W. H. Muntz.

Paddle Wheel.

No. 10,235. Patented Nov. 15, 1853.

Fig: 1.

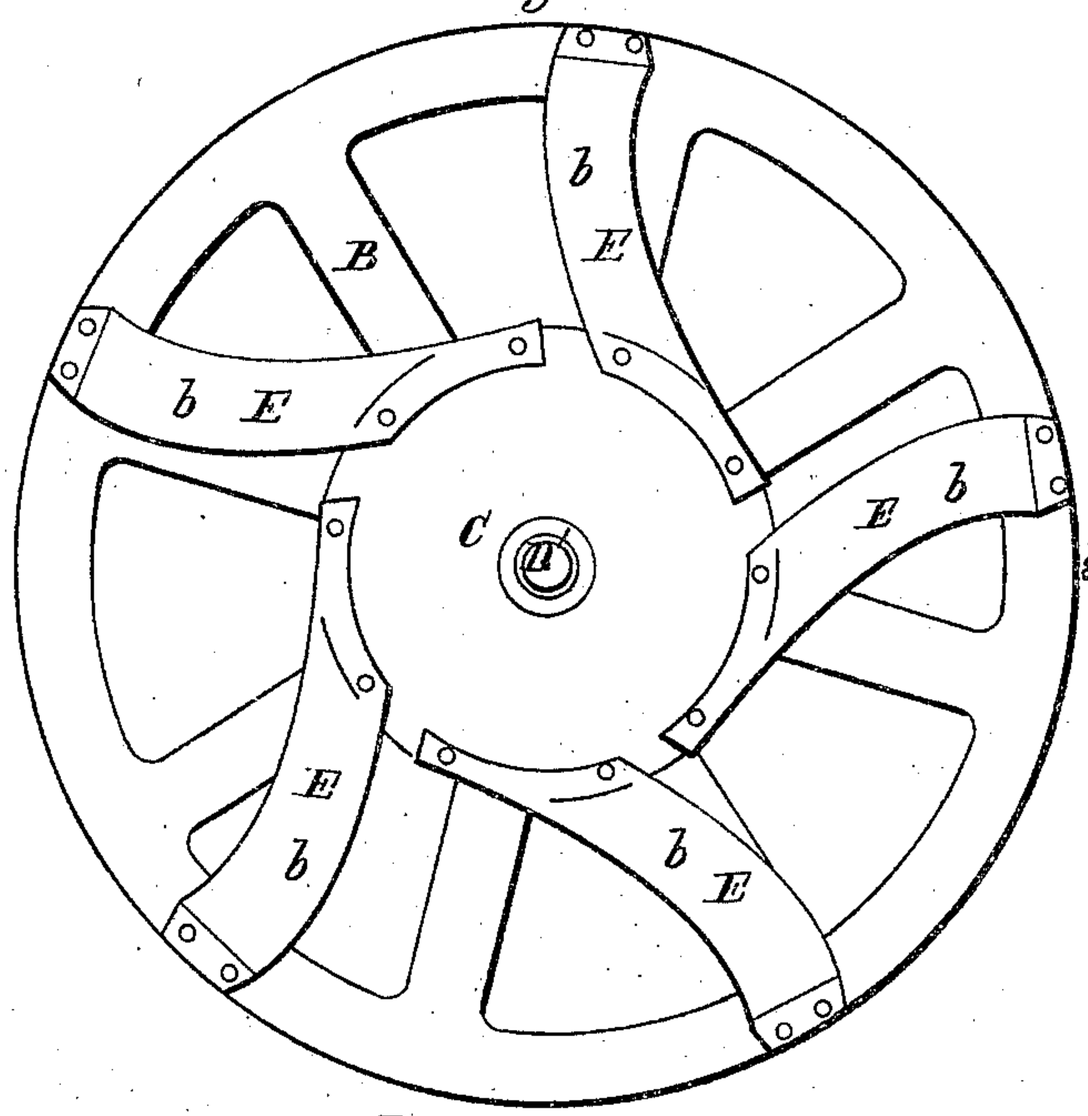


Fig: 2

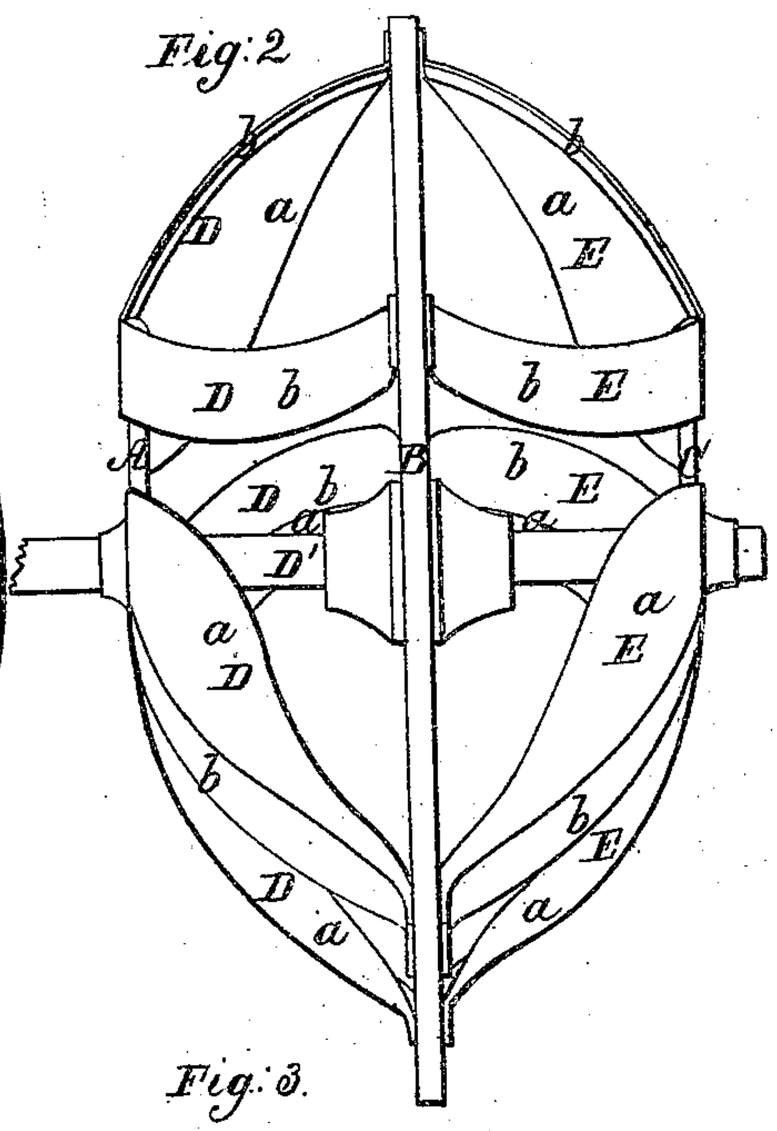


Fig: 3.

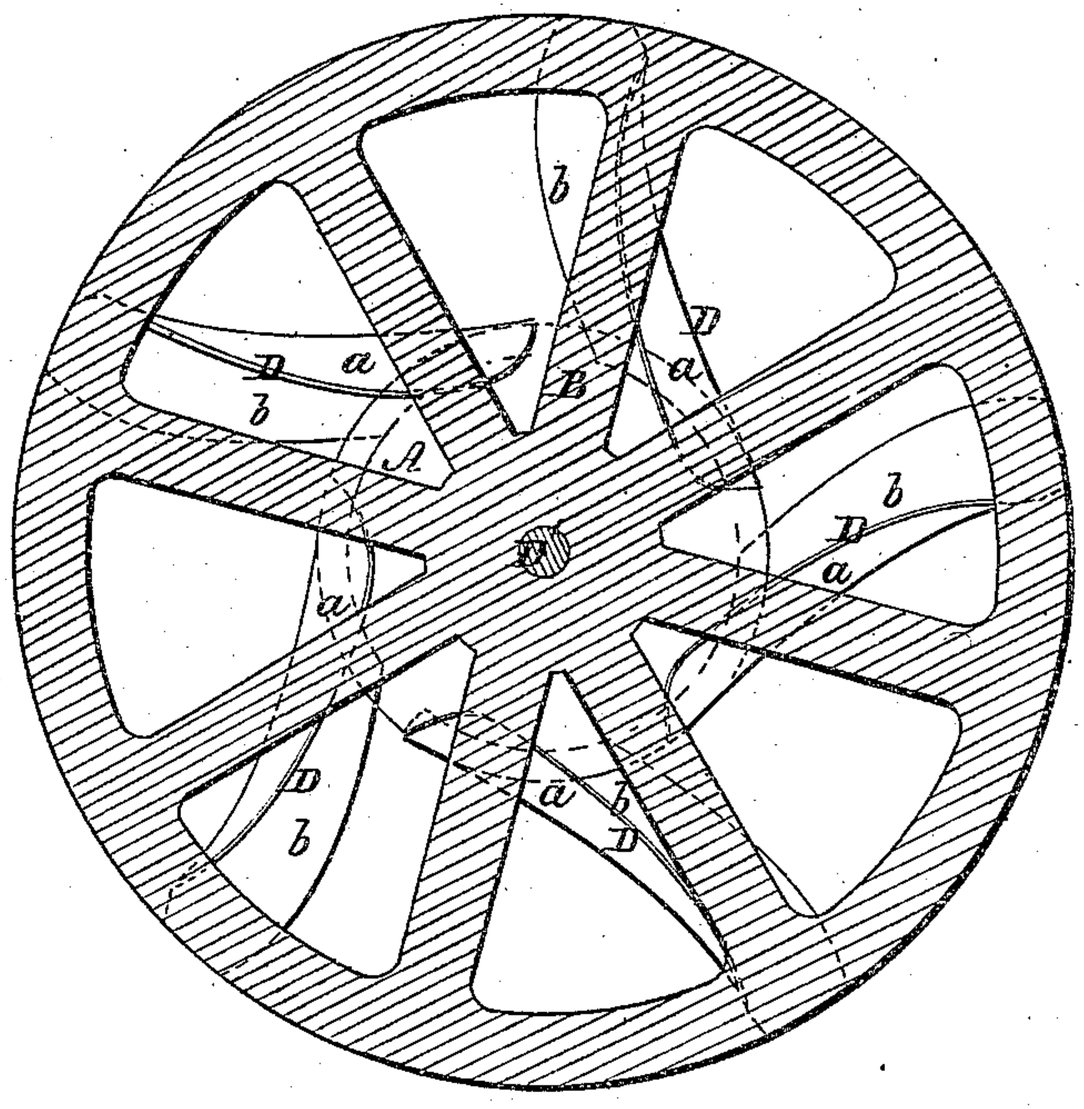
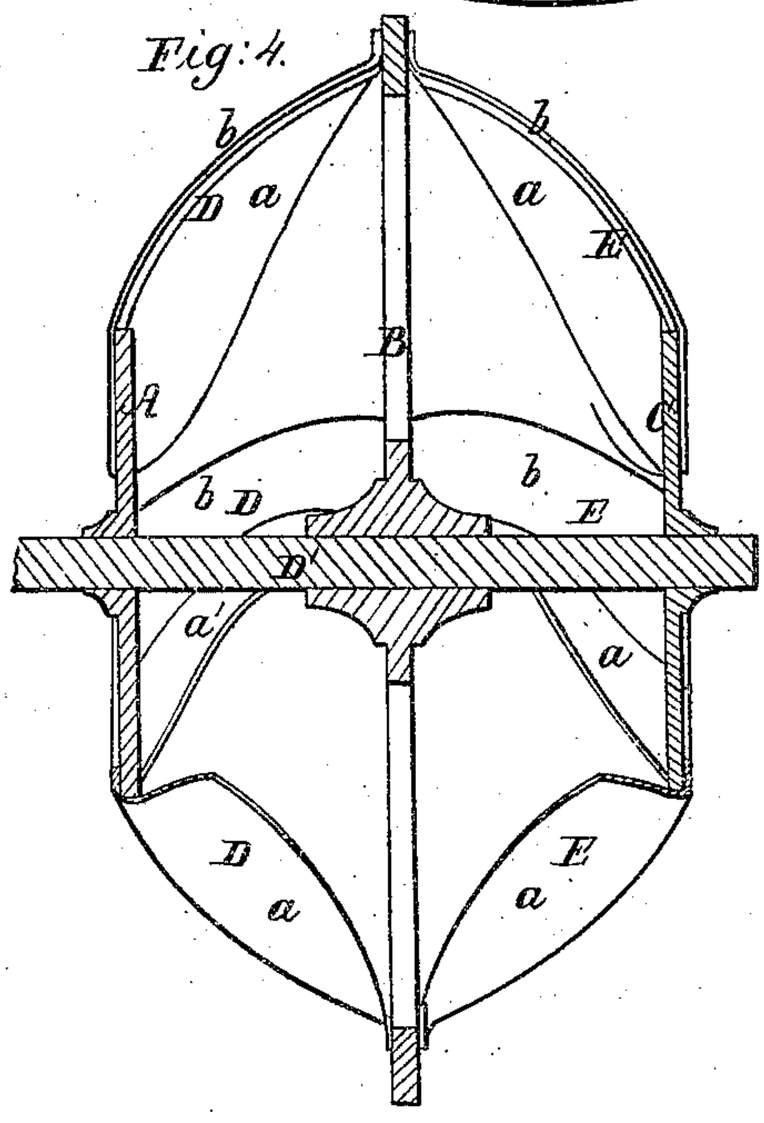


Fig: 4.



UNITED STATES PATENT OFFICE.

WILLIAM HENRY MUNTZ, OF NORTON, MASSACHUSETTS.

PADDLE-WHEEL.

Specification of Letters Patent No. 10,235, dated November 15, 1853.

To all whom it may concern:

Be it known that I, WILLIAM HENRY MUNTZ, of Norton, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Paddle-Wheels for Navigable Vessels; and I do hereby declare the nature of my invention to be fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

Figure 1, of the said drawings, denotes a side elevation, Fig. 2 an end elevation, Fig. 3 a central, vertical and longitudinal section, and Fig. 4 a central, vertical, and transverse section of my improved paddle wheel.

In the construction of it, I employ three circular wheels A, B, C, which I affix (parallel to one another and at suitable distances apart) to a shaft D′, which runs through the center of each of them. The middle wheel, B, is about twice the diameter of each of the others, viz., A, C, and may be termed the cutwater wheel. To these wheels, the buckets, D, D, &c., E, E, &c., are affixed, one set of them being made to extend from the inner part of one wheel A, to that of the other wheel, B, while the other set, viz., E, E, are made to extend from the circumference of the wheel, C, to that of the wheel, B, the said buckets being fastened to their wheels in any suitable manner.

Each bucket is formed of sheet metal, bent in the following manner. First, it is bent or formed so that one part, *a*, shall stand at about a right angle to the other part, *b*. The part, *a*, of each may be termed the paddle or float, while the part, *b*, may be termed the guard. The part, *a*, is made to stand about perpendicularly to the side of the cutwater wheel and is curved flatwise from the edge of the smaller wheel to where it strikes the cutwater wheel, the chord of such curve being about tangential to the circumference of the outer wheel, and inclined toward the inner wheel. The inner edge of the float is curved and forms an acute angle with its outer edge or joining with the guard, the widest part of the float being near the outer supporting wheel, A, or C, whichever it may be attached to. The float is thus made to take a form approximating to that of a bird's wing. The guard of the bucket is made of about an equal width throughout and to extend from the circumference of the outer wheel A, or C, to the cutwater wheel, B, and it may be curved as seen in the drawings—it being so arranged (as seen in the drawings) that it shall enter endwise into the water, and pass edgewise through the water during the revolution of the paddle wheel. The float strikes the water flatwise, but enters at an angle of about forty degrees to the horizontal, so that its narrowest part shall not only enter the water first, but shall be the first part of the float to leave the water. In the act of passing into the water to its greatest submergence, the propelling surface of the float constantly increases, while in passing from the position of its greatest submergence, the propelling surface of the float decreases—the increase as well as the decrease of propelling surface, being not only in the direction of its width, but also in that of its length, whereas with a common radial rectangular float arranged in the plane of the axis the wheel, the increased or diminution of the propelling surface in passing through the water is one direction only, viz., in that of the width of the float. While the guard and the float constitute a bucket that operates to great advantage under the peculiar arrangement of it—the guard not only serves to strengthen the float, but to protect it from injury, and it throws off the water externally, somewhat as do the bows of a vessel. Thus by making the middle wheel, B, larger in diameter than each of the side wheels, A, C, and applying the guard to them as described, the paddle wheel in passing through the water, is made to cut the water somewhat after the manner of the bows of a ship, the form of the wheel and the guards of the buckets tending to diminish the resistance in passing through the water as do the bows of a ship. The float and the guard not only constitute a bucket but are of great advantage in propelling a vessel as by the peculiar manner in which a bucket so made enters the water, there is little or none of the jar or vibration produced that is incident to the flat paddle. Besides in passing out of the water, the tendency to lift back water is very much less.

On steamships, that are compelled to pass through fields of floating ice, my wheel will be found very advantageous; its great strength also renders it of much importance.

I would remark, that a wheel may be made by dispensing with the guard to each bucket,

and constructing each of the buckets as a float having its greatest width at or near its connection with the cutwater wheel, such float being made to stand tangentially or at an angle with the rim of the smaller supporting wheel.

The mode of making the paddle wheel is claimed by me as new and of my invention, such mode consisting: first, in making the supports of the buckets, a cutwater wheel, and two wheels, A, C, of smaller diameter. Second, of forming each bucket of a float and guard made to stand at an angle to each other. Third, of making the guard to extend from the rim of the cutwater wheel to the other or smaller wheel and so that the guard shall not only pass edgewise through the water, but endwise into the water, the float being made to project inward from the guard as stated. And in combination therewith I claim—

The making the float narrowest at its outer end, or at the cutwater wheel and gradually increasing in width toward its inner end as described.

In testimony whereof I have hereto set my signature this eleventh day of October, A. D. 1853.

WILLIAM HENRY MUNTZ.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.