

J. WEINTZ.
BURNER.

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1,075,742.

Patented Oct. 14, 1913.

2 SHEETS-SHEET 2.

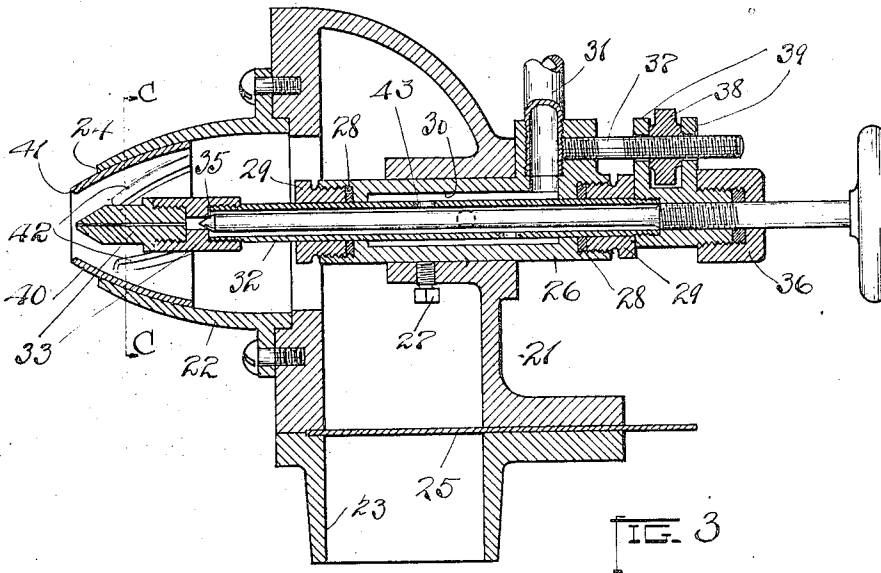


FIG. 3

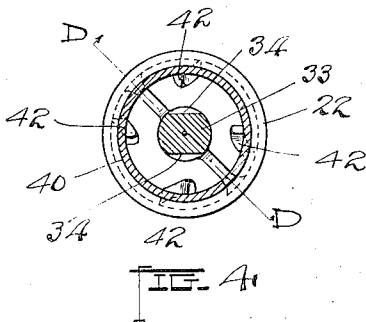


FIG. 4

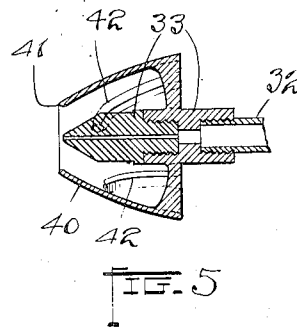


FIG. 5

WITNESSES

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BURNER.

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To all whom it may concern:

Be it known that I, JACOB WEINTZ, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Burners, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention relates to burners, and its particular object is the provision of an oil burner in which the combustible mixture may be closely regulated.

To the accomplishment of this and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—Figure 1 is a vertical section of a burner embodying the invention; Fig. 2 is a section on the line A—A of Fig. 1, the line B—B indicating the plane of the section of Fig. 1; Fig. 3 is a vertical section of another form of burner embodying the invention; Fig. 4 is a section on the line C—C of Fig. 3; and Fig. 5 is a section on the line D—D of Fig. 4.

Referring first to Figs. 1 and 2, the burner comprises a suitable casing 1 provided with a nozzle 2 communicating at its inner end with an air inlet 3. The nozzle contracts in size toward its mouth 4, and in its preferable form it is circular in cross-section and contracts gradually toward the mouth. The air inlet may be controlled by a suitable valve such as gate 5.

A tube 6 is slidably mounted in the casing 1 and extends into the nozzle 2, the passage 7 through the tube being connected with an oil inlet 12 which is provided with a strainer 13 if desired. At the outer end of the tube adjacent the nozzle mouth 4 is a baffle 8, which is of the general form of a segment of a sphere, and the passage 7 opens outwardly around the baffle through a plurality of passages 9. The passage through the tube is controlled by a needle valve 10 operated by an exterior hand-wheel 11.

A screw 14 is rigidly secured to the casing 1, and engaging it is a nut 15 connected with the tube 6, preferably by a pair of apertured ears 16. At its outer end adjacent the nozzle mouth 4, and surrounding the outer end of the tube, there is mounted on the tube a supplementary nozzle 17 which substantially conforms in shape with the main nozzle 2, but its mouth 20 is smaller than the main nozzle mouth. It will be obvious that air from the inlet 3 can always pass through the open way 18 of the supplementary nozzle, and, except when the supplementary nozzle is in its outermost position, air can also pass through the way 19 between the supplementary and main nozzles.

In Figs. 3, 4 and 5 the main features of construction are the same. The burner shown in those figures comprises a casing 21 having a similar nozzle 22 connected with the air inlet 23, which is controlled by a valve 25, the nozzle contracting, as in the other figures, toward its mouth 24. In this form of burner a sleeve 26 is secured in the casing by a set screw 27, and is provided at its inner and outer ends with packing rings 28 secured by glands 29. The bore of the sleeve is enlarged for part of its length to form a chamber 30 which communicates with an oil inlet 31. Axially slidable through the sleeve is a tube 32, the passage through which is contracted at its outer end within the nozzle preferably by means of nipples 33. The end of the tube is substantially conical but is formed with flat sides 34. The portion of the tube within the chamber 30 is formed in its wall with a plurality of holes 43, and the passage through the tube is controlled by a needle valve 35. The outer end of the tube bears a packing gland 36 through which the needle valve stem extends. A screw 37 rigidly secured to the sleeve 26 is engaged by a nut 38 connected with the tube 32 preferably by a pair of apertured ears 39.

A supplementary nozzle 40 substantially conforming in shape with the nozzle 22, its mouth 41 being smaller than the mouth 24 of the main nozzle, is secured to the outer end of the tube 32 and surrounds the end thereof. Interiorly the supplementary nozzle is formed with a plurality of vanes 42 which are formed substantially as parts of helices.

In the operation of either form of the

burner the main air supply is controlled by the gate in the air inlet, and the flow of oil is controlled by adjustment of the needle valve. Furthermore, the supplementary nozzle may be adjusted toward or from the main nozzle mouth by adjusting the tube which carries it. Since both the main and supplementary nozzles contract toward their mouths, with the mouth of the supplementary nozzle being smaller than the mouth of the main nozzle, the supplementary nozzle in its outermost position will close the main nozzle mouth, and all of the air will be forced through the supplementary nozzle. When, however, the supplementary nozzle is retracted from its outermost position air may pass around as well as through the supplementary nozzle. When the supplementary nozzle is in its outermost position it substantially constitutes an elongation of the main nozzle with a continuation of the gradual reduction in size from the main nozzle mouth to the supplementary nozzle mouth, so that a smaller and more intense flame is secured. As the supplementary nozzle is retracted and the air allowed to pass around as well as through the supplementary nozzle, the effective area of the nozzle mouth is gradually increased, because the further the supplementary nozzle is retracted the more extensive is the space open around it for the passage of air.

The provision of the adjustable supplementary nozzle in connection with the adjustable air and oil inlets provides for a complete control of the combustible mixture at the orifice of the burner and for a complete control of the size and intensity of the flame. In the form of burner shown in Fig. 3 the tube carrying the supplementary nozzle has a bearing for a considerable part of its length in a sleeve which is itself bodily removable from the casing.

The thoroughness of the mixture of oil and air is assured in the form of burner shown in Figs. 3, 4 and 5 by providing the supplementary nozzle interiorly with helical vanes which swirl the air as it flows past the end of the oil tube, while in the form shown in Figs. 1 and 2 the same result is attained by dispersing the oil outwardly through divergent passages at an acute angle to the air passages. In either case, therefore, a complete intermingling of air and oil is assured.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

65 1. In a burner, the combination of a cas-

ing having an inlet; a main nozzle, circular in cross-section and gradually contracting toward its mouth, communicating with the inlet; an axially adjustable tube secured to the casing and extending into the main nozzle; a valve for controlling the passage through the tube; and a supplementary nozzle secured to the tube and surrounding the end thereof, the supplementary nozzle substantially conforming in shape with the main nozzle and its mouth being smaller than the mouth of the main nozzle.

2. In a burner, the combination of a casing having an inlet; a main nozzle, circular in cross-section and gradually contracting toward its mouth, communicating with the inlet; an axially adjustable tube secured to the casing and extending into the main nozzle; a screw rigidly secured to the casing; a nut secured to the tube and engaging the screw; a needle valve for controlling the passage through the tube; and a supplementary nozzle secured to the tube and surrounding the end thereof, the supplementary nozzle substantially conforming in shape with the main nozzle and its mouth being smaller than the mouth of the main nozzle.

3. In a burner, the combination of a casing having an inlet; a main nozzle, circular in cross-section and gradually contracting toward its mouth, communicating with the inlet; an axially adjustable tube secured to the casing and extending into the main nozzle; a valve for controlling the passage through the tube; and a supplementary nozzle secured to the tube and surrounding the end thereof, the supplementary nozzle substantially conforming in shape with the main nozzle and being formed interiorly with a plurality of substantially helical vanes, its mouth being smaller than the mouth of the main nozzle.

4. In a burner, the combination of a casing having an inlet; a main nozzle contracting toward its mouth and communicating with the inlet; a sleeve secured in the casing and formed with a chamber having an inlet; a tube axially slidable in the sleeve and formed with holes in the portion of its wall within the chamber, the tube extending into the main nozzle; a valve for controlling the passage through the tube; and a supplementary nozzle secured to the tube and surrounding the end thereof, the supplementary nozzle contracting toward its mouth and the latter being smaller than the mouth of the main nozzle.

5. In a burner, the combination of a casing having an inlet; a main nozzle contracting toward its mouth and communicating with the inlet; a sleeve secured in the casing and formed with a chamber having an inlet; a tube axially slidable in the sleeve and formed with holes in the portion of its wall within the chamber, the tube extending into

the main nozzle; a screw rigidly secured to the sleeve; a nut secured to the tube and engaging the screw; a needle valve for controlling the passage through the tube; and a supplementary nozzle secured to the tube and surrounding the end thereof, the supplementary nozzle contracting toward its mouth and the latter being smaller than the mouth of the main nozzle.

6. In a burner, the combination of a casing having an inlet; a main nozzle, circular in cross-section and gradually contracting toward its mouth, communicating with the inlet; a sleeve secured in the casing and formed with a chamber having an inlet; a tube axially slidable in the sleeve and formed with holes in the portion of its wall within the chamber, the tube extending into

the main nozzle; a screw rigidly secured to the sleeve; a nut secured to the tube and engaging the screw; a needle valve for controlling the passage through the tube; and a supplementary nozzle secured to the tube and surrounding the end thereof, the supplementary nozzle substantially conforming in shape with the main nozzle and being formed interiorly with a plurality of substantially helical vanes, its mouth being smaller than the mouth of the main nozzle.

Signed by me, this 11th day of December, 1912.

JACOB WEINTZ.

Attested by—

ROBERT M. SEE,
MARY GLADWELL.