

W. F. Ketchum.
Screw Propeller.

N^o 11,429.

Patented Aug. 1, 1854.
Fig. 1.

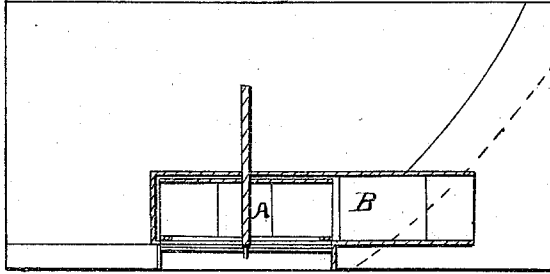


Fig. 2.

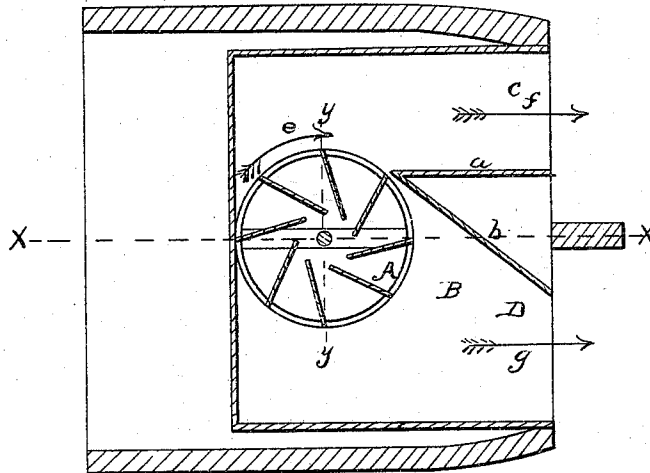
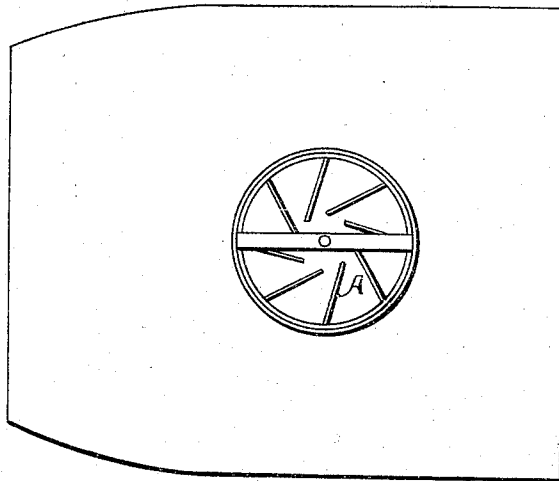


Fig. 3.



UNITED STATES PATENT OFFICE.

WILLIAM F. KETCHUM, OF BUFFALO, NEW YORK.

SUBMERGED PADDLE-WHEEL.

Specification of Letters Patent No. 11,429, dated August 1, 1854.

To all whom it may concern:

Be it known that I, WILLIAM F. KETCHUM, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Centrifugal Submerged Propellers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which make a part of this specification, in which—

Figure 1 represents a longitudinal vertical section of a section of a canal boat, taken in the line *x x*; Fig. 2, a longitudinal horizontal section, and Fig. 3, a plan view of the bottom of the same.

The same letters refer to the same parts in each of these figures.

The nature of my invention consists in the relative arrangement of a centrifugal wheel with the charge and discharge openings, so as that water shall be taken up by the wheel at its center, at the bottom of the boat, and discharged at the stern, on each or both sides of the stern post, or in a volume of nearly the width of the beam of the vessel. The wheel being constructed with buckets arranged tangentially to its axis, and the casing in which it is adjusted of such size and form, and with such a disposition of its openings that the above object is attained with an increased volume and centrifugal action, with a given force for propulsion without diminishing the strength in the construction of the vessel, and without occupying much room in the after part of the same.

In applying my invention to a canal boat, I employ a wheel (A) of about four feet in diameter, formed of a disk, and rim, and any desired number of buckets which are placed at about such an angle to the periphery as that a line drawn across the axis will cut their extreme points or peripheries as indicated by the dotted line (*y—y*) Fig. 2. This I adjust in a horizontal position in one end of a rectangular or nearly rectangular casing, (B), placed in the stern of the vessel. Said casing which is closed at top and bottom, I provide with an opening in its bottom, concentric with and under the center of the wheel, and a large opening at its end next the stern of the vessel. This latter opening, which forms that for the discharge water of propulsion, I divide into two parts, (B) and (C), by the partitions

(*a*) and (*b*), which are so placed as to divide the said openings and the interior surface of the casing into such form and relative capacity to the diameter of the wheel as above stated, and the other one (B) gradually diminishes by the angular partition (*b*) to the orifice of discharge which is the same size as that of (C,) allowing a space between, (*a*) and (*b*), the two partitions, for the stern post. This arrangement in connection with the position of the wheel, it is contended, will give a uniform and equal discharge at the stern of the vessel, without loss of centrifugal force, or a retardation of the motion of the wheel, thus giving an increased force, and medium of reaction against the surrounding sea or water, for propulsion, with a given amount of power, and preserve the advantage of maintaining the usual strength in the construction of the vessel.

The whole apparatus will occupy a space of only about seven feet square, when applied to a canal boat, and a steam engine of six horsepower, will drive the wheel with a force and speed sufficient to propel the vessel seven or eight miles per hour; the expense of which will be vastly less than that attending the present mode of propelling such vessels, and all the vexatious delays and inconveniences of that system will be avoided.

The wheel is rotated in the direction of the arrow (*l*) and it will be observed that the discharge opening (C) is of less capacity than that of (B), and is straight, which form and capacity is regulated by the size and position of the wheel, that the wheel in its revolution shall discharge from its buckets all the water taken up by it, at its center with equal centrifugal force, and volume through the said openings, and avoid the liability it would otherwise have if carrying a dead weight of water in its revolution, and thus weakening its power of suction and tangential discharge, and also avoids the removal of the stern post by spanning it, and thus preserving the strength of the vessel. These partitions extend from the top to the bottom of the casing and that one (*a*) is straight or parallel with the side of the casing B, and at a tangent with the periphery of the wheel, and the other (*b*) joins that of (*a*) near the periphery of the wheel, extending to the stern end of the casing, and is also on a tangent with

the periphery of the wheel, thus dividing the discharge openings (C,) and (B) into two openings one of which is straight and the other conical, but both of the same capacity or size at their discharge orifices as clearly shown in Fig. 2.

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

10 The arrangement of the centrifugal wheel (A,) relatively to the charge and discharge openings of the casing, (B), and the division of the interior of the said casing by the partitions (a) and (b) so as to form

the openings (C,) and (D), so that the wheel shall take in water at its center, and discharge it out of said openings on each or both sides of the stern post, substantially as in the manner, and for the purposes set forth.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

WILLIAM F. KETCHUM.

Witnesses:

T. CAMPBELL,
GEO. R. WEST.