P. CAMERON.

SPRAYING AND DISTRIBUTING NOZZLE.

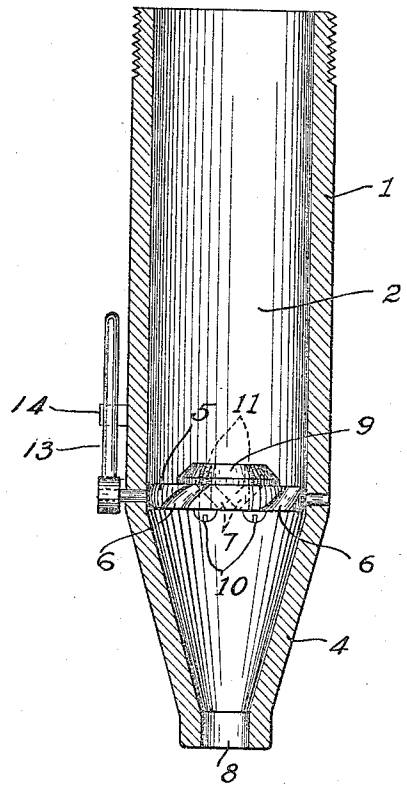
APPLICATION FILED JULY 31, 1914.

1,183,430.

Patented May 16, 1916.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses:

Walter F. Stone

William E. Hann.

Inventor:

Peter Cameron

By Cummings & Cummings

Attys.

P. CAMERON.

SPRAYING AND DISTRIBUTING NOZZLE.

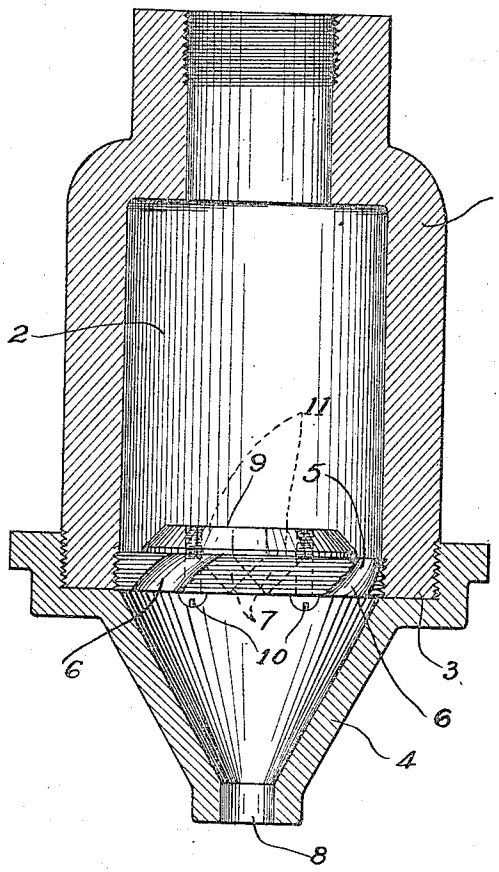
APPLICATION FILED JULY 31, 1914.

1,183,430.

Patented May 16, 1916.

2 SHEETS—SHEET 2.

Fig. 2



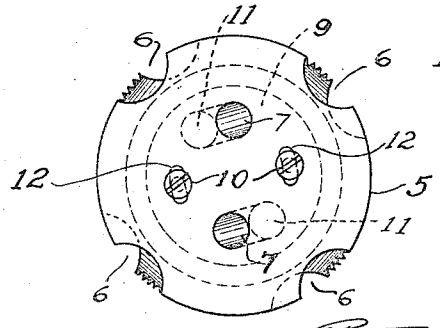


Fig. 3

Witnesses:

Walter F. Stone.

William E. Hann.

Inventor

Peter Cameron

By Cameron & Cameron

Attys.

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

PETER CAMERON, OF CHICAGO, ILLINOIS.

SPRAYING AND DISTRIBUTING NOZZLE.

1,183,430. Specification of Letters Patent. Patented May 16, 1916.

Application filed July 31, 1914. Serial No. 854,256.

To all whom it may concern:

Be it known that I, PETER CAMERON, subject of the King of England, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Spraying and Distributing Nozzles, of which the following is a specification.

The main objects of this invention are to provide improved means for effecting substantially uniform distribution of a spray; and to provide a spraying or distributing nozzle particularly adapted for spraying oil with means whereby comparatively large spraying apertures may be employed and still maintain a uniform distribution of the spray and thoroughly atomize it.

An illustrative embodiment of this invention is shown in the accompanying drawings in which—

Figure 1 is a vertical sectional view of a spraying device constructed according to this invention. Fig. 2 is a plan in detail of a distributing disk. Fig. 3 is a vertical sectional view of the device as arranged for oil spraying in the production of illuminating gas.

The present invention comprises means for producing a plurality of streams of oil or other fluid and for compelling said streams to converge in a restricted space while giving the streams opposed spiral movements in such manner that one spiral movement predominates over the other and its centrifugal action is maintained sufficiently to cause the spray to spread while it is properly atomized and distributed by the particles of oil having opposed movements striking each other.

Many forms of spraying devices have been devised for producing a spiral movement of the spray and thereby distributing it through centrifugal action, but the tendency in these devices is not to thoroughly atomize and uniformly distribute the spray as much as desired, but to produce a comparatively coarse spray often in the form of an envelop, the spray being less in quantity near the center. This is particularly the case when large spraying apertures are employed and is overcome to an extent by the use of small apertures, but small apertures have the objection, at least in the manufacture of gas, of becoming clogged after prolonged operation. In the present device centrifugal action is relied upon but the streams are produced in opposed spirals meeting within a restricted space or nozzle, which results in a more uniform distribution of the spray and permits the use of comparatively large spray apertures.

In the drawings, 1 represents a cylindrical casing providing an oil or fluid chamber 2. The lower end 3 of the casing 1 is preferably threaded on the outside to receive a cone-shaped nozzle 4, and on the inside for receiving an aperture disk 5. The disk 5 has two sets of apertures 6 and 7, having a helical trend through the disk, but the trend of apertures 6 is opposite to that of apertures 7 and the former set of apertures has a combined area greater than the area of apertures 7, in order that the spiral movement of streams of oil passing through apertures 6 will predominate and cause the required centrifugal action for spreading the oil after it leaves the nozzle 4. The streams of oil passing through apertures 7 strike the streams leaving the apertures 6 within the nozzle 4 and at or near its outlet 8 and continue to react upon each other, the impact causing the particles of oil to become finely divided or atomized.

The relative area of the apertures 6 and 7 is preferably predetermined to suit the requirements of the device when used in connection with the manufacture of gas, but the disk 5 may be provided with adjustable means for varying this relative area. This means comprises a disk 9 secured to disk 5 by screws 10 and having apertures 11 which may be caused to register with the apertures 7 in disk 5. The communication through disk 5 through the apertures 7 may be regulated by slightly rotating disk 9, the slots 12 through which screws 10 pass providing this movement.

Fig. 1 shows the device so arranged that it may be employed as a lawn sprinkler. In this case disk 5 is pivoted within casing 1 and provided with an operating handle 13 whereby it may be adjusted to present its edge to the stream flowing through the device for the purpose of providing means to throw a steady stream without any atomizing action. The handle 13 is preferably limited in its movement in one direction by a lug 14 to insure the proper setting of disk 5 when employed to atomize the spray.

Fig. 3 shows a preferred construction of the device for oil spraying when used in the manufacture of illuminating gas involving the process of projecting with considerable

force a finely divided and uniformly distributed spray against heated surfaces for the purpose of converting the oil into gas.

In the operation of the device, the oil under pressure which is sent to chamber 2 passes through the disks 9 and 5, the apertures therein being so formed as to cause a plurality of streams to enter the nozzle 4 in opposed spiral paths, the spiral motion of the streams passing through the apertures 6 predominating, as these are the larger apertures. The oil is thoroughly atomized by impact of the opposed streams, the latter being made to converge because of the conical shape of nozzle 4. Upon leaving the nozzle, the spray spreads in the desired manner, due to centrifugal force and the reaction upon each other of differently directed streams. By varying the relative sizes of the apertures 6 and 7, any tendency to unequal distribution of the spray may be overcome.

Although but one specific embodiment of this invention has been herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:—

1. A spraying device, comprising a casing having a cone-shaped nozzle provided with a restricted atomizing space, and a disk located at the base of said nozzle provided with two sets of distributing apertures, said apertures being set at an angle to each other to produce in said space converging intercepting streams having opposed helical movements, one of said sets of apertures having a combined area larger than the other set of apertures.

2. A spraying device comprising a casing, having a nozzle and spraying means within said casing, having two sets of oppositely disposed helical apertures, and means for varying the size of one set of apertures.

Signed at Chicago this 28th day of July, 1914.

PETER CAMERON.

Witnesses:
RUDOW RUMMLER,
WILLIAM E. HANN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."