No. 654,549. Patented July 24. 1900.

S. C. LITTLEFIELD, JR.

PROPELLER.

(Application filed Dec. 12, 1899.)

(No Model.)

Fig. 2.

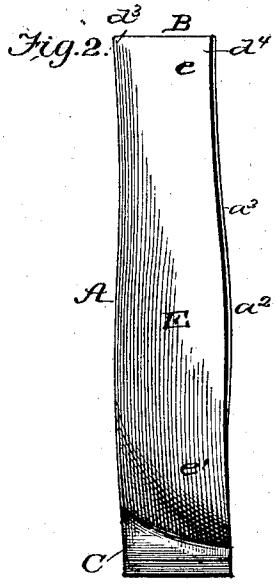


Fig. 1.

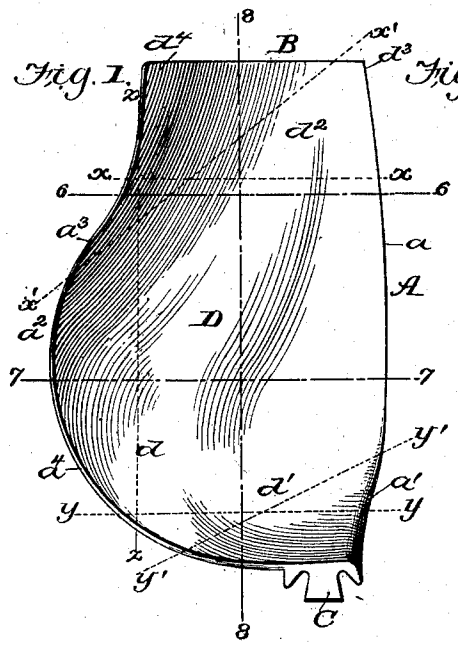


Fig. 3.

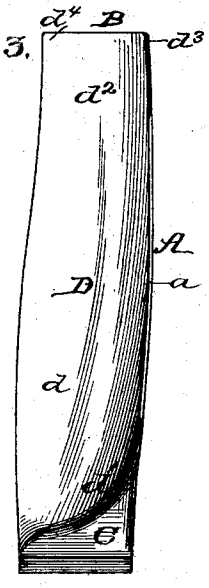


Fig. 4.

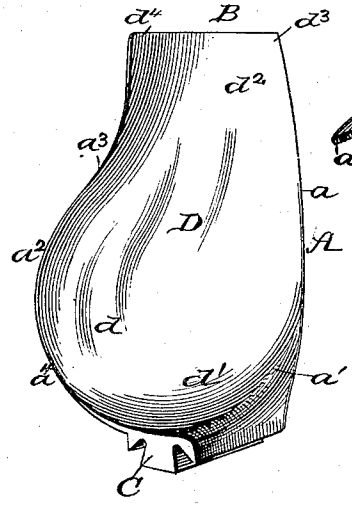


Fig. 5.

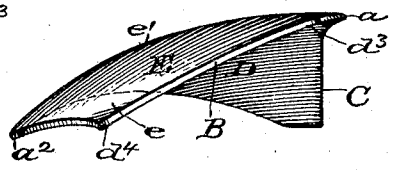


Fig. 6.

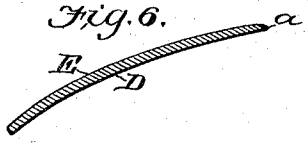


Fig. 7.

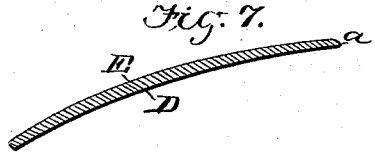
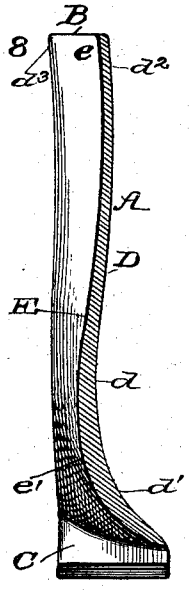


Fig. 8.



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SYLVANUS C. LITTLEFIELD, JR., OF BRUNSWICK, GEORGIA.

PROPELLER.

SPECIFICATION forming part of Letters Patent No. 654,549, dated July 24, 1900.

Application filed December 12, 1899. Serial No. 740,055. (No model.)

To all whom it may concern:

Be it known that I, SYLVANUS CLARK LITTLEFIELD, Jr., of Brunswick, in the county of Glynn and State of Georgia, have invented a new and useful Improvement in Propellers, of which the following is a specification.

My invention relates to propellers, and has for its object a propeller-blade whose form will be such that it will reduce suction or "drag," will tend to throw the strain near the shaft, whereby to prevent to a large extent lateral vibration of the vessel, and which will not tend to settle the vessel deep in the water when at high speed; but rather lift and push the vessel, by reason of the fact that it will effectively work when not wholly submerged.

With these ends in view the invention consists in a propeller-blade of the specific form hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a face view of my improved propeller-blade. Fig. 2 is a side view illustrating the blade when viewed from the left as seen in Fig. 1. Fig. 3 is a side view of the same when seen looking from the right of Fig. 1. Fig. 4 is a perspective view. Fig. 5 is an end view. Fig. 6 is a fragmentary section taken on the line 6 6 of Fig. 1. Fig. 7 is a similar view on the line 7 7 of Fig. 1, and Fig. 8 is a longitudinal section on the line 8 8 of Fig. 1.

Referring to the drawings, A designates my improved propeller-blade, whose advance or attacking side edge a appears slightly outwardly curved when looking toward a face of the blade, the curved portion extending from the straight end edge B of the blade to the point a' near the hub portion C, at which point the outwardly-curved portion merges into an inwardly-curved portion, as shown. The opposite edge a^2 when viewing the blade as above stated appears with a pronounced inward curve from the end B to a point a^3, from whence it takes on a pronounced outward curve, (designated by a^4,) such outward curve extending to the hub portion C, as shown, and serving to widen the blade considerably from the line $x\ x$ to the line $y\ y$, the extent of this increase in width or bulge being denoted by the line $z\ z$. One face D of the blade is deeply concave, the concavity d extending from the hub portion C to about the line $x\ x$ and being deepest at the point d' near the lower portion of the side edge a. The concavity d merges into a slight outward sweep or trough-like portion d^2 beyond the line $x\ x$, the said outward sweep being slight at the point d^3 of the blade and very pronounced at the opposite point d^4. The face D by its peculiar form provides a gradually-deepening channel for the water bounded approximately by the lines $x'\ x'$ and $y'\ y'$, for a purpose to be hereinafter described. The other face E of the blade is provided with the portions e and e', corresponding substantially to the form of the face D, and the blade is slightly thicker at the hub portion than at the end edge, as shown.

In general form the blade A is provided with a straight end edge, is much wider at a point near the hub portion, and the face D is convex toward the end and concave toward the hub portion. By reason of having the said face convex at the end and concave in the center, running to the hub portion, and by reason of the blade being wider near the hub the strain on the blade is thrown near the shaft, giving more power for a given steam-pressure. The blades being concave, as described, and wider near the hub force the water down the blades to the hub portions from the ends in the channel bounded by the lines $x'\ x'$ and $y'\ y'$, which causes a large displacement of water and prevents suction and drag, which would tend to retard the vessel, and the blades being concave and wider at the hub portions gives the propeller great power, even if the blades are not wholly submerged.

The speed of the boat is governed by the pitch of the blades, and when speed alone is desired I preferably use two or three blades, while for speed and power four blades are preferably used.

I wish it understood that my improved blades may be formed integral with the hub of the propeller or adjustable thereon, as desired.

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

1. A propeller-blade having a straight edge B and a face D formed with a convex, trough-like or outwardly-sweeping portion d^2 near the said end edge, the outwardly-sweeping portion being more pronounced at one side than the other, the said face D being also formed with a concave portion d merging into the portion d^2 and being deepest near the hub of the blade, as set forth.

2. A propeller-blade, provided with a straight end edge B, a slightly outwardly curved advance side edge a merging into an inwardly-curved portion a' at the hub portion of the blade, an opposite side edge a^2 curved inwardly from the end for a minor portion of its length and merging into a pronounced outward curve for the remainder of its length, and extending to the said hub portion, and a face D provided with a concave portion d merging into a backwardly-curved trough-like or sweeping portion d^2, as set forth.

3. A propeller-blade, having a straight end edge B, a slightly outwardly curved advance side edge a, an opposite side edge a^2 inwardly curved from the end for a minor portion of its length and outwardly curved for the remainder of its length to the hub portion of the blade, and a face D concave from the hub portion to a point near the end and backwardly turned from such point to the end, the concavity of such face being deepest near the hub portion, and the backwardly-turned portion of such blade being more pronounced at the side edge a^2 than at the side edge a, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SYLVANUS C. LITTLEFIELD, JR.

Witnesses:
C. B. CONYERS,
C. P. GOODYEAR, Jr.