(No Model.)

S. STEWART.

HEATING GAS BURNER.

No. 407,134. Patented July 16, 1889.

Fig. 3.

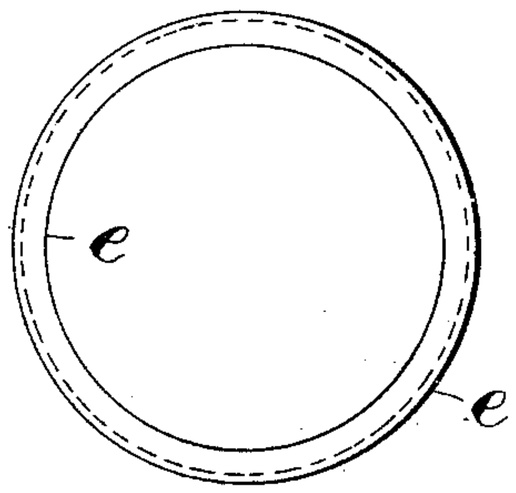


Fig. 4.

Fig. 5.

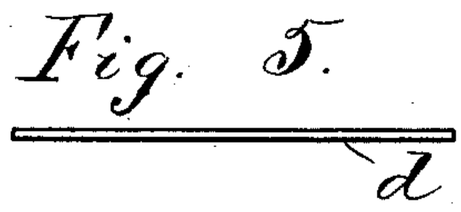


Fig. 6.

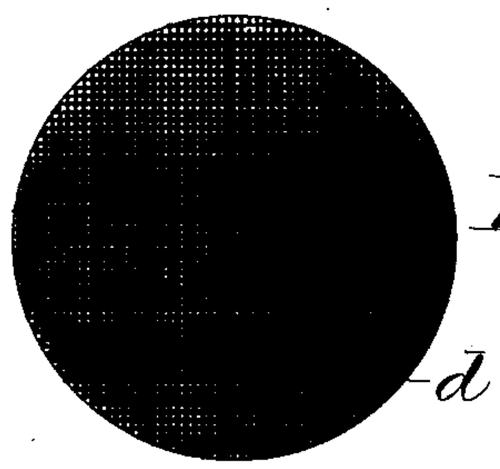


Fig. 2.

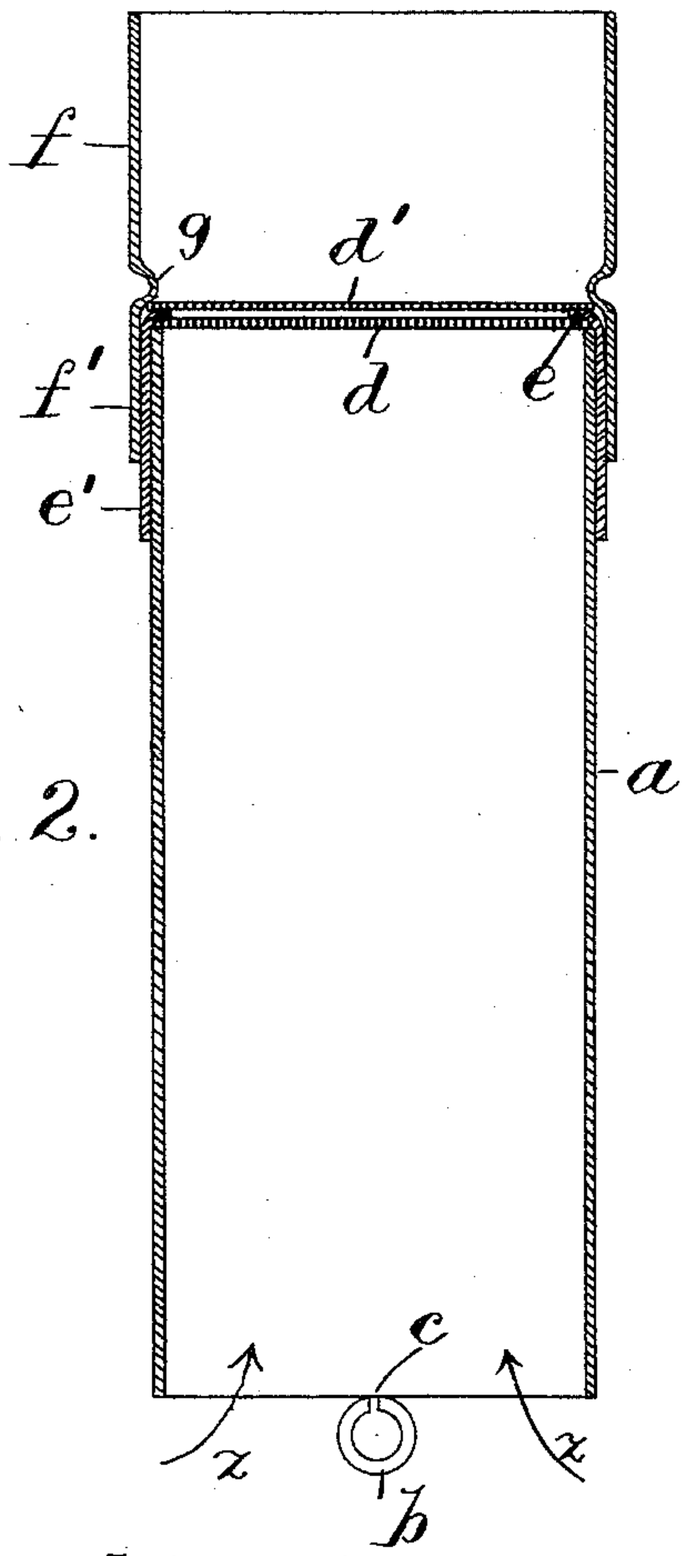
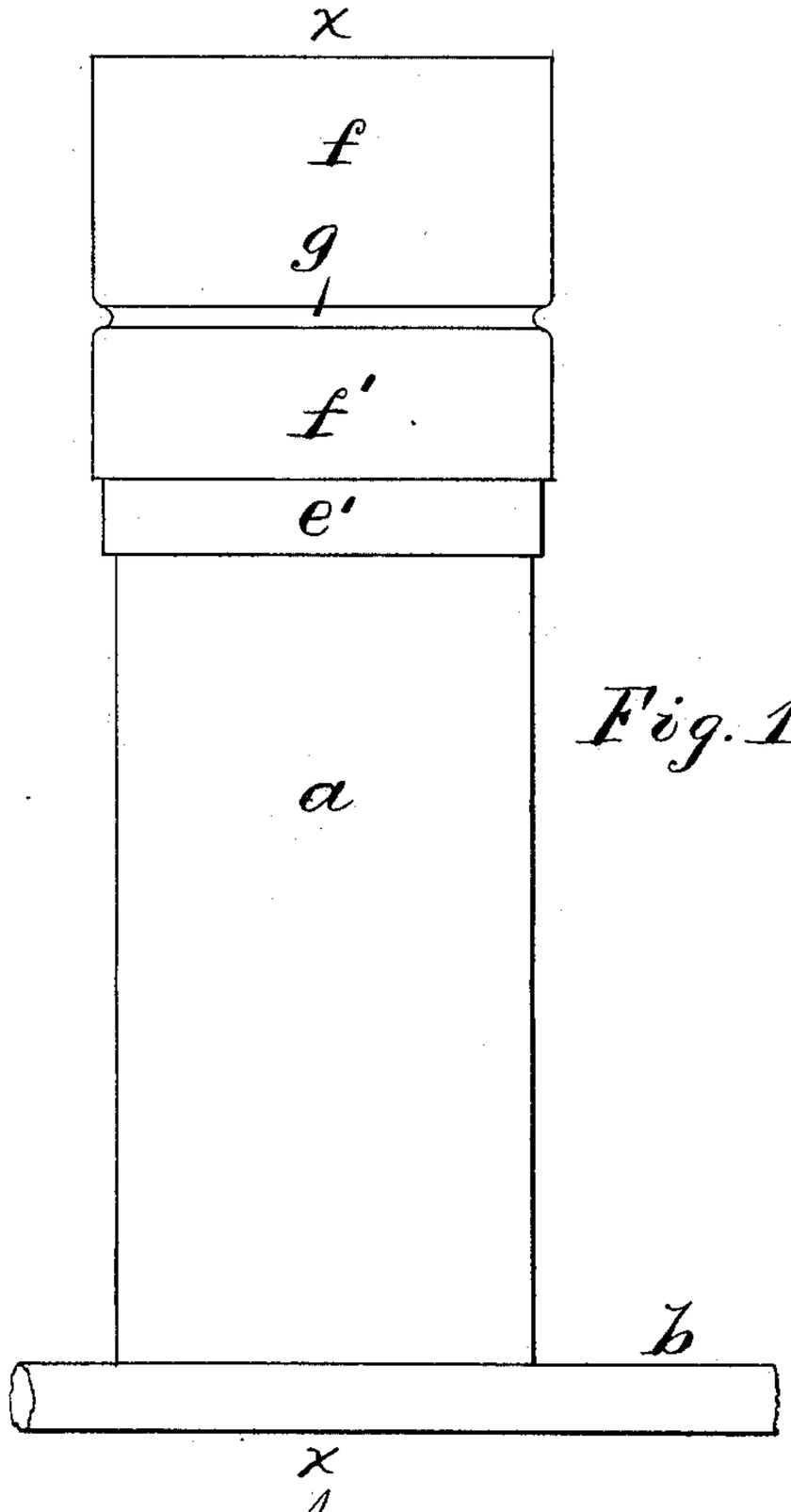


Fig. 1.



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UNITED STATES PATENT OFFICE.

SAMUEL STEWART, OF NEWARK, NEW JERSEY.

HEATING GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 407,134, dated July 16, 1889.

Application filed August 14, 1888. Serial No. 282,727. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL STEWART, a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Heating Gas-Burners, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of this invention is to furnish a cheap and effective means of applying a mixture of air and gas in cooking and heating operations; and the invention consists in the particular construction shown and described herein.

In most of the gas-burners heretofore used for such purposes means have been employed for admitting the air and gas to the interior of the burner-tube separately, or in the absence of such means it has been common to provide apertures which would by their fineness regulate the admission of the air to the burners; but in my invention the air is permitted free access to the lower end of the burner-tube, and a perfect combustion is secured by a special construction of the mixing devices and the application of a chimney above the same.

The invention will be understood by reference to the annexed drawings, in which—

Figure 1 is an external view of a burner constructed with my improvements; Fig. 2, a vertical section on line *x x* in Fig. 1; Fig. 3, a plan and Fig. 4 a side view of the separator. Figs. 5 and 6 are respectively an edge view and plan of one of the mixing-diaphragms.

a is a plain cylindrical tube, *b* a straight gas-pipe applied to the bottom transversely, and *c* a small aperture formed in the side of the same toward the interior of the tube *a*.

d is one of the mixing-diaphragms laid directly upon the top of the tube *a*.

e is a separator formed as a flange turned inwardly upon the upper edge of the collar *e'*, which is fitted upon the upper end of the tube *a*, with the flange resting upon the diaphragm *d*.

d' is a second diaphragm laid upon the top of the flange *e*, and is held in place by a collar *f*, the base *f'* of which is fitted over the collar *e'*, and has a bead *g* formed upon its inner side to rest upon the diaphragm *d'*. The flange *e* holds the two diaphragms slightly separated, and the collar *e'* and the base *f'* of the collar are fitted tightly together, so that the diaphragms are held securely upon the top of the tube *a*.

One of the diaphragms is shown in Fig. 6, and may be formed of finely-perforated sheet metal having about four hundred perforations to the square inch; or the diaphragms may, if desired, be made of fine wire-cloth, as it would perform the same function in my construction. The gas is discharged from the aperture *c* within the tube *a*, and rises to the diaphragms, and the air enters freely at the base of the tube at all points, as indicated by the arrows *z*.

The tube *a* is made high in proportion to its diameter, being shown nearly three times its diameter in length in the drawings; and the gas and air are thus intimately mingled before they reach the diaphragms. The mingled air and gas then pass through the two diaphragms and the mixture is ignited at the top of the collar *f*, the base of the flame extending hardly any within the top of such collar.

By the use of two diaphragms with a small intervening space I secure a very perfect mixing of the air and gas, and by igniting the mixture at some distance above such diaphragms and protecting the surface of the diaphragms from a draft by the collar *f*, I enable the diaphragms to perform their function in the most perfect manner and protect them more perfectly from the flame.

A burner constructed as shown herein, with a diameter of three inches and a total height of nine inches and a half, will furnish heat sufficient to cook for a family of six persons with a consumption of less than five cubic feet of coal-gas per hour; and the burner may also be used most effectively in groups or series for heating coffee-roasters, steam-boilers, or other desirable purposes.

Having thus set forth my invention, what I claim herein is—

1. A heating gas-burner consisting in the tube *a*, the collar *e'*, provided with flange *e*, the diaphragms *d d'*, separated by such collar, and the collar fitted over the collar and

projected above the diaphragms, substantially as herein set forth.

2. A heating gas-burner consisting in the tube *a*, having open bottom, the transverse pipe *b*, with aperture *c* opening within the tube, the collar *e'*, with flange *e* fitted to the top of the tube, the diaphragms *d d'*, separated by the flange, as described, and the collar *f*, provided with base *f'*, fitted over the collar, and with bead *g*, fitted upon the edge of the diaphragm *d'*, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

SAMUEL STEWART.

Witnesses:
THOS. S. CRANE,
L. LEE.