

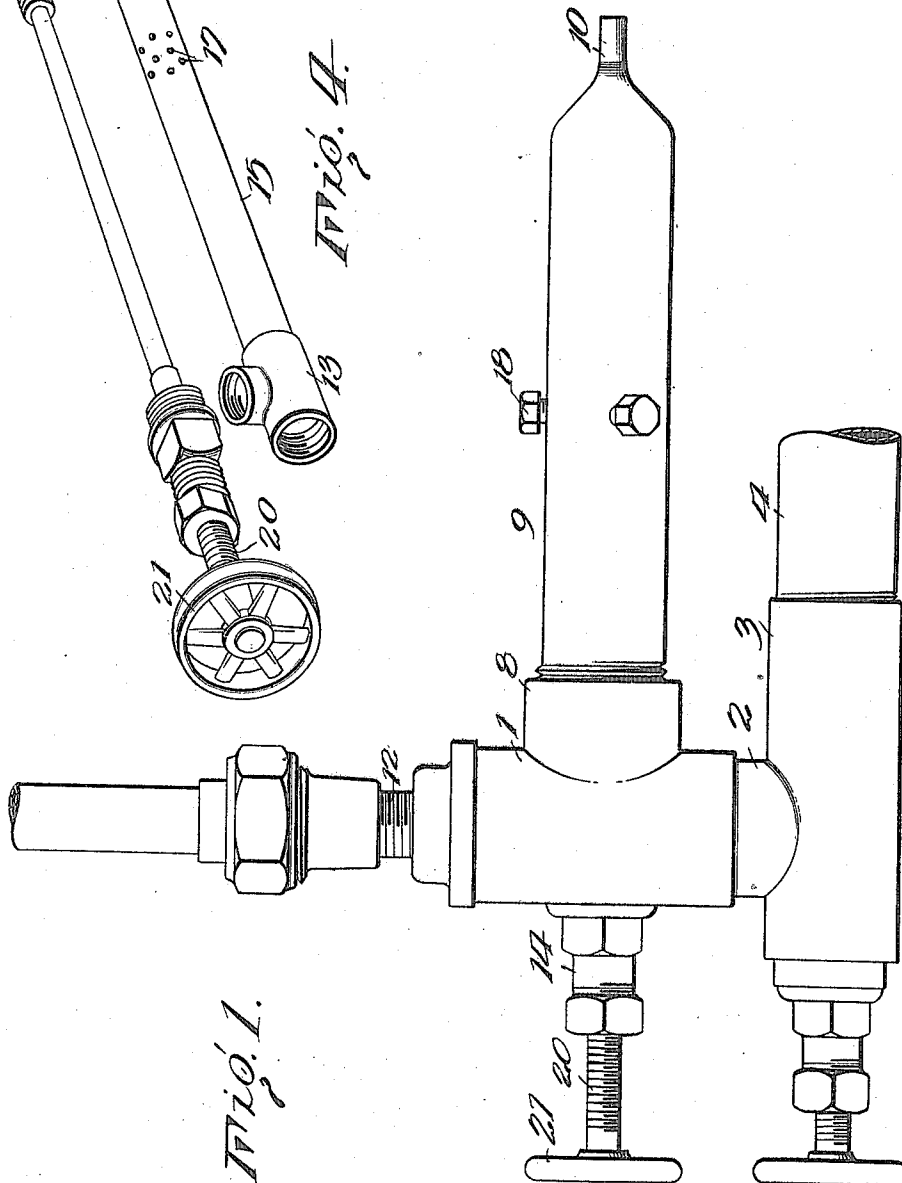
BURNER.

Patented Apr. 10, 1917.

2 SHEETS--SHEET 1.

7. 0211

Fig. 1.



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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

CHARLES DONALDSON, OF BROOKVILLE, PENNSYLVANIA.

BURNER.

1,222,084.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES DONALDSON, a citizen of the United States, residing at Brookville, in the county of Jefferson and State of Pennsylvania, have invented certain new and useful Improvements in Burners, of which the following is a specification.

This invention relates to gaseous fuel burners and while it is designed primarily for employment in glass factories in connection with the melting pots and glass flattening ovens, it may be put to various other uses as for example, in connection with boilers. It is one aim of the present invention to provide a burner so constructed that the air and gaseous fuel will be more intimately mixed before issuing from the burner tube.

Another aim of the invention is to provide a novel arrangement of the fuel tube and valve for controlling the supply of fuel through the tube and through the said tube to the burner tube.

Another aim of the invention is to provide a burner which may be readily and quickly adjusted so as to regulate the supply of fuel and air and also to regulate their mixture with each other within the burner tube.

In the accompanying drawings;
Figure 1 is a side elevation of the burner embodying the invention.

Fig. 2 is a vertical longitudinal sectional view through the burner, the valves for controlling the fuel and air being shown in open positions.

Fig. 3 is a vertical transverse sectional view on the line 3—3 of Fig. 2.

Fig. 4 is a group perspective view of the fuel tube and the controlling valve therefor.

Fig. 5 is a perspective view of the discharge end of a modified form of burner tube.

Fig. 6 is an end view of the nozzle shown in Fig. 2.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The burner embodies a hollow casing or body indicated in general by the numeral 1, and threaded into the lower end of this body is a short branch 2 extending upwardly from a valve casing 3. Fitted into one end of the said casing 3 is the end of an air inlet pipe 4 through which air under pressure may be supplied to the burner and the

casing 3 is provided interiorly adjacent the end of the pipe with a valve seat 5. A cut-off valve 6 has its stem 7 adjustably threaded through the other end of the casing 3 and the said valve is designed to coact with the seat 5, when adjusted, for the purpose of controlling the supply of air to the casing 1 and consequently to the burner tube. The casing 1 is provided at its forward side with a short branch 8 into which is threaded the rear end of the burner tube, which is indicated by the numeral 9, and in that form of the invention shown in Figs. 1 and 2 of the drawings the burner tube is provided at its forward or discharge end with a relatively flat horizontally disposed discharge nozzle or tip indicated by the numeral 10. The burner tube, however, may have a discharge end of circular form as indicated by the numeral 11 in Fig. 5 of the drawings it being preferred to employ this modified form of burner tube when the burner is to be used in connection with melting pots and to employ the first described form of burner tube when the burner is to be used in connection with a flattening oven. The numeral 12 indicates a fuel inlet pipe which is threaded through the upper end of the casing 1 and which at its lower end is threaded into the branch of a T-coupling 13, located within the casing 1 opposite the branch 8 thereof. A stuffing box 14 has its stem threaded into the side of the casing 1 opposite the branch 8 and also into one end of the coupling 13. Threaded into the other end of the said coupling is the rear end of the fuel tube of the burner which is indicated by the numeral 15 and this tube extends axially within the burner tube with its forward end terminating relatively close to the discharge end of the said burner tube. The forward end of the fuel tube 15 is closed as indicated by the numeral 16 and the said tube is formed in its wall rearwardly of its closed end 16 with a number of perforations 17 through which the gaseous fuel may issue to the burner tube 9. Set screws 18 are threaded into the wall of the burner tube 9 and may be adjusted so as to bear at their inner ends against the fuel tube for the purpose of centering the tube within the burner tube and holding said tubes in proper relative position. The numeral 19 indicates a valve stem which is relatively long and extends axially within the fuel tube 15 the said stem being threaded as at

20 and having its threaded portion adjustably fitting the stuffing box 14. The stem is provided at its outer end with an operating handle 21 of the ordinary type and at its inner end the stem is provided with a valve head preferably made up of a number of split packing rings 22, which by reason of their tendency to expand, fit snugly within the fuel tube 15.

10 From the foregoing description of the invention it will be understood that when the valve 22 is in the position shown in Fig. 2 of the drawings, or in other words has been adjusted forwardly past the openings 17, 15 gaseous fuel may issue from the tube 15 through said perforations 17 and into the burner tube 9. Air under pressure enters the burner tube through the valve casing 3 and mixes with the gaseous fuel, the mixture of 20 gas and air issuing from the nozzle or tip 10 or 11 as the case may be. It will be understood further that some or all of the openings 17 may be closed by adjusting the valve 22 in the direction of the rear end of 25 the fuel tube and thus the supply of gaseous fuel may be partly or wholly cut off as desired, the air controlling valve 6 being in like manner adjusted and for the same purpose. It will be apparent that inasmuch as 30 a number of the openings 17 are formed in the fuel tube 15, the gaseous fuel will be discharged into the burner tube 9 in a number of fine jets causing it to become more intimately mixed with the air than would 35 otherwise be possible.

Having thus described the invention, what is claimed as new is—

1. In a burner of the class described, a body having an air inlet, a burner tube extending from the body, a valve for controlling the admission of air through said inlet, 40 a fuel tube, a union to which the inner end of the tube is connected, the said tube extending within the burner tube and provided in its wall with a discharge orifice, a member having a portion fitted through the wall 45 of the body and into the other end of the said union, a valve stem adjustably fitted through the said member and extending into the fuel tube, a valve head at the end of the 50 stem movable within the fuel tube with relation to the said discharge orifice therefrom to control the discharge of fuel through the orifice, and a fuel supply pipe leading into 55 of the body and communicating with the branch of the said union.

2. In a burner of the class described, a body having an air inlet, a burner tube extending from the body, a fuel supply pipe 60 leading into the body, a fuel tube to which the pipe is connected, the said fuel tube extending within the burner tube and having a discharge orifice, a valve for controlling the flow of fuel through the orifice, and centering screws adjustably threaded through the 65 wall of the burner tube at points in the circumference thereof and bearing at their inner ends against the said fuel tube.

In testimony whereof I affix my signature.
CHARLES DONALDSON. [L. s.]

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."