(No Model.)

J. H. MEACHAM.

ENDLESS BAND PROPELLER.

No. 553,416. Patented Jan. 21, 1896.

Fig. 1.

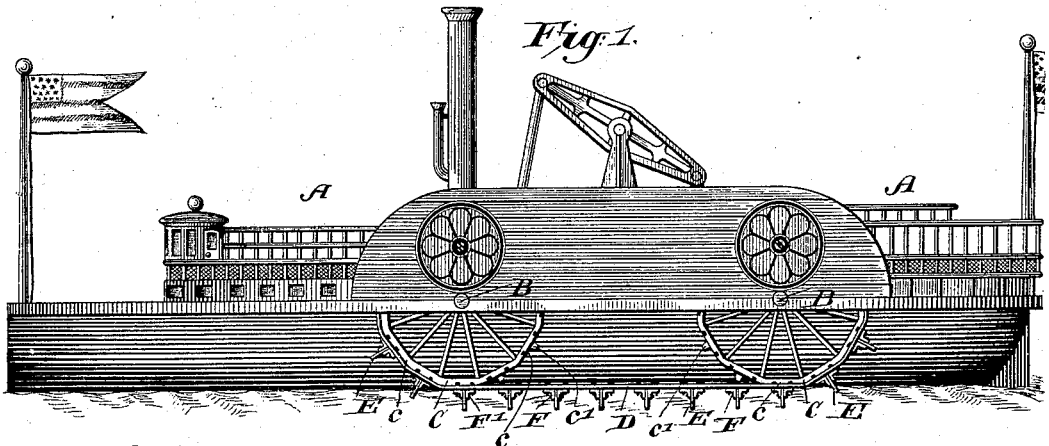


Fig. 2.

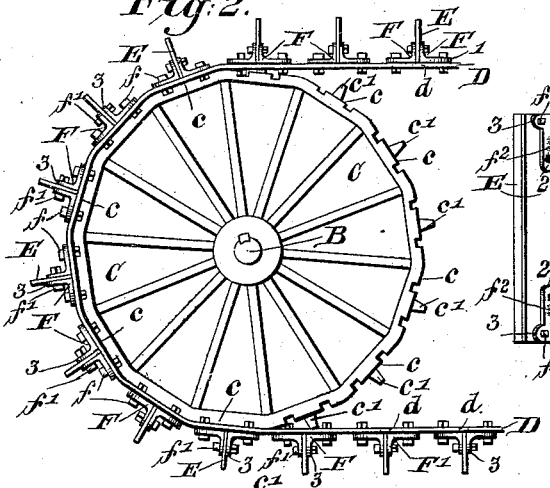


Fig. 3.

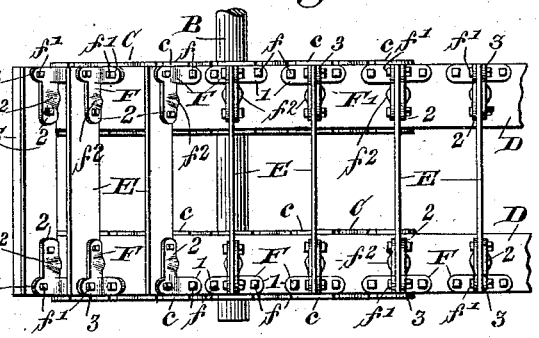


Fig. 4.

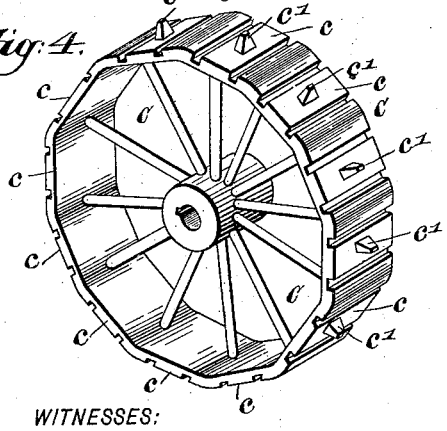


Fig. 5.

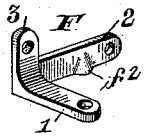


Fig. 6.

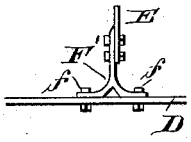
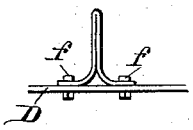


Fig. 7.



WITNESSES:

H. C. Dieterich

Amos W. Hart

INVENTOR

James H. Meacham

BY Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JAMES H. MEACHAM, OF PETERSBURG, VIRGINIA.

ENDLESS-BAND PROPELLER.

SPECIFICATION forming part of Letters Patent No. 553,416, dated January 21, 1896.

Application filed May 10, 1895. Serial No. 548,839. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. MEACHAM, residing at Petersburg, in the county of Dinwiddie and State of Virginia, have invented a new and useful Improvement in Endless-Band Propellers, of which the following is a specification.

My invention is an improvement in the class of propellers consisting of sprocket-wheels and endless chains carrying paddles or buckets. Owing to certain practical defects such propellers have failed to come into that extended use to which they are theoretically entitled; and it is the object of my invention to provide a propeller which shall be free of such defects, besides possessing practical superiority in other respects. I attain such result by a novel construction and arrangement of parts hereinafter described, and shown in accompanying drawings, in which—

Figure 1 is a side view of a steamboat provided with my improved propelling apparatus. Fig. 2 is a side view of a portion of said apparatus enlarged. Fig. 3 is a plan view of the same. Fig. 4 is a perspective view of one of the sprocket-wheels. Fig. 5 is a perspective view of one of the braces for the paddles or buckets. Figs. 6 and 7 show modifications of the paddle or bucket.

As shown in Fig. 1, the boat A is provided with two transverse parallel shafts B, each carrying two large sprocket-wheels C on its ends. The said shafts are separated by a considerable space, one being arranged preferably forward of and the other abaft the center of the craft. One or both of these shafts are geared with the steam-engine or other form of motor employed to propel the craft A. The two sprocket-wheels C are narrow and arranged with a space between them. Endless bands D run thereon, the same being made of steel, copper, or other metal having a suitable degree of tenacity and elasticity. Thus a band runs on each wheel of a pair. The two bands are connected by a series of transverse paddles or buckets E, formed preferably of thin metal plate, say iron or steel. Said paddles E are preferably attached and held in due position by means of braces or brackets F or F'; but the latter may be dispensed with and the paddles E attached directly to the bands, as shown in Fig. 7.

I will proceed to describe the details of construction, arrangement, and operation. The periphery of each sprocket-wheel C is polygonal—that is to say, it is composed of a continuous series of planes or straight flat surfaces *c*; but it will be noted that the periphery is rounded instead of presenting true angles at the points where the said planes meet and unite. This construction is adopted in order to avoid undue strain on the endless bands where they come in contact with the wheels at points between the planes *c*. In the middle of each plane *c* is a conical projection or tooth *c'*, and the bands D are provided with a series of circular holes *d*, which are spaced correspondingly to the peripheral distance between said teeth or projections *c'*. The peripheries of the wheels are provided with a recess or groove on each side of a tooth *c'* for a purpose hereinafter stated.

The paddles or buckets E may be formed of one piece, Fig. 7, which is doubled on itself, and in such case the free edges are turned out or bent laterally in the same plane and provided with holes to receive screw-bolts *f* that secure the paddles to the bands; but my preferred construction of paddles is a plate having a single thickness and secured to two-part brackets or braces F, as shown in Figs. 1 and 2. The braces are constructed and arranged in pairs. Each one of a pair is extended (see Fig. 5) in three directions—to wit, vertically and horizontally at right angles—thus forming three arms 1, 2, and 3. One of the horizontal arms (marked 1) lies on the band D, and is secured thereto by a screw-bolt *f*, and the other horizontal arm, 2, projects inward along the side of a paddle E, while the arm 3 extends transversely of the paddle. Thus the latter is secured between the opposite arms 3 3 by means of screw-bolts *f'*, which pass through all three. The horizontal interior arms 2 of the braces impart rigidity to the paddles and thus enable a thinner plate to be employed than would be otherwise practicable. The heads of the bolts *f* that pass through the bands D enter the before-described peripheral recesses or grooves in the sprocket-wheels and engage or lock with the same, as shown in Fig. 2, by which arrange-

ment the bolt-heads supplement the function of the teeth c' of wheels C and serve to distribute the tractive strain over a larger area. The bases of the braces or brackets F are recessed at f^2, Fig. 5, at their meeting-edges at such points as coincide with the openings d in the bands D, so that the teeth c' of the wheels may engage said braces or brackets as well as the bands, thus further distributing the tractive strain and applying it directly to the paddles, so far as practicable.

As shown in Fig. 6, the brackets may be made in one piece, and in such case the paddles E will be attached to one side at their vertical arms. In any case the engagement of the sprocket-wheels with the endless bands, braces and paddles is such that there is no necessity for the bands to be strained so tightly as the endless chains heretofore employed in propellers of this class, and hence the friction of the shafts in their bearings is greatly reduced.

The bands D are far superior to chains, since they combine maximum strength and lightness, besides being less liable to take up and become entangled with weeds, grass, or other matter floating in the water.

The paddles E may be feathered, or inclined transversely to the direction of motion, for the purpose of enabling them to shed or discharge water with greater facility.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a propeller of the class indicated, the combination, with sprocket wheels whose periphery is composed of a continuous series of plane surfaces, each having a tooth or projection of endless bands having openings to receive said teeth, and a series of paddles attached to the bands, and braces for securing them, which braces are provided in their under sides with recesses that coincide with the openings in the bands, substantially as shown and described.

2. In a propeller of the class indicated, the combination with sprocket wheels, endless bands and paddles, of braces or brackets having a vertical arm, and two horizontal arms which are arranged at a right angle thereto, and bolts which secure the brackets and paddles together and to the bands, as shown and described.

3. In a propeller of the class indicated, the combination with sprocket wheels, having peripheral teeth, endless bands having holes as specified and paddles, of brackets or braces made in two parts whose vertical sides are recessed to receive the paddles between them, and whose bases are likewise recessed to receive the teeth of the wheels, as shown and described.

4. In a propeller of the class indicated, the combination with the sprocket wheels, having peripheral teeth, and intervening recesses or grooves, of endless bands having openings as specified, a series of paddles, and bolts for securing them to said bands, said bolts passing through the bands and their heads projecting on the under side and entering said recesses or grooves, in the wheels, substantially as shown and described.

JAMES H. MEACHAM.

Witnesses:
E. H. BEASLEY,
B. B. JONES.