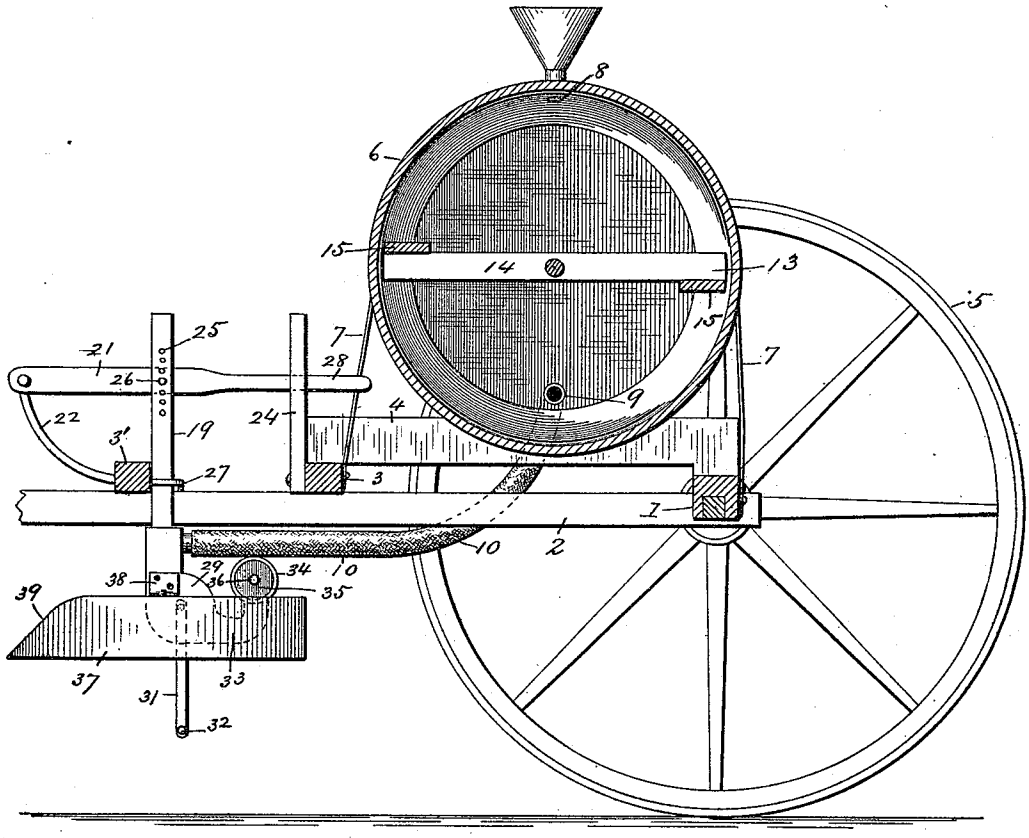
(No Model.) 2 Sheets—Sheet 1.

H. W. CAIN.

APPARATUS FOR SPRINKLING VINES AND PLANTS.

No. 440,247. Patented Nov. 11, 1890.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

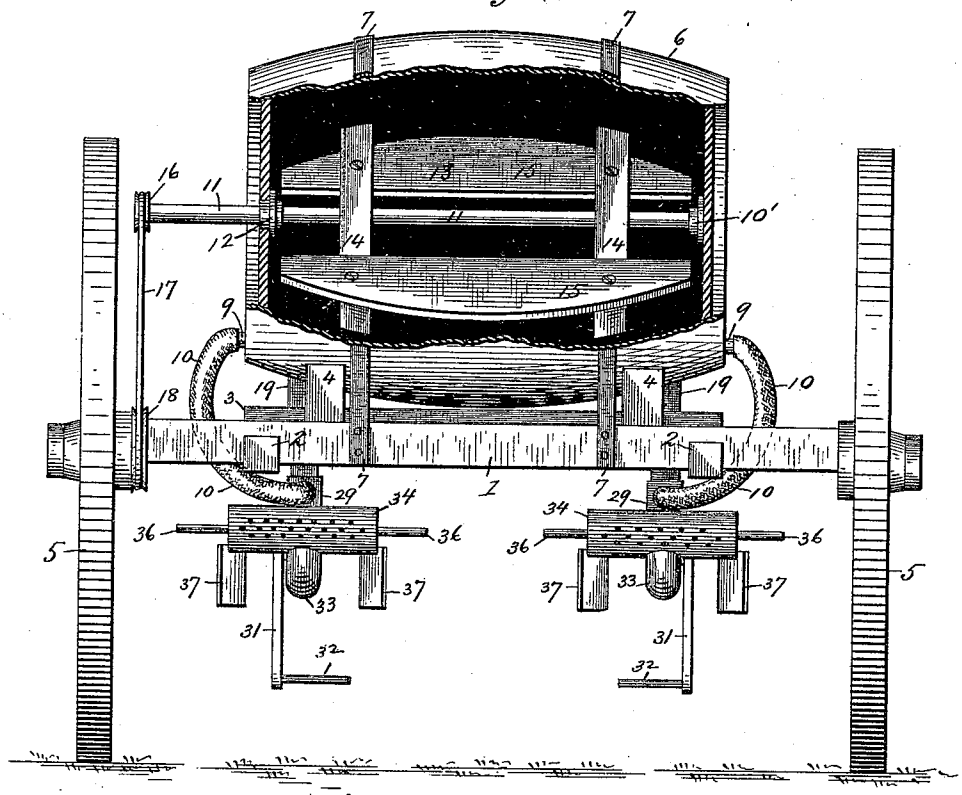


Fig. 3.

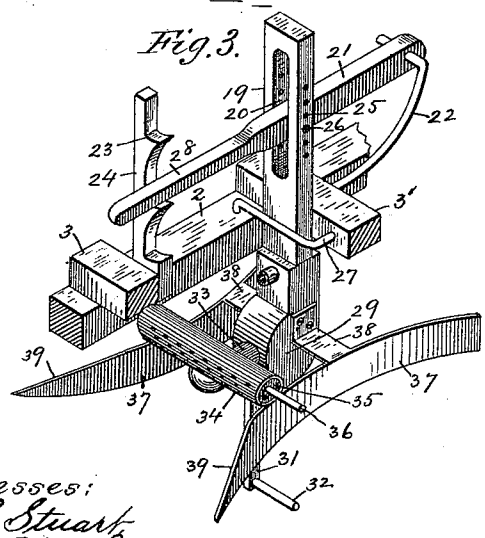
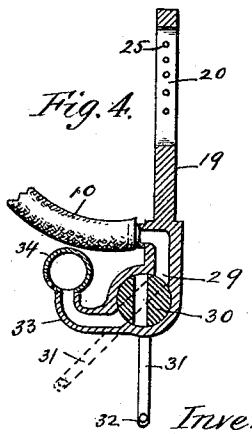


Fig. 4.



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UNITED STATES PATENT OFFICE.

HENRY W. CAIN, OF DEER LAKE, MICHIGAN.

APPARATUS FOR SPRINKLING VINES AND PLANTS.

SPECIFICATION forming part of Letters Patent No. 410,247, dated November 11, 1890.

Application filed November 27, 1889. Serial No. 331,768. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. CAIN, a citizen of the United States, residing at Deer Lake, in the county of Lake and State of Michigan, have invented certain new and useful Improvements in Apparatus for Sprinkling Vines and Plants; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates generally to sprinklers, and particularly to apparatus for sprinkling potato-vines, tomato-plants, and similar vegetation planted in rows or hills with a liquid, which may be water, for the purpose of irrigation, or preferably a solution of some poison—such as paris-green and the like—for destroying potato-bugs and other insects; and it consists of the peculiarities of construction and arrangement or combination of parts hereinafter disclosed in the description, drawings, and claims. Irrigating and sprinkling apparatus of this character have been constructed and employed for these purposes; but they have proven more or less objectionable in operation and complicated in construction, and hence have not generally been adopted.

The object of my invention is to provide an apparatus which will overcome these objections and in some respects be automatic in operation and also simple and inexpensive in construction. This object I accomplish by the mechanism shown in the accompanying drawings, forming part of this specification, in which the same reference-numerals indicate the same parts, and in which—

Figure 1 represents a vertical longitudinal section of a sprinkling-cart provided with my improvements, the section being taken on the line *x x* of Fig. 2; Fig. 2, a rear elevation of the same, the rear portion of the tank or barrel being broken away; Fig. 3, a detail perspective view of one of the supports for the sprinkling devices, of the wings attached to the lower portion of said support, of the lever for raising and lowering said support, and of the standards for supporting said lever, the ends of the cross-bars upon which these parts are mounted being broken away; and Fig. 4, a detail vertical sectional view taken through the hollow portion or duct, one of said supports, and the parts communicating therewith, a portion of one of the flexible pipes being shown in side elevation.

My improved apparatus as illustrated is constructed to sprinkle two rows of plants or potato-vines at once as it is drawn over said rows, and, also, it is provided with a seat for the driver, from which he can control or adjust its operation.

The frame-work of the apparatus is composed of the axle 1, the shafts 2, the rear cross-bar 3, the front cross-bar 3′, and the forwardly-extending bars or skids 4, all being suitably fastened together and mounted upon the pair of wheels 5. The bars or skids 4 are concaved upon their upper surfaces to conform to the contour of the tank or barrel 6, which is held down in place by two or more iron bands 7, which pass over the same and are secured at their ends to the axle 1 and the rear cross-bar 3.

In the upper portion of the tank or barrel is formed an opening 8, in which may be inserted a funnel for the introduction of the poisoned liquid, and also in ends of said barrel, near its lower side, are inserted two couplings 9, to which are connected the rubber or other flexible pipes 10 for conveying the liquid from said barrel.

One of the heads of the barrel is provided with an interior bearing 10′, in which is journaled one end of the shaft 11, while the other head is provided with a stuffing-box 12, through which passes the outer portion of said shaft, and which prevents the escape of the liquid at that point. Secured to this shaft and arranged within the barrel is the stirrer 13 for agitating and keeping the poisoned liquid thoroughly mixed, which stirrer consists of two thick bars 14, arranged transversely of said shaft, and two strips or flat bars 15, arranged parallel with said shaft and attached to the opposite sides of said thick bars near their ends. For revolving this stirrer and agitating the liquid the projecting portion of this shaft is provided with a pulley 16, over which is passed an endless belt 17, which is driven from a pulley 18, which may be formed with or attached to the hub of one

of the wheels 5; or, if preferred, two sprocket-wheels and a chain may be employed instead of the pulleys and the belt.

The sprinkling devices or apparatus proper and the devices for operating and connecting the same to the tank or barrel and to the frame-work are as follows: Each of the vertical supports 19 is formed with a vertical slot 20 near its upper end, within which is adjustably pivoted the operating-lever 21, which is attached at its forward end to an upwardly and laterally curved rod or standard 22, which is fastened at its rear end to the front cross-bar 3′. The rear end of the lever 21 is adjustably supported within the notches 23, formed in the side of the vertical standard 24, which is fixed to the rear cross-bar 3 on a line central with the vertical slot 20 in the support 19 and the forward end of the curved rod or standard 22.

For adjusting the height of the support 19 for regulating the distance of the sprinkling devices at its lower end from the tops of the plants or potato-vines it is formed in its edges with a vertical series of holes 25, which communicate with the vertical slot 20, and through which pass the adjustable pivot 26, which holds the operating-lever 21 in any position in which it may be placed; also, for the purpose of permitting said support 19 to be swung laterally to adjust the sprinkling devices at its lower end to plants or vines that are out of alignment in the rows or hills it is held loosely against the rear side of the front cross-bar 3′ by the laterally-extending bent rod 27, which is fixed at one end in the shaft 2 and at its other end in said cross-bar, whereby an elongated space is formed, within which the driver can laterally move said support by operating the handle 28 at its upper end. The lower portion of each of the vertical supports 19 is enlarged, slightly curved, projected rearwardly, and formed with a duct 29, in which is seated a horizontally-pivoted rotary valve 30, to one of the pivots of which is fixed a downwardly-projecting valve-stem 31, which is provided at its lower end with a laterally-extending rod or pin 32. To the rear sides of said supports and communicating with the ducts 29 therein are attached the flexible hose or pipes 10, which extend rearwardly and upwardly and are connected to the lower portions of the heads of the tank or barrel for conveying the poisoned liquid therefrom to said ducts. To the curved rear end of each of the supports 19, in rear of the rotary valve 30, is coupled a short pipe 33, which extends horizontally for a short distance and is then curved upwardly, its upper end being connected to and communicating with the straight horizontally-arranged sprinkler 34, which is apertured along its rear side from end to end for the escape of the liquid, and provided in its open ends with adjustable plugs 35, which by moving them in and out by their handles 36 regulate the length of the spray according to the width of the plants or vines to be sprinkled.

To the sides of the lower portions of the vertical supports 19 are attached the bow-shaped or curved wings 37, which project forwardly and rearwardly of said supports and are formed with the bent fastening-flanges 38 at or near the centers of their upper edges and with the curved or inclined front ends 39. These wings are employed for the purpose of drawing together the tops of the larger plants or vines which often grow in the same rows with smaller ones, and thus insure that the outer branches thereof shall be also sprinkled; also, said wings will raise the flat or low branches of said plants or vines for receiving their proportion of the spray, this raising being due to the curved or inclined front ends of said wings passing beneath said low branches.

The operation and advantages of the several parts of my improved sprinkling apparatus, in addition to those which are obvious and hereinbefore described, are as follows: The flexible hose or pipes 33, which communicate with the tank or barrel 6, the ducts 29, and the rotary valves 30, being normally filled with the liquid and the cart being drawn forward over the plants or vines to be sprinkled, the laterally-extending rods or pins 32 will come into contact with the tops of said plants or vines, and thus turn the valve-stems 31 and the rotary valves 30 and permit the liquid to pass through the short pipes 34 and out of the apertured rear sides of the sprinklers 35. When the valve-operating devices of each sprinkler pass over the top of a plant or vine, they will suddenly fall by gravity, close the valve, cut off the flow of the liquid, and prevent further discharge and waste thereof until they strike the next succeeding top of a plant or vine, when the valve will be again opened and the sprinkling repeated.

The supports 19 for the sprinkling devices are rendered vertically adjustable by their slots 20 and holes 25, by the operating-levers 21 and their adjustable pivots 26, and by the front and rear standards 22 and 24, while said supports and their sprinkling devices are rendered capable of lateral movement or swing by the handles 28 and the laterally-extending bent rods 27, which confine them loosely against the rear side of the front cross-bar 3′, whereby said sprinkling devices can be raised or lowered to suit the height of the plants or vines undergoing treatment and moved or swung laterally to reach and cover such of said plants or vines as may be out of alignment in the rows or hills being sprinkled.

Having thus fully described the construction and arrangement or combination of the several parts of my improved sprinkling apparatus, its operation, and advantages, what I claim as new is—

1. In a sprinkling apparatus, the combination, with a liquid-receptacle, of a vertical

support formed with a duct along its lower portion and provided with a rotary valve, a supply-pipe communicating with said receptacle and duct, a sprinkler arranged in rear of said valve, and means for automatically transmitting a rocking motion to said valve for letting on and cutting off the supply of liquid to and from said sprinkler, said means consisting of a downwardly-projecting valve-stem provided at its lower end with a laterally-extending rod or pin, substantially as described.

2. In a sprinkling apparatus, the combination, with a liquid-receptacle, of a vertical support formed with a duct along its lower portion and provided with a rotary valve, a supply-pipe communicating with said receptacle and duct, a short pipe connected to the lower portion of said support in rear of said valve and formed with horizontal and with upwardly-curved portions, a horizontal sprinkler secured to the upper end of said pipe, a downwardly-projecting valve-stem secured to said valve and provided at its lower end with a laterally-extending rod or pin, substantially as described.

3. In a sprinkling apparatus, the combination, with the frame-work, of a vertically-adjustable and laterally-movable support provided with sprinkling devices, the front and rear standards, an operating-lever supported upon said standards and provided with means for adjustably connecting it to said support, and a laterally-extending bent rod for permitting lateral movement of said support, substantially as described.

4. In a sprinkling apparatus, the combination, with the rear and front cross-bars 3 and 3′, of the vertical support 19, provided with the sprinkler 34 and means for supplying liquid thereto, and formed with the vertical slot 20 and the series of holes 25, the rear standard secured to said rear cross-bar and formed with the series of notches 23 in its side, the curved front standard 22, secured to said front cross-bar, and the operating-lever 21, supported at its ends upon said standards and adjustably pivoted at its center within the vertical slot in said support, substantially as described.

5. In a sprinkling apparatus, the combination, with the frame-work, of a vertically-adjustable and laterally-movable support formed with a duct along its lower portion and provided with a rotary valve and two horizontally-arranged wings, a sprinkler, and means for automatically imparting a rocking motion to said valve, substantially as described.

6. In a sprinkling apparatus, the combination, with the frame-work, of a vertically-adjustable and laterally-movable support formed with a duct along its lower portion and provided with a rotary valve and with two curved horizontally-arranged wings, a sprinkler, and means for automatically imparting a rocking motion to said valve, substantially as described.

7. In a sprinkling apparatus, the combination, with the frame-work, of a vertically-adjustable and laterally-movable support formed with a duct along its lower portion and provided with a rotary valve, and with two curved and horizontally-arranged wings formed with bent flanges on their upper edges and with inclined front ends, a sprinkler, and means for automatically imparting a rocking motion to said valve, substantially as described.

8. The herein-described sprinkling apparatus mouuted upon a cart and comprising a barrel, two flexible pipes communicating at their upper ends with the lower portions of the heads of said barrel, two vertically-adjustable and laterally-movable supports formed with ducts along their curved lower portions which communicate with the lower ends of said pipes and provided with rotary valves, short pipes coupled to the curved portions of said supports in rear of said valves and formed with horizontal and with upwardly-curved portions, horizontal sprinklers communicating with the upper ends of said pipes, downwardly-projecting valve-stems secured to said valves and provided at their lower ends with laterally-projecting rods or pins, and curved horizontally-arranged wings secured to the sides of said supports and formed with inclined front ends, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY W. CAIN.

Witnesses:
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C. H. MUNRO.