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HOSE NOZZLE

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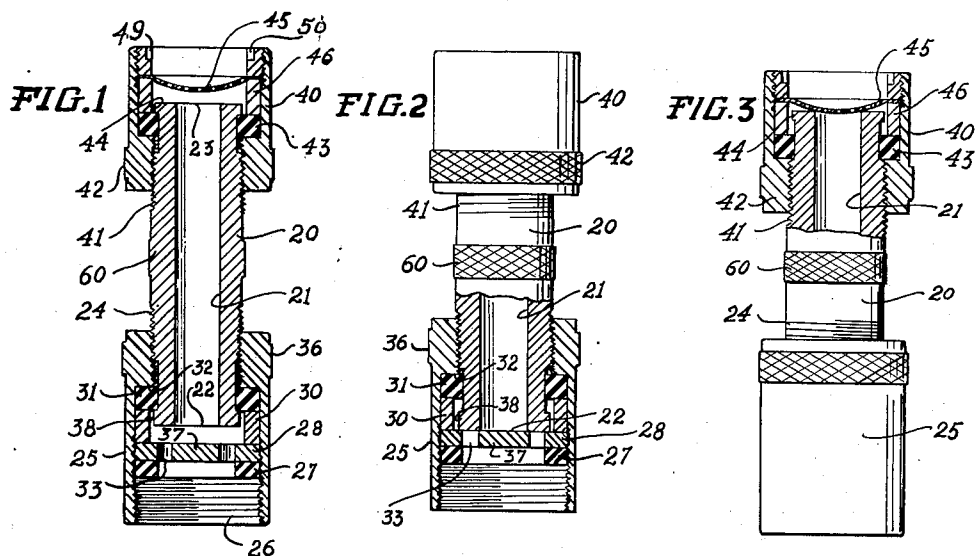


FIG. 4

FIG. 5

FIG. 8

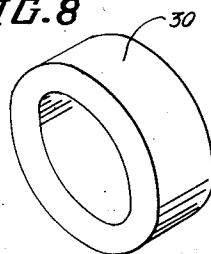
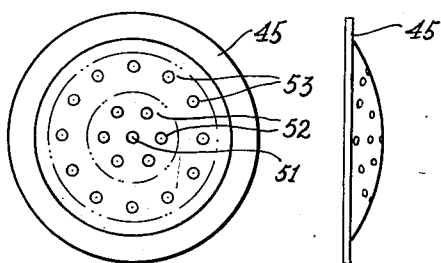
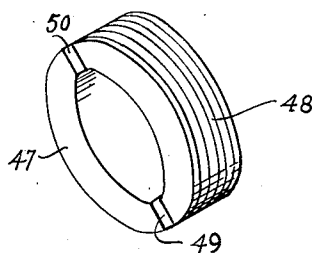
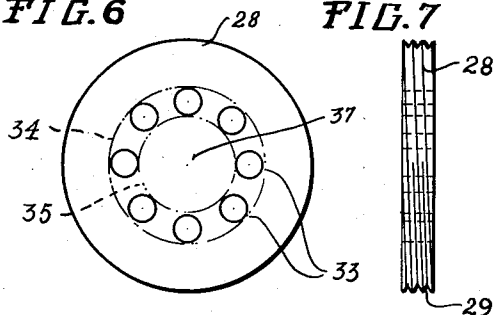


FIG. 6

FIG. 7

FIG. 9



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HOSE NOZZLE

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2 Claims. (Cl. 299-132)

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This invention relates to a hose nozzle and more particularly pertains to one which provides a sprinkling delivery port adjustable to vary the spread of the delivered streams and which also provides an adjustable valve at the hose end for controlling the amount of fluid flowing through the nozzle.

The nozzle is designed to deliver small individual streams of water, or other fluid, to sprinkle gardens, or the like, the side spread of part of the emitted streams being variable by turning a control device at the delivery end of the nozzle. The throw of the individual streams is controlled by turning another member of the nozzle, whereby the flow of fluid may be varied to any degree between shut-off and the delivery capacity of the nozzle.

The delivered streams are emitted from a perforated disc in which the holes are arranged in concentric circles, the outer circle of holes having the water delivered therethrough in a selectively directed manner to determine the angle at which the streams therethrough are emitted with reference to the long axis of the nozzle, whereas the inner circle of holes delivers fluid streams therethrough in lines substantially parallel with the nozzle axis.

By provision of such a sprinkling port, a considerable amount of water may be delivered in a sufficiently distributed manner as to quickly water a garden without damage to the vegetation, without washing or eroding the ground, and without causing the harmful effects present in the use of the spray or atomizing types of nozzles. The adjustable sprinkler head permits a selection of the area to be wetted and the individual streams issuing from the disc may be accurately directed by properly pointing the nozzle. Adjustment of the sprinkler head in conjunction with adjustment of the valve gives the operator control of the area over which and the force with which the fluid is emitted.

Although the nozzle is intended for use with water, other fluids such as insecticides and liquid fertilizers may be used.

The nozzle has a relatively long tube between the valve and the sprinkler head which collimates the stream of water conducted therethrough so as to still any turbulence thereof which is imparted thereto by the passage of it through the hose or valve, so that the sprinkler head has a straight stream of water directed thereto at all times.

Therefore, an object of my invention is to provide a hose nozzle having a sprinkling head ad-

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justable as to delivery angle of the streams and which has a flow control valve separate therefrom.

Another object of the invention is to provide a hose nozzle having an adjustable sprinkling head comprising a disc with concentric circles of delivery holes, the delivery of fluid to the outer circle of holes being controlled by a selecting means so as to selectively direct the angle of delivery of fluid through the outer circle of holes.

Another object of the invention is to provide such a nozzle wherein a collimating tube straightens the water supply stream directed to the sprinkling head.

With these and other objects in view, which will appear in the description and claims to follow, I describe my invention with reference to the drawings in which:

Fig. 1 is a section through the length of the nozzle showing the control valve and sprinkling head in full open position.

Fig. 2 is a view of the substance of Fig. 1, except the sprinkler head end is shown in elevation and the control valve end shown, closed, in section.

Fig. 3 is a view of the substance of Fig. 1, except the control valve end is shown in elevation and the sprinkler head end shown with the outer circle of holes occluded.

Fig. 4 is an enlarged detail of the sprinkler disc in front elevation.

Fig. 5 is an enlarged detail of the sprinkler disc of Fig. 4, in side elevation.

Fig. 6 is an enlarged detail of the valve disc in front elevation.

Fig. 7 is an enlarged view of the valve disc of Fig. 6, in side elevation.

Fig. 8 is a perspective view of one of the spacing collars.

Fig. 9 is a perspective view of the sprinkler disc retaining collar.

In the drawings, the same reference numbers are applied to the same parts throughout the several views.

I provide a collimating tube 20 having a cylindrical fluid passageway 21 having an input port 22 and an output port 23.

The input end of tube 20 is threaded externally, as at 24, to receive, adjustably, a hose-coupling piece 25, having threads 26, by which it may be coupled to the effluent end of a hose which will abut in a water-tight contact with a resilient washer 27, in the ordinary manner.

Washer 27 rests against the outer edge of valve disc 28 extending across the interior of the

coupling, its edges being threaded, as at 29, so it may engage threads 26 on the hose-coupling piece 25, said valve disc 28, being screwed into the coupling piece so as to come into contact with a collar 30 which rests, on its other end, against washer 31, made of gasket fibre, said washer 31 being seated against a shoulder 32 on the inside of hose-coupling piece 25. Washer 31 may be split so it may be slipped over a shoulder 38 on tube 20.

Valve disc 28 has a circle of holes 33 piercing it from side to side between two circles 34 and 35, represented by dotted lines (Fig. 6), the circle 35 having a radius slightly greater than the input port 22 so that, when hose-coupling piece 25 is run onto tube 20 by the operator turning it by knurled portion 36, the disc 28 will be moved from the position shown in Fig. 1, which is the wide open position, to the position shown in Fig. 2 which is the closed position, wherein the central portion 37 will occlude the input port 22, shutting off flow of water from the hose to the tube 20. In intermediate positions of the disc 28, the water will flow with more or less volume, through holes 33, according to the spacing of disc 28 from the end of tube 20. Washer 31 engaging shoulder 38 of the tube when the valve is full open prevents the backing off of the hose-coupling piece 25 from tube 20.

At the delivery end of the nozzle an adjustable sprinkler head 40 is provided with internal threads which permit it to be screwed on external threads 41, on the delivery end of tube 20, said head being moved by the operator turning it by knurled portion 42. Split fibre gasket 43 limits the movement of head 40 in an outwardly direction by coming to rest against shoulder 44 of tube 20.

Held across the interior of the head 40 is sprinkler disc 45 held against a collar 46, similar to collar 30, before described, which, in turn abuts against gasket 43. Disc 45 is held in place by retaining ring 47 having external threads 48 mating with internal threads in the forward end of head 40. Retaining ring 47 has grooves 49 and 50 to aid in its insertion and removal, whereby the sprinkler disc 45 may be removed and reinstalled, for cleaning purposes.

The sprinkler disc 45 has its central, pierced, portion curved inwardly, as shown in Figs. 1, 3 and 5, the holes therein consisting of a central hole 51 (Fig. 4), an inner circle of six holes 52, and an outer circle of twelve holes 53.

For ordinary use with half-inch garden hose, the diameter of tube passageway 21 should be about three eighths of an inch and its length two and one-half inches. Under such circumstances the disc 45 should be made of stock about fifteen-thousandths of an inch thick and the centers of the inner circle of holes should be on a circle having a radius slightly less than the radius of tube 20 so that they are within the walls of the tube passageway, at the delivery end when the head 40 is screwed down to its innermost limit as shown in Fig. 3, thus preventing passage of water through any except hole 51 and holes 52 in said sprinkler disc when head 40 is screwed down. As the head is turned to move it outwardly, as shown in Fig. 1, water is permitted to pass through all the holes in the sprinkler disc.

The directional influence of water being turned by the disc toward the outer circle of holes is retained by the streams issuing from the disc through the outer circle of holes and cause such streams to be directed outwardly, such out-

ward angle being more pronounced as the disc moves inwardly toward port 23.

The holes 51, 52 and 53 should be about one-sixteenth of an inch in diameter and the holes 33 in the valve disc should be about one-eighth in diameter, which will give the sprinkler disc a discharge area, when full open, about sixty percent of the area of the holes in the valve disc. This assures maintenance of pressure within the nozzle, to cause the issuing sprinkling streams to be forced to a distance useful for gardening purposes when used with ordinary hydrant pressures. Such dimensional factors may be adjusted to suit the conditions under which the nozzle is used.

Brass or equivalent material is preferred for the parts of the nozzle other than the gaskets and washer.

In use, the operator adjusts the flow of water through the valve by turning the tube 20 by means of knurled portion 60 and adjusts the type of sprinkling pattern by turning sprinkler head 40.

I am aware that variations may be made in regard to some of the things specified without departing from the principle of the invention, and therefore, I claim my invention broadly as indicated by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent, is:

1. A hose nozzle for sprinkling fluids, including, in combination, a straight cylindrical tube sufficient in length to collimate a stream of water passed therethrough, one end of said tube being connectable to a hose; a sprinkler head adjustably mounted on the other end of the tube, and means connecting the sprinkler head to the end of the tube to permit movement of said head back and forth on the tube, said head having a large orifice occluded by a transverse disc having two concentric circles of holes which pass from surface to surface of the disc, the inner circle of holes being spaced from the center of the disc a distance less than the internal radius of the tube and the other circle being spaced from the center of the disc a distance greater than external radius of the tube, the center of said disc being in line with the axis of the tube, so that movement of the head onto the tube to its limit causes the disc to make contact with the tube opening on that part of the surface of the disc between the circles of the holes, whereby, by such an adjustment of said head, fluids forced through the tube may be made to issue from the inner circle of holes only, and whereby, when said head is adjusted outwardly, the fluids may issue through both circle of holes.

2. In a sprinkling nozzle, the combination of a straight cylindrical tube of sufficient length to collimate a stream of fluids passed through it, said tube having an effluent end externally threaded except for the extreme end which ends in a shoulder; a sprinkler head having an internal orifice larger than the bore of the tube, said orifice being threaded internally on one end to cooperate with the external threads of the tube whereby it may be adjustably screwed onto and off of the tube, said orifice being internally threaded on the other end, and there being an offset shoulder in said orifice whereby the said other end has a larger internal diameter; a split gasket inserted between the shoulder of the head and the shoulder of the tube so as to limit the

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relative movement axially between the said sprinkler head and tube; a collar, of larger internal diameter than the effluent end of the tube, set at the larger end of the sprinkler head against the gasket; a sprinkler disc, of a diameter to fit the larger end of the sprinkler head, set in said head against the collar, said disc between the collar's internal periphery being dished inwardly toward the end of the tube and said dished portion having a central hole, a circle of holes surrounding said central holes, said circle being of a radius smaller than the radius of the internal bore of the tube, and a second circle of holes, said second circle being of a radius larger than the internal radius of the tube; and a retaining collar screwed into the outer end of the sprinkler head and bearing against the disc to hold it against the first mentioned collar, the parts being so dimensioned that when the sprinkler head is screwed onto the tube to its limit the disc will make contact with the end of the tube occluding passage of fluids through the outer circle of holes but not the first inner circle of holes, and, when the sprinkler head is turned to adjust it outwardly of the tube the both circles of holes will be able to pass fluids from the tube,

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the fluids passing from the outer circle of holes being angularly directed outwardly from the center according to the adjustment of said sprinkler head.

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