H. MARCOTTE.
Paddle-Wheels.

No. 196,813. Patented Nov. 6, 1877.

Fig. 1

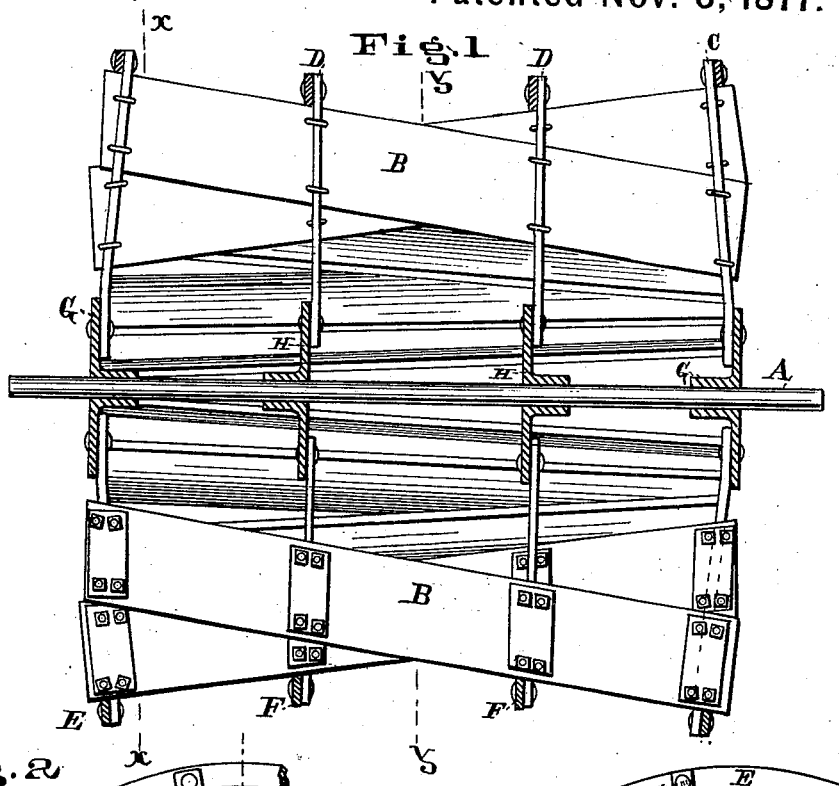
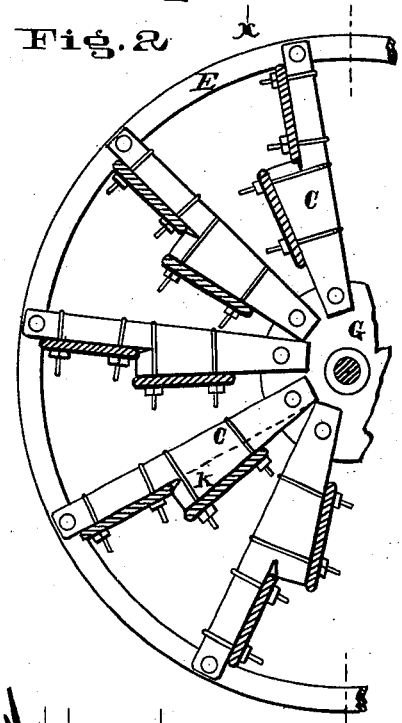


Fig. 2



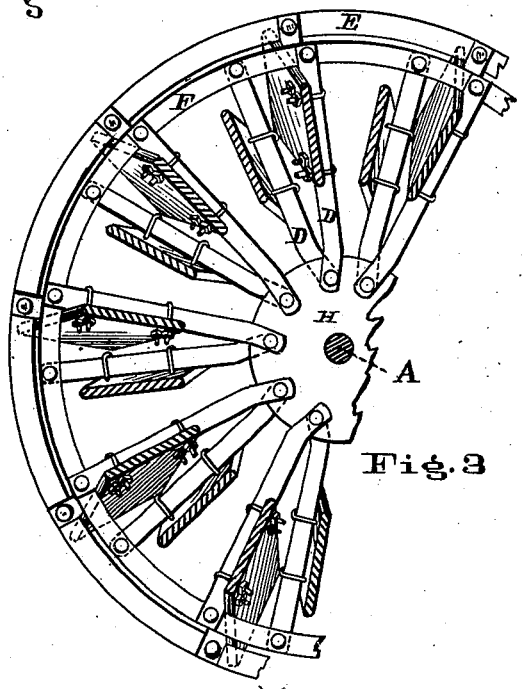


Fig. 3

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UNITED STATES PATENT OFFICE.

HENRY MARCOTTE, OF UNITED STATES ARMY.

IMPROVEMENT IN PADDLE-WHEELS.

Specification forming part of Letters Patent No. **196,813**, dated November 6, 1877; application filed August 6, 1877.

To all whom it may concern:

Be it known that I, HENRY MARCOTTE, of United States Army, and stationed at Newport, State of Kentucky, have invented a new and useful Improvement in Paddle-Wheels for Steam-Vessels, which improvement is fully set forth in the following specification and accompanying drawing, in which—

Figure 1 is an axial section of my improved paddle-wheel; Fig. 2, a transverse vertical section through line *x x*, Fig. 1, looking toward the end of the wheel; and Fig. 3, a central transverse section through line *y y*.

The object of this invention is to provide a propelling-wheel for steam-vessels which will combine lightness with strength and economy in construction and use, which will not be liable to get out of order or be injured by drift or ice, which may be readily attached to the hull of the vessel or gunwale, without requiring a heavy frame-work of timbers to form its bearings, and, when attached, will be in a position to receive the power from the engine in nearly the same plane with the stroke of its piston. In practical use the wheel presents at all times a uniform bucket-surface to press the water. Its force is transmitted in a plane perpendicular to its axis, so that it may be used either with a stern or side wheel vessel, and thus insuring a constant steady movement, avoiding jar. It feathers its paddles without mechanical combinations for the purpose, thus avoiding loss of power by lifting water.

The invention consists in so arranging the buckets that their edges and sides each form an angle with the axis of the wheel, the edges and sides of each alternate float forming an equal opposite angle to the axis with the float next adjoining, the plane of the edges of each float or bucket crossing the edge plane of the adjoining bucket at mid-length of the wheel; and in the construction and arrangement of wheel-arms which adapts them to the buckets so arranged.

In the drawing, A is the shaft; B, the buckets; C, the end arms, to which the buckets are secured. These are secured to the hub G of the wheel at their inner ends. The outer ends are secured to the ring E, which serves the double purpose of bracing the arms and guarding the floats against injury from ice or drift. There are two bucket-seats upon each arm, in different radial lines, the outer seat being back of the inner one, forming an offset or step in the bucket edge of the arm, extending from the outer end of the arm inward a distance equal the width of the bucket plus the width of ring E, so as to permit one end of the bucket to fit between the inner circumference of the ring and the end of the step or offset, and leave a water-space between the adjacent faces of the buckets. D are the inner arms. They are secured at their inner ends to the hubs H, and at their outer ends to the ring F, which is for the same purpose as the outer ring E. These arms are all the same shape, each having a bend near its inner end, but are arranged on the wheel in pairs right and left, so that the bucket edge of each is in a radial line to the center of rotation. The buckets are secured to the arms by staples, as shown, or in any suitable manner.

In constructing my wheel the end arms are secured to their hubs and rings, so that each arm upon one end is secured to its ring E opposite a point on ring E at the other end central between the arms secured to said opposite ring. The bucket B is placed upon the outer seat of arm C at one end, and upon the inner seat of the arm, to the rear, at the other end, and properly secured to the arms. The arms D are then placed in a position to support the buckets, and secured to it, and to their hub and ring.

The above operation is continued, each bucket being placed with its edge and face at an equal opposite angle with the shaft to the one preceding.

The common paddle-wheel now in use may be changed, so as to embody the features of my invention, by placing upon its arms wedge-shaped pieces, as shown by dotted line at *k*, Fig. 2, and giving to the buckets the proper diagonal pitch.

By this arrangement a greater bucket-surface is presented to the water, and, owing to the incline of the buckets, the wheel may be placed deeper in the water without liability of

lifting as the buckets leave the water. This admits of a wheel of less diameter being used, and the wheel-bearings being secured to or built as part of the hull, instead of requiring an elevated frame-work for the purpose.

I claim—

1. In a paddle-wheel, the combination, substantially as specified, of the end arms C, constructed with two bucket-seats in different radial lines, and the bucket B, secured at one end of the wheel to the outer, and at the opposite end to the inner, bucket-seat, the arms joined by the bucket being secured to their hubs in different axial planes, for the purpose set forth.

2. In combination with the buckets B and arms C, arranged as described, the inner arms D, secured to hubs H in pairs right and left, and rings to support the buckets, substantially as described.

3. A paddle-wheel all the buckets of which have a twofold angulation with reference to the axis of the wheel, each bucket also having a twofold angulation with reference to the adjacent ones, substantially as specified.

HENRY MARCOTTE,
U. S. Army.

Witnesses:
HUGH SHIELS,
JOHN B. MURPHY.