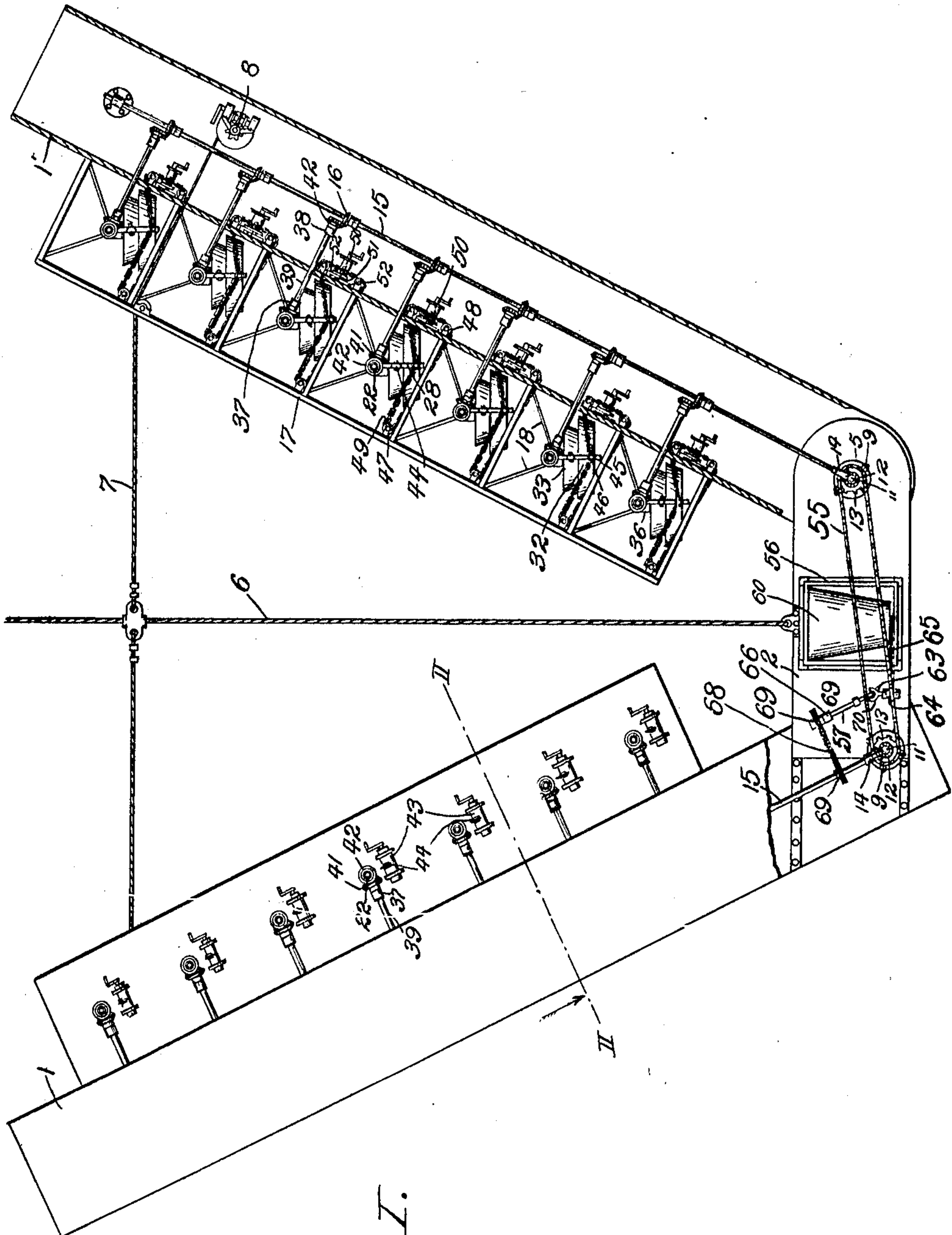


C. T. J. MINER.  
CURRENT MOTOR.  
APPLICATION FILED JUNE 9, 1909.

969,794.

Patented Sept. 13, 1910.

4 SHEETS—SHEET 1.



WITNESSES:

*Ed. C. Hill*  
*Myrtle H. Jackson*

*Fig. I.*

INVENTOR.

*C. T. J. Miner.*

BY

*Arthur C. Brown.*

ATTORNEY.

C. T. J. MINER.  
CURRENT MOTOR.

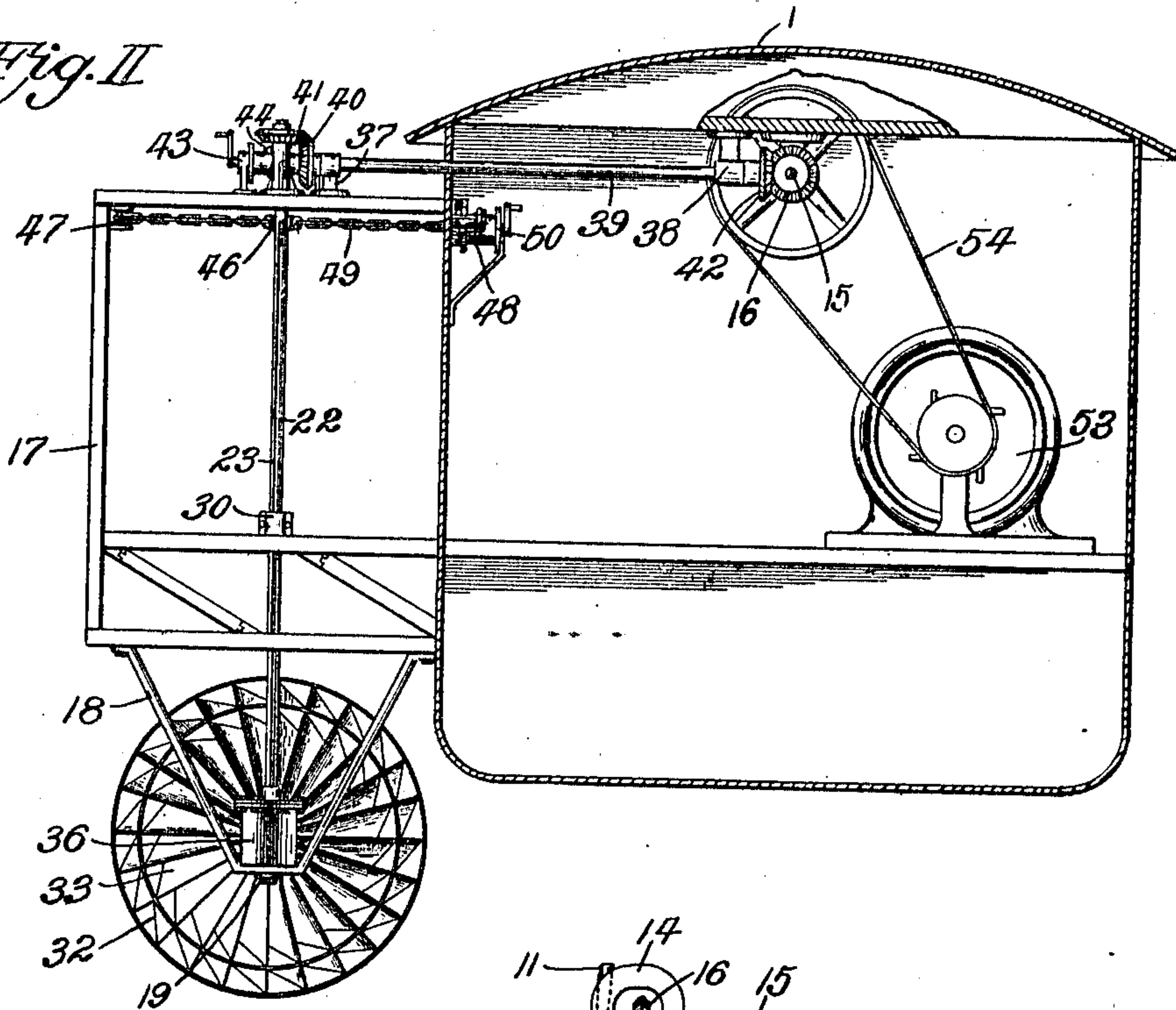
APPLICATION FILED JUNE 9, 1909.

969,794.

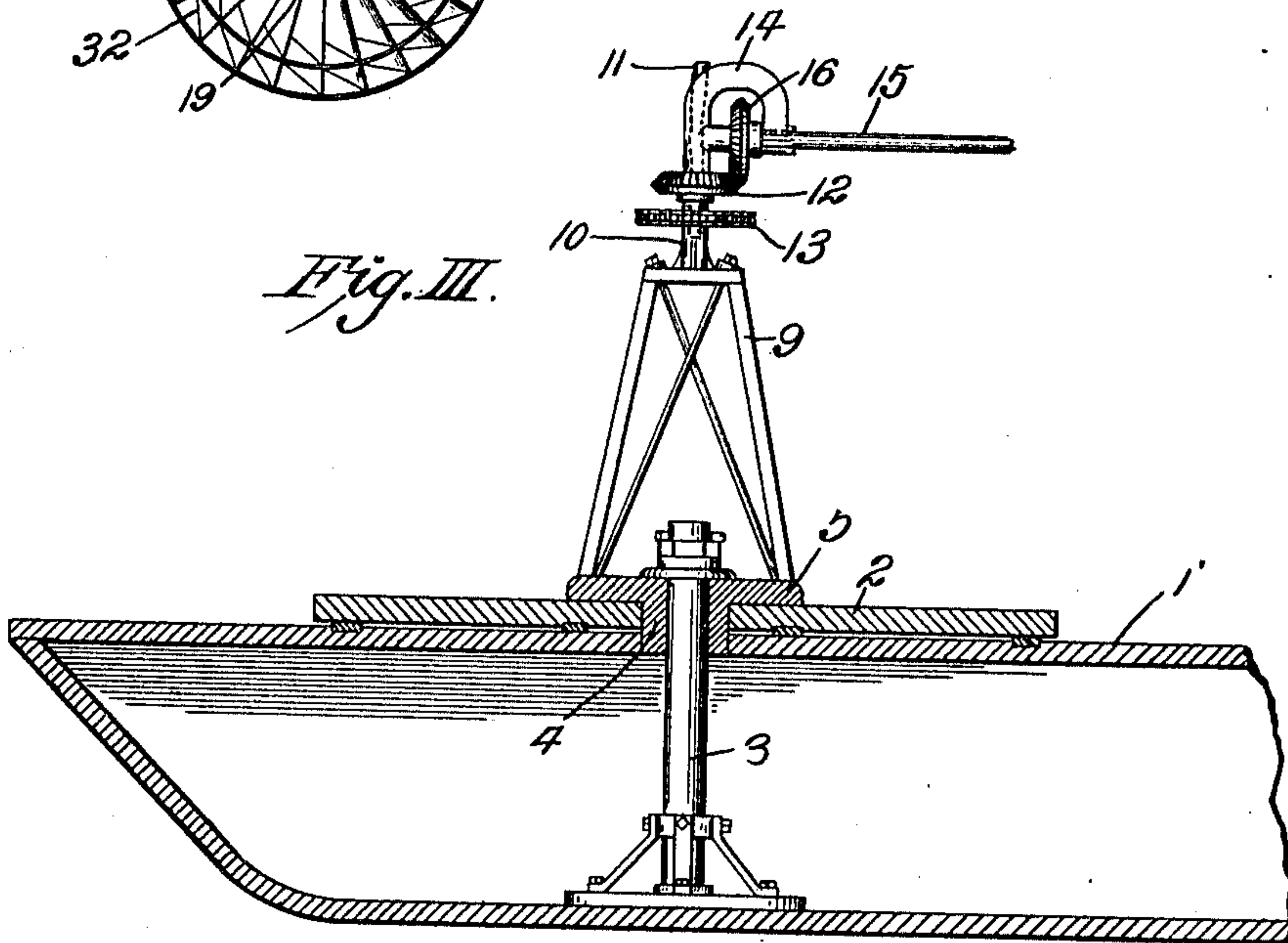
Patented Sept. 13, 1910.

4 SHEETS—SHEET 2.

*Fig. II*



*Fig. III.*



WITNESSES:

*E. Cahill*  
*Myrtle E. Jackson*

INVENTOR.

*C.T.J. Miner.*

BY

*Arthur C. Brown*  
ATTORNEY.

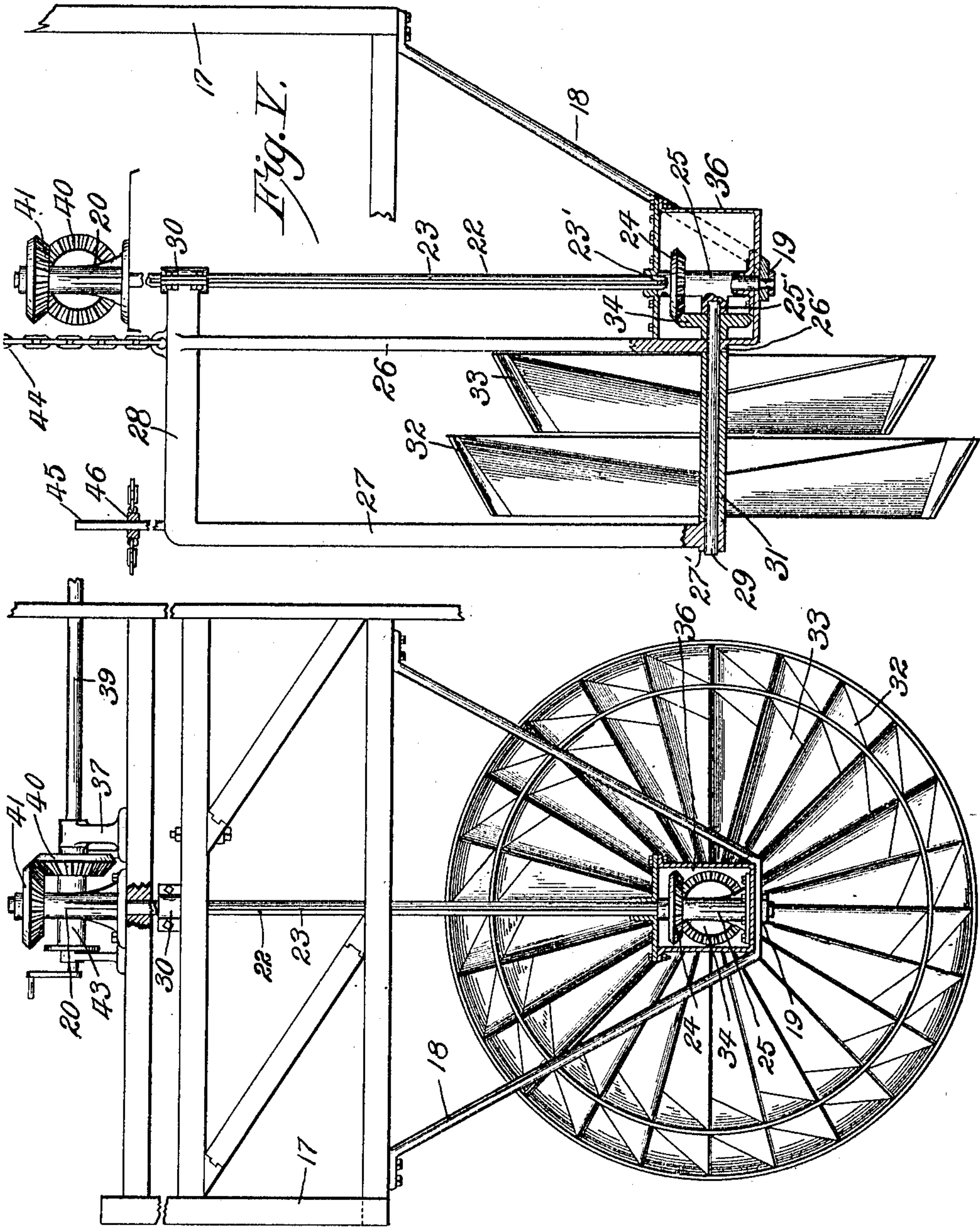


C. T. J. MINER.  
CURRENT MOTOR.  
APPLICATION FILED JUNE 9, 1909.

969.794.

Patented Sept. 13, 1910.

4 SHEETS—SHEET 3.



WITNESSES:

*C. A. Cahill*  
*Myrtle M. Johnson*

*Fig. IV*

INVENTOR.

*C. T. J. Miner.*

BY

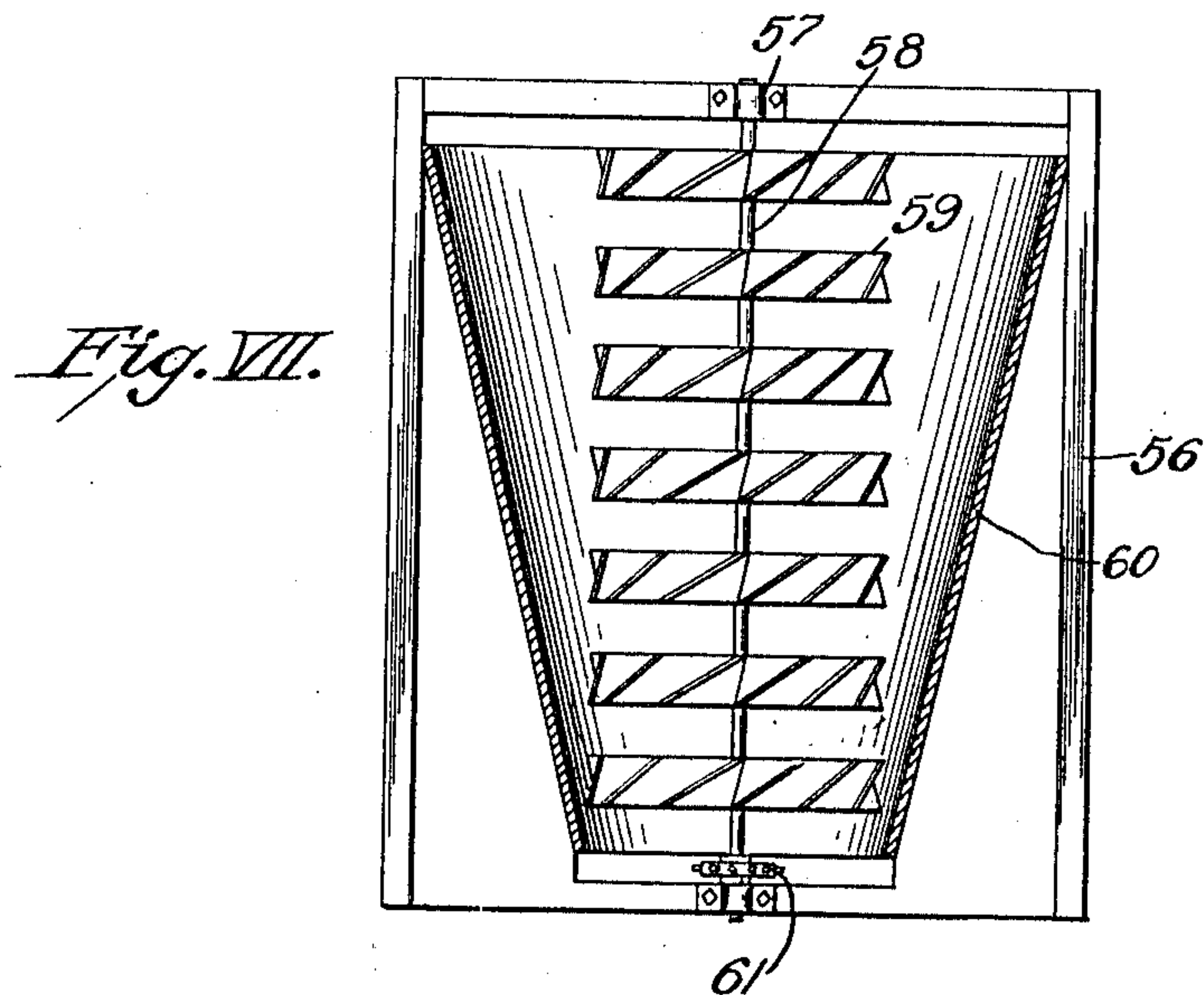
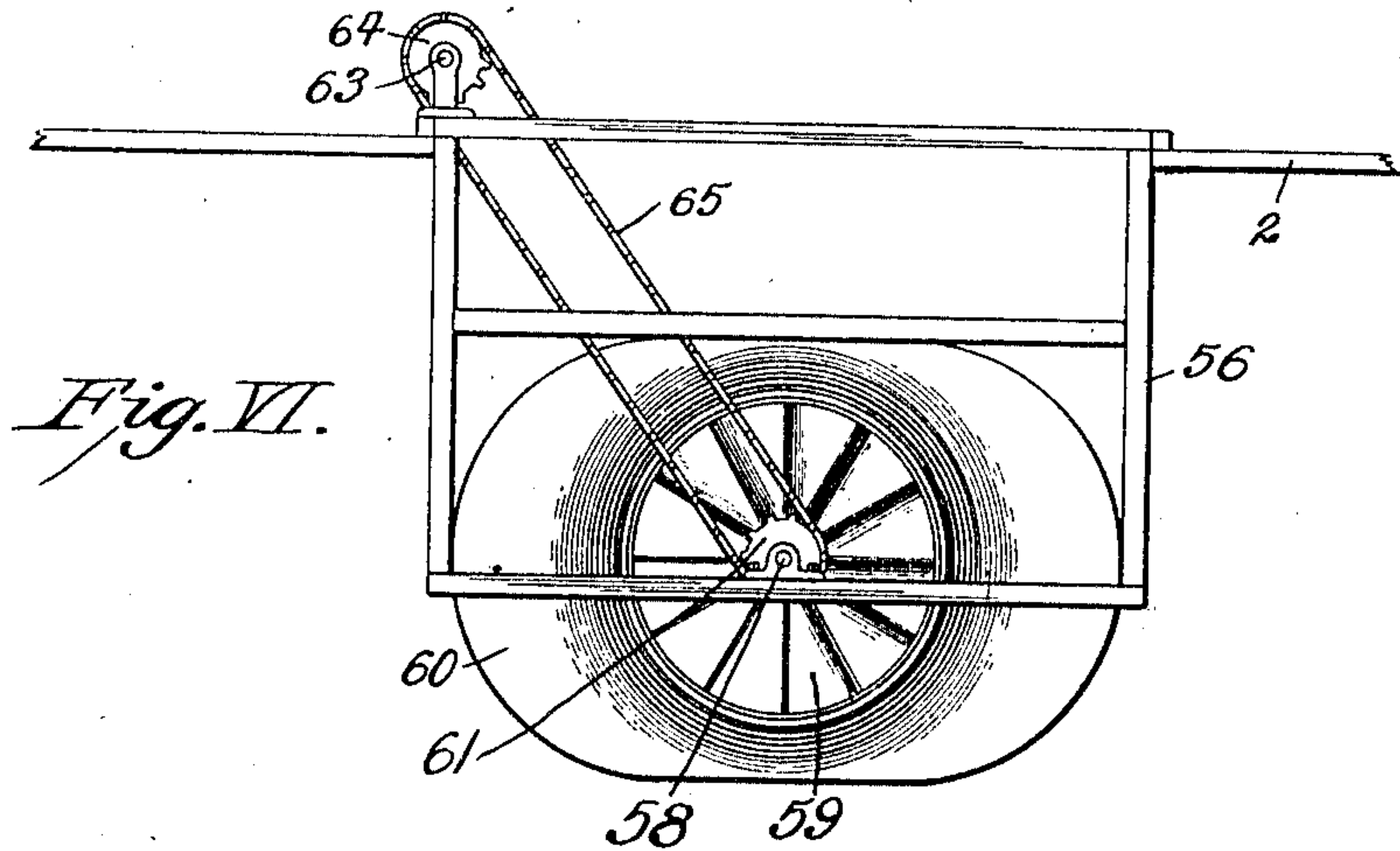
*Arthur C. Brown*  
ATTORNEY.

C. T. J. MINER.  
CURRENT MOTOR.  
APPLICATION FILED JUNE 9, 1909.

969,794.

Patented Sept. 13, 1910.

4 SHEETS—SHEET 4.



WITNESSES:

*E. A. Conhill.*  
*Myrtle M. Jackson.*

INVENTOR

*C. T. J. Miner.*

BY

*Arthur C. Brown.*

ATTORNEY



# UNITED STATES PATENT OFFICE.

CHARLES T. J. MINER, OF KANSAS CITY, MISSOURI.

CURRENT-MOTOR.

969,794.

Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed June 9, 1909. Serial No. 501,060.

*To all whom it may concern:*

Be it known that I, CHARLES T. J. MINER, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Current-Motors; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to hydraulic motors and more particularly to motors adapted for developing power from the current of a flowing stream.

It is the principal object of my invention to provide an apparatus which may be anchored on a stream in position to receive the full force of the current and which may be easily and quickly moved or adjusted to follow a changing current, or regulate the power of the apparatus.

It is a further object of my invention to provide the apparatus with individual water wheels and connect the individual wheels with a common motor shaft.

It is a further object of my invention to provide means for raising and lowering the individual wheels in order that they may be removed from the current to facilitate repairing or for other purposes.

Further objects of my invention will appear from the following description, and the structure by which such objects are attained will be pointed out in the appended claims.

In the drawing forming part of the specification, Figure I is a plan view of a current motor constructed according to my invention, one side section being in horizontal section to illustrate the water wheels and the transmission. Fig. II is a cross sectional view of one of the motor sections on the line II—II, Fig. I. Fig. III is a central vertical section of the rear end of one of the motor sections. Fig. IV is an enlarged detail view of one of the water wheels and its mounting. Fig. V is a central vertical section of same. Fig. VI is an end view of the central turbine. Fig. VII is a horizontal sectional view of same.

Referring more in detail to the parts:— 1—1' designate floats or barges upon which the water wheels are mounted.

2 designates a cross frame which connects the rear ends of the floats 1—1', the frame being rigidly secured to the float 1 and pivotally connected with the float 1'.

3 designates a pivot standard which is fixed in the bottom of float 1' and projects thereabove. The cross frame 2 has a boxing 4 which turns on the standard and is provided with a head plate 5 that overlies the frame body.

6 designates the anchoring cable which is secured to the cross frame 2 and may be fastened to a bridge pier, or the like, to throw the floats into a river current. Secured to cable 6 are the side cables 7, each of which extends to a windlass 8 on one of the floats, so that the latter may be moved inwardly or outwardly toward or from the main cable upon the operation of the windlass.

Supported on the forward end of float 1 and upon the cross frame 2 are standards 9 having journal boxes 10 within which the vertical shafts 11 are revolvably mounted. Fixed on shafts 11 are the beveled gear wheels 12 and on the shafts 11 are fixed sprockets 13; also supported on the standards 9 are the bearing brackets 14 and journaled in said brackets and extending throughout the length of the float are the horizontal shafts 15. Fixed at intervals throughout the length of the shaft 15 are beveled gear wheels 16, one of which meshes with the wheel 12 on the shaft 11.

Float 1' is provided with parts identical with those described as mounted on the float 1, with the exception that the rear standard 9 is supported on the head 5 of the boxing 4, so that the float may move pivotally on the standard 3 without injuring the driving parts or throwing same out of gear.

On the inner side of each of the floats is a frame 17 upon which the water wheels and their parts are mounted. The floats 1, 1' and frames 17 are covered, but the cover of float 1' and its frame 17 are omitted to expose the mechanism. Inasmuch as the wheels on both frames are identical, I will describe those on one of the frames with the understanding that the description relates equally to both. Rigidly secured to the



under side of the frame are the hangers 18 which support a shaft bearing 19. Revolvably mounted in a bearing 19 and in bearing 20, on the frame 17, is the shaft 22, which is provided with a feather groove 23.

Slidably mounted on shaft 22 is a beveled gear 24 which is adapted to move longitudinally, but is held against revoluble movement on the shaft by the feather 23'.

25 designates a boxing which has a journal socket 25', at one side, and revolvably mounted in said socket and in the bearings 26'—27' on the arms 26—27, or a bracket 28, is a longitudinal shaft 29. Said bracket is shown in its lowermost position. Bracket 28 is provided at its upper end with the bearing 30 which is movable longitudinally on the grooved shaft 22.

Fixed to shaft 29, between the bracket arms 26—27 is a hub 31 upon which the water wheels 32—33 are mounted, the wheel 33 being of less diameter than wheel 32 and arranged in front of same, so that water may enter the larger wheel at the side of and through the smaller. Each wheel 32 and 33 comprises blades and an annular member secured to and upon the outer ends or the blades. Said annular members are frusto-conical in form, both interiorly and exteriorly. Also fixed on shaft 29 is a beveled gear wheel 34 which meshes with a beveled gear 24 on the boxing 25, so that when the wheels are revolved, power is transmitted to the shaft 22 through the mechanism described.

36 designates a housing which is carried by the bracket 28 and is adapted for inclosing the shaft gearing to prevent its injury from floating debris.

On the top of the frame 17 is a journal bearing 37 and suspended within the float 1' is a bearing 38. Revolvably mounted in said bearings is a shaft 39 the outer end of which is provided with a beveled gear 40 which meshes with a similar gear 41 on the shaft 22 and the inner end of which is provided with a beveled gear 42 that meshes with one of the gear wheels 16 on the shaft 15.

Supported on the frame 17 is a windlass 43 and connecting the windlass with bracket 28 is a chain 44, by which said bracket and the water wheels and gearing may be lifted out of the water when desired.

49 designates an endless chain, which extends horizontally and is supported by guide-rollers 47 and 48. At a certain point said chain is connected with a collar 46 which is loosely mounted on a rod 45 rising vertically from the bracket 28. Said chain 49 is given one or more turns around a windlass 50.

51 designates a double ratchet on the windlass 52 and 52' are pawls which are adapted to engage the ratchet 51 to hold the

windlass against revolution in either direction, but which may be lifted separately when it is desired to operate the windlass. It is readily apparent that the wheel frame may be turned (with the shaft 22) according to the direction in which the chain 49 is moved by the windlass.

The windlass 50 and chain 49 constitute means whereby the power wheels 32, 33 may be faced to the current, regardless of the angle at which the floats are disposed. The rod 45 maintains the connection with the chain at all heights of the bracket 28.

53 designates a dynamo electric machine which is connected with the shaft 15 on float 1 through the belting 54.

The sprocket 13 on float 1' is operatively connected with the sprocket 13 on float 1 by a chain belt 55 so that the water wheels of both floats may operate the single dynamo.

Suspended from the cross frame 2 is a hanger frame 56. Journaled in bearings 57 at the front and back of hanger 56 is a shaft 58, and rigidly fixed on said shaft are the turbines 59, which are preferably duplicates of each other and are arranged in train, as shown.

Mounted on the hanger 56 is a frusto-conical casing 60, which incloses the turbines and tapers in the direction of the current to confine the water entering the casing mouth and throw same against the turbines.

Rigidly mounted on the shaft 58 is a sprocket 61. Revolvably mounted in bearing 62 on the cross frame 2 is a shaft 63, having a sprocket 64 connected with the turbine sprocket by a chain belt 65.

Journaled in bearings 66 on the cross frame 2 is a shaft 67 which is parallel with the shaft 15 on float 1 and is operatively connected therewith through the chain 68 and sprockets 69.

70 designates a universal joint which connects the shafts 63 and 67.

It is readily apparent that power will be transmitted from the turbines 59 to the shaft 15 on float 1 to assist in operating the dynamo.

To use the apparatus, the floats are placed in a flowing stream and anchored by the cable 6 so that they may swing into the current, the two floats 1—1' being preferably held in closed position until ready for operation. The current is supposed to be toward the converging ends of the floats.

When the apparatus is properly set the two floats are separated by letting out the cables 7 from their windlasses, until they are spread to the V shape shown in Fig. I, so that the current may pass therebetween. The floats having been spread, the individual wheels 32—33 are made to face the current, by manipulating the chains 49 through the windlasses 50. With the apparatus set for its full power capacity all of the wheels



32—33 are faced fully toward the current, so that each wheel may receive the full force thereof. To regulate the power the wheels may be moved on their shafts so that the force of the current may be partially broken before striking the wheels, or the wheels may be partially removed from the water by lifting the frames 28 by chains 44.

It is apparent that when the apparatus is in operation a single dynamo may be driven from the wheels on the separate floats and from the turbines at the cross frame.

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

1. In a current motor, a vertically movable bracket comprising two depending arms connected at their upper ends; a horizontal shaft journaled in said arms; a housing secured to said bracket, a vertical shaft journaled on said housing, a gear wheel splined on the vertical shaft within the housing; a gear wheel on the horizontal shaft and meshing with said splined gear; a water wheel on the horizontal shaft; a fixed bearing for the lower part of the vertical shaft; and means for shifting said bracket vertically.

2. In a current motor, a vertically movable bracket comprising two depending arms connected at their upper ends; a horizontal shaft journaled in said arms; a housing secured to said bracket, a vertical shaft journaled on said housing; a gear wheel splined on the vertical shaft within the housing; a gear wheel on the horizontal shaft and meshing with said splined gear; a water wheel on the horizontal shaft; a fixed bearing for the lower part of the vertical shaft; said bracket having at its upper end a part mounted slidably on the vertical shaft, and means for shifting said bracket vertically.

3. In a current motor, a horizontal shaft suitably supported and adapted for revolvable movement, water wheels of different diameter mounted on said shaft, the wheel of less diameter being in advance of the wheel of greater diameter, so that water may flow to the larger wheel around the smaller, and a transmission shaft suitably connected with the wheel shaft.

4. In a current motor, a frame, a hanger frame depending therefrom, a horizontal shaft journaled on said frame, a series of turbines mounted on said shaft and a frusto-conical casing surrounding the peripheries of said turbines and permitting the flow of water therethrough.

5. In a current motor, a frame, a hanger frame depending therefrom, a horizontal shaft journaled on said frame, a series of turbines mounted on said shaft and a tubular casing surrounding the peripheries of said turbines and permitting the flow of water therethrough, said casing being tapered in the direction of the current, for the purpose specified.

6. A current motor comprising two separate floats, a cross frame connecting said floats, a hanger frame attached to the cross frame, a horizontal shaft journaled on said hanger frame, a plurality of turbines mounted on said shaft, and a casing around the peripheries of turbines and permitting flow of water therethrough.

7. In a current motor, a pair of floats, a cross frame connecting said floats, a casing suspended from the cross frame, a shaft extending longitudinally through the casing, a plurality of water wheels arranged in train on said shaft, and a main shaft having operative connection with the wheel shaft.

8. In a current motor, a pair of floats, a cross frame having rigid connection with one float and pivotal connection with the other, a main shaft on each float, a plurality of water wheels carried by each float, connection between each water wheel and its main shaft, a water wheel carried by the cross frame, connection between the main shafts on opposite floats, connection between the cross frame wheel and one of the main shafts, and a motor connected with said last named shaft, for the purpose set forth.

9. In a current motor, a cross frame, a pair of floats, extending in V-formation from the cross frame, water wheels mounted on the inner side of the floats, a water wheel mounted on the cross frame, and means for regulating the angle of projection of said floats.

10. In a current motor, a cross frame, a pair of floats extending in V-formation from the cross frame, shafts mounted on the floats, water wheels carried on the inner sides of said floats and connected with said shafts, and means for adjusting said water wheels both laterally and vertically.

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

CHARLES T. J. MINER.

Witnesses:

MYRTLE M. JACKSON,  
E. A. CAHILL.