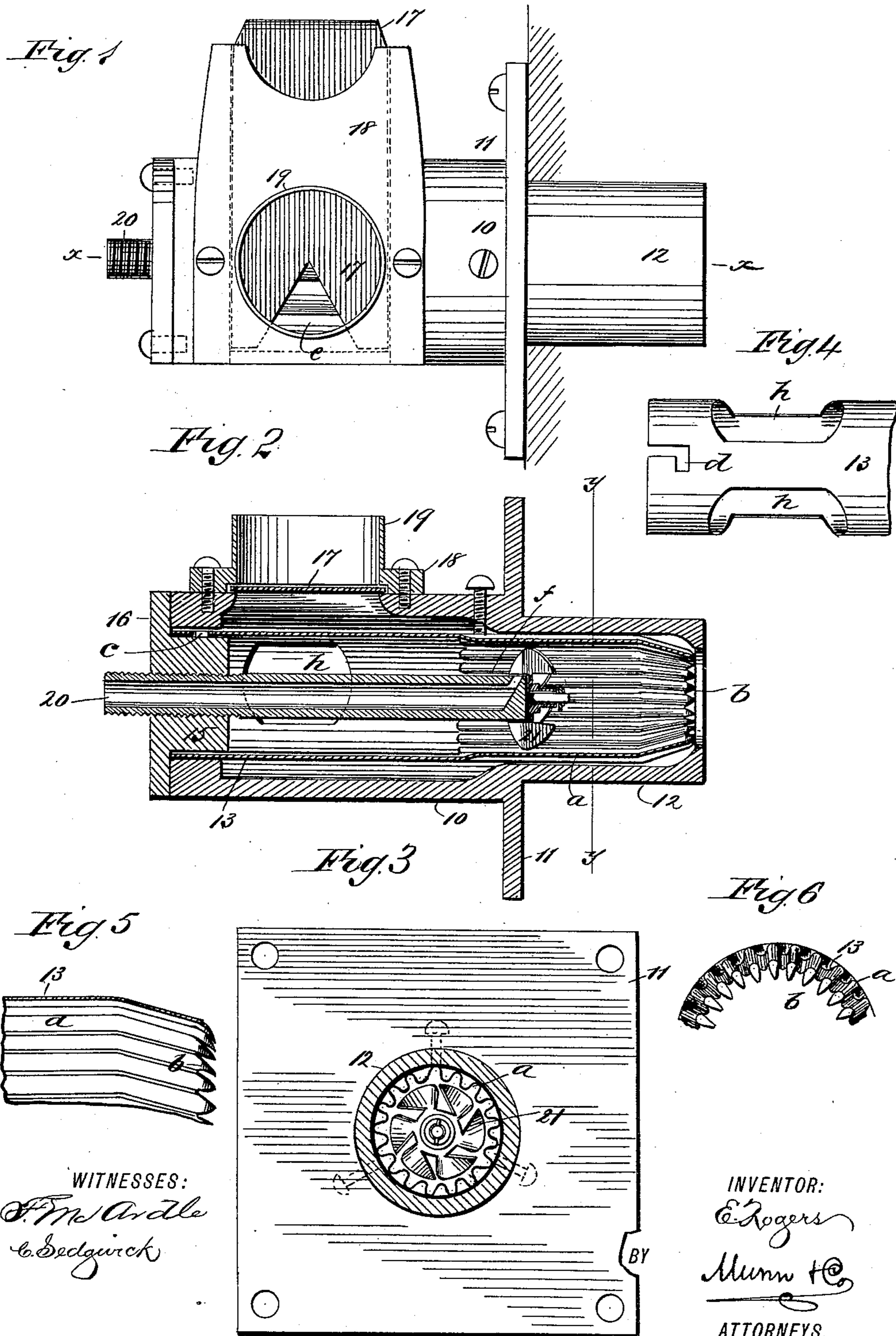


(No Model.)

E. ROGERS.
HYDROCARBON BURNER.

No. 434,810.

Patented Aug. 19, 1890.



UNITED STATES PATENT OFFICE.

ETHAN ROGERS, OF BALLSTON SPA, NEW YORK.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 434,810, dated August 19, 1890.

Application filed July 13, 1889. Serial No. 317,448. (No model.)

To all whom it may concern:

Be it known that I, ETHAN ROGERS, of Ballston Spa, in the county of Saratoga and State of New York, have invented a new and Improved Hydrocarbon-Burner, of which the following is a full, clear, and exact description.

This invention relates to hydrocarbon-burners, the object of the invention being to provide a burner by means of which crude oil may be used as a fuel for forges or for any other desired purposes, the burner, however, being more especially adapted for use as a forge-burner.

To the ends above named the invention consists, essentially, of certain novel constructions, arrangements, and combinations of elements to be hereinafter described, and specifically pointed out in the claims.

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

Figure 1 is a plan view of my improved burner. Fig. 2 is a central sectional elevation thereof, the view being taken on line *x x* of Fig. 1. Fig. 3 is a cross-sectional view on line *y y* of Fig. 2. Fig. 4 is a detail view of a portion of the atomizer. Fig. 5 is a detail view of a portion of the forward end of the atomizer in partial longitudinal section, and Fig. 6 is a view of a portion of the forward end of the atomizer.

In the drawings, 10 represents the body or barrel of the burner, which is formed with a flange 11, arranged for connection with the forge-back, and with a forwardly-extending open tubular projection 12.

Within the body or barrel 10 is mounted a tubular atomizer 13, the forward portion of which is corrugated, as shown at *a*, the extreme forward end being preferably drawn in and the forward edge serrated, as shown at *b*; but although I prefer to so draw in the forward end and serrate the forward edge of the atomizer, still it will be understood that in certain cases the drawing in and the serration might be dispensed with. The atomizer fits closely upon a projection 15, that is formed upon the cap or back 16 of the body 10, the

projection 15 being provided with a lug *c*, which fits within an L-shaped slot *d*, that is formed in the atomizer.

In the upper wall of the body or barrel 10 I form an opening arranged so that it may be partially closed by a slide or valve 17, said valve or slide riding beneath a cap 18, formed with a flange 19, to which said flange an air-supply pipe is secured when the burner is in operation. The valve or slide 17 has an opening near its forward end, preferably V-shaped, as shown at *e*, the only requirement being that the opening shall be such as to prevent the entire cutting off of the supply of air. Oil is fed to the burner through a pipe or tube 20, the rear end of which is externally threaded to engage an internal thread formed in the cap 16, and to the forward end of the tube 20 is attached a fan 21, the oil from the tube being delivered through an eduction-port *f* just to the rear of the fan-blades.

In operation the pipe or tube 20 is connected with an oil-supply and the flange 19 with an air-blast. The air is then forced inward past the slide or valve 17, a portion of the air passing forward about the atomizer 13, while a portion enters ports or openings *h*, that are formed in the atomizer just beneath the slide, and as the air entering the ports *h* passes forward it imparts a rotary motion to the fan 21, and as the fan 21 is so revolved its centrifugal force takes the oil as it comes from the port *f* and throws it in a spray upon the corrugations on the inside of the atomizer, the sprayed or vaporized oil being forced forward and out of the burner, there to be ignited, as will be readily understood. By forming the slide or valve 17 so that it cannot be entirely closed I prevent the shutting off of the air and the consequent accumulation of unconsumed oil.

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

1. In a hydrocarbon-burner of the character herein described, the combination, with the inclosing tube or casing, of a longitudinally-corrugated tubular lining open at both ends, and an oil-supply pipe leading into said inclosing tube or casing, substantially as described.

2. In a hydrocarbon-burner of the character herein described, the combination, with the inclosing tube or casing, of a longitudinally-corrugated tubular lining open at both ends, and an oil-supply pipe provided with a spreader located at the inlet end of the corrugations, substantially as set forth.

3. In a hydrocarbon-burner of the character herein described, the combination, with the tubular atomizer having longitudinally-extending internal corrugations, of an oil-supply pipe provided with a centrifugal spreader at the inlet end of said corrugations, the atomizer having an opening for the blast in rear of the spreader, substantially as set forth.

4. The combination, with the outer tubular body or barrel adapted for connection with an air-blast and the atomizing-tube extending nearly to the discharge end thereof and provided with an opening communicating with the said body or barrel, of the oil-supply pipe provided at its delivery end within the atomizing-tube with a fan receiving the oil from said pipe and having a complete rotation about its axis, said fan being continuously rotated by the air-blast, substantially as set forth.

5. The combination, with the outer tubular barrel or body having an inlet slide-valve provided with a notch therein to prevent full closure thereof, and the atomizing-tube extending nearly to the discharge end of the said body or barrel and provided with an opening at or near its rear end, of the hydrocarbon-supply pipe discharging into the said atomizing-tube, and a rotary fan at the dis-

charge end of the said pipe, substantially as set forth.

6. The combination, with the atomizing-tube having longitudinal corrugations, a contracted and serrated discharge end, and an inlet for the blast at its rear end, of a hydrocarbon-pipe entering said tube and provided with a rotary fan at its delivery end within the corrugated portion of the said tube, having a continuous rotary movement imparted to it by the blast through the atomizer-tube, substantially as set forth.

7. In a hydrocarbon-burner, the atomizing-tube 13, open at both ends, contracted and serrated at its forward or discharge end, formed with longitudinally-corrugated forward portion and lateral openings *h h*, substantially as set forth.

8. A hydrocarbon-burner consisting of the outer tubular blast body or barrel 10, having its delivery end contracted, a lateral inlet-valve at its rear end, a flanged plug 15 in its rear end provided with a projection *c*, the atomizing-tube 13, having a slot *d*, receiving said projection and provided with lateral openings *h*, longitudinal corrugations *a*, and contracted serrated delivery end *b*, and the hydrocarbon-supply pipe extending through said plug 15 into the corrugated part of the atomizer-tube and there provided with a freely-revoluble fan, substantially as set forth.

ETHIAN ROGERS.

Witnesses:

HERBERT C. WESTCOT,
THOMAS KERLEY.