

No. 708,893.

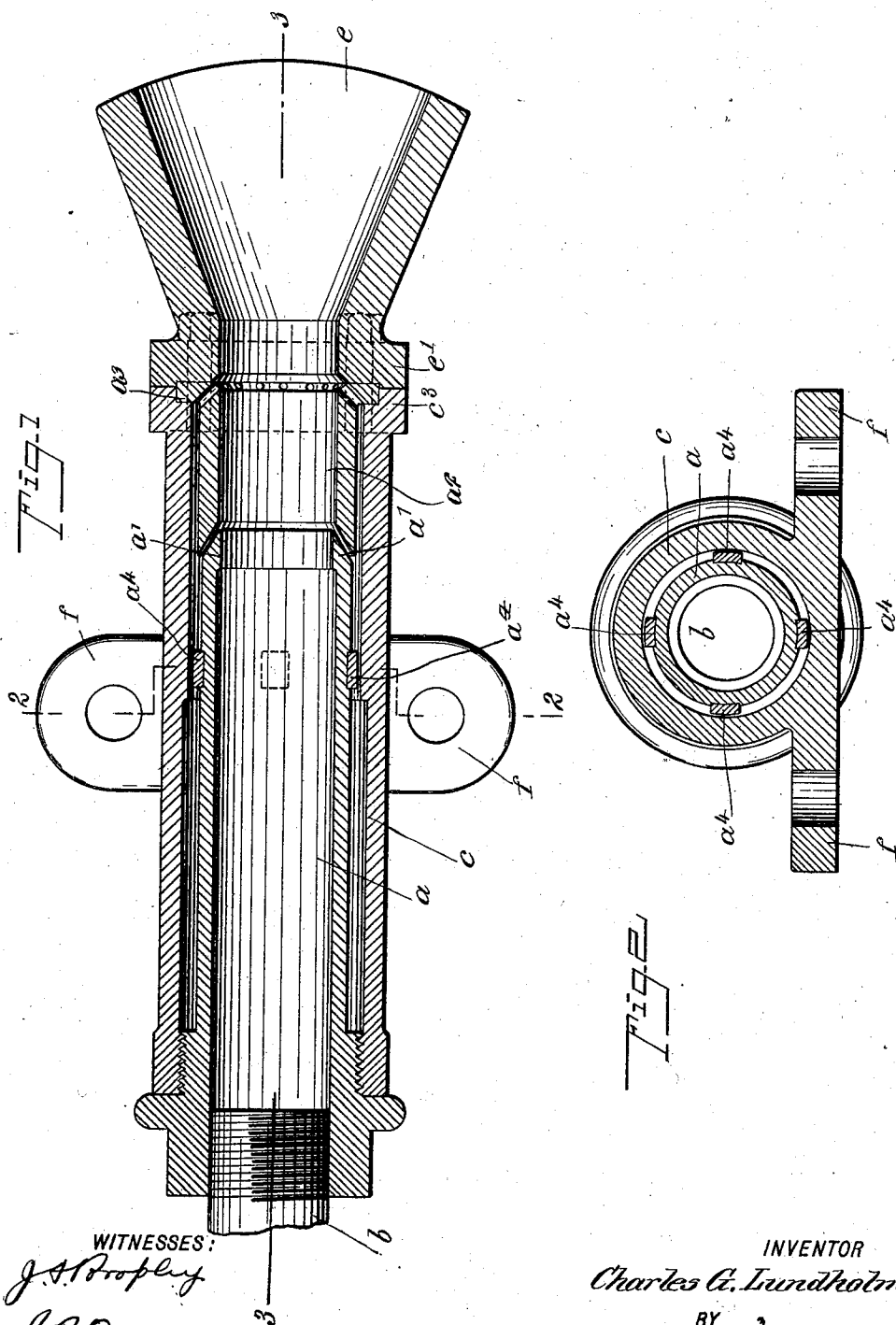
Patented Sept. 9, 1902.

C. G. LUNDHOLM.
BURNER FOR LIQUID FUELS.

(Application filed Aug. 8, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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J. B. Owens

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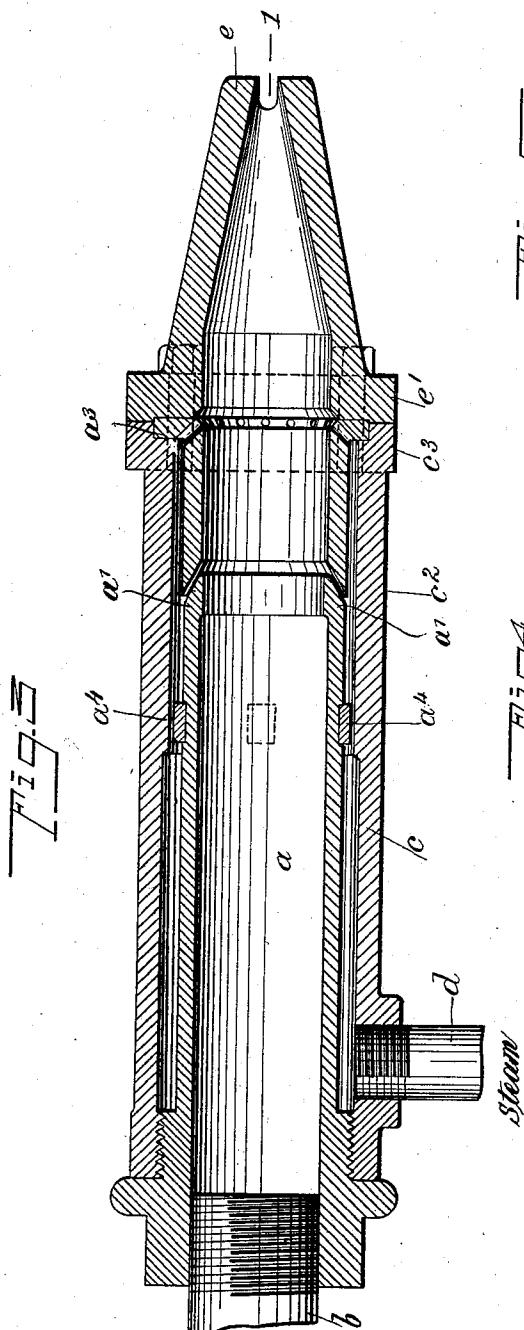


Fig. 3

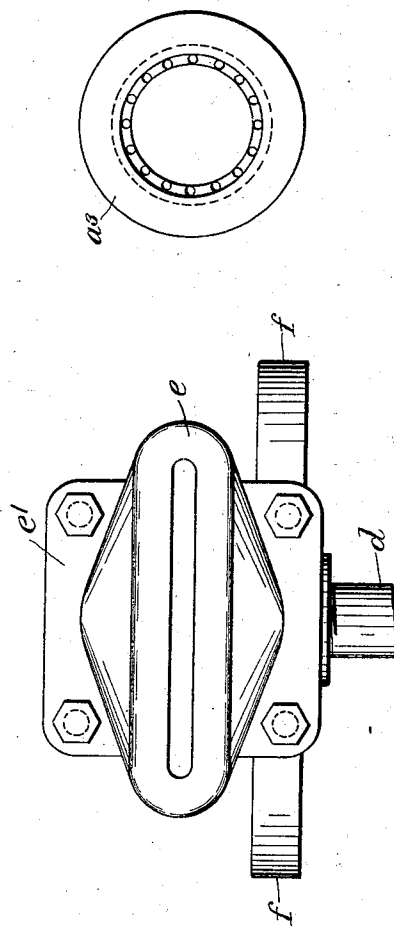


Fig. 4

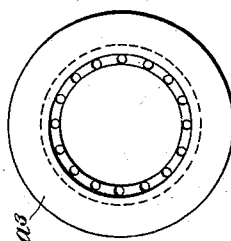


Fig. 5

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UNITED STATES PATENT OFFICE.

CHARLES GUSTAVUS LUNDHOLM, OF SAN BERNARDINO, CALIFORNIA.

BURNER FOR LIQUID FUELS.

SPECIFICATION forming part of Letters Patent No. 708,893, dated September 9, 1902.

Application filed August 8, 1901. Serial No. 71,335. (No model.)

To all whom it may concern:

Be it known that I, CHARLES GUSTAVUS LUNDHOLM, a citizen of the United States, and a resident of San Bernardino, in the county of San Bernardino and State of California, have invented a new and Improved Burner for Liquid Fuels, of which the following is a full, clear, and exact description.

This invention relates to a burner adapted especially for burning oils, and it is of that class in which the oils are atomized by a spray of steam or air previous to the combustion of the oil.

This specification is a specific description of one form of the invention, while the claims are definitions of the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal section of the invention on the line 1 1 of Fig. 3. Fig. 2 is a cross-section on the line 2 2 of Fig. 1. Fig. 3 is a longitudinal section on the line 3 3 of Fig. 1. Fig. 4 is a front elevation showing particularly the mouthpiece or tip of the burner, and Fig. 5 is a front view of the flange of the front section of the nozzle.

The burner has an exterior cylindrical shell *c*, into which is screwed the rear nozzle-section *a*.

b represents the oil-supply pipe, which enters the rear end of the nozzle-section *a*. The rear portion of the shell *c* is enlarged over the diameter of the shell at the front portion, and the front portion of the nozzle *a* has guide-lugs *a*⁴ thereon which bear against the smaller diameter of the shell to steady the nozzle-section *a*. The front end of the nozzle-section *a* is tapered at its outer edge, as indicated at *a*'. Directly ahead of the rear nozzle-section *a* is located the front nozzle-section *a*², the rear end of which is flared to match the tapered front end of the nozzle-section *a*. This section *a*² has a flange *a*³ at its front end, in which are formed diagonal perforations.

d, Fig. 3, represents the steam-supply pipe, which enters the shell *c*, so that the steam passes along the nozzle-sections *a* and *a*².

e represents the mouthpiece or tip of the burner, which is of duck-bill form and fastened to the front end of the shell through

the medium of flanges *c*³ and *e*', formed, respectively, on the parts *c* and *e* and secured together by bolts or other suitable fastenings.

The nozzle at the point of the flange *e*' is circular in cross-section; but owing to the peculiar form described it broadens out at the discharge, so as to eject a flat divergent stream. Between these flanges *c*³ and *e*' is secured the flange *a*³ of the nozzle-section *a*².

f indicates ears which are formed on the shell *c* and by which the burner may be fastened in the position desired.

The two nozzle-sections *a* and *a*² are arranged in line with each other, the back section *a* being fastened to and supported in the shell *c* at the rear and the section *a*² being secured by the flange *a*³. The front end of the section *a* is beveled, so as to direct the steam-blast into the oil-chamber in a converging conical stream, and the same result is attained by the perforations in the flange *a*³, through which the steam from the nozzle-section *a*² passes. The oil passing through the parts *a* and *a*² and the steam being forced into the oil-stream in two circular-converging streams results in the most thorough atomizing of the oil. The burner thus constructed insures the effective combustion of the oil, and it is especially adaptable for use in connection with the heavy oils which heretofore have been very difficult to consume. This is true owing to the manner in which the tubular steam-jets are converged into the center of the stream of oil, so that the oil, notwithstanding its heaviness, is thoroughly atomized.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A burner for liquid fuel, comprising a shell, a mouthpiece at its front end, and two nozzle-sections located in and separated from the shell in longitudinal line with each other, the nozzle-sections having a passage between them, and the front nozzle-section having a passage between its front end and the shell, and means for supplying the fuel and an atomizing fluid, the one to the interior of the nozzles and the other to the exterior of the nozzles within the shell.

2. A burner for liquid fuels, comprising a shell, a mouthpiece fastened to the front end

thereof, a front nozzle-section situated in the shell and spaced therefrom, said front nozzle-section having a perforated flange secured between the front of the shell and the mouth-
5 piece, a rear nozzle-section located in the shell in line with and back of the front nozzle-section, said nozzle-sections having a passage between them, and means for supplying the fuel and an atomizing fluid, the one
10 to the interior of the nozzles and the other to the exterior of the nozzles within the shell.

3. A burner for liquid fuel, comprising a shell, two nozzle-sections located in and separated from the shell said nozzle-sections being
15 in longitudinal line with each other, the

nozzle-sections having a passage between them and the front nozzle-section having a passage between its front end and the shell, and means for supplying the fuel and an atomizing fluid, the one to the interior of the nozzles and the other to the exterior of the nozzles within the shell. 20

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

CHARLES GUSTAVUS LUNDHOLM.

Witnesses:

C. F. LAPE,

ROBT. CUNNINGHAM.