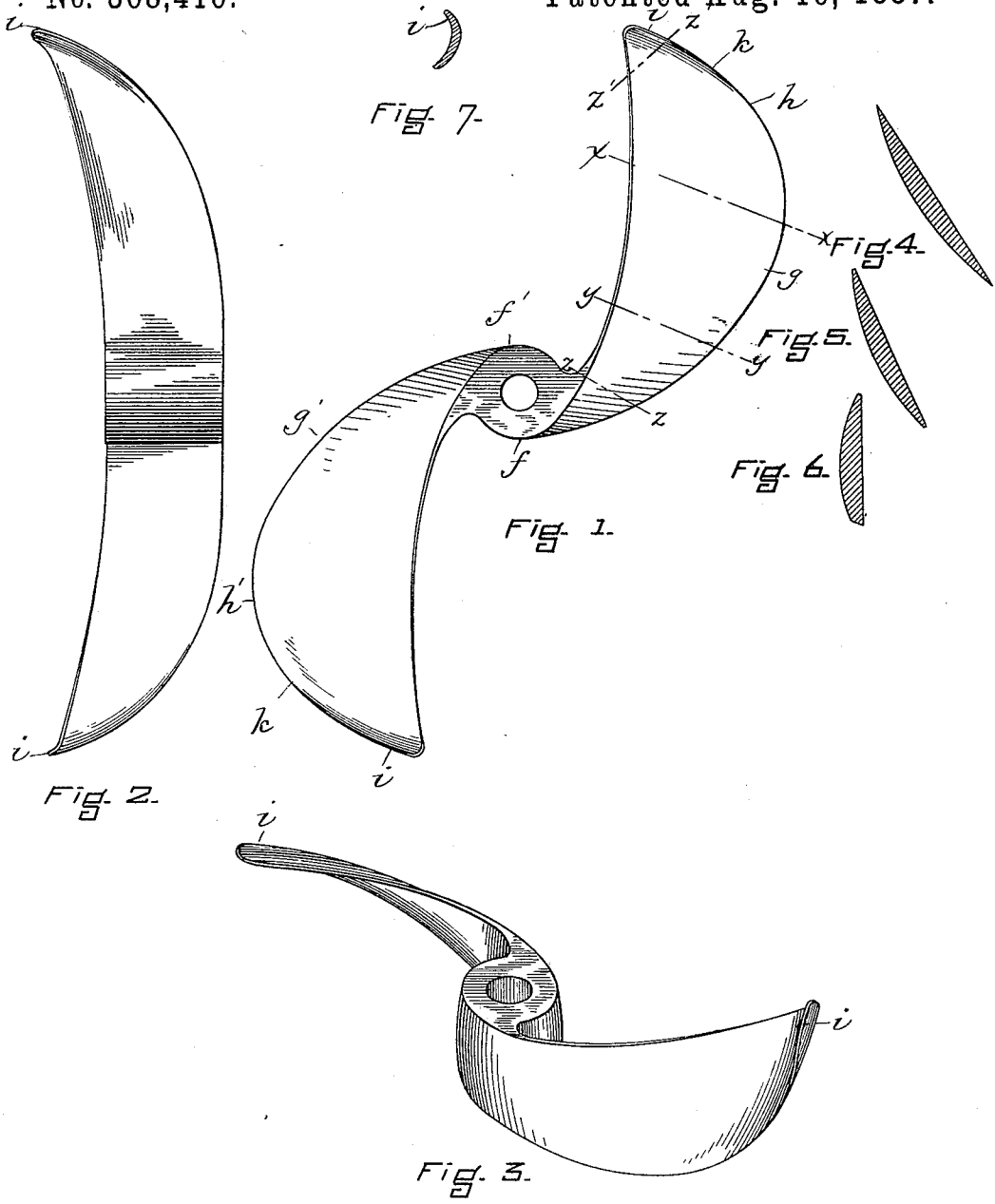


(Model.)

C. D. MOSHER.
SCREW PROPELLER.

Patented Aug. 16, 1887.

No. 368,416.



WITNESSES.

A. D. Grover
C. D. Crocker.

INVENTOR

C. D. Mosher
by Wright, Brown & Crowley
Attys.

UNITED STATES PATENT OFFICE.

CHARLES D. MOSHER, OF AMESBURY, MASSACHUSETTS.

SCREW-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 368,416, dated August 16, 1887.

Application filed March 26, 1887. Serial No. 232,457. (Model.)

To all whom it may concern:

Be it known that I, CHARLES D. MOSHER, of Amesbury, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Screw-Propellers, of which the following is a specification.

The modern screw-propeller embraces two theories—viz., (a) the true pitch, and (b) the expanding or increasing pitch, the latter embracing two applications—first, expanding from hub to periphery; second, from the anterior to the posterior portion of blade. In each of these two types the blades start radially from hub. The helicoidal angle near the center of revolution is practically *nil*. The portion of the blade at and near the hub acts chiefly as a longitudinal radial vane or paddle to produce a revolving and radiating or centrifugal motion to the body of water upon which it impacts, thus causing a considerable waste of power, increase of friction, deterioration of the effective thrust of the peripheral portion of blades, and producing destructive vibratory and jarring motions.

The improved propeller of my invention, hereinafter described, is designed to overcome the above-quoted and other disadvantages incident to the use of the types heretofore used.

In my improved propeller the acting or working surface is made to start from the hub tangentially, and, following a volute or other suitable spiral curve, ends at the circumference nearly opposite the initial point on the hub.

The initial or starting point or line upon the hub may be parallel to or at an angle with the center of revolution. In the latter case the hub would have the form of a truncated cone. The pitch from this point to the periphery may be "true," or the blade may be given either of the two characteristics of the old type. I prefer, however, to reclinate or bend or curve backward the outer end of blade, for reasons stated hereinafter.

It will be seen that the improved form near the hub also tends to give the water a centrifugal motion. I believe that this unavoidable result is produced in a smoother manner than the radial blades effect and with much less

friction, while the spiral form brings the effective angle of impact much nearer the center of revolution, and at the same time reduces the angle of water-release. As a result the area of effective pressure is greatly increased, while the water flows from the blades in an unbroken current without eddies. The tendency of the reclination or backward curve at end of blade is to meet and overcome the divergent or outward tendency of the water. The two forces—viz., that caused by the form near the hub and that caused by the recurvity at the periphery—being in equilibrium, cause the water to be projected backward in a cylindrical column, the whole producing a uniformity of resistance and action, reducing vibration, friction, and backflow or dead-water to a minimum, incidentally tending to prevent the body of water acted upon from rising to the surface (the direction of least resistance) and permitting the equally effective use of the screw at a less degree of submergency.

Referring to drawings herewith, Figure 1 is an elevation of my improved propeller looking forward—that is, in the direction or line of motion of the vessel to which in practice it would be attached—and showing the acting or working surfaces of the blades. Fig. 2 represents a side view. Fig. 3 represents a perspective view. Figs. 4, 5, 6, and 7 represent, respectively, sections on lines *x x*, *y y*, *z z*, and *z' z'*, Fig. 1.

In Fig. 1 the curve or outline of the anterior or leading edge of blade starts tangentially at the point *f* and, forming the curve *g h*, ends at a point on the periphery *k*. In a similar manner the posterior or following edge of blade starts from the point *f'*, forms the curve *g' h'*, and ends at point *k*. The relative form of these curves depends upon the character of the acting face of the screw—that is, whether it be true or "expanding" pitch—as also depends the form of the sections shown in Figs. 4, 5, and 6.

i i represent the reclinated or backwardly-curved peripheral portions of the blade.

I claim—

A screw-propeller the acting or working surface of each of the blades of which starts

from the hub tangentially, and following a
volute or other suitable curve, ends at the
circumference nearly opposite to the initial
point on the hub, the outer ends or tips of
5 said blades curving backwardly, all substan-
tially as and for the purpose set forth.

In testimony whereof I have signed my name

to this specification, in the presence of two sub-
scribing witnesses, this 11th day of March,
1887.

CHARLES D. MOSHER.

Witnesses:

C. F. BROWN,

A. D. HARRISON.