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No. 775,971.

PATENTED NOV. 29, 1904.

H. HELMEKE.
BOAT PROPELLER.

APPLICATION FILED FEB. 25, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

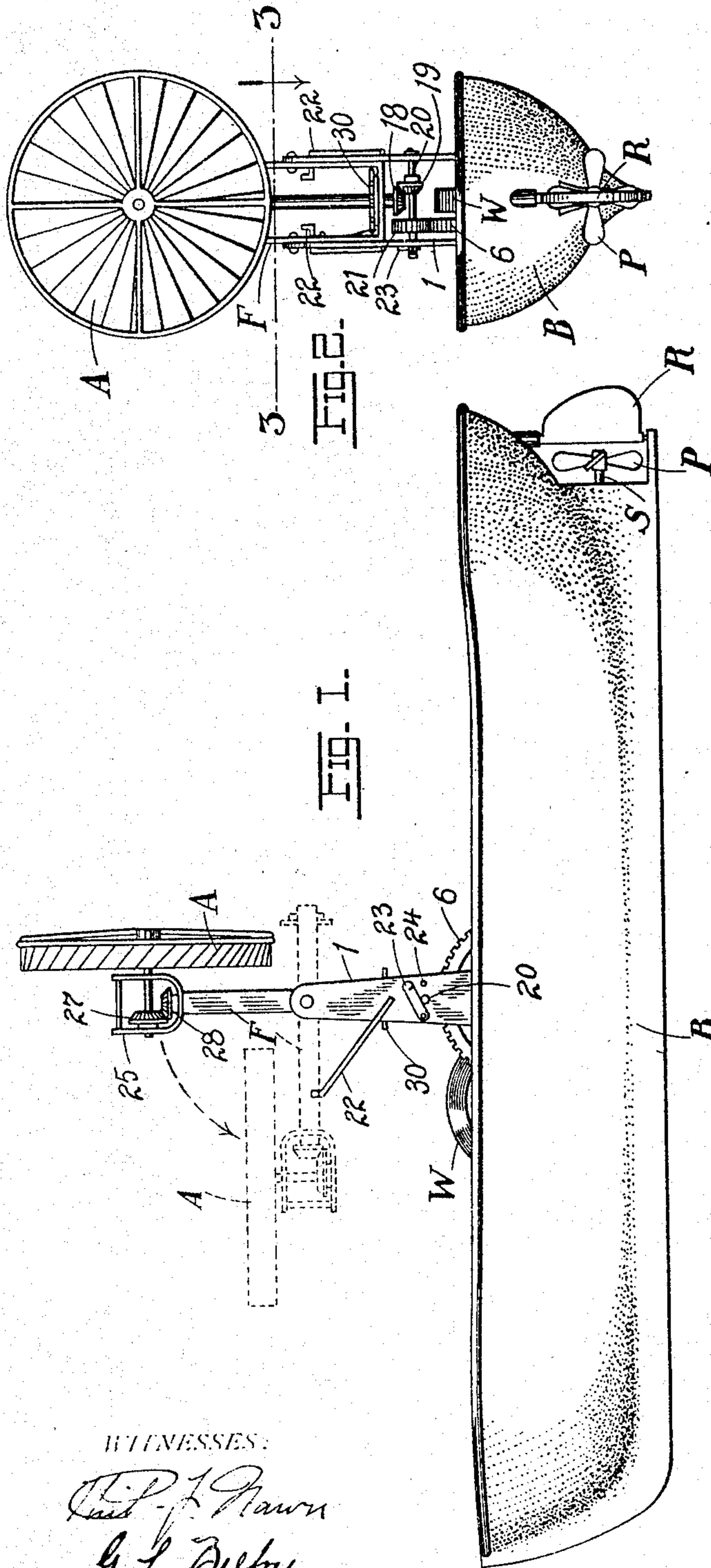


FIG. 1.

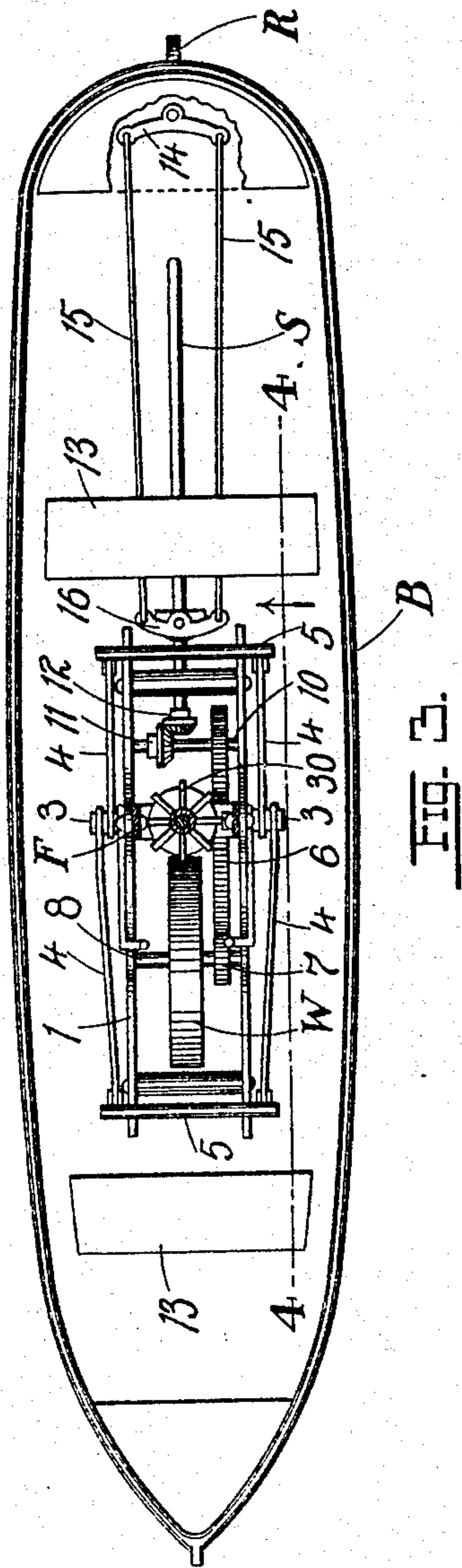


FIG. 2.

WITNESSES:

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INVENTOR.

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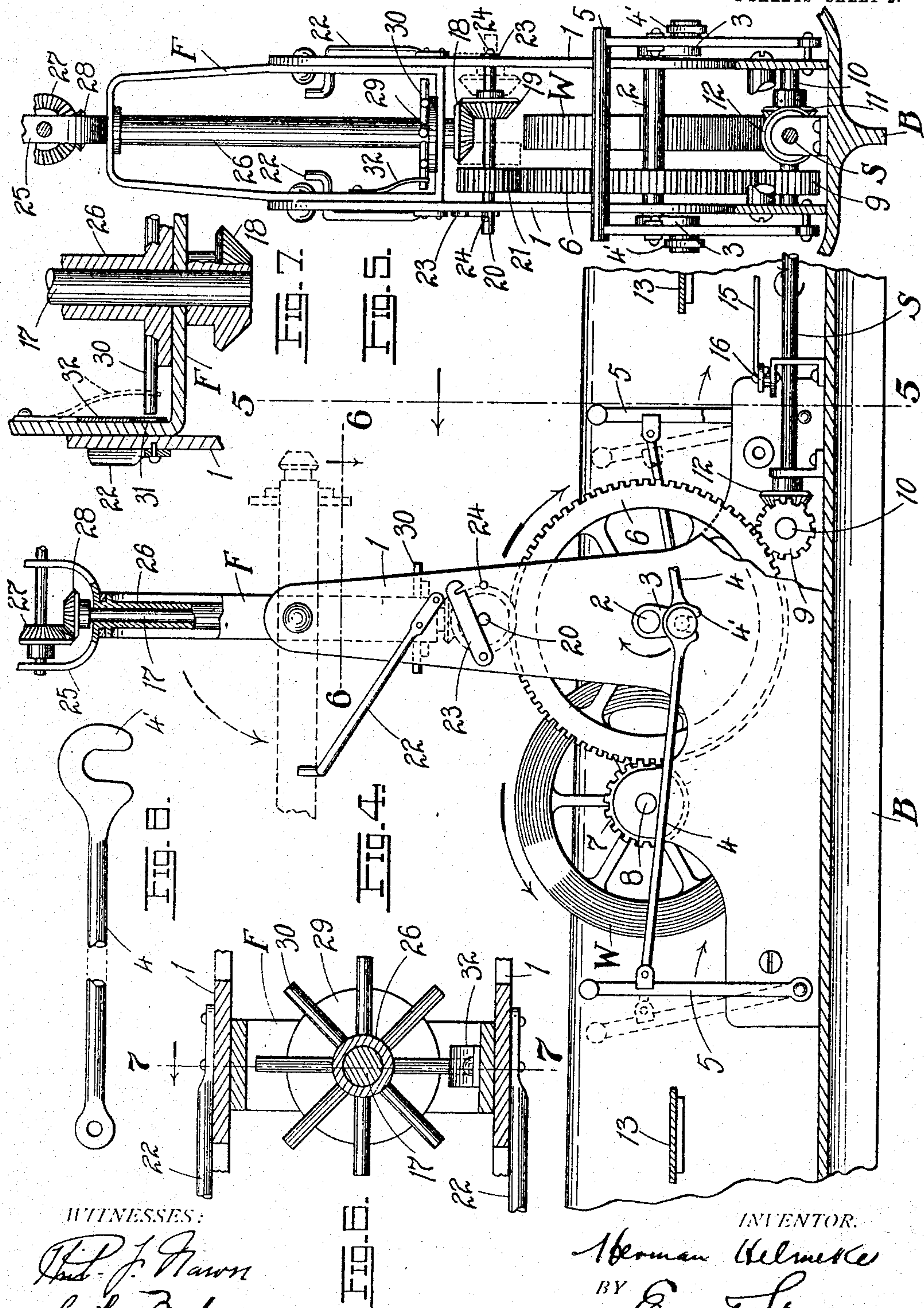
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2 SHEETS—SHEET 2.



WITNESSES:
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UNITED STATES PATENT OFFICE.

HERMAN HELMEKE, OF ST. LOUIS, MISSOURI.

BOAT-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 775,971, dated November 29, 1904.

Application filed February 25, 1904. Serial No. 195,228. (No model.)

To all whom it may concern:

Be it known that I, HERMAN HELMEKE, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Boat-Propellers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in boat-propelling mechanism; and it consists in the novel construction and arrangement of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a boat, showing my invention applied thereto, the wind-wheel being swung into engagement with the main propelling mechanism. Fig. 2 is an end view thereof. Fig. 3 is a horizontal section on line 3 3 of Fig. 2. Fig. 4 is an enlarged vertical section on line 4 4 of Fig. 3. Fig. 5 is a transverse vertical section on line 5 5 of Fig. 4. Fig. 6 is a horizontal section on line 6 6 of Fig. 4. Fig. 7 is a vertical section on line 7 7 of Fig. 6, showing, however, the spring-latch disengaged from the radial locking-arms carried by the sleeve of the wind-wheel shaft; and Fig. 8 is a detail of one of the connecting-rods of the main propelling mechanism.

The object of my invention is to provide propelling mechanism for pleasure-boats and small boats generally which shall dispense with oars and sails altogether, thereby enabling even the unskilled to operate the boat without danger of capsizing.

In detail the invention may be described as follows:

Referring to the drawings, B represents an ordinary form of pleasure-boat, the same being provided with a centrally-disposed propeller-shaft S and rear propeller-blades P. Disposed longitudinally to the boat on either side of the axis of rotation of the shaft S are standards 1 1, between which and at a convenient point above the base thereof is mounted the transverse drive-shaft 2, terminating on the outside of each standard in a crank-arm 3, which in turn is coupled, by means of connecting-rods 4 4, to the adjacent members of the lever-frames 5, pivoted at opposite ends

of the standards. The connecting-rods are readily uncoupled from the wrist-pins of the crank-arms, being coupled thereto through the medium of the terminal hooks 4', as clearly shown in the drawings, the uncoupling being effected by simply lifting the rods off the pins. It is of course apparent that one of the lever-frames 5 may be dispensed with, it being possible to actuate the shaft 2 from a single lever-frame.

Mounted on the shaft 2 is a gear-wheel 6, which in turn meshes with a pinion 7 in a counter-shaft 8, carrying the fly-wheel W. The gear-wheel 6 likewise meshes with a pinion 9 on a bottom shaft 10, mounted between the standards opposite the adjacent end of the propeller-shaft, said shaft 10 carrying a bevel pinion 11, meshing with a corresponding pinion 12 on said propeller-shaft. From the foregoing connections it is apparent that the occupants of the boat seated in the seats 13 by oscillating the frames 5 will impart motion to the drive-shaft, and thus in turn to the propeller-shaft and propel the boat. The latter is provided with a rudder R, the tiller-arms 14 of which are connected, through the medium of connecting wires or rods 15 15, to a foot-lever 16, pivoted to swing horizontally and located in position to be actuated by the feet of one of the occupants.

Where the wind is favorable, it may be desirable to supplement the hand driving mechanism by wind-propelled mechanism or to utilize the latter to the exclusion of said hand propelling devices. To this end I provide the following gearing: Pivoted at the top of the standards 1 1 and adapted to swing longitudinally with the boat is a frame 17, in which is centrally mounted a longitudinal shaft 17, whose lower end is provided with a bevel-pinion 18, adapted to mesh with a similar pinion 19 on a shaft 20, mounted between the standards, said shaft being provided with an additional pinion 21, which can be thrown into engagement with the teeth of the large gear-wheel 6. The shaft 20 is movable longitudinally in its bearings, and for one position thereof the pinion 21 may be shifted entirely out of engagement with said gear-wheel 6. (See dotted position of parts in Fig. 5.) The

frame F is pivoted at a point to one side of its center of gravity and when not in service is allowed to rest on the supporting-brackets 22, secured to the standards. By swinging the frame F to a vertical position the pinion 18 can be brought into engagement with the pinion 19 by first shifting the shaft 20 to one side sufficiently to permit the pinion 18 to clear the pinion 19 and then forcing the shaft back the necessary distance to effect the desired connection between the two pinions, Fig. 5. When this connection is accomplished, the small gear-wheel or pinion 21 is likewise in position to engage the gear-wheel 6. Once the parts are adjusted the shaft 20 is locked against longitudinal movement by a latch 23, pivoted to one of the standards 1 and hooking over a pin 24, the end of the shaft bearing against the body of the latch under the circumstances. Again, when it is desirable to disengage the pinion 21 from the gear 6 the latch 23 is swung to an unlocked position and the shaft is shifted to move the pinion 21 out of alinement with the gear 6, when again the shaft 20 is locked by a similar latch 23 on the opposite standard 1 bearing against the adjacent end of the shaft and hooking over a similar pin 24. When, however, the frame F is in a vertical position and the bevel-pins 18 19 are in mesh, the shaft 17 is adapted to assist in the rotation of the gear-wheel 6 through the connections described, the said shaft 17 being set into operation by a wind-wheel A, whose shaft is mounted in the upper terminal fork 25 of a sleeve 26, through which the shaft 17 passes, the wind-wheel shaft carrying a bevel-gear 27, which meshes with a bevel-pinion 28 at the upper end of the shaft 17. When the wind is favorable, therefore, the frame F may be swung into a vertical position to effect connection between the wind-wheel and the drive-shaft 2 in the manner indicated, the wind-wheel under the circumstances either supplementing the work of the occupants of the boat or relieving them altogether, as the case may be. When the wind is to be relied on altogether, the connecting-rods 4 4 may be disconnected from the crank-arms and allowed to rest on the bottom of the boat.

The purpose of the sleeve 26 is to enable the operator to lock the frame F in its vertical position and to adjust the angular position of the wind-wheel in relation to the direction of the wind, this locking and adjustment being accomplished as follows: The base of the sleeve (which, by the way, is freely rotatable in its bearings) is provided with a disk 29, along whose upper face are disposed a series of radial arms 30, projecting beyond the periphery of the disk, the free ends of which are adapted to engage an opening 31 at the end of a spring arm or latch 32, whose fixed end is secured on the inner face of one of the

side members of the frame F. By first forcing the spring 32 against the frame so as to disengage it from its locked position with any one of the series of arms 30, Fig. 7, the operator can turn the disk 29 and sleeve 26 until the face of the wind-wheel is square against the wind (or disposed at any other favorable angle thereto) when by releasing the spring the opening therein will engage the particular arm 30 that happens opposite thereto, thus locking the sleeve and wheel A in position. The turning of the sleeve of course in no wise affects the inner shaft 17; nor does it disturb in any wise the geared relation of the operating parts as described.

From the foregoing it is apparent that the boat may be propelled by hand-power, by the wind, or by both, and this without resorting to either oars or sails. It is apparent, of course, that I may depart from the mechanical details here set forth without in any wise affecting the spirit or nature of my invention.

Having described my invention, what I claim is—

1. In a boat, a suitable propeller, a drive-shaft, means for imparting rotation to the drive-shaft, intermediate gearing between said propeller and drive-shaft, a tilting frame mounted above the boat, a wind-wheel on said frame, a suitable shafting carried by the frame for transmitting power from the wind-wheel, and means for cooperatively connecting said shafting with the drive-shaft upon the tilting of the frame in one direction, substantially as set forth.

2. In a boat, a suitable propeller-shaft, a drive-shaft, crank-arms on said drive-shaft, actuating-levers pivoted to the boat, connecting-rods carried by the levers and detachably coupled to the wrist-pins of said crank-arms, intermediate gearing between the propeller-shaft and drive-shaft, a tilting frame mounted in proximity to the drive-shaft, a wind-wheel carried by said frame, and suitable shafting cooperatively connected to the wind-wheel and adapted to be coupled to the drive-shaft upon the swinging of said frame in one direction, substantially as set forth.

3. In a boat, suitable standards, a drive-shaft mounted on the same, a propeller-shaft, intermediate gearing between the propeller-shaft and drive-shaft, a gear-wheel on the drive-shaft, a tilting frame mounted to swing vertically on the standards, a shaft disposed longitudinally in said frame, and adapted to have one end cooperatively connected to the aforesaid gear-wheel, a rotatable sleeve enveloping the shaft on the frame, an upper terminal fork carried by said sleeve, a wind-wheel shaft on the fork, a bevel-pinion on the shaft, a corresponding pinion on the upper end of the longitudinal shaft meshing with the aforesaid pinion, means for rotating the sleeve to effect the proper angular adjust-

ment for the wind-wheel, and means for locking the sleeve when once adjusted, substantially as set forth.

4. In a boat, a suitable oscillating frame, a rotatable sleeve disposed longitudinally thereof, a shaft in said sleeve, a bevel-pinion at the lower end of the shaft, a longitudinally-sliding shaft mounted in suitable standards below the frame, a bevel-pinion on said sliding shaft, and locking-latches pivoted to the standards and adapted to bear against the adjacent ends of the sliding shaft upon proper adjustment of the latter, and lock the same in position, substantially as set forth.

5. In a boat, suitable standards, propelling mechanism mounted on the same, a tilting frame pivotally carried at the upper end of the standards, a wind-wheel at the free upper end of the frame, a shaft disposed longitudinally with the frame and coöperatively connected to the wind-wheel, and adapted to be coupled to the main propelling mechanism upon tilting the frame to a vertical position, a sleeve enveloping the shaft on the frame, a series of radially-disposed arms fixed to the sleeve, and a spring-latch engaging any one of the arms for locking the sleeve, substantially as set forth.

6. In a boat, a suitable propeller-shaft, a

drive-shaft, means for imparting rotation to the drive-shaft, intermediate gearing between said propeller-shaft and drive-shaft, a tilting frame mounted above the drive-shaft, a wind-wheel on said frame, a suitable shafting carried by the frame for transmitting power from the wind-wheel, and means for coöperatively connecting said shafting with the main drive-shaft upon the tilting of said frame to an upright position, substantially as set forth.

7. In a boat, a longitudinally-disposed propeller-shaft, standards carried by the boat, propelling mechanism mounted between the standards, a longitudinally-tilting frame mounted on top of the standards, brackets for supporting said frame in its lowest position, a wind-wheel at the free upper end of the frame, and suitable gearing actuated by the rotation of said wind-wheel and adapted to be brought into coöperative connection with the main propelling mechanism of the boat upon the tilting of said frame from its position on said brackets, substantially as set forth.

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

HERMAN HELMEKE.

Witnesses:

EMIL STAREK,
G. L. BELFRY.