(No Model.) 3 Sheets—Sheet 1.

# H. KESSLER.

## CURRENT MOTOR.

No. 365,133. Patented June 21, 1887.

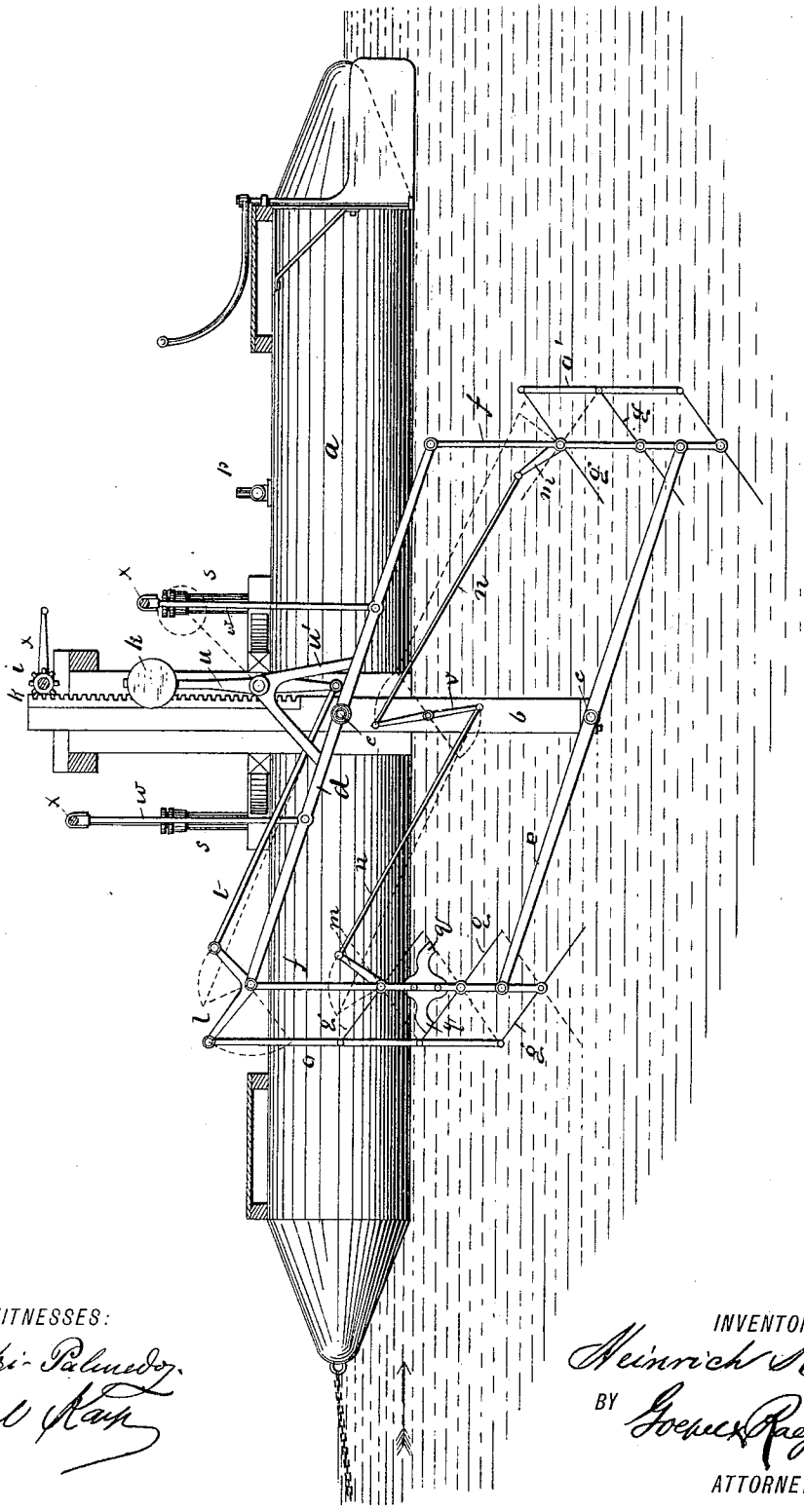


Fig. 1.

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Heinrich Kessler

BY Goepel & Raegener

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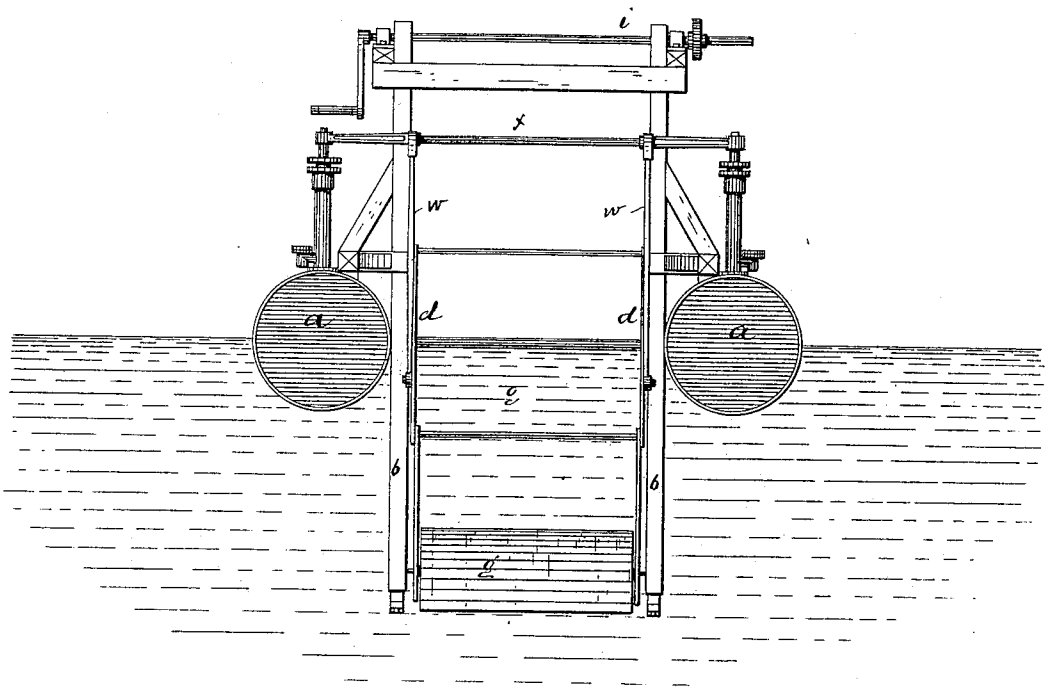
(No Model.) 3 Sheets—Sheet 2.

# H. KESSLER.

## CURRENT MOTOR.

No. 365,133. Patented June 21, 1887.

Fig. 2.




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(No Model.) 3 Sheets—Sheet 3.

# H. KESSLER.

## CURRENT MOTOR.

No. 365,133. Patented June 21, 1887.

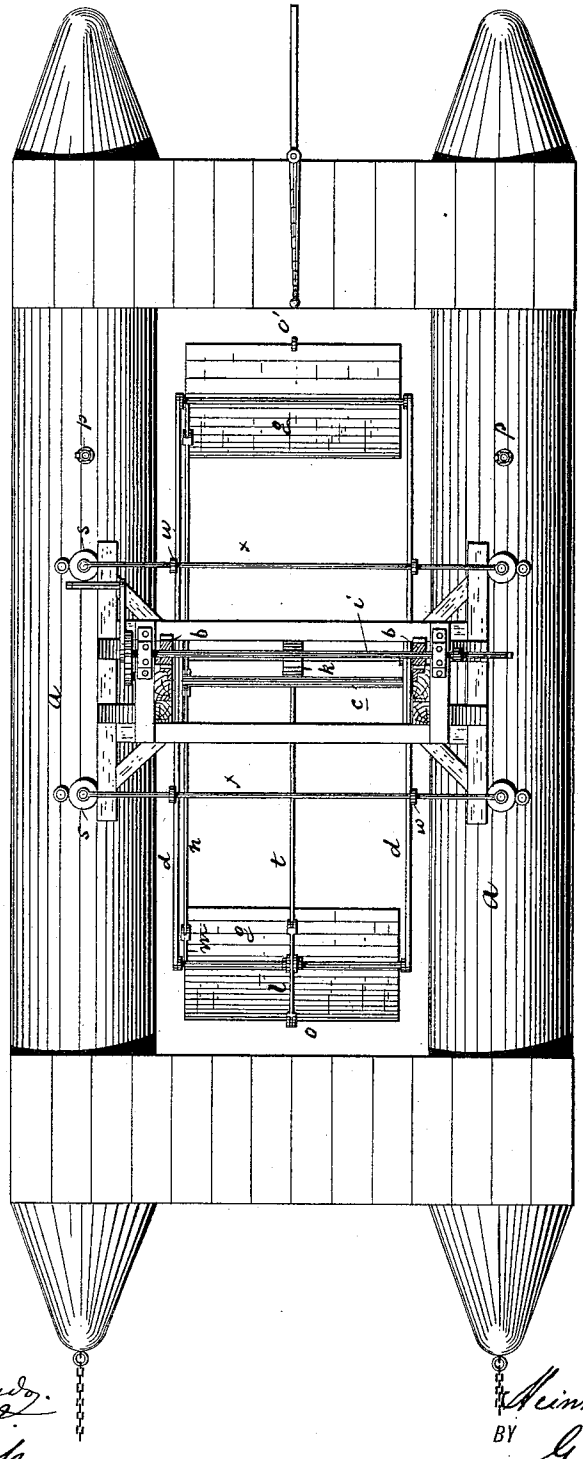


Fig. 3.

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# UNITED STATES PATENT OFFICE.

HEINRICH KESSLER, OF OBERLAHNSTEIN, PRUSSIA, GERMANY.

## CURRENT-MOTOR.

SPECIFICATION forming part of Letters Patent No. 365,133, dated June 21, 1887.

Application filed November 24, 1886. Serial No. 219,747. (No model.) Patented in Germany August 3, 1886, No. 38,863.

*To all whom it may concern:*

Be it known that I, HEINRICH KESSLER, a subject of the King of Prussia, German Empire, residing at the city of Oberlahnstein, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Current-Motors, (which have heretofore been patented to me by the Government of Germany by Letters Patent No. 38,863, dated August 3, 1886,) of which the following is a specification.

This invention relates to certain improvements in tide or current motors which are floated on rivers for the purpose of utilizing the power derived from the current or tide.

The object of my invention is to provide a machine of this kind which is simple in construction and can be used with the current or tide flowing in either direction, the machine reversing and regulating itself automatically.

The invention consists of the combination, with a suitable float, of rocking levers provided with pivoted wings and a weighted lever for automatically shifting the paddles, all as will be fully described and set forth hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view of my improved tide or current power, parts of the float being in section. Fig. 2 is a cross-sectional view of the float and end view of the mechanism. Fig. 3 is a plan view of the float and mechanism on the same.

Similar letters of reference indicate corresponding parts.

Two cylindrical vessels, *a*, are united by transverse frames to form a float; but in place of this float any other suitable float, raft, or vessel may be used. At each side opening in the float a bar, *b*, is held vertically adjustable in suitable standards, each bar being provided with a rack, *h*, engaged with a pinion, *i*, on a shaft provided at one end with a crank-handle, *z*, thus permitting raising the motive power mounted on said bar *b* out of the water, or lowering it as far as may be desired. On said bar *b* two transverse shafts, *c c*, are fixed, on which the two tiers of rocking levers *d e* are mounted to rock. Said rocking levers are connected at their ends by pivoted vertical bars *f*, between which a series of wings or blades, *g*, are pivoted to turn on their longitudinal axis. The outer ends of the wings are connected by upright bars *o o'*. At one end of the frame the bar *o* is extended upward and pivoted to one end of the angle-lever *l*, mounted to rock on a transverse shaft uniting the ends of the upper rocking levers, *d*, the upper end of said angle-lever *l* being connected by a rod, *t*, with the lower end of an arm, *u*, fixed on a transverse shaft mounted to rock on inverted-V-shaped standards *u'*, projecting upward from the upper rocking levers, *d*. A weight or ball, *k*, is held on the upper end of the arm *u*. The shaft of the uppermost wing at each end of the machine is provided at one end with a fixed arm, *m*, to which arm rods *n* are pivoted, the inner ends of which are pivoted to the opposite ends of a rocking lever, *v*, pivoted to one of the uprights *b*. Stops *q* project in opposite directions from one of the upright bars *f*. Upwardly-projecting rods *w* are pivoted to the upper rocking levers, *d*, and connected with a transverse rod, *x*, to the ends of which downwardly-projecting piston-rods are fastened, to which piston-rods pistons are connected, working in pump-cylinders *s*, projecting upward from the cylinders *a*. The cylinders are preferably made of sheet-iron and hollow, so as to swing in horizontal direction. An outlet-cock, *p*, is provided on one or both tanks *a*.

The pump-cylinder may be connected with any other suitable tank.

The operation is as follows: When the tide or current runs in the direction from left to right, it strikes the under sides of the wings *g* at the left-hand end of the frame, and also strikes the upper sides of the wings at the right-hand end of the frame, thereby raising the left-hand end of the swinging frame, whereby the weight *k* is thrown out of the vertical line and tilts into the position shown in dotted lines. By means of the connecting-rods *t* and angle-lever *l*, connecting-rods *n*, and lever *v*, the blades *g* are reversed and brought into the position shown in dotted lines. The current now strikes the under side of the wings at the right-hand end of the frame and raises the right-hand end of the frame, the left-hand end being lowered, the downward pressure of the water in the upper sides of the blades at the left assisting in raising the right-hand end of the frame. Thereby the arm *u*, carrying the weight *k*, is swung back to the vertical position, then tilts to the left, and reverses the

blades or wings, and brings them back into the position shown in Fig. 1, when the current raises the left-hand end of the frame, and so on alternately.

The air compressed by the action of the machine may be used for driving motors, for boring rocks, working electric-light machines, or for any other purposes in which compressed air is utilized.

The machine works with the current or tide running in either direction, and at all times readjusts itself automatically.

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

1. A tide or current motor constructed with a rocking frame, pivoted wings on the ends of the frame, and a weighted arm for reversing said wings, substantially as shown and described.

2. A tide or current motor constructed with a rocking frame, wings at the ends of the said frame, a pivoted weighted arm, and rods for transmitting motion from said weighted arm to the wings, substantially as shown and described.

3. In a tide or current motor, the combination, with a rocking frame, of pivoted wings on the ends of the same, stops against which the wings can rest, a weighted arm on the rocking frame, and rods and levers for transmitting motion from said weighted arm to the wings, substantially as shown and described.

4. In a tide or current motor, the combination, with a vertically-adjustable frame, of a rocking frame on the same, wings on the ends of the rocking frame, and a weighted arm for changing the positions of the wings, substantially as shown and described.

5. In a tide or current motor, the combination, with a rocking frame, of the pivoted wings $g$ on the ends of the same, rods $o\,o'$, connected with the wings, the angle-lever $l$, connected with the rod $o$, the rocking arm $u$, carrying the weight $k$, the rod $t$, connecting the lower end of the arm $u$ with the angle-lever $l$, the crank-arms $m$, the pivoted lever $v$, and the rods $n$, connecting the arms $m$ with the end of the pivoted lever $v$, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HEINRICH KESSLER.

Witnesses:

ALVESTO S. HOGUE,

JEAN GRUND.