

No. 772,383.

PATENTED OCT. 18, 1904.

H. J. M. SIEMERS.

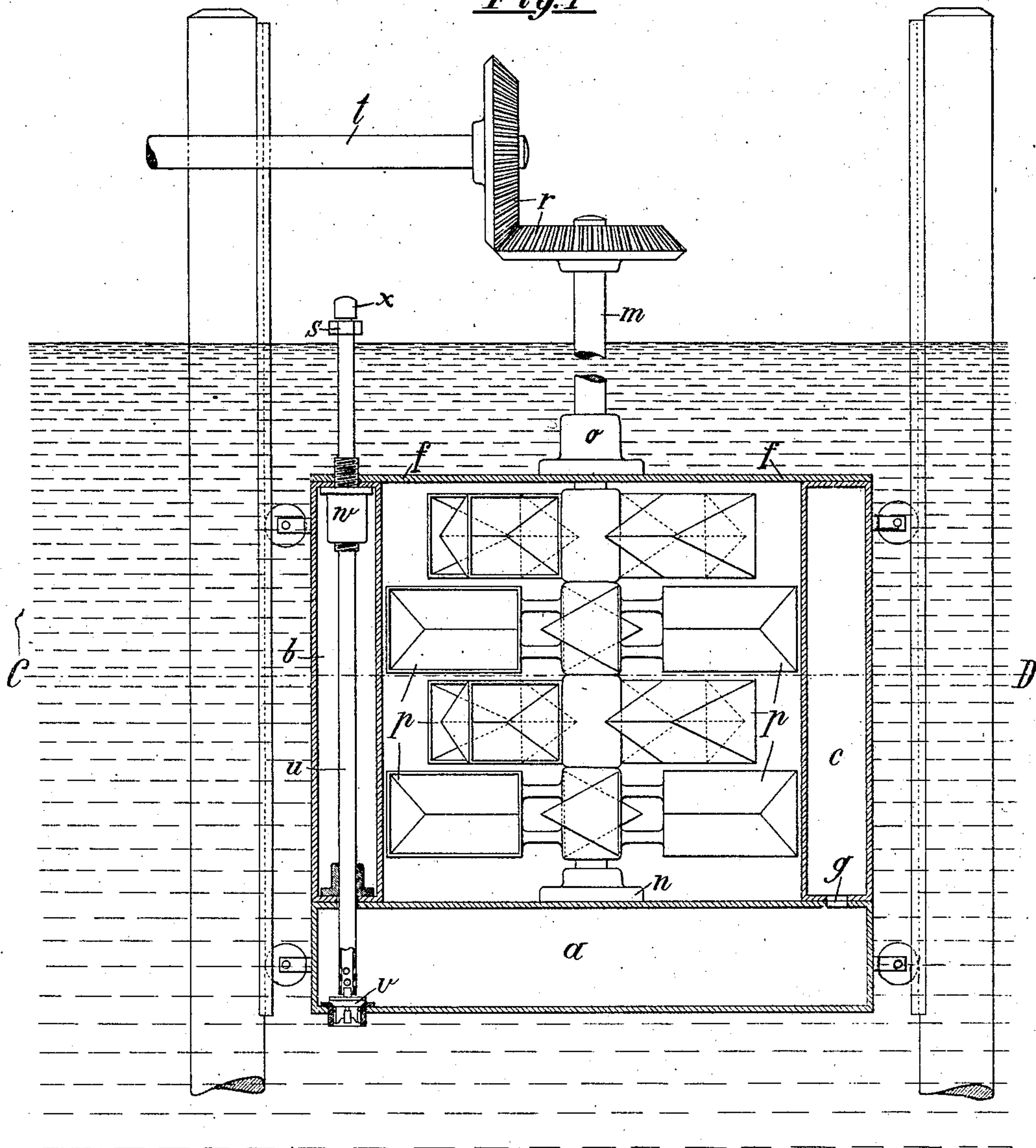
WATER MOTOR.

APPLICATION FILED NOV. 27, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1



Witnesses:
Fred. Unfricht
William Schukz

Inventor:
Hermann Jacob Martin Siemers
by his attorney
Paul H. Bensen

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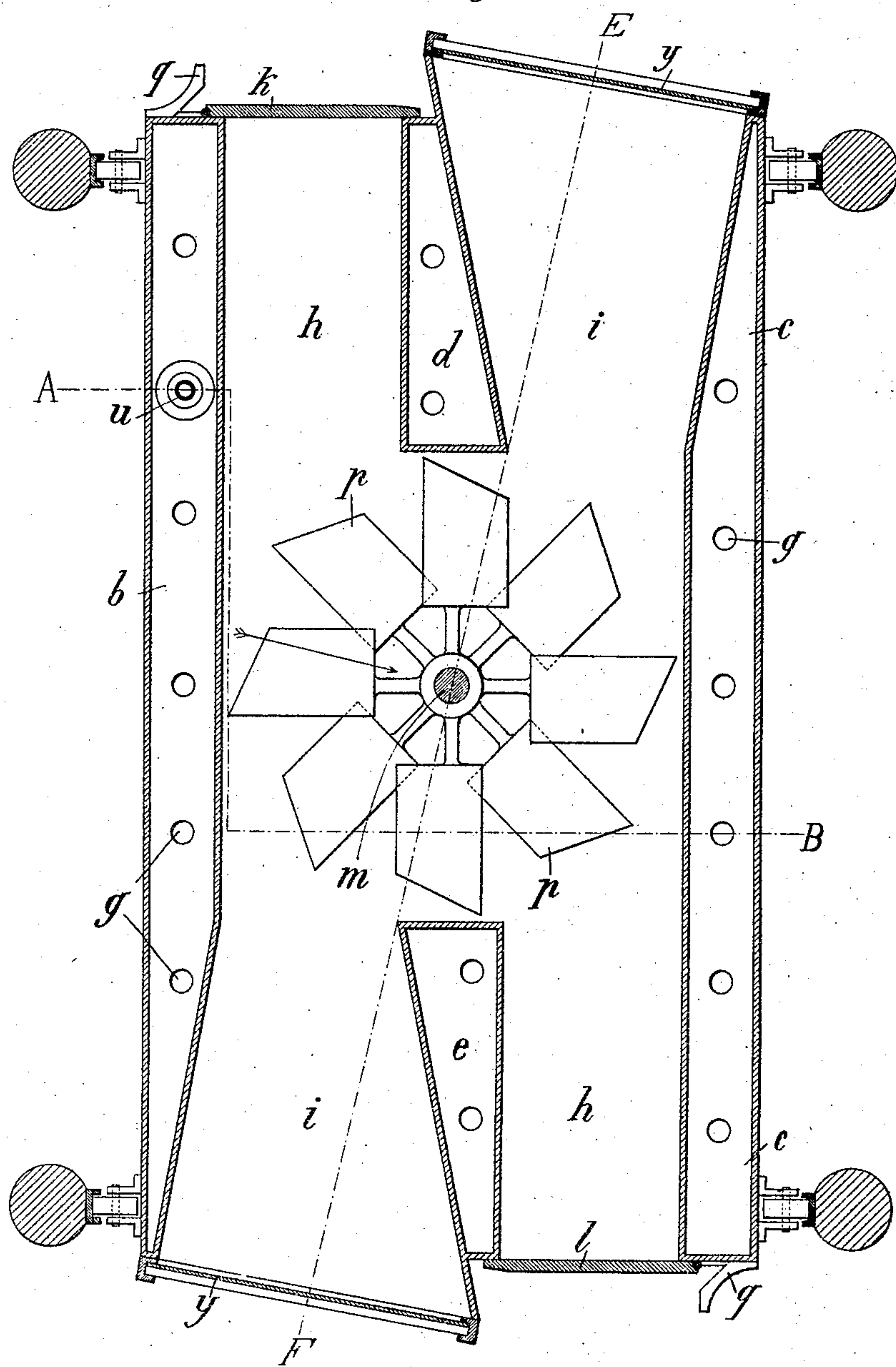
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APPLICATION FILED NOV. 27, 1903.

NO MODEL.

3 SHEETS—SHEET 2.

Fig. 2



Witnesses:
Fred. Unfricht
William Schuly.

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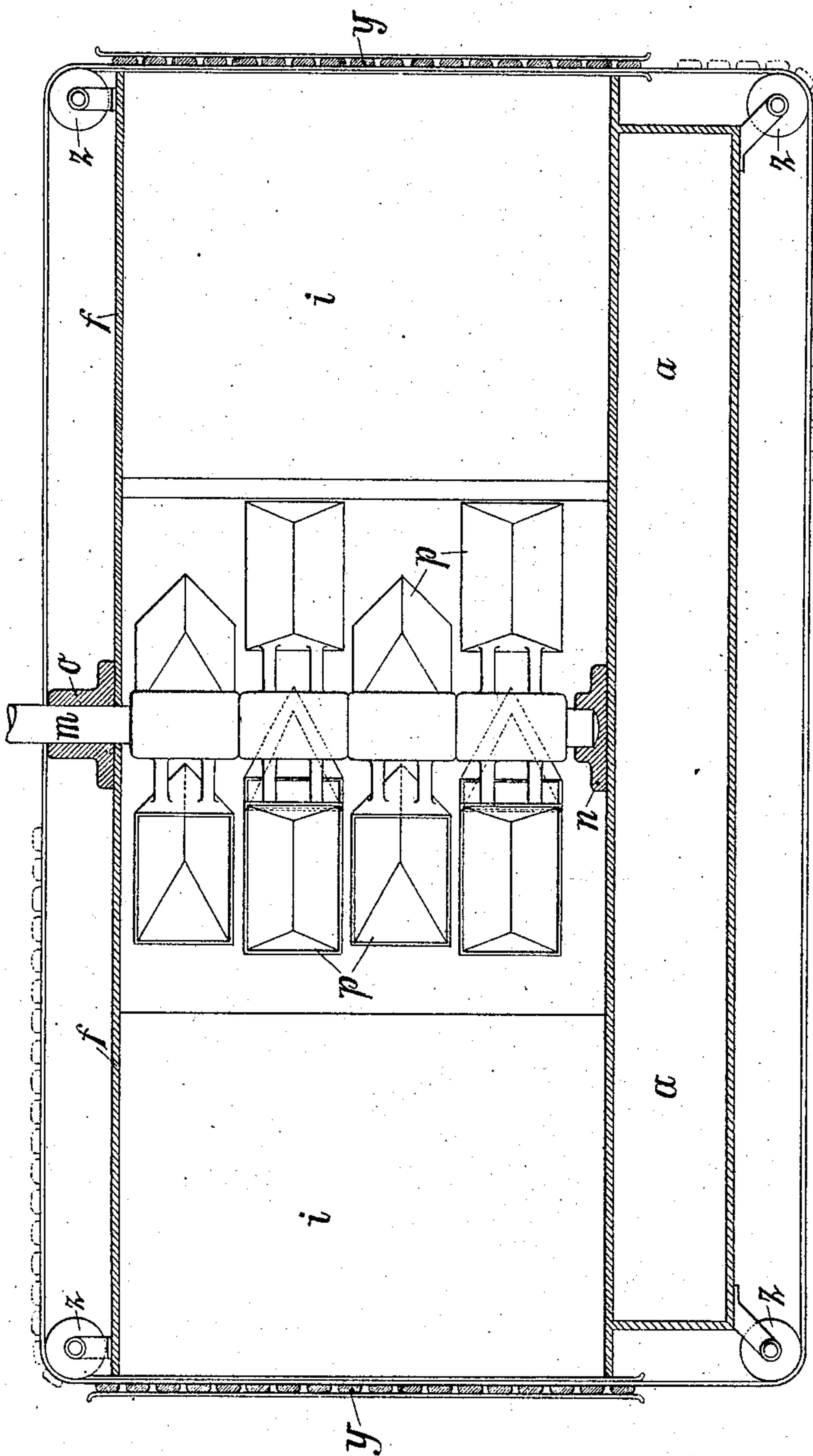
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NO MODEL.

3 SHEETS—SHEET 3.

Fig. 3



Witnesses:

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UNITED STATES PATENT OFFICE.

HERMANN JACOB MARTIN SIEMERS, OF HAMBURG-HORN, GERMANY.

WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 772,383, dated October 18, 1904.

Application filed November 27, 1903. Serial No. 182,727. (No model.)

To all whom it may concern:

Be it known that I, HERMANN JACOB MARTIN SIEMERS, a citizen of Germany, residing at Hamburg-Horn, Germany, have invented new and useful Improvements in Water-Motors, of which the following is a specification.

The motor according to this invention is intended to utilize the current streams for industrial purposes without being affected in any way by change in the current or by the formation of ice in the stream. To this end the motor is arranged vertically in a conduit of special form open at both ends, which conduit, so as to be independent of frost, is placed deep in the water in order that the current can continue to freely work the motor under the ice.

In the accompanying drawings, Figure 1 is a vertical cross-section of my improved water-motor on the line A B of Fig. 2; Fig. 2, a horizontal section on the line C D of Fig. 1, and Fig. 3 a longitudinal section on the line E F of Fig. 2.

The conduit consists of a lower air-chamber *a*, on which are arranged air-chambers *b* and *c*, forming lateral walls, and tapering air-chambers *d* and *e*, forming an intermediate interrupted partition-wall. The double channel thus produced is closed at the top either by a plate *f*, as shown in the drawings, or by another air-chamber. The upper air-chambers communicate with the lower one, *a*, by means of openings *g* or in any other suitable way, and the chambers are of such a shape as to form two diagonally-arranged tapering inlet-passages *i* and two diagonally-arranged outlet-passages *h*, all of which communicate with each other at the center. The outlet-passages *h* are provided with sluice-gates *k* and *l*. In the open portion of the central partition rotates the centered vertical motor-spindle *m*, supported in a pivot-bearing *n* and a journal-bearing *o*, which are suitably constructed so that the friction is reduced to a minimum. On the motor-spindle *m* are arranged vanes, paddles, or buckets *p*, the open sides of which take up the impact of water and cause the spindle *m* to rotate, while the wedge-shaped opposite sides of the paddles *p* cut through the water like knives, so that the

resistance opposed to turning is reduced to a minimum. The current closes the gate *k*, situated near the inlet, so that only one channel is always open to the water, which after having done its work passes partly through the opening in the central wall formed by the parts *d* and *e* and is free to escape at the other end through both the channels.

If the direction of the current should change, as may be the case during floods, the gate *l*, which up to that time remained open, will close automatically, and water will enter through the adjoining funnel-shaped inlet of the channel and open the gate *k*. The current acts in this case on the motor-spindle *m* in the opposite direction, but causes it to rotate in the same direction as before.

The gates *k* and *l* are hinged upon vertical rods and are protected against excessive back play by stops *q* or in some other way. The transmission of the power generated by the rotation of the motor-spindle *m* (which always takes place in the same direction) to the shaft *t* can be effected in any desired manner. In the drawings it is shown to be effected, by way of example, by means of bevel-gears *r*, Fig. 1.

The volume of the air-chambers *a b c d e* is calculated in such manner that when said chambers contain air only the whole apparatus will float on the water and can be easily towed to the desired point. The sinking of the apparatus is effected by opening one or several valves in the bottom, whereupon the hollow chambers will fill with water. After the apparatus has been properly anchored or secured by cables in the bed of the stream it may begin to work at once. When it is required to examine the apparatus or to effect repairs, the bottom valve *v* is closed and the water pumped out from the chambers through the pipe *u*, when the apparatus will rise to the surface. In order to prevent more water from entering through the valve *v* during the pumping operation, the valve can be secured by means of the suction-pipe *u*, which can be screwed down in a casing *w* and is perforated at the bottom, said suction-pipe *u* being provided at the top with an angular head *s* for the purpose of receiving a spanner or the like. After this has

been done the closing-cap x is removed from the pipe u and the latter connected to a pump in any suitable manner.

The inlet-openings can be closed by means of flexible shutters y , Figs. 2 and 3, passing over rollers z . By these means the motor can be stopped under water whatever be the direction of the current.

What I claim is—

10 1. In a water-motor, the combination of a body provided with air-chambers, with a water-inlet valve, and a suction-pipe having a perforated lower end and adapted to close said valve, substantially as specified.

15 2. In a water-motor, the combination of a body provided with a series of air-chambers, with a water-channel having diagonally-ar-

ranged water-inlets, diagonally-arranged water-outlets, means for closing the inlets and outlets, and a bucket-wheel within the channel, 20 substantially as specified.

3. In a water-motor, the combination of a body provided with a series of air-chambers, with a water-channel having tapering diagonally-arranged water-inlets, diagonally-arranged water-outlets, means for closing the inlets and outlets, and a bucket-wheel centered within the channel, substantially as specified. 25

Signed by me at Hamburg, Germany, this 13th day of November, 1903.

HERMANN JACOB MARTIN SIEMERS.

Witnesses:

A. POLHS,

OTTO W. HELLMRICH.