

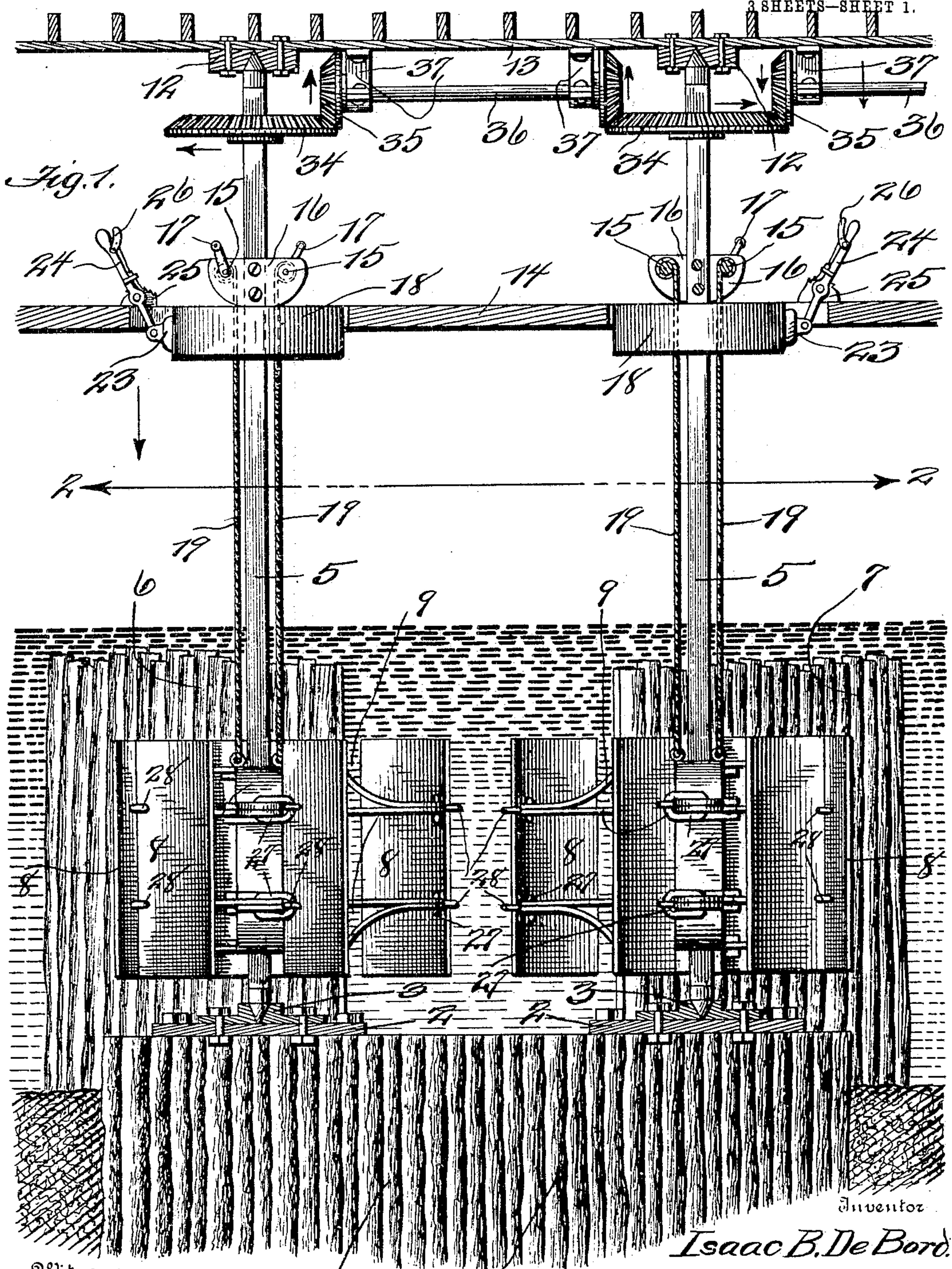
No. 788,028.

PATENTED APR. 25, 1905.

I. B. DE BORD.
WATER MOTOR.

APPLICATION FILED SEPT. 26, 1904.

3 SHEETS—SHEET 1.



Witnesses

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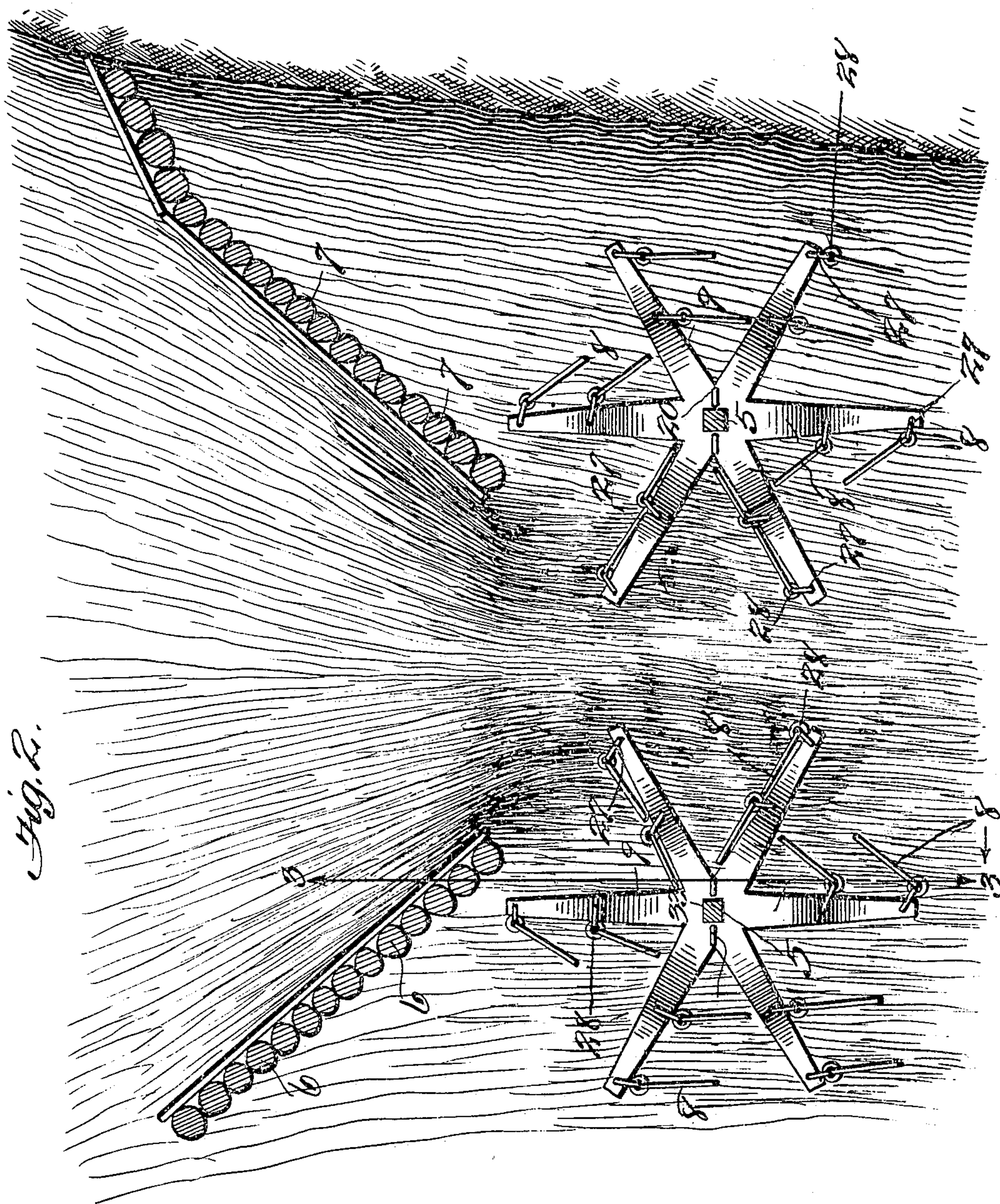
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3 SHEETS—SHEET 2.



Inventor

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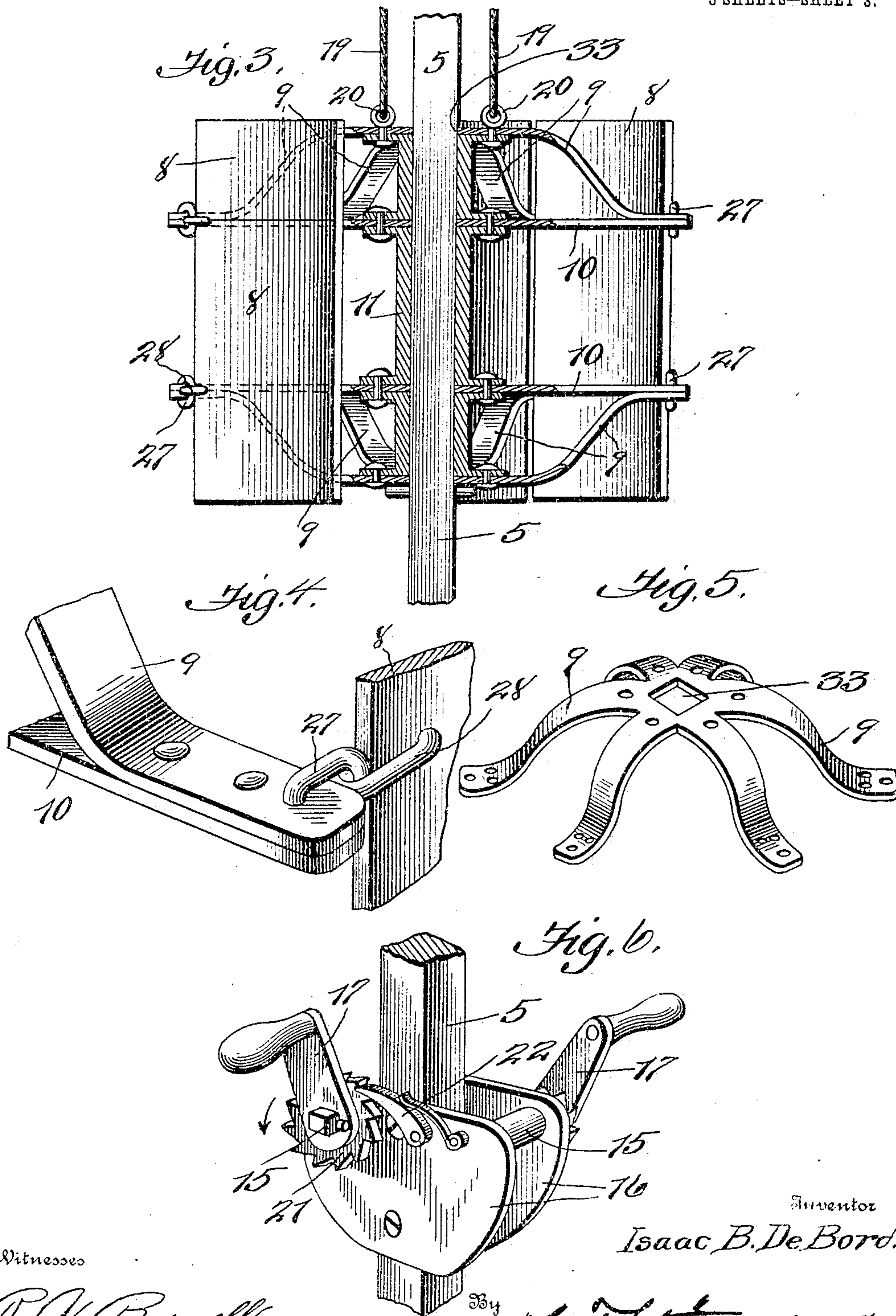
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3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

ISAAC BISHOP DE BORD, OF WINSTON, MISSOURI.

WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 788,028, dated April 25, 1905.

Application filed September 26, 1904. Serial No. 226,419.

To all whom it may concern:

Be it known that I, ISAAC BISHOP DE BORD, a citizen of the United States, residing at Winston, in the county of Daviess and State of Missouri, have invented certain new and useful Improvements in Water-Motors; and I 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.

My invention relates to water-motors or water-wheels; and it consists of certain novel features of combination and construction of parts, the preferred form whereof will be hereinafter clearly set forth, and pointed out in the claim.

The prime object of my invention, among others, is to provide a water-wheel or a plurality of water-wheels properly mounted in position whereby the force of the current passing through the water-gate or releasing-point of the mill will squarely strike the plurality of blades carried by the water-wheel and apply their maximum force thereto consistent with a minimum amount of frictional loss of said force.

A further object of my invention is to provide a water wheel or wheels the several blades of which shall present the least possible resistance while moving into their operative position, but will then automatically unfold and present a maximum surface to the force of the current.

Other objects and advantages will be hereinafter made clearly apparent, reference being had to the accompanying drawings, which are made a part of this application, and in which—

Figure 1 shows my invention complete. Fig. 2 is a top plan view of two of my improved water-wheels mounted in their respective operative places and showing a pair of blades used in connection with each set of arms. Fig. 3 is a detail sectional view showing the arms employed to carry the water-engaging blades and a single blade secured to each set of arms. Fig. 4 is a perspective detail view showing one of the many ways of attaching the water-blades in their operative positions upon the framework. Fig. 5 is a per-

spective detail view of a part of the carrying-arms for the blades, while Fig. 6 is a perspective view showing means for elevating the motor-blades or for lowering the same into their operative positions.

For convenience of reference to the various details and coöperating accessories of my invention numerals will be employed, the same numeral applying to a similar part throughout the several views.

In carrying out my invention I first provide a suitable base or support for my water-wheel or water-wheels, which may be accomplished in any of the well-known ways, as in building a base of masonry, though in the present instance I have shown in the drawings said base or support as formed of a plurality of piles, as indicated by the numeral 1, said piles being driven into the bottom of the water-course and their ends severed on a line with each other, and upon said prepared upper ends of the piles I locate the bearing-plate 2, secured in position in any suitable manner, said bearing-plate having upon its upper side the bearing-seat 3, provided with a recess to receive the conical end 4 of the motor-carrying shaft 5. In some instances I provide in the watercourse the converging walls 6 and 7, formed in any suitable manner, preferably by driving the requisite number of piles in place and facing the inner sides thereof so as to direct all of the water out between the ends of said piles without loss from leakage. I therefore locate the bearing-plates at a proper point upon each side of this waterway thus or otherwise provided, and my water-wheel consists of a plurality of blades 8, pivotally connected to the outwardly-directed arms 9 and 10, carried by the collar 11, which latter is provided with a square opening to receive the square shaft 5, thus making it possible to move said collar and the parts carried thereby upward or downward upon said shaft, as will be hereinafter pointed out.

It will be understood that the arms 9 and 10 may be made of any preferred material, though it is thought that heavy sheet metal will best serve the purpose inasmuch as said members may be turned edgewise to the force

of the water, and thus cause the least possible amount of friction incident to the swinging movement or rotation of the arms.

The upper end of the shaft 5, it will be understood, is properly supported in suitable bearings, as by the bearing-block 12, attached securely in place to any form of support, as the floor-section 13 or suitable framework as an equivalent thereof.

I also provide the platform or floor section 14 at a point below the platform or support 13, which will enable the platform 14 to be utilized as a floor for the attendant, and in order that the motors or wheels may be drawn entirely out of the water I provide a suitable windlass or winding-drum 15, mounted in the bracket 16, secured to and rotating with the shaft 5, said drums being provided with the controlling-handle 17, as clearly shown in the drawings.

I also secure to the shaft 5 the platform 18, which is designed to rotate with the shaft, and the upper surface of the platform 18 is flush with the surface of the platform 14, said platform 18 being of sufficient size to accommodate one or two persons who will operate the winding drum or drums provided in the bracket 16.

It will be understood that suitable cables or chains 19 are connected to the upper end of the collar 11, as by suitable eyebolts 20 or equivalent means, while the upper ends of said cables are disposed around the winding drums or rollers 15, and it therefore follows that by rotating said drums the entire water-wheel carried by the collar-section 11 may be lifted or lowered at the will of the operator, as it is by said means that I am able to start the motor at its work or stop the operation thereof.

In order to hold the motor or water-wheel in an elevated position, a suitable ratchet-wheel 21 is provided upon the end of the winding drum or roller 15, a suitable detent 22 being pivotally secured to the bracket 16 and designed to cooperate with said ratchet-wheel to hold the same in any desired position.

It will be observed that the platform 18 is circular in form, and I have provided a brake-shoe 23 to engage the periphery thereof, said brake-shoe being carried by the controlling-lever 24, pivoted in engagement with the rack-bar 25, it being understood that said lever is also provided with a suitable thumb-lever 26, designed to control the detent engaging said rack-bar, whereby the brake-shoe may be forced tightly in engagement with the circular platform 18 when it is desired to check the momentum of the winding-wheel after the latter has been raised out of the water.

The object of the rotating platform is to enable the person to step upon the same and operate the controlling-handle 17 without moving from his position upon said platform.

In Fig. 4 I have shown one of the preferred ways of connecting the blade 8 to the arms 9

and 10, wherein it will be observed that the arms 9 and 10 are provided with suitable hinges comprising the link members 27, into which take corresponding link members or clevises 28, which are designed to engage one edge of the blade-sections 8 and pivotally secure the same to the arms 9 and 10. In some instances the arms 9 and 10 are of sufficient length to accommodate two or more of the blades 8, as shown in Fig. 2 of the drawings. In this manner I am enabled to present a larger contact-surface for the water and at the same time limit the size of the blades so that they will not be unwieldy when returning against the current.

By reference to Fig. 5 it will be understood that the plurality of arms 9 and 10 may be fashioned from a single piece of suitable sheet metal, all of said parts being integral with each other and provided with a suitable opening 33 to receive the shaft 5, it being understood that a collar-section or a plurality of said collar-sections 11 may be employed in the manner shown in Fig. 3 or anything substantially equivalent of said arrangement.

By reference to Figs. 1 and 2 it will be seen that the blades 8 swing automatically inward parallel with the plane of the arms which carry them when said blades are successively moved into contact with the current, but that by reason of the peculiar pivotal mounting of said arms they swing idly out of resistance to the water during their returning movement to again be engaged by the force of the current.

In the showing made in Fig. 2 of the drawings it will be observed that the force of the current is directed on a line between the pair of motor-wheels and that the full impact of the current will therefore be directed against the blades as they are successively brought into position, each of the blades being so disposed that they will be brought into contact with and rest against the edge of the arms 9 and 10, which will prevent said blades from moving out of a plane parallel with the plane of said arms. It is furthermore obvious that after the blades shall have moved around to the opposite side upon their reverse travel they will swing loosely upon their hinges and their inner edges only will be presented to the water in which they are submerged. It therefore follows that the full strength of the current is applied to the blades and that said blades are successively brought back into operative position with the least possible amount of friction or resistance.

In order that power may be transmitted by the shaft 5, I secure at any suitable point thereon, preferably near the upper end of the same, a band-wheel or a gear-wheel 34, as shown in the drawings, which may be placed in communication with the beveled gear 35 upon the shaft 36, which latter is mounted in proper bearings 37, attached to the framework, it be-

ing understood that said gear-wheels may be placed in direct communication with the machinery to be driven or may be joined together in the manner shown in Fig. 1.

5 The various parts of my invention may be cheaply and expeditiously manufactured and each readily assembled in its respective operative position, and while I have described the preferred combination and construction of
10 parts I desire to comprehend in this application all substantial equivalents and substitutes that may be considered as falling fairly within the scope of my invention.

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

20 The herein-described water-motor comprising a plurality of blades; suitable arms pivotally connected to said blades whereby they may swing freely in one direction but cannot pass beyond the plane of said arms in the other direction; a suitable collar or collars attached

to said arms; a shaft fitting in said collar and operatively mounted in an upright position; a circular platform attached near the upper
25 end of said shaft, a brake-shoe adapted to engage the edge of said circular platform, a controlling-lever to operate said brake-shoe; a suitable winding drum or drums mounted in brackets carried by said shaft and cables connecting said collars and winding-drums where-
30 by the collars and the parts carried thereby may be bodily raised out of the water or lowered into the same as desired, all combined substantially as specified and for the purpose
35 set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ISAAC BISHOP DE BORD.

Witnesses:

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