

United States Patent Office.

AMOS D. OWEN, OF THORNTOWN, INDIANA, AND JOHN D. SHERMAN, OF PAW PAW, MICHIGAN.

Letters Patent No. 96,831, dated November 16, 1869.

IMPROVEMENT IN PROPELLING-APPARATUS FOR VESSELS.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern:

Be it known that we, AMOS D. OWEN, of Thorn-town, Boone county, Indiana, and JOHN D. SHERMAN, of Paw Paw, in the county of Van Buren, and State of Michigan, have invented a new and useful Improvement in Propelling-Apparatus for Steam-Vessels; and we do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and being a part of this specification, in which—

Figure 1 is an elevation of our propelling-apparatus, attached to a steamer's hull, which is shown in section;

Figure 2 is a plan of one of the propelling-fins;

Figure 3 is an elevation of one of the connecting-rods;

Figure 4 is a plan of the same; and

Figure 5 is an elevation of the slotted hanger.

Like letters refer to like parts in each figure.

The nature of this invention relates to a new method of propulsion for steam vessels; and

It consists in the employment of a series of metallic double fins at the ends of connecting-rods, to which a reciprocating motion is communicated from a suitable engine, the fins being so arranged that they will automatically open, to present a large area to the resistance of the water when making a propelling stroke, and on their return stroke will be closed together, and present a small section to the water. The motion of the fins very nearly resembles that of a duck's foot in swimming, whereby the entire power of the engine is utilized for the propulsion of the vessel, as no dead water is carried up by the fins, as is the case with paddle-wheels.

Also, in the general arrangement of its parts, as hereinafter more fully shown and set forth

In the drawings—

A represents a section of a steamer's hull, with the planking removed, and

A', the overhanging guards.

B is a longitudinal beam, secured to the hull, as shown in fig. 1.

Pivoted at *a*, to this beam, is a vertical vibrating beam, C, to which motion is communicated from the rotating crank D, on the end of the overhanging engine-shaft by the connecting-rod E.

To the upper and lower ends of the beam C are pivoted the connecting-rods F, which operate the forward-propelling fins.

To the lower end thereof is also pivoted the connecting-rod F' of the backward-propelling fin.

The connecting-rods reciprocate in the guides G G', which are journalled in the lower ends of the hangers H H'.

The rods terminate in a cross-head, I, in the ends of which are pivoted the inner ends of the metallic fins or blades J.

A vertical cut-water, *b*, is also secured in the centre of the cross-head, against, and on a line with the rear of which the fins J fold up when not propelling.

On each rod F, outside of its guide G, is secured a stop, *c*.

Sleeved on the rod, beyond this stop, is an arm, K. Pivoted to each end of said arm is a link, L, whose outer end is pivoted to the fin J, about its centre.

Between each pair of links L is pivoted a toggle-lever, M, to whose knuckle the rod N is attached, whose other end is pivoted to the upper end of a lever, O, which vibrates on a pivot, *e*, which has a vertical movement in the slot *f* of the hanger P.

The lower ends of these cam-levers P are rounded off on the forward side for the backing-fin, and on the rear side for the forward-propelling fins, in order that they may be lifted by the tappets *g*, on the rods F, the pivot *g* moving up the slot *f* for the purpose, when the rods F are moving back after having completed a propelling stroke, without affecting the then closed fins; but in making propelling stroke, the tappets *g* strike the straight end of the lever O, which, in turn, through the links L, toggle-lever M, and rod N, throws apart the fins J, which, when the stroke is reversed, close automatically from the resistance they meet from the water.

Two sets of fins are employed, one above the other, for the forward propulsion, alternating in their movement, so as to keep up a steady action on the water.

One set of fins is used for backing the vessel, which are inactive when the vessel is going ahead, and *vice versa*.

Either set of fins may be thrown out of operation by raising the pivot *e*, in the slot *f*, by any suitable mechanical means over which the engineer has control, to carry up the cam-lever O above the tappet.

What we claim as our invention, and desire to secure by Letters Patent, is—

In combination with the pins J and rods F, the links L, arms K, toggle-levers M, rods N, cam-levers O, and pivots *e*, sliding in the slots *f* of the hangers P, in connection with the tappets *g*, the guides G, vibrating beam C, and connecting-rod E, the whole constructed, arranged, and operating substantially as and for the purpose herein shown and set forth.

AMOS D. OWEN.
JOHN D. SHERMAN.

Witnesses:

H. F. EBERTS,
JAS. I. DAY.