

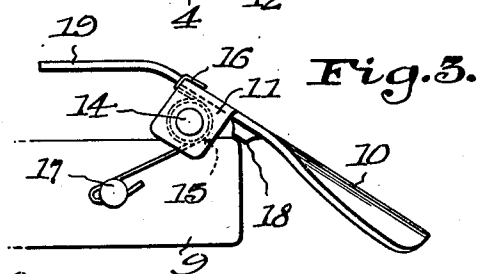
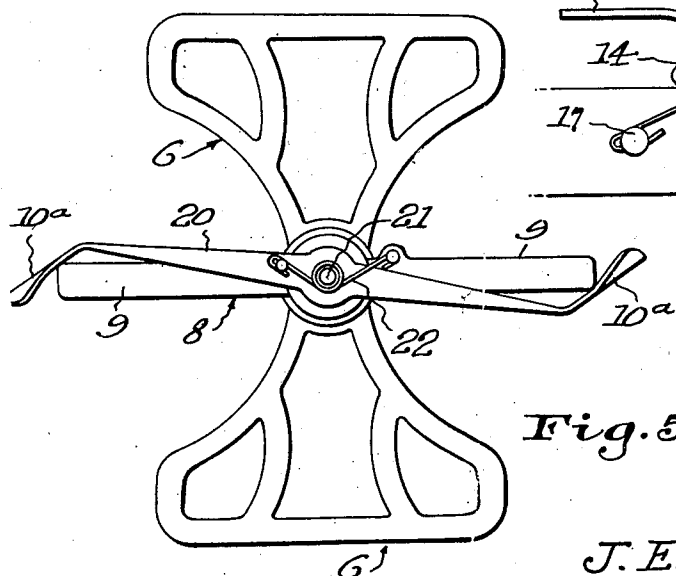
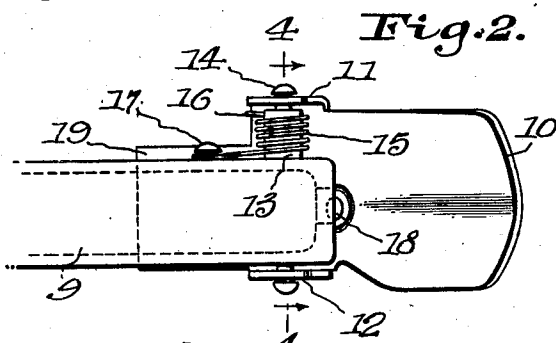
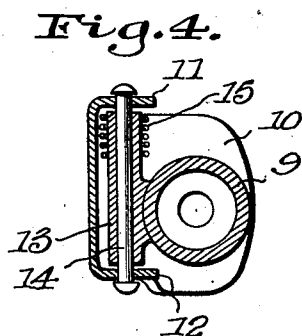
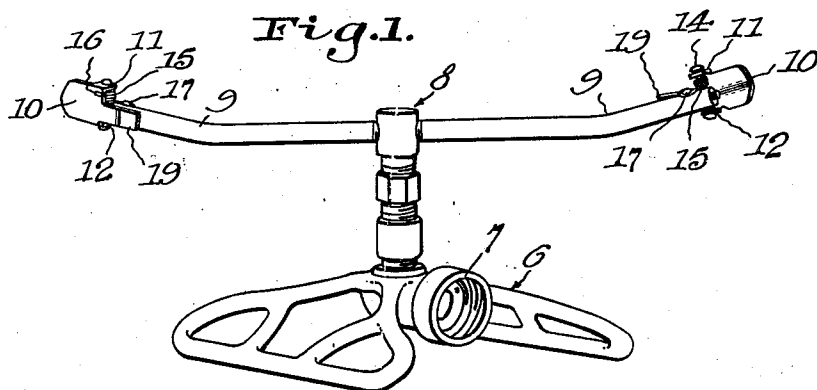
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2,314,702

ROTARY LAWN SPRINKLER

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UNITED STATES PATENT OFFICE

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ROTARY LAWN SPRINKLER

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3 Claims. (Cl. 299-69)

The invention relates to a new and improved sprinkler for lawns and other areas, of a type in which water discharged from a nozzle of the sprinkler rotor acts against an oblique deflector to rotate said rotor.

The principal object of the invention is to provide a sprinkler of the stated type in which the obliquity of the deflector with respect to the nozzle is automatically varied by the strength of the water stream discharged against said deflector, and in which, whether spraying small or large areas, said obliquity is always such that said deflector will bend the water stream only to the required extent for slowly rotating the rotor, instead of wasting water pressure to violently whirl said rotor at the sacrifice of area sprayed.

A further object is to provide a simple, inexpensive and efficient structure which will be trouble-free.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, description being accomplished by reference to the accompanying drawing.

Figure 1 is a perspective view showing one form of the invention.

Figure 2 is an enlarged fragmentary elevation of the outer end of one of the nozzles and the associated deflector.

Figure 3 is a top plan view of the parts illustrated in Figure 2.

Figure 4 is a vertical transverse section on line 4-4 of Figure 2.

Figure 5 is a top plan view showing a modified form of construction.

With the exception of the deflecting means, the rotary sprinkler may be conventional. For illustrative purposes, a sprinkler is shown having a base 6 with a hose connection 7, and a rotor 8 suitably mounted on said base, said rotor having oppositely projecting water discharge nozzles 9, the outer ends of which are preferably inclined to some extent. The number of nozzles may of course vary and the invention is applicable to sprinklers having only one of said nozzles, should a single-nozzle construction be desired. As the deflectors 10 are of the same construction and associated in the same way with their respective nozzles, regardless of the number of the latter, a description of one deflector and the nozzle with which it coacts, will suffice.

The deflector 10 is in the form of a substantially vertical plate which is disposed obliquely with respect to the nozzle 9, in position to be struck by the stream of water discharged from

said nozzle, to cause rotation of the rotor 8, said plate being preferably curved transversely to some extent, as shown. The deflector 10 is pivotally mounted on the nozzle 9 upon a substantially vertical axis, permitting said deflector to swing to different oblique relations with respect to said nozzle, and I provide yieldable means for urging said deflector toward its minimum angle with respect to said nozzle, said means being yieldable to allow the deflector to swing toward its maximum angle with respect to said nozzle under the influence of the water discharged against said deflector. Thus, when relatively little water pressure is turned on at the faucet to spray only a comparatively small area, the deflector will move little from what may be considered its normal relation with the nozzle (see Figure 3). Therefore, even though relatively low water pressure is being directed against said deflector, the water will be so bent that it will exert sufficient back pressure to cause rotation of the rotor 8 at a reasonable speed to properly distribute the water. However, when more water pressure is turned on to spray a comparatively large area, this water pressure will swing the deflector 10 to quite an extent toward its maximum angle with respect to the nozzle 9. Therefore, the deflector does not bend the discharged water as much and does not, therefore, interfere with projection of the discharged stream a relatively great distance from the sprinkler. Moreover, the angle of the deflector with respect to the nozzle is then only such as is required to cause the rotor 8 to turn at a reasonable speed. No water pressure is thus wasted in violently rotating the rotor at the sacrifice of area sprayed.

In the form of construction illustrated in Figures 1 to 4, the inner or mounting portion of the deflector 10 is provided with upper and lower laterally bent pivot lugs 11 and 12 respectively, and the nozzle 9 is provided with a vertically elongated bearing 13 at the ends of which said lugs are disposed. A vertical pin 14 passes through the bearing 13 and through the lugs 11 and 12 to pivotally mount the deflector upon the nozzle. A coiled spring 15 surrounds one end portion of the bearing 13, said spring acting against the aforesaid mounting portion of the deflector 10 and reacting against the nozzle 9 to always urge said deflector toward its minimum angle with respect to said nozzle, said spring of course constituting, in the present disclosure, the yieldable means above referred to. I have shown one end of the spring 15 hooked at 16 around an edge of the deflector 10, and the other end of

said spring suitably connected at 17 with the nozzle 9. For limiting the movement of the deflector 10 under the influence of the spring 15, I have illustrated a stop boss 18 on said deflector to strike the tip of the nozzle 9, and to limit the swing of said deflector under the water pressure, I have disclosed an inwardly projecting stop lug 19 on said deflector to strike one side of the nozzle.

In the modification shown in Fig. 5, the mounting portion of the two deflectors 10^a are constituted by the two arms of a lever 20 which extends diametrically of the rotor 8, said lever being pivoted at 21 to said rotor on an axis alined with the axis on which said rotor turns. A suitable spring 22 is shown for urging the lever 20 toward the position in which the deflectors 10^a occupy their minimum angle with respect to the nozzles 9, said spring, however, permitting swinging of said lever and deflectors, under the action of the discharged water, toward the position in which said deflectors occupy their maximum angle with respect to said nozzles. The action of the modification shown in Figure 5 is the same as the action of the structure shown in Figures 1 to 4, the difference being principally one in the manner of mounting the deflectors.

From the foregoing, taken in connection with the accompanying drawing, it will be seen that novel and advantageous provision has been made for carrying out the objects of the invention. While preferred features of construction have been illustrated, variations may of course be made within the scope of the invention as claimed.

I claim:

1. In combination with a lawn sprinkler having a rotor provided with a substantially radial water discharge nozzle; a deflector oblique to said nozzle and positioned to be struck by the water discharged therefrom to cause rotation of said rotor, means mounting said deflector on said rotor upon a substantially vertical pivotal axis to allow said deflector to occupy different oblique positions with respect to said nozzle, yieldable means acting on said deflector and reacting on said rotor for urging said deflector toward its minimum angle with respect to said nozzle, said means being yieldable to allow the deflector to swing toward its maximum angle with respect to the nozzle, under the influence of the water discharged against said deflector, said deflector having upper and lower laterally projecting pivot lugs, said nozzle being provided with a bearing at the ends of which said lugs are disposed, and a pin pivotally connecting said lugs with said bearing, said lugs, bearing and pin constituting the aforesaid deflector-mounting means.

2. In combination with a lawn sprinkler having a rotor provided with two nozzles projecting in opposite directions and disposed substantially radially; a lever extending diametrically of said rotor and having deflectors at its ends oblique to said nozzles and positioned to be struck by the water discharged therefrom to cause rotation of said rotor, a pivot alined with the axis of rotation of said rotor and connecting said lever with said rotor to allow said lever and deflectors to swing and thus dispose said deflectors in different oblique positions with respect to said nozzles, and spring means acting on said lever and reacting on said rotor for urging said lever toward the position in which said deflectors occupy their minimum angle with respect to said nozzles, said spring means being yieldable under the influence of the water discharged against said deflectors to allow the water to swing said lever and deflectors toward the position in which the latter occupy their maximum angle with respect to said nozzles.

3. In combination with a lawn sprinkler having a rotor provided with a substantially radial water discharge nozzle; a deflector having a single water-deflecting portion contiguous to and oblique to said nozzle and positioned to be struck by the water discharged therefrom to cause rotation of said rotor, said water-deflecting portion having a free outer end, said deflector being devoid of encumbrances between said water-deflecting portion and said nozzle, said deflector being provided with a mounting portion joined to the inner end of said water-deflecting portion, means mounting said mounting portion of said deflector on said rotor upon a substantially vertical pivotal axis to allow said deflector to swing and dispose said water-deflecting portion in different oblique positions with respect to said nozzle, and a spring surrounding the deflector pivot, said spring having one arm connected directly with said mounting portion of said deflector and another arm connected directly with said rotor, said spring urging said deflector in a direction to position said deflecting portion at its minimum angle with respect to said nozzle, said spring being yieldable to allow said deflector to move in the opposite direction to one position or another under the influence of the water discharged against said deflecting portion, said spring and the action of the water against said deflecting portion serving to hold said deflector against oscillation upon its pivot during rotation of said rotor, whereby said rotor will rotate continuously at a uniform speed.

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