2 Sheets—Sheet 1.

W. B. WHITING.

CHAIN-PROPELLERS FOR VESSELS.

No. 187,948. Patented Feb. 27, 1877.

Fig. 1.

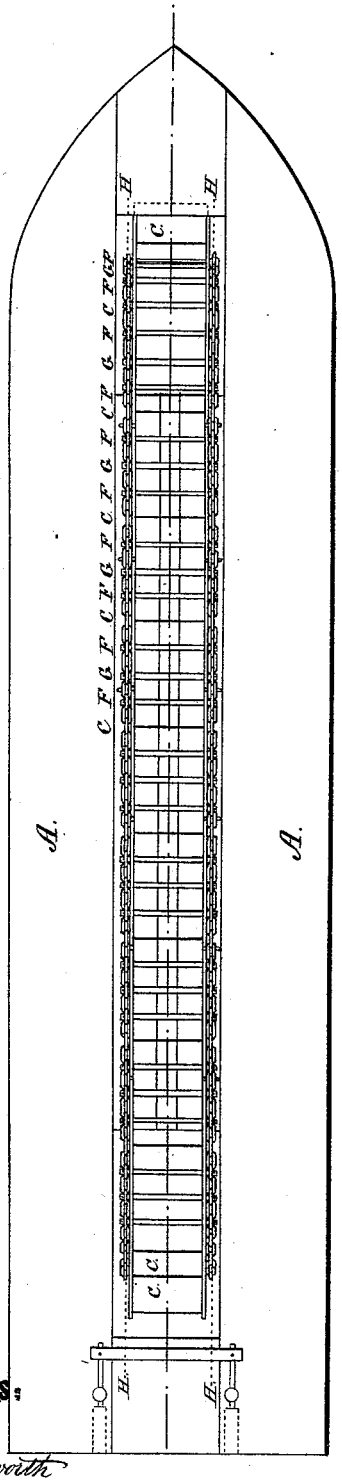
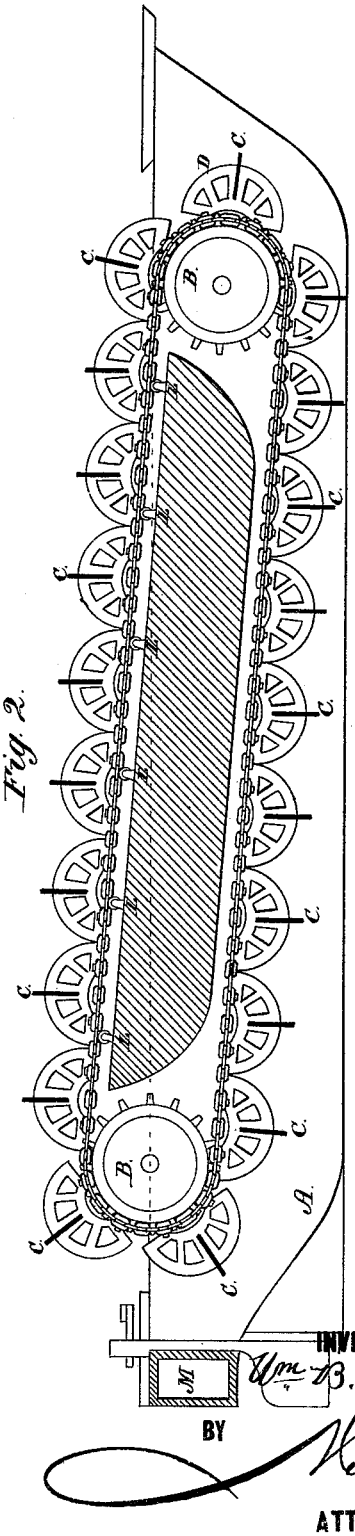


Fig. 2.



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2 Sheets—Sheet 2.

W. B. WHITING.

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Fig. 3.

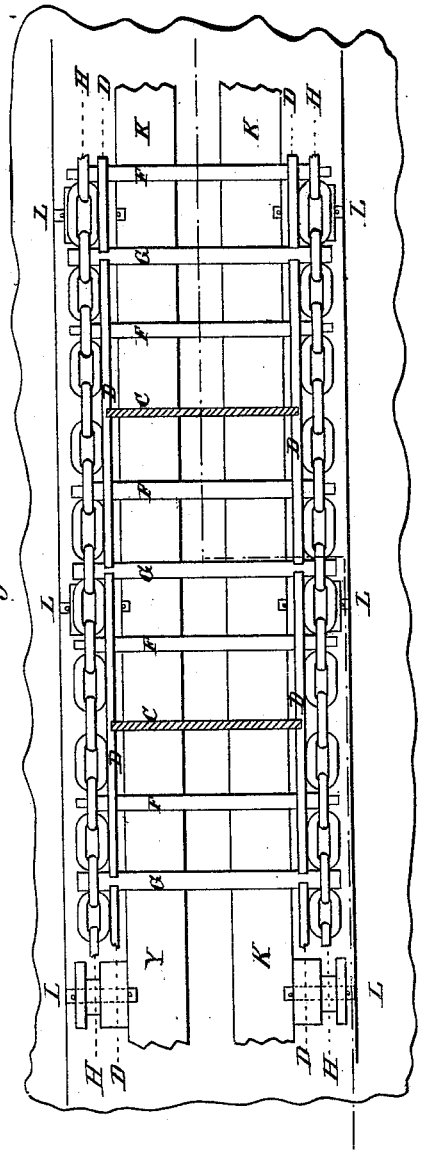
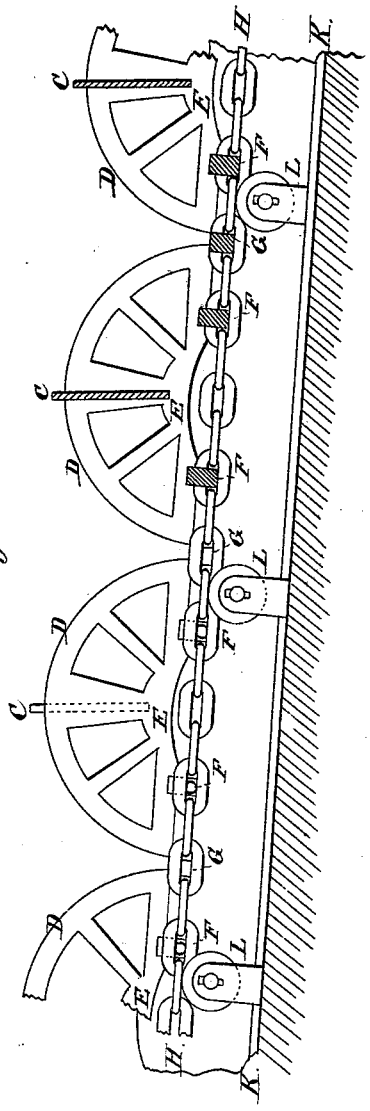


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM B. WHITING, OF UNITED STATES NAVY.

IMPROVEMENT IN CHAIN-PROPELLERS FOR VESSELS.

Specification forming part of Letters Patent No. **187,948**, dated February 27, 1877; application filed December 5, 1876.

To all whom it may concern:

Be it known that I, WILLIAM B. WHITING, of the United States Navy, have invented various new and useful Improvements in Chain-Propellers for Vessels, of which the following is a specification:

My invention relates to a class of vessels known as endless-chain propellers, propelled by paddles traversed and carried by endless chains revolving around sprocket-wheels, drivers, or drums at either end of the vessel, and working in a central longitudinal passage-way extending from the bows to the stern.

My invention consists, first, in the combination, with the endless chain, of the braces which support the paddles, curved near the center, together with the transverse bar supporting the brace, and having rounded ends fitting loosely in the upright links of the chains, whereby the paddles are enabled to revolve around the sprocket-wheels without their support being diminished; secondly, the endless chain, having the rigidly-fixed transverse bars, in combination with the braces for the paddles, having a curve at the center, and the supporting-bars for the braces, having rounded ends loosely fitting in the links of the chain; and, thirdly, in the endless-chain propeller, having its rear end elevated, combined with the inclined connecting-compartment, having a railway upon its upper surface, whereby the paddles are lifted perpendicularly out of the water as they approach the stern, and whereby, also, the return of the paddles to the forward sprocket is facilitated.

The braces I would construct, preferably, in the shape of semicircles or half-wheels, with arms connecting the outer periphery to the base, but resting on transverse bars, as herein described, extending from one chain to the other, those nearest to the center of the braces, or midway between the centers and the outer ends, to be firmly affixed to the braces, and inserted into the corresponding upright links of the chains by rounded ends, so as to permit them to slightly turn, and to slightly extend their position in the links when revolving around the sprocket-wheels. The other or outer transverse bars support the outer ends of the braces when moving in a straight line, and ought to be firmly welded into the corresponding upright links of the chains, keeping the chains in a parallel position to each other. In order to obviate all obstruction to the smooth revolution of the paddles, &c., around the sprocket-wheels, no transverse bar should occur at the center of the braces. The outer periphery of the braces may be connected with the inner or base by arms or otherwise. A groove in the middle arm should hold the paddle, and a section of a circle at or near the center unite the base-arms, so that the braces may revolve smoothly around the sprocket-wheels. The axis of the after sprocket-wheel should be raised about half the diameter of the sprocket-wheel (more or less, according to the length of the boat) above the level of the forward one. This elevation has a threefold advantage—first, it will lift the paddles perpendicularly out of the water as they approach the after sprocket, thereby avoiding the lift of water, which is an obstruction to the speed of the vessel; second, it will give an inclined plane, by which the water which will naturally drip from the return paddles will be carried off (the return paddles may also pass through a covered way, to prevent the same drip from splashing the deck;) third, it will give a downward grade to the deck-railways, which carry the upper sections of the chains, with the return paddles, from the after to the forward sprocket-wheels.

The line between the axes of the respective sprocket-wheels being thus varied from horizontal, the paddles should have similar inclination from perpendicular to the base of the braces, in order to attain a perpendicular position in the water. Between the sprocket-wheels, and extending nearly from one to the other and parallel to the chains, having the same inclination as the sprocket-wheels, one from the other, is a compartment connecting the two parts of the vessel, and may also be used as a means for communication, and for the stowage of cargo. The upper surface of this compartment forms the inclined plane, to carry off the drainage or drip from the return paddles, and is furnished with two railways of rollers, (one for each chain,) for carrying downward and forward the return chains and pad-

dles. Abaft the after sprocket-wheel may be a passage connecting the two cabins.

In the annexed drawing, Figure 1 is a perpendicular view of an endless-chain propeller thus constructed; Fig. 2, a side view of the same on the line 1 1 of Fig. 1, showing the mechanism of the claimed improvements. Fig. 3 is a section of Fig. 1 on an enlarged scale; and Fig. 4 a section of Fig. 2 on a similar scale.

The same letters in the different figures represent same and corresponding parts.

A, &c., is the hull; B B, the sprocket-wheels; C, &c., the paddles; D, &c., the braces; E, the curved section of the base; F, &c., the transverse bars affixed to the braces, and inserted with rounded ends into the chains; G, &c., the transverse bars affixed to the chains; H, the endless chains; I, the central compartment; K, the deck-railway with its rollers L, &c.; and M the connecting-passage between the two cabins.

I claim—

1. The combination, with the endless chains H, of the braces D, supporting the paddles, and curved or cut away to accommodate the turn of the sprocket-wheels, together with the transverse bars E, supporting the braces, and having rounded ends loosely arranged in the links of the chains, substantially as and for purpose described.

2. The endless chain H, having the rigidly-fixed transverse bars G, in combination with the braces D for the paddles, curved or cut away as described, and the supporting-bars F for the braces, having rounded ends loosely fitted in the links of the chain, substantially as and for the purpose described.

3. The endless-chain propeller, having its rear end elevated, in combination with the inclined connecting-compartments I, carrying series of rollers, substantially as and for the purpose described.

WILLIAM B. WHITING.

Witnesses:

J. BOSHOOPER,

HANNAH MANN.