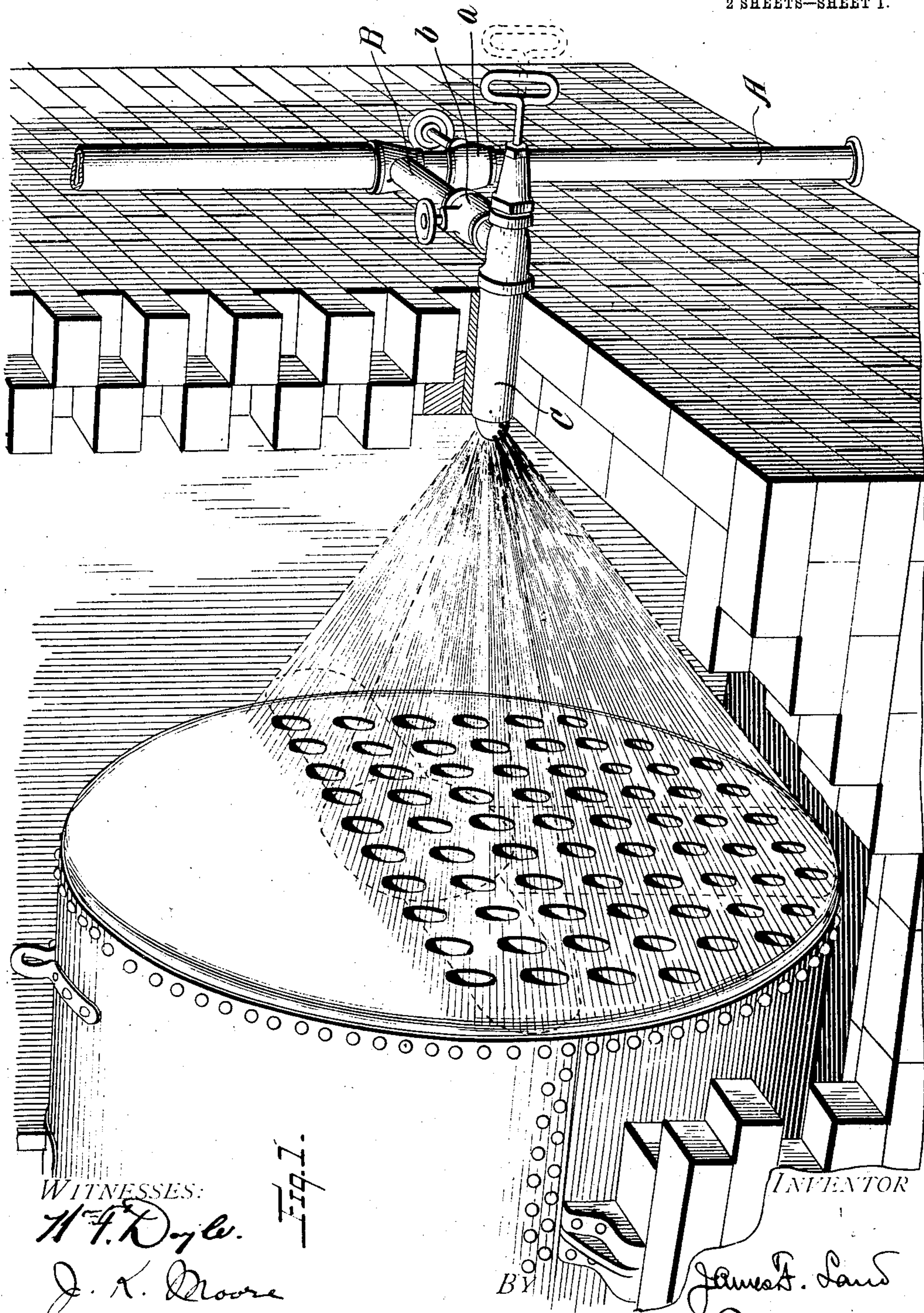


No. 846,856.

PATENTED MAR. 12, 1907.

J. F. LAND.
BOILER TUBE CLEANER.
APPLICATION FILED OCT. 8, 1906.

2 SHEETS—SHEET 1.

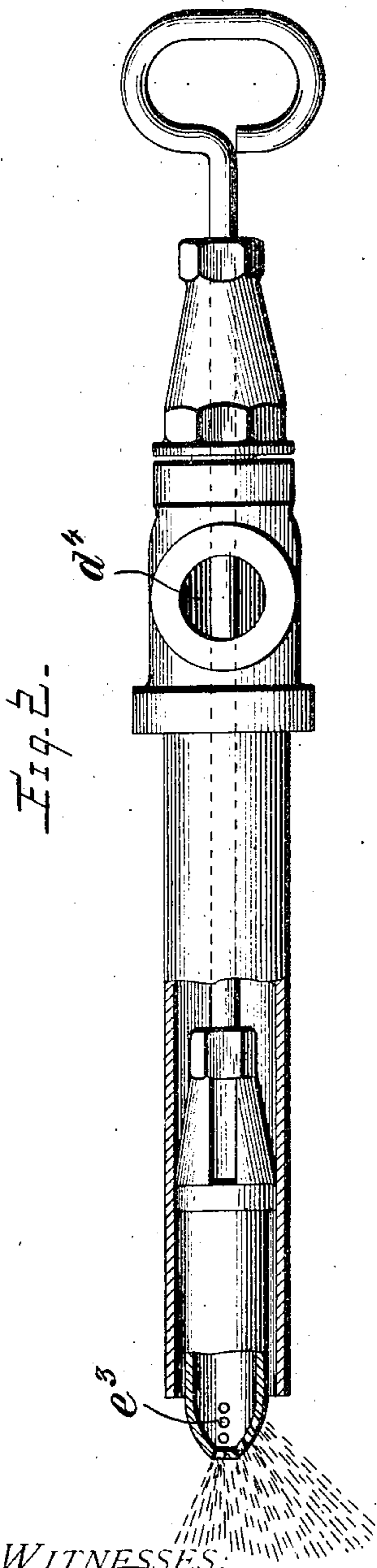


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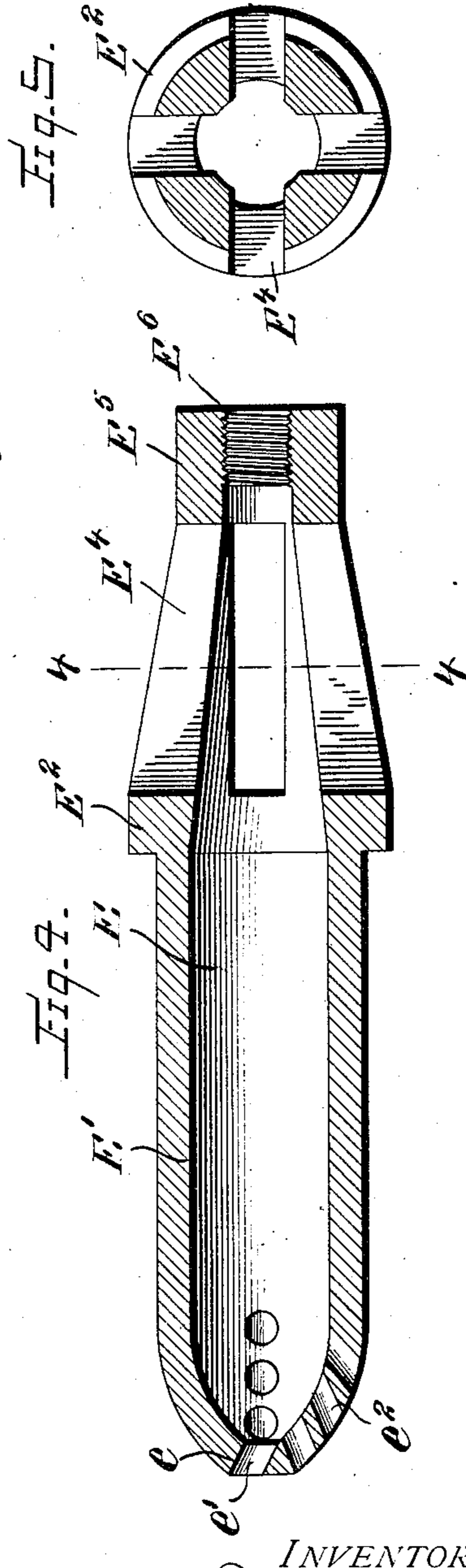
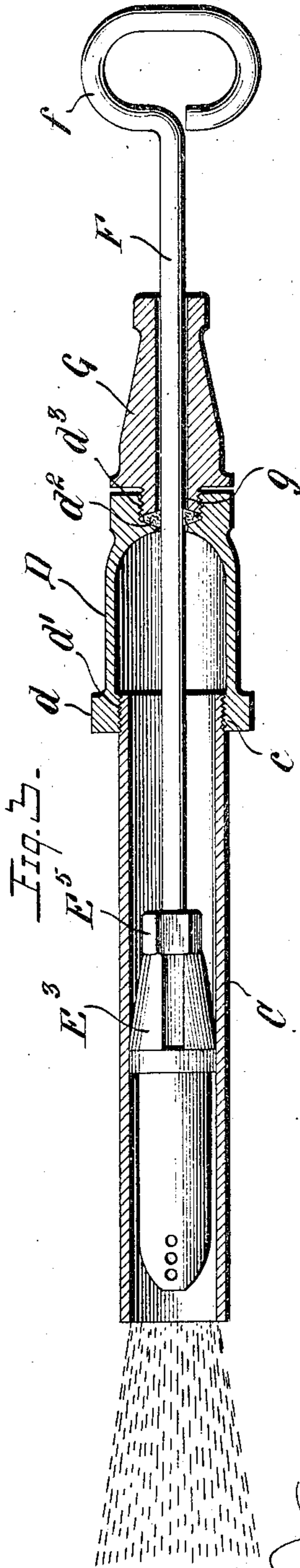
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2 SHEETS—SHEET 2.



WITNESSES:
H. F. Doyle.
J. K. Moore



INVENTOR
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Attorney

UNITED STATES PATENT OFFICE.

JAMES F. LAND, OF DANVILLE, VIRGINIA.

BOILER-TUBE CLEANER.

No. 846,856.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed October 8, 1906. Serial No. 338,029.

To all whom it may concern:

Be it known that I, JAMES F. LAND, a citizen of the United States, residing at Danville, in the county of Pittsylvania and State of Virginia, have invented certain new and useful Improvements in Boiler-Tube Cleaners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the class of boiler-tube cleaners, and more particularly to that class in which jets of steam are thrown onto the rear end of the boiler.

The special object of my invention is the production of a spraying device which will effectually direct a jet of steam into each and every tube in the boiler to clean the same; and the said device consists of the construction hereinafter set forth.

In the accompanying drawings I have clearly illustrated my improved device, and a full and exact description thereof is contained in the annexed specification.

In the accompanying drawings, Figure 1 is a perspective view of a steam-boiler with my improved device employed in connection therewith, the brick casing being broken away to more clearly show my device. Fig. 2 is a side elevation, partly in section, of my device. Fig. 3 is a longitudinal section through the casing and showing the nozzle and handle in elevation. Fig. 4 is a longitudinal section through the nozzle; and Fig. 5 is a section on line 4 4, Fig. 4.

In the several views like letters of reference designate similar parts of my improved device.

A in the drawings designates the steam-supply pipe, and B a branch pipe therefrom, the main pipe A being provided near the joint with the branch pipe B with a stop-cock *a* and the branch pipe B being provided with a stop-cock *b*.

C is a cylindrical casing located in the wall of the fire-box at a point opposite the center of the boiler, the end of said casing adjacent to the boiler being flush with the inside of the wall, while the other end of said casing is provided with an externally-threaded portion *c*, projecting beyond the outer face of the wall.

D is a hollow casing provided with an annular flange *d* and an internally-threaded ori-

fice *d'*, adapted to engage with the threaded end *c* of the casing C and at the other end with an orifice *d''*, directly in line with the orifice *d'*, but of reduced diameter, said orifice *d''* entering a stuffing-box *d'''*, formed in the casing D.

d'' is an inlet-port in the side of the casing C and in direct communication with the branch pipe B.

E is the spraying-nozzle and comprises a hollow cylindrical body *E'*, having a rounded end *e*, provided with a central discharge-opening *e'*, adapted to direct a jet of steam upwardly, and a series of discharge-openings *e'' e''' e'''*, respectively, in the under face and the sides of said rounded end *e*, said openings being adapted to direct jets of steam downwardly and outwardly. The other end of the cylindrical body *E'* is provided with an annular flange *E''* and a conical portion *E'''*, provided with oblong openings *E''''*, and at its end with an octagonal or squared projection *E'''''*, having an internally-threaded orifice *E''''''*.

F is a rod adapted to freely slide in the opening *d''* in the casing D and is supported in a conical-shaped bearing portion G, having a threaded cylindrical projection *g*, adapted to fit into the stuffing-box *d'''*, and forms the gland therefor. The rod F is provided at one end with a threaded portion adapted to fit into the threaded opening *E''''* in the nozzle E and at its other end with a handle *f*. With this construction it is obvious that the nozzle E, through the medium of the rod F, may be either reciprocated or revolved in the casing C.

The operation of my improved device is as follows: When the parts are in a normal position, as shown in Fig. 3, and when the stop-cocks *a* and *b* have been opened, the steam from the supply-pipe A will be forced through the branch pipe into the casing D, thence through the openings *E''''* into the nozzle E, from which it escapes through the openings *e'*, *e''*, and *e'''* into the cylindrical casing C, which, it is obvious, will result in a circular spray which will only strike a limited number of the tubes. The nozzle is then forced into the position shown in Fig. 2, in which position it will throw a number of sprays, as shown by dotted lines in Fig. 1, and hence by turning the nozzle the jets of steam may be thrown into every tube not already subjected to the action of the steam.

When all of the tubes have been cleansed, the stop-cock *b* is turned off and the nozzle drawn back to normal position.

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

1. In a boiler-flue cleaner, the combination with a stationary tubular casing, having a discharge-aperture at its end, and provided with a steam-inlet, of a hollow nozzle located within said casing and having a part snugly fitting the same and a part adapted to be projected through said discharge-aperture beyond the end of said casing, said projecting part of said nozzle being provided with a discharge-aperture angularly disposed to the axis thereof, and an operating-rod directly and rigidly connected to said nozzle and extending beyond said casing for positively projecting, retracting and rotating said nozzle, substantially as described.

2. In a boiler-flue cleaner, the combination with a stationary tubular casing, having a discharge-aperture at its end, and provided with a steam-inlet, of a hollow nozzle located within said casing and having a part snugly fitting the same and a part adapted to be projected through said discharge-aperture beyond the end of said casing, said projecting part of said nozzle being rounded and provided with a discharge-aperture at its end and with series of apertures extending longitudinally of said nozzle, all of said apertures in said nozzle being angularly disposed to the axis thereof, and an operating-rod directly and rigidly connected to said nozzle and extending outside of said casing for positively projecting, retracting and rotating said nozzle, substantially as described.

3. In a boiler-flue cleaner, the combination with a stationary tubular casing, having a discharge-aperture at its end, and provided with a steam-inlet adjacent to its rear end, of a hollow nozzle located within said casing and having a part intermediate of its ends snugly fitting said casing, the forward por-

tion of said nozzle being of less diameter than that of the interior of said casing and provided with discharge-apertures angularly disposed to the axis thereof, said forward portion of said nozzle being adapted to be projected through said discharge-aperture in said casing, the rearward portion of said nozzle being tapered toward its end and provided with slits therein forming inlet-apertures, and an operating-rod directly and rigidly connected to the rear end of said nozzle and extending outside of said casing for positively projecting, retracting and rotating said nozzle, substantially as described.

4. In a boiler-flue cleaner, the combination with a stationary tubular casing, having a discharge-aperture at its end, and provided with a steam-inlet adjacent to its rear end, of a hollow nozzle located within said casing and having a part intermediate of its ends snugly fitting said casing, the forward portion of said nozzle being of less diameter than that of the interior of said casing and provided with discharge-apertures angularly disposed to the axis thereof, said forward portion of said nozzle being adapted to be projected through said discharge-aperture in said casing, and rearward portion of said nozzle being tapered toward its end and provided with slits therein forming inlet-apertures, an operating-rod directly and rigidly connected to the rear end of said nozzle and projecting through the rear end of said casing for positively projecting, retracting and rotating said nozzle and a gland at the end of said casing surrounding said rod to prevent the escape of steam and to guide said rod, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

JAMES F. LAND.

Witnesses:

HARRY R. LOYD,
MACK. H. WITT.