

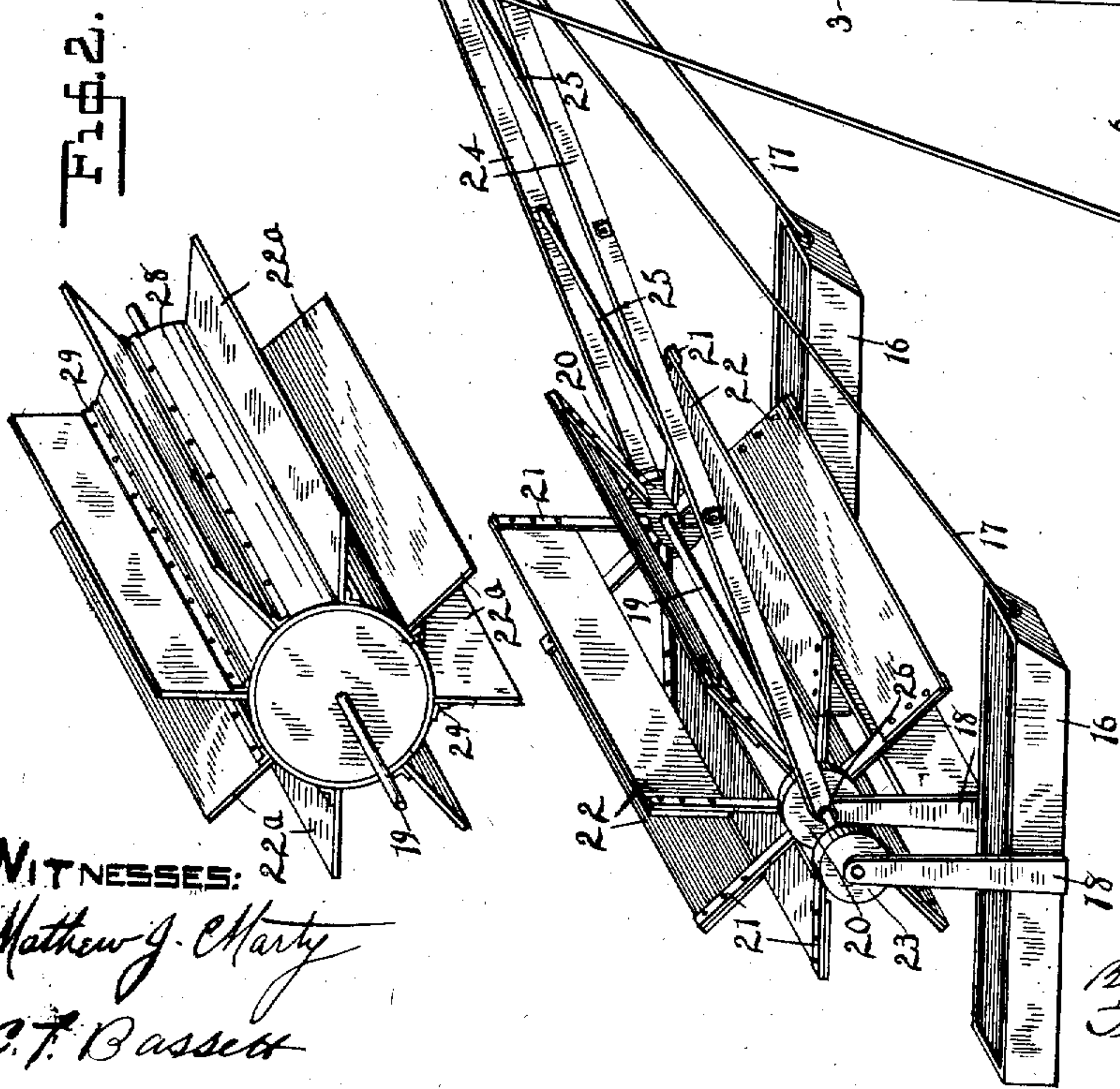
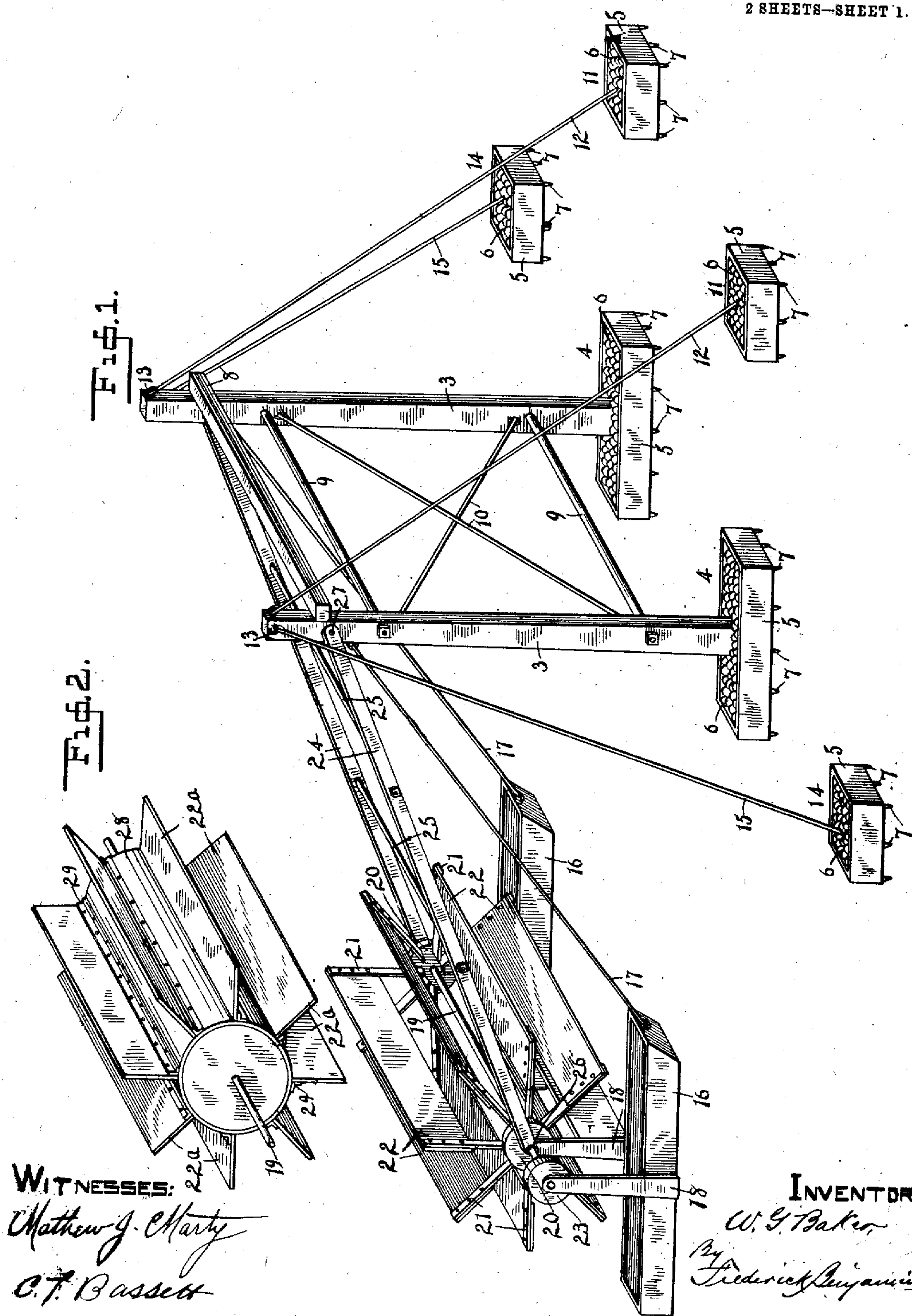
No. 862,873.

PATENTED AUG. 13, 1907.

W. G. BAKER.  
CURRENT MOTOR.

APPLICATION FILED FEB. 21, 1907.

2 SHEETS—SHEET 1.



**WITNESSES:**

Matthew J. Marty  
C. F. Bassett

**INVENTOR**

W. G. Baker

By Frederick Benjamin

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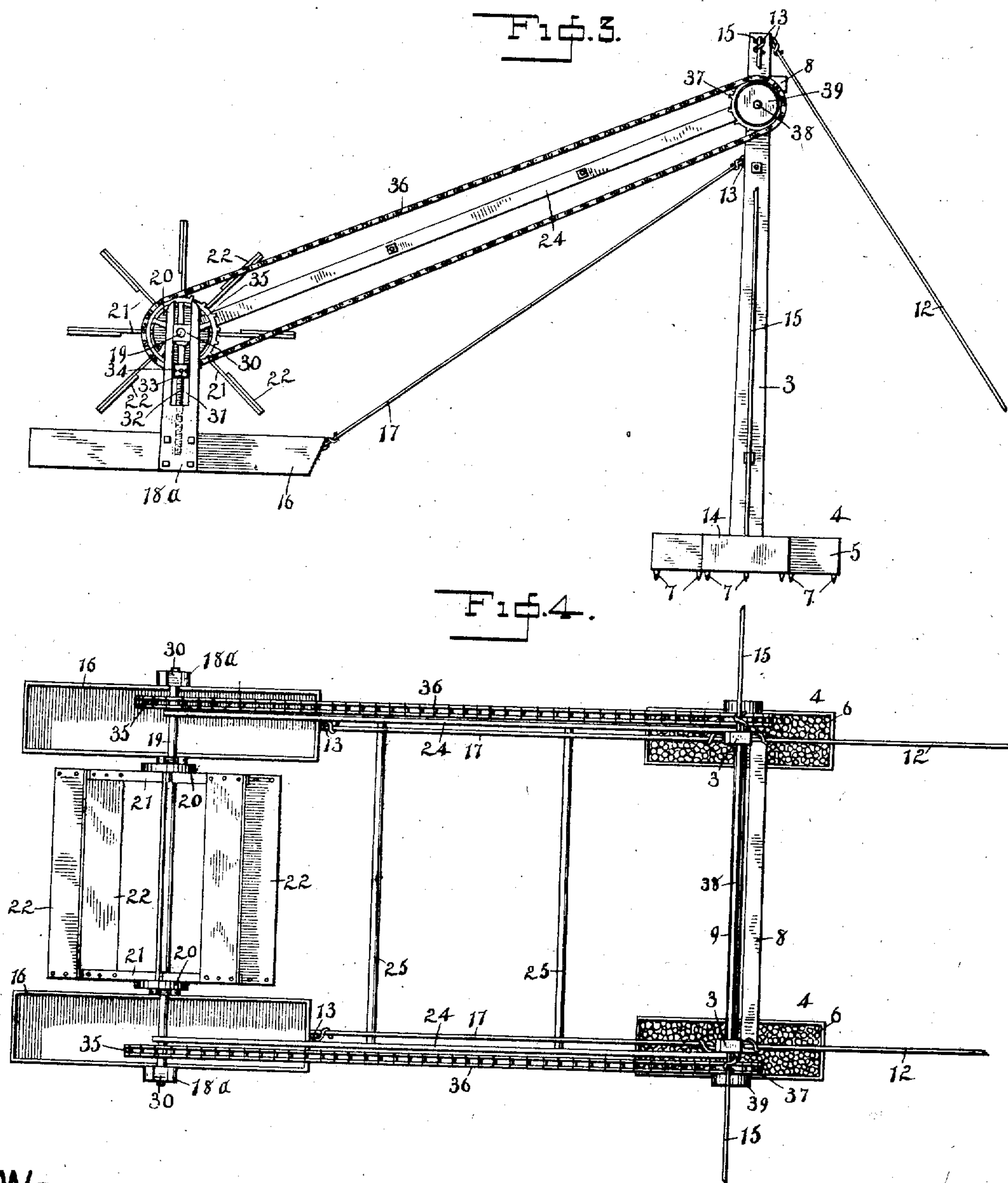
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Matthew J. Marty  
Chas. F. Bassett

INVENTOR

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By

Fredrick Cuyamir

ATTY.



# UNITED STATES PATENT OFFICE.

WALTER G. BAKER, OF SUNNYSIDE, WASHINGTON.

## CURRENT-MOTOR.

No. 862,873.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed February 21, 1907. Serial No. 358,641.

*To all whom it may concern:*

Be it known that I, WALTER G. BAKER, a citizen of the United States, residing at Sunnyside, in the county of Yakima and State of Washington, have invented certain new and useful Improvements in Current-Motors, of which the following is a specification.

My invention relates to hydraulic motors and refers especially to that class which are designed to convert the rectilinear motion of masses of water into rotary motion such apparatus being commonly termed current motors. These appliances are usually designed to be placed upon rock beds or artificial docks or piers which require considerable outlay of time and labor, and are expensive to construct. Another disadvantage of the usual method is that in order to locate the device where the current is strongest, i. e., in mid stream, there will be corresponding increase in the cost of the plant, over the installation upon or near the bank of the river. In the method which I employ the difficulty and expense of locating the appliance a considerable distance from shore will be practically the same as at a near point. Another advantage in the structures which I have designed to support the motor wheel is that very little surface is exposed to the current energy and the stress and strains will be met by material disposed in the best manner to withstand the destructive forces.

I have designed a current motor that is exceedingly simple in its general construction and one that can be readily adapted to meet the varying natural conditions found in the vicinity of rapid streams. The motor wheel is kept suspended at a uniform depth in the water whatever may be the changes in the level, thus aiding in the production of a uniform motion.

An advantage of no mean importance will be found in the ease and economy with which the appliance may be dismantled and relocated in a more favorable position.

My appliance consists generally speaking of an upright frame supported at the base on sunken rafts ballasted with rock and placed in mid current, said frame being further stayed by means of guy ropes or cables, and a motor wheel supported upon flat boats moored down stream from the fixed upright frame and attached to said frame by struts and cables which allow the wheel to rise and fall with any changes which may occur in the water level.

In the accompanying drawing which forms a part of this specification: Figure 1 is an isometric view of my improved current motor showing the method of installing the apparatus in the bed of a stream; Fig. 2 is an isometric view of a modified form of paddle wheel; Fig. 3 is a side view showing means for varying the height of the motor relatively to the floats, and a modification of the method of transmitting the power, and Fig. 4 is a plan view of Fig. 3.

Referring to the drawing, 3 indicates two uprights or

masts which may be constructed of any suitable material, either wood or iron, and may be in the form of simple spars or beams or of a more complex structure in the form of trussed pillars. These members constitute the main supports for the apparatus and are firmly moored in mid stream, or wherever the current is swiftest, their lower ends being stepped in cribs 4 which are provided with raised sides 5 thus forming a box like structure within which are placed rocks 6 to form a ballast of sufficient weight to sink the rafts and attached uprights in the water so that they will rest securely on the bottom of the river. To further secure the said rafts they are provided with a series of strong, downwardly projecting anchoring points 7, the gravity of the loaded rafts causing these points to sink deeply into the bottom of the stream when the character of the bed is such as to permit them to do so, and in case of a rock bottom at the place selected those points will still serve the purpose of anchors by engaging any inequalities which may exist in the surface of the ledge.

The uprights of the main frame are connected by a girder 8 near their upper ends and are further joined by tie rods 9 secured to the frame members in any suitable manner. As an additional means of strengthening the frame, and preserving its rectangular form I provide diagonal tension rods 10. These rods in combination with the ties 9 and the girder 8 complete a rigid structure well calculated to withstand lateral thrusts. Up stream from the frame thus located are placed rafts or cribs 11 which are constructed in a similar manner to the cribs 4 in which the uprights 3 are stepped. These cribs are also provided with strong anchor points 7 and raised sides 5 to form a receptacle to retain the ballast 6 which may consist of rock, gravel or any suitable material available. Between the tops of the upright frame sides and these anchored cribs are stretched guy cables or rods 12 secured to the frame members by means of eye bolts 13, and fastened securely to the anchors in any convenient way.

In the same plane with the frame and at suitable distances on either hand are moored anchoring cribs 14 constructed in all respects in the same manner as the previously described cribs 11 and are connected to the tops of the frame sides by cables 15 which support the frame laterally. Down stream from the main frame flat boats or floats 16 are moored by cables 17 which are attached to the prows of said boats and run to the upper part of said frame where they are fastened to strong eye bolts 13. Frame members 18 are firmly fixed to the said boats and in this frame is journaled a horizontal shaft 19 which carries hubs 20, provided with radial arms 21 connected by paddles 22. At one or both ends of said shaft are located driving pulleys 23 for transmitting power to auxiliary machinery, or to a dynamo for the purpose of transforming the rotary motion into electrical energy. In addition to the cables



17 further means are employed to moor the boats to the main frame and at the same time to prevent any slackening in the said cables from variation in the current or the action of the wind and waves and to hold the motor wheel more steadily than would be possible by cables alone. This device is a frame consisting of side members 24, connected by transverse bars 25. The lower ends of the side members are provided with boxes 26 through which the wheel shaft 19 passes and the upper ends are secured to the uprights of the main frame by pivot bolts 27. This rigid frame acts both as a strut and tie, and at the same time allows the wheel and supports to rise and fall with wave or tide.

I have illustrated in Fig. 2 a modified form of paddle wheel which will render the boats or floats 16 unnecessary, the wheel itself being constructed so as to be buoyant enough to be supported in the water without the use of said boats. For this purpose the paddles 22<sup>a</sup> are mounted upon an air tight cylinder or drum 23 and secured thereto by angle irons 29. The shaft 19<sup>a</sup> passes longitudinally through the drum and the projecting ends are journaled in the frame members 24 which in this case will form the only connection with the main frame.

It may sometimes be desirable to raise and lower the motor wheel relatively to the supporting floats. A mechanism for accomplishing this is shown in Fig. 3. The ends of the shaft 19 are journaled in blocks 30 which slide vertically in slots 31 in the frame members 18<sup>a</sup>. The blocks are supported on the ends of vertically disposed screws 32 which have threaded engagement with the frame members 18<sup>a</sup> and are provided with heads 33 having holes 34 for the insertion of an operating bar. The power may be transmitted directly from the pulleys 23 as previously mentioned, but a preferred method is shown in Figs. 3 and 4. Sprockets 35 are keyed to each end of the shaft 19 and connected by chains 36 to sprockets 37 attached to each end of a shaft 38 journaled in the upright 3, and passing through the upper ends of the side members 24. To the shaft 36 are keyed pulleys 39 from which the power may be taken, or other methods may be employed as desired.

It is obvious that many changes may be made in the

minor details of my invention as herein disclosed without departing from the spirit and scope thereof and I do not wish, therefore, to be limited to the precise construction shown.

Having thus described my invention, I claim:—

1. A current motor, including a frame consisting of duplicate masts, transverse and diagonal rods and ties connecting said masts, and a foundation structure for said frame consisting of sunken weighted cribs, anchor-points projecting downwardly from said cribs, a plurality of flat boats and struts connecting said boats and frames, said struts having pivotal connection with the said frame and boats, a paddle wheel supported upon the boats, and means for transmitting motion to auxiliary mechanism. 50
2. A current motor, including a frame, said frame consisting of a plurality of masts, weighted cribs supporting said masts, guy ropes attached to the masts, rods and ties connecting said masts, anchor-points projecting downwardly from said cribs and adapted to engage the bed of a stream, a plurality of flat boats, cables and struts connecting said boats and frame, the struts having pivotal connection at each end, a paddle-wheel supported upon said boats, means for raising and lowering the said wheel relatively to the said boats, and means for transmitting motion to auxiliary mechanism. 55
3. A current motor, including a frame consisting of a plurality of masts, weighted cribs supporting said masts, cables and weighted anchors connected with said masts, rods and tie pieces connecting the said masts, anchor-points projecting downwardly from said cribs and anchors and adapted to engage the bed of a stream, a plurality of flat boats, cables and pivoted struts connecting said boats and frame, a paddle wheel mounted upon a shaft supported by said boats, means for varying the height of said shaft relatively to the boats, a counter-shaft journaled in bearings carried on the said frame, and gearing connection between the said counter-shaft and the wheel-shaft. 60
4. In a current motor, the combination with a wheel of a plurality of masts, guy ropes supporting the masts, foundation members for said masts and anchors for the attachment of guy ropes, said foundation members and anchors consisting of receptacles for holding ballast and provided with points projecting downwardly and adapted to penetrate the bed of a stream. 65

In testimony whereof I affix my signature in presence of two witnesses.

WALTER G. BAKER.

Witnesses:

J. R. HARVEY.

M. R. KINER.