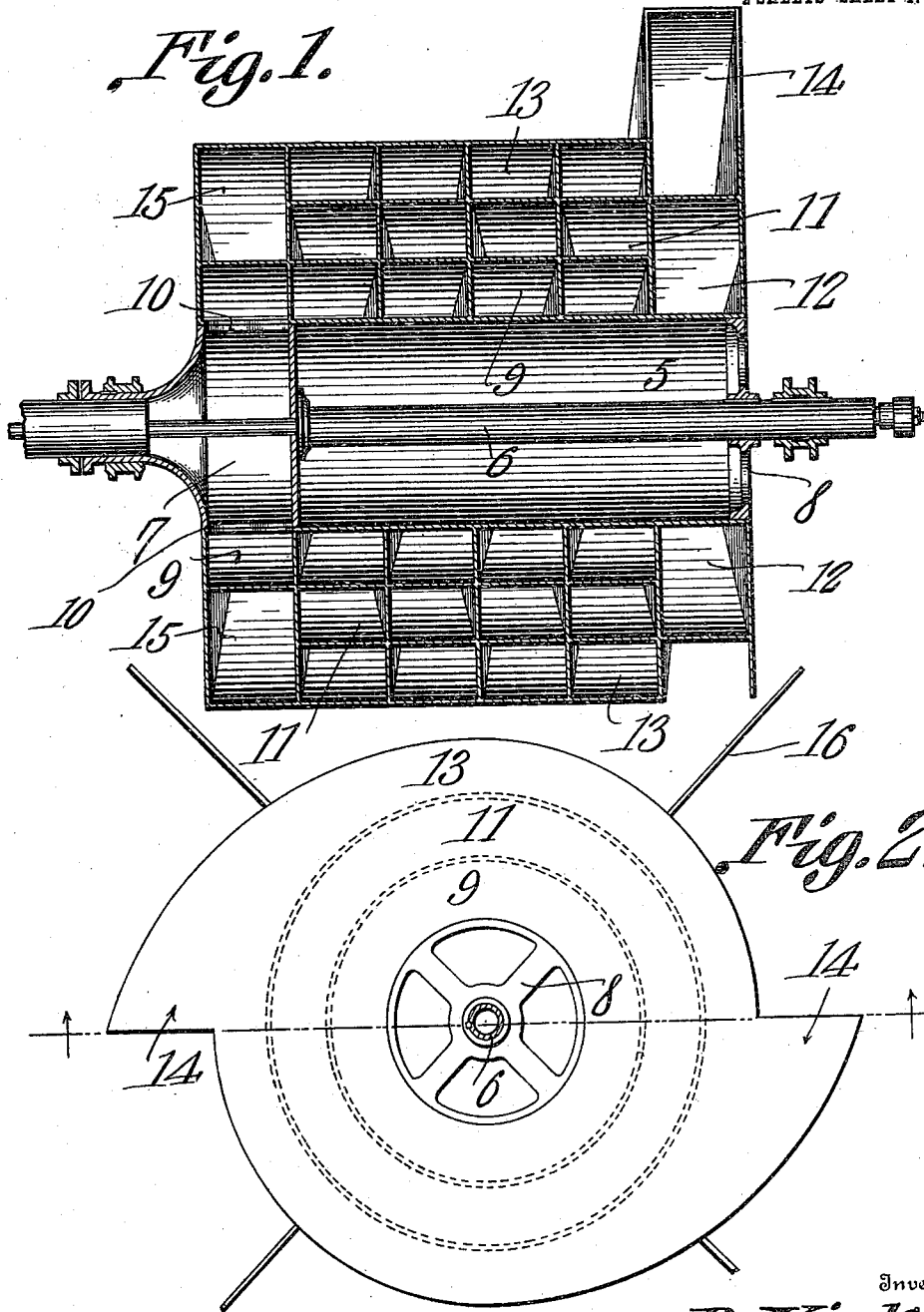


J. B. KIRK.
 WATER ELEVATOR.
 APPLICATION FILED FEB. 12, 1910.

965,304.

Patented July 26, 1910.

2 SHEETS—SHEET 1.



Witnesses
E. J. Schmitt
Ma. Schmitt

Inventor
James B. Kirk.
 384 *Cash & Co.*
 Attorneys

J. B. KIRK.
 WATER ELEVATOR.
 APPLICATION FILED FEB. 12, 1910.

965,304.

Patented July 26, 1910.

2 SHEETS—SHEET 2.

Fig. 3.

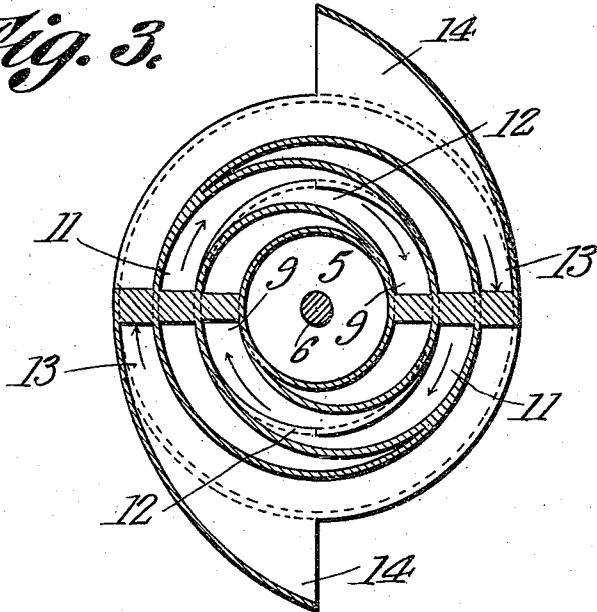


Fig. 4.

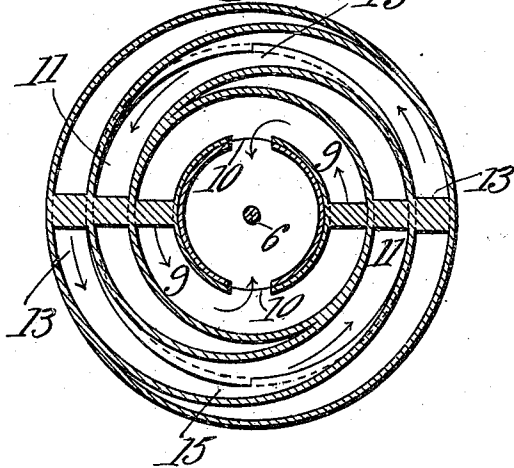
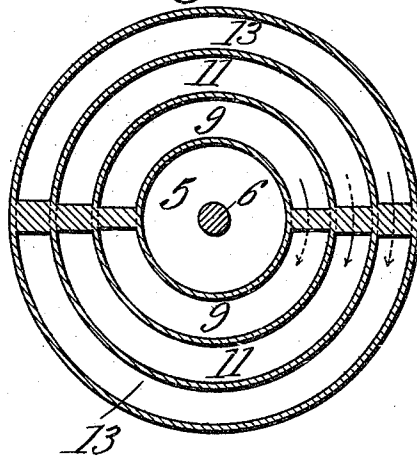


Fig. 5.



Witnesses

J. Downing

James B. Kirk,
 Inventor

by *C. Snow & Co.*
 Attorneys

UNITED STATES PATENT OFFICE.

JAMES B. KIRK, OF THE DALLES, OREGON.

WATER-ELEVATOR.

965,304.

Specification of Letters Patent. Patented July 26, 1910.

Application filed February 12, 1910. Serial No. 543,470.

To all whom it may concern:

Be it known that I, JAMES B. KIRK, a citizen of the United States, residing at The Dalles, in the county of Wasco and State of Oregon, have invented a new and useful Water-Elevator, of which the following is a specification.

This invention relates to water elevating devices designed to be installed in running or still waters and operating by the current or other applied power to elevate the water by pneumatic pressure, for irrigating purposes, and the like. A device of this kind is disclosed in Patent No. 896,581, and the present invention is an improvement over the same.

The device in the patent referred to comprises a drum which is partly submerged in the water, and is caused to rotate by the current thereof, or other applied power. On the drum is carried a spiral water passage having one of its ends arranged to dip into the water as the drum rotates. The rotary movement of the drum forces the water through the spiral passage into a delivery pipe which conveys the water to the place of use.

The present invention has reference more particularly to the spiral passage just referred to, the object being to increase the length of the passage, and thus obtain a greater lift, and also to obtain this increase in the length of the passage without increasing the length of the drum. This is effected by carrying several passages around the drum concentrically, back and forth from one end to the other, as will be hereinafter more fully described.

In order that the invention may be better understood, reference is had to the accompanying drawing, in which—

Figure 1 is a central longitudinal section of the drum. Fig. 2 is an end view thereof. Figs. 3, 4 and 5 are transverse sectional views taken on the lines 3—3, 4—4 and 5—5 respectively of Fig. 1.

In the drawing, 5 denotes a drum mounted on a shaft 6 so as to rotate therewith. In one end of the drum is mounted a hollow head 7 to which the delivery pipe is connected in such a manner as not to interfere with the rotation of the drum. In the other end of the drum is mounted a spider 8 which is made fast on the shaft 6, said shaft also

entering the drum, and being secured to the head 7. Suitable means, such as shown in the patent herein referred to, are provided for supporting the shaft so as to partly submerge the drum and the parts carried thereby in the stream.

On the outer surface of the drum are mounted conduits 9 which are in the form of a double spiral extending from one end of the drum to the other. These conduits are closed to the stream, and at one of their ends they open into the head 7, as indicated at 10.

Around the conduits 9 extend conduits 11 which are also in the form of a double spiral extending from one end of the drum to the other. These conduits are also closed to the stream, and they open at one of their ends into the conduits 9 as indicated at 12, one conduit 11 opening into one of the conduits 9, and the other conduit 11 opening into the other conduit 9. The openings establishing communication between the conduits 9 and 11 are at the ends of the conduits 9 which are opposite the ends of said conduits which open into the head 7.

Around the conduits 11 extend conduits 13, also in the form of a double spiral and extending from one end of the drum to the other. The last mentioned conduits open into the stream at one of their ends, these ends being formed into scoops 14 which dip into the water and gather up the same. The opposite ends of said conduits open into the conduits 11 at the ends of the latter which opposite ends of said conduits open into the conduits 9.

The three sets of spiral conduits herein described are arranged concentrically around the drum, and form a continuous conduit from the inlet 14 to the outlet 7. The conduits 9 and 13 run rearwardly in the direction of the outlet, and the conduit 11 runs in the reverse direction or forwardly. By this arrangement, the water entering the conduits 13 through the scoops or intakes 14, flows to the rear ends of said conduits, enters the conduits 11 through the openings 15, and then flows forwardly in the last mentioned conduits, and at the front ends thereof enters the conduits 9 through the openings 12. The water is then carried rearwardly by the conduits 9, and discharged through the openings 10 into the head 7, from which it is conveyed by the

delivery pipe to the place of use. The inlets 14 are diametrically opposite each other, so that when one leaves the water, the other is entering the same, whereby a continuous discharge of water is had.

By the herein described arrangement of conduits, a proper length of conduit to lift the water to the desired elevation is had without increasing the length of the drum, more conduits being added if a conduit of greater length is desired. Each set of conduits forms a double spiral, but this arrangement may be varied by increasing the number of conduits in the set, so as to obtain a triple, or other multiplex spiral. The drum and the conduits may be built throughout of sheet metal, the seams being welded together.

The apparatus receives a rotary motion from the current of the stream in which it is partly submerged, or from other power applied when used in still waters, it being provided with radial blades 16 which dip into the water.

It will be noted that the dippers 14, when not taking in water, are taking in air, so that the conduits are filled with air and water, and the rotation of the drum causes the air to be compressed by the water, and when the air is discharged into the head 7, it expands and lifts the volume of water

ahead of it, this operation being repeated twice during every revolution of the drum.

What is claimed is:

1. A water elevator comprising a drum, and a series of inter-communicating spiral conduits extending around the drum from one end thereof to the other, said conduits being arranged concentrically on the drum, and running alternately in opposite directions, and the conduits forming a continuous passage, one end of which opens into the body of water to be elevated.

2. A water elevator comprising a drum, a hollow outlet head mounted in one end of the drum, and a series of inter-communicating spiral conduits extending around the drum from one end to the other, said conduits being arranged concentrically on the drum, and running alternately in opposite directions, and said conduits forming a continuous passage, one end of which opens into the body of water to be elevated, and the other end of which opens into the aforesaid discharge head.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JAMES B. KIRK.

Witnesses:

J. T. RORICK,

J. C. HOSTETLER.