N. S. SIBERT.

INJECTOR BURNER.

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988,216. Patented Mar. 28, 1911.

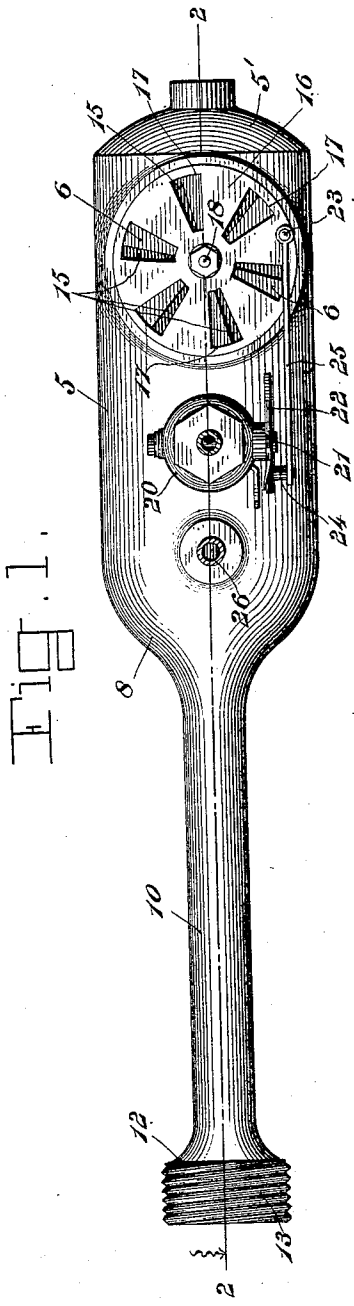

Fig. 1.

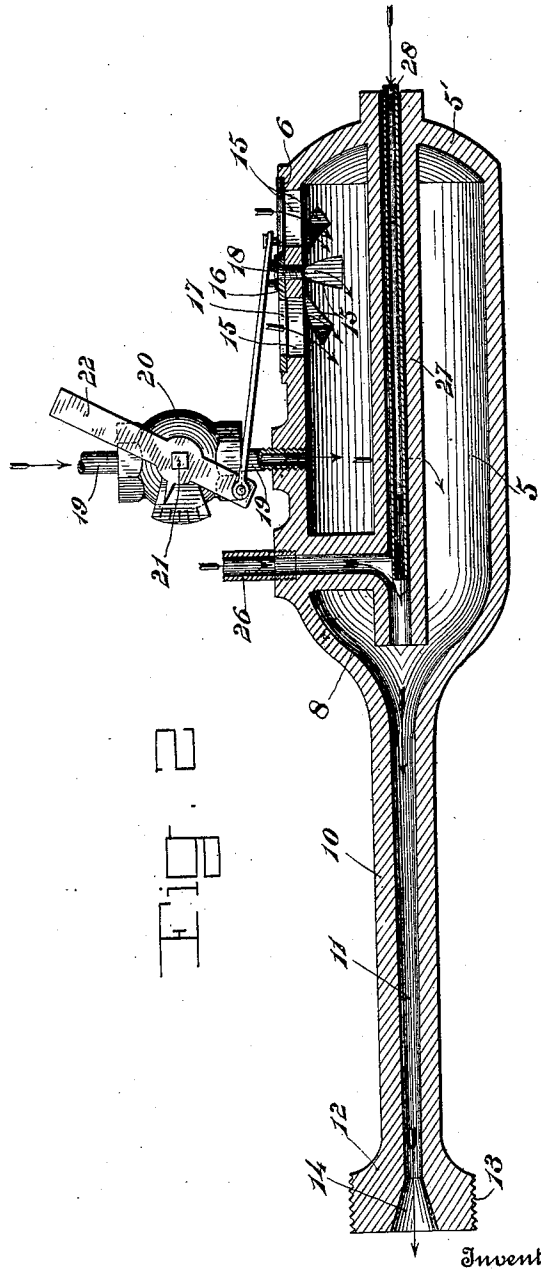

Fig. 2.

Witnesses

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INJECTOR-BURNER.

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To all whom it may concern:

Be it known that I, NICHOLAS S. SIBERT, a citizen of the United States of America, residing at Neodesha, in the county of Wilson and State of Kansas, have invented new and useful Improvements in Injector-Burners, of which the following is a specification.

This invention relates to improvements in injector burners such as are employed for injecting a mixture of oil and air into a fire-box, steam constituting the injecting force as well as the means for atomizing the oil and mixing the latter with air.

One object of the invention is the provision of an injector burner which is simple and compact in structure embodying comparatively few parts and an arrangement by means of which the injector may be expeditiously attached to and detached from the door or other covering of a fire-box.

A further object is the provision of a valve-controlled oil inlet pipe and a valve-controlled air inlet and a connection between the said valves serving to open the air inlet valve to admit a quantity of air in proportion to the amount of oil passing through the oil inlet pipe.

With these and other objects in view, which will more fully hereinafter appear, the present invention consists in certain novel details of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claim; it being understood that various changes in the form, proportion, size, and minor details of the device may be made, within the scope of the appended claim, without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, forming part of the specification:—Figure 1 is a plan view of the device. Fig. 2 is a longitudinal sectional view on the line 2—2 of Fig. 1.

Similar numerals of reference are employed to designate corresponding parts throughout.

The device is shown to include a horizontally disposed mixing chamber, the said mixing chamber being a hollow cylindrical-shaped structure as shown at 5, and having on its upper side and adjacent to one end a flat portion 6. One end portion of the cylinder is provided with an end wall 5′ and the opposite end is contracted as shown at 8 and formed integral with the contracted end is an elongated nozzle 10, the bore 11 of which is in axial alinement with the long axis of the cylinder. The free end of the nozzle 10 is somewhat enlarged to provide a circular head 12 the outer periphery of which is screw-threaded as shown at 13, the said head having a flared bore 14 in axial alinement with the threaded bore of the nozzle. The head 13 is to be screwed into the door or other portion of a fire-box, not shown.

By reference now to Figs. 1 and 2 it will be seen that the flat portion 6 is provided with a zone of spaced openings designated by the numeral 15. What will subsequently be termed a damper plate is designated by the numeral 16. This member is circular in contour and is provided with a plurality of spaced openings 17, and is further centrally provided with an opening to receive a pivot pin 18, the said pivot pin passing through an opening in the top plate 7, the said opening being equidistant from the inner ends of the openings 15. The spaces between the openings in the flat portion 6 correspond to those between the openings 17 of the damper 16, so that when the damper is turned to one position the openings in the flat portion 6 will be blanked and when turned to another position either the whole or parts of the openings 15 in the flat portion 6 will be exposed.

An oil supply pipe is designated by the numeral 19 and has one end thereof leading through an opening in the top side of the cylinder. By reference to Figs. 1 and 2 it will be seen that the oil supply pipe, is provided with a valve casing 20, in which is an ordinary plug valve not shown, the stem 21 of said plug valve extending beyond one side of the casing and having securely fitted thereto a handle 22. By reference now to Figs. 1 and 2 it will be seen that rising from the damper plate 16 is an eccentrically disposed stud 23, and extending laterally from the free end portion of the handle 21 is a stud 24. Connection between the stud 24 and stud 23 is established by means of a connecting rod 25, the opposite ends of which are pivoted to the said studs. With this construction it will be manifest when the handle 21 is turned the damper plate 16 will be likewise turned, the relative sizes of the openings in the valve plug (not shown) and those

in the damper plate and top plate 7 being such that when the plug valve is partly open the damper plate will be turned so as to expose one part of each of the openings 15, the exposed parts of said openings being sufficient to permit a quantity of air to enter the mixing chamber in proportion to the amount of oil passing into the mixing chamber through the oil supply pipe 19, these proportions being sufficient to produce proper combustion when the mixture is ignited. By reference now to the drawings it will be seen that leading into the mixing chamber and at a point adjacent to the contracted portion 8 is a steam pipe designated by the numeral 26. It will be further observed that arranged in the mixing chamber and extending longitudinally of the same is an axially disposed tube 27, one end of which is formed integral, or otherwise secured to the central portion of the end plate 5′, and the opposite end of which extends to a point adjacent to the nozzle 10. The inner end portion of the steam pipe 26 is tapped into or otherwise secured to the free end portion of the tube 27, so that steam passing through the steam pipe 26 and outwardly through the free end of the tube 27, and thence through the nozzle 10 will create a partial vacuum in the mixing chamber so that the oil and air in the latter will be drawn through the nozzle 10 by the steam, the latter atomizing the oil in its passage through the nozzle 10. It will be seen now by reference to Fig. 2 that arranged in the tube 27 is an auxiliary oil supply pipe 28, the outer end of said oil pipe being connected with an oil reservoir (not shown) and the inner end extending a trifle beyond the connection between the tube 27 and steam pipe 26. This auxiliary oil pipe is to be employed when for any reason the oil supply pipe 19 becomes inoperative, and it will be evident when oil flows through the auxiliary supply pipe 28 and steam passes through the steam pipe 26 and nozzle 10 and air is admitted into the mixing chamber that the oil from the auxiliary supply pipe 28 and air will be drawn through the nozzle 10 by the action of the steam.

From the foregoing, it is evident that I have provided a device which is comparatively simple in structure and inexpensive in manufacture, embodying few parts and these so arranged that the danger of derangement will be reduced to a minimum.

I claim:—

An injector burner comprising an enlarged mixing chamber terminating at one end in a reduced and elongated nozzle, said mixing chamber having a plurality of spaced openings in the upper side thereof, an exteriorly disposed damper plate rotatably mounted on the mixing chamber and having a plurality of spaced openings to aline with the openings of the mixing chamber, a valve-controlled oil inlet pipe leading into the mixing chamber, an operating handle connected to said valve, a connecting rod having its opposite ends connected to the operating handle and damper plate, a steam inlet pipe leading into the mixing chamber and having one end secured to that end of the mixing chamber adjacent to the nozzle, a tube arranged in axial alinement with the mixing chamber and nozzle, and having one end extending through the end of the mixing chamber remote from the nozzle and connected adjacent to its opposite end with the steam inlet pipe, and an auxiliary oil pipe located in the tube and extending to a point beyond the connection between the tube and steam inlet pipe.

In testimony whereof I affix my signature in presence of two witnesses.

NICHOLAS S. SIBERT.

Witnesses:
C. A. WALKER,
JOHN I. KIMBALL.