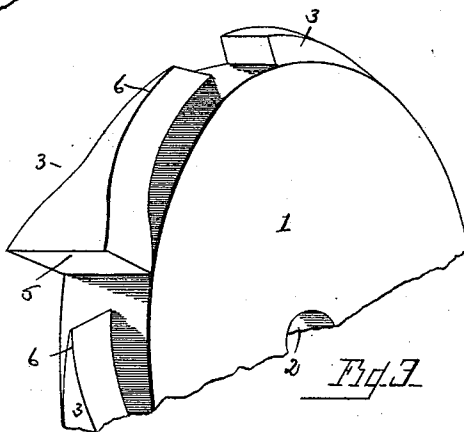
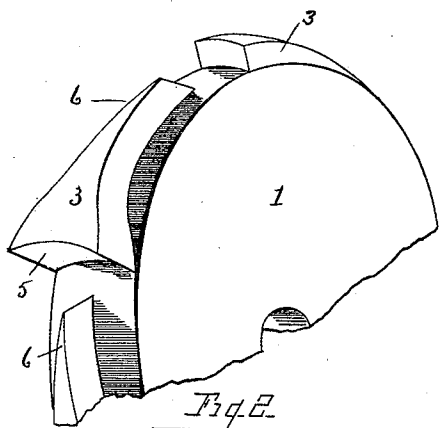
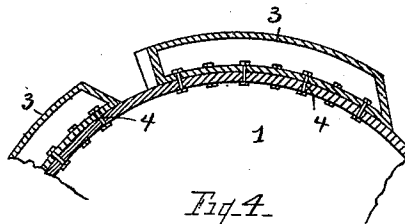
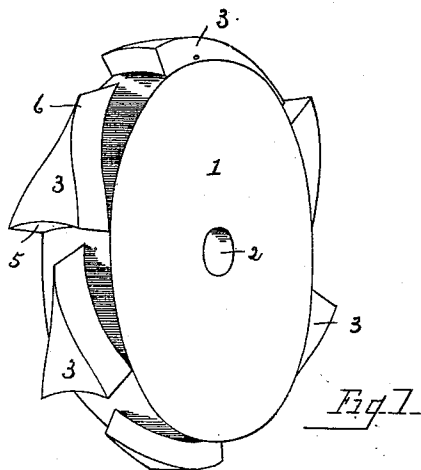


(No Model.)

T. DUNLAP.
PROPELLING WHEEL.

No. 461,669.

Patented Oct. 20, 1891.



WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS DUNLAP, OF TOLEDO, OHIO.

PROPELLING-WHEEL.

SPECIFICATION forming part of Letters Patent No. 461,669, dated October 20, 1891.

Application filed August 1, 1891. Serial No. 401,379. (No model.)

To all whom it may concern:

Be it known that I, THOMAS DUNLAP, of Toledo, county of Lucas, and State of Ohio, have invented certain new and useful Improvements in a Wheel for the Propulsion of Vessels; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in wheels for the propulsion of vessels, and has for its object to provide a wheel having a series of striking-faces upon the periphery, each face having a rearwardly-extending fin of a gradually-decreasing area in cross-section, terminating in a point adjacent to the striking-face next following, whereby the water release is effected without vacuum, and the water without the usual eddies due to the necessary lateral displacement by the ordinary form of wheel.

A further object is to form a wheel for the propulsion of vessels in which I may provide a cylindrical water-tight drum or body portion and air-tight blades having striking-faces, whereby the buoyancy of the wheels assist in trimming or maintaining the horizontality of the boat.

With these objects in view the invention consists in forming a wheel with a series of blades formed with striking-faces at the proper angle relative to the axial center of the wheel to prevent percussion at the point of impact and with rearwardly-extending fins of cuneal form.

The invention further consists of forming a wheel for the propulsion of vessels, having a cylindrical body formed with an air-tight compartment and peripheral blades having striking-faces and rearwardly-extending cuneal fins to afford water release without vacuum or eddy, the blades being air-tight, whereby the buoyancy of the wheel will assist in maintaining the vessel in proper trim or horizontal position.

In the drawings, Figure 1 is an elevation of a wheel constructed in accordance with my invention. Fig. 2 is a sectional detail of the

same, the two figures named showing the striking-face of the wheel or blade as curved in order to increase the area of the same and prevent divergence of the water when the impact is made. Fig. 3 is a like view to that shown in Fig. 2, with the striking-face straight, either construction being adaptable to the peculiar form of fin forming part of the blade. Fig. 4 is a detail view, in front elevation, of a transverse section of the wheel, showing the air-tight body portion and a preferred means of securing an air-tight blade thereto.

1 designates the body of the wheel, formed with an axial opening 2 for the reception of the power-shaft. The body portion 1 may be of any preferred construction, although I have found in practice that if formed with a central air-tight chamber great buoyancy is effected, and as a result the wheels assist greatly in sustaining the vessel from inclination sidewise or from rocking motion in this direction.

3 designates a series of blades, either formed integral with or detachably secured to the body portion, a preferred construction being a hollow air-tight blade to increase the buoyancy of the wheel, with the blade detachably secured either by bolts 4, as shown in Fig. 4, or in any other convenient manner. The interior formation of the blade or body portion is, however, of less importance than the peculiar formation of the striking-face and fin of the wheel, as the prime object of my invention is to secure a maximum propelling power with a corresponding water release by avoiding great lateral displacement, with the consequent retarding effect of the vacuum occasioned by the present form of wheel, in which the striking-faces and intermediate peripheral wheel-surface are of the same width.

Each blade 3 is formed with a striking-face extending radially from the periphery of the wheel, and preferably of a width corresponding to the width of the wheel, there being a fin 6 extending rearwardly from the face in a true taper, whereby when the face of the blade has entered the water and is in the act of moving through the same by the revolution of the wheel the water may pass from the outer edges of the face without lat-

eral displacement, thereby decreasing the friction and obviating the vacuum necessary in the use of wheels wherein the periphery is of uniform width.

5 It will be seen that in preventing the radial displacement of the water the usual eddy is avoided, and there is an absence of swell, as the wedge-shaped end of the blade passes from the water with cutting effect, as
10 contradistinguished from lifting a volume of the same.

As has been previously mentioned, the blades may be adapted to any form of wheel having a periphery upon which the blades
15 may be formed or secured; but in a vertically-moving paddle-wheel or in submerged propellers the closed drum or body portion, having an air-tight central recess with or without air-tight blades, has by its buoyancy
20 an effect to greatly assist in maintaining the equilibrium of the vessel.

What I claim is—

1. In a wheel for the propulsion of vessels, a body portion provided on its periphery

with a plurality of radial striking-surfaces 25 having projections rearwardly extending and of like circumferential distance from the hub and with tapering sides.

2. In a wheel for the propulsion of vessels, a cylindrical body provided on its periphery 30 with a plurality of removable blades formed with striking-faces, and projections of like circumference having sides decreasing from the broad area of the striking-face to a point in rear thereof.

3. In a wheel for the propulsion of vessels, a body portion comprising an air-tight chamber, a plurality of blades upon its periphery, having radial striking-faces and cuneal projections of like circumference. 35

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses. 40

THOMAS DUNLAP.

Witnesses:

WILLIAM WEBSTER,
O. W. BENSTER.