

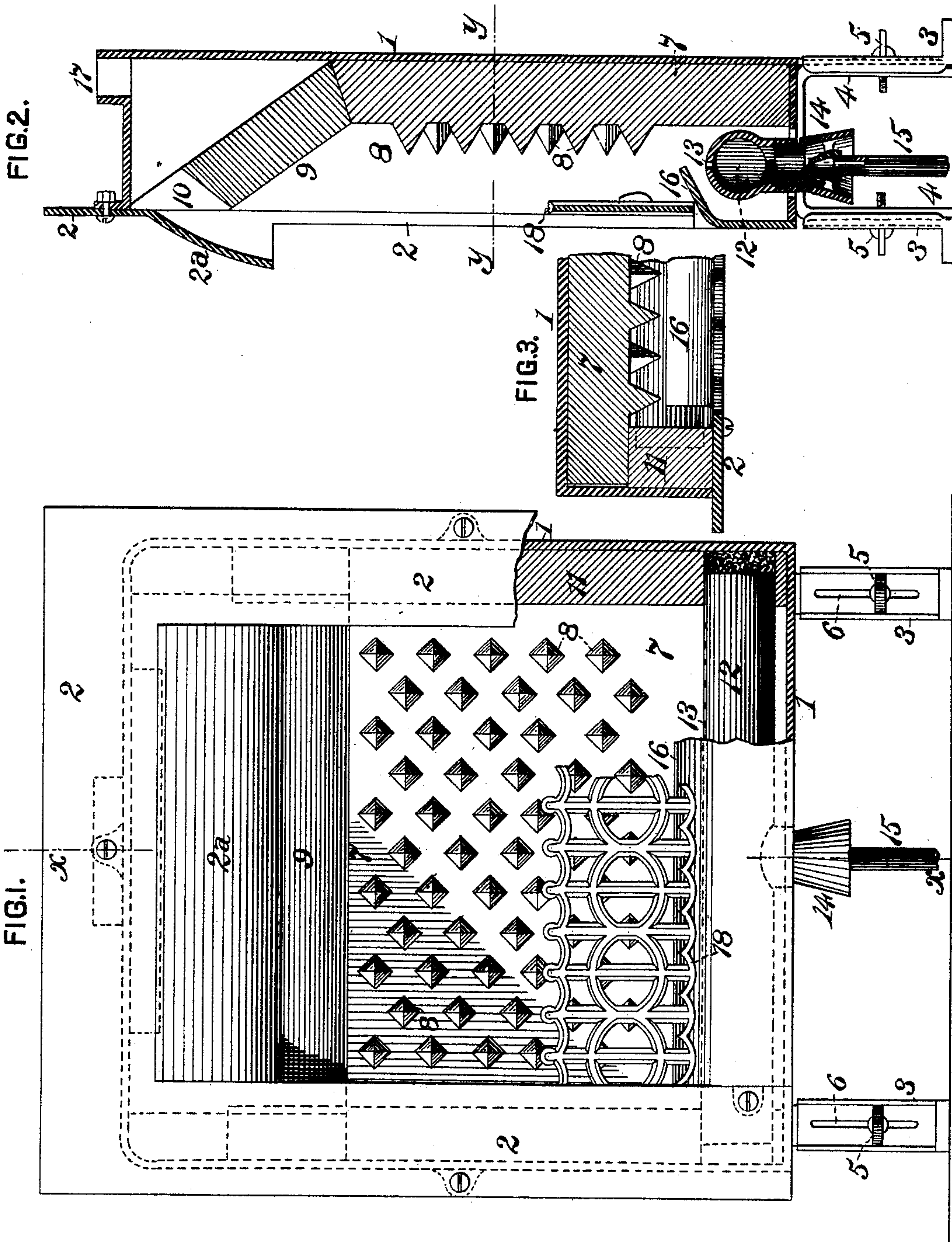
(No Model.)

J. SMITHLEY.

GAS BURNER FOR STOVES OR FIRE PLACES.

No. 406,860.

Patented July 9, 1889.



WITNESSES:

J. Morden Bell.
E. E. Gaither.

INVENTOR,

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by *George W. Christy* Att'y.

UNITED STATES PATENT OFFICE.

JOHN SMITHLEY, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE FUEL GAS AND ELECTRIC ENGINEERING COMPANY, (LIMITED,) OF SAME PLACE.

GAS-BURNER FOR STOVES OR FIRE-PLACES.

SPECIFICATION forming part of Letters Patent No. 406,860, dated July 9, 1889.

Application filed March 15, 1889. Serial No. 303,486. (No model.)

To all whom it may concern:

Be it known that I, JOHN SMITHLEY, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented or discovered a certain new and useful Improvement in Gas-Burners for Stoves or Fire-Places, of which improvement the following is a specification.

The object of my invention is to provide an appliance, of simple and inexpensive construction and ready applicability to use either in stoves or in open-grate or hearth fire-places, whereby the combustion of gaseous fuel may be thoroughly and economically effected, and the heat of the products of combustion utilized as fully as practicable prior to their discharge to the chimney.

To this end my invention, generally stated, consists in the combination of a refractory radiating-plate having a series of projections on its front, an inclined deflecting-plate having an upper discharge-opening and located above the radiating-plate, a burner-pipe having a series of openings and located in front of the lower portion of the radiating-plate, and a front deflecting-plate located above and adjacent to the burner-openings; also, in the combination of a radiating-plate, a deflecting-plate, and a burner-pipe, as above set forth, adjusting arms or bars connected to and projecting downwardly from the radiating-plate, and standards secured with the capacity of vertical adjustment to the adjusting-arms.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is front view, partly in section, of a gas-burner embodying my invention; Fig. 2, a vertical transverse section through the same at the line *x x* of Fig. 1, and Fig. 3 a partial horizontal section at the line *y y* of Fig. 2.

In the practice of my invention I provide a casing 1, of cast or wrought metal, which is of substantially rectangular outline on each of its sides, and is open at its front, to which is secured a front plate or rectangular frame of metal 2, which is entirely open, except along its sides and top, to which the casing 1 is secured. The casing is supported upon vertical standards 3, which are connected to ad-

justing arms or bars 4, secured to and projecting downwardly from the ends of the casing by clamping-screws 5, passing through longitudinal slots 6 in the standards 3, and engaging corresponding threads in the arms 4. The standards may thus be adjusted vertically relatively to the arms and casing, so as to enable the latter to be set at a greater or less distance above the floor or base on which it rests in accordance with the requirements of the stove or fire-place in which the apparatus is to be used.

A radiating-plate 7, of fire-clay or other suitable refractory material, is fitted vertically in the casing 1, abutting against its rear plate and extending from one side plate to the other and from its base-plate for the major portion of its height, and has a series of projections 8, of any desired shape or pattern, formed upon or fixed to the front face of the radiating-plate in order to increase the extent of radiating-surface. A deflecting-plate 9, also composed of refractory material and having a discharge throat or channel 10 on its upper side, is placed upon the top of the radiating-plate and is upwardly and outwardly inclined therefrom to the inner side of the front plate 2, against which it rests adjacent to its top. Lateral radiating-plates 11, of refractory material, extend from the plate 7 to the front plate at or near each side of the casing.

A horizontal burner-pipe 12, the upper surface of which is perforated with a series of burner-openings 13, is supported upon the bottom plate of the casing, said pipe communicating on its under side with a tapering open-ended mouth-piece or mixer 14, into which projects the delivery end of a gas-supply pipe 15, governed by a suitable cock or valve, which may be located at any convenient point in its length. A front deflecting-plate 16, which is secured to the front plate 2 of the casing, projects upwardly and inwardly above the openings of the burner-pipe, so as to deflect the flames of the gas issuing from said openings toward the radiating-plate 7. The upper portion of the front plate 2 is inclined downwardly and outwardly in front of and for a short distance below the discharge-channel 10 of the upper radiating-plate 9, forming a delivery-plate 2^a, which serves to direct the

escaping products of combustion into said channel and prevent them from passing off into the apartment in which the burner is located, and a chimney-passage 17, communicating with the discharge-channel 10, is formed upon the top of the casing, a suitable exit-pipe leading to a chimney or flue being connected to the passage 17. A grating 18, of any desired ornamental design, extends across the opening of the front plate above the front deflecting-plate 16.

In operation the pressure of the gas flowing into the mixer from the supply-pipe 15 draws thereinto a proportion of atmospheric air, which mingles with the gas in the mixer and burner-pipe, the mixture of gas and air being ignited at the burner-openings. The flames issuing therefrom are directed by the front deflecting-plate toward the radiating-plate 7, the surface of which, with its projections 8, and of the side radiating-plates 11 and deflecting-plate 9, are traversed by the heated products of combustion in their passage to the discharge-channel 10 and communicating chimney-passage 17. The heat generated by the combustion of the gas is effectively imparted to and radiated from the radiating and deflecting plates into the apartment to be heated, and the products of combustion pass off to the chimney at a comparatively low temperature.

The appliance is free from complication in its structure, and can be readily manufactured at slight cost. It will be obvious that it may be employed either in the manner of an ordinary stove or be set in a fire-place, either above an open grate, in substitution of the broad-faced burners and fire-brick filling ordinarily employed with gaseous fuel, or upon a hearth.

I claim as my invention and desire to secure by Letters Patent—

1. The combination of a refractory radiating-plate having a series of projections on its front, an inclined deflecting-plate having an upper discharge-opening and placed above the radiating-plate, a burner-pipe having a series of burner-openings and located in front of the

lower portion of the radiating-plate, a front deflecting-plate located above and adjacent to the burner-openings and inclined toward the radiating-plate, a mixer communicating with the burner-pipe, and a gas-supply pipe leading into the mixer, substantially as set forth.

2. The combination of a casing, a centrally-open front plate or frame secured thereto, a radiating-plate of refractory material fitted within the casing adjacent to its rear side and having a series of projections on its front, a deflecting-plate having an upper discharge-opening and inclined upwardly from the top of the radiating-plate to the front plate, a delivery-plate fixed to the front plate and outwardly and downwardly inclined in front of and below the discharge-opening of the deflecting-plate, a front deflecting-plate secured to the front plate and projecting inwardly and upwardly therefrom above and adjacent to the burner-openings, a chimney-passage communicating with the discharge-passage of the upper deflecting-plate and leading out of the casing, a mixer communicating with the burner-pipe, and a gas-supply pipe leading into the mixer, substantially as set forth.

3. The combination of an open front casing, a refractory radiating-plate fitted within the casing and having a series of projections on its front, a deflecting-plate having an upper discharge-opening and placed above the radiating-plate, a burner-pipe supported in the lower portion of the casing in front of the radiating-plate and having a series of burner-openings, a mixer communicating with the burner-pipe, a gas-supply pipe leading into the mixer, adjusting-arms projecting downwardly from the bottom of the casing, and longitudinally-slotted standards connected by clamping-screws to the adjusting-arms, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JOHN SMITHLEY.

Witnesses:

J. SNOWDEN BELL,
F. E. GAITHER.