

G. E. MARCH.
NOZZLE.

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1,380,403.

Patented June 7, 1921.

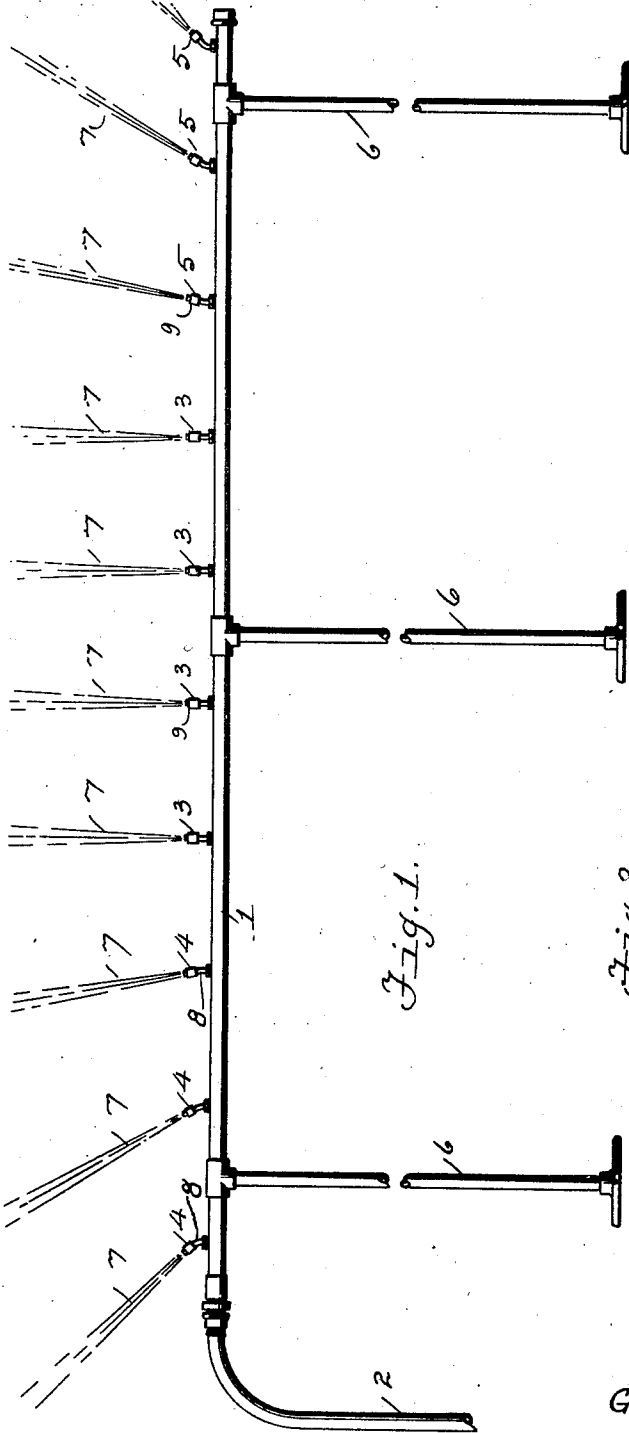


Fig. 1.

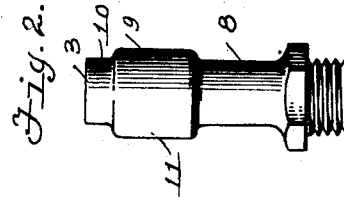


Fig. 2.

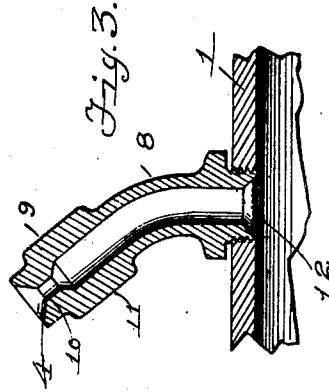


Fig. 3.

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UNITED STATES PATENT OFFICE.

GEORGE E. MARCH, OF MUSKEGON, MICHIGAN.

NOZZLE.

1,380,403.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE E. MARCH, a citizen of the United States, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented new and useful Improvements in Nozzles, of which the following is a specification.

The present invention relates to nozzles; and its object is to provide a nozzle whose axial form or shape may be readily changed in order that the stream or spray issuing therefrom may be directed as desired, such change being effected by bending the nozzle to maintained forms or shapes.

This object is attained by, and the invention finds preferable embodiment in, the structure hereinafter particularly described and illustrated by the accompanying drawings, in which:—

Figure 1 shows in side elevation a part of a sprinkling or irrigating system furnished with a plurality of my nozzles;

Fig. 2 is a side view of one of said nozzles; and

Fig. 3 is a longitudinal sectional view of a portion of a water pipe and of said nozzle, illustrating the nozzle bent to a desired axially-changed form.

In the drawings, the water pipe 1 to which water may be supplied through the flexible tube 2 and from which the water is discharged through the nozzles 3, 4, 5, is shown supported by suitable standards 6, on which the pipe may be rockably mounted so that, as the pipe is rocked, the streams or sprays issuing from the nozzles may sweep back and forth from one side of the pipe to the other. As shown, the nozzles 3 are axially straight, the water being discharged therefrom in a direction perpendicular to the pipe; the nozzles 4 are axially changed to direct the water therefrom toward the left-hand side of Fig. 1; and the nozzles 5 are axially changed to direct the water therefrom toward the right-hand side of said figure. To permit of their axial changing, the nozzles are made of a material—as annealed metal such as brass—which is capable of being bent, (as by a suitable tool) into the axially-changed form whereby the spray or stream therefrom is given the desired direction; or only a portion 8 of the nozzle intermediate its ends may be thus bendable, the bending pliers or other tool being applied to a portion of the nozzle adjacent its outer end, as to the rigid portion 9 of the nozzle. That the

portion of the nozzle to which the bending tool is applied may be sufficiently rigid to resist the compressing effect of the tool (which effect might result in contracting the water passage through the nozzle) the wall of said portion may be thicker than the wall of the bendable portion as shown at 10, and also (and preferably) as shown at 11 where the nozzle is seen to be of greater diameter than the bendable portion 8; or, the bendable portion 8 being annealed, the outer portion to which the tool is applied may not be annealed or less thoroughly annealed than the bendable portion. It will be understood that the material of the nozzle is such that, when bent to a desired form, it will maintain that form until the nozzle is again bent to another desired axial form. The inner end of the nozzle may be provided with a screen 12 to exclude dirt, etc., therefrom.

It is evident that a very slight change of the angle between the pipe 1 and the direction in which the stream issues from any of the nozzles will cause a very considerable change in the area or space irrigated or sprinkled by that stream. It is very difficult to properly adjust said angle in any other way than by experimentation with the operation of the irrigating system as and in the place where the same is actually installed. However carefully the nozzles may be adjusted at the factory where the pipe and its nozzles are made, a faulty mounting of the same whereby the pipe may swerve out of a direct line, or a settling or warping of the pipe's supports after installation, will result in a change in the direction of the sprays or streams. It will be seen that by my present invention these difficulties may be readily avoided and such defects corrected; and further, that the streams may be readily directed to areas beyond the ends of the pipe as shown in Fig. 1, or in any other direction as may be desired; and that any such adjustment may be changed at any time.

The invention being intended to be pointed out in the claims, is not to be limited to or by details of construction of the particular embodiment thereof illustrated by the drawings or hereinbefore described.

I claim:

1. A nozzle comprising a rigid portion adjacent its outer end and a portion intermediate its ends integral with said rigid portion, said intermediate portion being adapt-

ed to be bent into maintained axially-changed forms.

2. A nozzle having a portion intermediate its ends adapted to be bent into maintained axially-changed forms and a portion adjacent its outer end whose wall is thicker than the wall of said intermediate portion, said portions being integral with each other.

3. A nozzle having a portion intermediate its ends adapted to be bent into maintained

axially-changed forms and a portion adjacent its outer end of greater diameter than said bendable portion and having a thicker wall, said portions being integral with each other.

In testimony whereof I have hereunto set my hand at Grand Rapids, Michigan, this 15th day of April, 1920.

GEORGE E. MARCH.