Dec. 8, 1925. 1,564,963

J. F. KIRGAN

SELF CLEANING SPRAY HEAD

Filed Aug. 3, 1923

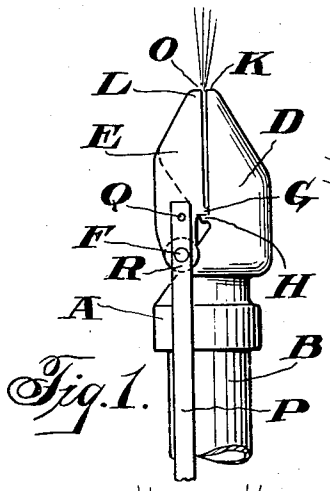


Fig. 1.

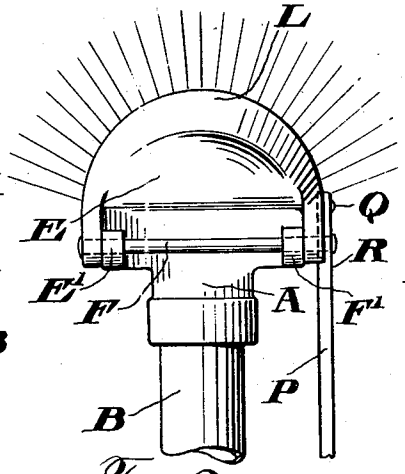


Fig. 2.

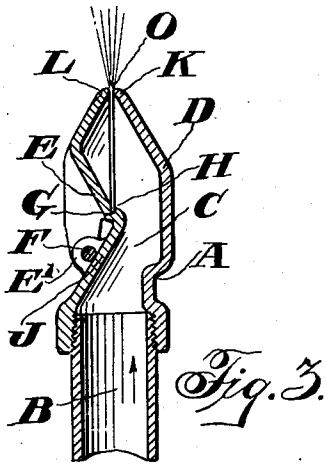


Fig. 3.

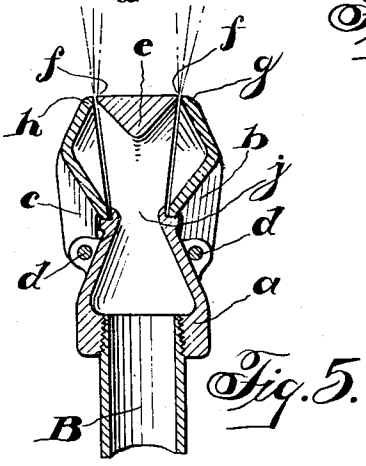


Fig. 5.

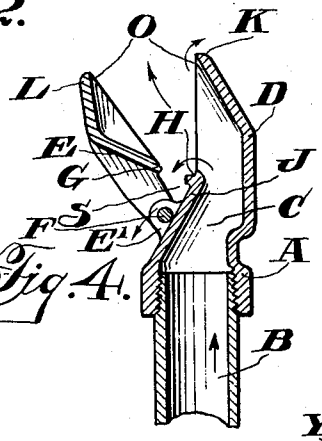


Fig. 4.

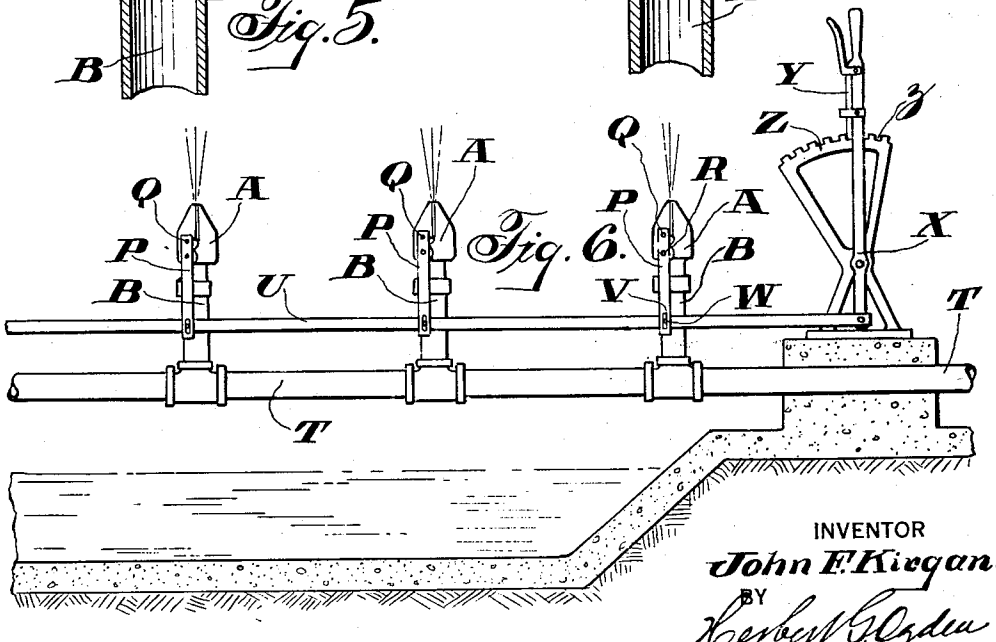


Fig. 6.

INVENTOR

John F. Kirgan.

BY

Herbert G. Ogden

HIS ATTORNEY

Patented Dec. 8, 1925. 1,564,963

UNITED STATES PATENT OFFICE.

JOHN F. KIRGAN, OF PHILLIPSBURG, NEW JERSEY, ASSIGNOR TO INGERSOLL-RAND COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SELFCLEANING SPRAY HEAD.

Application filed August 3, 1923. Serial No. 655,390.

To all whom it may concern:

Be it known that I, JOHN F. KIRGAN, a citizen of the United States, residing at Phillipsburg, county of Warren, State of New Jersey, have invented a certain Self-cleaning Spray Head, of which the following is a specification, accompanied by drawings.

This invention relates to devices for spraying liquids and particularly to spray nozzles or spray heads used in the spray ponds of condenser installations, in fire extinguishers, sprinklers, lawn sprays, and other uses in which a uniform finely divided spray is desired, especially where the liquid contains slime, organic growths or other impurities.

The primary objects of the present invention are to enable the discharge opening in the head to be adjusted to various predetermined degrees to vary the capacity of the nozzle and produce fine or heavy streams as desired. Another object is to permit at least one side of the body to be opened wide when desired, so that the liquid, instead of issuing in the form of a spray, will flow freely out of the head with a cleansing action, expelling any growth, slime or foreign matter which may have accumulated within the head.

A further important object is to spray a maximum quantity of liquid per square foot of pond area and to direct the spray in the most efficient manner, so that the maximum effect is obtained whether for cooling, aeration or other purposes.

With the above and other objects in view, the invention consists of the features of construction and arrangement of the various parts of a spray nozzle substantially as herein shown and described, reference being had to the accompanying drawings forming a part hereof, in which—

Figure 1 is a side elevation of the improved spray head;

Figure 2 is a front view;

Figure 3 is a vertical longitudinal section through the spray head;

Figure 4 is a view similar to Figure 3 showing the movable leaf of the head in a wide open position, as when cleaning the spray head;

Figure 5 is a vertical longitudinal sectional view through a modified form of spray head provided with a plurality of movable leaves and adapted to function as a double jet or ring nozzle, and

Figure 6 is a side elevation partly in section of a portion of a spray pond having a plurality of spray heads operated by a common means located at the bank of the pond.

Referring to the drawings, the body A of the spray head may be in the form of a hollow bulb, threaded or otherwise connected to the discharge line B for the liquid or other material to be sprayed. The body A is divided into two sides or sections, the internal conformation of which is designed to produce a tortuous passage C for the liquid or other material forced through the head. The sections include an integral stationary side D and an opposite movable leaf E preferably pivoted to lugs E′ on the body A, as by means of a pin F. The base G of the movable leaf E is adapted to seat in a groove H extending across the wide portion of the inwardly directed side J of the body A and maintains the lips K and L of the sections D and E, respectively in spaced relationship during operation of the spray head. The lips K and L are adapted to define a semi-circular outlet or discharge opening O centrally across an end of the head. Suitable means are provided for varying the size of the outlet opening to produce fine or heavy streams, as may be desired, preferably by effecting a swinging movement of the movable leaf E on its pivot F. In this instance one end of a vertical lever P is suitably secured to one end of the leaf E at Q and the portion R of the lever is pivoted on the pin F. Swinging movement of the lever P about the pivot pin F will cause the movable leaf E to swing relatively to the stationary side D, varying the size of the discharge opening O to any degree desired. The side of the body A represented by the movable leaf E may be opened wide as shown in Figure 4, so that the liquid is permitted to flow freely out of the opening O and also over the groove H and beneath the base of the movable leaf E as indicated at S, the lines of flow of the liquid being such as to exert a cleansing effect, removing and expelling any slime, organic matter or other foreign substance which may have collected within the head or on the interior surface of the head parts. Occasional opening of the movable leaf E to wide limits will tend to keep the spray head always clean and prevent clogging of

the discharge opening thus materially increasing the efficiency of the spray head for all purposes.

In Figure 6 a spray pond is illustrated in which a plurality of spray heads are shown connected to the supply pipe T and suitable unitary actuating means are provided for actuating a plurality of levers P from a distant point, as for instance the bank of the spray pond. In this instance a suitable operating rod U is connected to a plurality of levers P. For this purpose the levers P may be provided with slots V, which are engaged by pins W on the rod U. Any desired means may be employed for moving the arm U to simultaneously and uniformly vary the capacity of the openings O of the plurality of spray heads. Such variation in capacity may take place gradually or in predetermined graduated steps. In this instance the variation is effected by means located at the bank of the spray pond, and consists of a pivoted lever X having a latch Y operating in conjunction with the notched rack Z and adapted to be moved to vary the capacity of the openings O of the spray heads in predetermined graduated steps, as will be understood, the notches *z* each representing one step.

In Figure 5 of the drawings I have illustrated a form of spray head *a* in which both sections *b* and *c* are in the form of leaves movable on pivots *d* and are maintained in spaced relation with a deflector *e* extending across the main portion of the head between the leaves *b* and *c*. A plurality of openings *f* may thus be provided, or the deflector *e* may take the form of a central plug surrounded by the lips *g* and *h*, in which case a more or less circular opening will be formed so that the liquid will pass through the tortuous passage *j* and issue in a ring jet or spray. The leaves *b* and *c* are otherwise operated in all respects substantially the same as the leaves E of the construction already described. Both leaves *b* and *c* may be connected to the operating rod U or one leaf may remain stationary. In the latter case the operation and effects produced will be substantially the same as with the head *a*, and the rod U may be connected with the leaves *b* and *c* so that the leaves are moved alternately or simultaneously as may be desired.

I claim:

A spray head for spraying liquids, comprising a divided body having a tortuous passage therethrough and having an inlet end adapted to be connected to a liquid discharge line, said body including a relatively stationary section and an opposite separate movable section in the form of a leaf pivoted to the stationary section, semicircular lips having smooth surfaces formed on said sections in position to define a semicircular outlet opening across an end of the spray head in a plane of the axis of said inlet, and means for adjusting the movable section whereby to vary the size of the outlet opening.

In testimony whereof I have signed this specification.

JOHN F. KIRGAN.