

No. 730,260.

PATENTED JUNE 9, 1903.

C. E. HARRIS.
WATER ELEVATOR.
APPLICATION FILED MAY 23, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

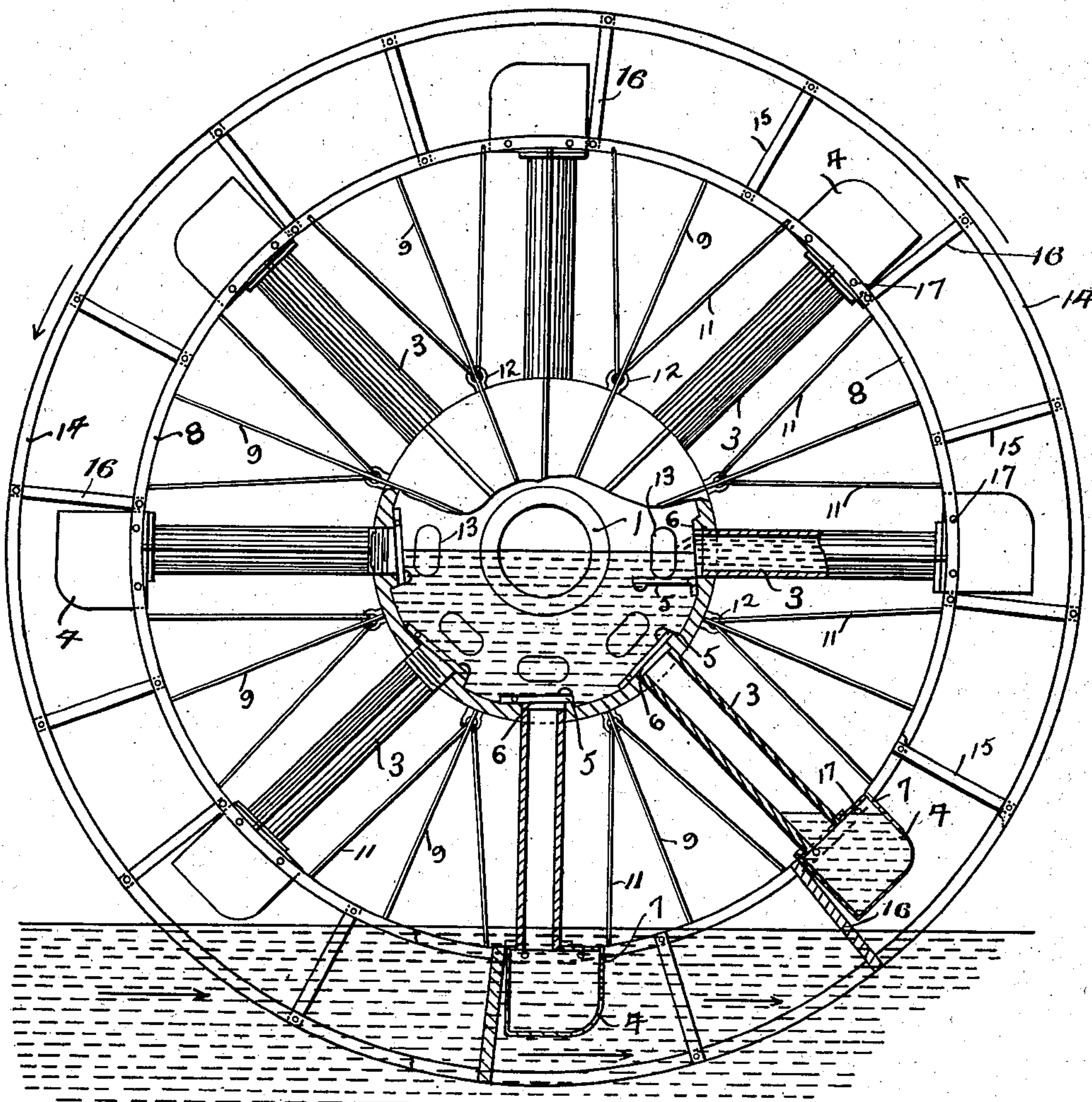


Fig. 1.

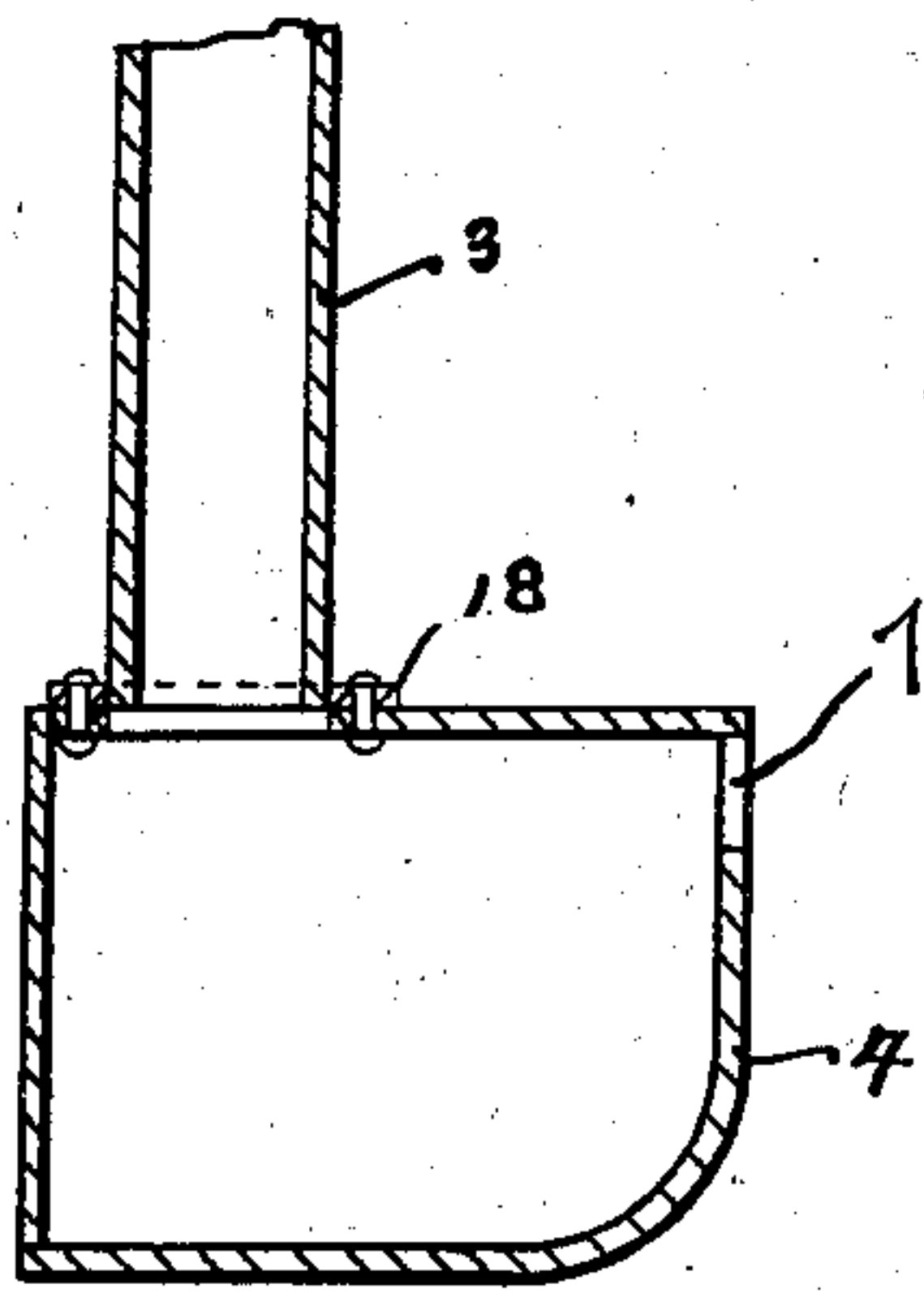


Fig. 2.

WITNESSES:

Harry Smith.
D. O. Barnell.

Charles E. Harris.
INVENTOR

BY
Harold J. Conzill.
ATTORNEY.

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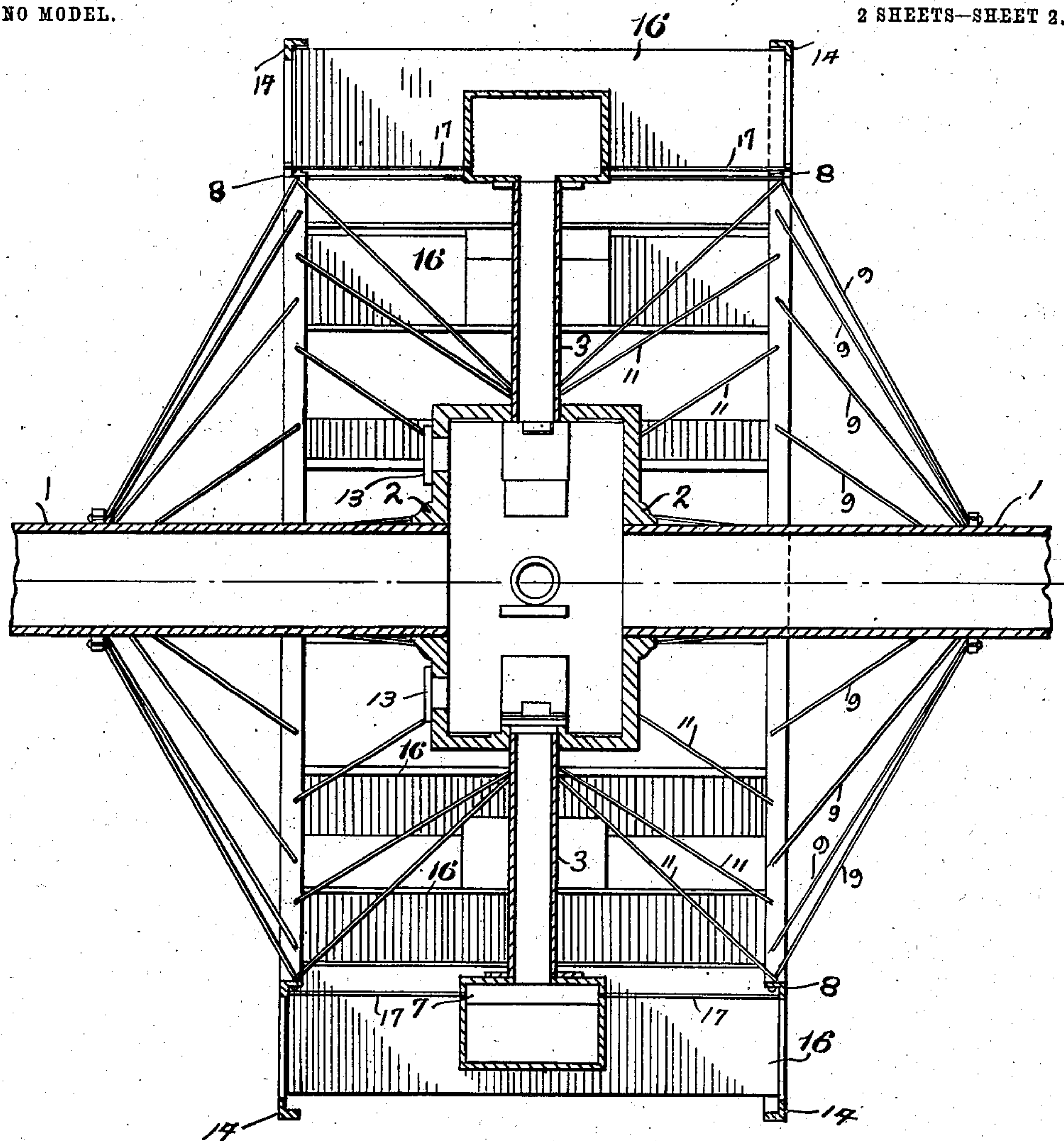


Fig. 3.

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UNITED STATES PATENT OFFICE.

CHARLES E. HARRIS, OF VALLEY, NEBRASKA.

WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 730,260, dated June 9, 1903.

Application filed May 23, 1902. Serial No. 108,731. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. HARRIS, a citizen of the United States, residing at Valley, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Water-Elevators; and I do hereby 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.

My invention relates to water lifts and wheels, and particularly to water-lifts for raising water a moderate distance, as for irrigating purposes.

It is the object thereof to provide a water-lift for elevating water a moderate height by the power of a current or stream in which the wheel may be placed.

A further object of my invention is to provide a device for the said purposes which shall be light, strong, and cheaply constructed.

A mechanism embodying my invention is shown in the accompanying drawings, in which—

Figure 1 is a side elevation, partly sectional, of my improved lift and water-wheel. Fig. 2 is a detail sectional view of one of the buckets, and Fig. 3 is a transverse section on a plane passing through the horizontal axis of the wheel.

In the construction shown the hollow shafts 1 1 are journaled in a suitable framework placed in the bed or on the banks of the stream in which the wheel is placed. The shafts 1 1 at their adjacent ends are screwed into the hollow hub 2, which is of cylindrical form and has a number of pipes 3 3, &c., extending radially outward therefrom and carrying on their ends the buckets 4 4, &c. At the openings of the pipes 3 3, &c., into the hub 2 are placed the valves 5 5, &c., which are hinged at one side of the said openings and are weighted at the end opposite the hinge to facilitate the opening and closing thereof. The said valves 5 5, &c., are preferably made to seat on surfaces 6 6, &c., which are at a tangent with a circle smaller than and concentric with the inner surface of the hub 2, so that the valves shall open and close, respectively, a little below and

a little above a line passing horizontally through the axial center of the wheel. Hand-holes 13 13 in the ends of the hub allow easy access to the valves for cleaning and repairing the same.

The buckets 4 4 are preferably of the form shown and have openings 7 7 in the forward faces thereof when the buckets are at the lower part of the wheel.

The suspension-rings 8 8 are formed from ordinary angle-iron and are held and supported concentrically with the hub by the rods 9 9, extending therefrom to the collars 10 10 on the shafts 1 1. The said rings are further held against rotary displacement by the brace-rods 11 11, &c., extending therefrom to the loops 12 12, &c., on the outer surface of the hub. The outer rings 14 14 are similar in form to the rings 8 8 and are secured to the latter by the braces 15 15, &c. The blades or paddles 16 16, &c., are fastened between the rings 8 8 and 14 14 and may vary in number according to the work which the wheel is to do. The buckets are held laterally by rods 17, extending to the rings 8 8.

The operation of the device is as follows: The wheel is placed in a stream so that the buckets and paddles at the lower part of the wheel are covered by the water, and the current flows relative to the openings 7 in the buckets in the direction indicated by arrows in Fig. 1. The force of the current flowing against the paddles 16 turns the wheel in the direction indicated in Fig. 1. As the buckets pass through the water they are filled through the openings 7 therein, and thus filled are carried up the ascending side of the wheel. When the ascending buckets reach a position such that the pipes 3 are a little below a horizontal position, the valves 5 open (partly on account of the same being weighted and partly on account of the weight of the water in the pipes and buckets) and the water flows into the hub 2 and thence through the hollow shafts 1 1 to any point to which it may be desired to conduct it. The valves remain open during the time their respective buckets are passing around the upper half of the wheel, and on again approaching the water-line in the hub close, and so remain while passing around the lower half of the wheel, thus preventing the water in the hub from es-

caping through the lower pipes and buckets. It will be especially noted that on account of the valves seating on the inclined surfaces 6 6, &c., the said valves open a little below the
5 center of the wheel and close a little above the same.

It is obvious that by omitting the paddles and applying power to the shaft 1 the device might be used as a simple water-elevator to
10 be driven by externally-applied power.

Now, having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A water-elevator comprising rotatable,
15 hollow shaft-sections, a hollow hub supported by said shaft-sections, pipes extending radially from the hollow hub, buckets carried at the extremities of said pipes, opening there-
20 into and having filling-openings therein, and valves at the openings of the pipes into the hub, said valves being hinged at one side of the said openings and seating on surfaces tan-
25 gent to a circle smaller than and concentric with the inner surface of the hub whereby said valves are adapted to open on the as-
cending side of the hub at a point lower than the level of the axial center thereof and to close on the descending side of the hub at a
30 point higher than the axial center thereof, substantially as described.

2. A water elevator and wheel comprising rotatable, hollow shaft-sections, a hollow hub supported by said shaft-sections, pipes ex-
tending radially from the hollow hub, buck-
ets carried at the extremities of said pipes, 35 opening thereinto and having filling-openings therein, valves at the openings of said pipes into the hub, said valves being hinged at one side of said openings and seating on surfaces
40 tangent to a circle smaller than and concentric with the inner surface of the hub where-
by said valves are adapted to open on one side of the hub at a point lower than the axial center thereof and to close on the other side
45 at a point higher than the axial center there-
of, rings concentric with the hub and hollow shaft-sections, braces connecting said rings to each other, suspension-rods extending from
50 the rings to the hollow shaft-sections, other suspension-rods extending from the rings to the hollow hub, and water-engaging paddles
carried by said rings, substantially as de-
scribed.

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

CHARLES E. HARRIS.

Witnesses:

F. H. CLARK,
E. M. ELLIOTT.