O. D. BOOTH.

CURRENT MOTOR.

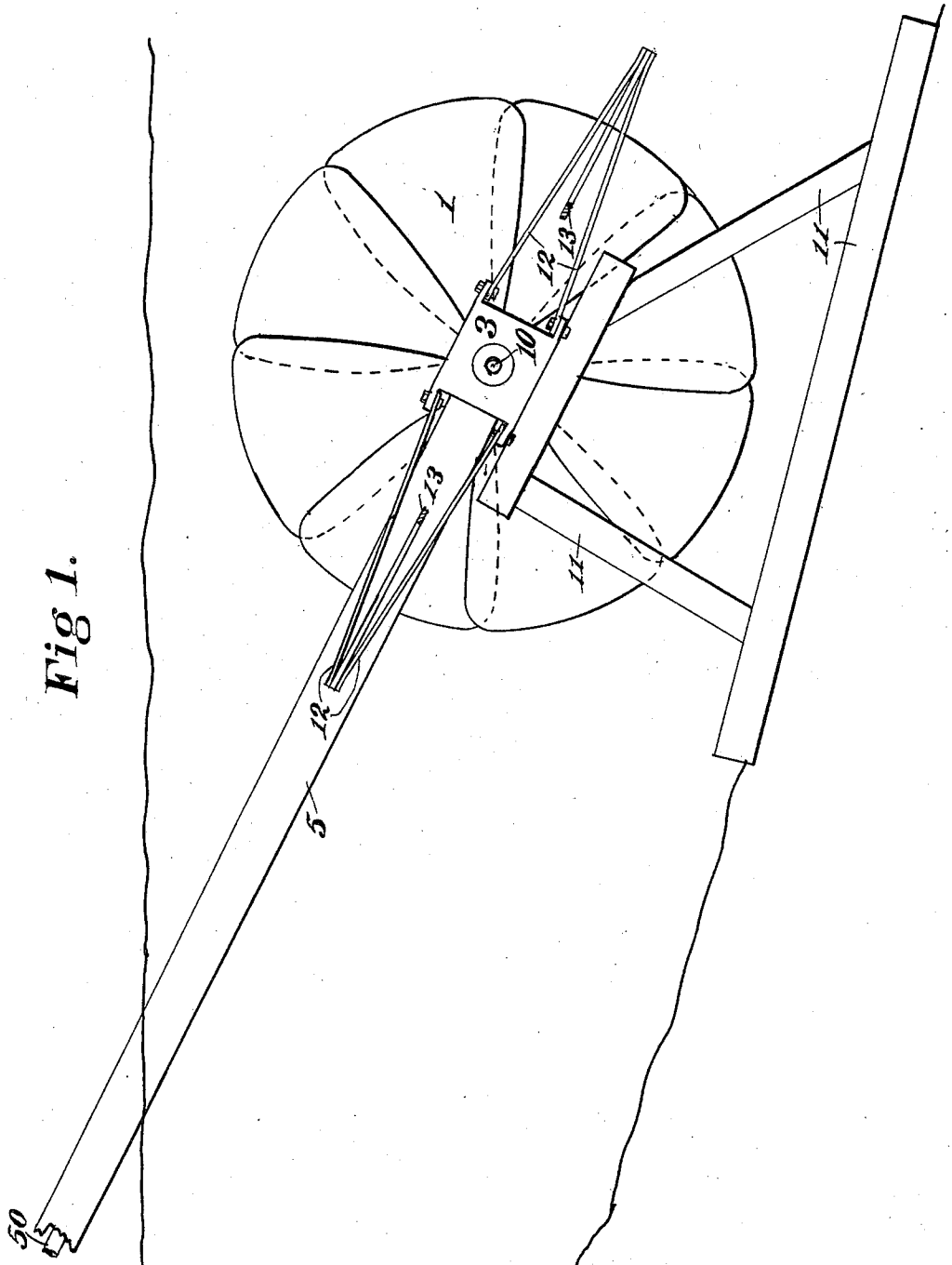
APPLICATION FILED OCT. 30, 1911.

1,039,087.

Patented Sept. 24, 1912.

2 SHEETS—SHEET 1.

Fig 1.



WITNESSES.

Alice E. Johnston.

Percy Gardiner.

INVENTOR.

Oscar D. Booth,

by Chandler & Chandler

ATTORNEY.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

O. D. BOOTH.

CURRENT MOTOR.

APPLICATION FILED OCT. 30, 1911.

1,039,087.

Patented Sept. 24, 1912.

2 SHEETS—SHEET 2.

Fig. 2.

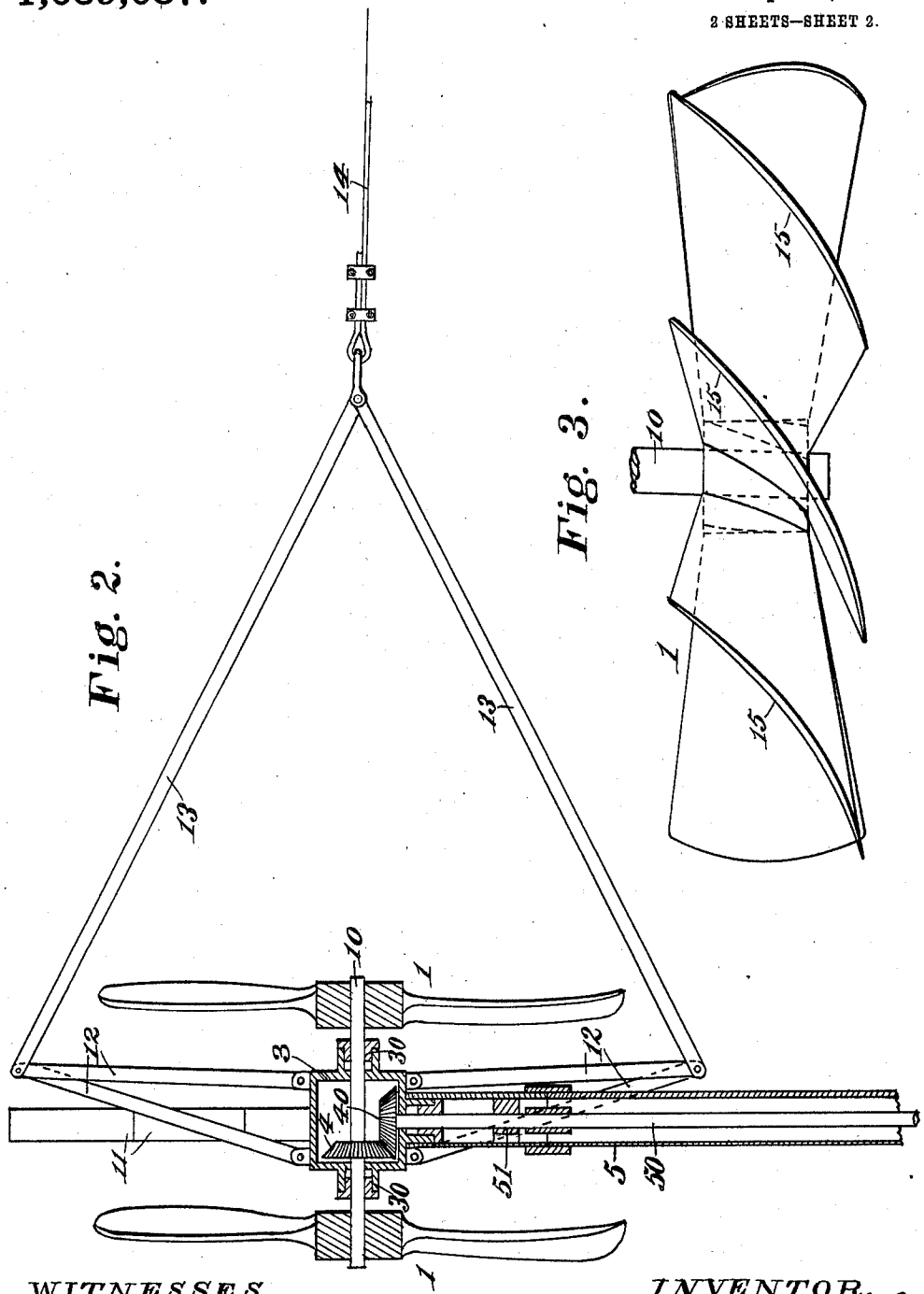


Fig. 3.

WITNESSES

Alice E. Johnston.

Percy Gardiner.

INVENTOR.

Oscar D. Booth,

by Church & Church

ATTORNEY.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

OSCAR D. BOOTH, OF EVERETT, WASHINGTON, ASSIGNOR TO IDEAL DEVELOPMENT COMPANY, OF EVERETT, WASHINGTON, A CORPORATION.

CURRENT-MOTOR.

1,039,087. Specification of Letters Patent. Patented Sept. 24, 1912.

Application filed October 30, 1911. Serial No. 657,616.

To all whom it may concern:

Be it known that I, OSCAR D. BOOTH, a citizen of the United States, residing at Everett, in the county of Snohomish, State of Washington, have invented a new and useful Improvement in Current-Motors, of which the following is a specification.

My invention relates to current motors and comprises certain improvements which will be hereinafter described and particularly pointed out in the claims.

The object of my invention is to improve and simplify such devices, to make them cheaper to construct, more reliable in operation and more effective in their working.

In the accompanying drawings I have shown my invention in the form which is now preferred by me.

Figure 1 is an elevation of my device looking down stream, the up-stream wheel being removed to better show the supporting frame. Fig. 2 is a plan in section along the line of the transmission shaft. Fig. 3 is an edge view of one of the wheels upon a large scale.

The power generating element of my present invention consists of one or more wheels of the general type represented by a propeller wheel, these being secured to a shaft which extends in the direction of the flow of the current, and being submerged in and turned by the current. I have shown two such wheels 1, 1, secured to a short shaft 10, which shaft turns in bearings 30 in a hollow box or frame member 3. This places one wheel upstream from the frame and one downstream therefrom. Within the box 3 a bevel gear 4 is secured to the shaft so as to serve, in conjunction with the downstream face of the box, as a thrust bearing for said shaft. A transmission shaft 50 enters this box from one side and has a bevel gear 40 secured thereto and meshing with the gear 4. Surrounding shaft 50 is a tube 5 which is in communication with the box 3 and supports bearings 51 for the transmission shaft 50. The communication between the tube 5 and the box 3 needs be but a slight one, only sufficient to transfer the pressure of the oil with which tube 5 is intended to be filled to the oil with which box 3 is filled so as to replace from tube 5 all leakage from box 3 through the bearings of the wheel shaft 10. The leakage through a small groove in each of the upper bearings of shaft 50 is sufficient for this purpose. The tube 5 extends upward and laterally toward the bank of the stream to a point above the surface of the water, and is to be kept filled with oil to a level above the water so as to provide a pressure within the tube 5 and box 3 greater than that of the surrounding water, thus preventing water-borne grit from entering the bearings.

A supporting frame consisting of the parts 11, 11, is secured to box 3 and extends downwardly to beneath the bottom of the wheels and is designed to rest upon the stream bed. Arms 12 extend laterally in opposite directions from the bearing box 3 to beyond the periphery of the wheels, and bars 13 connect with their outer ends and extend upstream and connect with an anchoring cable 14, to resist the pressure of the current. The wheels, one of which is shown in edge view in Fig. 3, have vanes which, in cross section, are concaved upon their upstream face, 15, so that as the water strikes their upstream edge and passes backward, it impinges upon a surface of constantly changing angle, and is thereby effective to produce a rotative effect until entirely discharged therefrom, which it could not do if this surface were straight transversely. In addition, the blades are twisted, so that the angle with the current is increased as their outer end is approached. This compensates for the more rapid movement of their outer ends through the water, the desire being to produce a relatively constant rotative efficiency at all points in the length of the blades. The wheel which I prefer to use has these features embodied therein, although differently shaped wheels may be used in a device embodying the other features of my invention.

I claim as my invention—

1. In a current motor, in combination, a wheel having blade surfaces at an angle to the direction of the flow of the stream, an axial shaft secured to the wheel, a hollow body receiving said shaft and carrying the bearings therefor, a power shaft also entering said hollow body, a power transmission mechanism within the hollow in said body and connecting said shafts, and a tubular body surrounding the power shaft and communicating with the chamber containing the

transmission gearing whereby a lubricant under pressure may be supplied to said chamber.

2. A current motor comprising a bladed wheel having its blade surfaces at an angle to the current, a shaft for said wheel, a frame having bearings for said shaft and comprising members adapted to rest upon the stream bed and carry the wheel above said bed, and a hollow arm extending transversely of the current and with one end extending above the water level, a transmission shaft within said hollow arm, a driving connection between said transmission shaft and the wheel shaft, and a box like member inclosing said driving connection and communicating with said hollow arm.

3. In a current motor, in combination, a wheel having angularly placed blades and with its axis extending in the direction of the current, a shaft secured to said wheel, a frame having bearings for said shaft, and also having legs adapted to support said wheel from and above the stream bed, a hollow arm extending from said frame transversely the current and upwardly to above the water surface, stay bars extending upstream from said frame and adapted to be secured to an anchoring cable, and a power transmission mechanism extending from said wheel through said hollow arm to the surface.

4. In a current motor, in combination, a propeller wheel and its shaft, a frame having bearings for said shaft, arms extending from said frame to beyond the periphery of the wheel, bars extending from the outer ends of said arms up-stream and there being joined and adapted to connect with an anchoring cable, legs extending from the shaft bearing frame downwardly for engagement with the stream bed, an arm extending from said frame toward the bank, and means for transmitting the power generated by the wheel to the shore along said arm.

5. A current motor comprising a power wheel having blades with surfaces angularly placed to the current, a shaft therefor, in line with the current, a box carrying bearings for the wheel shaft and through which said shaft passes, a bevel gear secured to said wheel shaft within said box, a transmission shaft entering said box, a bevel gear on the transmission shaft engaging the bevel gear upon the wheel shaft, a tube communicating with the box and surrounding the transmission shaft and extending to above the water, and means for fixing said mechanism with the power wheel submerged.

6. In a current motor, in combination, a pair of propeller wheels secured in separated positions upon a common shaft, a hollow frame forming a closed chamber surrounding said shaft between said wheels and carrying bearings for said shaft, a tubular member extending from the side of said chamber and communicating therewith to above the water level, a power shaft extending within said tubular member and entering the said chamber, and bevel gear connections between said shafts within said chamber, whereby said shafts and their connections may be lubricated by filling said tubular member with lubricant.

OSCAR D. BOOTH.

Witnesses:
SCHUYLER DURYEE,
PERCY GARDINER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."