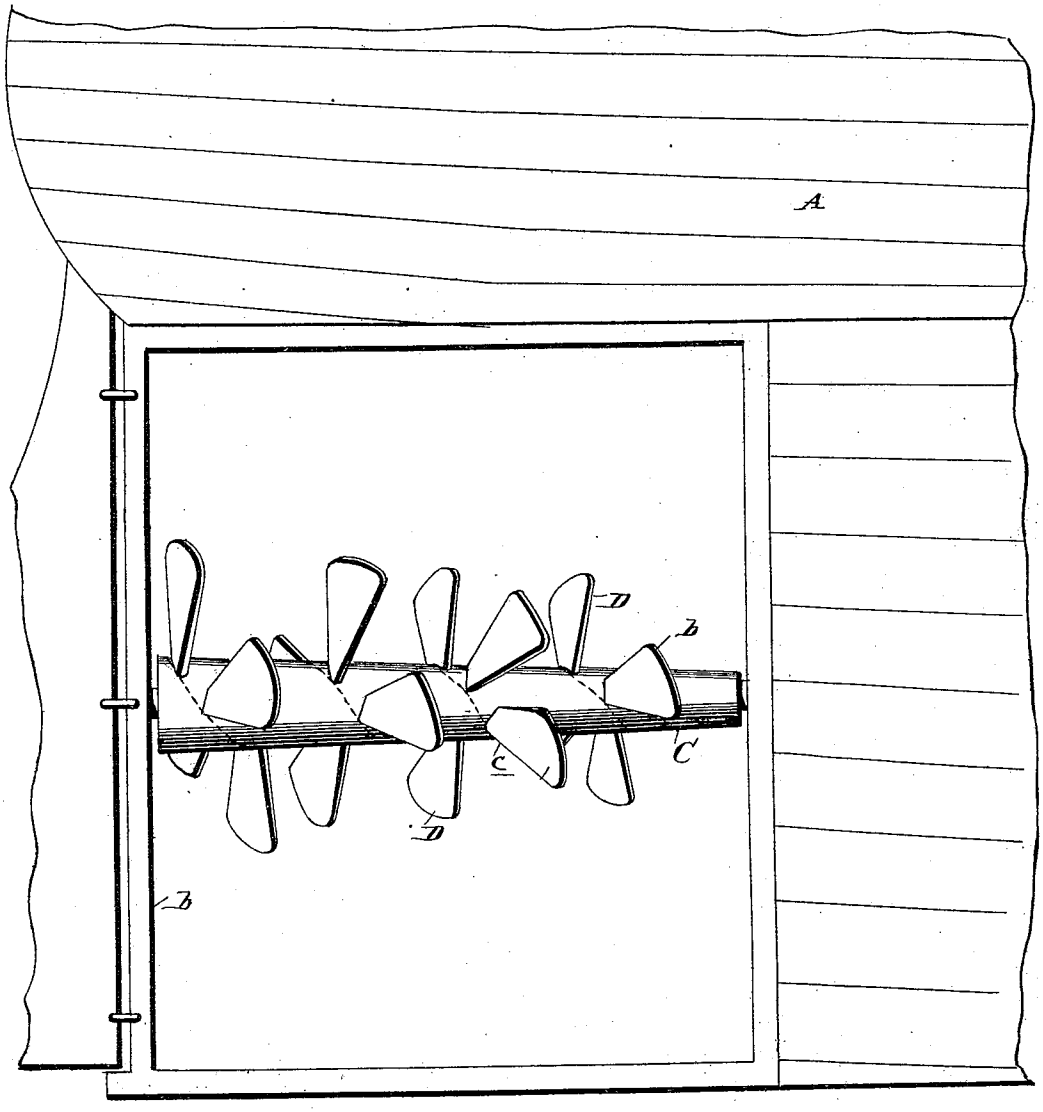
(No Model.)

W. A. BALDWIN.

PROPELLER.

No. 470,097. Patented Mar. 1, 1892.



Witnesses
C. A. Raeder
T. C. Dorsin

Inventor
William A. Baldwin
by James J. Shelby
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM A. BALDWIN, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO ROSWELL D. SAWYER, OF SAME PLACE.

PROPELLER.

SPECIFICATION forming part of Letters Patent No. 470,097, dated March 1, 1892.

Application filed March 6, 1891. Serial No. 384,001. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. BALDWIN, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Water-Wheels or Propellers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a propeller-wheel to be used on boats using steam or other motive power, and may be advantageously used in propelling canal-boats.

The object of the invention is to utilize the full force of the resistance which the water will naturally afford and get an increased motion without increasing the motive power by having each blade arranged in a different path from its preceding one and successively reach out and cut still water, or water which has not to any measure been agitated by the blade arranged in advance of it. With this and other objects in view I have constructed a wheel or propeller in which a line drawn around the shaft at the base of the blades would describe a spiral and another line drawn over the tips of the blades would produce a similar figure of greatly-increased diameter from the rear to the forward end of the shaft on which such blades are mounted.

The invention will be fully understood from the following description and claim, when taken in connection with the annexed drawing, in which the figure is a side elevation of a part of the hull of a vessel, showing my improvements applied.

While I have shown the interrupted screw or propeller applied to the rear or stern of the keel, yet in some cases I may arrange one of such propellers on each side as well; but I do not wish to be understood as confining myself to any number of propellers nor to any particular point of location, but may use as many of them as the dictation of the mechanic or builder may suggest.

Referring by letter to said drawing, A indicates the hull of a vessel, which may be of any ordinary or approved construction, and B indicates the usual stern-post.

C indicates the shaft of my propeller. This shaft has its forward end bearing in the stern of the vessel, and its opposite end bearing in the stern-post, as shown, and may be connected with the drive-shaft of the boat in any suitable manner. The shaft C may be solid, and tapers from end to end, the smaller end being directed forwardly. In some cases it may be desirable to have a hollow sleeve or hub over the shaft, and in such cases the bore of the hub or sleeve would be of a tapering or conical form, so as to firmly bear on the shaft throughout its length, and set-screws, bolts, and nuts or other suitable devices may be employed for removably or permanently fixing the sleeve in position on the shaft.

D indicates the paddles or blades, which may be of any desired length and width and are preferably provided with flat sides, as illustrated. These blades D increase in width from their inner to their outer ends, whereby their inner portion will meet with but little resistance, and they are given a slight twist, as shown, whereby their outer ends will rest approximately at right angles with respect to the shaft. The blades of the first whirl *b* are of an equal length and width and arranged at equal distances apart in a spiral or helical manner, while the blades of the next succeeding whirl *c* are of a greater length and arranged, respectively, in a line with the longitudinally-disposed interspaces formed between the blades of the advanced or preceding set. The next succeeding set of blades are arranged on the shaft in a similar staggering position and are of an increased length, so as to reach out into and cut the still water, or water which has not been agitated by the blades ahead of them, and so on, increasing in length until the desired number of whirls or spirals have been made. In practice I should make from two to four whirls, although more or less might be made, as desired. With a boat equipped with a propeller of this construction there is little or no lost motion. The movement of the boat will be steady and forward and a greater speed will be had with a less amount of motive power, inasmuch as each and every blade

will not enter the water which has been violently agitated by its predecessor, but will successively reach out and move in a path of still or undisturbed water, thereby meeting with resistance on but one side of the blades and avoiding any tendency to move in but one rotative direction.

While I have described the blades as increasing in length from the forward to the rear end of the shaft, yet it is obvious that when a shaft has a tapering cylindrical outer surface the blades may be of equal length, and they would necessarily increase the diameter of the whirls from front to rear of the shaft. In some cases it is not necessary that care should be taken to have all of the blades of the same length, as they may be made of unequal length and serve effectively.

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

A propeller for vessels, consisting of a shaft having an external cylindrical surface tapering from its rear to its forward end, the flat-side twisted blades or paddles increasing in width from their inner to their outer ends and arranged in spiral series approximately at right angles to the shaft, the blades of the spiral describing a larger circular area from front to rear of the shaft and arranged so that the blades of one whirl will be in line with and approximately at right angles to the longitudinally-disposed interspaces between the blades of the preceding whirl, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM A. BALDWIN.

Witnesses:
CHAS. H. RAEDER,
THOMAS E. TURPIN.