

No. 745,871.

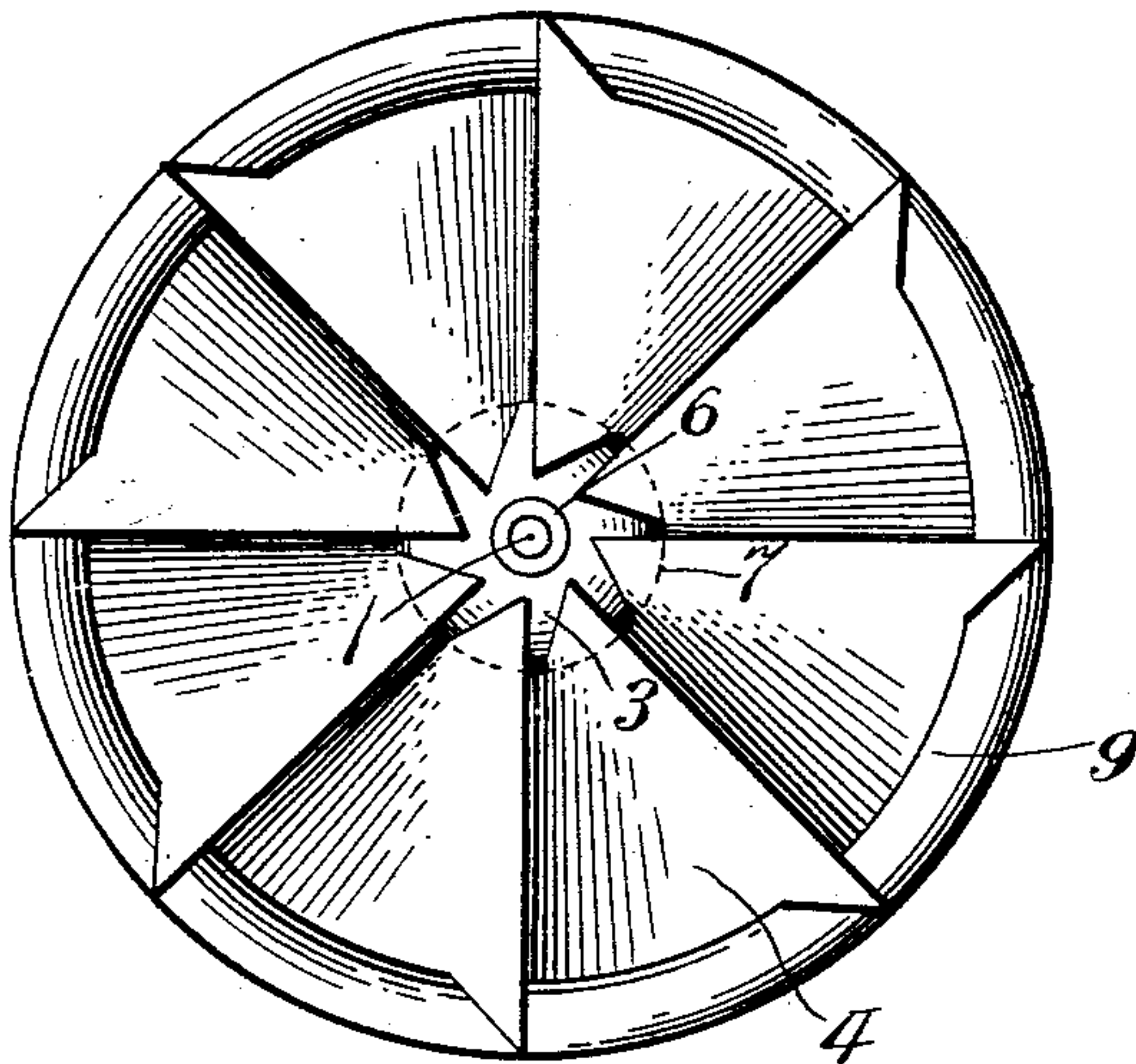
PATENTED DEC. 1, 1903.

J. B. MACDUFF.  
SCREW PROPELLER.

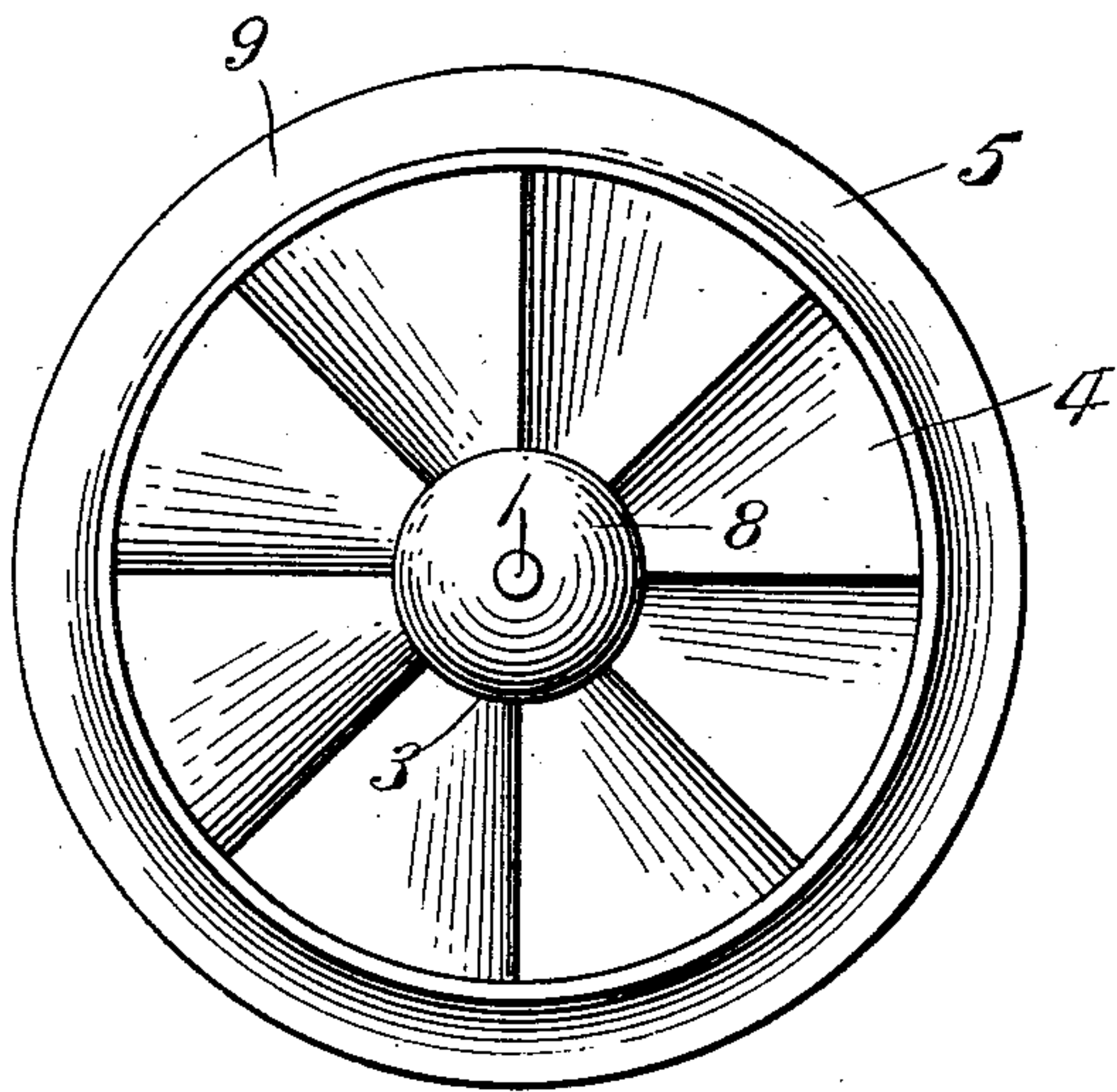
APPLICATION FILED APR. 13, 1903.

NO MODEL.

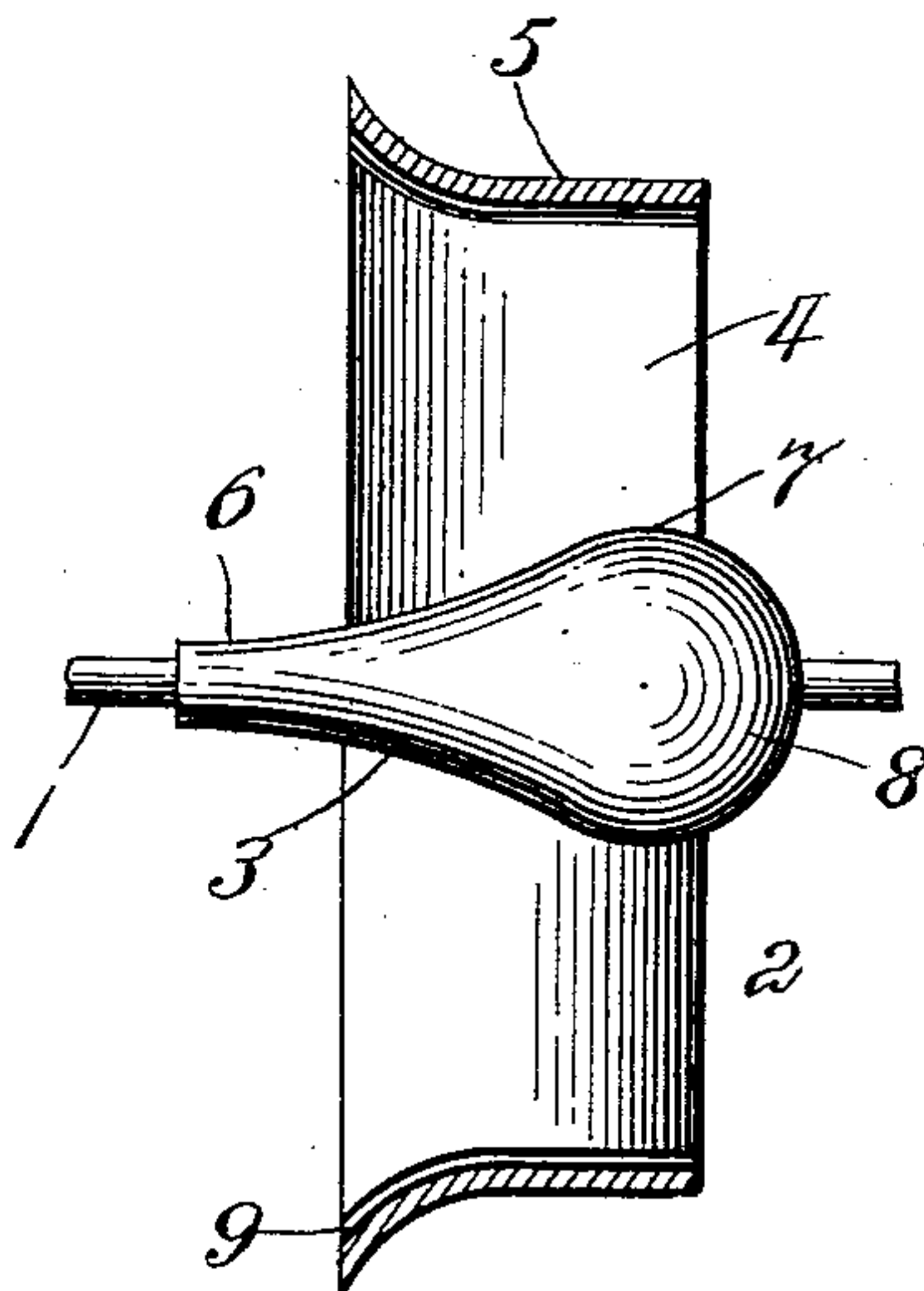
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

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## SCREW-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 745,871, dated December 1, 1903.

Application filed April 13, 1903. Serial No. 152,416. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES B. MACDUFF, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Screw-Propellers; and I do declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same.

My invention relates to certain new and useful improvements in screw-propellers which may be used for propulsion either through air or water.

The object of the invention is to simplify the construction, reduce the cost of production, and increase the general efficiency of this class of devices.

A further object is to provide a construction whereby the resistance of the fluid in which the device operates will be directed to the points of greatest leverage on the blades of the propeller, and hence increase the propulsive power of the device.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be more fully described, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a front elevation of my improved screw-propeller. Fig. 2 is a rear elevation of the same. Fig. 3 is a central longitudinal sectional view.

Referring more particularly to the drawings, the numeral 1 denotes a shaft upon which my improved propeller 2 is suitably secured. The latter comprises the tapering hub 3, the screw-blades 4, and the casing or hood 5, which parts are rigidly secured together.

The hub 3 is of tapered form, having a rear round butt-end 8, the taper beginning at the point 7 and extending forwardly to the point 6. The hood or casing 5 is secured upon the outer ends of the blades 4 and has its front or forward edge flared outwardly, as shown at 9, whereby the air or water is directed inwardly toward the blades. The hood or rim

of the propeller in addition to confining the air or water against the blades also acts as a fly-wheel for the shaft to preserve the momentum and steady the rotation. The blades 4 are arranged radially about the hub 3 and have their inner ends attached to the tapered face of the same.

Owing to the taper of the hub and the flare of the hood or casing, it will be observed that the air or water will be directed to the outer portions of the blades where the leverage is greatest, and hence the propulsive power of the device will be increased. As the propeller is rotated in the air, the flaring mouth or inlet end of the casing will direct the air inwardly against the blades, and at the same time the tapered hub directs the air outwardly toward the extremities of the blades, thereby causing the air to afford a greater amount of resistance.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. A propeller, consisting of a hood or casing, a hub and blades connecting said hub and hood or casing, said hood or casing flaring outwardly from its rear to its forward end, and said hub tapering from its rear to its forward end, at which point it is of less diameter than at its rear end, substantially as described.

2. A propeller comprising a hood or casing having an outwardly-flaring forward end, a hub tapering from its rear to its forward end and blades having their outer ends attached to the hood or casing and their inner ends secured to the flaring portion of the hub, substantially as described.

3. A propeller comprising blades having

their outer ends connected by a forwardly  
and outwardly flaring hood or casing and  
their inner ends secured to a forwardly-taper-  
ing hub, whereby the fluid will be directed to  
5 the center or outer portion of the blades, sub-  
stantially as described.

In testimony whereof I have hereunto set

my hand in presence of two subscribing wit-  
nesses.

JAMES B. MACDUFF.

Witnesses:

GEO. H. YOUNG,  
WM. C. DAVIDSON.