

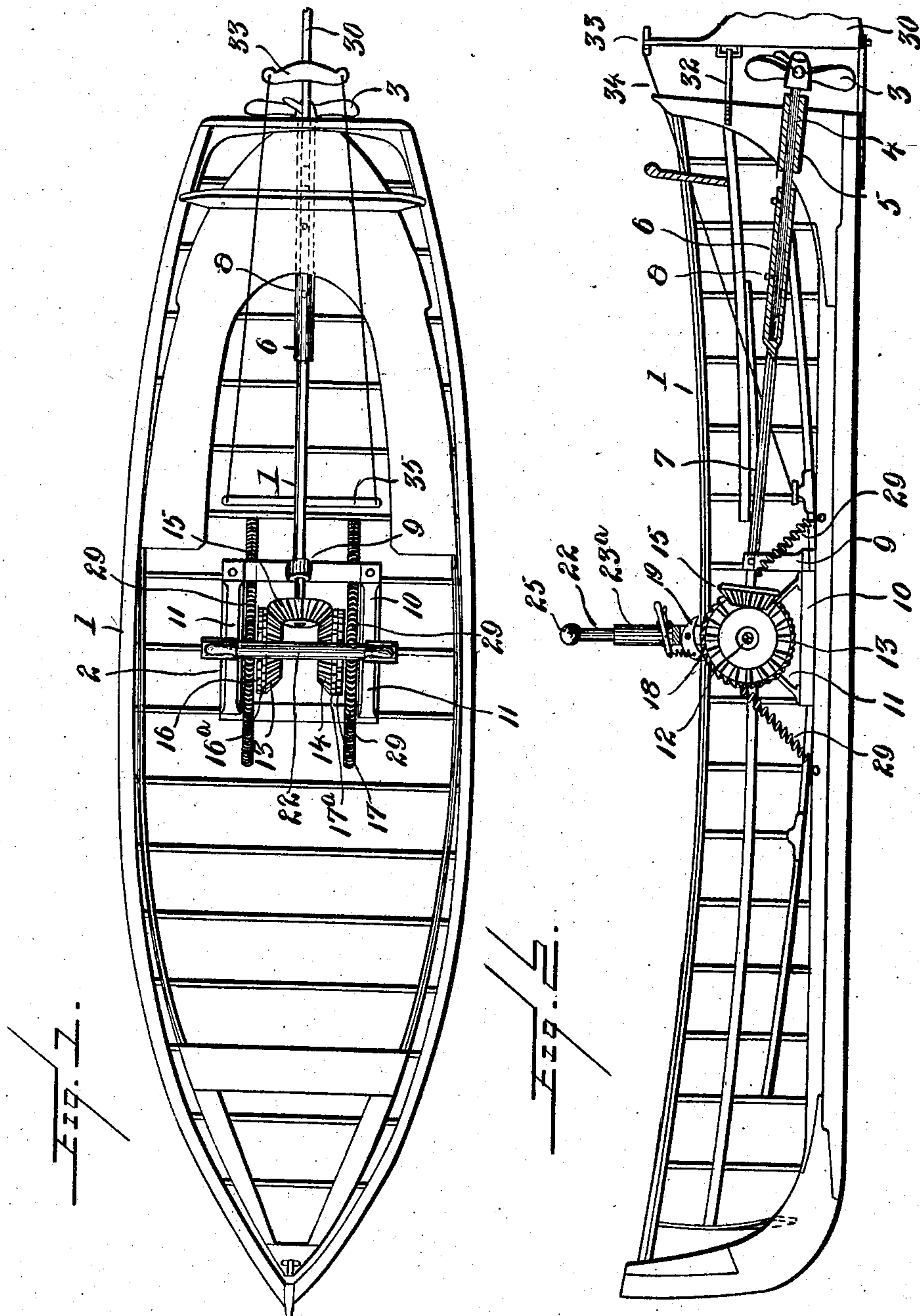
No. 855,062.

PATENTED MAY 28, 1907.

W. KIRKPATRICK.
BOAT.

APPLICATION FILED MAY 31, 1906.

2 SHEETS—SHEET 1.



WITNESSES:
H. F. Doyle.
L. O. Langworthy.

INVENTOR
Wallace Kirkpatrick
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Watson E. Coleman
Attorney

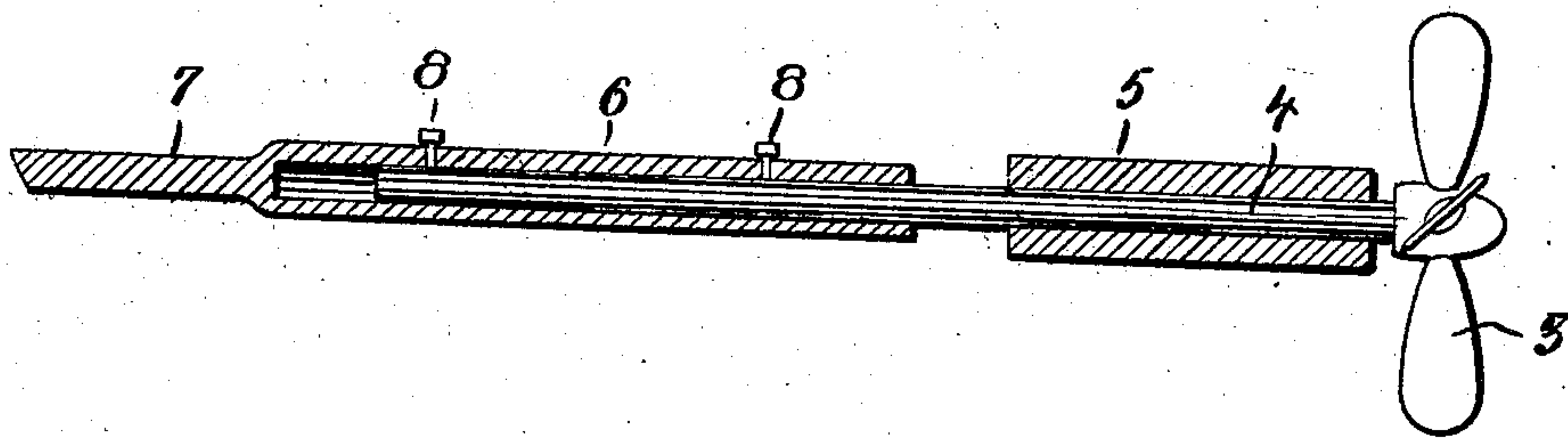
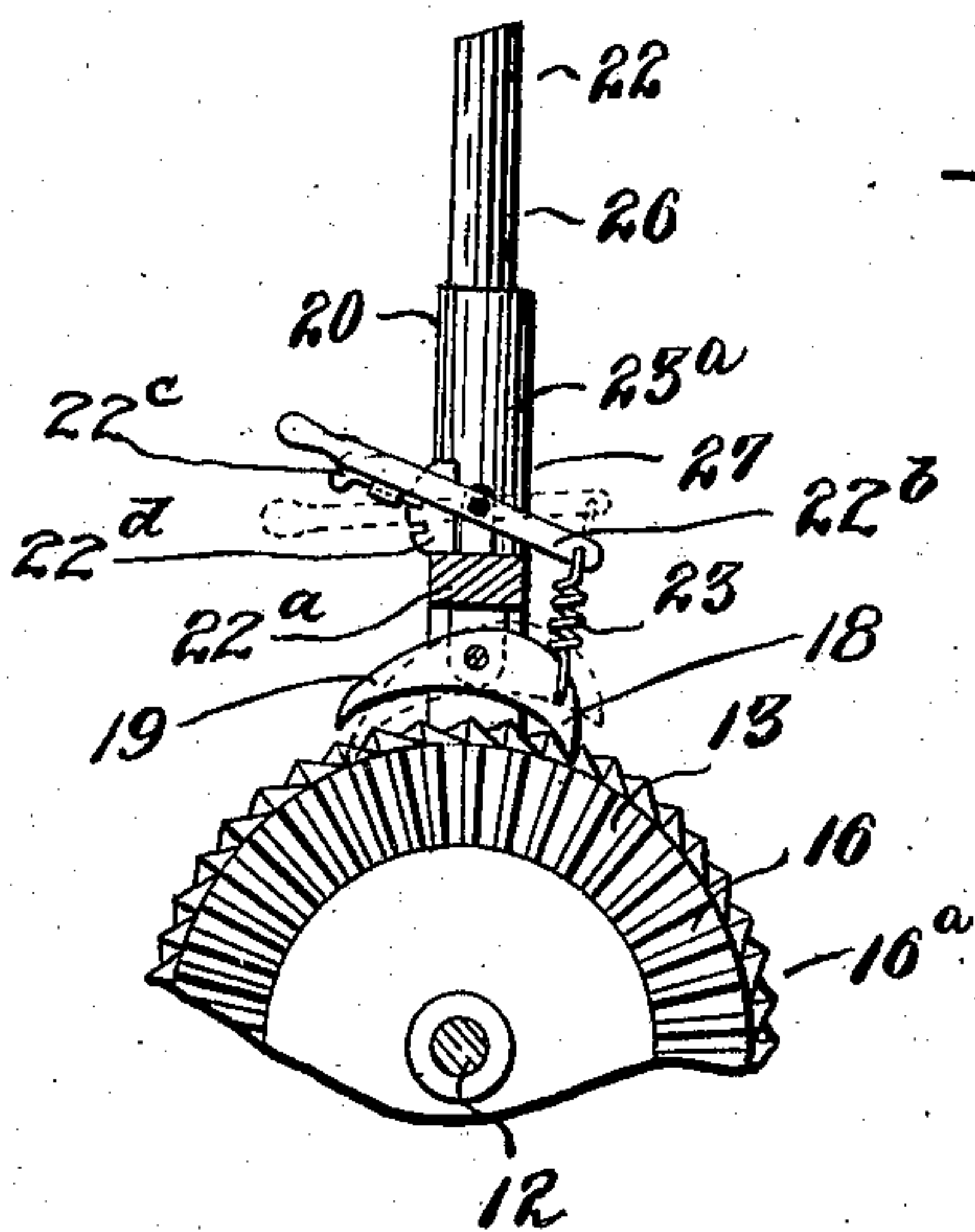
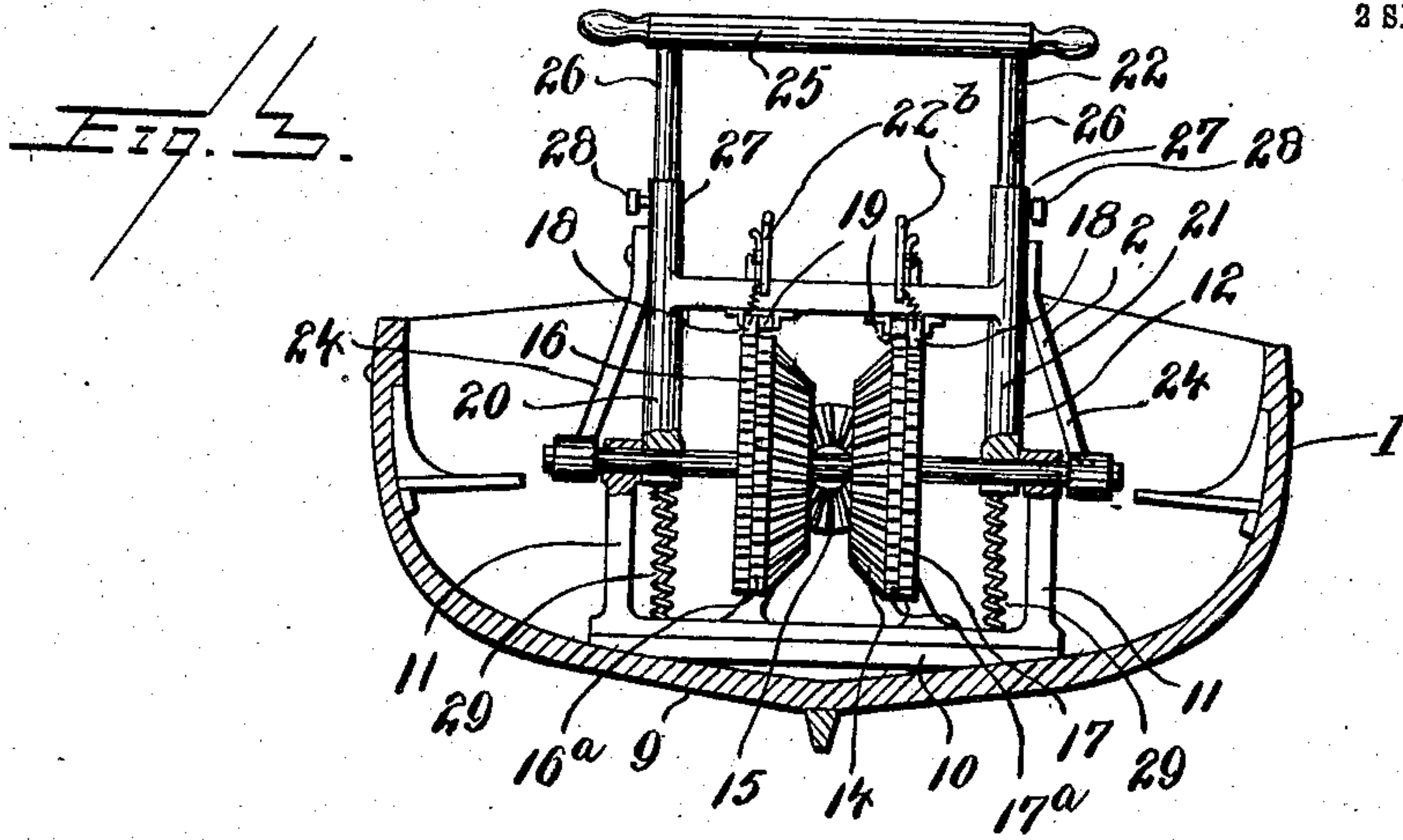
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UNITED STATES PATENT OFFICE.

WALLACE KIRKPATRICK, OF SAVAGE, MINNESOTA.

BOAT.

No. 855,062.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed May 31, 1906. Serial No. 319,547.

To all whom it may concern:

Be it known that I, WALLACE KIRKPATRICK, a citizen of the United States, residing at Savage, in the county of Scott and State of Minnesota, have invented certain new and useful Improvements in Boats, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in boats, and more particularly to a hand-operated propelling mechanism therefor.

One object of the invention is to provide a small boat such as a skiff or row-boat with a simple and practical hand-operated means for rotating a screw propeller thereon.

Another object of the invention is to provide a mechanism of this character which may be readily applied to small boats of any description after they have left the factory.

A further object of the invention is to improve and simplify the construction and operation of manual power boats and thereby render the same more efficient and durable, and less expensive.

Further objects and advantages of the invention, as well as the structural features by means of which they are attained, will be made clear by an examination of the following specification, taken in connection with the accompanying drawings, in which similar reference numerals denote corresponding parts throughout the several views, and in which,

Figure 1 is a top plan view of a boat equipped with my hand-operated propelling mechanism; Fig. 2 is a vertical longitudinal sectional view through the same; Fig. 3 is a vertical transverse sectional view; Fig. 4 is a detail view of the hand lever and the parts it carries; and Fig. 5 is a detail view of the telescoping propeller shaft.

Referring to the drawings by numeral, 1 denotes a small boat such as a skiff row-boat or the like, in which my improved hand-operated mechanism 2 is mounted for rotating a screw propeller 3 of suitable size and shape. The propeller is preferably made heavy so that it will act as a fly wheel, and is secured upon the rear end of a longitudinal shaft 4 which extends through a water-tight bearing 5 in the stern of the boat. The front or inner end of the shaft 4 telescopes into the tubular rear portion 6 of a longitudinal shaft 7 and the latter is adjustably retained upon the propeller shaft, of which it forms a continuation, by set screws 8, as shown. The

tubular portion 6 is welded upon the solid portion of the shaft 7 and the latter is mounted in suitable bearings 9 which rise from the bottom of the boat or from a casting 10 which forms the support for the mechanism 2.

The casting 10 comprises a base screwed or otherwise secured upon the bottom of the boat and two uprights 11, in bearings upon the upper ends of which is journaled a transverse shaft 12. This shaft 12 is disposed in the horizontal plane of the shaft 7 and has loosely mounted upon it two beveled gear-wheels 13 and 14. These gears oppose each other and mesh with a beveled pinion 15 fixed upon the shaft 7. Upon the edges or peripheries of the gear-wheels 13 and 14 are formed outer and inner rows 16 and 17 and 16^a and 17^a of ratchet teeth, the teeth in the two rows on each wheel projecting in opposite directions. The teeth of the two outer rows 16 and 17 project in opposite directions and the teeth of the two inner rows 16^a and 17^a also project in opposite directions, the outer rows being used when the boat is to be propelled forwardly and the inner rows being used when the boat is reversed or propelled to the rear, as presently explained. Coacting with these rows of teeth are two double pawls which are pivoted on a cross-bar 22^a upon the hand-lever 22. These double pawls have weighted ends 18 which engage the outer rows of teeth 16, 17 to propel the boat forwardly, and ends 19 which engage the teeth of the rows 16^a, 17^a to propel the boat rearwardly. The pawls 18 overbalance the pawls 17 and are normally engaged with the teeth 16, 17, and they are adapted to be elevated, so that the pawls 19 will engage their teeth 16^a, 17^a, by means of hand-levers 22^b, which latter may be connected together for simultaneous operation if desired. As shown, the levers 22^b are pivoted in brackets upon the top of the cross-bar 22^a, and have their forward ends connected by springs 23 to the pawls 18. These levers are locked by means of sliding latches or dogs 22^c, which they carry, to notched segmental plates 22^d provided upon the cross-bar 22^a. When the handle ends of the levers 22^b are elevated or raised, the pawls 18 will drop and engage their coacting teeth but, when said ends are lowered, the springs 23 will elevate the dogs 18 to disengage them from their coacting teeth and thereby force the pawls 19 downwardly into engagement with their coacting teeth 16^a, 17^a. The

pawls 18 are thus adapted to propel the wheels in one direction when the hand-lever 22 is oscillated, each of the two pawls 18 acting to alternately lock the lever to one of the two wheels 13, 14, that is to say, when the hand-lever swings in one direction, one of the pawls 18 will cause its ratchet to move with the lever while the other pawl 18 slips over its ratchet and, when the lever is swung in the opposite direction, the latter pawl causes its ratchet to move with the lever while the former pawl slips over its ratchet. When the shifting levers 22^b, are operated to cause the pawls 19 to engage their ratchet wheels, a similar operation takes place, only the boat is propelled to the rear instead of forwardly. The two wheels 13 and 14 will thus alternately transmit power to the propeller shaft 7, and will be constantly rotated in opposite directions by reason of their engagement with the pinion 15.

The hand-lever 22 swings from the shaft 12, the members 20 and 21 of said lever having their lower ends mounted to turn upon said shaft and being strengthened by braces 24, which latter also have their lower ends mounted to turn upon said shaft. The lever members 20 and 21 have their upper ends connected by a cross-bar or handle 25 and they are each composed of two telescoping sections 26 and 27 which are adjustably secured together by set screws or the like 28 so that the length of the lever may be varied to suit the operator. In order to hold the lever normally in an upright position within convenient reach of the operator, I preferably provide two coil springs 29 which are arranged and secured as clearly shown in Figs. 1 and 2 of the drawings.

In order to steer the boat, I mount in rear of the propeller 3 a rudder 30 of suitable form and construction. As shown, this rudder is pivoted between a longitudinal strap or bar 31 extending rearwardly from the keel of the boat and a bracket 32 secured upon the stern or rear end of the boat. Upon the upper end of the pivot of the rudder is a cross-bar 33 to which are connected cords or other flexible connections 34. The latter are also connected to a pivoted foot piece 35 suitably mounted in the boat so as to be operated by the feet of the person who oscillates the hand-lever, a suitable seat (not shown) being provided for such person and being so arranged that he faces forwardly or in the direction in which the boat is propelled.

The construction, operation, and advantages of the invention will be readily understood from the foregoing description, taken in connection with the accompanying drawings. It will be seen that when the hand-lever is oscillated the wheels 13 and 14 will be alternately driven by it and they will impart a continuous rotary motion to the propeller shaft. By making the latter of two adjust-

ably telescoping sections, the mechanism may be installed in a boat of any length. Since the propeller must be beneath the surface of the water, the location of the operator's seat varies according to the nature and construction of the boat, the weight of the operator serving to properly balance the boat, and since the operating mechanism must be in front of the seat, the propeller shaft must be made adjustable in order to permit the mechanism to be applied to a boat of any length. By making the hand-lever adjustable it may be varied to suit the height of the operator, the length of his arms, etc.

While I have shown and described the preferred embodiment of the invention, it will be understood that I do not wish to be limited to the precise showing herein set forth, since various changes in the form, proportion and the minor details of construction may be made without departing from the spirit or sacrificing any of the advantages of the appended claims.

Having thus described my said invention, what I claim as new and desire to secure by Letters Patent of the United States, is

1. In a boat propelling mechanism, a propeller shaft, opposing gears arranged to act alternately on opposite sides of said shaft to revolve it, two annular rows of ratchet teeth carried by each of said gears, the teeth in the two rows on each gear projecting in opposite directions, an operating lever, two double pawls, each having a weighted end to normally engage one of the annular rows of ratchet teeth on one of said gears and a reduced end to engage the other annular row of ratchet teeth on the same gear, and means for elevating and supporting the weighted ends of said pawls to hold their reduced ends in yieldable engagement with their co-acting rows of ratchet teeth.

2. In a boat propelling mechanism, a propeller shaft, opposing gears arranged to act alternately on opposite sides of said shaft to revolve it, two annular rows of ratchet teeth carried by each of said gears, the teeth in the two rows on each gear projecting in opposite directions, an operating lever, two double pawls, each having a weighted end to normally engage one of the annular rows of ratchet teeth on one of said gears and a reduced end to engage the other annular row of ratchet teeth on the same gear, operating devices for elevating and yieldably supporting the weighted ends of said pawls, and means for locking said operating devices against movement.

3. In a boat propelling mechanism, a propeller shaft, opposing gears arranged to act alternately on opposite sides of said shaft to revolve it, two annular rows of ratchet teeth carried by each of said gears, the teeth in the two rows on each gear projecting in opposite directions, an operating lever, two double

pawls, each having a weighted end to normally engage one of the annular rows of ratchet teeth on one of said gears and a reduced end to engage the other annular row of ratchet teeth on the same gear, reversing levers carried by said operating lever, yieldable connections between said reversing levers and the weighted ends of said pawls, and means for locking said reversing levers in adjusted position.

4. In a boat propelling mechanism, a propeller shaft, opposing gears arranged to act alternately on opposite sides of said shaft to revolve it, two annular rows of ratchet teeth carried by each of said gears, the teeth in the two rows on each gear projecting in opposite directions, an operating lever, two double pawls, each having a weighted end to normally engage one of the annular rows of ratchet teeth on one of said gears and a reduced end to engage the other annular row of ratchet teeth on the same gear, reversing levers pivotally mounted upon said operating lever, spring connections between said reversing levers and the weighted ends of said pawls, and latches for holding the said reversing levers against movement.

5. In a boat propelling mechanism, a propeller shaft, a pinion fixed thereon, a support, a second shaft mounted therein, opposing gears loosely mounted upon said shaft and in mesh with said pinion, the peripheries of each of said gears being provided with two annular rows of ratchet teeth, the teeth in the two rows on each gear projecting in opposite directions, a substantially U-shaped

operating lever mounted for oscillation upon said second shaft and provided with a cross bar, a pair of double pawls pivotally mounted upon said cross bar, each pawl being adapted to co-act with the two rows of ratchet teeth on one gear, and each of said pawls having one of its ends weighted to normally engage one row of ratchet teeth and its other end reduced and adapted to be moved into engagement with the ratchet teeth of the adjacent row on the same gear, means for elevating and supporting the weighted ends of said pawls, and means for holding said operating lever normally in a vertical position.

6. In a boat propelling mechanism, a support, a shaft therein, an oscillatory operating frame consisting of a substantially H-shaped inner section having its inner end mounted to swing from said shaft, and a substantially U-shaped outer section having handles at its outer end, the inner end of said outer section and the outer end of said inner section having telescoping parts, means for securing said telescoping parts in adjusted position, a propeller shaft, and gears arranged on the first mentioned shaft and actuated by said operating frame for driving said propeller shaft.

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

WALLACE KIRKPATRICK.

Witnesses:

JOHN RILEY,
S. L. KING.