

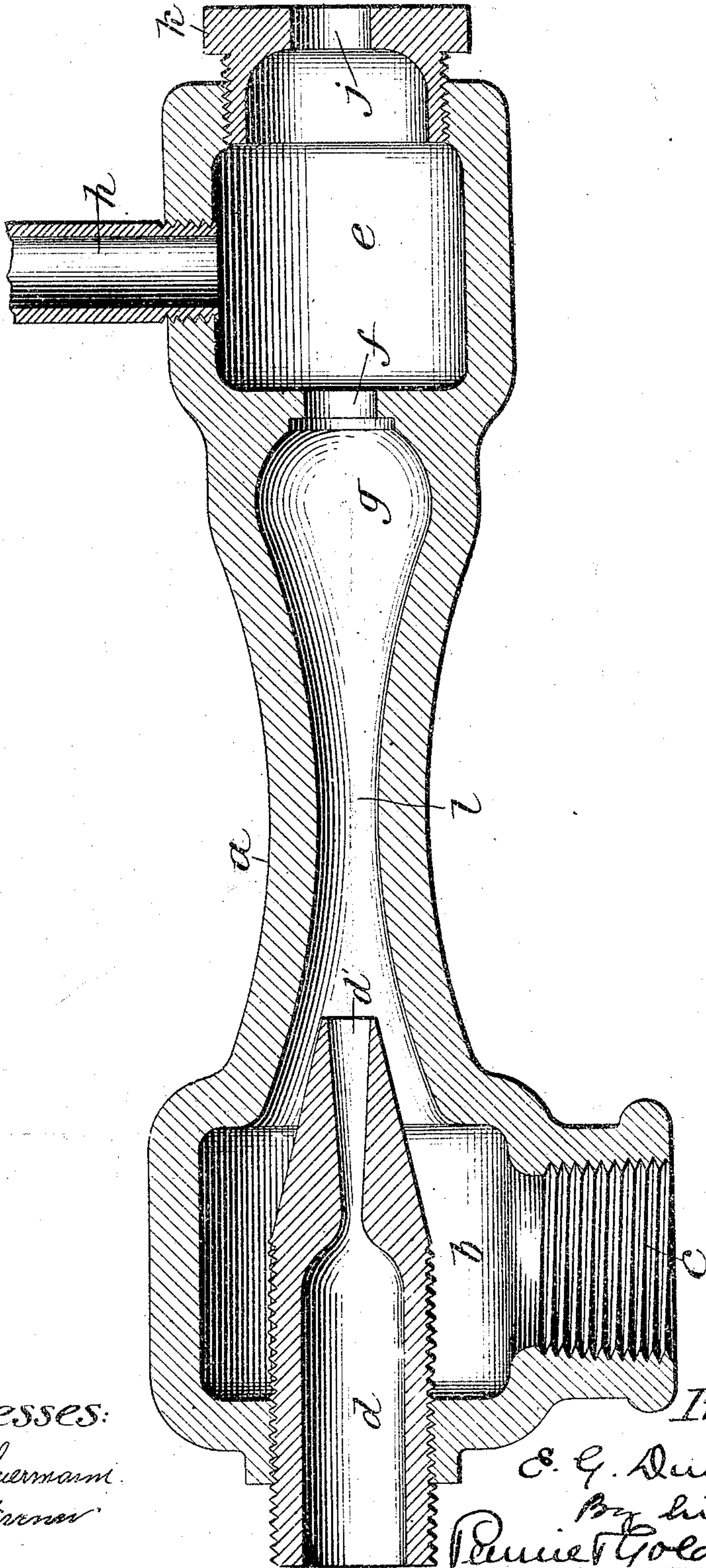
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E. G. DUISENBERG.
ATOMIZER FOR LIQUID FUEL.

APPLICATION FILED MAY 28, 1903.

NO MODEL.



Witnesses:

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EDWARD G. DUISENBERG, OF HONOLULU, TERRITORY OF HAWAII.

ATOMIZER FOR LIQUID FUEL.

SPECIFICATION forming part of Letters Patent No. 757,100, dated April 12, 1904.

Application filed May 28, 1903. Serial No. 159,088. (No model.)

To all whom it may concern:

Be it known that I, EDWARD G. DUISENBERG, a citizen of the United States, residing at Honolulu, Island of Oahu, Territory of Hawaii, have invented a new and useful Atomizer for Liquid Fuel, of which the following is a specification.

My invention relates to that class of burners for liquid fuel which atomize the fuel previous to its entering the furnace.

The invention of burners employing the injector principle to draw in air and oil or other liquid fuel was a step in the right direction; but they do not meet all the requirements for the reason that the fuel is either imperfectly atomized or if accomplished the amount of steam used to operate the apparatus is too great.

My invention employs a steam-injector to draw in air and impart to the steam and air mixture a velocity as it enters the mixing-chamber through an orifice, all being arranged such that the liquid fuel is drawn into and atomized in said mixing-chamber and is then ejected through another orifice into the furnace. The proportion of steam, air, and fuel is adjustably controlled, as will hereinafter more fully appear.

The accompanying drawing represents in section an atomizer for liquid fuel embodying my invention.

The casing *a*, preferably a casting, at one end has an air-inlet *c* and an air-chamber *b*, provided with an adjustably-connected steam-injector *d*, with a conical orifice *d'*. At the other end of the casing *a* is the mixing-chamber *e*, provided with a liquid-fuel inlet *h* and a plug *k*, having an orifice *j* to the furnace or combustion-chamber. Between the air-chamber *b* and the mixing-chamber *e* is located a steam and air chamber *g*, which connects with the air-chamber *b* by the passage *l* and with the mixing-chamber *e* by the orifice *f*. It will now be noted that the steam-inlet is arranged to form an injector, the amount of air being drawn in being regulated by adjustment of the position of the steam-inlet nozzle with respect to the casing-passage *l*. The steam and air mixing in the chamber *g* is forced through the orifice *f* under a high velocity, entering the mixing-chamber *e*. On account of the construction of the chamber *g* and orifice *f* a partial vacuum is formed at the edge of the chamber *e*, due to which the liquid fuel is drawn in from the supply-pipe *h* and becomes atomized and is ejected through the orifice *j*. The flame begins immediately outside of the plug *k*. The amount of steam admitted is regulated by a valve in the steam-supply pipe connected to the steam-inlet. The liquid fuel—such as crude oil, petroleum, tar, molasses, &c.—is also regulated by a valve. The plug *k* is removable for cleaning.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An atomizer for liquid fuel, comprising a casing provided with an air-chamber, a steam-injector for drawing air into said chamber, a mixing-chamber having a fuel-inlet, a plug in the end of said casing provided with a constricted outlet to the furnace in axial alinement with the casing and a constricted passage between the air-chamber and the mixing-chamber to impart a high velocity to the air and steam entering said mixing-chamber.

2. An atomizer for liquid fuel, comprising a casing provided with an air-chamber, a steam-injector for drawing air into said chamber, an enlarged air and steam chamber, a mixing-chamber beyond the latter and provided with a fuel-inlet and a constricted burner-outlet in axial alinement with the casing leading to the furnace, and a constricted passage between the air and steam chamber and the mixing-chamber, to impart a high velocity to the air and steam entering the mixing-chamber.

3. An atomizer for liquid fuel, comprising the casing *a*, having the air-chamber *b* provided with the inlet *c*, the steam-injector *d* entering said air-chamber, the air and steam chamber *g*, the passage *l* connecting the chambers *b* and *g*, the mixing-chamber *e* connected to the chamber *g*, the fuel-supply *h* entering said chamber *e* and the outlet-plug *k* having a constricted orifice *j*.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

E. G. DUISENBERG.

Witnesses:

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JAMES E. FULLERTON.