(No Model.)

H. P. NIELSEN & F. K. KRAUTH, Jr.

HOSE NOZZLE.

No. 580,142. Patented Apr. 6, 1897.

Fig. 1.

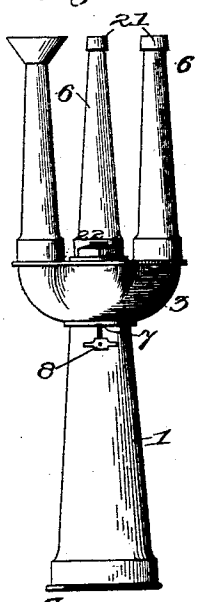


Fig. 2.

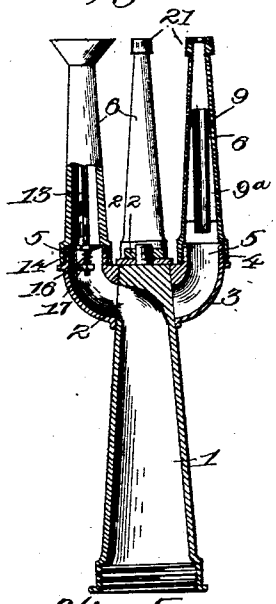


Fig. 3.

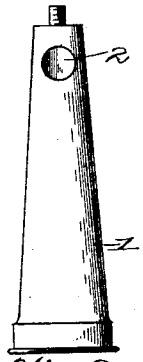


Fig. 8.

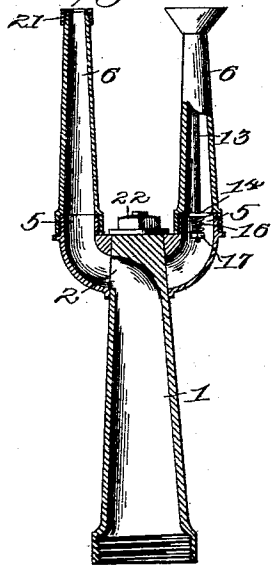


Fig. 4.

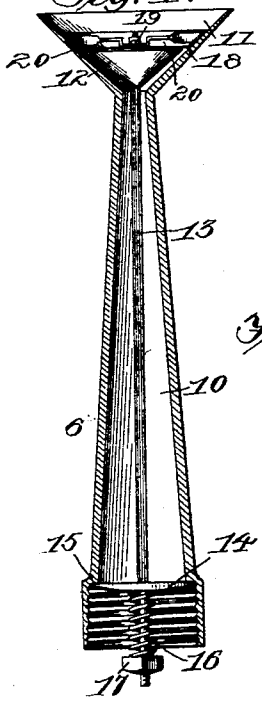


Fig. 5.

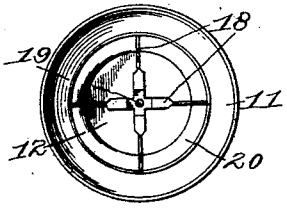


Fig. 6.

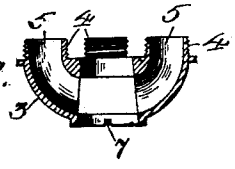


Fig. 7.

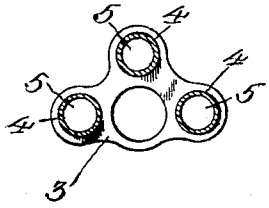
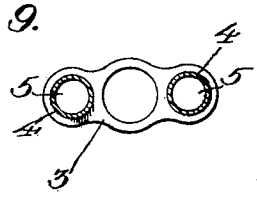


Fig. 9.



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R. M. Smith

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UNITED STATES PATENT OFFICE.

HANS PETER NIELSEN AND FREDERICK KELLER KRAUTH, JR., OF ALAMEDA, CALIFORNIA.

HOSE-NOZZLE.

SPECIFICATION forming part of Letters Patent No. 580,142, dated April 6, 1897.

Application filed April 30, 1896. Serial No. 589,733. (No model.)

To all whom it may concern:

Be it known that we, HANS PETER NIELSEN and FREDERICK KELLER KRAUTH, Jr., citizens of the United States, residing at Alameda, in the county of Alameda and State of California, have invented a new and useful Hose-Nozzle, of which the following is a specification.

This invention relates to hose-nozzles; and the object in view is to provide an improved article of the character referred to which may be used either for garden or fire purposes and in which provision is made for throwing the water in a single solid and powerful stream or in a double stream or in the form of a widely-diverging spray for covering a large area of space. The adjustment from one form of spray to another is effected in a simple and expeditious manner; and the invention further contemplates novel means for regulating the fineness of the spray and for preventing the indentation of and injury to the nozzle proper.

Other objects and advantages of the invention will appear in the course of the subjoined description.

The invention consists in certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and finally pointed out in the claims hereto appended.

In the accompanying drawings, Figure 1 is a side elevation of the improved hose-nozzle. Fig. 2 is a longitudinal section through the same. Fig. 3 is a side elevation of the hollow stem or barrel. Fig. 4 is a longitudinal section through the spray-nozzle. Fig. 5 is a front end view of the same. Fig. 6 is a longitudinal section through the yoke or waterway. Fig. 7 is a transverse section through the same. Fig. 8 is a longitudinal section through a modified form of the device employing but two nozzles. Fig. 9 is a transverse section through the yoke or waterway thereof.

Similar numerals of reference designate corresponding parts in the several figures of the drawings.

Referring to the accompanying drawings, 1 designates a hollow stem or barrel, which may be of any form or length, but is preferably illustrated as of cylindroconoidal shape, the larger inner end thereof being threaded for coupling it to the hose, the smaller or outer end thereof being closed. A segmental passage-way or conduit 2 opens out from the inner bore of the barrel at one side thereof and near the outer end, as clearly shown in Figs. 2 and 3. Fitting closely around the small outer end of the barrel 1 is a yoke 3, which is preferably of plano-convex form in exterior contour, having its flat side disposed outermost or toward the discharge end and provided with a series of threaded thimbles 4, surrounding the branch waterways or passages, (indicated at 5,) and adapted to receive a series of interchangeable nozzles 6.

In Figs. 1 and 2 we have shown three nozzles and in Fig. 8 but two nozzles. The number of nozzles may thus be varied to suit the requirements, and each of the nozzles is constructed differently or is of a different size from the other nozzle, whereby the screens or sprays of different sizes or qualities may be had. The yoke 3 is so constructed internally that only one of the waterways 5 can be placed wholly in communication with the passage-way 2 of the barrel at a time. Said yoke may be revolved upon the barrel 1, so as to bring any one of the waterways 5 opposite the passage-way 2, or by moving the yoke to an intermediate position the stream of water passing through the barrel 1 will be Siamesed or divided and caused to pass through adjoining nozzles simultaneously. The yoke 3 is provided near its inner end with a series of notches 7, corresponding in number to the nozzles and adapted to be engaged by a catch 8, attached to the barrel and adapted to be moved into engagement with any one of the notches for holding the yoke against rotation. These notches are so arranged with relation to the nozzles that when any particular notch is engaged by the catch 8 the nozzle which said notch represents will be placed in communication with the passage-way 2 of the barrel 1.

For the purpose of strengthening the nozzles 6 and preventing the indentation thereof said nozzles may each be provided with an interiorly-arranged longitudinal tube 9, which

is held in place by means of radially-disposed longitudinal webs 9^a, said webs being made tapering to agree with the taper of the nozzle, as shown in Fig. 2. The inner tube imparts solidness and far-reaching qualities to the water and renders it easy for one man to handle heavy-pressure streams.

The spray-nozzle shown in Fig. 4 comprises a tapering tubular body 10, having a splayed or conical discharge-mouth 11. Within this mouth is located a conical deflector 12, provided with a stem 13, extending through the bore of the nozzle and passing through a cross-bar 14 near the inner end of the nozzle and seated as to its ends against an internal annular flange 15. The inner end of the stem 13 is surrounded by a spiral spring 16, which is confined between the cross-bar 14 and an adjusting screw or nut 17, by means of which the tension of the spring may be adjusted for regulating the fineness of the spray delivered by the nozzle, as the greater the tension of the spring the greater will be the pressure of the conical deflector 12 against the inside of the flaring mouth of the nozzle.

18 designates cross-stays located in the mouth of the spray-nozzle, said stays being crossed flatwise in the axial center of the nozzle and being connected to the center of the deflector 12 by any suitable fastening 19. The terminal portions of the cross-stays are given a quarter-twist, as shown, and their extremities are united to a flared annular ring 20, adapted to seat itself against the inner surface of the mouth of the spray-nozzle. The object of these cross-stays and the ring 20 is to impart an even thickness or density to the annular stream or spray which passes between the opposing surfaces of the deflector and the mouth of the nozzle. The water-pressure centralizes the cone in the bell-mouth. The other nozzles 6 are provided with removable screw-tips 21, having different-sized apertures, whereby the size and force of the stream passing therethrough may be regulated.

22 designates the nut and washer, by means of which the yoke is secured upon the hollow stem or barrel 1.

From the foregoing description it will be apparent that the water may be directed separately into any one of the nozzles described or it may be directed simultaneously into two of said nozzles by adjusting the yoke to the proper point. A single solid stream of any desired force may thus be obtained, or the stream may be divided into two portions, whereby it may be directed to two different points at one and the same time, or it may be projected in the form of an annular or conical spray for covering a large area. By the construction described it is also possible to adjust the fineness of the spray and also to prevent injury to or the indentation of the nozzle. By reason of the segmental form of the passage-way 2 all abrupt angles are done away with and the body of water passes continuously and without any material obstruction or hindrance from the barrel 1 into any particular nozzle 6, and as the force of the stream is thus unimpaired it will be projected to as great a distance as if the passage-way were straight and in a direct line between the barrel and the nozzle.

Changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new is—

1. In a spray-nozzle the combination with the hollow body of the nozzle having the flared discharge-mouth, of a conical deflector arranged in said mouth and provided with a stem, a tension-spring engaging said stem and a centering device attached to said deflector, substantially as described.

2. In a spray-nozzle, the combination with the body of the nozzle having the flared discharge-mouth, of a conical deflector adjustably seated in said mouth and provided with a stem extending longitudinally within the bore of the nozzle, the cross-bar through which the stem slides, the spiral spring surrounding said stem and bearing against the cross-bar, and provision for adjusting the tension of said spring, substantially as described.

3. In a spray-nozzle, the combination with the body thereof having the flaring mouth as described, of a deflector movably seated in said mouth, provision for adjusting the deflector, and the cross-stays connected to the deflector and united at their ends to a ring, whereby the deflector is sustained centrally within the mouth of the nozzle, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

HANS PETER NIELSEN.
FREDERICK KELLER KRAUTH, JR.

Witnesses:
N. STRAUSS,
M. W. SIMPSON.