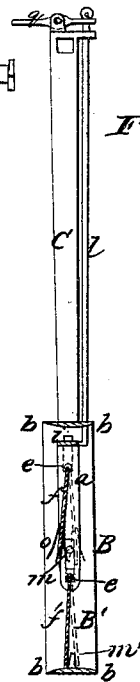
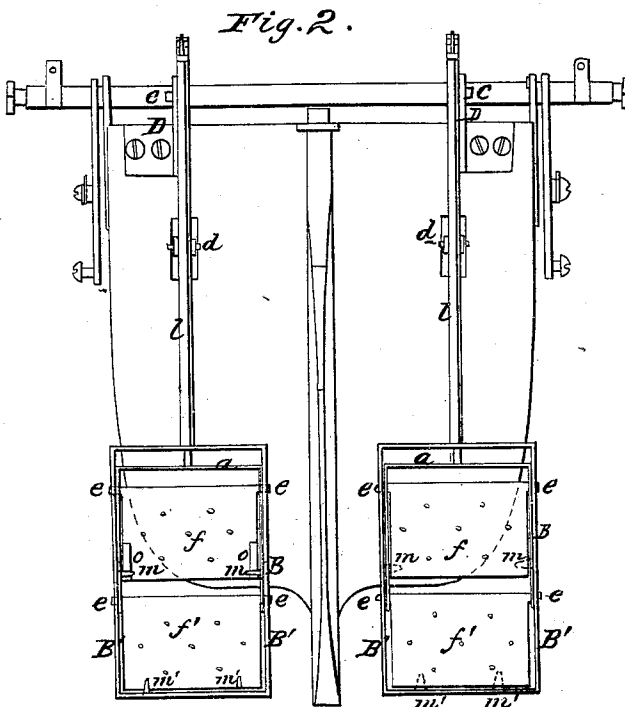
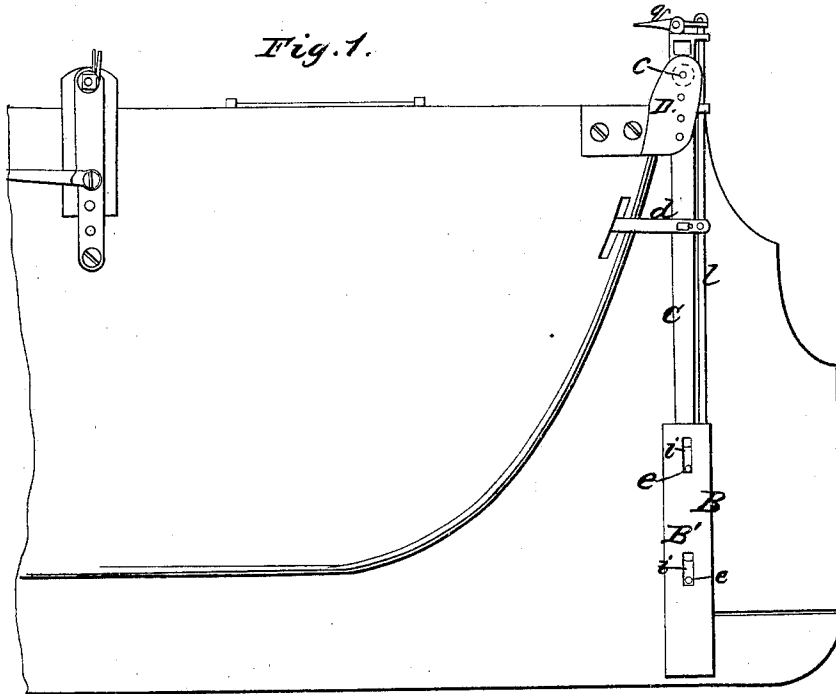


G. R. Comstock.
Vibrating Propeller.

No. 22,016.

Patented Nov. 9, 1850.



Witnesses

Geo. Patterson
Thos. Lloyd

Inventor.

Geo. R. Comstock

UNITED STATES PATENT OFFICE.

GEO. R. COMSTOCK, OF LITTLE FALLS, NEW YORK.

PROPELLER.

Specification of Letters Patent No. 22,016, dated November 9, 1858.

To all whom it may concern:

Be it known that I, G. R. COMSTOCK, of Little Falls, in the county of Herkimer and State of New York, have invented a new and useful Improvement in Propellers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, forming part of this specification, in the several figures of which similar characters of reference denote the same part.

Figure 1 is a side view of boat with the propeller here considered attached. Fig. 2 is a stern view of same. Fig. 3 is a section of propeller, showing construction and mode of reversing.

The character of propeller here considered is the vibratory paddle propeller, designed for application either at the stern or on the sides of the boat.

The invention consists in constructing the paddles with elastic blades, perforated as will be described; also, in a peculiar device for reversing the action.

The invention also consists in constructing the paddles with cutting edges as will be set forth, for the purpose of preventing them from becoming clogged with vegetation.

The details of construction and operation will be understood from the following description.

In the drawing B B, are the buckets or paddles, consisting each of an exterior frame B', furnished with sharp cutting edges as shown at *b* Fig. 3. This frame B', is attached to the rod C suspended by a pin *c* from bearing D and made to vibrate by a rod connection *d* with the engine. Within the frame B' is a secondary frame *a* in which the blades *f f'* of the buckets are hung, their journals *e* passing through slots *i* of frame B' and thus connecting the two frames. There is also a slot in each side of frame *a*, through which protrude studs *m m* against which the blades *f* rest. The lower

blades *f'* rest against studs *m'*. Frame *a* has a rod *l* passing upward through the top of frame B', along the rear edge of rod C, and is attached to a lever *q* at the head of rod C, as shown in Fig. 3. This enables the frame *a* to be lifted within frame B', so that the blades *f f'* will pass clear of studs *m* and *m'*, and rest against the opposite sides thereof when the frame again drops. This enables the propeller to reverse its action.

The blades *f f'* are made very thin and elastic, and are perforated at various points may moreover be furnished with springs *o* to prevent shocks against the studs *m*.

The constructing of the blades *f f'* so as to constitute each a spring is for the purpose of bringing into play a force to assist the return stroke of the paddle. Thus in moving to the rear the water will press the center of the blade forward, and when the stroke has terminated and the paddle is for an instant at rest the force of this spring acting against the water will give the bucket a tendency to move forward and thus assist the moving power. The perforation of the blades is designed to prevent the retarding effect of suction to a certain extent.

The cutting edges of the frame B' render the passage of the paddle through the water very easy, and at the same time serve to sever the aquatic plants which would otherwise become entangled with the propeller and impair its movement.

I claim—

The series of spring blades *f f'* hung and reversed substantially as set forth, in combination with the cutting edges of the vibrating frame B'; the operation being substantially as specified.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

GEORGE R. COMSTOCK.

Witnesses:

GEO. PATTEN,
JOHN S. HOLLINGSHEAD.