

J. M. CORN.
WATER ELEVATOR.

Patented Dec. 29, 1896.



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UNITED STATES PATENT OFFICE.

JAMES M. CORN, OF TEMPE, ARIZONA TERRITORY.

WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 573,963, dated December 29, 1896.

Application filed October 3, 1895. Serial No. 564,534. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. CORN, a citizen of the United States, residing at Tempe, in the county of Maricopa and Territory of Arizona, have invented a new and useful Water-Elevator, of which the following is a specification.

This invention relates to water-elevating appliances which depend for their successful operation upon a lifting-wheel; and the object of the same is to provide a lifting-wheel of compact form and of great force compared with its size and the power required to operate it.

The improvement consists of a water-lifting wheel having elevating-wings, each formed of practically three sections, said wings being related and disposed in groups of three, so that the receiving-section of the lower wing comes opposite the middle section of the second wing and opposite the delivery-section of the third wing, considering only one group, the said wings being uniformly spaced apart, so that the water-passages therebetween are practically uniform. The end portion of the receiving-section of a wing is in substantially a horizontal plane, and its edge extends on a radial line, thereby enabling the wing to the better catch up the water or fluid, and the wing gradually curves upwardly and is given a slight twist as it recedes from the receiving or front end. The delivery-section is the reverse of the receiving-section, the extreme or rear end portion being in practically a horizontal plane and its edge terminating on a radial line, and the main portion curving downwardly and having a twist given thereto. The middle section is curved and twisted in its length and connects the adjacent receiving and delivery sections. The three sections of a wing are about the same length and may be separate parts or integrally formed.

The improvement further consists of the novel features which hereinafter will be more fully set forth and claimed, and which are illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of a pumping or water-elevating appliance constructed in accordance with the present invention. Fig.

2 is a side elevation of the water-lifting wheel on a larger scale, parts being broken away to show more clearly the relative disposition of the sections comprising the wings. Figs. 3 and 4 are respectively top and bottom views of the water-lifting wheel. Fig. 5 is a detail view of a wing.

Similar reference-numerals indicate corresponding parts in the several views.

The casing 1 may have any desired form, and, as shown, is square in cross-section, and has openings 2 in its sides below the plane of the wheel 3 for the ingress of the water or fluid to be raised, and the curb 4 connects with or forms a continuation of the casing 1 and extends to the desired point of discharge. The shaft 5 is suitably journaled in the casing and curb, and is adapted to be rotated by suitable power, and for this purpose the upper end of the shaft is provided with a pulley 6 for the reception of a drive-belt from any suitable source of power.

The water-lifting wheel 3 is secured upon the shaft 5 and has an outwardly-extending flange 7, which projects over the edge of the opening in the horizontal partition or diaphragm 8, in which operates the said wheel, so as to form a close joint between the water-lifting wheel and the edge portion of the opening in the said partition or diaphragm.

The wings 9 are disposed about the central portion or hub 10 of the wheel in groups of three, and each wing is composed of three sections 11, 12, and 13 of about equal length and width. The section 11 is the receiving or front section, and its extremity or front portion lies in substantially a horizontal plane and its edge terminates on a radial line. This section curves rearwardly and upwardly as it recedes from the radial edge and has a partial twist. The section 13 is the rear or delivery section and is formed the reverse of the receiving-section 11, that is, its extremity or rear portion lies in substantially a horizontal plane and the main portion curves forwardly and rearwardly and is given a partial twist. The middle section 12 is curved and twisted throughout its length and forms a continuation of and connects the inner ends of the sections 11 and 13. For perspicuity of description it may be stated that the wings

are disposed in groups of three, and the middle section 12 of each group of wings lies between and comes opposite the receiving and the delivery sections of the adjacent wings 5 and occupies a position midway thereof, thereby providing passages 14 of uniform area and capacity. A ring or band 15 connects the outer edges of the wings, so as to brace and strengthen the same, and acts jointly with 10 the hub 10 to close the sides of the said passages 14. The upper edge portion of the ring or band is cut away to conform to the profile or contour of the outer edge portions of the delivery-sections of the wings, thereby providing for the ready escape of the water or fluid. The several sections 11, 12, and 13 15 may be independent parts or integrally formed, as found most convenient, but in every instance it is essential to the successful operation of the device that the wings and the sections thereof be related in substantially the manner herein set forth.

The operation of the invention can be readily comprehended from the foregoing description by one skilled in the use of water-elevating appliances of the character to which the present invention belongs, but it may not be amiss to state that in the working of the device the wheel is rotated so that the receiving-sections 11 will advance and catch up the water or fluid and cause the latter to move through the passages 14 into the casing 1 and up through the curb 4 to the point of discharge.

35 In the event of the elevation or lift being too great for a single wheel it will be understood that two or more wheels will be pro-

vided and located upon the shaft 5 at proper intervals, so as to attain the desired result.

Having thus described the invention, what is claimed as new is—

A water or fluid elevator comprising a vertical casing having openings in its lower end, a horizontal diaphragm located in the lower portion of the casing above the said openings 4 and having a central opening, and a water-lifting wheel mounted upon a shaft and operating in the opening of the said diaphragm, and comprising a hub, a ring or band attached to and encircling the hub, an outer flange 50 carried by the said ring and overlapping the opening in the said diaphragm, and a group of three elevating-wings disposed between and having attachment at their edges with the said hub and the ring or band, each of the said wings comprising a receiving, a middle and a delivery section, the receiving and delivery sections being reversely formed and having their terminal portions about parallel and lying in horizontal planes and jointly 60 with the middle section extending in a spiral direction, the middle section lying midway between and coming opposite the receiving and the delivery ends of the adjacent wings and forming passages therewith of uniform area and capacity, substantially as specified.

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

JAMES M. CORN.

Witnesses:

G. CAVE,

JNO. T. CAVE.