J. F. KIRGAN.

SPRAY HEAD.

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1,381,646. Patented June 14, 1921.

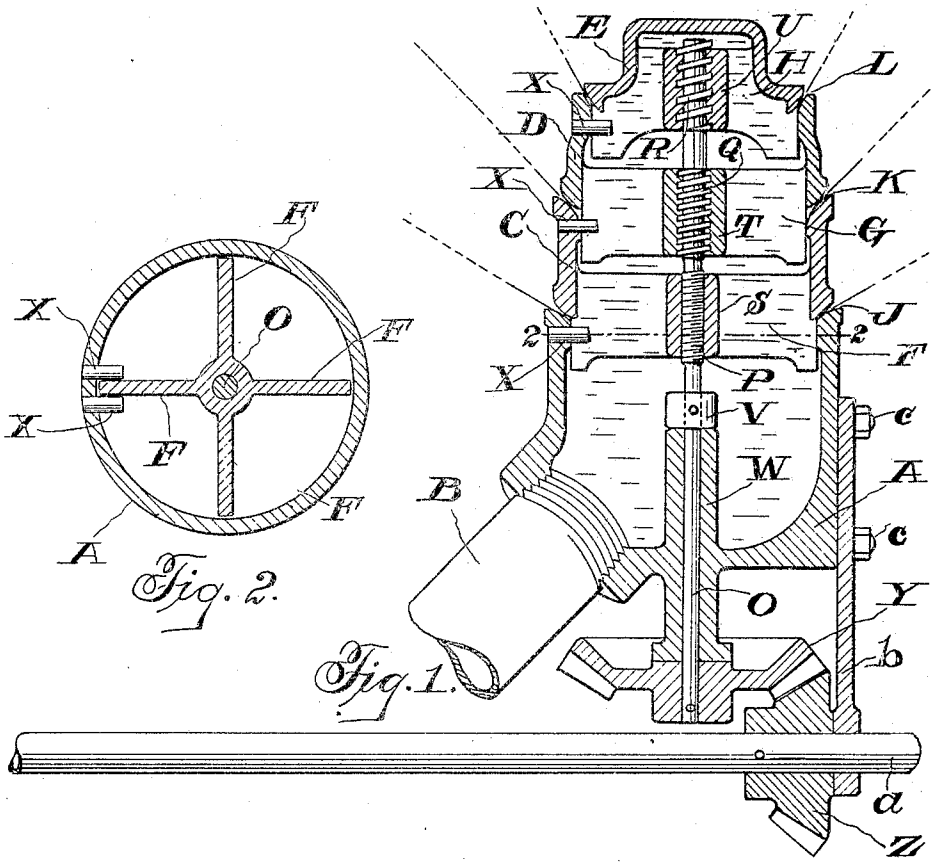


Fig. 1.

Fig. 2.

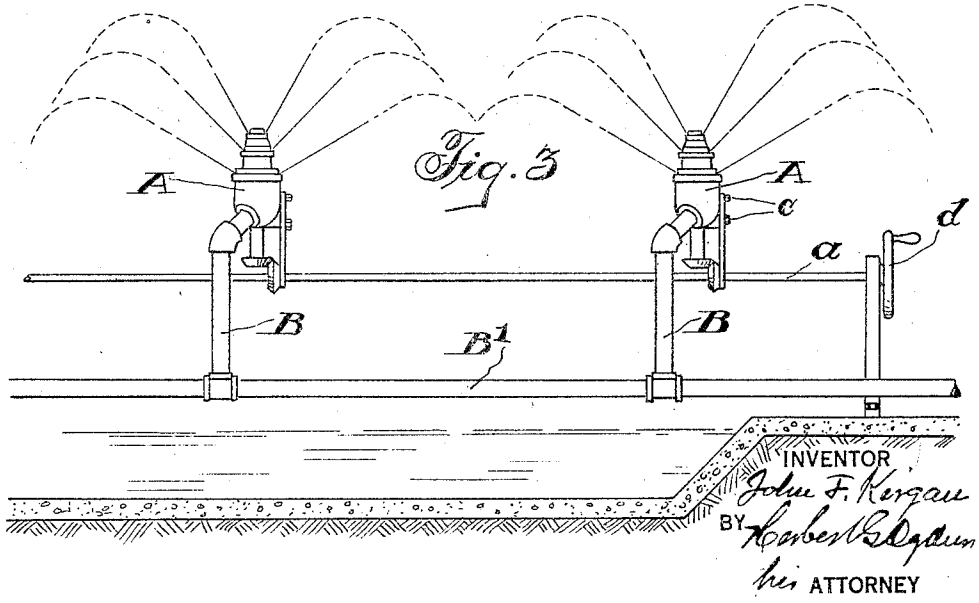


Fig. 3

INVENTOR
John F. Kirgan
BY Herbert B. Ogden
his ATTORNEY

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.

SPRAY-HEAD.

1,381,646. Specification of Letters Patent. Patented June 14, 1921.

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To all whom it may concern:

Be it known that I, JOHN F. KIRGAN, a citizen of the United States, and a resident of Phillipsburg, Warren county, State of New Jersey, have invented certain new and useful Improvements in Spray-Heads, of which the following is a specification.

This invention relates to spray heads for spraying liquids such as water, for spray ponds or any other desired uses, as for instance, for such purposes as spraying lawns, for extinguishing fires, for treating gases and for other purposes in which a wide and substantially uniform distribution of the liquid in the form of finely divided spray is highly desirable.

The primary objects of the present invention are to enable the discharge of liquid from a plurality of discharge openings in a spray head to be regulated and controlled simply and economically, and secure simultaneous control of a plurality of spray head sections in such manner the said openings may all be adjusted to the same degree or to different degrees as desired.

Another important object of the invention is to direct the sprays from a given head in the most efficient manner so that the maximum effect is obtained whether for cooling or other purposes.

To these ends the invention is shown in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal sectional view of a spray head,

Fig. 2 is a detail horizontal sectional view on the line 2—2 of Fig. 1, and

Fig. 3 is a side elevation partly in section of a spray pond having a plurality of spray heads.

Referring to the drawings A represents the body of the spray head which may be of tubular form, provided with the inlet B, for the liquid or other material to be sprayed. One or more separate and independent spray head sections C, D and E are arranged one over the other on the body A, the last or outer section E being in the form of a cap or cover. The intermediate spray head sections C and D as shown, are in the form of rings having internal webs in the form of spiders F and G. The cap E is also provided with a spider H.

Suitable means are provided for simultaneously adjusting the spray head sections longitudinally in order to regulate and control the discharge openings J, K and L formed by the body A, the intermediate sections C and D and cap E. In this instance the spindle O extends longitudinally through the body A and is provided with screw threaded portions P, Q and R engaging the internally screw threaded hubs S, T and U of the respective spray head sections so that rotation of the spindle is adapted to move the spray head sections longitudinally and regulate the discharge openings of the head. The spindle O is preferably provided with a stop or collar V supported on the bearing W and the spider F of the head section C extends within the body A and is restrained from rotation in any suitable manner as by means of the stop pins X extending through the side of the body. The spiders of the remaining head sections in like manner extend within the adjacent inner section and are restrained from rotation by similar stop pins X. Any suitable means may be provided for rotating the spindle O, in this instance a gear Y pinned to the spindle is rotated from the pinion Z pinned to the actuating shaft *a*, supported in the frame *b* to which the body A of the spray head may also be secured as by means of the bolts *c*.

As shown in the drawings, the meeting edges of the body A and spray head sections which form the discharge openings for the fluid, are preferably rounded both on the entry and discharge sides in order to reduce friction and have efficient operation. The angles at which the streams are discharged from the spray head are such as indicated in the drawings, that the streams do no interfere with each other.

In assembling the parts of the apparatus, the end section or cap E may first be threaded on the spindle O, and then the sections D and C are placed on the spindle in the order named, and the spindle shank is mounted in the body A. The screw threaded portion R at the end of the spindle limits the outward movement of the head section D by forming a stop for the hub T of that section, and in similar manner the screw threaded portion Q of the spindle forms a stop for the hub S of the head section C.

In case it is desired to provide means for adjusting all of the discharge openings simultaneously an equal amount, the number of threads per inch for each of the threaded spindle portions P, Q and R should be

chosen properly so that for instance, if it is desired to open each discharge opening one-tenth of an inch wider, the head section C would be moved a given distance longitudinally on rotation of the spindle, the head section D would be moved twice as far and the end or cap section E would be moved three times as far. Assume for instance, that the screw threaded portion P of the spindle had twelve threads to the inch, the screw threaded portion Q had six threads to the inch and the portion R had four threads to the inch, then one revolution of the spindle O would move the head section C one-twelfth of an inch, the head section D one-sixth of an inch and the head or cap section E one-fourth of an inch, but the discharge openings J, K and L would all be opened simultaneously an equal amount. The ratio of the threads of the screw threaded portion on the spindle may be selected as desired so that different quantities of water may be discharged from different openings and it is not necessary that the same amount of water be discharged from each discharge opening, which may be desirable under certain conditions, and variable openings are advantageous at times, as for instance on account of reduced pressure in which case it may be desirable to close off the larger openings more than the smaller openings in order to have flow through all of the head sections. For cleaning, all of the sections may be opened wide in order to discharge any foreign matter.

In Fig. 3 a spray pond is illustrated in which a plurality of spray heads are shown connected to the inlet pipe B′ and the actuating rod *a*, which is preferably in the form of a pipe, is provided with the hand wheel *d* for simultaneously adjusting all of the spray heads.

I claim:

1. A spray head for spraying liquids, comprising a tubular body having an inlet, a plurality of separate and independent spray head sections arranged one over the other on said body forming discharge openings, means for simultaneously moving said sections different amounts longitudinally relatively to the body to adjust said discharge openings, and operative connections between adjacent sections for preventing relative rotation of said sections.

2. A spray head for spraying liquids, comprising a tubular body having an inlet, a plurality of separate and independent spray head sections arranged one over the other on said body forming discharge openings, a common spindle extending longitudinally through said body and head sections, discharge openings being formed around the periphery of the spray head by the meeting edges of said body and said sections, operative connections between said common spindle and each of said head sections, whereby rotation of the spindle is adapted to adjust the longitudinal position of the sections to vary the discharge openings, and operative connections between each of said sections and the inner wall of an adjacent section for preventing relative rotation of said sections.

3. A spray head for spraying liquids, comprising a tubular body, having an inlet, a rotatable spindle extending longitudinally through said body, a plurality of longitudinally movable non-rotatable spray head sections, one of which forms a cap, all operatively connected to said spindle, whereby the discharge openings formed by the body, the sections and the cap may be adjusted by rotating said spindle, and means for moving said sections different amounts longitudinally to adjust the discharge openings when the spindle is rotated.

4. A spray head for spraying liquids, comprising a tubular body having an inlet, a rotatable spindle extending longitudinally through said body and provided with a plurality of screw threaded portions of different pitch and a plurality of spray head sections arranged one adjacent the other and threaded to said screw threaded portions respectively of the spindle, whereby the said sections are moved different amounts longitudinally to adjust the discharge openings formed by the body and said sections, when the spindle is rotated.

In testimony whereof I have signed this specification.

JOHN F. KIRGAN.