J. R. BROWN.

OIL ATOMIZER.

APPLICATION FILED OCT. 12, 1915.

1,197,600. Patented Sept. 12, 1916.

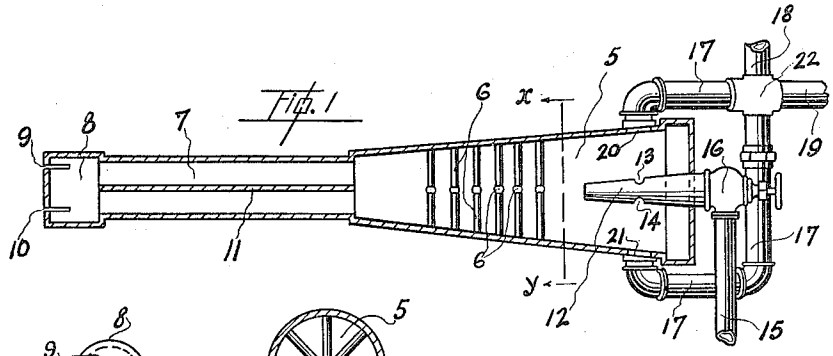


Fig. 1

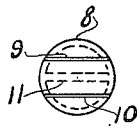


Fig. 2

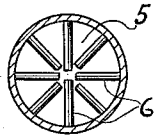


Fig. 3

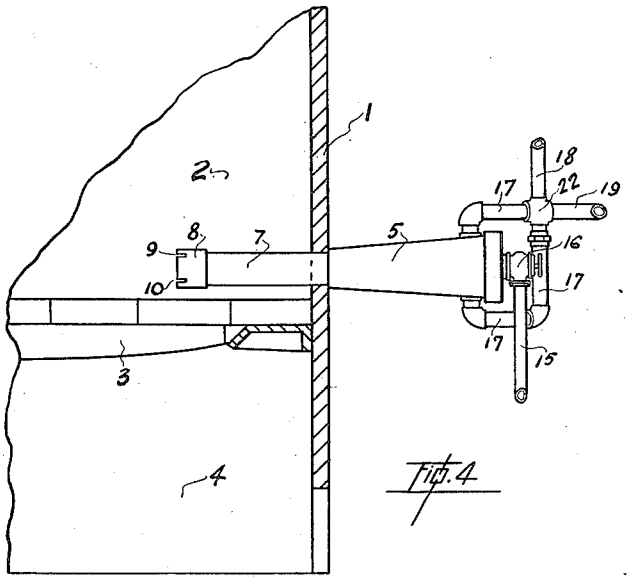


Fig. 4

WITNESSES.

R. H. Wilson

H. E. Ellis

INVENTOR.

JOHN ROBERT BROWN.

BY Fetherstonhaugh & Co.

ATTYS.

UNITED STATES PATENT OFFICE.

JOHN ROBERT BROWN, OF VANCOUVER, BRITISH COLUMBIA, CANADA, ASSIGNOR OF ONE-HALF TO ERNEST EDWARD HALL, OF VANCOUVER, BRITISH COLUMBIA, CANADA.

OIL-ATOMIZER.

1,197,600. Specification of Letters Patent. Patented Sept. 12, 1916.

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To all whom it may concern:

Be it known that I, JOHN ROBERT BROWN, a subject of the King of Great Britain, and a resident of the city of Vancouver, in the Province of British Columbia, Canada, have invented certain new and useful Improvements in Oil-Atomizers, of which the following is a specification.

My invention relates to improvements in oil atomizers for fuel oil, and the object of my invention is to devise an atomizer of simple and inexpensive construction, adaptable for use with either steam or compressed air, and which is capable of heating and atomizing the oil fed thereinto in a highly efficient manner and insuring that the oil will issue therefrom into the furnace in a perfectly atomized form, thus providing for great economy of fuel consumption. I attain this object by the construction illustrated in the accompanying drawings in which—

Figure 1 is a sectional view of the atomizer, a suitable arrangement of connecting the inlet pipes being shown. Fig. 2 is an end view of the atomizer tip. Fig. 3 is a cross section of the atomizer on the line *x*—*y* of Fig. 1. Fig. 4 is a view illustrating the manner in which the atomizer is mounted on a furnace front.

Similar figures of reference indicate similar parts throughout the several views.

The atomizer is preferably formed as shown in section in Fig. 1, and is, when in place, mounted on the furnace front as shown in Fig. 4, in which 1 indicates a portion of the end plate forming a furnace front, 2 indicates the combustion chamber, 3 the firebars and 4 the ashpit.

The portion of the atomizer exterior of the combustion chamber is preferably conical in design, forming a chamber 5, as shown in Fig. 1, from the inner periphery of which project into the center a plurality of pin members 6 arranged as shown in Figs. 1 and 3, while the portion extending into the combustion chamber is tubular in formation as shown at 7 in Figs. 1 and 4, the end of which portion 7 is enlarged, as shown at 8 and closed, two slots, 9 and 10, being cut in the closed end to allow for the exit of the atomized oil. A diaphragm plate 11 divides the tubular portion 7 longitudinally into two sections, and an oil nozzle 12 is fitted into the end of the chamber 5 to extend thereinto, all as shown in Fig. 1. The end of this nozzle may be open, so that the oil will issue directly therefrom, but in the preferred construction shown in Fig. 1, the end is closed and openings 13 and 14 are provided in the body of the nozzle, through which openings the oil issues into the chamber 5.

The chamber 5 is adapted for connection to any source of fuel supply and steam or compressed air for atomization purposes, such as that indicated in Fig. 1, in which 15 represents the oil supply pipe connected to the nozzle 12 by the stop valve 16, and 17 represents the alternative steam or compressed air supply pipe in connection with the chamber inlet openings 20 and 21 and entering the chamber on opposite sides of the nozzle 12, steam being fed to the pipe 17 by the pipe 18, which is connected to the steam space of the boiler, or, alternately, compressed air may be fed to the pipe 17 through the pipe 19, which is connected to any suitable source of compressed air supply, both these pipes, that is, pipe 18 and pipe 19, being led to a cross connection 22 common to both.

Referring to Fig. 1, it will be seen that the openings 13 and 14 of the nozzle 12 are located directly opposite the respective inlets 20 and 21, and this is the preferred position of the openings 13 and 14.

The operation of the atomizer will be apparent, and is as follows:—The oil, entering the conical chamber 5 through the openings 13 and 14 of the nozzle 12, which nozzle is maintained at a very high temperature by the impinging thereon of the steam, or compressed air, as the case may be, comes immediately in contact with the atomizing fluid issuing through the respective inlet openings 20 and 21 from the pipe 17 to be heated and broken up thereby and by which it is forced along to the tip of the atomizer, the atomization being completed by the pin members 6, the diaphragm plate 11, and finally by its passage through the restricted openings 9 and 10, issuing therefrom in a perfectly atomized state.

What I claim as my invention is:—

1. An oil atomizer comprising a frusto-conical chamber having inlet openings in its large end and having its small end terminating in a tubular extension the end of which is closed and provided with outlet passages, a tubular member extending into

said chamber, said member being provided with outlet openings arranged respectively opposite the inlet openings of the said chamber, and a plurality of inwardly projecting members disposed within the chamber.

2. An oil atomizer comprising a frusto-conical chamber having inlet openings in its large end and having its small end terminating in a tubular extension the end of which is enlarged and closed and provided with outlet openings, a tubular member extending into said chamber, said member being provided with outlet openings arranged respectively opposite the inlet openings of the chamber, a plurality of inwardly projecting members disposed within the chamber and arranged to obstruct the passage of fluid therethrough and a diaphragm plate disposed longitudinally in the said tubular extension.

3. An oil atomizer comprising a frusto-conical chamber having inlet openings in its large end and having its small end terminating in a tubular extension the end of which is enlarged and closed and provided with a pair of transverse outlet slots, a tubular liquid conduit member extending into the chamber, said member being provided with outlet openings arranged respectively opposite the inlet openings of the chamber, a plurality of pin members secured to the inner periphery of the chamber and arranged circularly and transversely thereof, and a diaphragm plate disposed longitudinally in the said tubular extension.

4. In an oil atomizer, a conical chamber, pins of decreasing length extending radially inwardly from the walls of the chamber intermediately of its length the pins of greatest length being adjacent the base of said chamber, means for injecting the fluid to be atomized into one end of the chamber, and a suitable outlet at the opposite end of the chamber.

5. In an oil atomizer, a chamber having an outlet at one end, a nozzle extending into the opposite end of the atomizing chamber and having diametrically opposed nozzle outlets, and steam supply inlets extending into the chamber at diametrically opposite points in radial alinement with the diametrically opposed orifices of the nozzle.

6. In an oil atomizer, a chamber having an extension, a transverse diaphragm in said extension dividing it into compartments, a discharge member for said extension having openings therein, said diaphragm terminating before reaching said member whereby vapor mingling space is provided.

Dated at Vancouver, B. C., this 20th day of September, 1915.

JOHN ROBERT BROWN.

Witnesses:
JAMES TAYLOR,
ISOBEL D. ORR.