B. VATER.

Feathering Paddle-Wheel.

No. 159,127. Patented Jan. 26, 1875.

Fig: 2.

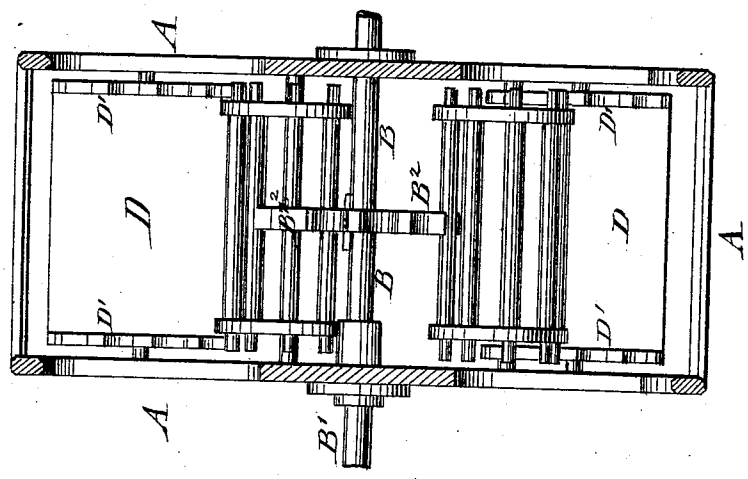
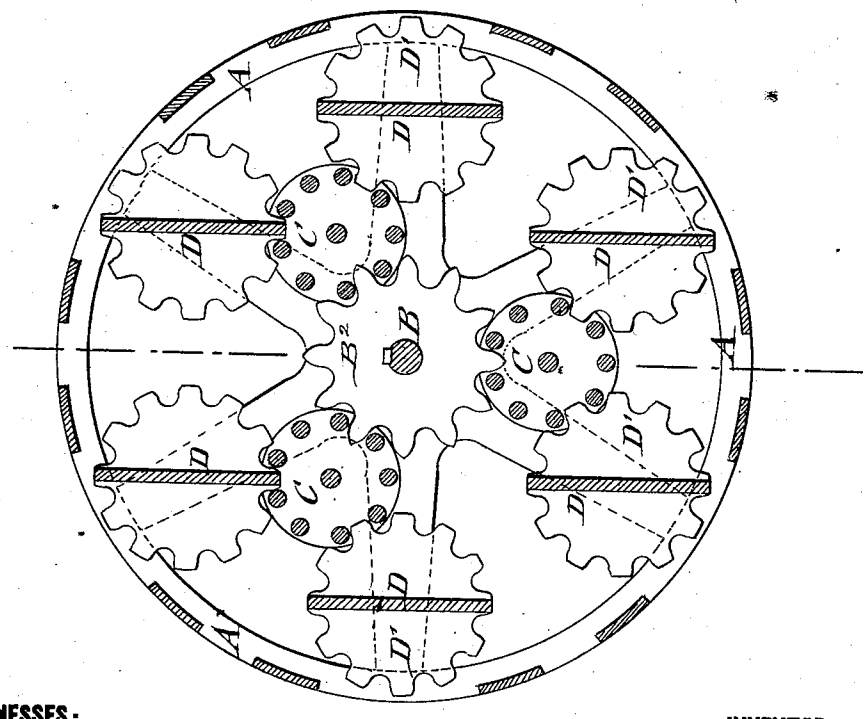


Fig: 1.



WITNESSES:

Chas. Nidy

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UNITED STATES PATENT OFFICE.

BERNHARD VATER, OF NEW YORK, N. Y.

IMPROVEMENT IN FEATHERING PADDLE-WHEELS.

Specification forming part of Letters Patent No. **159,127**, dated January 26, 1875; application filed January 11, 1875.

To all whom it may concern:

Be it known that I, BERNHARD VATER, of New York city, in the county and State of New York, have invented a new and Improved Paddle-Wheel, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a vertical longitudinal section of my improved paddle-wheel; and Fig. 2, a vertical transverse section of the same.

Similar letters of reference indicate corresponding parts.

My invention relates to an improved construction of paddle-wheels for steamboats, by which the paddles pass vertically into and through the water, so as to utilize the full amount of power with less agitation of the water and vibration of the vessel. My invention consists of a paddle-wheel with vertically-arranged paddles, that retain their position during their passage through the water by the rotation of the supporting-frame in connection with the action of intermediate gearing, and a central stationary cog-wheel on the gear-wheels of the paddles.

In the drawing, A represents the supporting-frame of my improved paddle-wheel, which is constructed with radial arms and lateral braces of sufficient strength to carry the required number of paddles. The wheel-frame A turns by suitable bearings on a stationary shaft, B, rotary motion being imparted to it from the driving-shaft B^1, which is rigidly secured at the hub at the inner side of frame, the stationary shaft being centered in such manner in the driving-shaft that the smallest degree of friction is produced. The stationary shaft B carries a cog-wheel, B^2, which is firmly keyed thereto, and imparts by the rotations of the frame rotary motion to three or more staff-pinions, C, arranged in proportion to the number of paddles employed. The shafts of pinions C turn in bearings or braces of frame A, and gear with cog-wheels D′ of the paddles D, which are rigidly attached thereto. The cog-wheels D′ are supported by shafts or gudgeons in bearings of the radial arms of the frame, the paddles being arranged in vertical position thereon. This position is retained throughout the revolution of the wheel by the joint action of the gearing, and the turning of the wheels. Any number of paddles may be employed, every two paddles being governed by one pinion, so that the number of paddles is twice that of the intermediate pinions. The paddles enter vertically into the water, and retain this position throughout their passage through the same, so that the full power of the engine, without the loss occasioned by the present paddles, is made use of for the forward propulsion of the vessel. The paddles are made by preference narrower, but higher, which produces a wheel of lesser width, but with the same acting surface as the present paddle-wheels in use. The paddles agitate the water but little, and cause hardly any vibratory motion of the vessel. Their speed is slower, but the motion of the vessel is steadier, easier, and quicker, as a greater percentage of power is utilized. The wheel is strong and durable, and less liable, if properly constructed, to be injured by ice, waves, or other causes.

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

A paddle-wheel for vessels, composed of a central stationary cog-wheel, intermediate revolving pinions, and outer vertical paddles with cog-wheels gearing therewith, mounted on a supporting wheel-frame, for producing by the rotation of the frame the vertical position and passage of the paddles through the water, substantially as shown and described.

BERNHARD VATER.

Witnesses:

PAUL GOEPEL,

T. B. MOSHER.