(No Model.)

J. McMURRIN.

WATER ELEVATOR.

No. 562,480. Patented June 23, 1896.

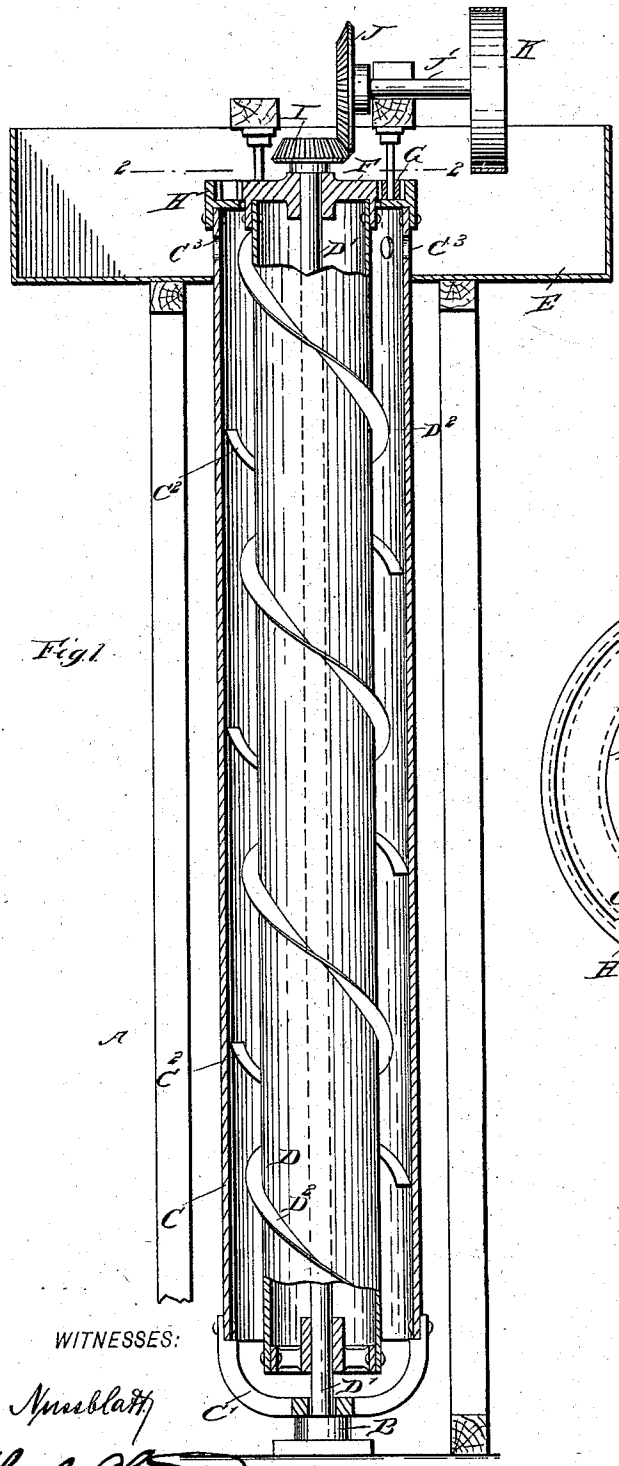

Fig. 1.

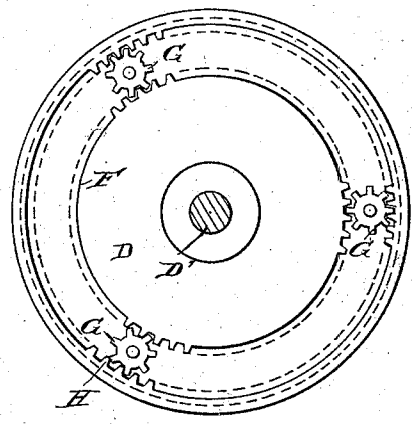

Fig. 2.

WITNESSES:

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JOSEPH McMURRIN, OF SHOSHONE, IDAHO.

WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 562,480, dated June 23, 1896.

Application filed April 30, 1895. Serial No. 547,666. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH McMURRIN, of Shoshone, in the county of Lincoln and State of Idaho, have invented a new and Improved Water-Elevator, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved water-elevator or centrifugal pump, which is simple and durable in construction, very effective in operation, and arranged to elevate the water to any desired height.

The invention consists of two or more pipes or cylinders, located one within the other, and adapted to revolve in opposite directions, the pipes being provided with spiral blades.

The invention also consists of certain parts and details, and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a sectional side elevation of the improvement; and Fig. 2 is an enlarged plan view of the gearing for the pipes or cylinders, the section being taken on the line 2 2 of Fig. 1.

The improved water-elevator is provided with a suitably-constructed frame A, in the lower end of which is arranged a step B, adapted to receive the box C′ for an exterior pipe or cylinder C, and the lower end of the shaft D′ for a pipe or cylinder D, located within the said pipe C, as is plainly shown in the drawings. On the inner surface of the pipe C is arranged a spiral blade C^2, and a similar blade D^2 is arranged exteriorly on the pipe or cylinder D, but wound in an opposite direction to that of the spiral blade C^2. At or near the upper end of the exterior pipe C are arranged outlet-openings C^3, through which passes the water into a flume E for carrying the water to the desired place.

The two pipes or cylinders C and D revolve in opposite directions, and for this purpose I provide the upper end of the inner pipe or cylinder D with a gear-wheel F, in mesh with a series of pinions G, journaled on studs supported from the framework A, as plainly indicated in Fig. 1. The pinions G are also in mesh with an internal gear-wheel H, secured on the upper end of the pipe or cylinder C, so that when the inner cylinder D is rotated, its rotary motion is transmitted by the pinions G to the internal gear-wheel H, and consequently to the cylinder C, but in an inverse direction to that in which the cylinder D is rotated.

The cylinder D is provided on the upper end of its shaft D′ with a beveled gear-wheel I, in mesh with a beveled gear-wheel J, secured on a shaft J′, mounted to turn in suitable bearings, and provided with a pulley K, connected by belt with other machinery for imparting a rotary motion to the said shaft J′.

Now it is understood that any desired number of pipes may be placed one within the other, but in order to render the pump effective, it will be necessary to rotate the pipes in opposite directions, to insure a satisfactory result. It is further understood that the spiral blade D^2 of the inner pipe D tends to throw the water against the inner surface of the pipe C and in an upward direction, and the spiral blade C^2 of this outer pipe or cylinder likewise elevates the water by causing it to flow upward on the spiral.

By the arrangement of gearing described and shown, it is obvious that there will be a differential rotary movement between the two cylinders, and as the inner cylinder is the faster of the two, it will load the spiral blade of the outer cylinder with a greater amount of water to be lifted and discharged than would be the case were the cylinders rotating equally.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A water-elevator, comprising vertically-arranged cylinders, one within the other, the space between the cylinders being uniform from top to bottom, continuous spiral blades secured on the adjacent faces of the cylinders, the said blades being wound in opposite directions, and mechanism for imparting a differential rotary motion to the cylinders in opposite directions, substantially as specified.

2. A water-elevator, comprising an inner

and outer cylinder, continuous spiral blades secured on the adjacent faces of the cylinders and wound in opposite directions, a gear-wheel secured to the inner cylinder, pinions in mesh with said gear-wheel, an internal gear secured to the outer cylinder and also in mesh with the said pinions, and a driving-shaft having gear connection with the first-named gear, substantially as specified.

JOSEPH McMURRIN.

Witnesses:
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