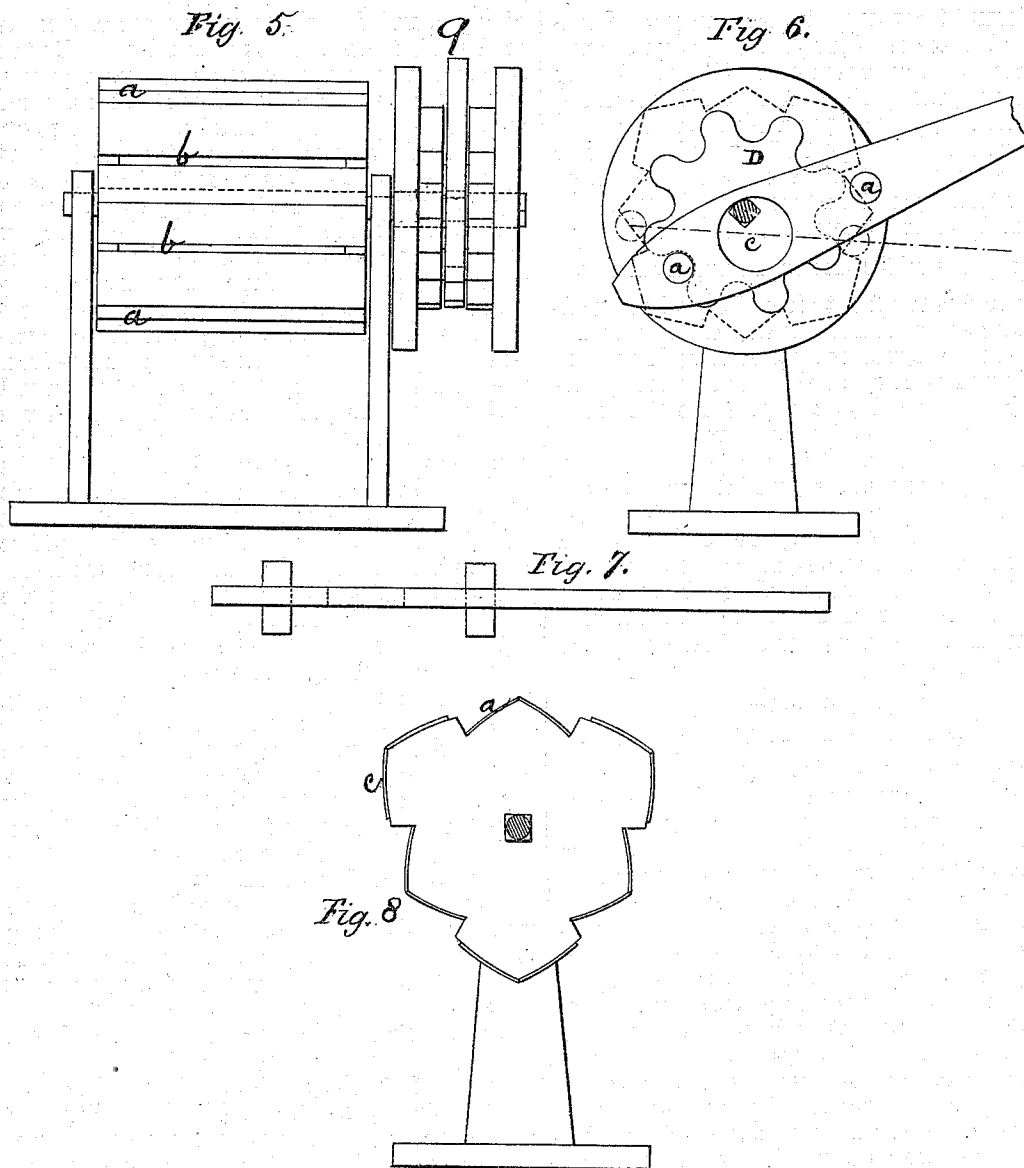


JOHN S. SWANN.

Improvement in Paddle-Wheels.

No. 126,760.

Patented May 14, 1872.



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JOHN S. SWANN, OF KANAWHA COUNTY, WEST VIRGINIA.

IMPROVEMENT IN PADDLE-WHEELS.

Specification forming part of Letters Patent No. 126,760, dated May 14, 1872; antedated April 27, 1872.

I, JOHN S. SWANN, of the county of Kanawha and State of West Virginia, have invented a certain Improvement in Water-Wheels for the propelling of boats and other vessels, of which the following is a specification:

The nature and object of my invention is to propel a boat or other vessel with a wheel so constructed that it will not lift the water or press it down in its evolutions.

Description of the Accompanying Drawing.

Figure 5 is the front view of the wheel, with the changeable fulcrum attached. Letters *a a* represent the boxes of largest size; letter *b* is the front view of a paddle of one of the smallest boxes. This Fig. 5 represents the front view of a wheel of eight boxes or sixteen paddles, two paddles combined together forming a box. Fig. 6 is a side view of the wheel. The dotted lines represent the form of the boxes at a side view. Fig. 8 is the side view of a wheel on the same model, somewhat modified in the form of the boxes. This wheel has six boxes. Letter *c* represents the paddles confined to the two arms of the wheel and forming the water-wheel.

General Description.

Fig. 5 is the wheel in position. Letters *a a* are the external and large boxes; letters *b b* are the internal or small boxes. To construct the wheel, divide the circumference of a circle of any given diameter into, say, eight large cogs, whose diameters will be equal and the diameters of circles. Number these to the right, one to eight. From the center of the circle describe three circles, A, B, and C. Let the circle A be tangent to the concavities of the cogs; the circle C to their apexes; and the circle B describe equidistant between them. On the apex of cog No. 1 put the point of a compass, or whatever you may use as a divider, and then put the point of the moving arm of the dividers on the apex of cog No. 6, and describe to the right the arc of a circle to a point, 1, in the circle B, where it is cut by a line from the center that will pass equidistant from the apexes of cogs 6 and 5. Then bring back the moving arm and place the point on said apex

of cog 6, and describe a similar arc of a circle to the left, from the apex of cog No. 3. Do the same from the apex of cog 7, as fixed points, and describe to the right and left from the apex of cog 4 similar arcs of circles, and so on. You will thus have described from the traced apexes of cogs 2, 4, 6, and 8 arcs of circles forming, as it were, four comb-shaped figures on the circumference of the figure designed for one arm or side of the water-wheel. On the apex of cog No. 2 put the point of a stationary arm of the dividers, and the point of their moving arm on the apex of cog 7, in the circumference B, where it is intersected by a line from the said apex of cog 7 to the center, around which the cogs are traced, and describe the arc of a circle to the right to the center of the concavity of the cogs 7 and 6, and so from the apex of cog 4 describe a similar arc of a circle to the left, and so with cogs 5, 3, and 1. You will thus have one of the arms of a wheel whose circumference will be divided into eight comb-shaped sections. Construct another arm on the same model. Cut out the sectional arcs forming these comb-shaped sections as traced, and then cut from the extremities of each outer section to the extremities of each inner section in a line perpendicular to the center, down to or near to the circle A, or rather the circumference A; put your paddles on these comb-shaped sections, and unite the wheel thus formed firmly to its axle, and you will have the wheel presented in Fig. 5, forming a succession of comb-shaped boxes. When this wheel is in motion, the paddle of each box descending enters the water in a circle, catching it and throwing it upward and backward, when it rebounds against and is caught by the upper paddle of the same box and thrown downward and backward, giving the force of the stroke in a direct line.

In Fig. 5 the large boxes of the wheel are represented by *a*; the small by *b*. In Fig. 8, *d* represents the side view of the small boxes, and *c* of the large. If more buckets are desired, increase the number of cogs described. A modified shape may be given the boxes or buckets by changing the size of the arcs of the circle forming them by making them more or

less perpendicular to the center. Fig. 7 represents a sectional view of the lever in Fig. 6. Fig. 6 represents the lever as applied to the wheel in Fig. 5. The letters *a a* represent the lever-pins; *b*, the lever; *D*, the fulcrum used. These are no parts of the wheel, and are referred to merely to show its action with the fulcrum described.

I claim as my invention—
A wheel with buckets, as above described,
of novel form.

JNO. S. SWANN.

Witnesses:

H. B. MUNN,
HARRY KING.