No. 635,899. Patented Oct. 31, 1899.

L. T. ROBERTS.
SCREW PROPELLER.
(Application filed Dec. 20, 1898.)

(No Model.)

FIG-1-

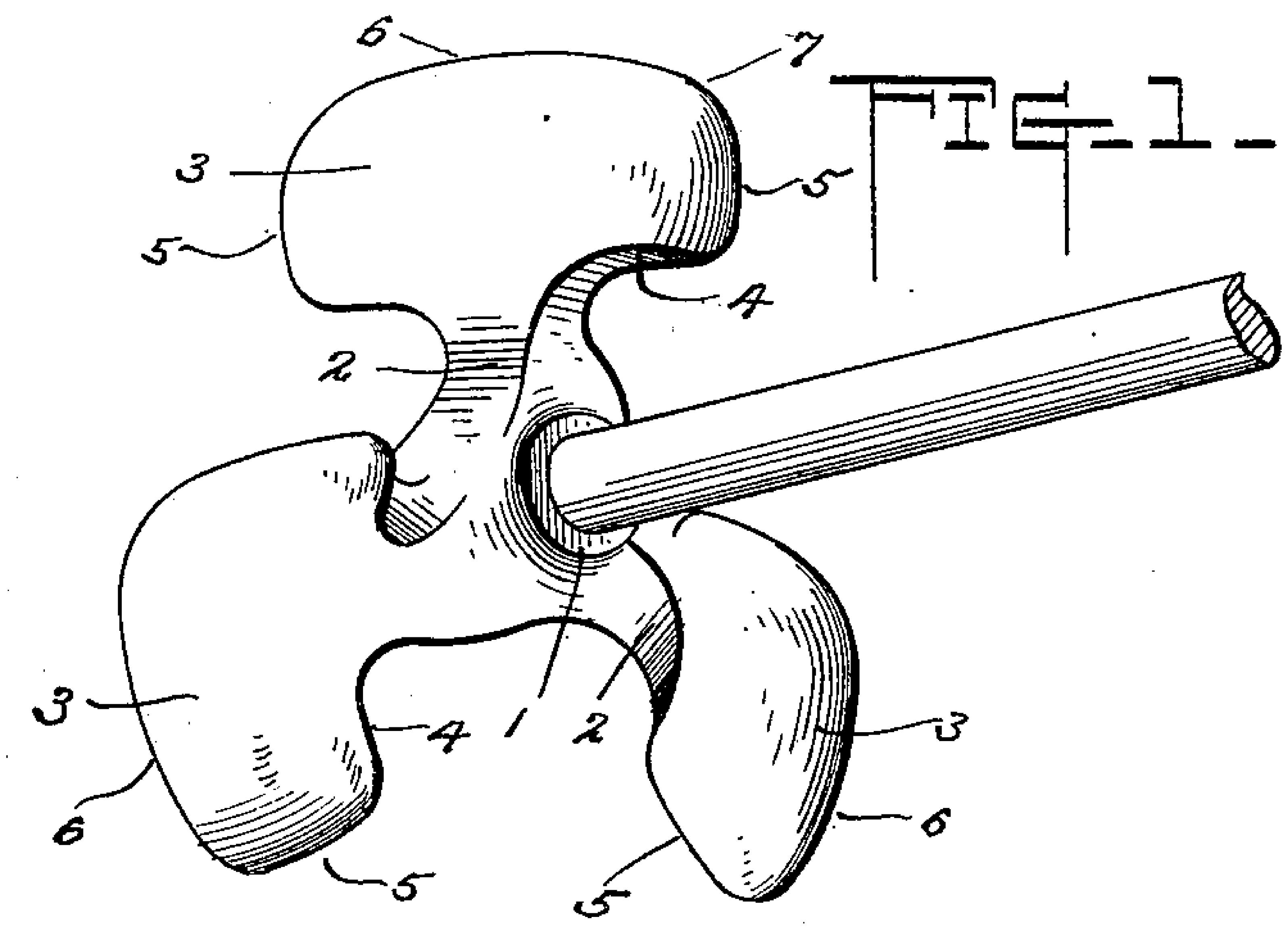


FIG-2-

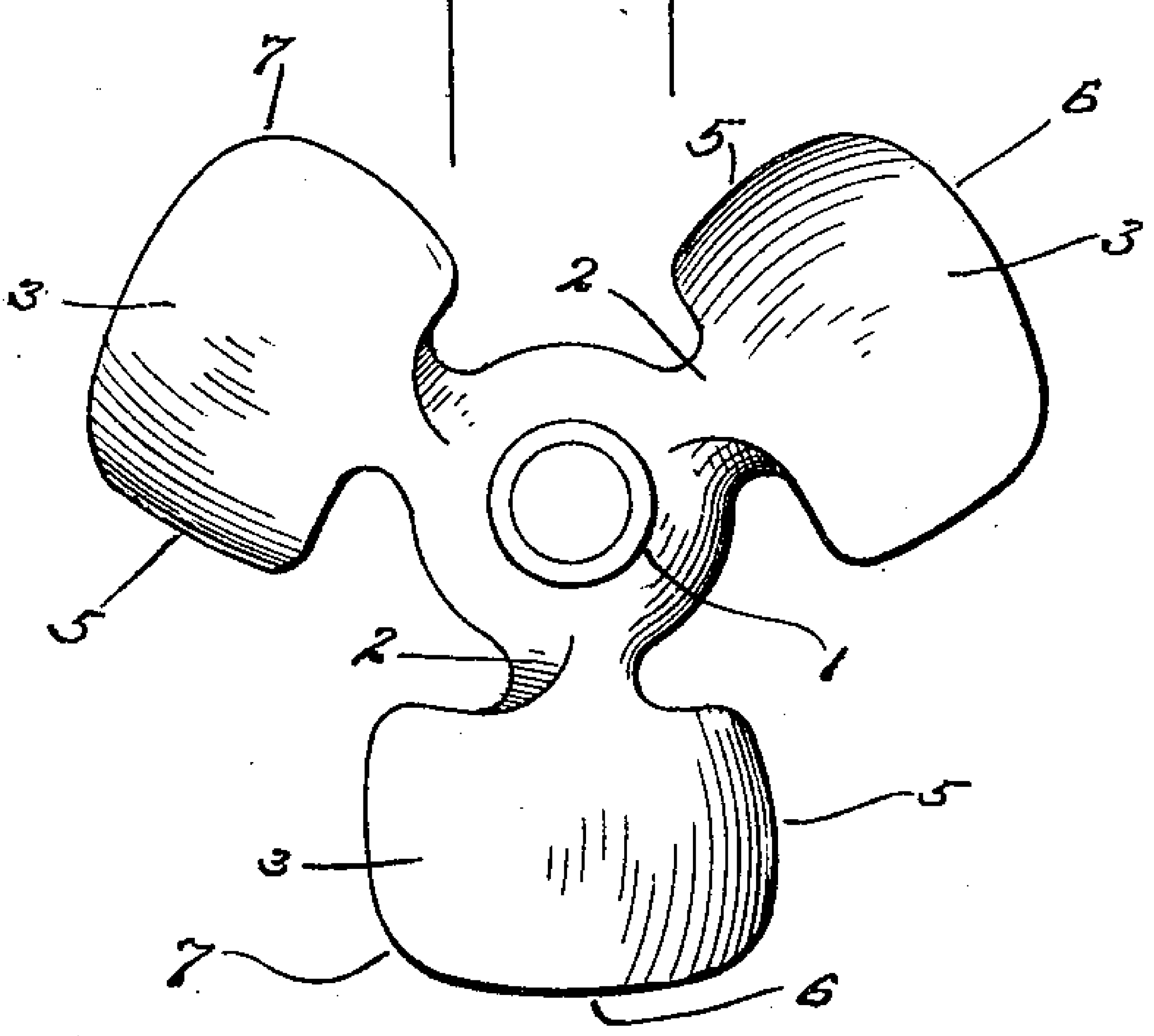


FIG-3-

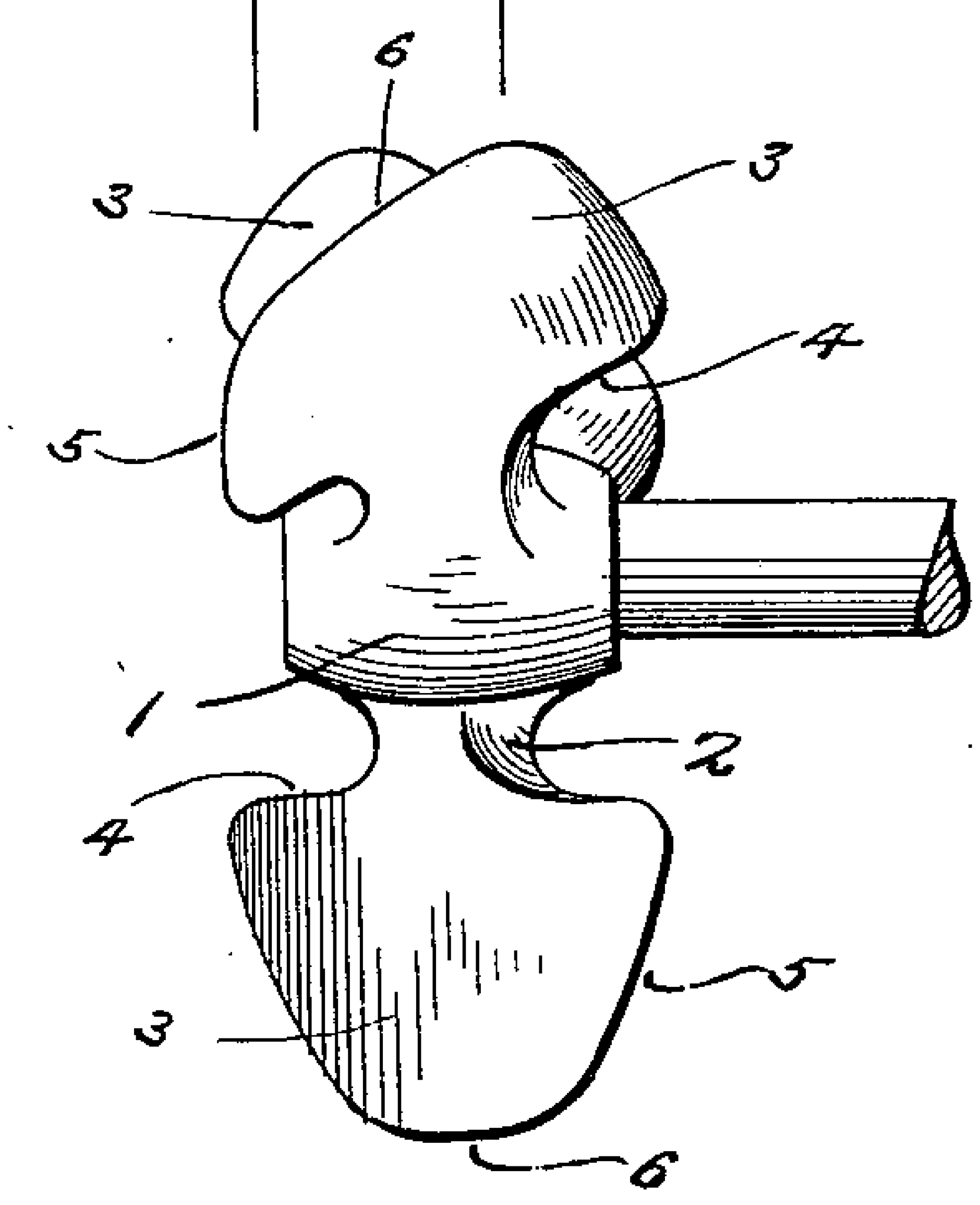


FIG-4-

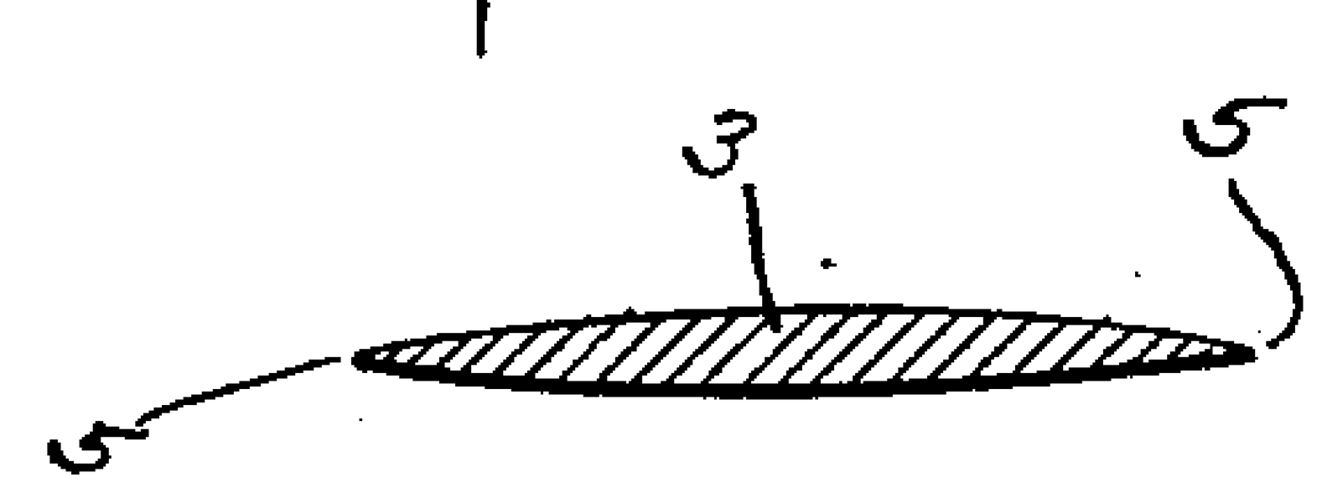
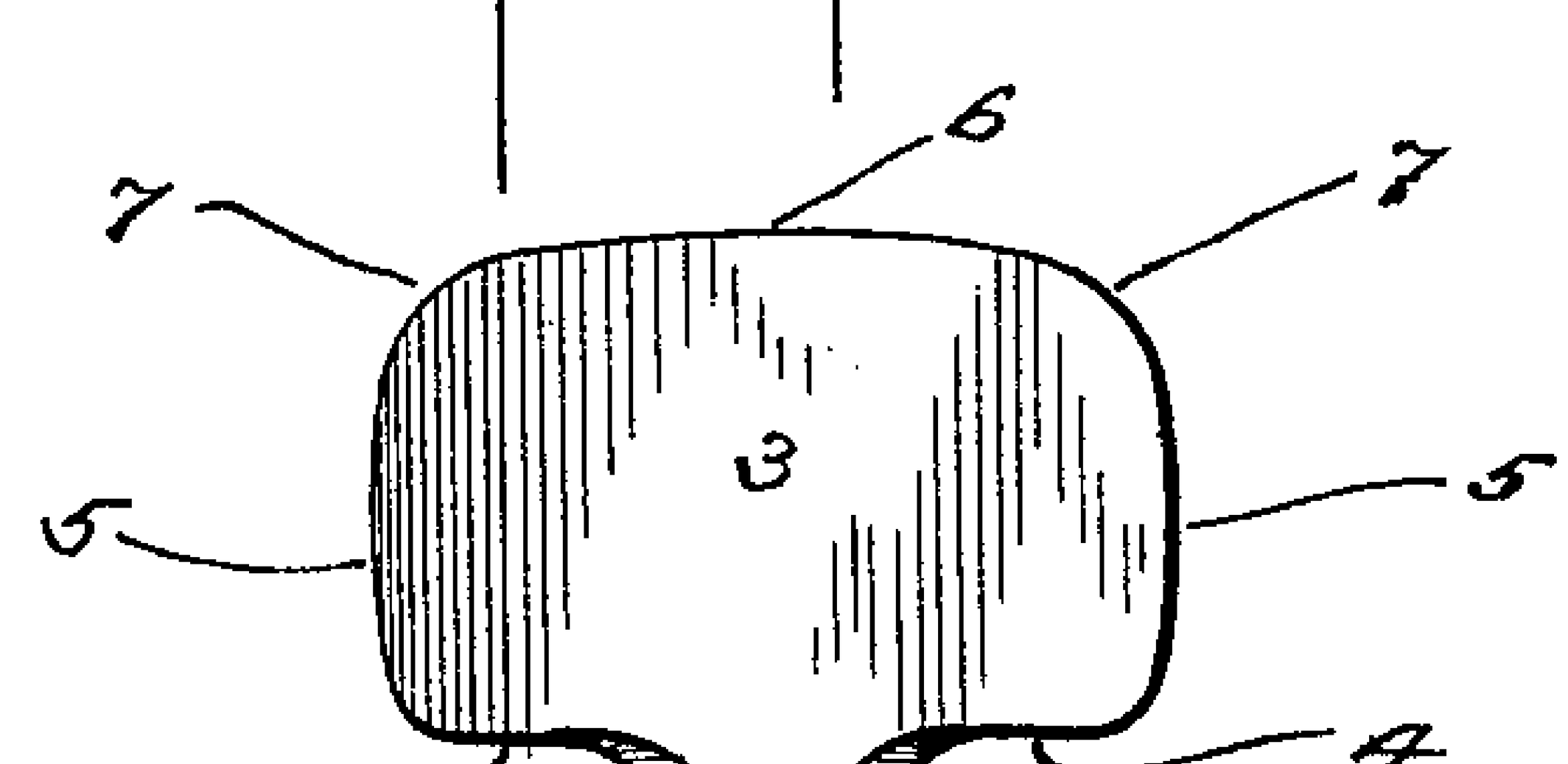


FIG-5-



Witnesses

L. T. Roberts, Inventor

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UNITED STATES PATENT OFFICE.

LEMUEL T. ROBERTS, OF TOLEDO, OHIO.

SCREW-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 635,899, dated October 31, 1899.

Application filed December 20, 1898. Serial No. 699,815. (No model.)

To all whom it may concern:

Be it known that I, LEMUEL T. ROBERTS, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Marine Propellers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a novel form of marine propeller-wheel; and the object is to improve the construction and increase the efficiency of the same.

To these ends the novelty consists in the construction, combination, and arrangement of the same, as will be hereinafter more fully described, and particularly pointed out in the claim.

In the accompanying drawings the same reference characters indicate the same parts of the invention.

Figure 1 is a perspective view of my improved propeller-wheel. Fig. 2 is a front elevation of the same. Fig. 3 is an edge view. Fig. 4 is a horizontal section through one of the blades. Fig. 5 is a plan view of one of the blades, taken at a right angle to the face thereof.

In the drawings, 1 represents the hub, 2 2 the radial arms, and 3 3 the approximately rectangular blades, centrally supported by the arms and having their outer edges 6 6 adapted to be arranged at any angle desired for power or speed. The base-lines 4 4 of each blade are elliptical and form a continuation of the same plane or in line with a spiral line around axis equal in length to lead of the wheel's circumference. The edges 5 5 taper to a point and are parallel with each other, as shown in Fig. 5, provided the twist is not in them or if taken out of them. The outer corners 7 7 are curved, as shown, and by referring to Fig. 4 it will be seen that the blade is of a double-convex form in cross-section and the oppositely-disposed faces are formed with the same pitch, so that the wheel operates exactly the same in backing as when running ahead.

Another important feature is that each blade has a uniform lead from its outer edge inwardly to the hub, and in practice a propeller-wheel thus constructed has in experimental test developed ten per cent. more speed and the same amount of power with a relatively smaller diameter.

While I have shown my improved propeller as formed with three blades, I do not wish to be confined to the same, as it is evident that the number of blades may be increased or diminished any number from two to four at will without departing from the spirit of my invention.

In very large propellers each blade, with a corresponding section of the hub, may be built separately and then joined together.

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

The herein-described marine propeller, comprising the hub 1 secured upon the driving-shaft, the integral radial arms 2, 2, extending from said hub 1, the integral double-convex blades 3 3, formed with approximately parallel edges 5 5, elliptical outer edges 6, curved corners 7 7, and having their oppositely-disposed faces formed with the same pitch to enable the wheel to operate the same when backing as when running ahead, substantially as specified.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LEMUEL T. ROBERTS.

Witnesses:
DANIEL H. JAMES,
FREDRICK J. RHORAR.