

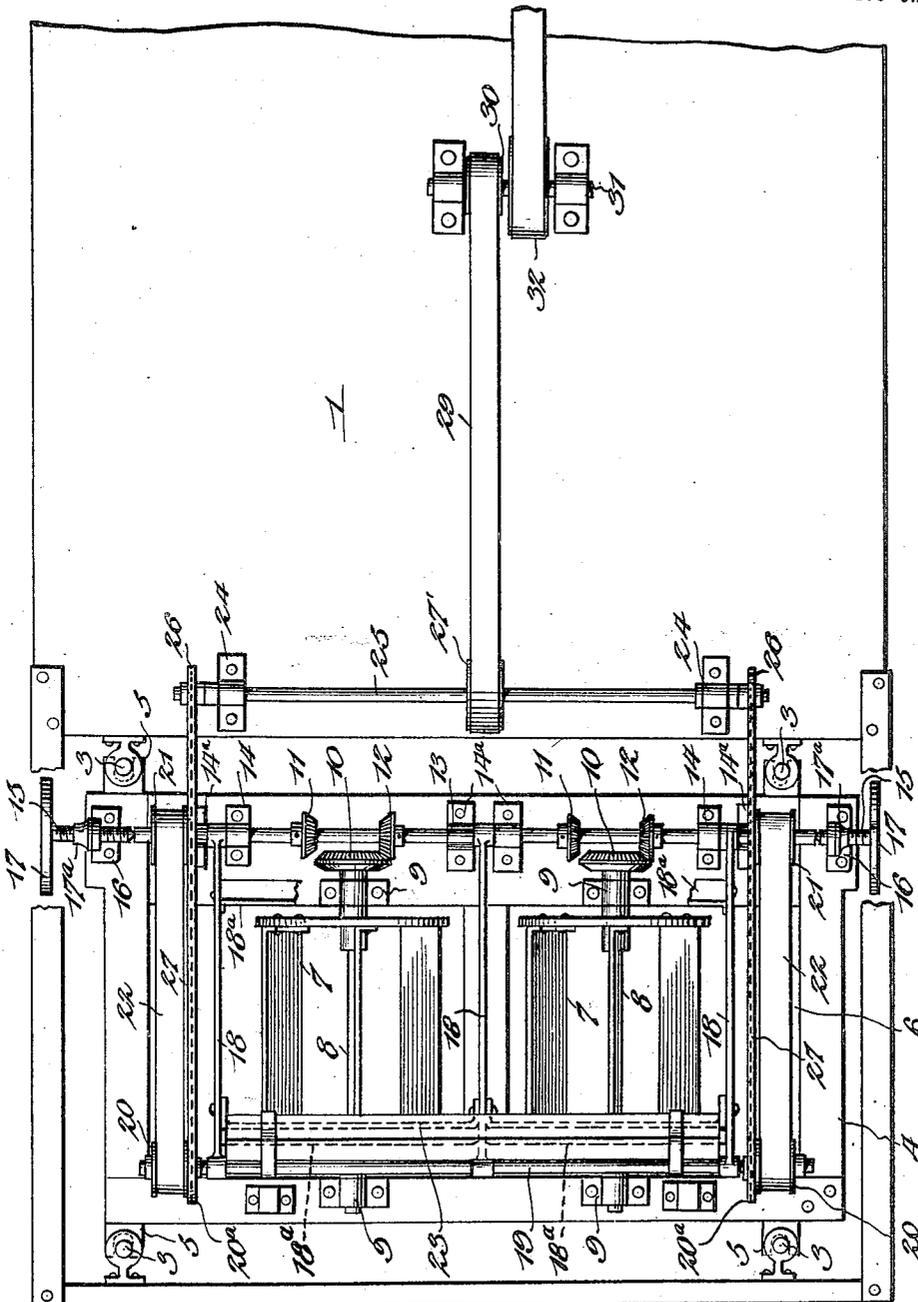
F. BAEHN.  
TIDE POWER.

APPLICATION FILED SEPT. 28, 1920.

1,407,623.

Patented Feb. 21, 1922.

2 SHEETS—SHEET 1.



*Fig. 1.*

*Frederick Baehn.*  
INVENTOR

BY *Nieto J. Evans*  
ATTORNEY

WITNESS: *J. Welch*

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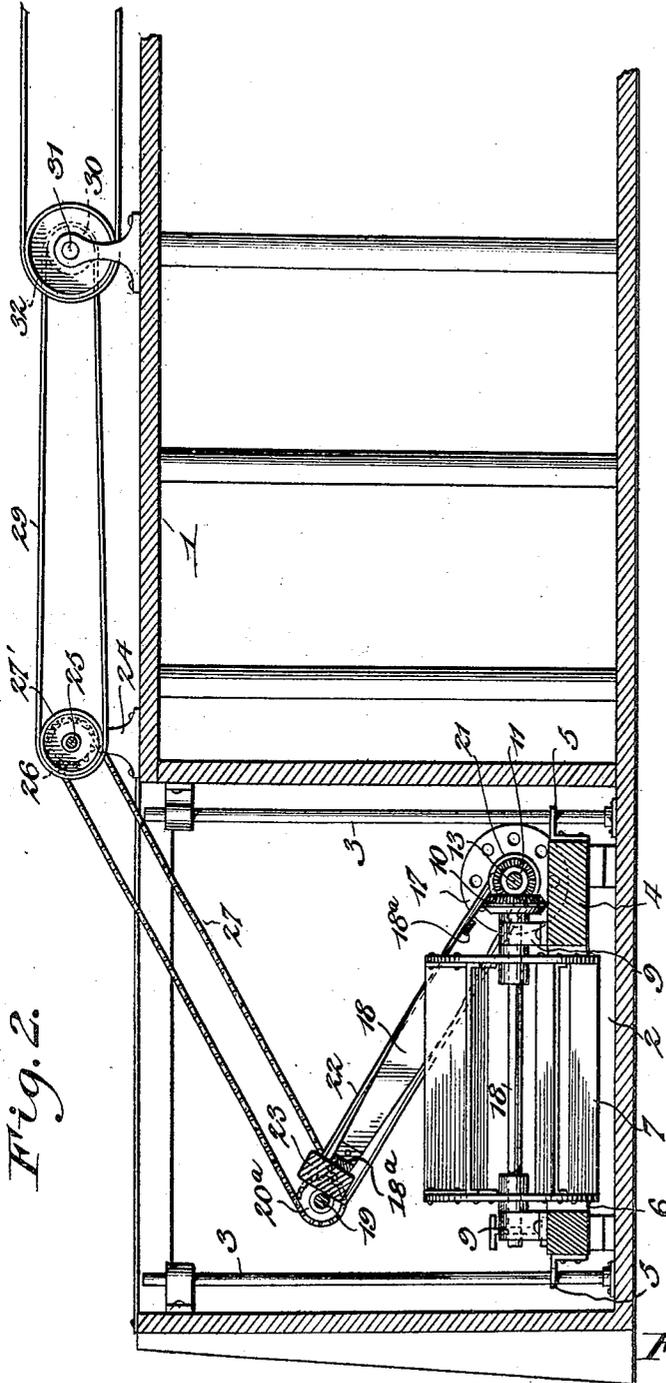


Fig. 2.

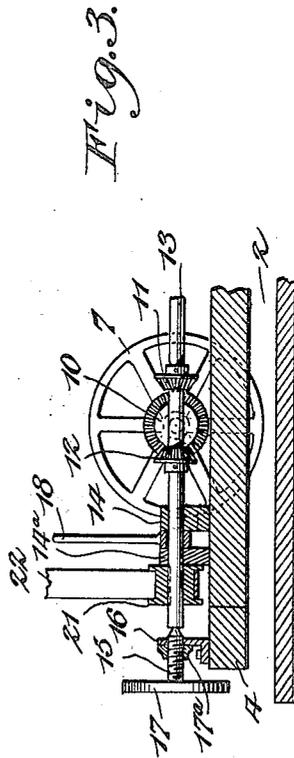


Fig. 3.

WITNESS: *J. W. Ely.*

BY *Frederick Baehn.*  
INVENTOR  
*Victor J. Enns*  
ATTORNEY

# UNITED STATES PATENT OFFICE.

FREDERICK BAEHN, OF JERSEY CITY, NEW JERSEY.

TIDE POWER.

1,407,623.

Specification of Letters Patent. Patented Feb. 21, 1922.

Application filed September 28, 1920. Serial No. 413,336.

*To all whom it may concern.*

Be it known that I, FREDERICK BAEHN, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Tide Power, of which the following is a specification.

My invention of a tide motive power generator is intended to produce motive power by the use of the ebb and flow tide, and the principal object is to provide a machine of this nature with means whereby the turning of the paddle wheels in opposite directions upon the ebb and flow of the tide may be caused to turn a power shaft in a single direction.

Another object is to provide means for automatically raising and lowering the paddle wheels in accordance with the rise and fall of the tide.

Another object is to provide novel compensating means for keeping the driving belts at an even tension regardless of the movement of the parts due to the rise and fall of the tide.

With these and other objects in view, my invention consists in certain novel construction and combination and arrangement of parts the essential features of which are hereinafter fully described and claimed, and one embodiment of which is shown in the accompanying drawings comprising two sheets, in which:—

Figure 1 is a top plan view of my new tide motive power generator.

Figure 2 is a vertical sectional view of the same.

Figure 3 is a fragmentary vertical sectional view taken along the reversing shaft.

Like characters of reference refer to like parts in all views.

My invention contemplates providing a generator consisting of a series of paddle wheels mounted on a float and geared to a shaft provided with reversible gearing, said shaft being connected by a system of belts to a power shaft from which the power may be taken off, and means being provided for maintaining the belts at a constant tension in all positions of the float.

Referring more in detail to the drawing, 1 represents a pier which may be of any usual construction and 2 represents a passage way constructed of timbers or concrete. Mounted in suitable brackets secured to the walls of passage 2 is a plurality of vertical bars 3. A float 4 is provided with bifurcated

bearing members 5 between the furcations of which are the aforesaid bars 3. The float is cut away as at 6 to permit the use of paddle wheels 7 which are provided with drive shafts 8 mounted in bearings 9 secured to the float. Mounted on one end of each shaft 8 is a beveled gear wheel 10 which is adapted to mesh with bevel gear 11 or a bevel gear 12, said gears 11 and 12 being mounted on a shaft 13, which shaft has its bearings in brackets 14 rising from float 4.

The gears 11 and 12 are pinned or keyed on shaft 13, and the shaft is adapted to be shifted longitudinally to bring either one of the gears 11 and 12 in mesh with the respective bevel gear 10. This longitudinal shift of shaft 13 is accomplished by means of screws 15 mounted in threaded apertures in brackets 16. Each screw 15 is provided at its outer end with an operating wheel 17 and bears with its inner end against the respective end of the shaft 13 and is provided with a limiting member 17<sup>a</sup> for limiting adjustments of shaft 13. By screwing one screw 15 out and the other one in, the shaft may be shifted longitudinally to engage either the wheel 11 or the wheel 12 with the wheel 10.

A swinging frame is constructed of arms 18 and cross bars 18<sup>a</sup>, said arms being pivotally mounted at one end on shaft 13 and extending therefrom toward the other side of the passage 2, and supporting at their opposite ends a shaft 19 upon the ends of which are loosely mounted pulleys 20. Sprockets 20<sup>a</sup> are secured to the pulleys 20. Pulleys 21 are secured on shaft 13 and belts 22 pass over corresponding pulleys 20 and 21, as shown in the drawing. A weight 23 is applied to the free end of the frame and secured to one of the cross bars 18<sup>a</sup> thereof. The bars 18 are held against displacement longitudinally of the shaft by brackets 14<sup>a</sup> extending upwardly from the float 4.

Mounted in bearings formed in brackets 24 secured to the edge of the pier 1 is a shaft 25 provided at opposite ends with pulleys 26 and near its center with a pulley 27'. Endless chains 27 connect corresponding sprocket wheels 20<sup>a</sup> and 26 and the weight 23 tends constantly to keep the belts 27 under tension in all positions of the float.

A belt 29 connects pulley 27' with a pulley 30 on a power shaft 31 which is provided with a pulley 32 from which the power may be taken off to run any desired mechanism.

In operation, the machine is placed so that

the tidal stream will move back and forth through the race way 2,—in one direction upon the ebb and in the opposite direction upon the flow. It will be obvious that in this manner the paddle wheels will be operated by the tidal stream, but will be operated in different directions by the ebb and flow and if no means were provided to compensate the shaft 31 would also turn in opposite directions. But the attendant at each turn of the tide readjusts shaft 13 and gears 11 and 12 so as to cause the movement of the paddle wheels 7 in opposite directions to turn the power shaft in a constant direction.

While I have described what I deem to be the most desirable embodiment of my invention, it is obvious that many of the details may be varied without in any way departing from the spirit of my invention; and I therefore do not limit myself to the exact details of construction herein set forth nor to anything less than the whole of my invention limited only by the appended claims.

What I claim as new and desire to secure by Letters Patent is:—

1. In a tide power generator, the combination of a float adapted to rise and fall with the tide, paddle wheels on said float and operable by the ebb and flow of the tide, a driving gear operable by each paddle wheel, a pair of gears for each of said driving gears, means for moving either gear of said pair into mesh with its respective driving gear, a power shaft and means for transmitting motion from the gears of said pair to said power shaft.

2. In a tide power generator the combination of a float, paddle wheels mounted on said float, a shaft journaled in suitable bearings on said float, means carried by said paddle wheels for rotating said shaft, a weighted swinging frame pivotally supported on said shaft, a power shaft, transmission means for operating said power shaft, including endless chains intermediate said transmission means and the free side of said frame and adapted to be held under a substantially uniform tension in all positions of said float.

3. In a tide power generator, the combination of a passage comprising two walls, brackets held by said walls, bars held by said brackets, a float between said walls and adapted to travel up and down on said bars, shafts journaled in suitable bearings on said float, paddle wheels rotatably mounted on said shafts, transmission mechanism including belts, and means for maintaining said belts under substantially uniform tension in all positions of said float.

4. In a tide power generator, the combination of a passage comprising, spaced walls, brackets held by said walls, bars held by said brackets, a float between said walls

and adapted to travel up and down on said bars, shafts rotatably mounted on said float, paddle wheels rotatably mounted on said shafts, transmission mechanism including belts, means for maintaining said belts under substantially uniform tension in all positions of said float, and means for reversing said transmission mechanism to compensate for reversal of the direction of drive of said paddle wheels.

5. The combination of two walls disposed opposite each other so as to form a passage way, brackets mounted on said walls, rods mounted in said brackets, a float, guide members on said float and co-acting with said rods, brackets on said float, a longitudinally movable shaft mounted in bearings in said brackets, gears mounted on said shaft, paddle wheels, shafts for said paddle wheels and mounted on said float, gears on said paddle wheel shafts and adapted to be engaged by the gears on said longitudinally movable shaft, arms pivoted to said longitudinally movable shaft, bars connecting said arms to form a frame extending toward the opposite side of said passage way, brackets on said float for preventing movement of said frame longitudinally of said movable shaft, a weight secured to the free end of said frame, pulleys fast to each end of said movable shaft, pulleys freely mounted at opposite sides of the free end of said frame, belts connecting the first said pulleys with respective ones of the second said pulleys, a shaft mounted at one side of said passage, means connecting the second said pulleys with the last said shaft, a power shaft, means connecting the two shafts last mentioned, and means for shifting said movable shaft longitudinally.

6. In a tide power generator, the combination of spaced walls, a float adapted to rise and fall with the ebb and flow of the tide between said walls, a longitudinally shiftable shaft journaled in suitable bearings on said float, means carried by said float for rotating said shaft, a power shaft, and transmission means for imparting motion from said longitudinally shiftable shaft to said power shaft.

7. In a tide power generator, the combination of spaced walls, a float adapted to rise and fall with the ebb and flow of the tide between said walls, a longitudinally shiftable shaft journaled in suitable bearings on said float, means for adjusting said longitudinally movable shaft means carried by said float for rotating said shaft, a power shaft, and transmission means for imparting motion from said longitudinally shiftable shaft to said power shaft.

In testimony whereof I have affixed my signature.

FREDERICK BAEHN.