S. S. DEEMER.

TIDE MOTOR.

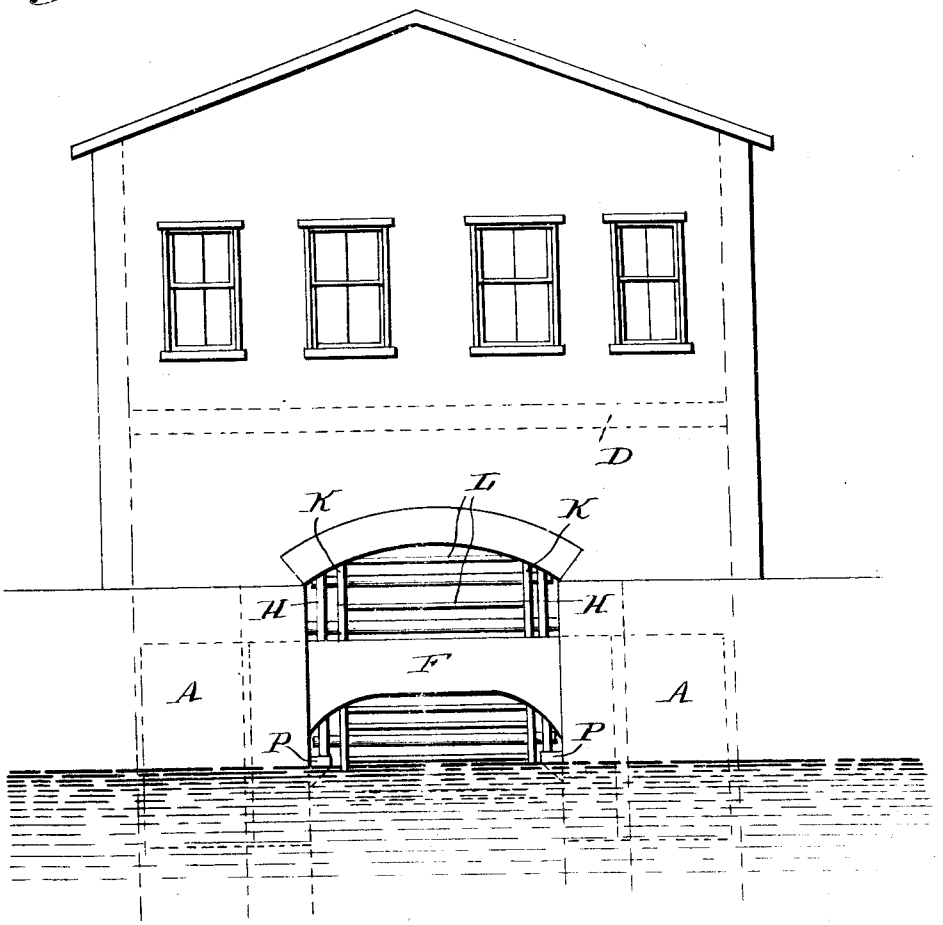
APPLICATION FILED JULY 30, 1912.

1,067,977.

Patented July 22, 1913.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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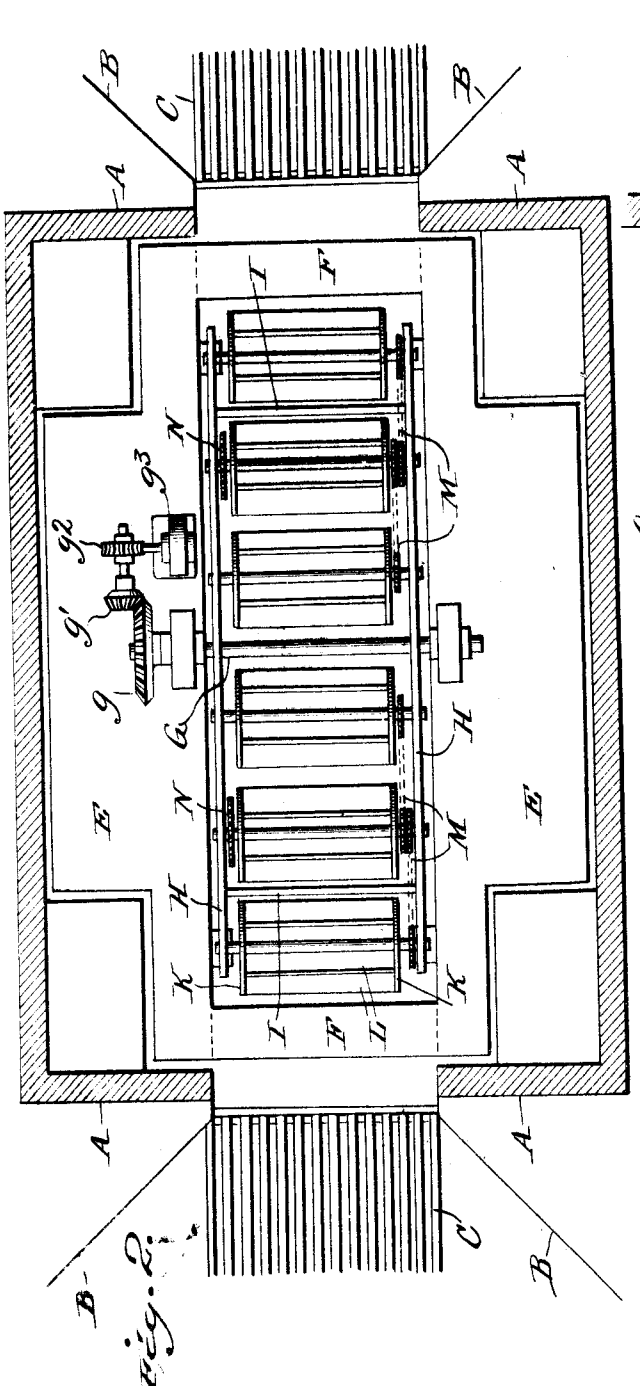


Fig. 2.

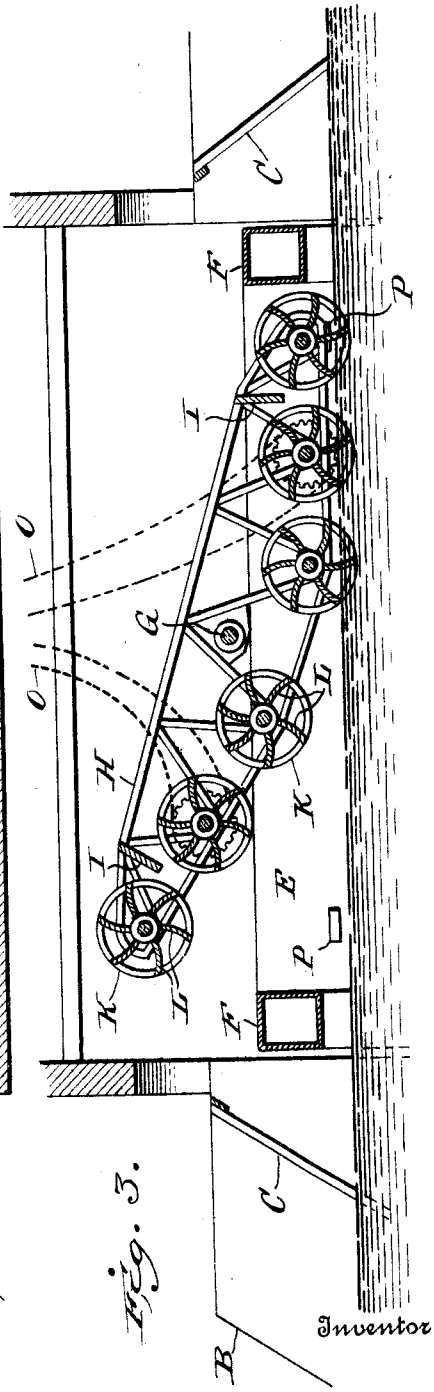


Fig. 3.

Witnesses

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TIDE-MOTOR.

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To all whom it may concern:

Be it known that I, SELDEN S. DEEMER, a citizen of the United States, and resident of New Castle, in the county of Newcastle and State of Delaware, have invented certain new and useful Improvements in Tide-Motors; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, and to the figures and letters of reference marked thereon.

This invention relates to apparatus designed primarily for utilizing currents set up by the action of tides, the objects of the invention being to provide a simple and efficient motor mechanism which will operate with equal efficiency regardless of the direction of current flow past the same, and with which the motor mechanism will be in position for effective operation at all stages of the tide, thereby providing in effect a motor which will operate continuously save for the brief periods when the tide is stationary.

The invention consists in certain novel details of construction and combinations and arrangements of parts, all as will be hereinafter described and pointed out particularly in the appended claims.

Referring to the accompanying drawings,—Figure 1 is an elevation somewhat diagrammatic in character of a tide motor building and tide motor embodying the present improvements; Fig. 2 is a horizontal section through the building in a plane below the second story floor and showing the motor and parts associated therewith in top plan; Fig. 3 is a section in a vertical plane centrally of the motor mechanism and channel through which the tide is allowed to ebb and flow.

Like letters of reference in the several figures indicate the same parts.

The apparatus forming the subject matter of the present invention is designed to be located in one of many channels through which strong currents are established by the action of the tides, such channels for instance, as are common along the eastern coast of the United States and which channels usually form the communicating links between relatively large inland bodies of shallow water and the ocean. The working parts of the apparatus are located within a house which is preferably, though not necessarily, a permanent immovable structure carried by suitable foundations which provide a channel or passageway between two side or wing portions A, and it will be understood that the building may embody a plurality of such channels depending upon the width of the stream and capacity of the apparatus. In each instance, however, it is preferred that the current flow shall be directed into the channel or channels through the building and its velocity increased by deflecting bulkheads or piers, such as indicated at B in Fig. 2, and that across each entrance opening there shall be arranged suitable gratings or guards C to prevent the entry of debris.

The building is designed to provide floor space located a considerable distance above the water level, as, for instance, a second story floor, indicated at D in Fig. 1, upon which the machinery to be operated by the motor may be located, such, for instance, as electric generating machinery of various kinds, the plant being primarily designed for the generation of electric energy.

Within the building there is located a pontoon which embodies in its construction two side floats E which at their ends are connected by girder framing F arched over the channel through the building, and the inner faces of the pontoons are preferably substantially in line with the sides of the entrance and exit openings, whereby a direct channel is formed through the entire building and pontoon, through which the water may pass at high velocity.

A relatively heavy shaft is mounted in suitable bearings on the two side portions of the pontoon, said shaft indicated at G in the drawings forming the pivotal support for two structural steel side frames H each preferably of truss formation and adapted to form the supports for two series of water motor wheels. The truss frames H are connected together for the sake of rigidity by cross pieces or stiffeners I located well toward the ends of the frames and the motor wheels are mounted in bearings whereby they will also add to the rigidity of the structure and serve to maintain the alinement and position of the truss frames. One set of motor wheels is located on one side of the axis or pivotal support and the other set on the opposite side of the axis or pivotal support and they extend in

planes at a sufficient angle to each other to permit of one set of motor wheels being elevated above the water level whenever the other set is in operative position. The motor wheels are preferably formed with end rims K and a series of involute curved paddles or blades L, whereby the blades will always present surfaces at right angles to the direction of the current flow up to the point where the blades are actually leaving the water. The blades are conveniently formed of steel plates and the end rims of metal so as to reduce water resistance to a minimum.

In operation, it is designed that during the flow of the water in one direction through the apparatus, one set of motor wheels shall be in operative position, and during the flow of the water through the apparatus in the opposite direction the other set of motor wheels shall be in operative position; thus, the two sets of wheels may be so formed as to give the maximum efficiency for the water flow available, thereby overcoming to a large extent the difficulty of providing a single set of motor wheels which will be equally efficient when the water is flowing in either direction. For shifting the truss frames and motor wheels, the shaft G is conveniently provided at one end with a bevel gear g with which meshes a pinion g' driven by a worm wheel and worm g^2 from a motor g^3. The power from the motor wheels is preferably utilized by gearing the wheels of each set together, as, for instance, by sprocket chains and wheels indicated at M in Fig. 2, and by providing one of the motor wheel shafts with a sprocket-wheel N around which a driving chain, indicated at O in Fig. 3, may pass and extend up through the floor into the room above for connection with any suitable machinery to be driven, an electric generator, for instance, which may be used to supply current to a set of secondary batteries from which the working circuit may be supplied and from which current may be taken to operate the motor g^3.

Each end of the truss or rocking frame carrying the motor wheels is preferably limited in its downward movement by stops or brackets P located on the inner sides of the pontoon, and it is designed that when the frame is brought to rest against one of these stops, the motor wheels shall be immersed to the proper depth for securing the most highly efficient service, but should less power be required, obviously the frame may be elevated slightly so as to reduce the immersion and correspondingly reduce the power derived from the rotation of the wheels.

The two sets of motor wheels practically balance so that but little power is necessary to swing the frame for moving either set into operative position, but the mechanism described for moving or adjusting the sets of wheels is of such character that it will lock the parts in any position to which they may be adjusted, inasmuch as the driving connections embody a worm and worm wheel drive gear.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

In a tide motor, the combination with a pontoon embodying side portions having their proximate faces substantially straight to form a water channel through the pontoon, a shaft bridging the space between the side portions of the pontoon, two truss frames centrally mounted on said shaft, two series of transversely extending water motor wheels journaled in the truss frames, said wheels having blades of involute curve formation said two series of wheels being located in planes at an angle to each other, whereby when one set is in depressed operative position the other set will be elevated above the water level, sprocket chains forming gearing connections between the motor wheels of each set and driving connections from one of the motor wheel shafts of each set of motor wheels for utilizing the power generated thereby and means for tilting the frame to move either set of wheels into operative position.

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