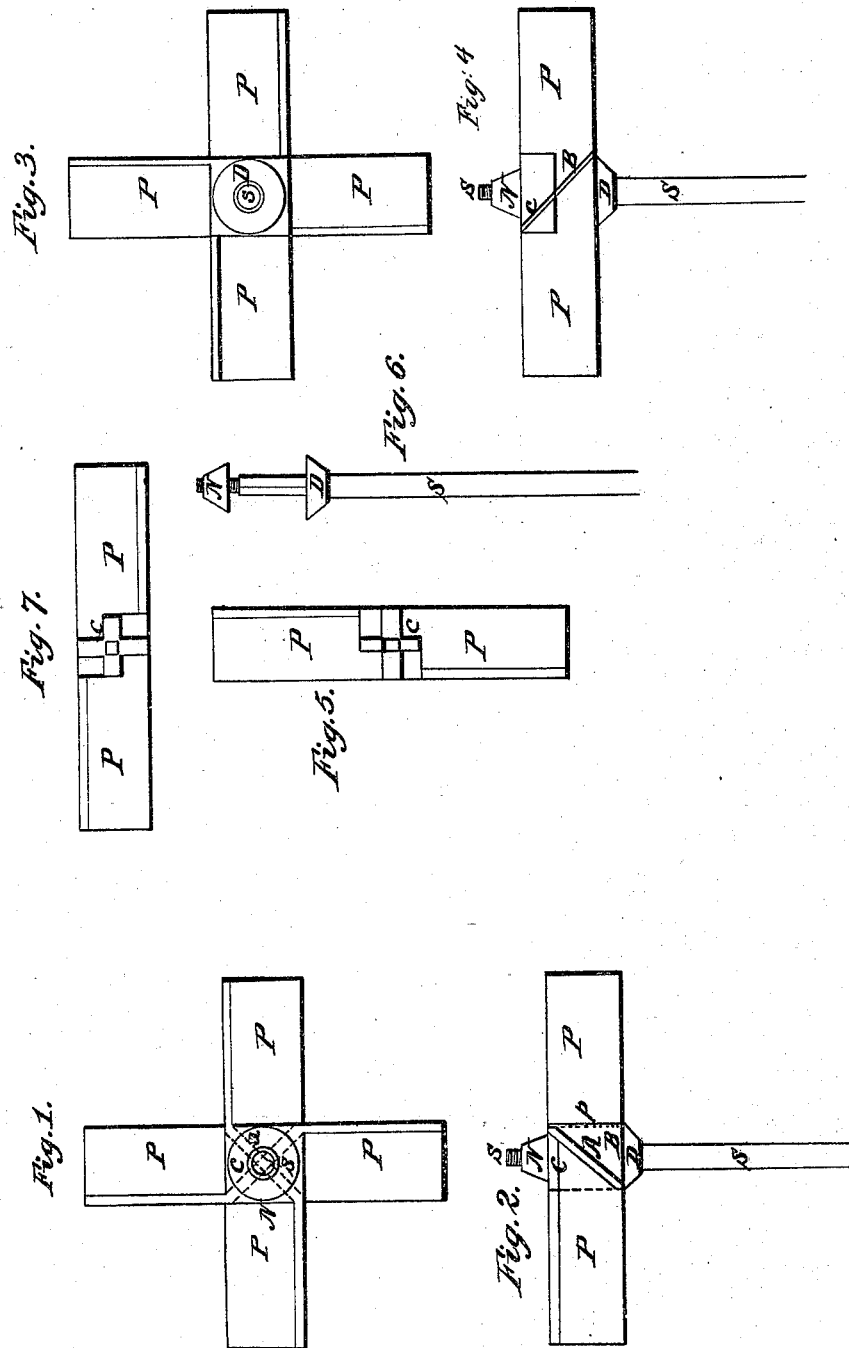


R. F. Loper,
Screw Propeller.

N^o 3,459.

Patented Feb. 28, 1844.



UNITED STATES PATENT OFFICE.

RICHARD F. LOPER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN ROTARY INCLINED PROPELLERS FOR VESSELS.

Specification forming part of Letters Patent No. 3,459, dated February 28, 1844.

To all whom it may concern:

Be it known that I, RICHARD F. LOPER, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in the Construction of Rotary Inclined Propellers for Propelling Vessels, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a plan of a propeller made in a single piece. Fig. 2 is a side elevation of the same. Fig. 3 is a plan of a propeller made in two parts. Fig. 4 is a side view of Fig. 3; Figs. 5, 6, and 7, the parts of the same separated.

In the old mode of constructing propellers it has been the custom to insert the inclined paddles into cylindrical or conical hubs, the inclined surfaces of the propellers which act on the water extending no farther than the periphery of the hub. By my invention and improvement I extend the length of the propelling-surfaces by continuing the inclined surfaces of the propellers or paddles into the core or hub nearly to the center thereof, by which construction the propeller is made to have an increased propelling power without increasing the diameter of the propeller or the expense of its construction.

The propeller may be made of one, two, or more pieces. When made in two pieces, they are halved and put together, and the center is perforated for the insertion of the shaft, which is secured in any suitable way. Several propellers may be placed on the same shaft, and the shafts may be arranged in any suitable part of the vessel and turned by any suitable power. The additional inclined planes or surfaces which act on the water form each a triangle, taken from each side of the center core or hub C, the base B of the

triangle being the lower edge of the next adjoining side of the square of the hub on a line coincident with the lower edge of the paddle P, thus continued in length toward the center of the propeller, the perpendicular of the triangle being a line coincident with the side of the hub, as represented by the dotted line R in Fig. 2, and the hypotenuse being the line A in Fig. 2, and the diagonal dotted line *a* of Fig. 1 representing the cavity or triangular cut or space as reaching nearly to the center of the aperture for the insertion of the shaft S, which still leaves sufficient solidity of metal at the ends of the core for supporting the propeller in action.

D is a shoulder formed on the shaft, against which the propeller is held firmly by a nut or other means, and N is a nut for securing the propeller on the shaft by being screwed on its outer extremity, extending through the propeller.

The propeller and shaft may be cast in a single piece, in which case the propelling-surfaces of the paddles may be extended to the very center of the propeller.

The sides of the propellers, instead of being straight and parallel, may be widened and curved toward their outer extremities, in order to increase their propelling action.

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

The before mentioned or described manner of constructing the propellers by extending their inclined planes or propelling-surfaces of the paddles into the hub or center portion of the propeller, as set forth.

RICHARD F. LOPER.

Witnesses:

JOHN BINNS,

B. T. McMINTON.