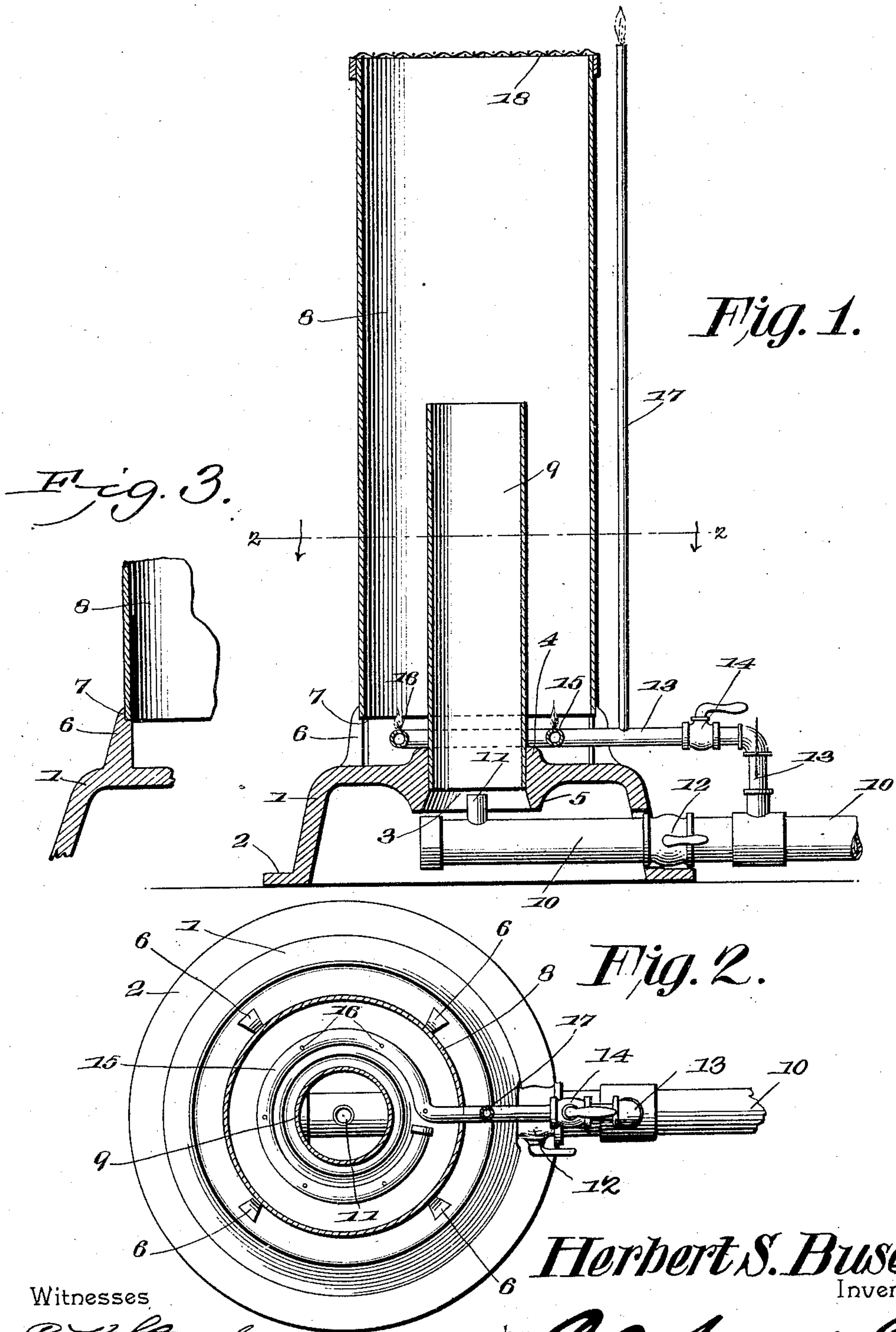


No. 791,002.

PATENTED MAY 30, 1905.

H. S. BUSEY.  
GAS BURNER.

APPLICATION FILED NOV. 12, 1904.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 791,002, dated May 30, 1905.

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*To all whom it may concern:*

Be it known that I, HERBERT STEVENSON BUSEY, a citizen of the United States, residing at Chambersburg, in the county of Franklin and State of Pennsylvania, have invented a new and useful Gas-Burner, of which the following is a specification.

This invention relates to gas-burners for heating purposes; and it has for its object to provide a burner of this class which shall possess superior advantages in point of simplicity, durability, and general efficiency.

A further object of the invention is to provide an improved burner with a primary and a secondary mixing-chamber, in the former of which the gas is mixed with atmospheric air at the ordinary temperature and in the latter of which the incoming air is heated by an auxiliary burner, the admixture of the heated air with the previously-mixed air and gas taking place in said secondary mixing-chamber, the passage of air through which is accelerated by the presence therein of the heating-burner.

With these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of embodiment of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that the right is reserved to any changes, alterations, and modifications to which recourse may be had within the scope of the invention and without departing from the spirit or sacrificing the efficiency of the same.

In said drawings, Figure 1 is a vertical sectional view of a gas-burner constructed in accordance with the principle of the invention. Fig. 2 is a horizontal sectional view taken on the line 2 2 in Fig. 1. Fig. 3 is a sectional detail view.

Corresponding parts in the several figures are indicated by like characters of reference.

In carrying this invention into operation in a simple and practical form a base 1 is provided, which may be conveniently constructed of cast-iron and which has been illustrated as being provided with a supporting-flange 2, a central aperture 3, which is marginally reinforced by an upstanding flange 4 and a downwardly-extending flange 5, and a plurality of annularly-disposed upwardly-extending lugs 6, provided upon their inner sides, near their upper edges, with recesses 7, forming seats for the lower edge of a cylinder 8, which constitutes the secondary mixing-chamber and which may be also designated as the "burner-tube." This cylinder, which may be constructed of sheet metal or of any other suitable material, is supported a suitable distance above the base by means of the lugs 6, as will be readily seen.

9 designates a tube constituting the primary mixing-chamber, and which is suitably mounted in the central aperture 3 in the base, extending upwardly a suitable distance into the tube 8.

The gas is supplied through a main supply-pipe 10, which may extend through an aperture in the side of the base and which terminates beneath the central aperture 3 in the latter, being provided with a discharge-nozzle 11, which extends upwardly into said aperture beneath the lower end of the tube 9. The supply-pipe 10 has a regulating-cock 12, and it is provided with a branch pipe 13, having a regulating cock or valve 14 and terminating in a coil 15, which is disposed surrounding the tube 9 directly beneath the lower edge of the tube 8, said coil being provided with jet-openings 16. The branch pipe 13 is also provided with an upward extension 17, disposed exteriorly adjacent to the tube 8 and terminating adjacent to the upper edge of said tube, said branch 17 constituting a pilot-burner. The upper end of the tube 8 is provided with a cap 18, of wire-gauze.

The operation and advantages of this invention will be readily understood from the foregoing description taken in connection with the drawings hereto annexed. The pilot-flame and the gas issuing through the jets 16 may be normally kept burning. By turning



the cock 12 so as to permit gas to escape through the nozzle 11 the gas entering the tube 9, which constitutes the primary mixing-chamber, will become mixed with air entering through the aperture 3. The mixture of gas and air on issuing into the secondary mixing-chamber formed by the cylinder 8 will become further commingled with air entering said secondary mixing-chamber between the lower edge of the cylinder 8 and the base, said air being heated by the flames issuing through the jet-openings 16, whereby the draft on upward passage of the air will also be accelerated. An exceedingly-inflammable mixture is thus formed, which on passing through the wire-gauze 18 will be ignited by the pilot-flame and burn with a clear blue flame of intense heat.

By this improved burner a large proportion of air will be supplied to the gas, which will thereby be supplied with sufficient oxygen to insure complete combustion and an absolutely clean blue flame. In Bunsen burners of ordinary construction a heavy pressure of gas will frequently prevent the admission of a sufficient proportion of air to insure complete combustion. By this invention the flames at the jet-openings 16 create an upward forced draft, which under all circumstances will result in admission to the burner of a sufficient proportion of atmospheric air, which being also heated will insure the most satisfactory results.

Having thus described the invention, what is claimed is—

1. In a gas-burner, a tubular primary mixing-chamber unobstructed throughout and open at its lower end for the admission of gas and air; gas-supply means supported adjacent to the lower end of said tube; a secondary tubular mixing-chamber of greater length and diameter than the primary mixing-chamber, surrounding the latter, supported slightly above the lower end of said primary mixing-chamber, and open at its lower end for the admission of air; and means for heating air admitted into the lower end of the secondary mixing-chamber.

2. In a gas-burner, a tubular primary mixing-chamber unobstructed throughout and open at its lower end for the admission of gas and air; gas-supply means supported adjacent to the lower end of said tube; a secondary tubular mixing-chamber surrounding, and sup-

ported slightly above the lower end of the primary mixing-chamber and open at its lower end for the admission of air; and a burner supported adjacent to the lower end of said secondary mixing-chamber.

3. A gas-burner comprising two different-sized tubes, the larger tube surrounding and supported slightly above the lower end of the smaller tube; gas-supply means supported adjacent to the lower end of the small tube; and a burner supported adjacent to the lower end of the large tube.

4. A tubular primary mixing-chamber unobstructed throughout; gas-supply means supported adjacent to the lower end of said chamber, a secondary mixing-chamber, constituting also a burner-tube, surrounding the primary mixing-chamber and open at its lower end for the admission of air; and air-heating means disposed adjacent to the lower end of said secondary mixing-chamber.

5. In a gas-burner, a base having a central aperture and upwardly-extending lugs, a tube supported in the central aperture and constituting a primary mixing-chamber, a tube surrounding the primary mixing-chamber, supported upon the upwardly-extended lugs and constituting a secondary mixing-chamber, a gas-inlet supported beneath the primary mixing-chamber, and an annular burner supported beneath the secondary mixing-chamber.

6. In a gas-burner, a base having a central aperture, reinforcing-flanges surrounding said aperture and upwardly-extending lugs recessed at their upper ends, a tube supported in the annular aperture of the base and constituting a primary mixing-chamber, a tube supported in the recesses of the upwardly-extending lugs and constituting a secondary mixing-chamber, a gas-supply pipe having a nozzle supported beneath the primary mixing-chamber, a branch extending from said supply-pipe and terminating in an annular burner surrounding the primary mixing-chamber and supported beneath the secondary mixing-chamber, a foraminous cap for the secondary mixing-chamber, and a pilot-burner.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HERBERT STEVENSON BUSEY.

Witnesses:

S. H. STOLTZFUS,

A. S. WOLF.