J. E. MILLS.

IRRIGATING SYSTEM.

APPLICATION FILED AUG. 25, 1909.

992,231.

Patented May 16, 1911.

3 SHEETS—SHEET 1.

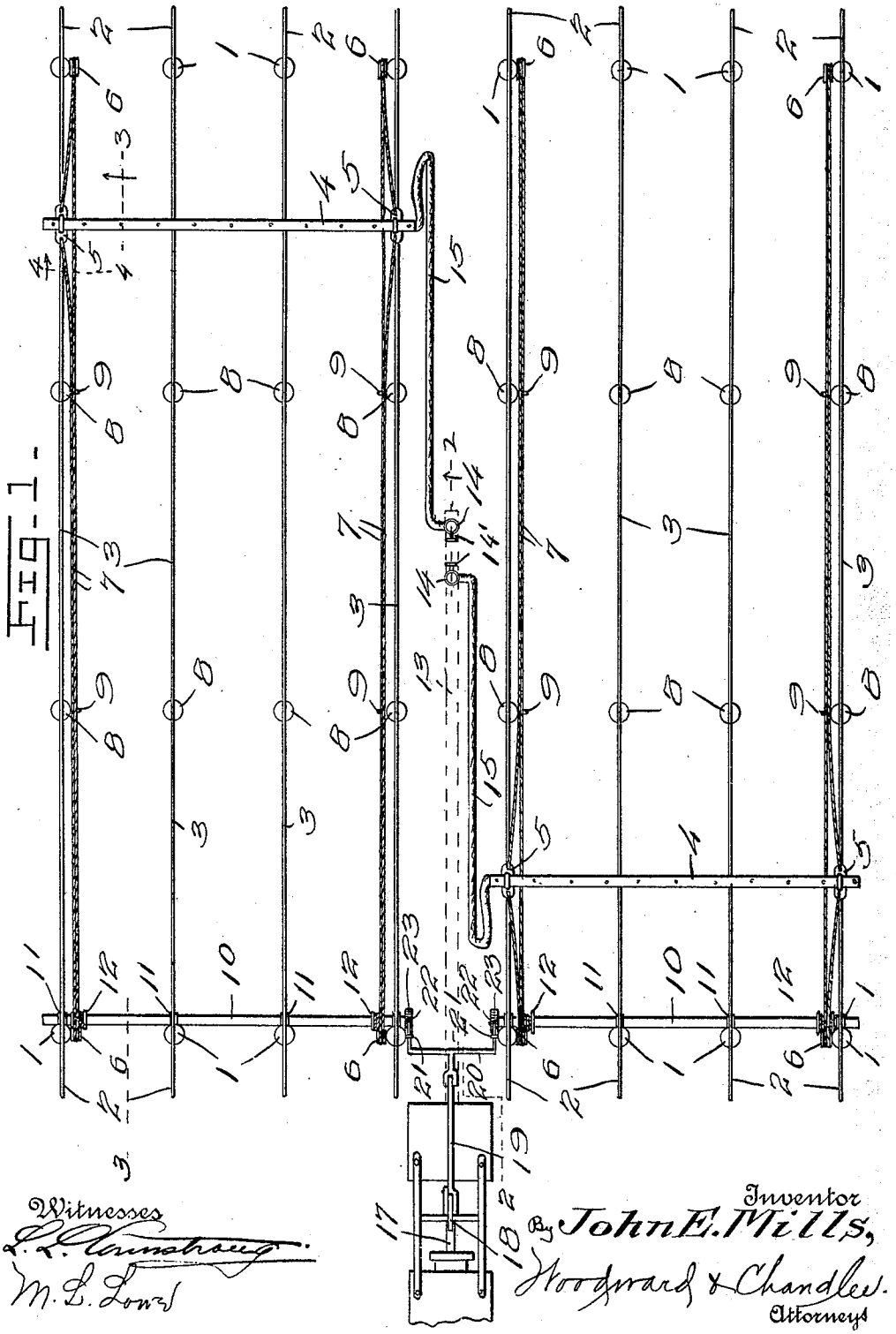

Fig. 1.

Witnesses

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3 SHEETS—SHEET 2.

Fig. 2.

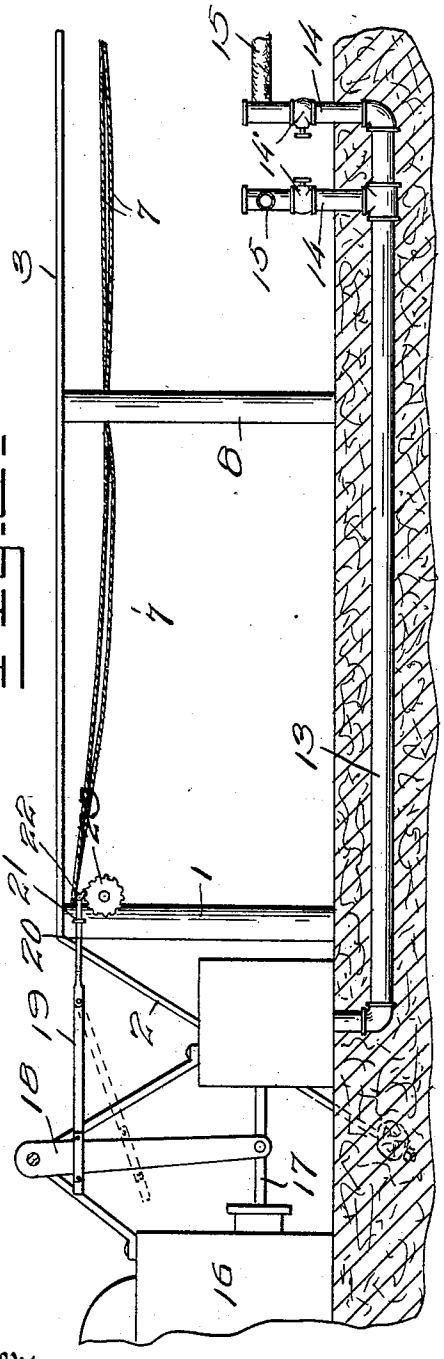
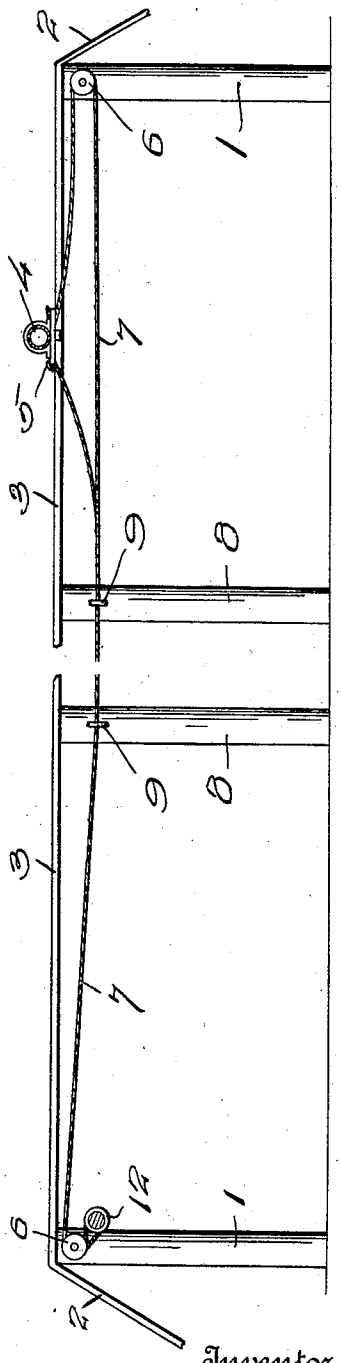


Fig. 5.



Witnesses

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3 SHEETS—SHEET 3.

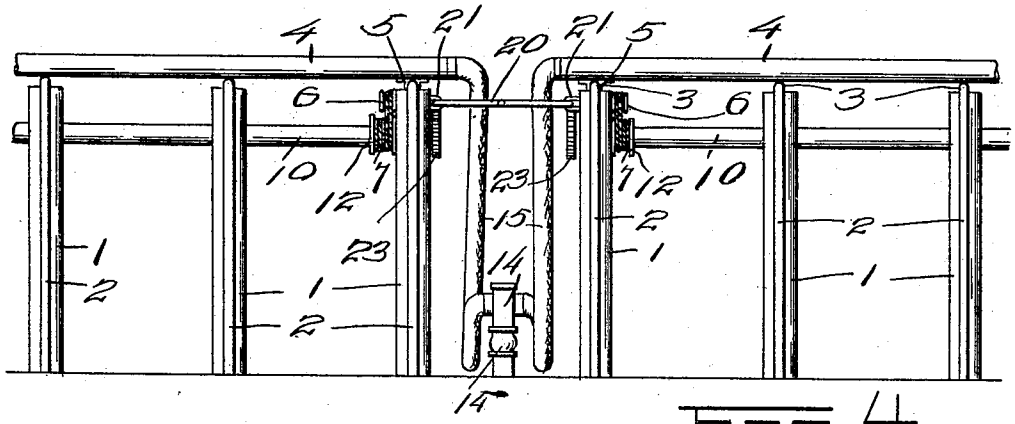


Fig. 4.

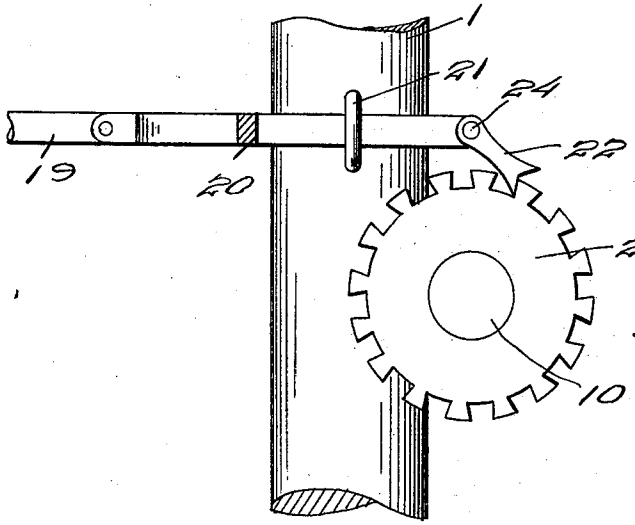
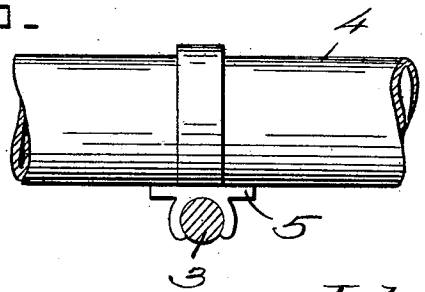


Fig. 5.

Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN E. MILLS, OF OLGA, FLORIDA.

IRRIGATING SYSTEM.

992,231. Specification of Letters Patent. Patented May 16, 1911.

Application filed August 25, 1909. Serial No. 514,603.

To all whom it may concern:

Be it known that I, JOHN E. MILLS, a citizen of the United States, residing at Olga, in the county of Lee and State of Florida, have invented certain new and useful Improvements in Irrigating Systems, of which the following is a specification.

This invention relates to suitable apparatus designed for irrigating large tracts of land and has for its primary object to provide an extremely simple mechanism whereby the land may be thoroughly and rapidly irrigated at a very slight expenditure of time and labor.

Another object is to provide an apparatus of this character, which comprises in its construction a plurality of elevated movable spray pipes, which may be moved over the land which is being irrigated, by the reciprocation of the piston of a suitable pumping engine.

A further object is to provide new and novel means whereby the direction of movement of the spray pipes may be reversed without the necessity of detaching the operating means from connection with the piston of the engine.

With these and other objects in view, the present invention consists in the combination and arrangement of parts as will be hereinafter more fully described and particularly pointed out in the appended claims, it being understood that changes in the specific structure shown and described may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings forming a part of this specification and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a top plan view of my improved irrigating apparatus. Fig. 2 is a section taken on the line 2—2 of Fig. 1. Fig. 3 is a similar view taken on the line 3—3 of Fig. 1. Fig. 4 is a front end elevation. Fig. 5 is a detail view of the means for operating the transversely positioned cable shaft. Fig. 6 is a detail sectional view taken on the line 4—4 of Fig. 1.

This invention is devised with a view to providing suitable means, of simple and inexpensive construction, whereby arid lands may be irrigated in a highly efficient manner and at extremely small cost. To this end I have provided a plurality of transversely arranged supporting posts 1. These posts are disposed in alinement at either end of the tract of land which is to be irrigated, and stout wires 2, have their ends secured to the upper ends thereof, and to suitable anchors which are secured below the ground level. To the upper end of the posts 1, the parallel wires 3 are secured. These wires are disposed parallel to one another as shown in the drawings, and support the spray pipes 4 which are transversely positioned thereon. These pipes are attached to certain of the wires 3 by means of the plates 5, which are slidably disposed upon the wires.

Between the end posts 1 are arranged supporting posts 8, and secured thereto are hooks 9 which support the slack of the cable 7 for properly guiding and holding the same. The cable 7 is secured to the attaching plate 5 carried by the spray pipe 4 and is arranged to move the said spray pipe along upon the wires 3 as will be later described.

At the front end of the apparatus, a transverse shaft 10 is mounted in the bearings 11 which are secured to the inner faces of the posts 1. Two of these shafts 10 are employed, and extend from the outer cable 7 inwardly adjacent to the transverse center of the apparatus. Upon these shafts, below the sheaves 6, the drums 12 are keyed on which are disposed the cables 7.

Arranged at the center of the apparatus, and below the surface of the ground, is the supply pipe 13 which is extended, and provided at suitable points with the vertically positioned pipes 14 which extend above the ground level. These pipes are provided with suitable regulating valves 14′ and are connected to the inner ends of the spray pipes 4 by means of tubes 15 which may be formed of any desired flexible material. The supply pipe 13 is connected to a suitable pumping engine, for conducting the water to the spray pipes 4. The engine 16 is provided with a suitable steam valve from which a reciprocating piston rod 17 extends to the water receiving chamber.

A pivoted arm 18 has its lower end attached to the piston rod, and is adapted to reciprocate a longitudinally disposed rod 19, which is adjustably secured to the arm. The extremity of the rod 19 is pivoted in the bifurcated stem of a U-shaped member 20. The member 20 is freely guided and held in an operative position by eyes 21 attached to the posts 1. In the outer ends of

the member 20, dogs 22 are pivoted, and are adapted to engage the teeth of the ratchets 23 which are secured upon the inner ends of the transversely positioned shafts 10. These dogs 22 are held in position by means of suitable pins 24, and as the spray pipes 4 are adapted to move in opposite directions, it will be seen that the position of the dogs 22 must necessarily be reversed to alter the direction of movement of the spray pipes. To allow of a slow or fast movement of the pipes 4 upon the wires 3, the rod 19 is adjustably attached to the pivoted arm 18. When the rod is secured to the arm 18 adjacent to the pivoted end thereof, the reciprocatory movement of the rod will be considerably less than when this rod is attached to the arm adjacent to its lower end, as clearly shown in Fig. 2. It will be understood, of course, that other means than that disclosed in the drawing may be employed for rotating the shafts 10.

In the operation of my improved apparatus, upon the starting of the pumping engine, the water will be forced through the supply pipe 13, and the flexible connections 15, into the spray pipe 4. These pipes may be in the form of the usual perforated pipe, or may be provided with suitable spray nozzles which are threaded therein. As the water is discharged from the pipes 4, the shafts 10 will be rotated through the medium of the ratchets 23 and rod 19, which has previously been adjusted upon the arm 18 which is connected to the piston rod of the engine. When the shaft 10 is rotated, the endless cables 7 will be passed over the drums 12 causing the spray pipes 4 to be moved upon the wires 3 in either direction as may be desired, of course depending upon the direction of rotation of the said shaft. During this movement of the pipes the water is being continually discharged, and the volume thereof may be regulated by means of the valves which are arranged in the vertical pipes 14. When the spray pipes 4 have been moved to either end of the wires 3, the position of the dogs 22 with respect to the ratchets 23 is reversed, and upon the continued operation of the engine, the spray pipes 4 will be moved to their former position. This operation is continued until the ground has been thoroughly irrigated, and it will be seen that owing to the adjustability of the several parts, this result may be quickly accomplished, and the flow of water regulated in accordance to the purpose for which the land is to be used. It will be obvious that a greater number of these spray pipes may be employed in the operation of the apparatus, and the same principles of construction and operation applied to tracts of land of greater or less area.

The apparatus is very simply constructed, and requires but little attention on the part of the operator. It may be readily assembled for operation and is of great efficiency in the reclaiming of arid and useless land. The various parts are all of ordinary construction, and the installation of the apparatus will therefore be extremely inexpensive.

What is claimed is:

1. In an irrigating apparatus, the combination with an engine and a water supply pipe disposed below the ground level, and connected to said engine, of a plurality of transversely arranged posts having parallel wires secured thereto, a plurality of spray pipes movably supported upon said wires, sheaves secured to certain of said posts, transversely positioned shafts mounted in bearings upon said posts, drums keyed to said shafts, cables secured to said spray pipes, said cables passing over said sheaves and around said drums, vertically disposed pipes connected to said supply pipe and extending above the surface of the ground, flexible connections respectively attached to said vertical pipes and to one end of each of the spray pipes, regulating valves in said vertical pipes, ratchets secured upon the inner ends of said transverse shafts, and means operated by the engine and engaging with said ratchets adapted to rotate said shafts and move the spray pipes in reverse directions.

2. In an irrigating apparatus, the combination with an engine and a water supply pipe, connected to said engine, of a plurality of transversely arranged posts, parallel longitudinally disposed wires having their ends secured to said posts, transversely positioned spray pipes supported on said wires, plates secured to said pipes and slidably connected to said wires, flexible connections between said spray pipes and said supply pipe, sheaves secured to the end posts, transversely arranged shafts mounted in bearings upon said posts, drums keyed upon said shafts, cables secured to said sliding plates, said cables passing over said sheaves and around said drums, hooks arranged upon the posts for supporting said cables, ratchets secured to the inner ends of said shafts, and means adjustably connected to the engine piston and engaging with said ratchets for moving said spray pipes in reverse directions.

3. In an irrigating apparatus, the combination with a water supply pipe, a suitable pumping engine in communication with the latter, of a plurality of transversely arranged posts, wires secured to said posts, a plurality of spray pipes supported upon said wires, said spray pipes being connected to said supply pipe, sheaves secured to said posts, transversely arranged shafts mounted in bearings secured to said posts, cables secured to said spray pipes, said cables pass-

ing over said sheaves and around said shafts, ratchets secured to the inner ends of said shafts, a pivoted arm connected to the engine piston and adapted to be oscillated thereby, a rod adjustably connected to said arm, dogs pivoted upon the outer ends of said rod, said dogs being adapted to engage with said ratchets to rotate said shafts in reverse directions upon the operation of the engine.

4. In an irrigating apparatus the combination with a water supply pipe, of a plurality of transversely arranged posts, wires secured to said posts, a plurality of spray pipes supported upon said wires and movable thereon, said spray pipes being connected to said supply pipe, sheaves secured to certain of said posts, a cable secured to said spray pipes and passing over said sheaves, transversely positioned shafts mounted in bearings upon said posts, the said cables passing around said shafts, ratchets secured to the inner ends of said shafts, a reciprocating engine for pumping the water to said supply pipe, an oscillating arm connected to the piston of said engine, a rod adjustably attached to said arm, a U-shaped member pivoted to the free end of said rod, said member being mounted in eyes secured to said posts, dogs adjustably secured in the outer ends of said member, said dogs being adapted to engage with said ratchets to rotate said shafts and move said spray pipes in opposite directions upon the reciprocation of the engine piston.

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

JOHN E. MILLS.

Witnesses:
K. L. SOLOMONS,
H. S. ENGLISH.