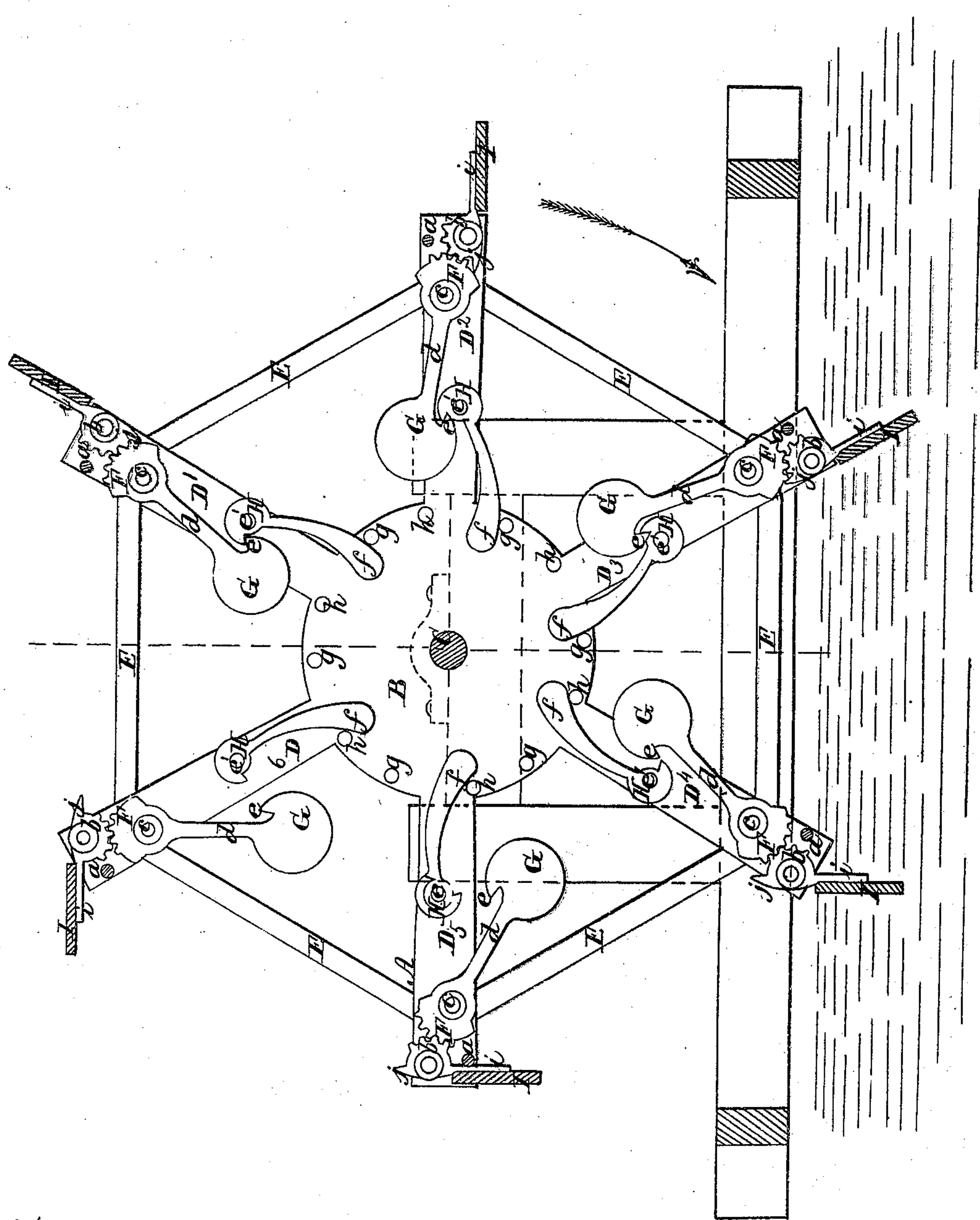


Thompson & Doty. Paddle Wheel.

No. 24,067.

Patented May 17, 1859.



Witnesses;
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UNITED STATES PATENT OFFICE.

JOHN THOMPSON AND M. L. DOTY, OF CHARITON, IOWA.

IMPROVED PADDLE-WHEEL.

Specification forming part of Letters Patent No. 24,067, dated May 17, 1859.

To all whom it may concern:

Be it known that we, JOHN THOMPSON and M. L. DOTY, both of Chariton, in the county of Lucas and State of Iowa, have invented a new and Improved Paddle-Wheel; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of the specification.

The drawing represents a vertical section taken transversely through the shaft and through the buckets of a paddle-wheel constructed according to our invention.

The object of this invention is to construct a paddle-wheel with feathering buckets, which take up no backwater and which will work equally well in backing as in propelling the vessel; and the invention consists in changing the position of the buckets by means of weighted pinions and dogs, which are so arranged that the dogs catch into the weighted ends of the pinions, and that they retain the buckets in the direction of the arms until they have passed the under center of the wheel, when the pinions are released by their own gravity, and the buckets assume a position in which they take up no backwater, and in which they pass with but little resistance through the air, and at the same time the arms to which the buckets are secured are provided with an extra spur or cog which keeps the paddles rigid while the wheels work backward.

To enable others skilled in the art to fully understand, use, and construct our invention, we will proceed to describe it.

The frame A of the wheel is constructed in the usual manner, having two flanges B, which are firmly secured to the axle C, and attached to these flanges are the arms D, the number of which may be varied at pleasure and which are strengthened by braces E, and the opposite arms are united by rods *a*. The flanges B may be made of cast-iron, to which the arms are secured by means of screws and nuts in the usual manner, and the number of the braces E can be increased by placing two between each pair of successive arms, if it is desirable to build an extra strong wheel.

Pivoted to the outer ends of the arms D are the toothed segments *b*, which gear into pinions or segments F, which are secured to the arms D by means of pivots *c*, and to which

the weights G are attached by means of rods *d*, and these weights are provided with a hook *e*, which enables the dogs H to retain the same under certain circumstances, which will be presently explained. These dogs are also secured to the arms D by means of pivots *e*, and attached to the same are the weighted bars *f*, which by their own gravity bring the dogs in such a position that they either retain the weights G or that they release the same. In order to prevent the weighted bars *f* from going too far one way or the other, stops *g* and *h* are attached to the flanges B, the stops *g* having the object to retain the weighted bars, while the dogs engage with the weights G, and the stops *h* being for the purpose of preventing the weighted bars from falling any farther the other way than is necessary to release the weights.

The buckets I are rigidly attached to arms *i*, which extend from the segment *b*, and these buckets may be constructed of wood or of iron, and as large or small as is desirable; but their weight must be such that it is easily overcome by the action of the weights G, so that the position of the buckets can be governed by the position assumed by the weights G as the wheel revolves, and the segments *b* are provided with spurs *j*, which extend from the same on the side opposite to the arms *i* and nearly in line with the same, and these spurs by striking against the pinions F keep the buckets rigid while the wheels are backing.

The operation is as follows: The wheels work in the direction of the arrow in order to propel the vessel to which they are attached, and as soon as the arms have passed the vertical line drawn through the axle the position of the buckets is changed by the action of the weights G, and they are retained in this position by the dogs H. The arms 1, 2, and 3 are represented as having the vertical line above the shaft and the arms 4 5 6 as having passed this line below the shaft C. As soon as one of the arms passes the vertical above the shaft the weighted bar attached to this arm changes its position from the stop *h* to the stop *g*, and the dog H is brought in such a position that it is ready to engage with the hook *e*, attached to the weight G, and at the same time this weight comes down to the position represented on the arms 1, 2, and 3, so that its hook *e* catches over the dog H, and

by the motion of the weight G and by means of the pinions F and of the segment *b* the bucket attached to this arm is brought in line with the arm, as clearly represented by the buckets attached to the arms 1, 2, and 3, and in this position the bucket acts with its full effect to propel the vessel. As soon, however, as the arms pass the vertical line below the shaft the weighted bar *f* changes its position from the stop *g* to the stop *h*, the dog H releases the weight G, as clearly represented on the arm 4, and the bucket is free to yield to the action of the water, so that it does not raise any backwater, and that the same in passing through the air offers the least possible resistance. If the wheel works in the opposite direction, the buckets will enter the water in the position represented at the arm 4, and the action of the water will force them back until the spur *j* strikes against the pin-

ion F and prevents the bucket from going back any farther, so that it acts with its full power in backing the vessel.

What we claim as new, and desire to secure by Letters Patent, is—

1. The buckets of a paddle-wheel arranged in combination with the segments *b*, the weighted pinions F, and the dogs H, or their equivalents, to operate substantially as and for the purpose specified.

2. The arrangement of the spurs *j* or their equivalents for the purpose of retaining the buckets in the proper position while the wheel is backing, substantially as described.

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Witnesses:

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