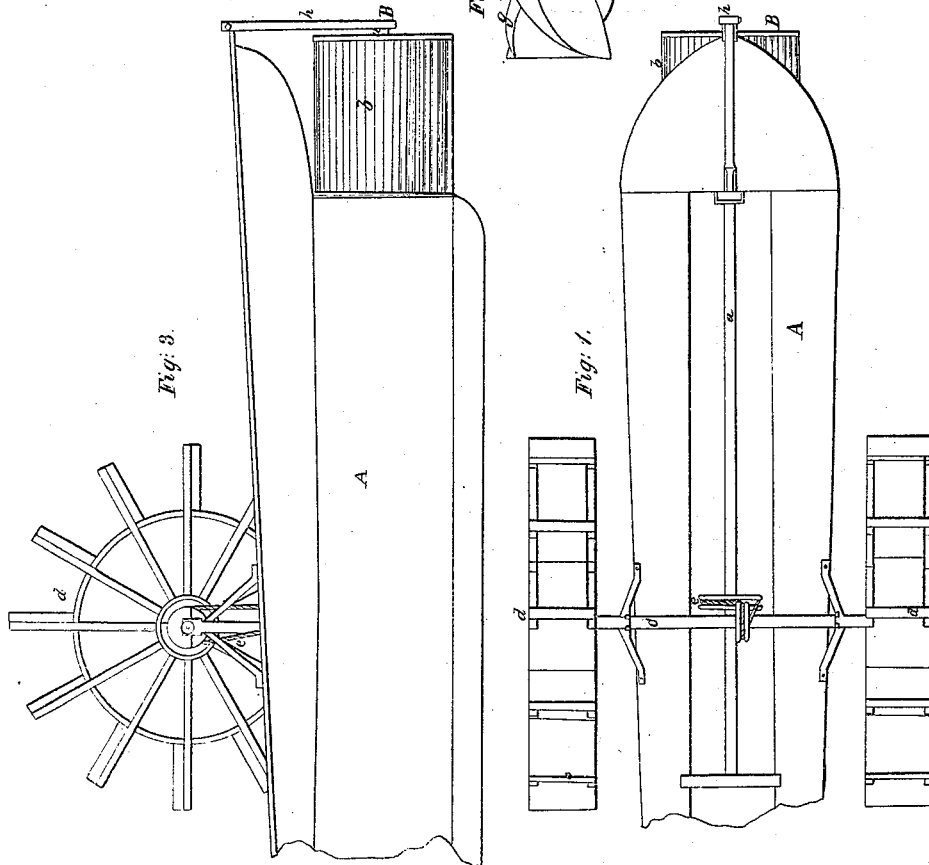
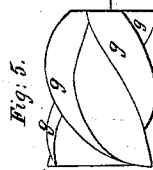
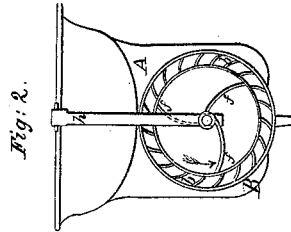
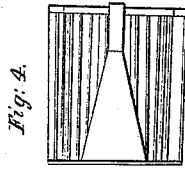


J. Echols.
Screw Propeller.

No. 4,503.

Patented May 9, 1846.



UNITED STATES PATENT OFFICE.

JOSEPHUS ECHOLS, OF COLUMBUS, GEORGIA.

PROPELLING VESSELS.

Specification of Letters Patent No. 4,503, dated May 9, 1846.

To all whom it may concern:

Be it known that I, JOSEPHUS ECHOLS, of Columbus, in the county of Muscogee and State of Georgia, have invented a new and useful Mode of Saving Power in the Propulsion of Boats or other Vessels, called the "Compensating Propeller," and that the following is a full, clear, and exact description of the principle or character thereof which distinguishes it from all other things before known and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—
Figure 1 is a plan of the boat; Fig. 2, a front elevation; and Fig. 3, a longitudinal elevation. The other figures will be explained in their appropriate places.

The same letters indicate like parts in all the figures.

The object contemplated by me in this invention to economize the power required for propelling boats or other vessels by making use of the resistance which the water presents to the bow of the boat in its passage, and causing it (the water) when being deflected to turn a wheel which is in connection with the paddle wheel shaft, and thus assist the driving power, such as a steam engine, in propelling the boat. With the view to attain this end, extra water wheels have been placed at the sides of the vessel and connected with the paddle wheels so that the current of water set in motion by the paddle wheels should communicate motion to the extra wheels which by the connection, transfers the power to the paddle wheels; but it must be obvious that this arrangement occasions an actual loss of power, for the motion communicated to the extra wheels at the sides retard the boat by a force equal to that communicated to them, minus the friction. But by placing the compensating wheel at the bow where the water must be displaced by the bow of the boat the deflection of the water communicates available power to the wheel which may be advantageously employed to aid in the propulsion of the boat, or applied to any other purpose.

In the accompanying drawings (A) represents the hull of a boat which may be made in any desired manner, with the bow adapted to the compensating wheel (B), which I prefer to make cylindrical and similar to what is known as the reaction mill wheel. The shaft (*a*) of this wheel is in a line parallel with the keel and in the center of

the bow which for this kind of wheel is circular. The periphery of the wheel is provided with volute or other curved buckets (*b*) similar to any of the class of water wheels referred to above. The rear end or that toward the bow is closed and the forward end open to the water, which after it enters is deflected by the forward motion of the boat, and in passing acts on the curved surfaces of the buckets and causes the wheel to rotate in the direction of the arrow. This motion, by the connection of the shaft (*a*) of this wheel with the shaft (*c*) of the common paddle wheels (*d, d'*), by means of a belt (*e*), or other mechanical substitute therefor, communicates motion and power and therefore aids the steam engine or other first mover in propelling the boat. The forward end of the shaft is (if desired) sustained by an outrigger (*h*) attached to and projecting from the bow of the boat. I contemplate connecting the buckets (*b*) and rim of this wheel with the central shaft by means of spiral or other curved vanes (*f, f'*), which not only tend gradually to deflect the water but at the same time give more stability to the rim and buckets and increase the power of the wheel. The core or hub may be made as represented in section at Fig. 4; or the whole wheel may be made as represented in Fig. 5 with spiral blades (*g*) projecting from the core, the base of which is toward and adapted to the bow of the boat. But it will be obvious from the foregoing that any kind of wheel which can be adapted to the bow of the boat and be actuated by the resistance of the water when the boat is forced through it, may be substituted for those described above, as the form or principle of the wheel employed makes no part of my invention. The power obtained by the wheel at the bow of the boat may be employed for driving machinery of any kind on the boat, if desired.

What I claim as my invention and desire to secure by Letter Patent, is—

The employment of a wheel or wheels at the bow of a boat to be driven by the resistance of the water as the boat is forced through it, for the purpose of aiding in driving the paddle wheels, and thereby saving power, as described, or to be applied as a moving force for any other purpose on the boat, as described.

JOSEPHUS ECHOLS.

Witnesses:

W. H. BISHOP,
A. P. BROWNE.