G. W. COEN.

LIQUID ATOMIZER.

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1,180,907.

Patented Apr. 25, 1916.

Fig. 1.

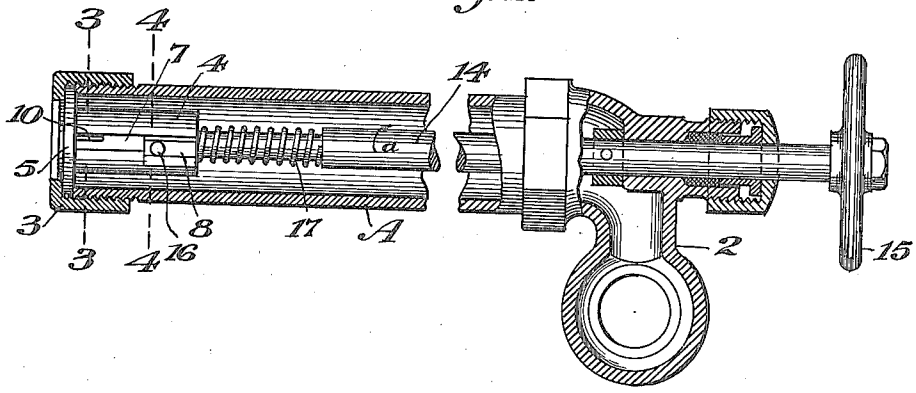


Fig. 2.

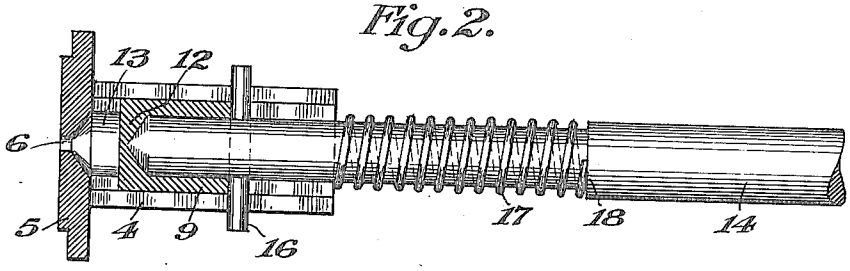


Fig. 3.

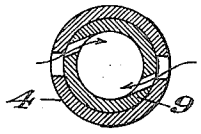


Fig. 4.

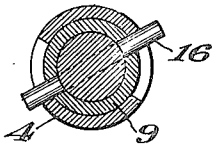


Fig. 6.

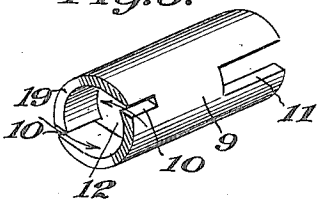
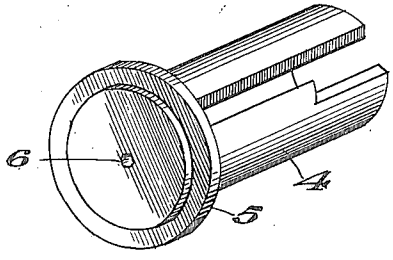


Fig. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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LIQUID-ATOMIZER.

1,180,907. Specification of Letters Patent. Patented Apr. 25, 1916.

Application filed June 14, 1915. Serial No. 34,122.

To all whom it may concern:

Be it known that I, GARNET W. COEN, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented new and useful Improvements in Liquid-Atomizers, of which the following is a specification.

This invention relates to an atomizer or spraying device particularly adapted for use in oil burners.

One of the objects of the present invention is to construct a simple, substantial atomizer or discharge nozzle, comprising a stationary and a turnable sleeve mounted one within the other, through which the oil is adapted to pass, said sleeves being provided with radially disposed admission slots which are adapted to be turned into and out of register with each other to regulate the oil flow therethrough.

Another object of the invention is to provide means for instantly regulating the adjustment of one sleeve with relation to the other, thus enabling the fireman or operator to instantly change the flame produced by the atomizer from a service fire to a stand-by or pilot light fire, or vice versa.

Further objects of the invention will hereinafter appear.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a longitudinal section of an oil burner showing the application of the atomizer. Fig. 2 is a central, longitudinal section through the outer end of the burner and atomizer. Fig. 3 is a cross section on line 3—3, Fig. 1. Fig. 4 is a cross section on line 4—4, Fig. 1. Fig. 5 is a perspective view of the outside atomizer sleeve. Fig. 6 is a perspective view of the interior sleeve.

Referring to the drawings, A indicates the discharge pipe of the burner which, in this instance, is connected with a suitable form of supply valve 2. Mounted on the outer end of the burner pipe and secured thereon, by means of a screw cap 3, is the atomizer proper. The atomizer consists of an exterior sleeve member 4 provided with a head 5 which is engaged by the removable cap 3 to secure it, with connected sleeve, centrally within the outer end of the pipe A. The head 5 is provided with a central discharge orifice 6 of small diameter, and the sleeve section 4 is slotted longitudinally on opposite sides, as indicated at 7; the outer end of the slot being slightly enlarged, as at 8, for purposes hereinafter to be described.

Mounted interiorly of sleeve 4 and turnable in relation therewith is an inner sleeve 9 which is slotted at its opposite ends, as indicated at 10 and 11; the slots 10 being preferably positioned tangentially. The sleeve 9 is centrally divided by a disk or partition 12 so that when the sleeves are positioned one within the other, as indicated in Fig. 2, an atomizing chamber 13 will be formed between the head 5 and partition 12, to which oil is admitted through the tangential slots 10 and from which the oil is permitted to discharge in the form of a whirling spray through the central discharge orifice 6. The oil admitted through valve 2 passes through the pipe A. It then enters the slots 7 and registering slots 10 into the atomizing chamber, and the volume of oil thus admitted is controlled by the register of slots 7 and 10. This is accomplished by turning the inner sleeve 9 by means of a rod 14, which passes through pipe A and valve 2, being provided with a handle 15 at its outer end by which it may be turned; connection between the inner sleeve and the inner end of rod 14 being formed by providing a pin 16 which passes through the rod and slots 11 formed on the outer end of sleeve 9. The pin 16 is also sufficiently long to pass through the enlarged portions 8 of slots 7, and the turning movement of the sleeve is, therefore, limited by the width of the enlarged portions 8 in the slots.

Referring to Fig. 1, it will be seen that the rod 14, with connected pin 16, has practically been turned to its limit in the direction of arrow *a*. The tangential slots 10 are in this position practically out of register with the communicating slots 7. Only a comparatively small volume or amount of oil can enter the atomizing chamber, or, in other words, just sufficient fuel is admitted to produce a pilot or stand-by fire. If it is desired to increase the fire, it can be accomplished by turning the rod 14 in the direction opposite to arrow *a* until the pin 16 engages with the opposite walls of the slots 8. The maximum opening or register be-

tween the slots 7 and 10 is thus produced, causing the atomizer to deliver or project its full capacity, or, in other words, produce a service fire which may be decreased by again turning the rod in the opposite direction to decrease the register between the communicating slots.

For the purpose of preventing leakage or admission of oil between the two sleeves 4 and 9, a spring 17 has been provided, one end of which engages a shoulder 18 on the rod while the opposite end engages with the outer end of sleeve 9, forcing the sleeve inwardly and causing its inner end 19 to abut or contact with the inner face of the head 5 with sufficient pressure to prevent leakage between the sleeves or the admission of oil into the atomizing chamber except through the tangential slots 10.

An oil burner constructed as here shown is simple and substantial in construction, cheaply manufactured and easily removed or taken apart. The control of oil passing therethrough or volume of fire produced can be instantly changed, as it is only necessary to turn the rod handle 15 a slight distance to secure the desired result. The life of this atomizer is practically unlimited as any wear produced between the parts is automatically taken up by the spring 17, thus insuring perfect operation and uniform results at all times.

The materials and finish of the several parts of the atomizer are such as the experience and judgment of the manufacturer may dictate.

I wish it understood that various changes in form, proportions and details of construction may be resorted to within the scope of the appended claims, and that I do not wish to limit myself to the specific design and construction here shown.

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

1. In combination with an atomizer head having a rear wall forming a seat, an apertured sleeve extending rearwardly of the head, and a member in said sleeve having an open inner end the edge of which rotatably and constantly engages in said seat so as to be closed by the wall and having an aperture registering with the sleeve aperture.

2. In an atomizer, a supply pipe, a tip having a discharge orifice and a slotted extension having a central chamber formed therein with which the discharge orifice and slots communicate, the slots of the extension being widened at one end a sleeve turnably mounted in the chamber, said sleeve having a chamber formed at its inner end communicating with the discharge orifice and tangentially disposed slots opening into the sleeve chamber and adapted to register with the first named slots, means for turning the sleeve to bring the slots into and out of register with the first named slots, and means for limiting the turning movement of the sleeve by engagement with the side walls formed by the widened parts of the extension slots.

3. In an atomizer, a supply pipe, a tip having a discharge orifice and a slotted extension having a central chamber formed therein with which the discharge orifice and slots communicate, a sleeve turnably mounted in the chamber, said sleeve having a chamber formed at its inner end and communicating with the discharge orifice and tangentially disposed slots opening into the sleeve chamber and adapted to register with the first named slots, means for turning the sleeve to bring the slots into and out of register with the first named slots, said means comprising a rod insertible into the outer end of the sleeve, and a pin in the rod extending through the slots in the sleeve and tip extension, the parts of the slots of the extension which receive said pin being of a width to allow the pin to move therein and to engage the side walls formed by the slots so as to restrict the extent of movement of the pin by engagement with said side walls.

4. In an atomizer, a supply pipe, a tip having a discharge orifice and a slotted extension having a central chamber formed therein with which the discharge orifice and slots communicate, a sleeve turnably mounted in the chamber, said sleeve having a chamber formed at its inner end communicating with the discharge orifice and tangentially disposed slots opening into the sleeve chamber and adapted to register with the first named slots, said inner end of the sleeve abutting the tip means for turning the sleeve to bring the slots into and out of register with the first named slots said inner end of the sleeve being closed by the tip, and means for applying pressure to the outer end of the sleeve to hold the inner end of the sleeve in abutting engagement with the tip.

5. In an atomizer, a supply pipe, a tip having a discharge orifice and a slotted extension having a central chamber formed therein with which the discharge orifice and slots communicate, a cylindrical-shaped member turnably mounted in the chamber, said member having a chamber formed at each end with tangentially positioned slots communicating with the inner chamber and radially positioned slots communicating with the outer chamber, a rod insertible into the outer chamber in the sleeve, a pin in the rod passing through the slots in the sleeve and the slots in the tip extension, and means for turning the rod and connected sleeve, the parts of the slots of the extension which receive said pin being of a width to allow the pin to move therein and to engage the side

walls formed by the slots so as to restrict the extent of movement of the pin by engagement with said side walls.

6. In an atomizer, a supply pipe, a tip having a discharge orifice and a slotted extension having a central chamber formed therein with which the discharge orifice and slots communicate, a cylindrical-shaped member turnably mounted in the chamber, said member having a chamber formed at each end with tangentially positioned slots communicating with the inner chamber and radially positioned slots communicating with the outer chamber, a rod insertible into the outer chamber in the sleeve, a pin in the rod passing through the slots in the sleeve and the slots in the tip extension, means for turning the rod and connected sleeve, a stop member on the rod, and a spring interposed between the stop and the outer end of the sleeve, the parts of the slots of the extension which receive said pin being of a width to allow the pin to move therein and to engage the side walls formed by the slots so as to restrict the extent of movement of the pin by engagement with said side walls.

7. In combination with an atomizer head, an outer sleeve connected to the head, an inner sleeve having its outer end open and abutting said head so that the latter forms a seat for said inner sleeve end and constantly closes the latter, spring means to hold said inner sleeve to its seat, said sleeves having registering openings, and means to relatively rotate said sleeves to vary the degree of register of the openings thereof.

8. In combination with an atomizer head, an outer sleeve connected to the head, an inner sleeve rotatable in the outer sleeve, said sleeves having registering openings and said outer sleeve having a relatively wide slot, means connected to the inner sleeve to rotate same, and means borne by the inner sleeve and movable in the slot whereby the sides of the slot restrict the extent of rotation of the inner sleeve by engagement with the last named means.

9. In combination with an atomizer head having a rear seat, and an apertured hollow extension projecting therefrom, a hollow member rotatable in the extension and having an aperture registering with the extension aperture, said hollow member having its front end open and engaged in the seat of the head so as to be closed by the latter and so that fluid may enter the member from the exterior of the extension through the aperture of the latter and the aperture of the member and pass from the open end of the member through the head.

10. In combination with an oil pipe having an atomizer head and a slotted hollow extension on said head, a member rotatable in said extension having a slot for registry with the extension slot, a rod in the pipe rotatably carried thereby, said member being slidably mounted on said rod, a spring abutting the outer end of said member for holding same constantly in engagement with said head, and means whereby rotation of the rod will effect rotation of said member.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GARNET W. COEN.

Witnesses:
JOHN H. HERRING,
W. W. HEALEY.