No. 635,504. Patented Oct. 24, 1899.

P. S. NOWACKI.

WATER LIFTING APPARATUS.

(Application filed Oct. 28, 1898.)

(No Model.)

Fig. 1.

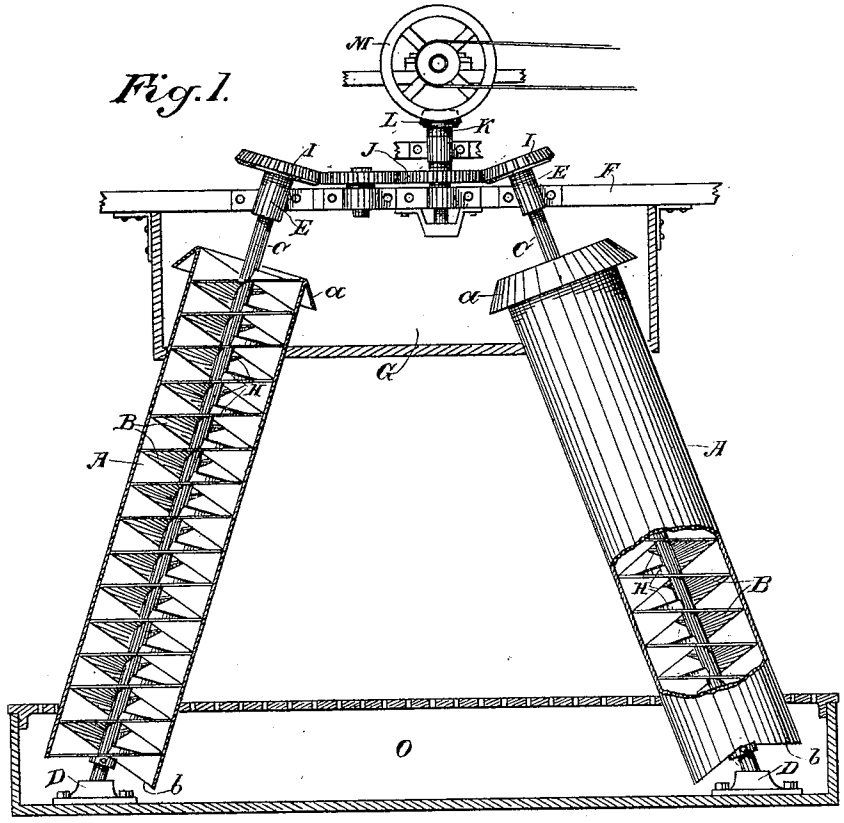
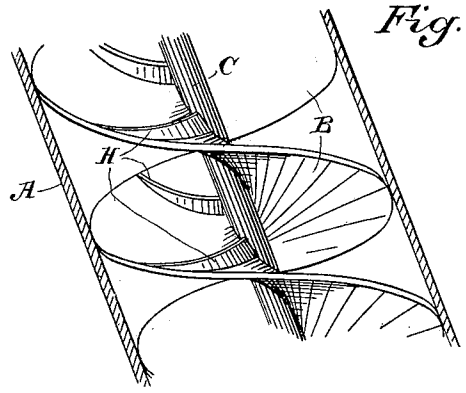


Fig. 2.



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UNITED STATES PATENT OFFICE.

PAULIN S. NOWACKI, OF SAN FRANCISCO, CALIFORNIA.

WATER-LIFTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 635,504, dated October 24, 1899.

Application filed October 28, 1898. Serial No. 694,764. (No model.)

To all whom it may concern:

Be it known that I, PAULIN S. NOWACKI, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Water-Lifting Apparatus; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an apparatus which is designed to raise water by the action of inclosed spirals.

It consists in the parts and the construction and combination of parts hereinafter described and claimed.

Figure 1 is a general view of my apparatus. Fig. 2 is a detail of the spiral plates with their stops.

A A are cylindrical casings, of which there may be any desired number, having within the interior the right and left spirally-arranged plates B, surrounding the central shaft C and disposed in pairs, like an auger, so as to form double chambers within the casings A.

The lower ends of the shafts C are supported in suitable steps D, and the upper ends, extending above the casings A, are journaled in boxes, as at E, upon a framework F, by which the whole apparatus is supported and the parts held with proper relation to each other.

In the present case I have shown two of the cylinders with the inclosed spirals, and these cylinders are set at an angle, being widest apart at the bottom and converging at the top, where the upper ends pass through a receiving box or tank G, and by reason of their inclination water brought up by the spiral blades will be discharged over the inner lower edges of the cylinders, falling into the tank G, from which it may be conveyed away by any suitable passage or conductor.

Within the apparatus and at suitable intervals are fixed the curved and wedge-shaped plates H, the bases of which stand in contact with the central shaft C, and the points extend toward the peripheries of the spiral blades. These plates are arranged at intervals from the bottom toward the top in each of the spiral chambers and serve as a sort of a check to prevent the water flowing backwardly when the speed of the apparatus is checked or reduced. In order to drive these cylinders and spirals in unison, I have shown gear-wheels I, fixed upon the upper ends of the shafts C, and these gears engage with a central gear J, mounted upon a shaft K, which turns in boxes upon the upper part of the frame F. The shaft K has fixed upon it a pinion L, and this is engaged by the gear M, mounted upon the main or power shaft, Power may be applied to this shaft and gear either by a hand-crank or by any other suitable means, so that the intermediate gearing may be revolved at such a rate of speed as will produce a revolution of the spiral chambers and their casings at a high velocity.

The lower ends of the inclosed spirals are preferably inclosed in a tank or box O, having a perforated top, so that water will be admitted freely thereto; but any material which would be likely to clog the apparatus would be excluded.

The lower ends of the cylinders are made substantially Λ-shaped in longitudinal section to form the inclined walls *b*, and when said cylinders are rotated the lower members of the spirals, which substantially conform to said walls, are permitted to collect the water with less resistance than if the end of the cylinders were not thus cut away.

Diverging flanges *a* around the upper ends of the cylinders A serve to direct the water into the receiver.

The apparatus thus constructed is capable of handling large quantities of water or other liquid within the range of height through which it is capable of elevating it.

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

1. In a water-lifting apparatus, the combination of oppositely-inclined cylinders one of which is provided with a right-hand spiral and the other with a left-hand spiral, shafts for the cylinders, a water-tank connecting with the lower ends of the cylinders and a receiver connecting with the upper or convergent ends of the cylinders, means whereby the cylinders are rotated in opposite directions, curved wedge-shaped plates extending from the shafts outwardly, having their bases in contact with the shafts and their points terminating near the periphery of the spirals, and divergent directing-flanges surrounding

the upper ends of the cylinders to direct the water into the receivers.

2. A water-lifting apparatus comprising convergent cylinders having internal spirals, means for rotating the cylinders in opposite directions, the lower ends of the said cylinders diverging from the center to facilitate the collection of the water, flanges on the spirals made narrower at their outer ends than at their inner ends and adapted to permit the water to flow up freely and to be retarded on the downward flow, a water-tank at one end of the cylinders and a receiver at the opposite end.

In witness whereof I have hereunto set my hand.

PAULIN S. NOWACKI.

Witnesses:
JOHN LUSZEZ,
HARRY J. LASK.