(No Model.)

# W. JOHNSTON.

## PROPELLING DEVICE.

No. 381,625. Patented Apr. 24, 1888.

Fig. 1.

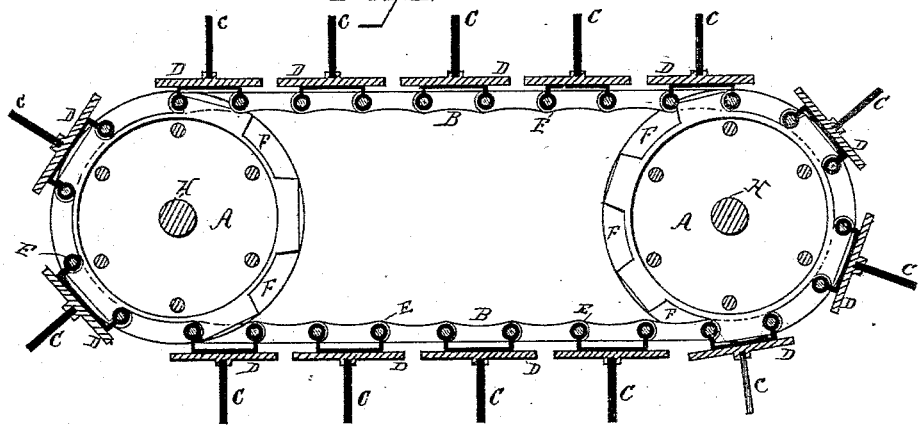



Fig. 2.

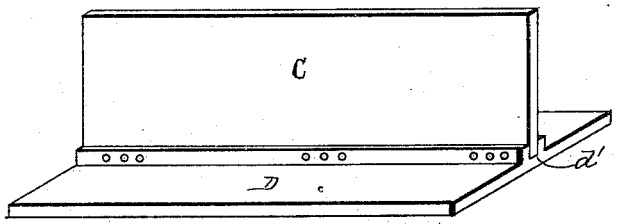
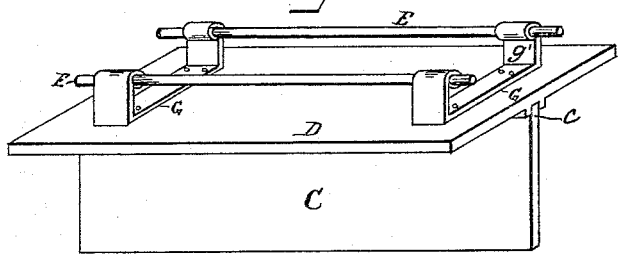



Fig. 3.

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WILLIAM JOHNSTON, OF PITTSBURG, PENNSYLVANIA.

## PROPELLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 381,625, dated April 24, 1888.

Application filed August 18, 1887. Serial No. 247,304. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM JOHNSTON, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Propelling Devices; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to that class of devices for propelling vessels which consist, essentially, of endless chains carrying buckets or paddles and supported at the sides of the vessel on wheels mounted on the hull at or near the bow and stern of the vessel, and my improvements are fully set forth in the following specification and pointed out in the claims.

In the accompanying drawings, which form part of my specification, Figure 1 is a longitudinal section of my improvement. Fig. 2 is a perspective view of one of the paddles or buckets. Fig. 3 is a perspective view of the same, showing the manner of securing the buckets and buoys to the rods connecting the links of the endless chain.

In the drawings, A represents a wheel or drum having guides F for keeping and guiding the endless chain B, which is composed of a number of links pivoted together by rods E. The body of the brackets G, Fig. 3, has at each end an arm, $g'$, the outer ends of which arms are mounted upon two adjacent rods E of the chain. To the body of each two laterally-adjacent brackets is secured a hollow flat plate-like buoy, D, plane upon the side next the bracket and having upon its other side, at or near its center, two parallel ribs, $d$, forming between them a seat, $d'$, in which is secured the edge $c$ of the bucket or paddle C, the ribs bracing the paddle throughout its length, as well as forming a convenient and most secure means of attachment.

The shafts H are mounted in the hull of the vessel, and upon them are secured the wheels or drums A, arranged so that the wheels will be on the sides of the vessel. The before described chains bearing the buoys and buckets or paddles are supported upon these wheels, as shown in Fig. 1, so that the paddles upon the under part of the chain shall be immersed in the water. The whole body of the paddles is thus made operative, while it will be observed by reason of the employment of the armed brackets G $g'$ the chain is kept free of the water, and therefore does not act as a drag upon the action of the paddles, as it does when it is immersed.

Power is applied to the shafts in the usual manner, and the rotation of the wheels and the consequent movement of the chain and its paddles will propel the vessel.

The buoys D may be dispensed with and the buckets or paddles C attached to the chain without their interposition. The projection of the paddles from the chain by the employment of the armed brackets renders the buoys much less necessary than in former constructions, and with or without the buoys a given amount of power will have greater efficiency in propelling the vessel.

Having thus described my invention, what I claim is—

1. The propelling device for vessels, consisting of the endless chain, the two-armed outwardly projected brackets, and the buckets or paddles secured thereto, substantially as described.

2. The propelling device for vessels, consisting of the endless chain, the two-armed outwardly-projected brackets, the flat plate-like buoys, and the buckets or paddles, all connected together, substantially as described.

3. The endless chain and the paddles or buckets carried thereby, in combination with the intermediate brackets having their projecting arms mounted upon the pivot-rods of the chain and projecting the paddles or buckets therefrom, substantially as described.

4. The combination of the endless chain, the brackets projecting therefrom, the flat plate-like buoys secured to said brackets and having on their outer side parallel ribs, and buckets or paddles secured in the seat between said ribs, all substantially as described.

In testimony whereof I have hereunto set my hand this 11th day of May, A. D. 1887.

WM. JOHNSTON.

Witnesses:
A. C. JOHNSTON,
C. S. JOHNSTON.