J. W. BROWN.

Propellers for Vessels.

No. 214,616. Patented April 22, 1879.

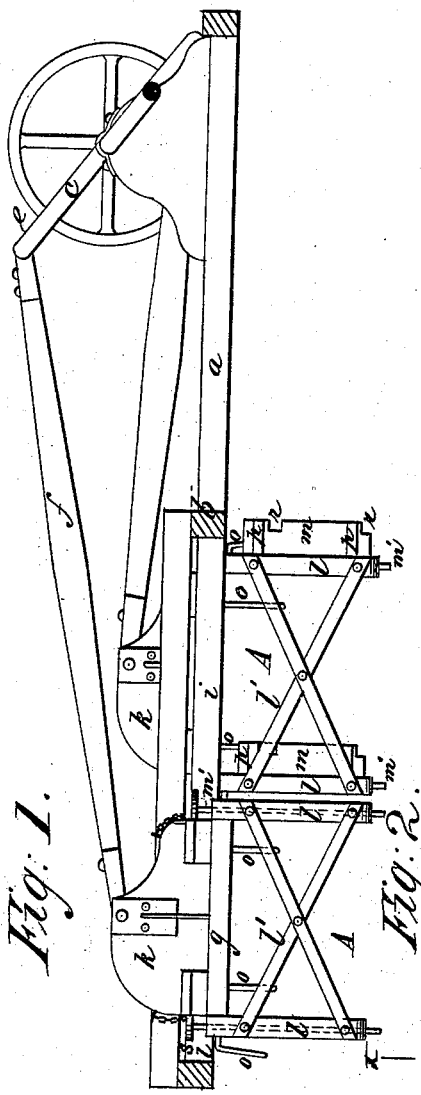

Fig. 1.

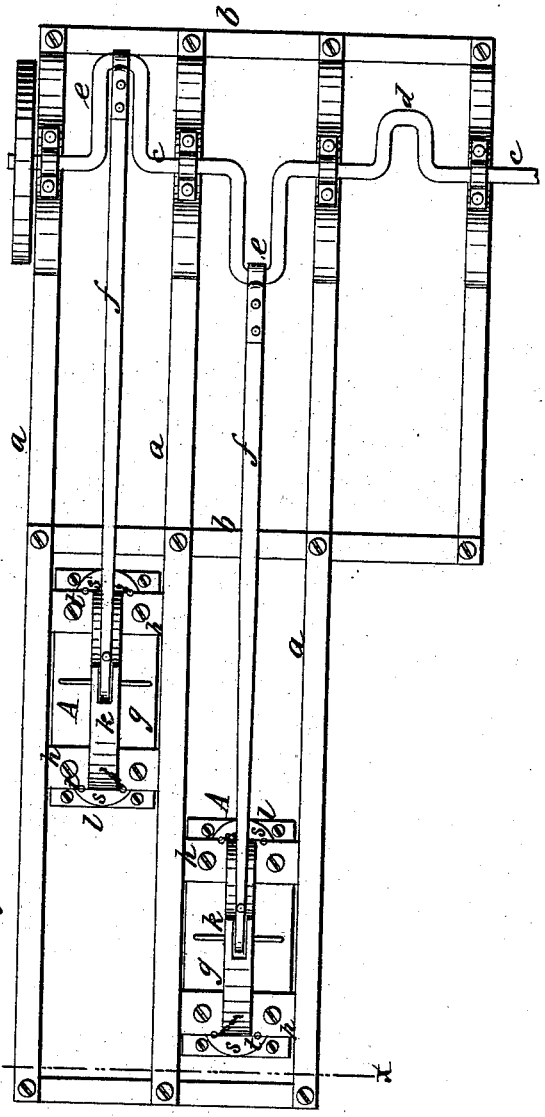

Fig. 2.

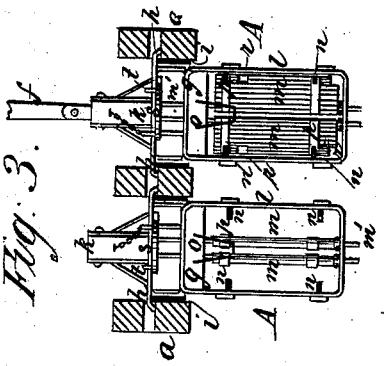

Fig. 3.

WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES W. BROWN, OF MAYFIELD, KENTUCKY.

IMPROVEMENT IN PROPELLERS FOR VESSELS.

Specification forming part of Letters Patent No. **214,616**, dated April 22, 1879; application filed February 1, 1879.

To all whom it may concern:

Be it known that I, JAMES W. BROWN, of Mayfield, in the county of Graves and State of Kentucky, have invented a new and useful Improvement in Propellers for Vessels, of which the following is a specification.

My invention relates to apparatus for propelling vessels; and consists in certain novel features of construction whereby the power applied to the propellers is rendered more effective than heretofore, and the propellers are submerged more or less, according to the load in the vessel.

In the accompanying drawings, Figure 1 is a sectional side elevation of my improved apparatus. Fig. 2 is a plan view. Fig. 3 is an end view in section on the line *x x* of Fig. 2.

Similar letters of reference indicate corresponding parts.

The propelling apparatus may be placed upon overhanging guards at the side of the vessel. The drawings show the parts as constructed for the right-hand side, when the propeller is used at the side; but for a stern-propeller the apparatus is shown complete, except the balance-wheel and a second crank.

a a are the longitudinal, and *b b* cross, timbers of the overhanging guards, upon which the apparatus is supported and works. *c* is the main shaft, driven by a rod from the crank *d*, and provided also with cranks *e e* for rods *f f*, that are connected with the two propellers A. These propellers are fitted for reciprocation, so that while one is moving forward the other will be moving back, and are alike in construction. The following description applies to either.

The guards *a* constitute horizontal ways, upon which the propellers slide. *g* is a frame or cross-head of wood or metal, fitted with side lugs, *h*, that project upon guards *a*, and form gibs that support the frame *g*, and the guards *a* are fitted with metal plates *i*, the edges of which are the slides for gibs *h*.

Upon the frame *g* is a block, *k*, to which rod *f* is connected. Depending from the under side of frame *g* are metal frames *l*, which are braced by bars *l'*. *m m* are shutters formed of sheet metal, and hung upon vertical rods *m'* in frames *l*, there being two of the shutters *m* in each frame *l*, of a width that when closed they cover the spaces inclosed by *l*. These shutters *m* are the paddles of the propeller.

Each paddle *m* is held, when closed, against pins *n n* at the sides of frame *l*, and each pair of paddles when open takes against a stop, *o*, upon the under side of frame *g*. There are two stops, *o*, to each pair of paddles, one or the other acting according as to which way the paddles are adjusted to swing. *p p* are spring-plates attached upon the paddles *m* in a position to bear upon the stop-pins *n*, for the purpose of relieving the shock of the paddles in closing.

It will be understood that the paddles *m* will be opened and closed by the water during the reciprocation of the propellers A. When the propellers are moving in one direction the paddles open to the water, so that there is but little resistance to the movement of the propellers; but when moved in the other direction the paddles close against frame *l* and present a broad surface to the water, thereby propelling the boat.

The stops *o* are arranged so that the paddles are held open at an angle slightly less than a right angle to frame *l*, thereby giving an opportunity for the water to close them the moment the return movement commences.

I provide for shifting the paddles *m*, so that they will open in an opposite direction when a reverse movement of the vessel is required. For this purpose there is a space allowed between the upper end of each paddle *m* and the under side of frame *g*, and niches *r* cut in the outer edges of paddles *m*, which construction permits the paddles to be lifted until the niches *r* are in line with pins *n*, when the paddles can be swung through past the pins and then dropped to place.

To prevent this movement accidentally, the rods *m'*, upon which the paddles are hung, extend up through frame *g*, and take against the under side of a pivoted plate, *s*. Thereby the rods and shutters *m* are prevented from rising. The plate *s*, when turned a half-revolution on its pivot, permits the rods to pass, and plate *s* is provided with a handle, *t*, by which it can be operated, and a pin for holding it in place.

The propelling apparatus is to be arranged upon the vessel so that paddles *m* will extend below the water about half their length when

the vessel is not laden; consequently, as the vessel sinks by being loaded, the paddles will sink deeper and act with an increased extent of surface.

By the construction described the parts are balanced and will operate smoothly. There will be a continuous action to propel the boat, and the parts are simple and strong in construction.

If desired, lugs *h* may carry friction-rollers to lessen the friction on slides *i*.

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

1. The spring-plates *p* on the paddle, in combination with the stop-pins *n* on frame *l*, for the purpose of relieving the shock of the paddles in closing, as set forth.

2. The shutters *m*, constructed with notches *r* in the outer edge, and vertically movable on rods *m'*, in combination with the pins *n* on frames *l*, as and for the purpose specified.

3. The paddle-rods *m'*, extended through frame *g*, in combination with the pivoted plate *s*, adapted to be operated as specified.

JAMES W. BROWN.

Witnesses:
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