

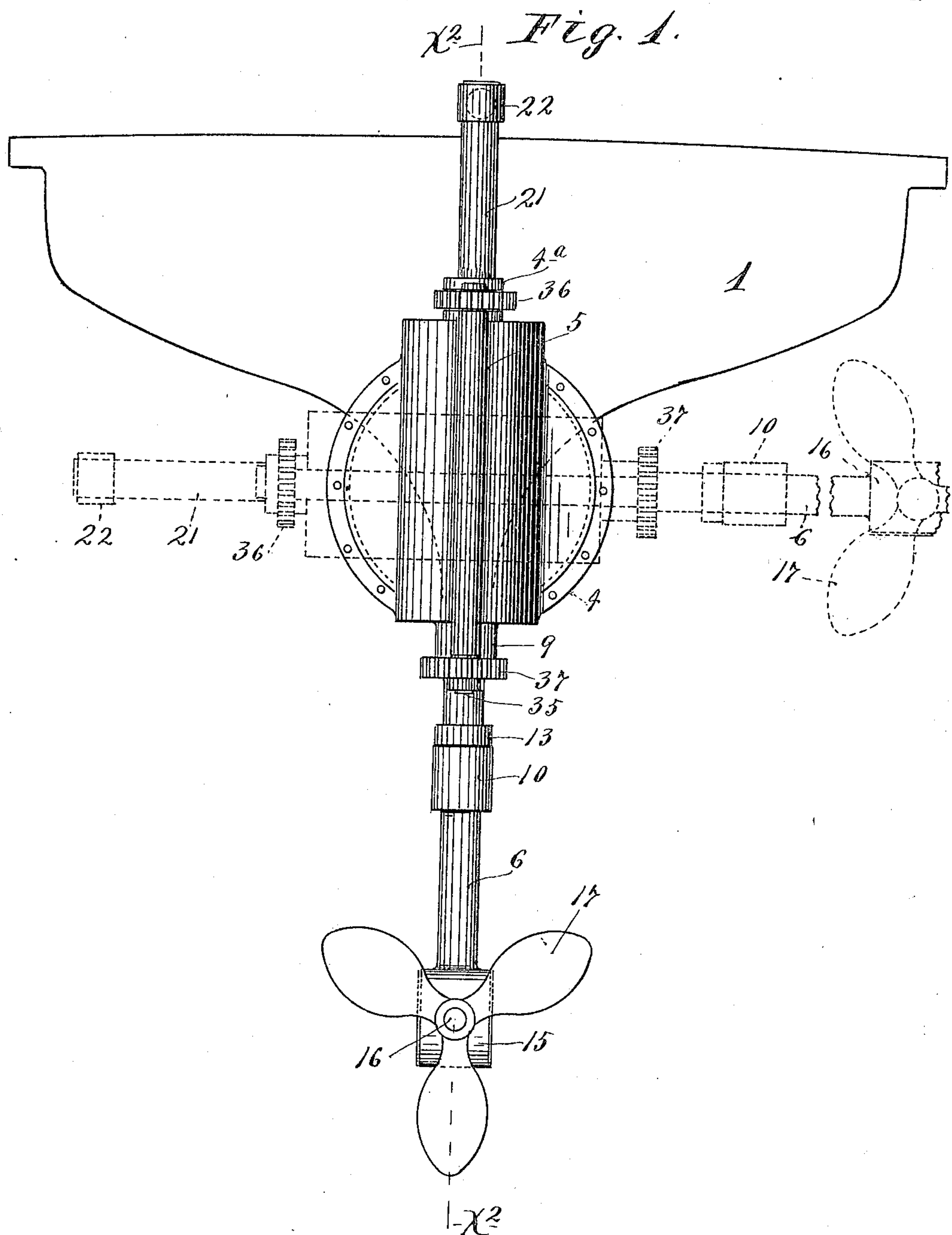
No. 812,534.

PATENTED FEB. 13, 1906.

E. G. WALLOF.  
PROPELLER ATTACHMENT FOR ROWBOATS.

APPLICATION FILED SEPT. 17, 1904.

3 SHEETS—SHEET 1.



Witnesses  
A. H. Opsahl.  
C. W. Jappesen.

Inventor.  
Edward G. Wallof.  
By his Attorneys.  
Williamson & Merchant

No. 812,534.

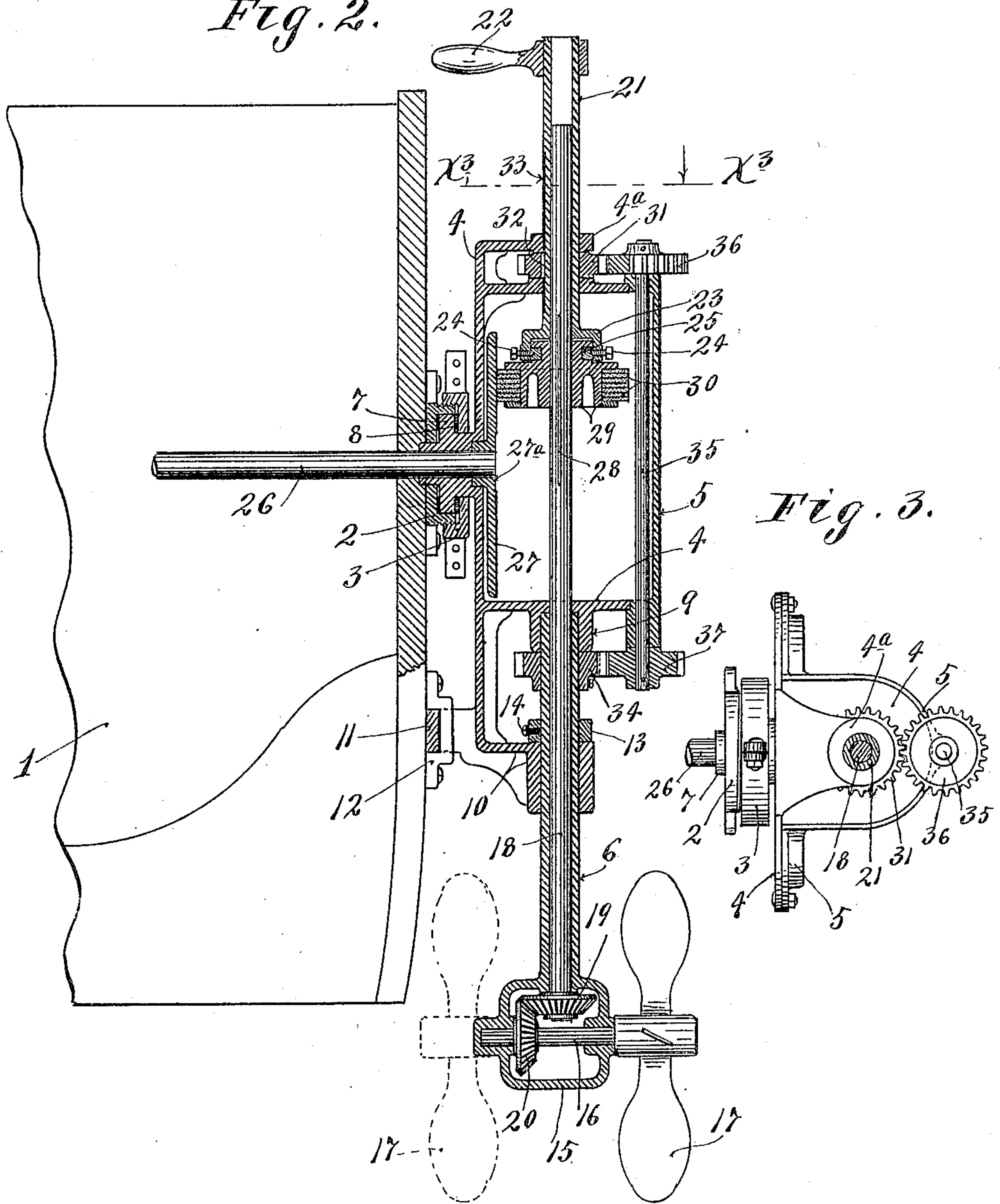
PATENTED FEB. 13, 1906.

E. G. WALLOF.  
PROPELLER ATTACHMENT FOR ROWBOATS.

APPLICATION FILED SEPT. 17, 1904.

3 SHEETS—SHEET 2.

*Fig. 2.*



*Witnesses.*  
*A. H. Opsahl.*  
*E. W. Jeppesen.*

*Inventor.*  
*Edward G. Wallof.*  
*By his Attorneys:*  
*Williamson & Merchant*

No. 812,534.

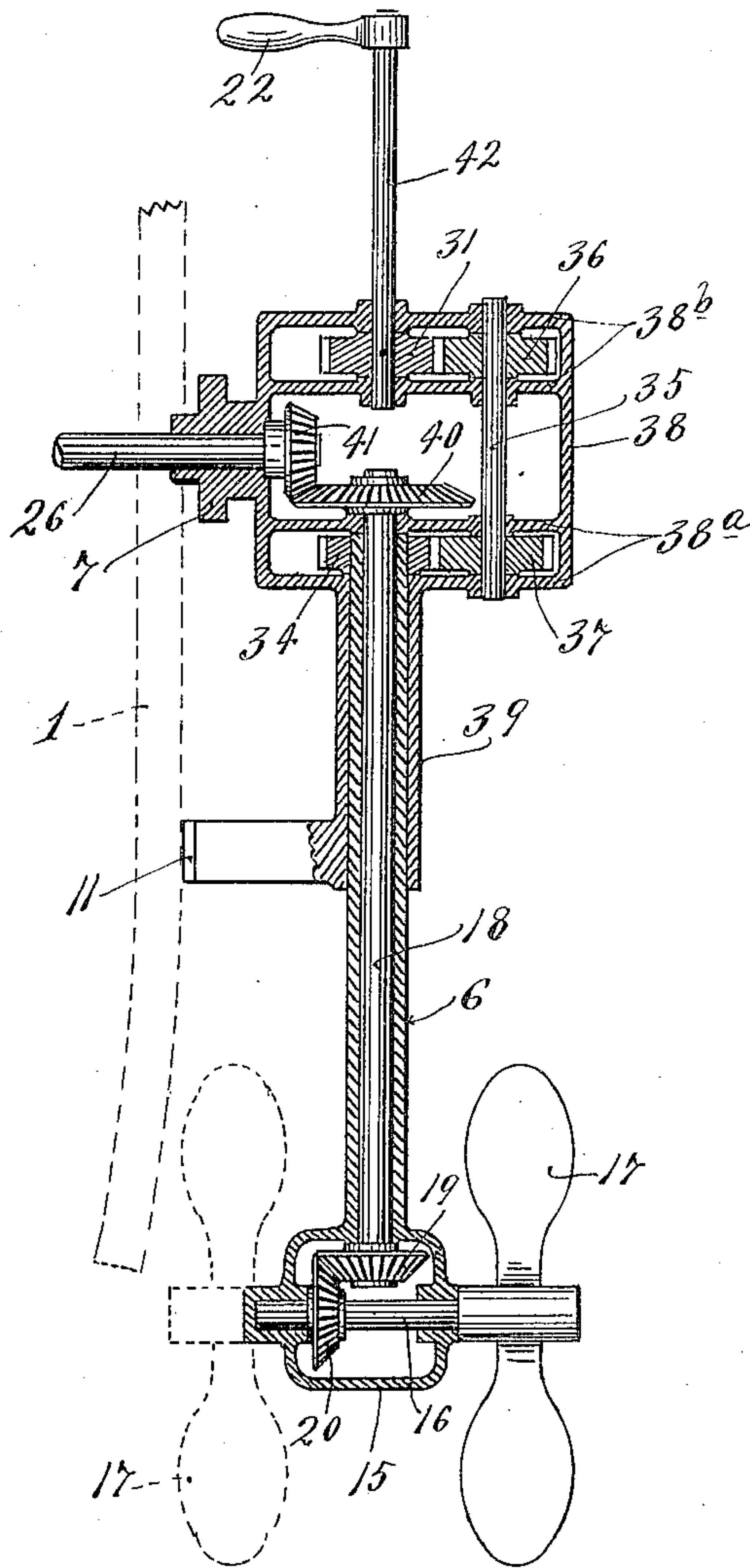
PATENTED FEB. 13, 1906.

E. G. WALLOF.  
PROPELLER ATTACHMENT FOR ROWBOATS.

APPLICATION FILED SEPT. 17, 1904.

3 SHEETS—SHEET 3.

*Fig. 4.*



*Witnesses*  
*A. H. Opsahl.*  
*E. W. Jeppesen.*

*Inventor.*  
*Edward G. Wallof.*  
*By his Attorneys.*  
*Williamson & Merchant*



# UNITED STATES PATENT OFFICE.

EDWARD G. WALLOF, OF MINNEAPOLIS, MINNESOTA.

## PROPELLER ATTACHMENT FOR ROWBOATS.

No. 812,534.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed September 17, 1904. Serial No. 224,799.

*To all whom it may concern:*

Be it known that I, EDWARD G. WALLOF, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Propeller Attachments for Rowboats; 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.

My invention has for its especial object to provide a simple, cheap, and efficient propeller attachment for rowboats and other light craft; and to such ends it consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a rear elevation of a rowboat having one of my improved propeller attachments applied thereto. Fig. 2 is a vertical section of the parts shown in Fig. 1, taken on the line  $x^2 x^2$  of said Fig. 1. Fig. 3 is a horizontal section on the line  $x^3 x^3$  of Fig. 2; and Fig. 4 is a view corresponding to Fig. 2, but illustrating a modified construction, some parts being shown only by dotted lines.

The numeral 1 indicates the hull of a rowboat to the stern of which my improved propeller attachment is applied. On the stern-board of the hull 1, directly over the keel, is rigidly secured a cup-like bearing 2, onto which is screw-threaded a large centrally-perforated cap-nut 3.

In the construction illustrated the support for the propeller-wheel is made up of a two-part casing 4 5 and a sleeve 6. The casing-section 4 at its back is provided with a heavy laterally-projecting flanged trunnion 7, the flange of which works within the cavity of the bearing 2 and the body of which is journaled in the web portions of said bearing 2 and nut 3. The nut 3 acts upon the flange of the trunnion 7 to hold the case 4 5 against movement longitudinally of the trunnion 7, but permits the said trunnion to freely turn to afford a pivot for the said case. Packings or gaskets 8, interposed between the flange of the trunnion 7 and web of the bearing 2 and the nut 3, form tight joints and cause the said bearing and nut to act as a stuffing-box.

The case 4 5 is thus mounted for pivotal move-

ments in an approximately vertical plane at a right angle to the line of travel, and normally it will stand in an approximately vertical position. At its lower end the case-section 4 is formed with a bearing-hub 9 and with a depending bearing-arm 10, which arm, as shown, is provided with a projecting finger 11, which when the case is turned upright enters a keeper 12, secured on the stern-post of the boat.

The propeller-wheel bearing-sleeve 6 extends longitudinally of the case 4 5, depends therefrom, and is journaled in the bearing-hub 9 and bearing-arm 10 of the case-section 4. A stop-collar 13, rigidly secured on the sleeve 6 by a set-screw 14 or otherwise, rests upon the bearing of the arm 10 and holds said sleeve 6 against axial endwise movements. At its lower free end the sleeve 6 is formed with yoke-like bearing 15. Journaled in this yoke-bearing 15 and extending approximately in the direction of the line of travel of the boat or, otherwise stated, at a right angle to the axis of the sleeve 6 is a short propeller-wheel shaft 16, to the projecting end of which is rigidly attached a propeller-wheel 17.

Loosely journaled in the bearing-sleeve 6 and extending upward through the case 4 5 is a shaft 18, which at its lower end is provided with a bevel-gear 19, that intermeshes with a bevel-gear 20 on the propeller-wheel shaft 16.

Mounted to rotate and to slide through bearing-prongs 4<sup>a</sup> at the upper end of the case-section 4 is a controller in the form of a sleeve 21, having at its upper end a hand-lever 22 and having at its lower end an expanded sleeve-section 23, within which is held, by means of set-screws 24 or otherwise, an annular shipper-ring 25.

Extending from within the hull 1, through the trunnion 7, and into the case 4 5 is a power-driven shaft 26, which may be assumed to be the shaft of a small explosive-engine. At that end which projects into the casing 4 5 said power-shaft 26 carries a smooth-faced frictional driving-disk 27. Mounted to slide on the upright shaft 18, but held to rotate therewith by means of key 28, is a friction-wheel 29. This friction-wheel has a peripheral annular facing 30, of leather or other material having great frictional adhesion to metal. This facing 30 runs against the face of the friction-disk 27 and serves to transmit motion from the shaft 26 to the shaft 18.



The sliding movements of the friction-wheel 29 are controlled by the position of the sleeve 21, the shipper-ring 25 of which fits an annular groove in the hub of said wheel.

5 Mounted on the sleeve 21, between the bearing-prongs 4<sup>a</sup> of the case-section 4, is a spur-gear 31. The sleeve 21 slides freely through the gear 31; but the latter is caused to rotate with the former by means of a key 10 32, carried by the gear and engageable with a groove 33 of said sleeve. A similar gear 34 is rigidly secured to the lower sleeve 6 just below the bearing-hub 9. A vertically-disposed shaft 35, mounted in the case-section 5 15 and extending through the upper and lower extremities thereof, is provided with spur-gears 36 and 37, that mesh, respectively, with the gears 31 and 34.

The friction-disk 27 and friction-wheel 29 20 coöperate to afford a variable-speed reversible frictional drive. As is evident, the farther the wheel 29 is moved away from the axis of said friction-disk 27 the greater will be the speed of the propeller-wheel. When 25 the said friction-wheel is moved above the axis of said friction-disk, the propeller-wheel 17 will be rotated in a direction to propel the boat forward; but when the said wheel is moved below the axis of said disk the propeller-wheel will be driven in a reverse direc- 30 tion and will propel the boat backward. When said friction-wheel is moved into the plane of the axis of said friction-disk, no motion whatever will be imparted to the propeller-wheel, and, as will be noted by reference to Fig. 2, the central portion of said friction-disk 27 is countersunk at 27<sup>a</sup> to prevent frictional engagement between said friction-disk and the friction-ring 30 of said friction-wheel when the said wheel stands in a 40 neutral or idle position. As already indicated, the friction-wheel may be raised and lowered by sliding movements of the sleeve 21 and its handpiece 22. By rotary or oscillatory movements of the sleeve 21, acting 45 through the counter-shaft 35 and coöperating gears 31, 34, 36, and 37, the sleeve 6 may be oscillated and the propeller-wheel may be thrown with its axis at any desired angle 50 with respect to the longitudinal axis of the boat, so that by such adjustments or movements of the propeller-wheel the boat may be steered without the use of a rudder. By the said movements the propeller-wheel may be 55 turned into a reverse position from that shown by full lines in Fig. 2, as shown by dotted lines in said Fig. 2, thereby reversing the driving action of the propeller without interrupting or changing its direction of rotation. 60 Also by means of the handpiece 22 and sleeve 21 the casing 4 5 and other parts carried thereby may be oscillated in an approximately vertical plane at a right angle to the axis of the boat, thereby raising or lowering 65 the propeller and throwing the same into any

desired depth into the water or entirely out of the water. This arrangement is important, because in deep water it is desirable for efficiency to have the propeller act below the 70 bottom of the boat, while in shallow water it is necessary to raise the propeller above the bottom of the boat to prevent the wheel from being broken. In Fig. 1 the propeller and its oscillating support are by dotted lines shown as turned into a horizontal position. 75

From the above it will be seen that all the above-described movements are under the control of the hand placed upon the handpiece 22. Otherwise stated, all the said 80 movements are under the control of a common actuator or controller, which in the construction illustrated in Figs. 1, 2, and 3 is afforded by the sleeve 21 and its handpiece 22. The said common controller, it will therefore 85 be understood, is an important feature and capable of many modifications within the scope of my invention as herein set forth and claimed.

In the construction illustrated in Fig. 4 a gear-casing 38 is provided with a flanged 90 trunnion 7, adapted to be mounted and operated as before described. Said casing 38 is provided with a depending sleeve 39, in which the sleeve 6 is journaled, and the shaft 18, which in this arrangement is shortened 95 up, is provided with a bevel-gear 40, that meshes with a bevel-pinion 41, directly applied to the adjacent end of the power-shaft 26. The spur-gear 34 on the sleeve 6 and intermeshing gear on the counter-shaft 35 are 100 placed between webs 38<sup>a</sup> of the casing 38, and the gear 31 and the intermeshing gear 36 are placed between webs 38<sup>b</sup> of said casing. The counter-shaft 35, which in this instance is 105 mounted in the casing 38, is much shorter than the counter-shaft of the construction previously described. The gear 31 in this construction is rigidly secured to an operating-shaft 42, which is mounted in the webs 38<sup>b</sup> of 110 the casing 38 and has a controlling handpiece 22 rigidly secured to the upper end thereof. The construction illustrated in this modification does not provide a variable-speed drive, but provides means for steering the boat by 115 angular oscillatory movements of the propeller-wheel, and provides means for driving the boat backward by turning the propeller forward into the position indicated by dotted lines in Fig. 4.

The propelling attachments above de- 120 scribed while of comparatively small cost are extremely efficient and convenient for the purposes had in view, and they may be very easily applied to any rowboat or similar small craft. When applied to a rowboat, the at- 125 tachment will usually be so set that the axis of the propeller-wheel will incline slightly downward rearward of the boat.

From what has been said it will be understood that the mechanism described is capa- 130



ble of many modifications within the scope of my invention as herein set forth and claimed.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

- 5 1. The combination with the hull of a boat, of a propeller-support pivotally adjustable in an approximately vertical plane, extending transversely of the longitudinal axis of the boat, and pivotally movable on an approxi-  
10 mately vertical axis, a propeller-wheel mounted on said support, and driving connections to said propeller, operative while permitting said adjustments of said propeller-support, substantially as described.
- 15 2. The combination with the hull of a boat, of a propeller-support mounted for angular adjustments and for pivotal movements on an approximately vertical axis, a common controller or handpiece for imparting said  
20 two movements to said support, a propeller-wheel mounted on said support, and driving connections to said propeller, operative while permitting the said adjustments of said propeller-support, substantially as described.
- 25 3. The combination with the hull of a boat, of a propeller-support pivotally connected thereto for pivotal movements in an approximately vertical plane, a power-shaft extending through the pivotal connections between  
30 the said hull and the said propeller-support, an approximately vertical shaft journaled in the propeller-support, a sleeve surrounding said vertical shaft and rotatively mounted in the main body portion of said propeller-sup-  
35 port and itself constituting a part of said propeller-support, a propeller-wheel carried by the lower end of said sleeve and geared to said vertical shaft, a handpiece or controller piv-  
40 otally mounted in the upper portion of the body of said propeller-support, a counter-shaft journaled in the body of said propeller-support and provided with a pair of gears, a

gear on said sleeve meshing with one of the gears of said counter-shaft, a gear connected for rotation with said handpiece or controller 45 and meshing with the other gear of said counter-shaft, and power-transmitting connections between the said power-shaft and said vertical shaft, operative while permitting the noted adjustments of said propeller-support, 50 substantially as described.

4. The combination with the hull of a boat, of a propeller-support having a rotary sleeve-section, a propeller having its shaft journaled in the lower portion of said sleeve-section, a 55 power-driven shaft journaled in said sleeve-section and connected to the shaft of said propeller by a pair of intermeshing bevel-gears, a handpiece having a stem portion journaled in said propeller-support above 60 said power-driven shaft, a counter-shaft offset from said sleeve-section and the stem of said handpiece, journaled in said propeller-support and connected both to the stem of said handpiece and to said rotary sleeve-section 65 of said propeller-support, substantially as described.

5. The combination with the hull of a boat, of a propeller-support pivotally connected to the stern of said boat for pivotal movements 70 in an approximately vertical plane transversely of the boat, a propeller-wheel carried by said propeller-support and movable into and out of the water by pivotal movements thereof, a drive for said propeller including a 75 shaft extending axially through the pivotal connection between said boat and propeller-support, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD G. WALLOF.

Witnesses:

ROBERT C. MABEY,  
F. D. MERCHANT.