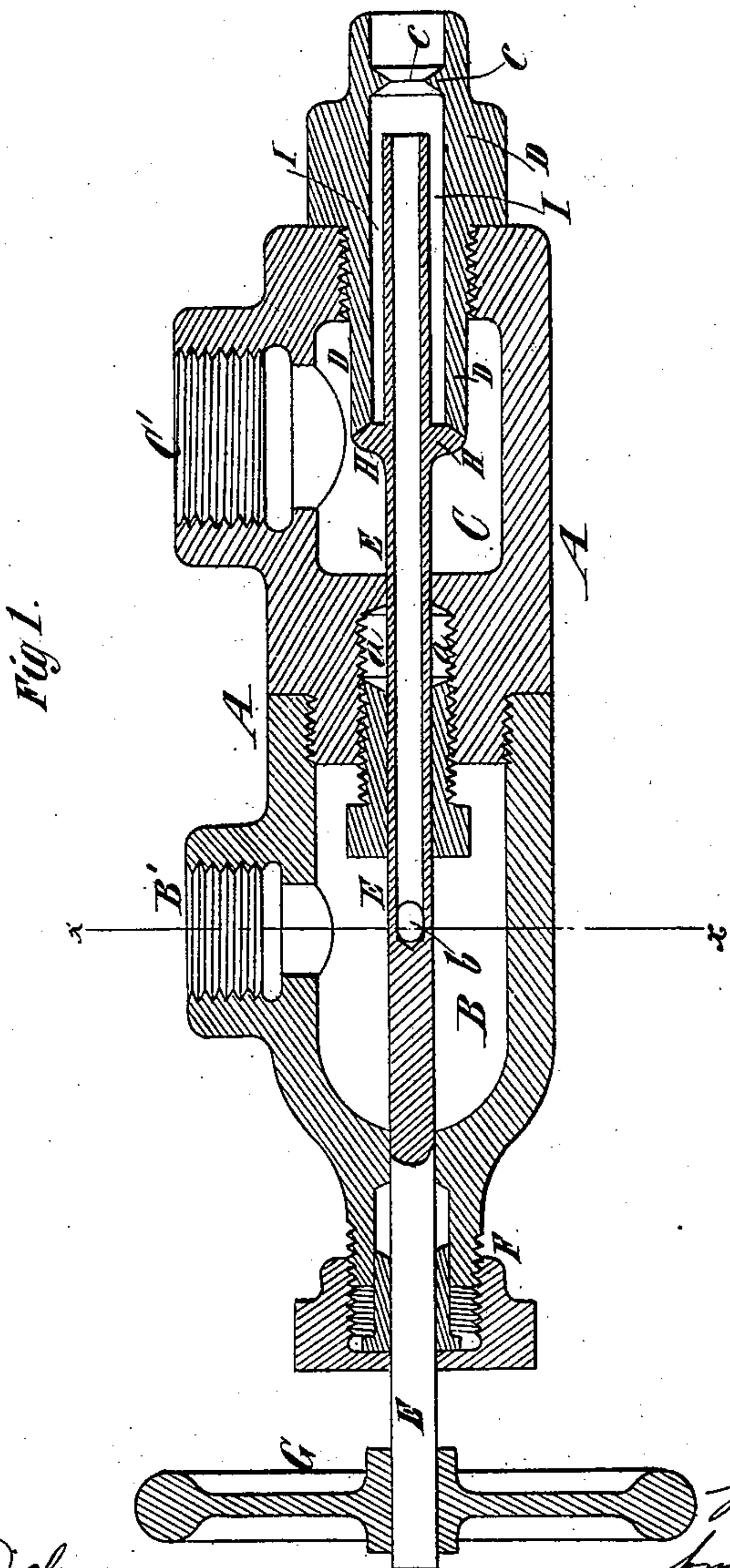
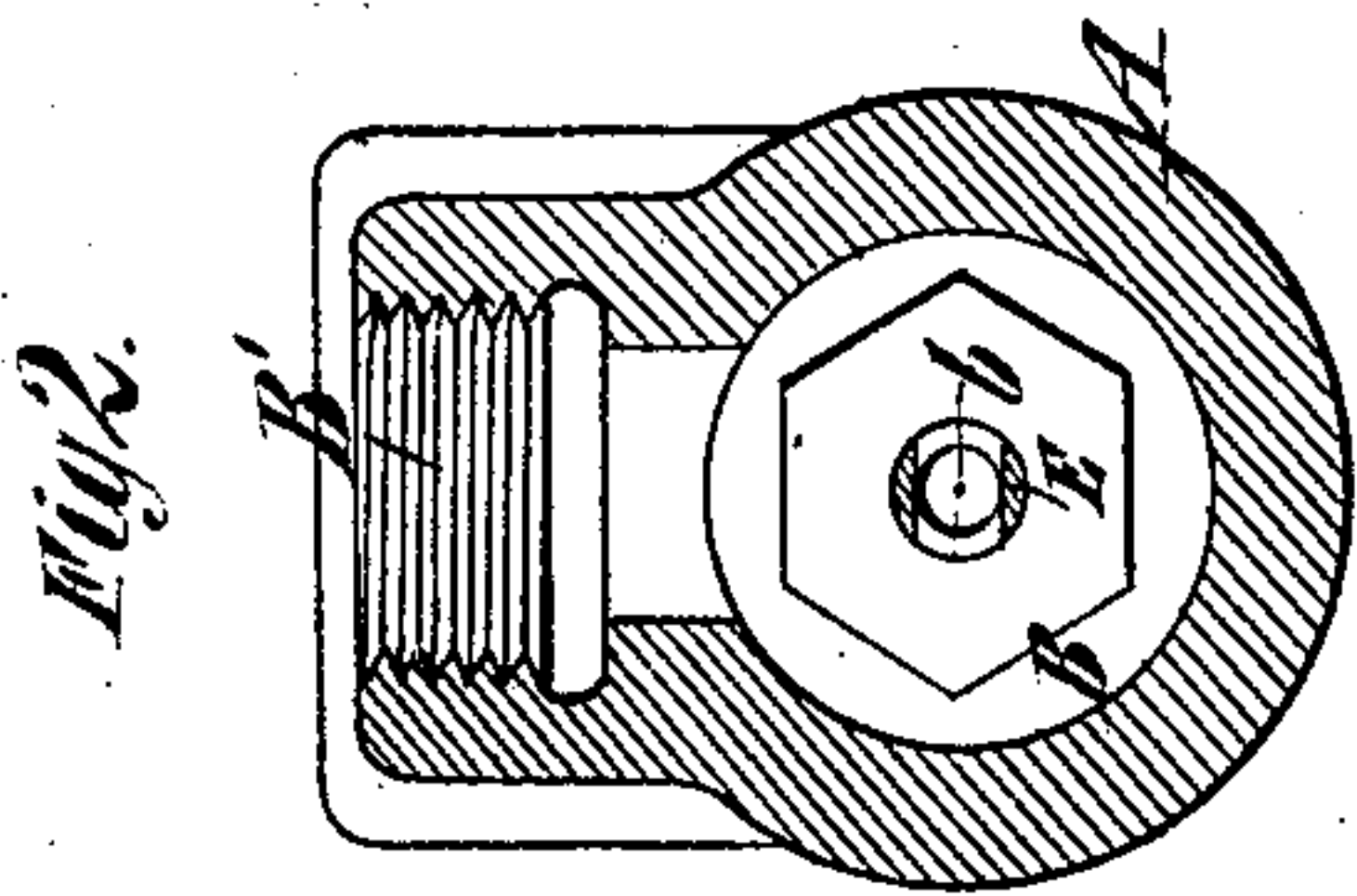


(Model.)

W. W. THOMAS.
Atomizer for Hydrocarbons.

No. 243,473.

Patented June 28, 1881.



Witnesses
Geo. H. Hayes
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UNITED STATES PATENT OFFICE.

WILLIAM W. THOMAS, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO SAMUEL T. THOMAS, OF PHILADELPHIA, PENNSYLVANIA.

ATOMIZER FOR HYDROCARBONS.

SPECIFICATION forming part of Letters Patent No. 243,473, dated June 28, 1881.

Application filed March 30, 1881. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM W. THOMAS, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Atomizers for Hydrocarbons, of which the following is a specification.

My invention relates to atomizers for injecting tar and other combustible liquids into furnaces, and which comprise a liquid-chamber, a steam-chamber, outer and inner nozzle-tubes, leading respectively from the liquid-chamber and steam-chamber, and the latter of which carries a valve fitting to a seat in rear of the former and is movable axially for opening and closing said valve.

The object of my invention is to effect the more complete atomization or spraying of the hydrocarbon liquid and the more thorough mingling thereof with the steam.

The invention consists in the combination, in an atomizer, with steam and liquid chambers and a nozzle-tube leading from the liquid-chamber, of a steam-tube carrying a valve fitting a seat at rear of said nozzle-tube and extended beyond said valve so as to form between the two tubes a channel of annular transverse section, through which the liquid is sucked, and over the surfaces of which the liquid to be atomized is distributed. In order to more effectively break the hydrocarbon liquid into spray the interior of the liquid-nozzle tube, beyond the end of the steam-tube, preferably has a sharp-edged contraction leaving an opening only a trifle larger than the internal diameter of the steam-tube.

In the accompanying drawings, Figure 1 represents a longitudinal section through an apparatus embodying my invention; and Fig. 2 represents a transverse section on the line xx , Fig. 1.

Similar letters of reference designate corresponding parts in both figures.

In the metallic shell or body A of the atomizer are formed two chambers, B C, the first of which is supplied with steam through an inlet-opening, B', and the second with hydrocarbon liquid through an inlet-opening, C'.

In the liquid-chamber C is inserted a nozzle-tube, D, through which liquid is discharged

from said chamber; and E designates a steam-tube concentric with the tube D and extending through both the chambers B and C. The tube E passes through a stuffing-box, a , between the two chambers, which prevents leakage of steam from the chamber B into the chamber C, and said tube, or a solid rod or stem forming a continuation thereof, passes through a stuffing-box, F, in the end of the atomizer, and is provided with a handle or hand-wheel, G. The steam enters the tube E through transverse openings, b , in the side thereof, and thence passes into the nozzle-tube D. The inner end of the nozzle D forms a valve-seat, to which is fitted a valve, H, carried by the tube E, and the said tube may be adjusted to open the valve to any required degree.

Ordinarily in atomizers the steam-tube does not extend beyond the valve which controls the escape of liquid; but in my atomizer said tube has a continuation, E', extending some distance beyond the valve H and forming between it and the inner surface of the tube D a channel or chamber, I, of annular transverse section. Beyond the end of the tube E the tube D is internally contracted or has an annular contraction, c , which has a sharp edge, and forms an opening very slightly larger than the internal diameter of the tube E.

The hydrocarbon-liquid chamber C, is full of liquid at all times, and when the atomizer is to be set in operation the tube E is moved outward enough to slightly open said valve. The discharge of steam through the steam-tube E then taking place produces a vacuum in the annular space I and the liquid, which passes the slightly-open valve in a thin film, spreads over the interior surface of the tube D and the exterior of the tube E', and as it reaches the sharp edge of the contraction c is exposed to the action of the current of steam and thoroughly sprayed and mingled therewith.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an atomizer, the combination, with steam and liquid chambers and a nozzle-tube extending from the liquid-chamber, of a steam-tube carrying a valve fitting to a seat at the rear of said nozzle-tube and extended beyond the

valve, so as to form between the two tubes in front of the valve a channel of annular transverse section, substantially as and for the purpose specified.

- 5 2. The combination of the chambers B C, the nozzle-tube D, having the sharp-edged contraction *c*, and the steam-tube E, carrying the

valve H, and having the extension E', all substantially as specified.

WILLIAM W. THOMAS.

Witnesses:

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