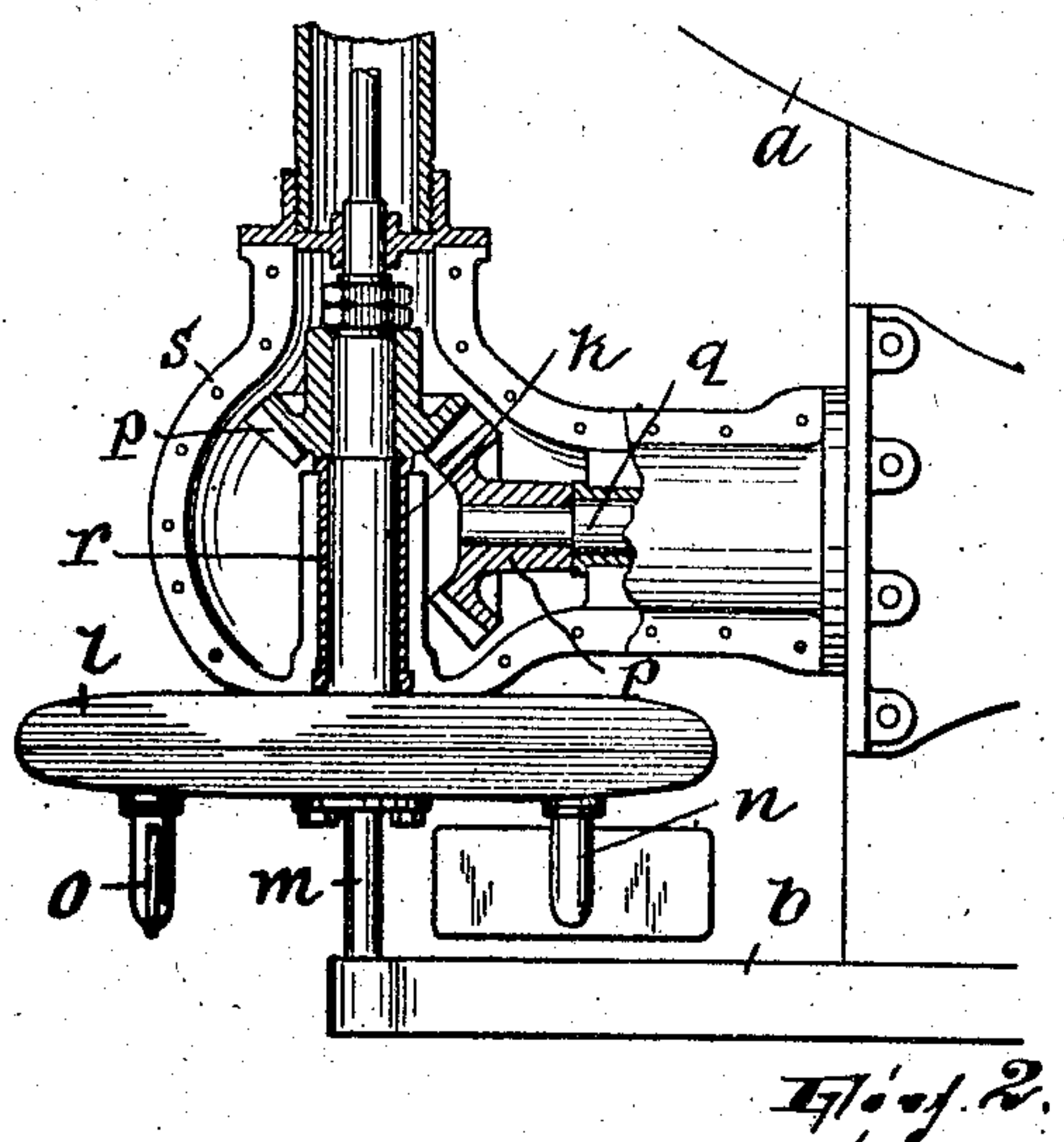
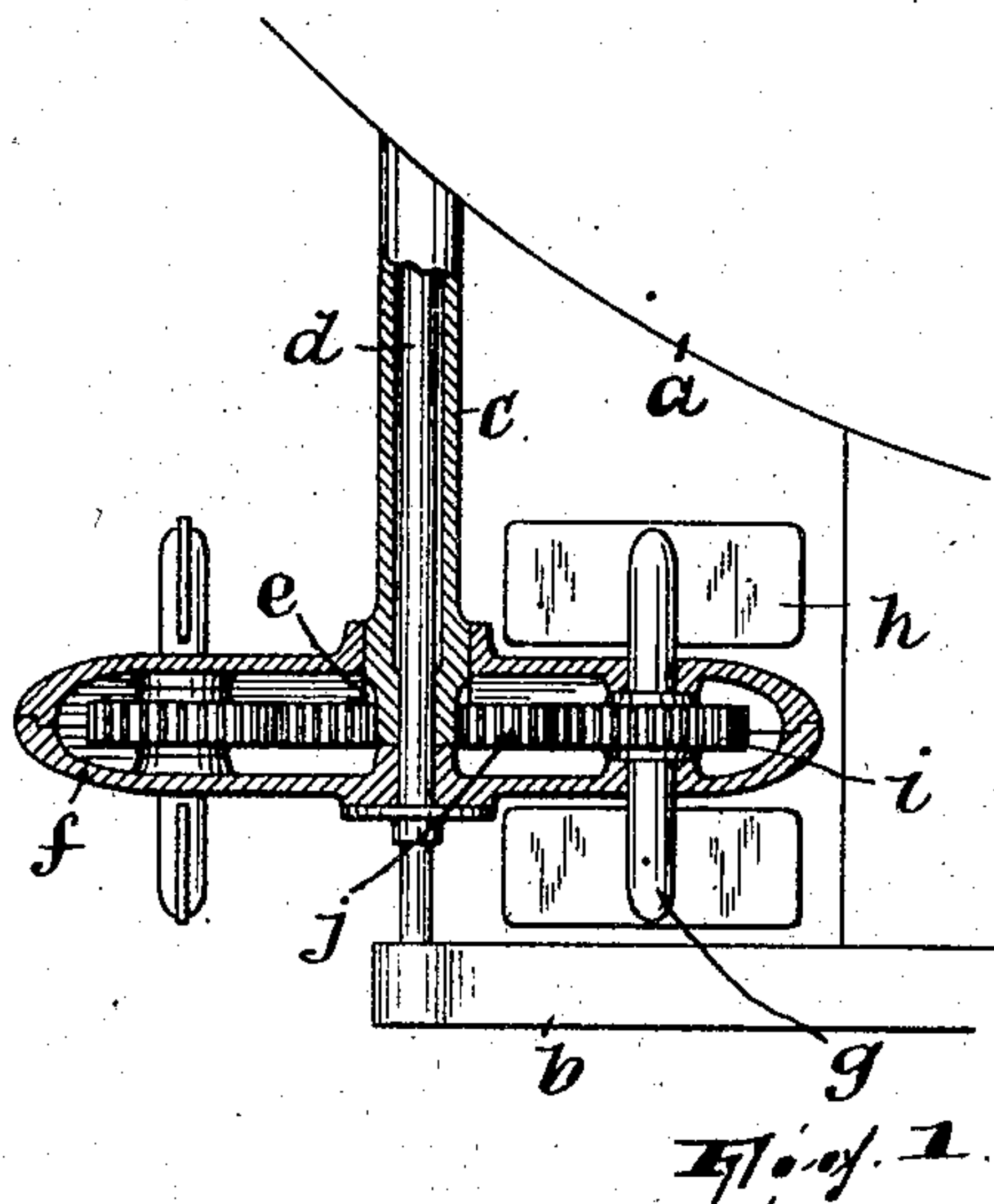


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SUBMERGED VERTICAL PADDLE WHEEL.  
APPLICATION FILED MAR. 16, 1908.

923,737.

Patented June 1, 1909.



WITNESSES

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# UNITED STATES PATENT OFFICE.

LADISLAV VOJÁČEK, OF PRAGUE, AUSTRIA-HUNGARY.

## SUBMERGED VERTICAL PADDLE-WHEEL.

No. 923,737.

Specification of Letters Patent.

Patented June 1, 1909.

Original application filed February 8, 1906, Serial No. 300,127. Divided and this application filed March 16, 1908, Serial No. 421,678.

*To all whom it may concern:*

Be it known that I, LADISLAV VOJÁČEK, a subject of the Emperor of Austria-Hungary, residing in Prague, Kingdom of Bohemia, Austro-Hungarian Empire, have invented a new and useful Improvement of Submerged Vertical Paddle-Wheels, the present being a division of my application for Letters-Patent of the United States of America filed February 8, 1906, Serial No. 300,127; and I do hereby 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in submerged feathering paddle wheels and it has for its objects, first, to improve the mounting of the paddle wheel with reference to its bearings; second, to protect the paddle wheel against injury by impact with the ground; and, third, to strengthen the entire mechanism. I attain these objects by the mechanism shown in the accompanying drawing, wherein,

Figure 1 is a vertical sectional view, partly in side elevation; and, Fig. 2 a similar view illustrating a modification.

In the drawing, *a* designates a vessel and *b* a bearing projecting from the keel portion thereof.

*c* designates a vertical hollow shaft suitably journaled in the vessel and *d* another shaft journaled in shaft *c* and also in bearing *b*. Shaft *c* in this instance is the steering shaft and it is formed at its lower end with a pinion *e*; shaft *d* is the power shaft and it carries at its lower end the flattened casing *f*, receiving the lower end of shaft *d*. The casing is preferably made in two sections, as shown, to facilitate access to the mechanism contained therein.

In casing *f* are journaled two or more vertical spindles *g* projecting above and below the same and each carrying at each end thereof a blade *h*; on the spindles *g* and

also within the casing are fixed the pinions which are geared with the pinion *e* by means of the intermediate pinions *j*.

The construction shown in Fig. 2 is substantially the same, except that in this instance the hollow shaft, *k*, is the driving shaft and carries the casing *l*, while the shaft *m*, journaled in shaft *k* and the bearing *n*, is the steering shaft, being geared with the spindles *o* for the blades *p* in the same manner as that already described with reference to Fig. 1; the hollow shaft *k* is driven by the bevel gears *q*, one of which is carried by the main shaft *q* of the vessel and the other of which is fixed on shaft *k* and serves to support it in the sleeve-portion *r* of a gear-casing *s* attached to the vessel. In this figure it appears that the blades may, if desired, be provided at only one side of the casing, *i. e.*, below it, for instance, instead of at both sides, above and below it, as in Fig. 1.

The operation is as follows: In Fig. 1 the casing is rotated by the driving shaft *d* and carries the blades around with it, each blade being caused to rotate on its own axis by virtue of the pinions *e*, *j* and *i*; steering is effected by rotating shaft *c*, whereby, at any predetermined point in their cycle of movement bodily around the axis of the casing, the blades may be caused to assume the angle required relatively to the longitudinal axis of the vessel in shaping the course of the latter. In Fig. 2, the operation is the same, only here the hollow shaft *k* drives the casing while the shaft *m* is employed for steering.

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

1. The combination of a rotary casing, a gear journaled centrally in the casing, means for rotating the gear, means for rotating the casing, a spindle journaled in the casing parallel with its axis of movement, blades carried by the spindle one on each side of the casing and gearing connecting said spindle with the gear, substantially as described.

2. The combination of a stationary casing,

a rotary inclosed casing arranged below the stationary casing, a bearing arranged below the rotary casing, rotary shafts, one of which is hollow, receives the other and is journaled in the stationary casing and the other of which is also journaled in said bearing, a pinion carried by the received shaft, said rotary casing being carried by the receiving shaft, blades or paddles journaled in said rotary casing and gearing connecting said

blades or paddles with the pinion, substantially as described.

In testimony, that I claim the foregoing, I have hereunto set my hand this twenty-sixth day of February, 1908.

LADISLAV VOJACEK.

Witnesses:

ADOLPH FISCHER,  
ARTHUR SCHWEZ.