

W. C. SMALSTIG.
Feathering Paddle-Wheel.

No. 200,578.

Patented Feb. 19, 1878.

Fig. 1.

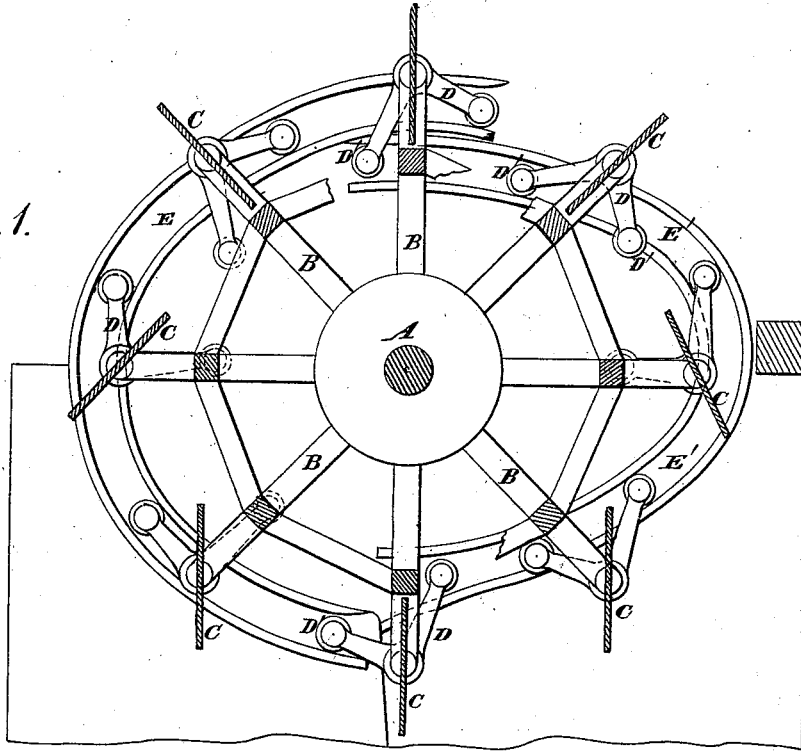


Fig. 2.

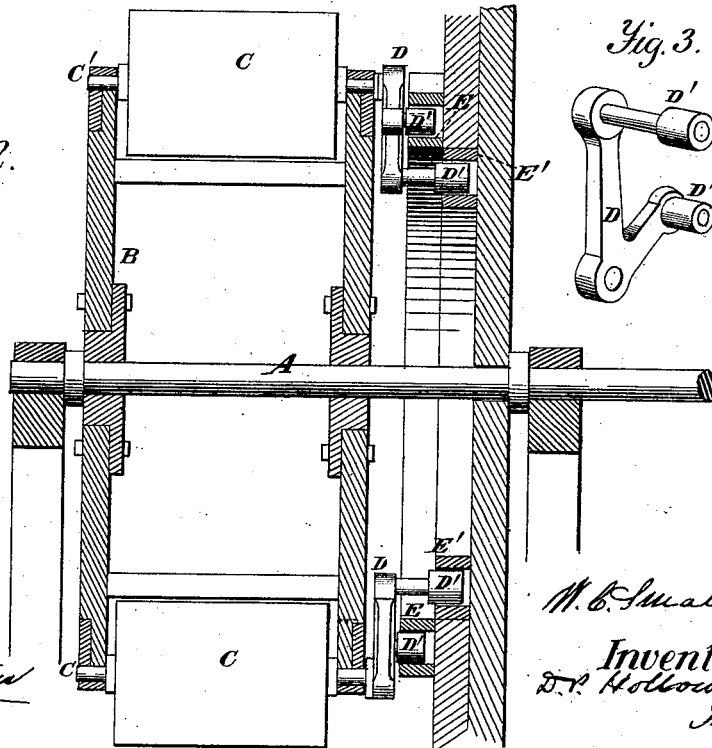
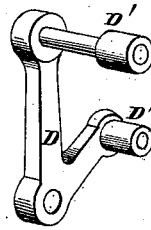


Fig. 3.



Witnesses.
A. Raphael
Jno. D. Allen

M. C. Smalstig
Inventor.
D. P. Holloway
Atty

UNITED STATES PATENT OFFICE.

WILLIAM C. SMALSTIG, OF SPRINGFIELD, MISSOURI, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO WILLIAM McADAMS, E. T. ROBBERTSON, AND G. M. JONES, OF SAME PLACE.

IMPROVEMENT IN FEATHERING PADDLE-WHEELS.

Specification forming part of Letters Patent No. 200,578, dated February 19, 1878; application filed October 12, 1877.

To all whom it may concern:

Be it known that I, WILLIAM C. SMALSTIG, of Springfield, in the county of Greene and State of Missouri, have invented a new and useful Improvement in Feathering Paddle-Wheels for Steamboats, of which the following is a specification:

My invention belongs to that class of feathering paddle-wheels in which the paddles are attached to radial arms, and have rotation with the arms around the driving-shaft, and also an independent rotation on their own shafts, which revolve in bearings in the ends of the radial arms.

Where a single cam-race is employed, as in the wheel patented by Comstock and Glidden on the 30th of April, 1861, a complicated series of toggle-levers are employed to give the necessary motions to the buckets, and where double races have been employed the arrangement of the crank-arms has been such that when the buckets enter and leave the water (which are the points of greatest strain on the levers, as in that position the pressure comes on one side of the axis) the crank is on the inside—that is, between the paddle and the center of the wheel—thus giving the least leverage where there is the greatest resistance.

In my wheel the cranks are set nearly at right angles to one another, and the races are so arranged that the arm managing the paddle is outside of the planes of the paddles at the point in their revolution where they enter and leave the water, thus giving a greater leverage. By this construction, also, the arms are either inside the race or in the circle formed by the race, thus always having a shield around them.

In the annexed drawing, making a part of this specification, Figure 1 is an elevation of the race, the wheel being shown in section. Fig. 2 is a vertical longitudinal section in the line of the axis. Fig. 3 is a perspective view of the double crank.

The same letters are employed in all the figures in the indication of identical parts.

A is the wheel-shaft carrying the radial arms B, which are constructed and attached as in the ordinary paddle-wheel. C are the buckets attached to shafts C', which rotate in bearings on the outer ends of the radial arms. One end of the shafts C' is overhung, and carries a double crank, D, the wrist-pins of which carry friction-collars D', and the arms of which are so proportioned that one wrist-pin will, during half the revolution, engage the cam-race E, and the other wrist-pin will, during the other half of the revolution, engage the other cam-race, E', so that by their combined operation the buckets will be properly feathered, and [at all times] rigidly controlled in position.

The ends of the races are made to slightly overlap, so that one crank shall be securely engaged before the other is released. Thus the relative position of the paddles is constantly definitely determined and controlled, according to the form of the race, thus introducing them and withdrawing them without shock and without resistance.

What I claim as my invention, and desire to secure by Letters Patent, is—

The buckets C, rotating around their common axis, and also each independently around its own axis, in combination with the double cranks D D and independent segmental races E E', arranged in such position that they shall alternately receive the wrist-pins of the crank and support the strain at the points where the buckets enter, and leave the water at points outside of the vertical planes of the bucket, and that at the same time they shall act as guards for the wrist-pins, which are always in or inside of the races, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

W. C. SMALSTIG.

Witnesses:

D. P. HOLLOWAY,
GEO. F. GRAHAM.