H. BLEYMEHL.

LIQUID SPRAYER AND SPRINKLER.

APPLICATION FILED AUG. 3, 1908.

916,984. Patented Apr. 6, 1909.

Fig. 1.

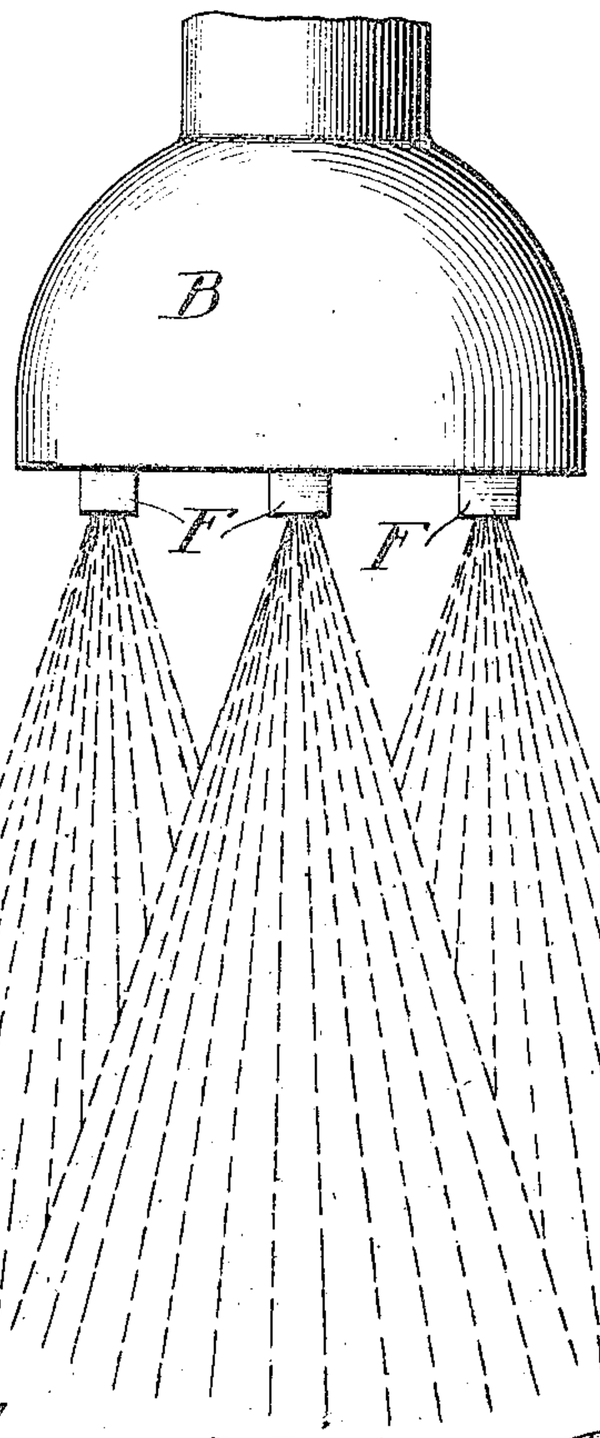


Fig. 2.

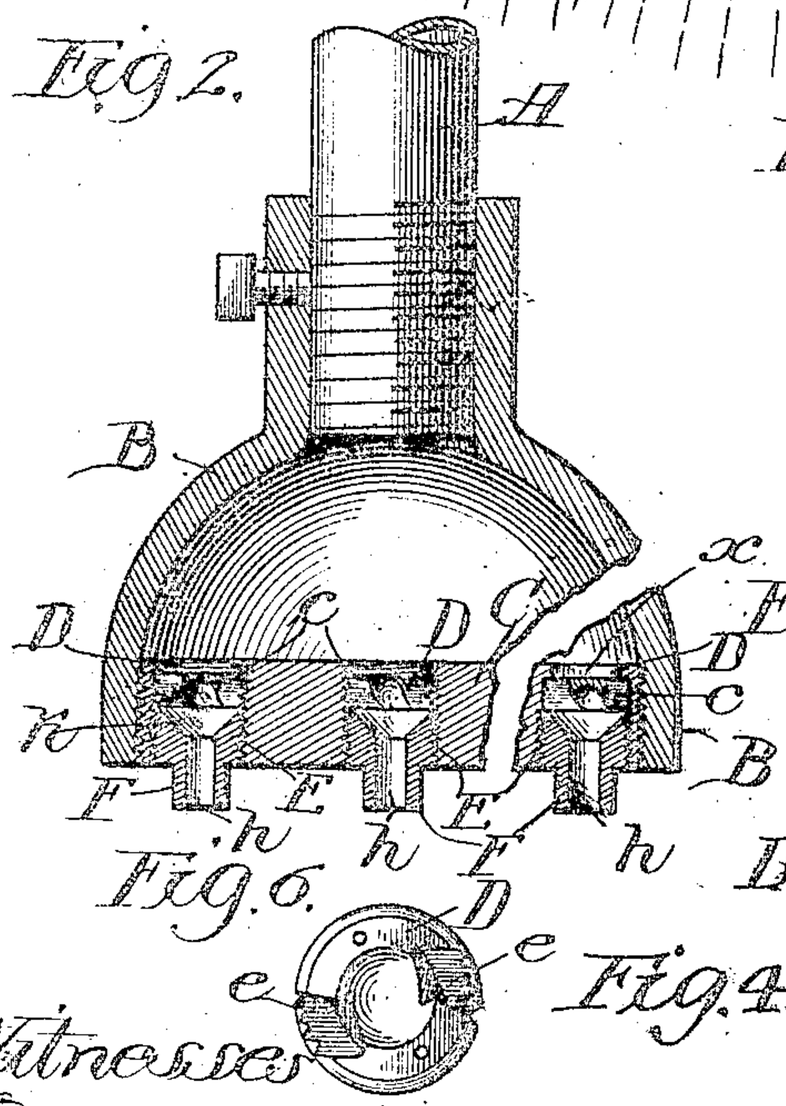


Fig. 3.

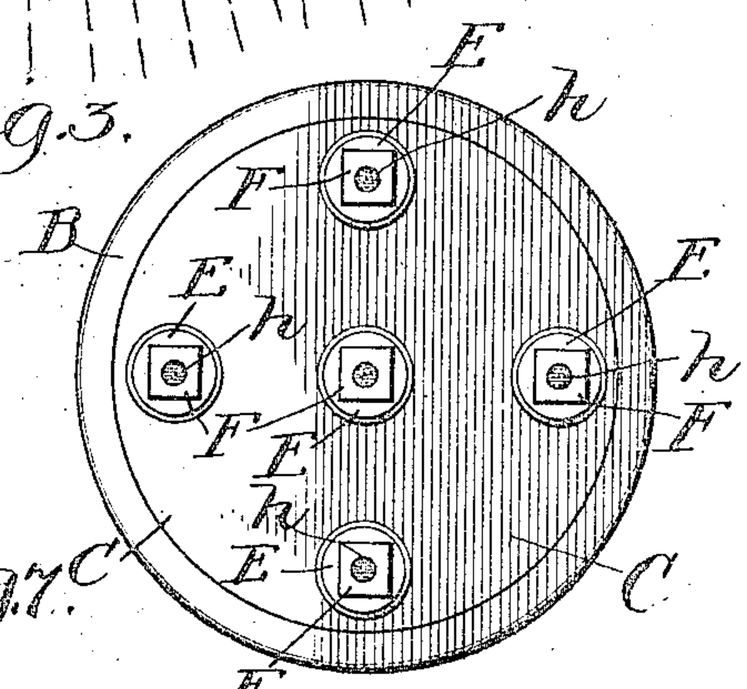


Fig. 4.

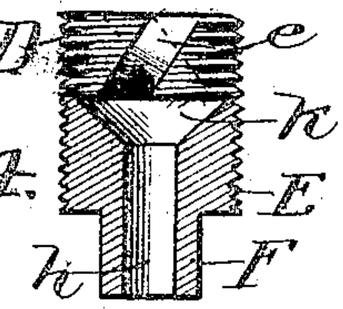


Fig. 5.

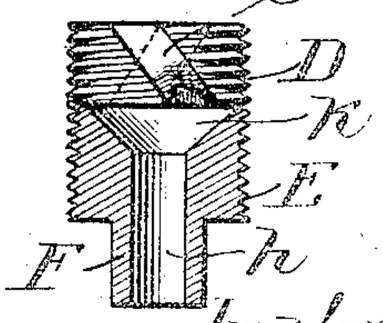


Fig. 6.




Witnesses

Chas. Hennick

E. L. Lundy.

Inventor

Henry Bleymehl

by Frank D. Thomson

Atty.

# UNITED STATES PATENT OFFICE.

HENRY BLEYMEHL, OF CHICAGO, ILLINOIS.

## LIQUID SPRAYER AND SPRINKLER.

No. 916,984. Specification of Letters Patent. Patented April 6, 1909.

Application filed August 3, 1908. Serial No. 446,727.

*To all whom it may concern:*

Be it known that I, HENRY BLEYMEHL, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Liquid Sprayers and Sprinklers, of which the following is a clear, full, and exact description.

My invention relates to liquid spraying devices, and particularly to oil sprayers for gas machines.

The object of my invention is to provide a simple and economically constructed spraying device which thoroughly atomizes the oil and is not affected by the heat, and which should any of its parts become damaged and need repairs, or replacement can be easily removed. This I accomplish by the means hereinafter fully described, and as particularly pointed out in the claims.

In the drawings:—Figure 1 is a side view of my invention showing it detached from the supply-pipe. Fig. 2 is a longitudinal central section of the same partly broken. Fig. 3 is a plan view of the spraying end of the same. Fig. 4 is a part section and part side view of a right to left sprayer embodying my invention. Fig. 5 is a similar view of a left to right sprayer. Fig. 6 is an end view of the oil revolving element of the sprayer, and Fig. 7 is a sectional fragmentary view of the device, showing a slightly modified form of sprayer.

In the drawings A represents the oil or liquid supply-pipe; B the bell-shaped head the reduced cylindrical portion of which is screwed or otherwise secured to the discharge end of the supply-pipe, and C the plate which is screwed or otherwise securely fitted into the mouth of the enlarged end of said bell-shaped head.

In the preferred form of my invention plate C is provided with five openings *c*, *c*, one of which is located in the center of the plate, and the remaining four at equal distances apart near the edge of the same. These openings *c*, are, preferably, screw-threaded, as shown in Fig. 2 of the drawings, but, if desired, they can be made as shown at *x* in Fig. 7, that is, with the inner end of the opening contracted, and screw-threaded only from the outer end of the same for about half its length. I secure in each of these openings *c*, a whirler D and a nozzle E. The whirler (so called because it gives the escaping liquid a spiral movement) consists of a screw-threaded plug, preferably, not longer than half the length of opening *c*. The whirler is provided with one or more longitudinally disposed spiral grooves *e* in its screw-threaded circumference, which extend from one end of the whirler to the other. When two of these spiral grooves are used, they are, preferably, located diametrically opposite each other, and when more than two, are arranged at equal distances apart. These grooves may all incline the same way, but I prefer to make the grooves of one whirler incline from right to left, as shown in Fig. 4 of the drawings, and make the grooves in others incline from left to right, as shown in Fig. 5, and moreover, in arranging these whirlers in plate C, I place the right to left, and the left to right whirlers alternately, as near as the employment of an odd number of whirlers will permit.

In addition to the whirlers the sprayers include a nozzle E, which consists of a screw-threaded plug, of about one-half the length of openings *c* into which they are screwed from the outer side of plate C until they bear against the opposed ends of the whirlers and they are provided on their outer ends with squared axial extensions F, that project beyond the outer face of plate C. A bore *h* is made longitudinally and centrally through the extension and plug of the nozzle, the end of which next the whirler is countersunk to form a basin *k* which receives the spirally moving streams or currents of liquid discharged from grooves *e*, and preserves the same *en route* to the bore, so that as they discharge from the outer end of said bore the circular action of the liquid, owing to the centrifugal tendency of the same, causes it to fly outward and downward, substantially as shown in Fig. 1 of the drawings.

When the whirler has been screwed into plate C, and then the nozzle is screwed home, the latter locks the whirlers in place. In the opening *c* of Fig. 7, the construction of the same is such that it is unnecessary to thread the whirler, because by placing it in said opening from the outside until it bears against the shoulders made by contracting its inner end as at *x*, and then screwing home the nozzle it will be held securely in position.

If desired my invention could be profitably used for sprinkling water, but in this event I prefer to use one or more of the spraying de-

vices, and depend upon the manufacturer to determine their relative positions, and to employ said devices having right to left grooves alternately with those having left to right grooves.

What I claim as new is:—

1. A liquid spraying device comprising a suitable head, one end thereof having a series of openings therein, and a spraying device having spiral passages secured in each of said openings.

2. A liquid spraying device comprising a suitable head, one end thereof having a series of openings therein, and a spraying device having spiral passages removably secured in each of said openings.

3. A liquid spraying device comprising a suitable head, one end thereof having a series of openings therein, and a spraying device having spiral passages secured in each of said openings and adapted to impart a spiral movement to the liquid discharged therefrom.

4. A liquid spraying device comprising a suitable head, one end thereof having a series of openings therein, and a spraying device having spiral passages secured in each of said openings some of which are adapted to impart a right to left spiral movement of the liquid discharged therefrom, and some a left to right movement thereof.

5. A liquid spraying device comprising a bell-shaped head, the flared end of said head having a series of openings therein, and a spraying device having spiral passages secured in each of said openings.

6. A liquid spraying device comprising a suitable head, one end thereof having a series of openings therein, and a spraying device secured in each of said openings and consisting of a part having spiral passages for giving the liquid discharged therethrough a spiral movement, and a nozzle out through which said spirally moving liquid issues.

7. A liquid spraying device comprising a suitable head, a removable plate closing one end thereof having a series of openings therein, and a spraying device having spiral passages secured in each of said openings.

8. A liquid spraying device comprising a suitable head, a removable plate closing one end thereof having a series of openings therein, and a spraying device having spiral passages removably secured in each of said openings.

9. A liquid spraying device comprising a suitable head, a plate closing one end thereof having a series of openings therein, and a spraying device secured in each of said openings and consisting of a part for giving the liquid discharged therethrough a spiral movement, and a nozzle out through which said spirally moving liquid issues and which locks the other part in place.

10. A liquid spraying device comprising a suitable head, one end thereof having a series of openings therein, and a spraying device secured in each of said openings and consisting of a part having spiral passages for giving the liquid discharged therethrough a spiral movement, and a nozzle out through which said spirally moving liquid issues having an extension projecting beyond the outer surface of said plate.

11. A liquid spraying device comprising a suitable head, one end thereof having a series of openings therein, and a spraying device secured in each of said openings and consisting of a part having spiral passages for giving the liquid discharged therethrough a spiral movement, and a nozzle out through which said spirally moving liquid issues and which has the end of its bore next the other part of the sprayer countersunk.

12. A liquid spraying device comprising a suitable head, a plate closing one end thereof having a series of openings therein, and a whirler for each of said openings consisting of a plug having a spiral groove therein for imparting to the liquid discharged therethrough a spiral movement.

13. A liquid spraying device comprising a suitable head, a plate closing one end thereof having a series of openings therein, and a whirler for each of said openings consisting of a screw-threaded plug having a series of spiral grooves in its circumference for imparting to the liquid discharged therethrough a spiral movement.

14. A liquid spraying device comprising a suitable head, a plate closing one end thereof having a series of openings therein, a whirler for each of said openings consisting of a plug having a spiral groove therein for imparting to the liquid discharged therethrough a spiral movement, and a nozzle out through which said spirally moving liquid issues.

15. A liquid spraying device comprising a suitable head, a plate closing one end thereof having a series of openings therein, a whirler for each of said openings consisting of a screw-threaded plug having a series of spiral grooves in its circumference for imparting to the liquid discharged therethrough a spiral movement, and a nozzle out through which said spirally moving liquid issues.

16. A liquid spraying device comprising a suitable head, a plate closing one end thereof having a series of openings therein, a whirler for each of said openings consisting of a plug having a spiral groove therein for imparting to the liquid discharged therethrough a spiral movement, and a nozzle out through which said spirally moving liquid issues, and which has the end of its bore next said whirler countersunk.

17. A liquid spraying device comprising a suitable head, a plate closing one end thereof having a series of openings therein, a

whirler for each of said openings consisting of a screw-threaded plug having a series of spiral grooves in its circumference for imparting to the liquid discharged therethrough a spiral movement, and a nozzle out through which said spirally moving liquid issues, and which has the end of its bore next said whirler countersunk.

In testimony whereof I have hereunto set my hand and seal this 20th day of June, A. D., 1908.

HENRY BLEYMEHL. [L. S.]

Witnesses:
FRANK D. THOMASON,
E. K. LUNDY.