

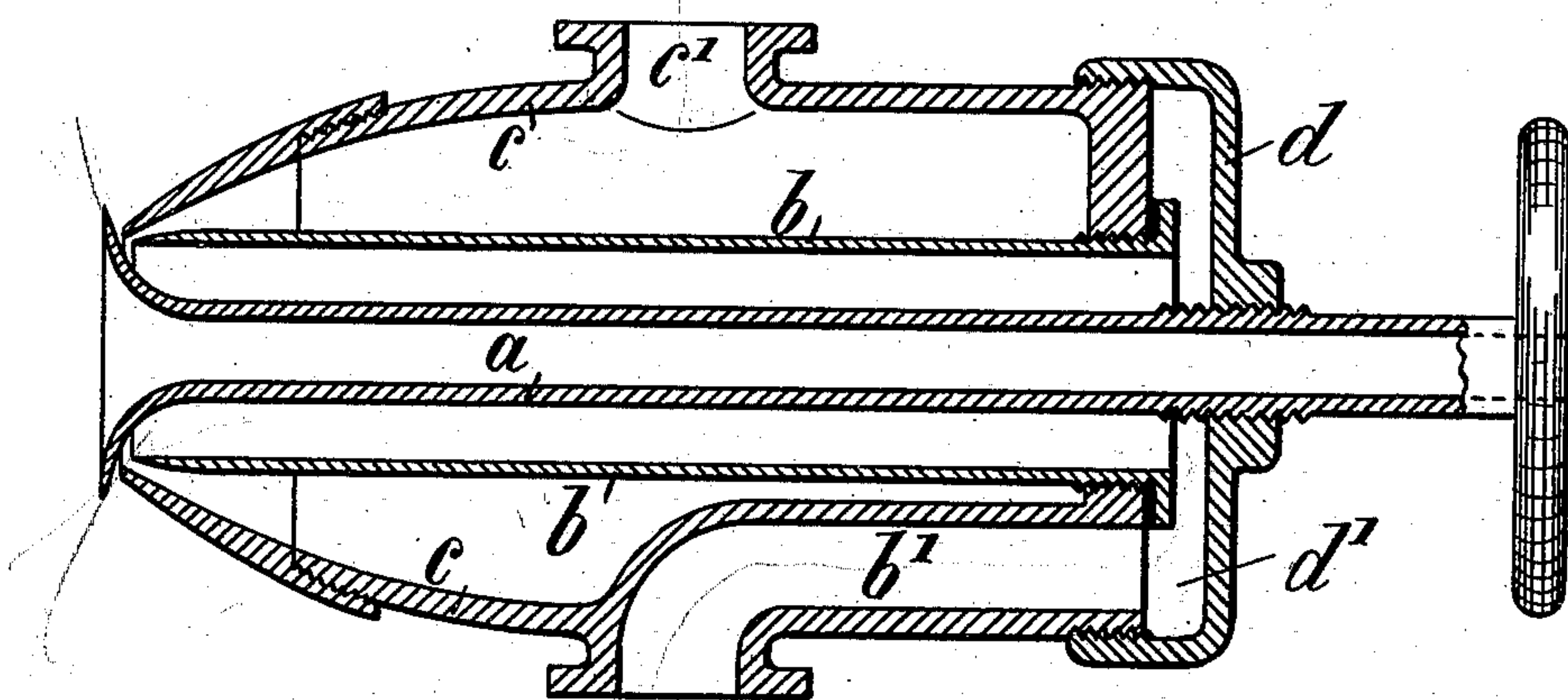
No. 651,900.

Patented June 19, 1900.

P. E. THUROW.
BURNER FOR LIQUID FUEL.

(Application filed Dec. 31, 1897.)

(No Model.)



Witnesses:
E. H. Allen
B. W. Sommers

Inventor:
Paul Emil Thurow.
by *[Signature]*
Atty.

UNITED STATES PATENT OFFICE.

PAUL EMIL THUROW, OF HAMBURG, GERMANY.

BURNER FOR LIQUID FUEL.

SPECIFICATION forming part of Letters Patent No. 651,900, dated June 19, 1900.

Application filed December 31, 1897. Serial No. 665,002. (No model.)

To all whom it may concern:

Be it known that I, PAUL EMIL THUROW, a subject of the German Emperor, and a resident of Hamburg, in the German Empire, have invented certain new and useful Improvements in Burners for Liquid Fuel, of which the following is a specification.

My invention relates to the utilization of liquid fuel, particularly for heating boilers.

In burners for burning liquid fuel—such as hydrocarbons, petroleum, and the like—in which a jet of compressed air is used to carry the liquid fuel in the form of spray into the furnace the compressed air, owing to its cooling while expanding in the pipe-conduit, reduces the temperature at the base of the flame. To overcome this inconvenience, it has been proposed to heat the air at the outlet of the jet-nozzle; but this has also proved impracticable, owing to the undue expansion of the air and corresponding loss in pressure or force to such an extent as to imperfectly atomize the liquid fuel.

In using steam for atomizing the liquid fuel the inconvenience mentioned above is practically obviated; but in many cases, and particularly in marine-boiler furnaces, it is very difficult and also too expensive to procure the sufficient amount of steam necessary for this purpose.

This invention has for its object a construction of burner whereby the use of air-pressure or steam as atomizing agents is dispensed with and the vapor of a suitable volatile combustible oil, as a hydrocarbon oil under the required pressure, is used, the oil thus serving also as a fuel. The necessary amount of oxygen indispensable for a perfect combustion may be led into the flame separately or together with the jet of vapor acting as the atomizing means for the liquid fuel.

My invention is illustrated in the accompanying drawing, wherein the burner is shown in longitudinal sectional elevation.

The burner consists of three pipes or nozzles *a*, *b*, and *c*, put together and screwed upon one another in the manner shown. The funnel-shaped or trumpet-mouthed outlet end of

the innermost tube *a* exceeds in diameter that of the outlet ends of the nozzles *b* and *c*. By screwing the said tubes *a*, *b*, and *c* more or less into one another the relative positions of the said tubes may be altered, so as to regulate the width of their outlet-openings.

The liquid fuel enters through the neck *c'* into the nozzle *c*, while the vapor for atomizing the liquid fuel is forced with a sufficient pressure through the channel *b'* and the chamber *d'*, formed by the screw-cap *d*, into the nozzle *b*. The liquid fuel escaping through the outlet-opening of the nozzle *c* is atomized by the combustible vapor driven through the nozzle *b* and is carried in the form of spray in the midst of the fire, so as to apply the flame to the surfaces of the boiler. The oxygen or atmospheric air necessary for a perfect or complete combustion is supplied through the tube *a*.

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

A burner for liquid fuel, comprising an internally-threaded cup-shaped base provided with an axial threaded bearing, and an external nozzle closed at its inner end and screwed to the base to form a chamber between the two, an internal open-ended nozzle screwed axially into the closed end of the external nozzle, means for supplying liquid fuel and a combustible vapor under pressure to the outer nozzle and the chamber in rear thereof, respectively, and an air-supply pipe extending axially through the inner nozzle and screwed into the aforesaid axial bearing in the base, said air-tube provided with a flaring mouth at its outlet extending over the outlets of the outer and inner nozzles, for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 15th day of December, 1897.

PAUL EMIL THUROW.

Witnesses:

ALEXANDER SPECHT,
E. H. L. MUMMENHOFF.