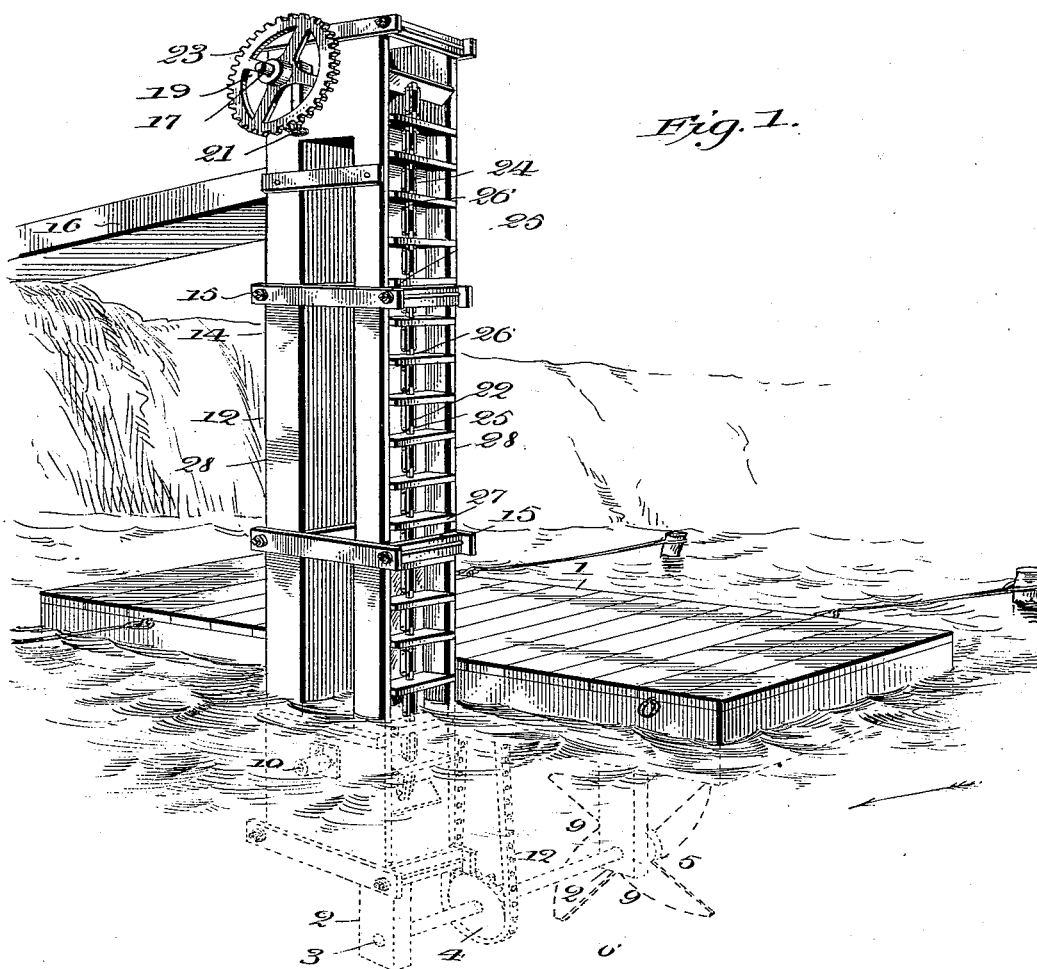


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CURRENT WHEEL.

(Application filed Feb. 11, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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No. 646,338.

Patented Mar. 27, 1900.

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(Application filed Feb. 11, 1899.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.

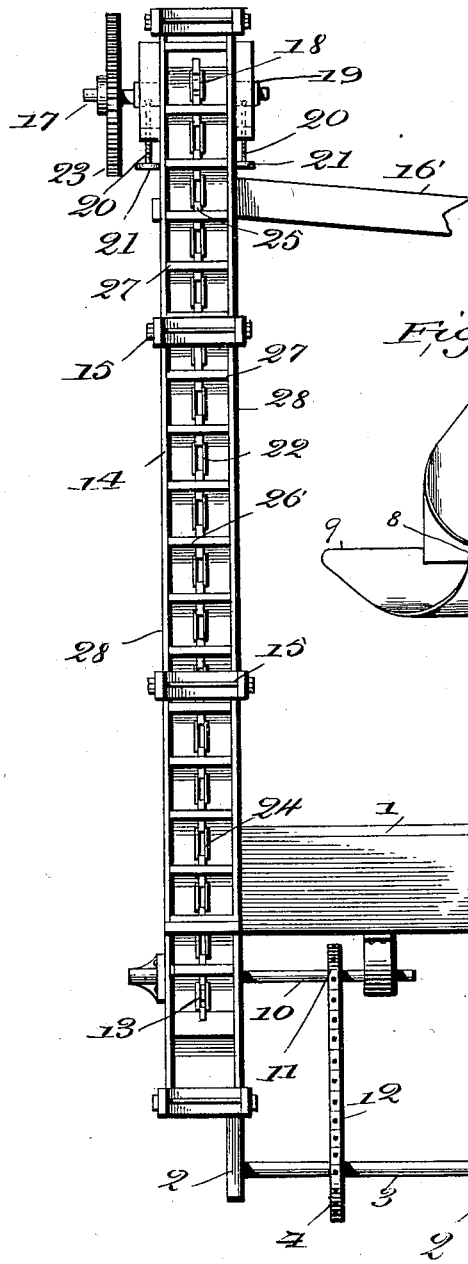


Fig. 3.

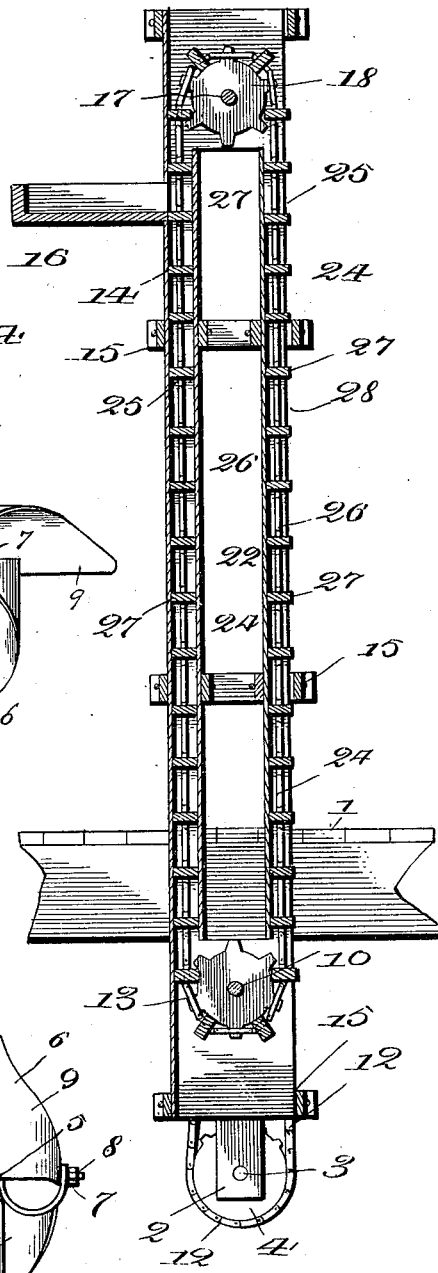
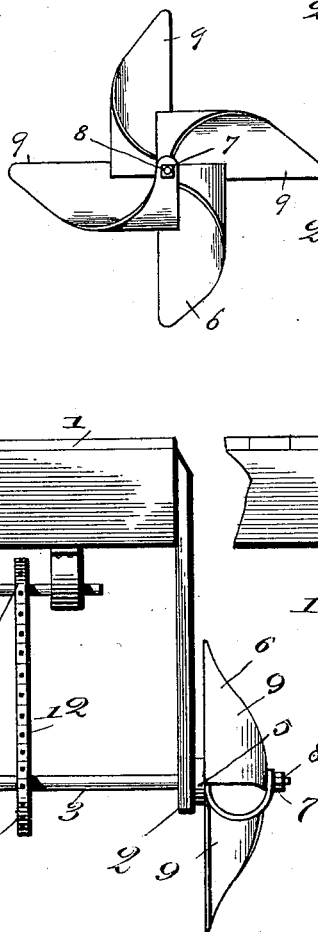


Fig. 4.



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# UNITED STATES PATENT OFFICE.

JAMES WINTER AND ABRAM D. GILL, OF LANDUSKY, MONTANA.

## CURRENT-WHEEL.

SPECIFICATION forming part of Letters Patent No. 646,338, dated March 27, 1900.

Application filed February 11, 1899. Serial No. 705,304. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES WINTER and ABRAM D. GILL, citizens of the United States, residing at Landusky, in the county of Choctaw and State of Montana, have invented certain new and useful Improvements in Current-Wheels; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to current-wheels and water-elevators; and it consists of the details of construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

The primary object of the invention is to obtain the full force of a current of water by submerging a current-wheel therein to a considerable depth below the surface, thereby insuring a steady rotation of a drive-shaft and the regular operation of a relatively-situated water elevator or pump.

A further object of the invention is to arrange the mechanism in connection with such a submerged water-wheel in a manner that the operation of the several parts will be positive and reliable, the construction being simple and effective, strong and durable, easily and readily set up, and comparatively inexpensive.

In the accompanying drawings, Figure 1 is a perspective view of a current-wheel and its relative parts shown in operative position and embodying the invention. Fig. 2 is an end elevation of the improved device. Fig. 3 is a vertical sectional view through the water-elevator. Fig. 4 is a detail view of the current-wheel.

Referring to the drawings, wherein similar numerals of reference are employed to indicate corresponding parts in the several views, the numeral 1 designates a float which may be of the form shown or constructed as a raft, flat-boat, or scow and held by oppositely-extending cables or guys running from stakes or the banks of a stream to maintain a regular position thereof relatively to a strong current. Depending from opposite sides of the float are hangers 2, in the lower portions of which a drive-shaft 3 is journaled, having a transmitting sprocket or other gear 4 keyed

thereon and located adjacent to the innermost hanger. The said drive-shaft projects outside of the outermost hanger 2 and has keyed thereto by means of a head 5 a current-wheel 6. The hangers 2 are of such length as to submerge the said current-wheel to a considerable depth below the surface, and thereby cause the latter to receive the full impact of the current without fluctuation, which ordinarily ensues where the wheel is located at or near the surface in the water. The present current-wheel is of itself constructed in a special manner and very cheaply. A suitable stiff sheet of non-corrosive metal or metal having been treated with non-corrosive material is cut diagonally from opposite corners and a part of the free ends are bent inwardly, as at 7, and engaged by a center pin or bolt 8, which extends outwardly from the head 5. When the said free ends 7 are bent inwardly, they form rolls, and with the unbent ends partially-tubular wings 9 are constructed, having their open sides arranged to face the current and at their inner ends, where the tubes are established, located directly in front of the open portions of the next succeeding wings. The water striking the open portions of the wings bears against an extended bearing-surface and is then carried through the tubular part of the said wings and thrown against the adjacent portions of the succeeding wings, and while this operation is very rapidly carried on, owing to the rotation and change of position of the several wings, the full power of the current is primarily applied to each wing and before becoming fully spent is secondarily transmitted to the succeeding wing. This operation will prevent any tendency toward a lag in the rotation of the current-wheel, and the rotation of said wheel will necessarily be very rapid.

Below the bottom of the float 1 is secured a counter-shaft 10, having a sprocket-wheel 11 keyed thereto and engaged by chain 12, which also extends around sprocket 4 on the drive-shaft 3. The shaft 10 is supported at one end in the lower portion of the water-elevator frame 14, which rises from a plane below the bottom of the float and above the axis of the current-wheel. This frame is inclosed on three sides below the bottom of the

float, and thereby forms a still-water space or well, from which water is drawn by the elevator. Within the casing and on the shaft 10 is secured sprocket-wheel 13. The frame 5 is braced at regular intervals by cross-strips and tie-rods, as at 15, and at its upper end has an outflow trough or chute 16. This outflow trough or chute 16 is projected from one side of the elevator, and its position will be 10 regulated in accordance with the direction desired and primarily constructed with this end in view. Near the said trough or chute 16 a cross-shaft 17 has bearing in the upper end of the frame, upon which a second sprocket-wheel 18 is keyed. This shaft 17 is adjustable and is mounted in a slot, the boxing 19 thereof having connected thereto an adjusting rod or screw 20, provided with a turn-wheel 21. The sprocket-wheels 13 and 18 are 20 engaged by an endless chain 22, which will be referred to more particularly hereinafter, and the upper shaft 17 is adjustable for the purpose of maintaining a regular tension on the said belt and insuring a positive operation 25 of the parts in connection therewith. One end of the said shaft 17 projects outwardly from the elevator and has a gear-wheel 23 keyed thereon, from which power may be taken and transmitted to any point at a distance, if so desired, and utilize the device for 30 driving other machinery.

The chain belt 22 consists of a series of links 24, pivotally connected to each other and reduced adjacent to one end, as at 25, 35 where they are extended or passed through openings 26 in buckets 27, consisting of flat boards or rectangular pieces of suitable material fitting within the casing and movable on opposite rails 28, to hold them in a straight 40 line and prevent sagging or irregular movement thereof, particularly on the side at which the water is carried up. The elevator as an

entirety in the form shown, consisting of a chain-pump, may be arranged either vertically or at an angle relatively to the float 1; 45 but the operation will remain the same irrespective of the position thereof.

The device is intended for use in irrigating arid lands or for conveying water for watering stock or other purposes to a distance 50 from a stream of water having high and precipitous banks, and changes in the proportions, dimensions, and minor details of construction might be made and substituted for those shown and described without in the least 55 departing from the nature or spirit of the invention or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed as new is— 60

The combination of a float having depending hangers, a drive-shaft mounted in the lower end of said hangers, a current-wheel keyed to the projecting end of the shaft, a counter-shaft operated by the driving-shaft 65 through suitable gearing, a frame projecting below the float, inclosed on three sides, to furnish one bearing for the counter-shaft and to form a still-water space or well and a water-elevator, as a chain-pump, leading from the 70 still-water space or well, operatively connected with the counter-shaft, substantially as described.

In testimony whereof we affix our signatures in presence of witnesses.

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