

No. 775,776.

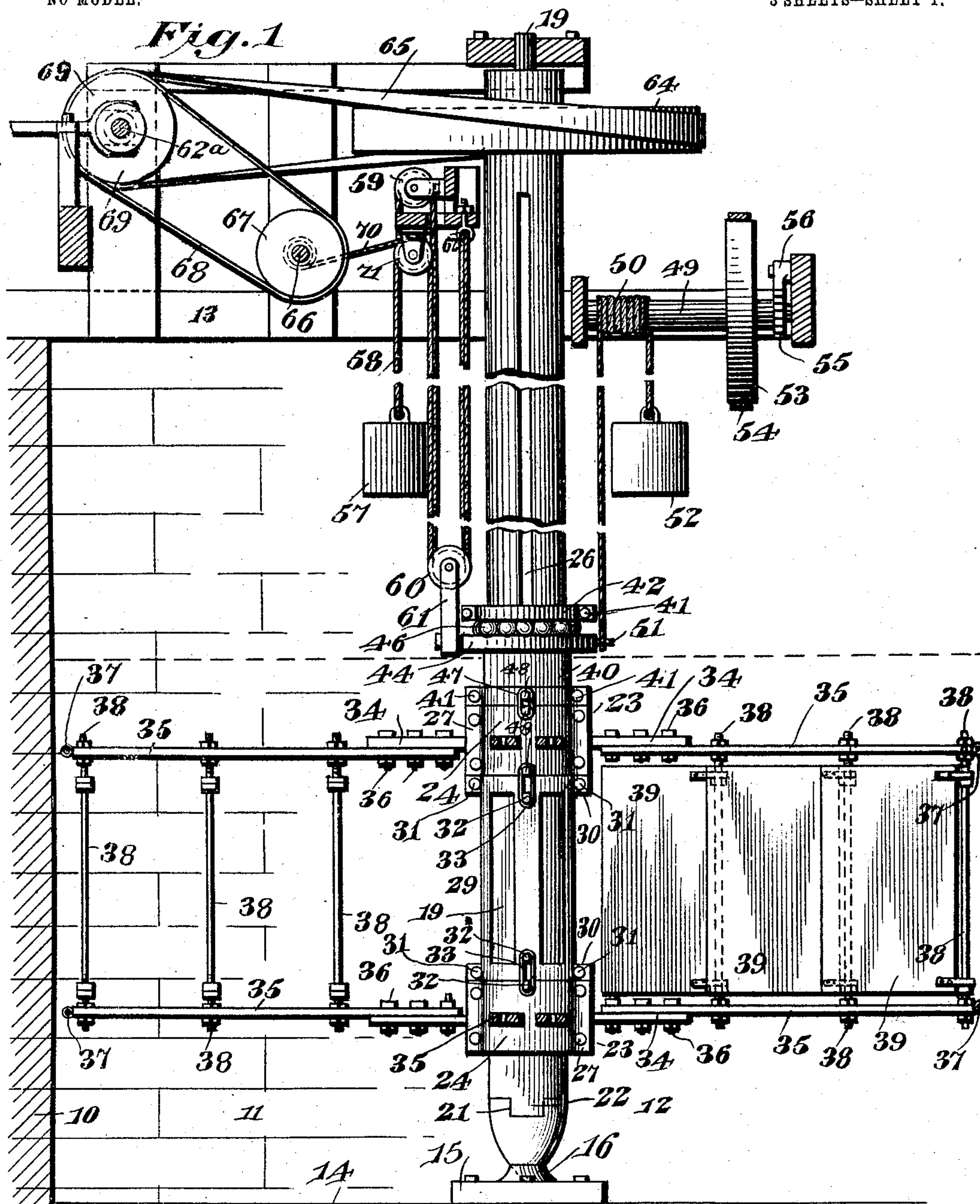
PATENTED NOV. 22, 1904.

J. F. MYSER.
WATER MOTOR.

APPLICATION FILED AUG. 11, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



J. F. Myser, Inventor

Witnesses
Jas. E. McCathran
B. H. Foster

E. G. Siggers
Attorney

No. 775,776.

PATENTED NOV. 22, 1904.

J. F. MYSER.
WATER MOTOR.

APPLICATION FILED AUG. 11, 1903.

NO MODEL.

3 SHEETS—SHEET 2.

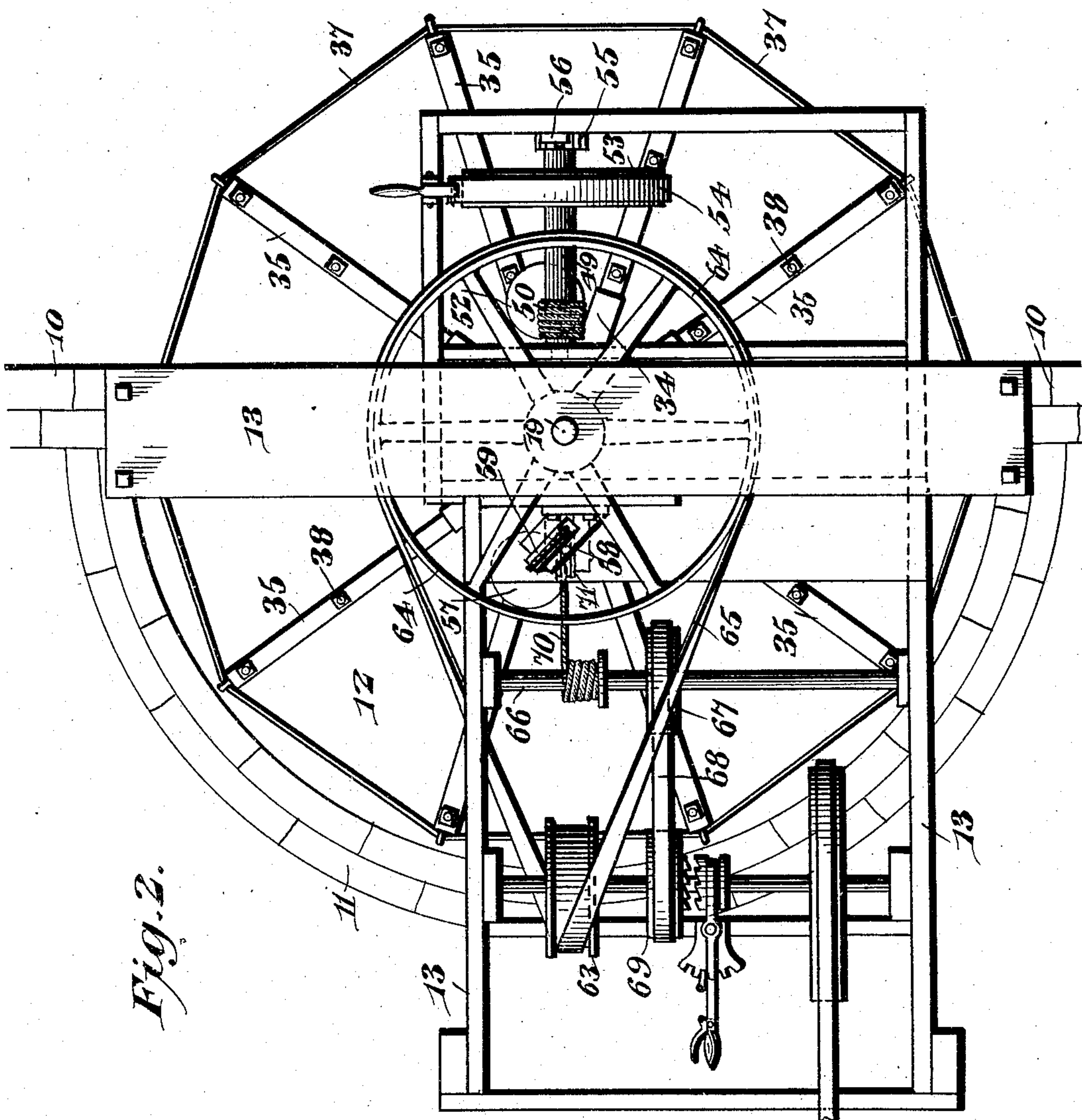


Fig. 2.

J. F. Myser, Inventor

By

E. G. Siggers

Attorney

Witnesses

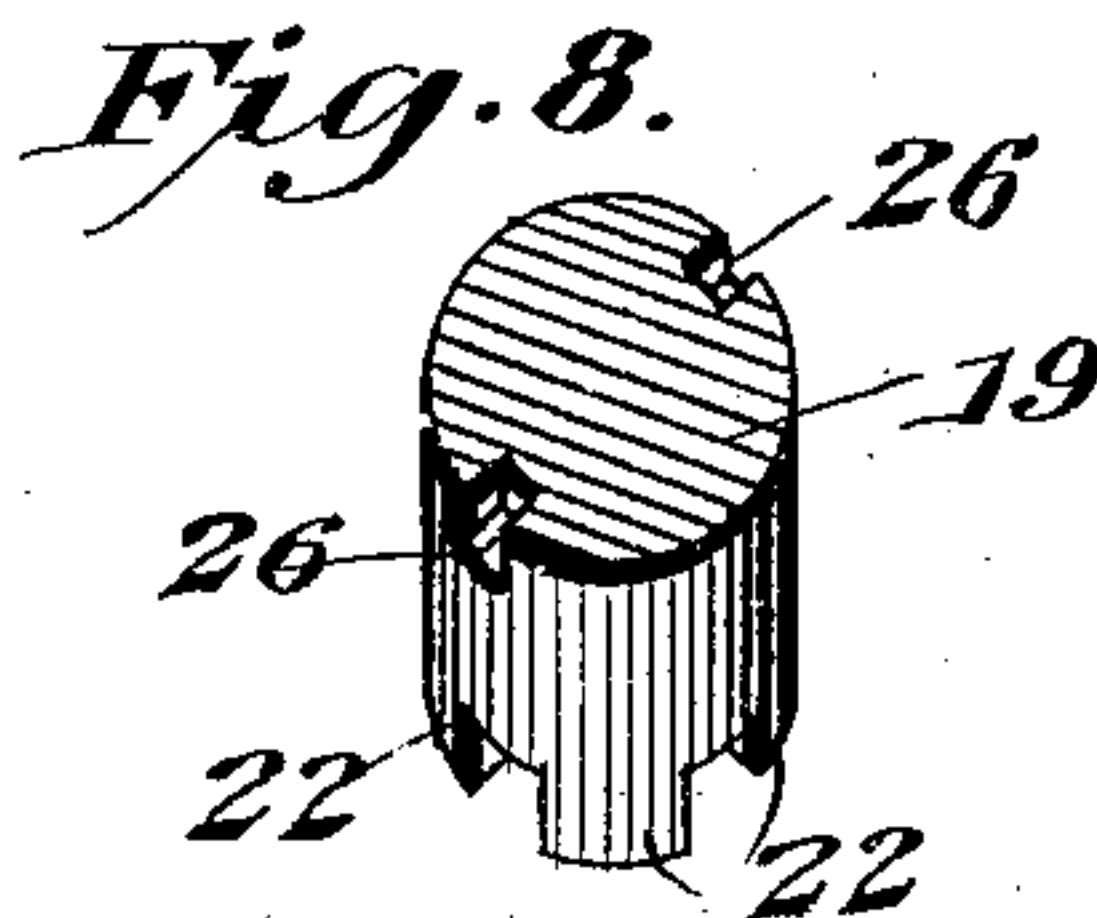
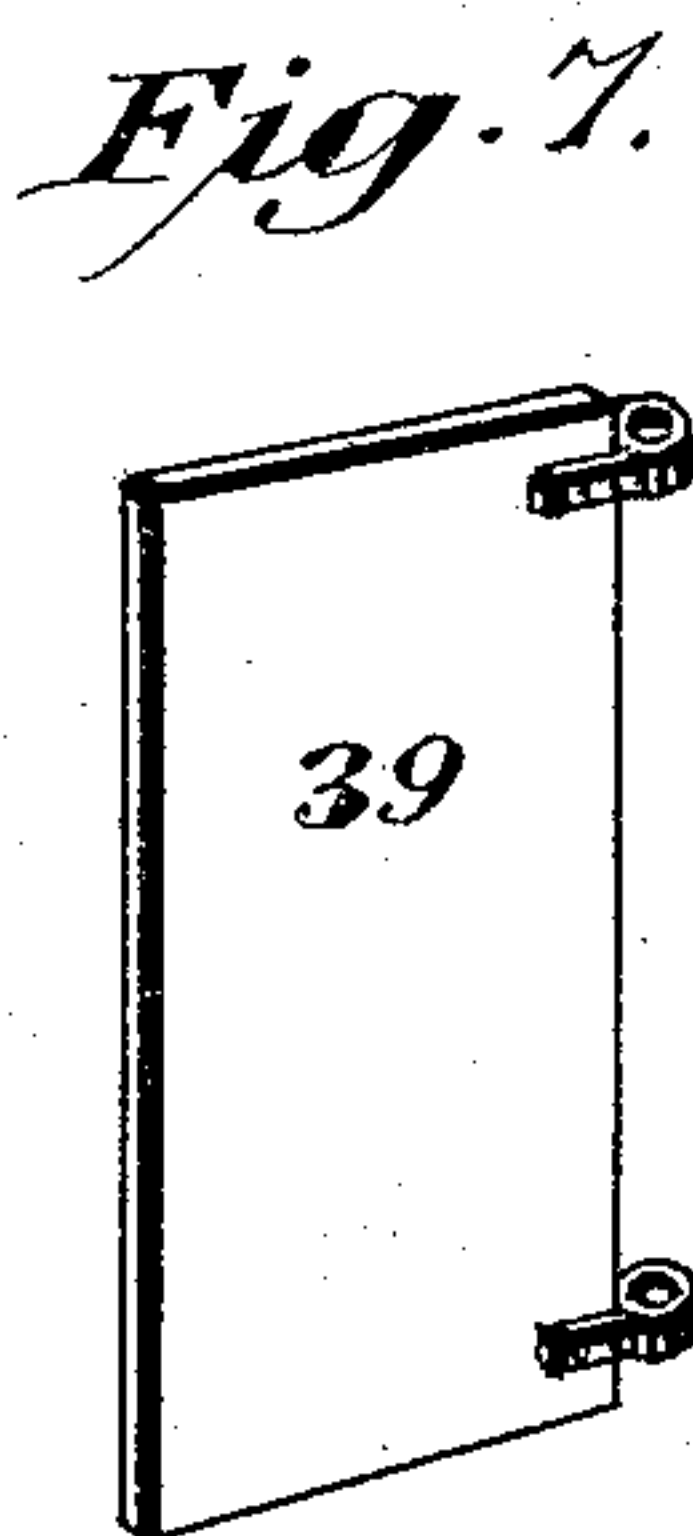
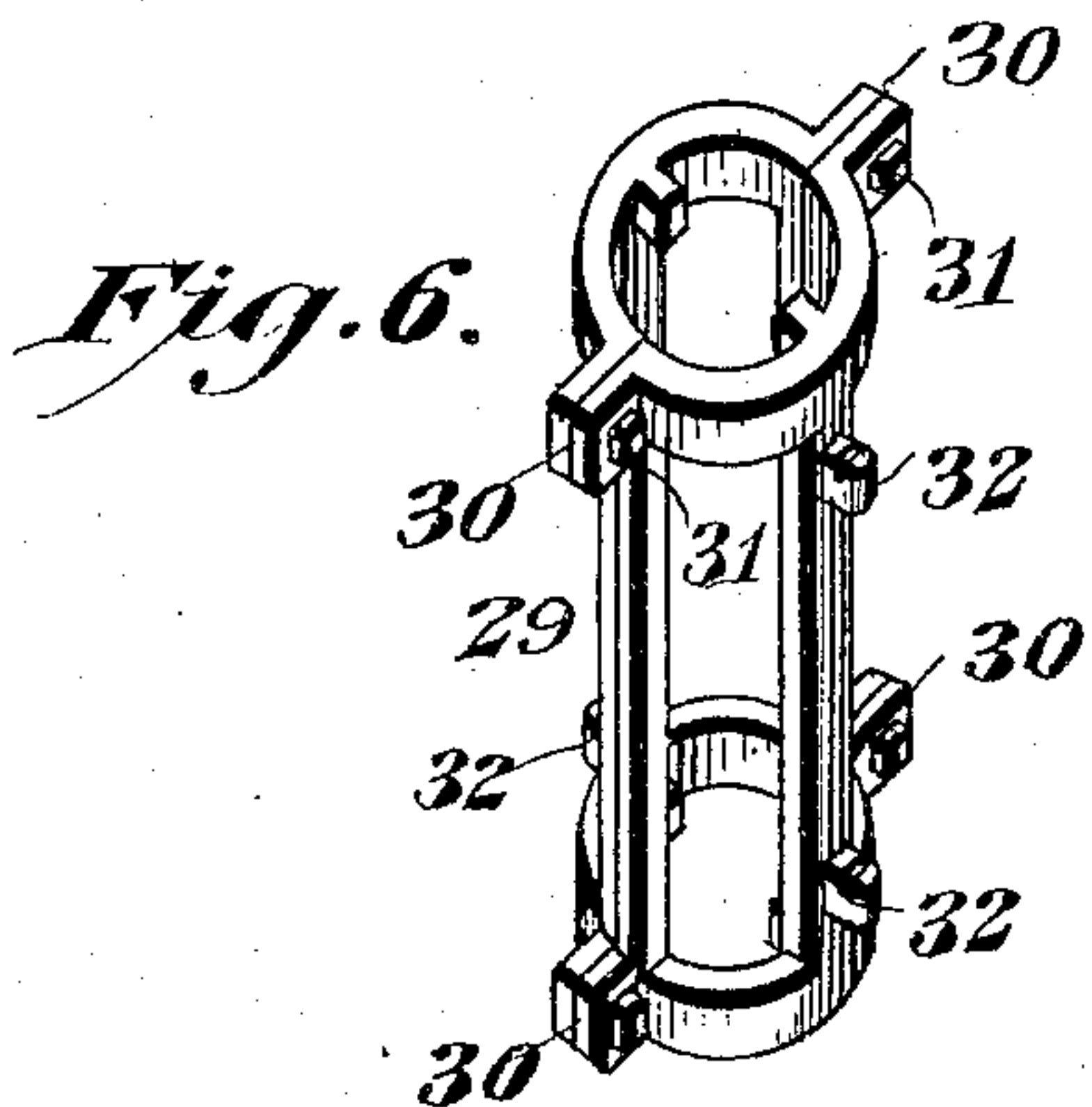
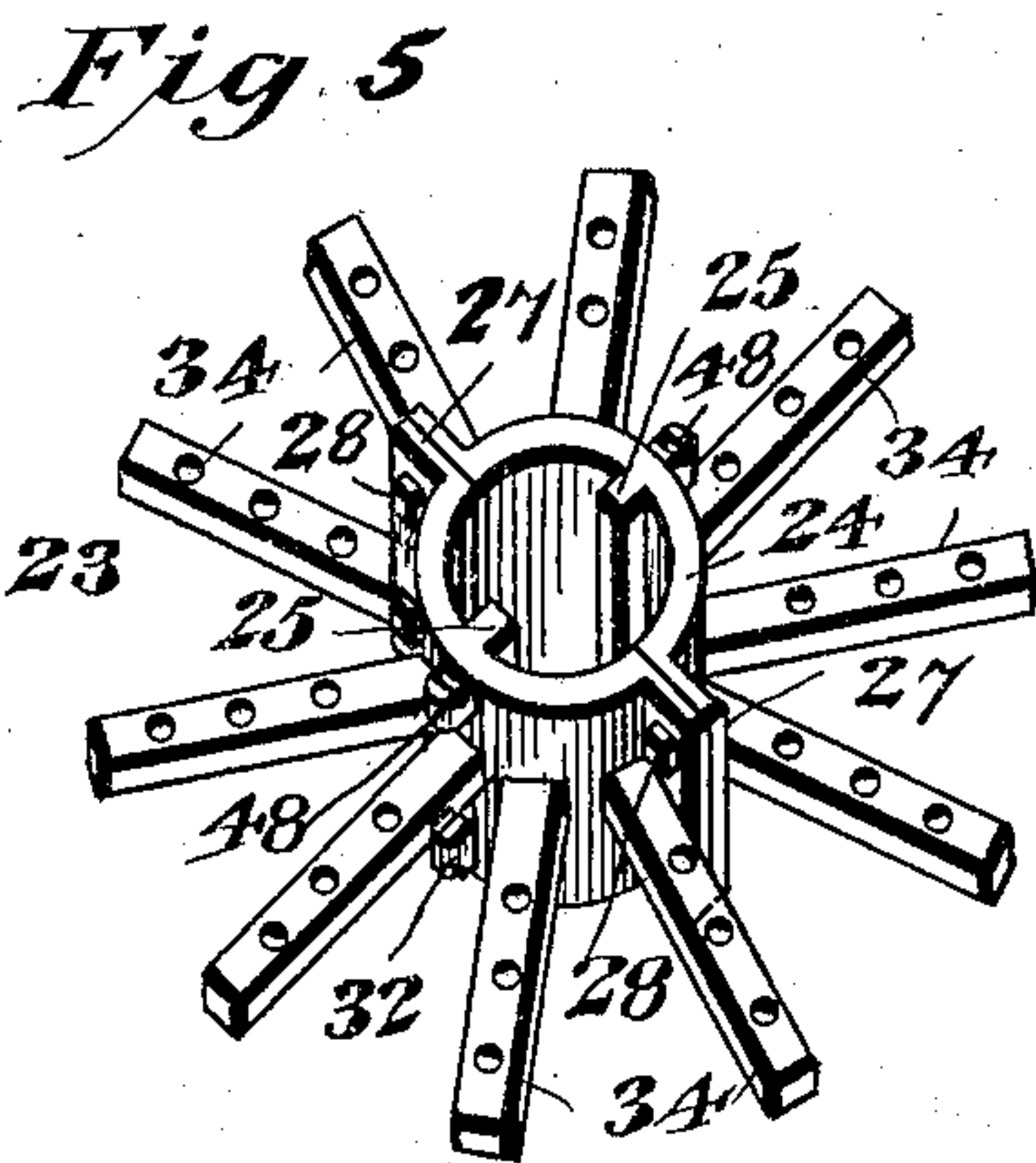
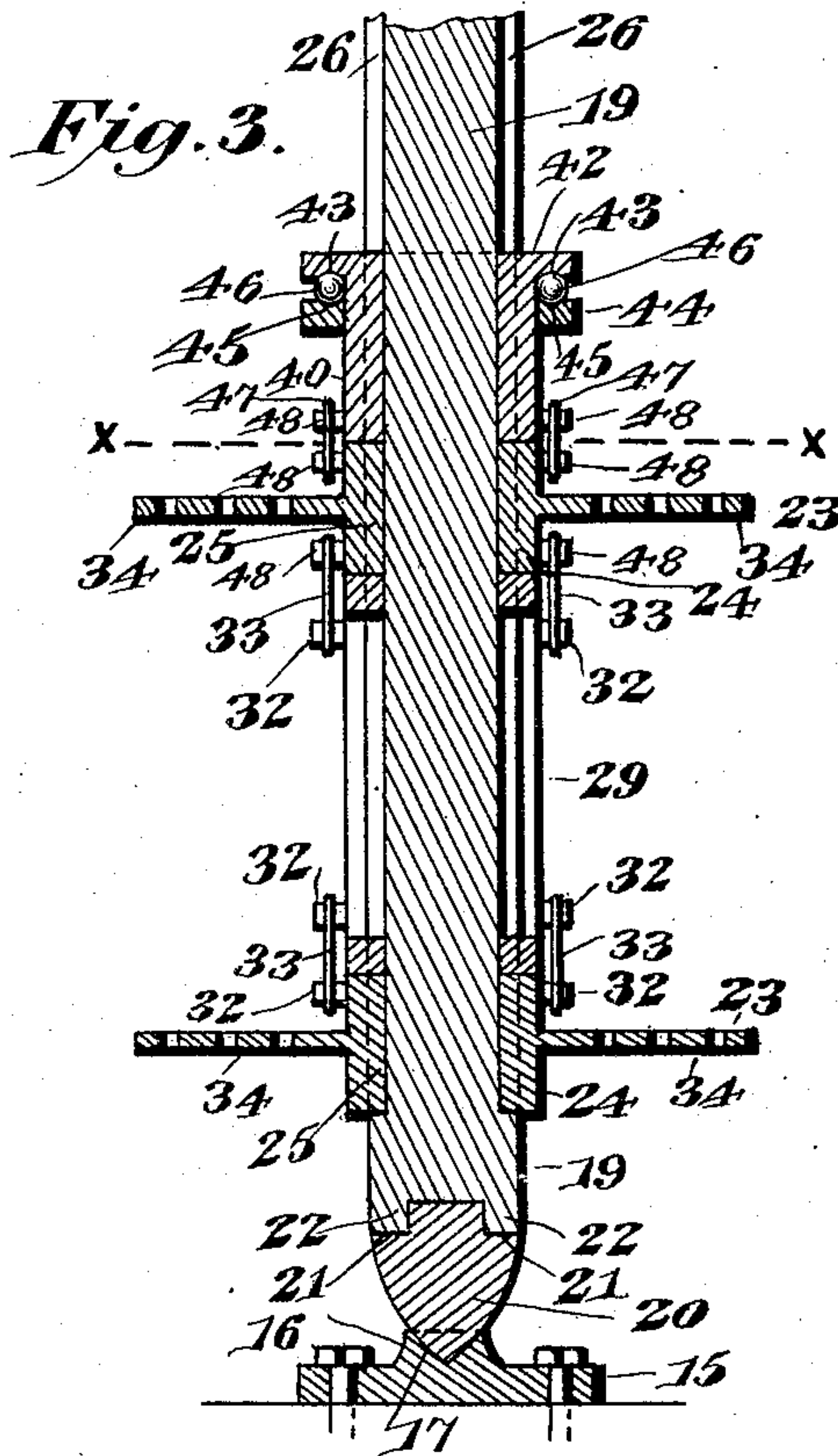
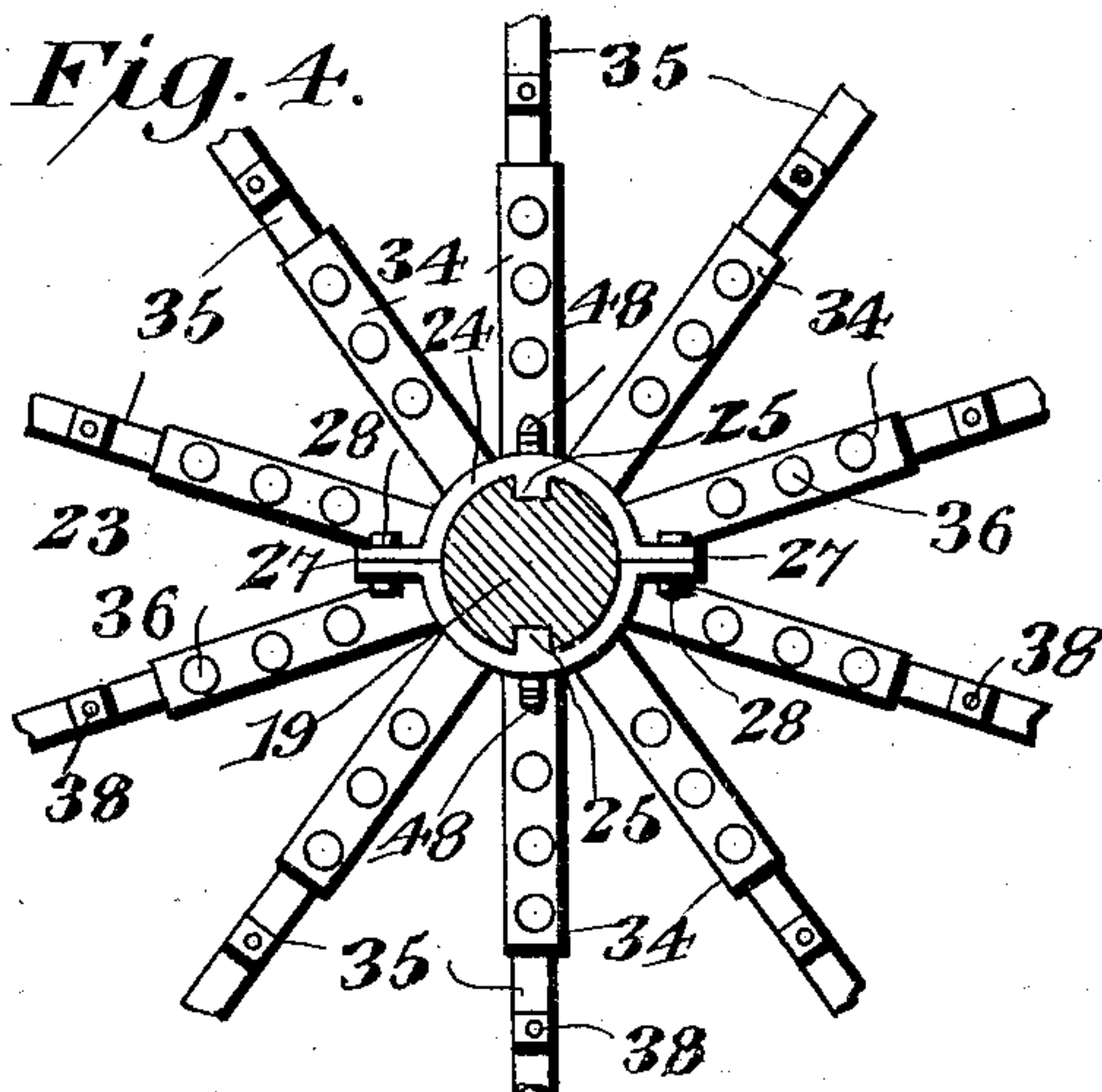
Jas. E. McArthur
B. H. Foster

PATENTED NOV. 22, 1904.

APPLICATION FILED AUG. 11, 1903.

NO MODEL.

3 SHEETS--SHEET 3.



2 Witnesses
Jas. E. McEachran
B. G. Foster

J. F. Myser, Inventor

၁၆၂

E. G. Siggers

Attorney

UNITED STATES PATENT OFFICE.

JAMES F. MYSER, OF NEWCASTLE, COLORADO.

WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 775,776, dated November 22, 1904.

Application filed August 11, 1903. Serial No. 169,136. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. MYSER, a citizen of the United States, residing at Newcastle, in the county of Garfield and State of Colorado, have invented a new and useful Water-Motor, of which the following is a specification.

The present invention relates to current-motors, which can be placed in natural streams of water to obtain power therefrom.

One of the objects of the invention is to provide a water-motor of the above character which is simple in construction, the elements thereof being cheap to manufacture and capable of being readily assembled. Moreover, the structure is durable; but should any part become damaged, deranged, or worn from any cause a new element may be substituted therefor without necessitating an entirely new wheel.

Another feature of the invention resides in novel means for elevating the wheel so as to stop the same or remove it from the water during times of high water or floods. This means is very simple, does not materially interfere with the operation of the wheel while said wheel is in action, and is operated by the wheel.

The preferred embodiment of the invention is illustrated in the accompanying drawings; but the invention is not limited to the exact structure set forth.

In said drawings, Figure 1 is a view in elevation of the motor, a portion of the wheel being broken away. Fig. 2 is a top plan view of the motor. Fig. 3 is a vertical sectional view through the lower portion of the same. Fig. 4 is a sectional view taken on the line x of Fig. 3, showing one of the hub members of the wheel in plan. Fig. 5 is a detail perspective view of said hub member. Fig. 6 is a similar view of the spacing-sleeve. Fig. 7 is a perspective view of one of the blades. Fig. 8 is a detail perspective view of the lower portion of the shaft. Fig. 9 is a perspective view of the step-bearing forming a part of said shaft.

Similar reference-numerals indicate corresponding parts in all the figures of the drawings.

The motor is preferably constructed to be

placed along the shore of the stream, and a shore-wall 10 is therefore employed having a semicircular inset portion 11, forming a similarly-shaped eddy-compartment 12, the outer side of which is open. A suitable frame 13 is located above the chamber, while a sleeper 14 is preferably located in the bottom of the same. The sleeper 14 carries a suitable base-block 15, having an upstanding boss 16 secured thereto, this boss being provided with a bearing-receiving socket 17, as illustrated particularly in Fig. 3. An upright shaft 19 has its upper end suitably journaled in the frame 13, the lower end of said shaft being provided with a detachable step-bearing 20.

This bearing is preferably cone-shaped and fits in the socket 17 of the base-block, its upper end having spaced seats 21, arranged to receive similarly-formed teeth 22, projecting from the lower end of the shaft. The shaft is located in the open side of the chamber 12, and the walls of said chamber are disposed concentrically to the same.

The wheel consists of spaced hub members 23, slidably mounted upon the shaft, each member comprising semicircular sections 24, which surround said shaft and are provided with inwardly-extending oppositely-disposed teeth 25, that slidably engage in longitudinally-disposed keyways 26, formed in the opposite sides of the shaft. The abutted ends of the sections have outstanding ears 27, through which are passed fastening-bolts 28. The hub members are held in spaced relation by a skeleton sleeve 29, also formed of sections that surround the shaft and having outstanding ears 30, secured together by bolts 31. This sleeve is placed between the hub-members and is attached thereto for this purpose. Said members and sleeve are provided with outstanding lugs 32, over which are engaged connecting-links 33.

The hub members 23 are provided with radially-disposed integral fingers 34, to which are attached radial arms 35 by means of bolts 36. The outer ends of the arms of each set are connected by tie-rods 37, and the arms of one member are disposed in vertical alinement with the arms of the other. Hinge-bolts 38 connect said arms and upon the same are hung

swinging blades 39, the outer blades being preferably of greater width than the inner ones. These blades are free to swing in one direction—namely, in an angular relation with respect to the arms—but when swung parallel thereto constitute paddles extending from the shaft to the outer ends of the arms. The wheel as thus constructed fits snugly within the chamber and revolves in a horizontal position through said chamber.

The means for elevating the wheel will now be described. A cuff 40 is fitted upon the shaft 19 above the upper hub member 23, this cuff comprising sections secured together by bolts 41. An outstanding annular flange 42 is formed upon the upper end of the cuff and is provided in its under face with a depression or groove 43. A supporting device formed of a collar 44 is placed upon the shaft and surrounds the cuff, said collar being located beneath the flange 42 and having a groove 45 in its upper face. The coacting grooves 43 and 45 form a raceway, in which are placed balls 46, and thus a ball-bearing is formed between the collar and the cuff. The cuff is attached to the wheel by means of links 47 engaging over projections 48, formed upon the adjacent ends of the cuff and upper hub member.

Journalled in the frame 13 at one side of the shaft is a drum 49, about which is wrapped a cable 50, one end of this cable being attached to a stud 51, projecting from the supporting-collar, the other end carrying a counterbalance in the form of a weight 52. A brake-wheel 53 is attached to the drum, and a suitable friction-brake 54 coacts therewith. A ratchet-wheel 55 is also carried by the drum, and a dog 56, pivoted upon the frame, is arranged to engage the teeth of said wheel. Located on the side of the shaft 19 opposite the drum and counterweight above described is another counterweight, 57, attached to the end of a cable 58, that passes over a pulley 59, suitably secured to a portion of the frame 13. This cable passes about another pulley 60, journalled in an upstanding arm 61, that is attached to the supporting-ring on the side opposite the stud 51, the end of the cable being fastened in an eyebolt 62, that is secured to the frame. The two counterweights 52 and 57 are not sufficient to elevate the wheel, but overcome a considerable portion of the weight thereof.

Mounted on the frame 13 is a horizontal power-shaft 62^a, carrying a pulley 63. Another drive-pulley, 64, is attached to the upper end of the vertical shaft 19, and this pulley is connected with the pulley 63 by a suitable belt 65. A drum 66 is mounted adjacent to the power-shaft and is provided with a pulley 67, about which passes a belt 68, that also extends around a pulley 69, mounted on the power-shaft. The pulley 69 is preferably a clutch-pulley of any desired form, so that it may be disconnected from the shaft, as de-

sired. Wound upon the drum 66 is a cable 70, which passes over a suitable pulley 71, and, passing beneath the pulley 60, (which is double,) has its end attached to the eyebolt 62.

The operation of the motor is as follows: When the wheel is submerged, its outer side will be projected into the stream proper, and the current thereof striking the blades will cause said wheel to revolve, consequently rotating the upright shaft 19, the main pulley 64, and consequently the power-shaft 62^a. The inner side of the wheel being located within the chamber will be protected from the force of the current and will offer no material resistance to the revolution of the wheel, as the blades can swing upon their hinges. However, under normal conditions an eddy will be formed by the chamber and the revolution of the wheel, so that the water in the chamber will move in the direction of the wheel and will therefore serve to assist in propelling the same. As long as the pulley 69 is unclutched from the power-shaft the wheel will remain submerged, and consequently in operation; but should it become desirable or necessary to elevate said wheel it is only necessary to clutch the pulley 69 to the shaft 62, whereupon the drum 66 will be revolved, the cable 70 wound thereon, thus drawing upwardly upon the supporting-ring and carrying the wheel hung therefrom to an elevated position. The power required for this movement will not be very great, as the weight of the wheel is to a great extent counterbalanced by the weights 52 and 57, and the momentum gained by the parts during the revolution will be sufficient to carry the wheel well above the surface of the water. It is held elevated by the ratchet and dog 55 and 56. To lower the wheel after such elevation, it is only necessary to release the dog 56 and unclutch the pulley 69. The weight of the wheel therefore will overcome the weight 52 and 57, and said wheel will consequently drop into the water, the rapidity of the movement being controlled by the brake 54. This feature of raising the wheel is an important one for various purposes. Not only may the machinery driven by the motor be quickly stopped, but in case of high water and floods when driftwood and the like is carried by the stream the wheel may be raised so as to avoid any injury from such causes. The structure, moreover, is very simple, the various elements being so arranged that they can be quickly set up and assembled. Should an accident befall any part, it may be replaced without the necessity of an entirely new wheel. The principal wear coming upon the step-bearing, said bearing has been made removable in order that it can be renewed when necessary. The motor can be employed in obtaining power for various purposes, such as generating electricity, hoisting, irrigating, and the like.

From the foregoing it is thought that the

construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In a current-motor, the combination with a flume having a side wall, of an inset semicircular chamber extending into the wall, said chamber having a completely-inclosed inner portion and an outer open side that communicates with the flume, an upright shaft journaled in the open side of the chamber, outstanding arms carried by the shaft, said shaft being disposed a sufficient distance from the inner wall to permit the arms to move in substantially horizontal planes through said chamber, said arms being also movable in a substantially horizontal plane through the flume, and blades carried by the arms and movable substantially in a horizontal direction through the inner portions of the chamber and through the flume.

2. In a current-motor, the combination with a flume having an upright side wall, of an inset semicircular chamber extending into the wall, said chamber having a continuous curved wall extending from the outer face of the flume-wall and furthermore having an outer open side that communicates with the flume, an upright shaft journaled in the open side of the chamber, outstanding upper and lower arms rigidly secured to the shaft below the waterline of the flume, said arms moving in substantially horizontal planes through the flume and chamber, and a plurality of horizontally-swinging blades located between and hinged to corresponding sets of arms, said blades being movable in a substantially horizontal direction through the flume and chamber.

3. In a current-motor, the combination with an upright shaft, of a motor-wheel slidably mounted on the shaft and having a sliding interlocking connection therewith throughout the extent of its sliding movement, whereby said wheel and shaft are held against relative rotation, a power-shaft driven from the upright shaft, a drum, a cable connecting the drum and motor-wheel, a pulley loosely mounted on the power-shaft and having operative connections with the drum, and a clutch carried by the power-shaft for connecting the same to the loose pulley.

4. In a current-motor, the combination with an upright shaft, of a motor-wheel slidably mounted on the shaft, a sliding interlocking connection between the wheel and shaft for holding them against relative rotation while permitting the sliding movement of the wheel, a power-shaft driven from the upright shaft,

a drum having a shaft, a cable connecting the drum and motor-wheel, pulleys mounted on the power and drum shafts, one of said pulleys being loose, a clutch for connecting the loose pulley to its shaft, and a belt connecting the pulleys.

5. In a current-motor, the combination with an upright rotatable shaft, of a non-rotatable supporting device slidably mounted on the shaft, a wheel slidably mounted on the shaft, interlocking connections between the wheel and shaft for holding the same against relative rotation throughout the sliding movement of the wheel and permitting said sliding movement, a revoluble connection between the wheel and the supporting device, a counterbalance for the wheel connected to the supporting device, and automatic means for elevating the wheel, said means being driven from the shaft and being attached to the supporting device.

6. In a current-motor, the combination with an upright shaft, of a supporting-collar slidably mounted on the shaft, a wheel mounted on the shaft and having a revoluble ball-bearing engagement with the collar, and a counterbalance attached to the collar.

7. In a current-motor, the combination with an upright shaft, of a supporting device slidably mounted on the shaft, a wheel mounted on the shaft and having a revoluble ball-bearing engagement with the supporting device, and means for elevating the wheel, said means being attached to the supporting device.

8. In a current-motor, the combination with a shaft, of a non-rotatable collar slidably mounted on the shaft, a current-wheel slidably mounted on the shaft and revoluble therewith, said wheel having a connection with the collar, and counterbalances attached to opposite sides of the collar.

9. In a current-motor, the combination with a shaft, of a non-rotatable collar slidably mounted on the shaft, a current-wheel slidably mounted on the shaft and revoluble therewith, said wheel having a connection with the collar, counterbalances attached to opposite sides of the collar, and elevating means coacting with the counterbalances.

10. In a current-motor, the combination with an upright shaft, of a non-rotatable collar slidably mounted on the shaft, a current-wheel slidably mounted on the shaft and revoluble therewith, said wheel having a revoluble engagement with the collar, a drum, a cable wrapped upon the drum, said cable having one end attached to the collar, a weight carried by the other end, a friction-wheel attached to the drum, and a friction-brake coacting with the wheel.

11. In a current-motor, the combination with an upright shaft, of a current-wheel slidably mounted upon and revoluble with the shaft, said wheel having an outstanding flange at its upper end, a non-rotatable collar slidably mounted upon the shaft and located be-

neath the flange, balls interposed between the flange and collar, counterweights attached to the collar on opposite sides of the shaft, and means connected with one of the counter-
5 weights and driven by the shaft for elevating the wheel.

12. In a current-motor, the combination with an ordinary shaft, of a current-wheel slidably mounted upon and revoluble with the
10 shaft, a non-rotatable supporting-collar coacting with the wheel, a cable attached to the collar and carrying a counterweight, and means for elevating the wheel, said means being attached to the cable.

13. In a current-motor, the combination with an upright shaft, of a current-wheel slidably mounted upon the shaft and revoluble therewith, a supporting-collar coacting with the wheel, spaced pulleys, one of which is car-
20 ried by the collar, a cable passing about said pulleys, a counterweight secured to one end of the cable, and means for elevating the wheel, said means being attached to the cable between the pulleys.

14. In a current-motor, a shaft, spaced hub members mounted on the shaft, a spacing-sleeve mounted on the shaft and interposed between the hub members, the opposite ends of the sleeve engaging the hub members and
30 holding the same in spaced relation, and blades connected with the hub members.

15. In a current-motor, a shaft, spaced hub members slidably mounted on the shaft, a spacing-sleeve slidably fitted upon the shaft
35 between the hub members to hold the hubs in spaced relation, detachable connections between the sleeve and hub members, and blades connected with the hub members.

16. In a current-motor, a shaft, spaced hub
40 members mounted on the shaft, a skeleton spacing-sleeve interposed between the hub members and engaging the same to hold them separated, links connecting the sleeve and hub members, and blades carried by the hub mem-
45 bers.

17. In a current-motor, an upright shaft, spaced upper and lower hub members mounted on the shaft and having outstanding lugs,

a skeleton spacing-sleeve interposed between the hub members and engaging the same to
50 hold them apart, said sleeve having outstanding lugs, links connecting the adjacent lugs of the sleeve and hub members, outstanding arms carried by the hub members, and swinging blades attached to and located between
55 the arms.

18. In a current-motor, the combination with a shaft having longitudinally-disposed keyways in its opposite sides, of a hub mem-
60 ber comprising sections that surround the shaft and each carrying keys that fit in the keyways, means for securing the sections together, radial arms carried by the sections, and blades attached to the arms.

19. In a current-motor, the combination
65 with an upright shaft provided with longitudinally-disposed keyways in its opposite sides, of spaced hub members each comprising sections that surround the shaft and each of said sections having a key fitting in one of the key-
70 ways, means for securing the sections together, a spacing-sleeve fitted between and engaging the members to hold them separated, said sleeve comprising sections, con-
75 nections between the sleeve and the members, spaced radial arms carried by the members, and swinging blades attached to and located between the arms.

20. In a current-motor, the combination with a base-block having a conical bearing-
80 socket, of a shaft having longitudinally-extending teeth projecting from the peripheral edge of its lower end, a current-wheel carried by the shaft; and a conical step-bearing fitting in the socket of the block and having de-
85 tachable engagement with the lower end of the shaft, said bearing being provided at its upper end with seats that receive the teeth of the shaft.

In testimony that I claim the foregoing as
90 my own I have hereto affixed my signature in the presence of two witnesses.

JAMES F. MYSER.

Witnesses:

J. W. NEWMAN,

JOHN W. RITTER.