tubes named, escapes through the wire-gauze and is burned in the outside of the same, the flame acting upon the highly-heated upper part of the apparatus, bringing the two tubes E F, and especially the latter, to a very high temperature throughout their entire length, but particularly at their upper ends. The mingled gas and air, in ascending between these tubes to the point of combustion, becomes very highly heated and issues in the best possible condition to insure a perfect and economical combustion.

The heating of the gas and air is the more thoroughly effected owing to the inclination

and convergence of the two tubes toward their upper ends, the tendency of the gas and air to ascend vertically causing them to impinge strongly against the surfaces of the tubes, in consequence of which they are more thoroughly heated than would otherwise be the case. The heating of the gas by being thrown in contact with a central tube materially increases the draft, and also renders the admixture of the gas and air more thorough and uniform than under other circumstances.

By elevating the temperature of the gas before its combination with the air, it is caused to combine with a much larger volume of air than it would if the admixture occurred while the gas was at a low temperature. As the combustion of the gas proceeds on the outside of the gauze a current of air ascends freely within the central tube F, and also another current of air around the outside of the tube E. These two currents in their passage upward become highly heated, and, meeting the flame at the top of the apparatus, one on the inside and the other on the outside of the same, supply the same freely with atmospheric oxygen, whereby a thorough and steady combustion is effected, the flame burning of a dark blue color and depositing little or no carbon.

Referring again to the top plate, it will be seen that it consists of an annular rim or ring cast complete in one piece, with four radial arms, *k*, through the center of which the vertical bolt *c* passes, and the outer ends of which are provided with upright studs or shoulders *l*, the inner faces of which stand slightly within the inner edge of the top of the ring, as clearly represented in Figs. 1 and 2. The object of this construction is to secure a proper outlet for the products of combustion and the proper combustion of the gas.

When vessels of different sizes are used upon the stove, when the vessel is of small size it fits within the studs *l* and rests directly upon the arms *k*, permitting the vessel to stand close to the top of the central tube, and permitting the products of combustion to pass upward around the outer edge of the vessel. When, however, a vessel of large size is employed, which would cover the entire top of the stove and prevent the escape of the products of combustion, were no means adapted to prevent, such vessel rests on top of the studs *l*, so that the ascending products of combustion may pass off freely under it at the sides.

The studs also elevate the bottom of the vessel above the flame a sufficient distance to permit the latter to expand under its entire surface and heat the same uniformly.

The stove constructed as above described possesses the advantage of being extremely simple and cheap in construction, all the parts except the gas-tube and outside cylinder D being cast complete and ready for use, without requiring to be machined or fitted by hand.

Having thus described my invention, what I claim is—

1. The gas-stove consisting of the top and bottom plates A B, tubes D E F, and gauze G, all united by means of a single bolt, C, substantially as shown.

2. The open central air-tube F, cast in one piece with the flaring upper end in combination with the short tube E and the wire-gauze held directly between the two, in the manner shown.

WALTER MARSH JACKSON.

Witnesses:
P. T. DODGE,
S. M. MADDEN.