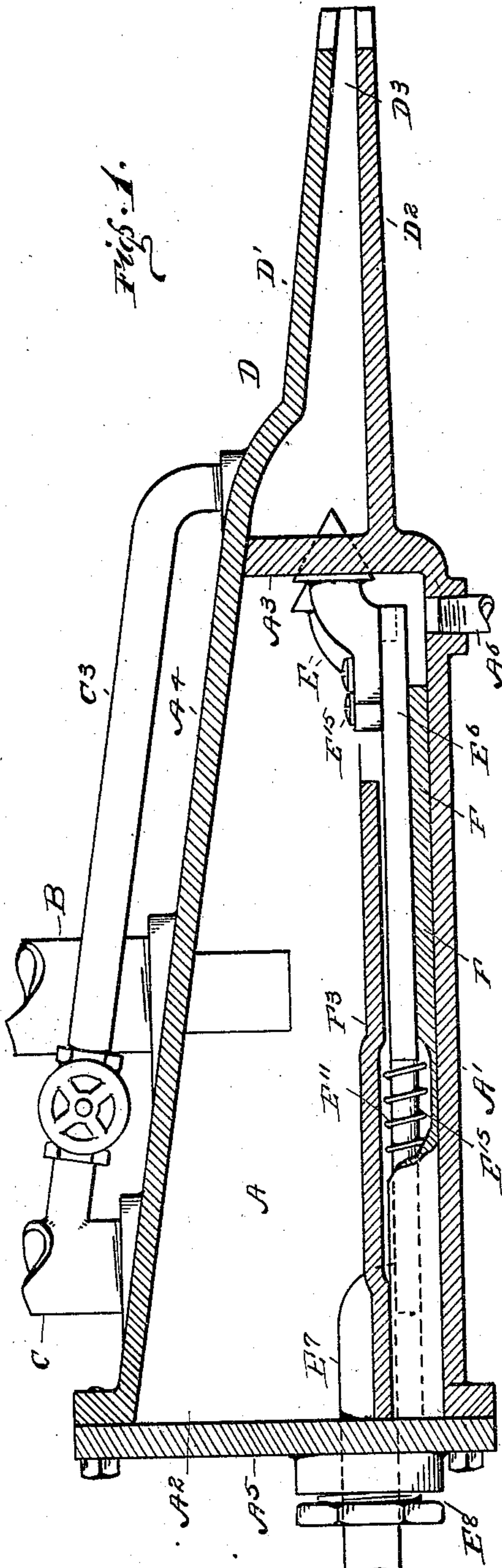


No. 842,370.

PATENTED JAN. 29, 1907.

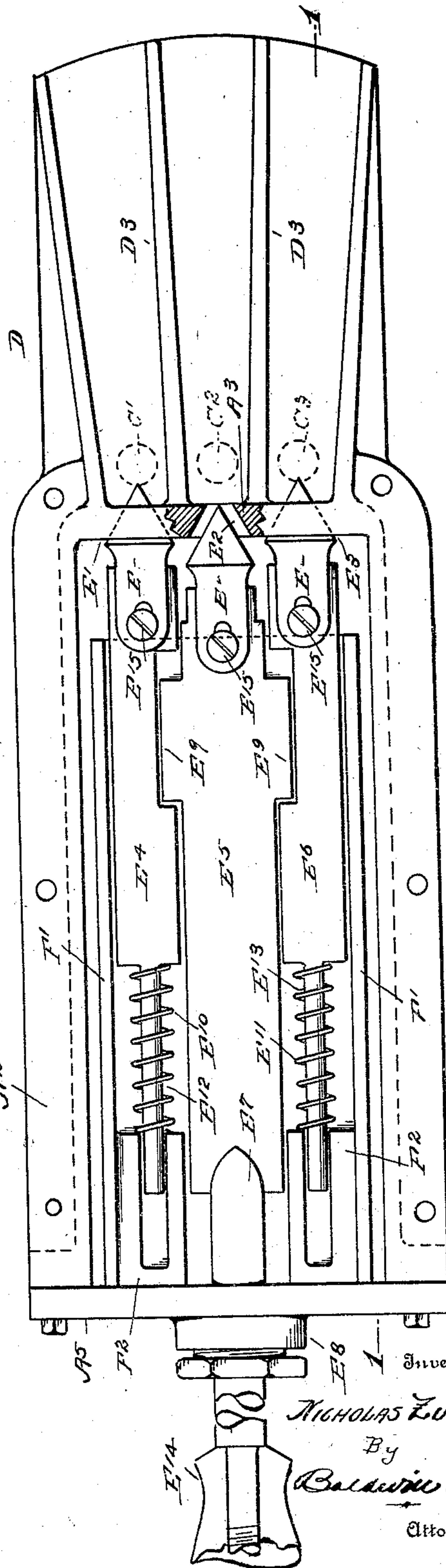
N. ZUCKE.
OIL BURNER.

APPLICATION FILED NOV. 16, 1905.



Witnesses
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Fig. 2.



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UNITED STATES PATENT OFFICE.

NICHOLAS ZUCKE, OF SPARKS, CALIFORNIA.

OIL-BURNER.

No. 842,370.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed November 16, 1905. Serial No. 287,594.

To all whom it may concern:

Be it known that I, NICHOLAS ZUCKE, a subject of the King of Italy, and residing in the city of Sparks, county of Nevada, and State of California, have invented certain new and useful Improvements in Oil-Burners; and I do hereby declare the following to be a full, clear, and exact description of the said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention relates to improvements in crude-oil burners, and particularly to oil-burners for locomotives.

The object of the invention is to provide a burner wherein the volume of flame is composed of distinct units capable of independent control, whereby one or more units may be operated at will to increase or decrease the main volume of flame.

Broadly, the invention consists of an oil-box having oil and steam inlets therein and a series of outlets leading to the atomizing-nozzle and controlled by plugs operated by a sliding handle protruding through a stuffing-box in the back of the oil-box.

In the drawings, Figure 1 is a side elevation, partially in cross-section, on the line 1 1, Fig. 2, of an oil-burner constructed in accordance with this invention. Fig. 2 is a plan view from above of the same with the detachable lid removed.

In detail the construction consists of the oil-box A, preferably of cast-iron, with the floor A', the sides A², and the dividing-wall A³ cast in one integral piece. The box is closed by the removable lid A⁴ and the removable back A⁵. The lid and back are bolted to the box with gaskets between to make the oil-box hermetically tight. The oil is led into the oil-box through the pipe B. The steam is introduced into the oil-box through the pipe C. The mixture of oil and steam or the oil alone, as the case may be, escapes from the oil-box to the atomizing-nozzle D through the tapered openings E' E² E³. These openings are closed by the tapered plugs E, ground to fit said openings. The plugs are adjustably mounted upon the interlocked slides E⁴ E⁵ E⁶. The central primary one terminates in the round shaft E⁷, which extends through the stuffing-box E⁸ in the back A⁵. The said slides rest within the

guide consisting of the floor F and the sides F'. The center slide E⁵ has the lateral extensions E⁹, which interlock with recesses formed in the adjacent sides of the slides E⁴ and E⁶. To maintain the valves E' and E³ normally tight, the spiral springs E¹⁰ E¹¹, encircling the stems E¹² E¹³, are provided. These springs are expanded between the slides and the lugs F², provided on the guide.

To protect the working parts from sand and grit which may be in the oil, the plate F³ is laid on top of the sides F' over the sliding parts.

Any water which may accumulate in the oil-box is conducted off by a suitably-constructed drain device A⁶.

The nozzle D consists of the top and bottom D' D², formed integrally with the top and bottom, respectively, of the oil-box, if desirable, and having the dividing-webs D³ leading from between the openings E' E² E³.

In the case of locomotives the oil is usually fed to the burners by gravitation. The oil fills the oil-box by gravitation or under pressure, as the case may be, and is driven therefrom by the steam entering through the pipe C. As shown in Fig. 2, the opening E² only is open, this being the only unit-flame in the burner operating. This would be the condition of the burner where the demands for steam are light. In the event of further demands for steam the handle E¹⁴ is drawn out until the extensions E⁹ engage the slides E⁴ and E⁶, which withdraws their respective plugs, and thus increasing the volume of flame by adding two more flame units.

Should it be found desirable, the plugs may be adjusted by means of the screws E¹⁵, so that the openings will be opened seriatim. To add force to the atomization, the inspirators C' C² C³, controlled by independent valves, are provided to eject a jet of live steam into the path of the oil escaping into the respective sections of the nozzle.

The inlet of steam to the oil-box should be proportioned to the number of exit-openings therefrom to avoid the possibility of the steam blowing back into the oil-tank. As a further precaution against this possibility a check may be placed in the oil-pipe.

Varying conditions may demand variations in the construction herein illustrated without materially altering the spirit of the invention.

Having thus described this invention, what is claimed, and desired to secure by Letters Patent, is—

- 5 1. An oil-burner consisting of an oil-box having oil and steam inlets; a divided atomizing-nozzle; a series of openings between said oil-box and the nozzle, primary and secondary plugs fitting said openings and mounted upon interlocked slides controlled from
10 outside said oil-box; a guide within said oil-box, and inclosing said slides; springs to keep said secondary plugs normally seated; inspirators opening into the several divisions of the nozzle.
- 15 2. An oil-burner consisting of an oil-box having oil and steam inlets; an atomizing-nozzle; openings between said oil-box and the nozzle, primary and secondary plugs fitting said openings, and mounted upon
20 slides, the movement of the secondary slides being controlled by the slide of the primary plug; inspirators opening into the nozzle.
- 25 3. An oil-burner comprising an oil-box having an oil-inlet, a divided nozzle, openings being formed between said oil-box and nozzle, and primary and secondary plugs fitting said openings and adjustably mounted upon slides, the slides of the secondary plugs being controlled by the slide of the primary plug.
- 30 4. An oil-burner comprising an oil-box having an oil-inlet, a divided nozzle, openings

being formed between said oil-box and nozzle, primary and secondary plugs fitting said openings, and slides upon which said plugs are adjustably mounted, the slides of the secondary plug being spring-pressed, and the slide for the primary plug being provided with means for moving the secondary slides against the action of their springs.

- 5 5. An oil-burner comprising an oil-box having an oil-inlet, a divided nozzle, openings being formed between said oil-box and nozzle, primary and secondary plugs fitting said openings, and means for operating said plugs synchronously and also for operating said
45 primary plug independently.

6. An oil-burner comprising an oil-box provided with oil and steam inlets, an atomizing-nozzle, a series of openings between said oil-box and nozzle, primary and secondary plugs controlling said openings, means
50 for holding said secondary plugs to their seats, means for moving the primary plug, and means whereby the movement of the primary plug will be imparted to the secondary
55 plugs.

In testimony whereof I have hereunto set my hand this 31st day of October, 1905.

NICHOLAS ZUCKE.

Witnesses:

A. J. HENRY,
BALDWIN VALE.