G. B. MARTIN.

PROPELLER.

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975,972.

Patented Nov. 15, 1910.

Fig. 1.

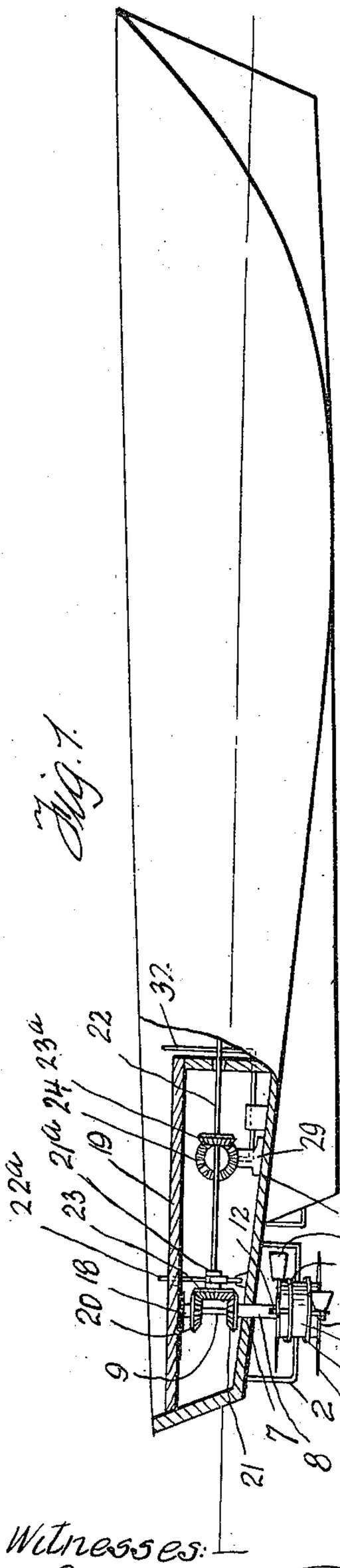


Fig. 3.

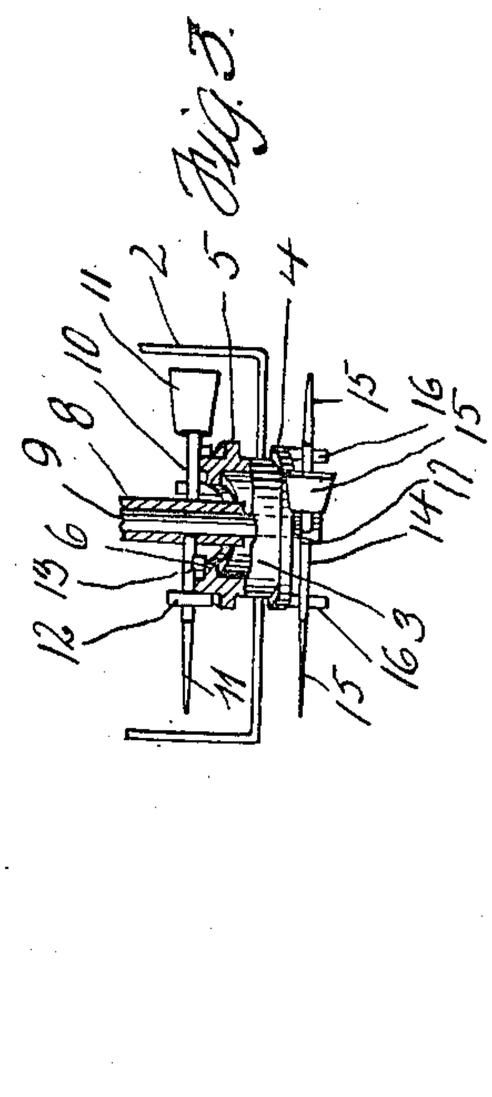


Fig. 4.

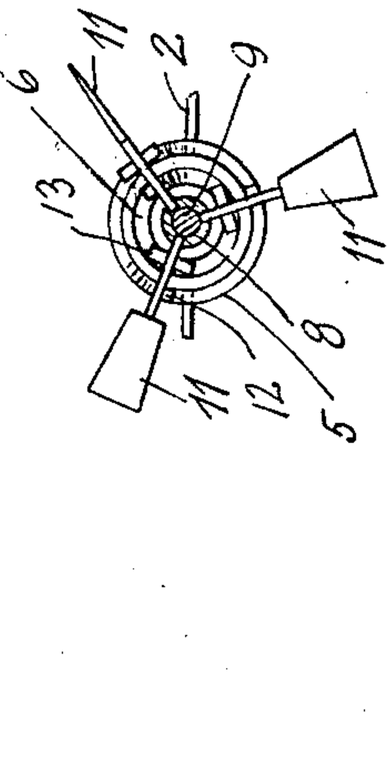
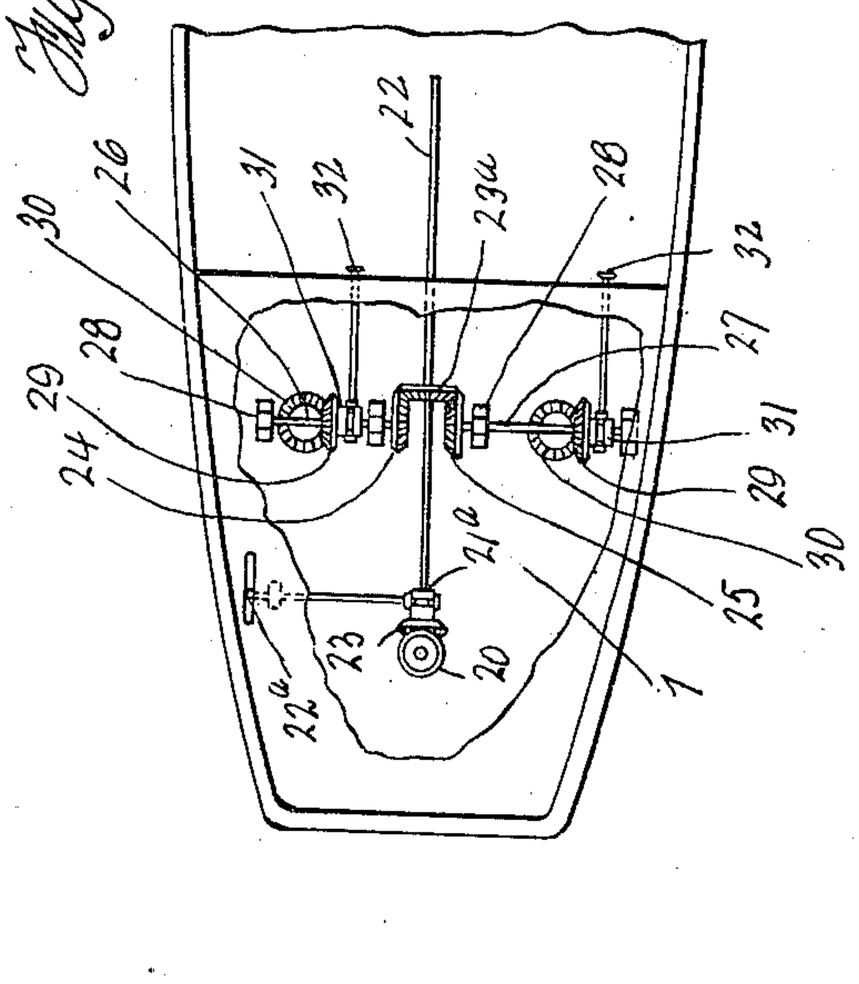


Fig. 2.



Witnesses:

Samuel Payne

R. H. Butler

Inventor

G. B. Martin

by P. C. Ewers Co.

Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE B. MARTIN, OF MARIETTA, OHIO.

PROPELLER.

975,972. Specification of Letters Patent. Patented Nov. 15, 1910.

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To all whom it may concern:

Be it known that I, GEORGE B. MARTIN, a citizen of the United States of America, residing at Marietta, in the county of Washington and State of Ohio, have invented certain new and useful Improvements in Propellers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to propellers, and more particularly to that type of propeller used in connection with motor driven boats, as the ordinary launch used on the rivers, lakes, and similar bodies of water.

The primary object of the invention is to provide a boat or vessel with a plurality of sets of horizontal revoluble propellers, that can be operated either in unison or independently as occasion may demand.

Another object of this invention is to provide a boat with propellers, capable of shifting so as not to retard the motion of the boat when moving against the current, the blades of the propellers assuming a horizontal position in one direction and a vertical position in another direction, the former moving through the water without retarding the boat, while the latter propel the boat.

These and such other objects as may hereinafter appear, are obtained by propellers that will be hereinafter described and then claimed.

Reference will now be had to the drawing forming a part of this specification wherein there is illustrated a preferred embodiment of the invention, but it is to be understood that the structural elements thereof can be varied or changed as to the size, shape and manner of assemblage without departing from the spirit of the invention.

In the drawings:—Figure 1 is an elevation of a boat, partly broken away and partly in section illustrating the stern propeller of the boat, Fig. 2 is a plan of the same, partly broken away illustrating the operating mechanism in plan. Fig. 3 is a cross sectional view of the stern propeller, and Fig. 4 is a plan of a portion of the same.

To put my invention into practice, I provide a boat with three sets of propellers, a set being located at each side of the bottom of the boat at the stern thereof, while another set is arranged in the rear of the side sets and in longitudinal alinement with the longitudinal axis of the boat, this last mentioned set being commonly known as stern propellers. As the sets of propellers are identical in construction, with the exception of the operating mechanism, it is deemed only necessary to describe in detail one set of propellers, and then to consider the same collectively relative to the operating mechanism.

Considering the stern propeller, the bottom of the boat 1 is provided with a depending frame 2 supporting a central vertical cylindrical housing 3. The outer side of the housing is provided with peripheral cam ribs 4 and 5, these ribs having oppositely disposed portions lying in a plane above other opposite disposed portions for a purpose that will presently appear. The inner walls of the housing 3 adjacent to the ends thereof are provided with inwardly projecting annular cam ribs 6 adapted to coöperate with the ribs 4 and 5, the said cam ribs 6 being the reverse of the ribs 4 and 5, that is, the raised portions of the ribs 6 being opposite the low portions of the ribs 4 and 5. The bottom of the boat 1 is provided with an opening 7 in vertical alinement with the axis of the housing 3. Revolubly mounted in the opening 7 and extending into the housing 3 is a sleeve 8, and journaled in said sleeve is a shaft 9 having the lower end thereof extending out of the sleeve and below the housing 3. Revolubly connected to the sleeve 8 are a plurality of radially disposed propeller arms 10 having the outer ends thereof provided with propeller blades 11. Fixed to the arms 10 are pins 12 and 13, the former being arranged at right angles to the latter, whereby when the latter are in a horizontal position engaging the uppermost rib 6 of the housing 3, the former will be in a vertical position relative to the rib 5. The lower end of the shaft 9 revolubly supports radially disposed propeller arms 14 having blades 15 and pins 16 and 17, similar to the arms 10. When the pins 17 are in a horizontal position engaging the lowermost rib 6, the pins 16 are in a vertical position relative to the rib 4. The upper end of the shaft 9 is journaled in a bearing 18 carried by the under side of a housing 19. Mounted upon

the shaft 9 is a beveled gear wheel 20 and mounted upon the upper end of the sleeve 8 is a beveled gear wheel 21. Extending into the stern housing of the boat is a longitudinal revoluble shaft 22 adapted to be driven by a motor or suitable source of power within the boat. Upon the rear end of the shaft 22 is loosely mounted a beveled gear wheel 23, said wheel meshing with the gear wheels 20 and 21, at the upper ends of the sleeve 8 and the shaft 9 respectively. Upon the shaft 22 adjacent to the beveled gear wheel 23 is a shiftable clutch member 21ª, adapted to be moved into engagement with the beveled gear wheel 23, through the medium of an operating lever 22ª. This lever controls the operation of the stern propeller. The shaft 22 is provided with another beveled gear wheel 23ª, meshing with beveled gear wheels 24 and 25, mounted upon shafts 26 and 27 respectively, journaled in bearings 28, carried by the bottom of the boat. The outer end of the shafts 26 and 27 are provided with beveled gear wheels 29, meshing with the beveled gear wheels 30 of side propellers, said propellers, as heretofore stated, being identical in construction with the stern propeller just described. The operation of a side propeller is controlled through the medium of clutches 31, and operating levers 32.

The operation of the propellers is as follows:—Assuming that the shaft 22 is driven from a suitable source of power located in the boat, the operator of the boat can control the operation of the propellers through the medium of the operating levers 23ª and 32. Assuming that all three propellers are in operation, the upper propellers of each set will be revolved in an opposite direction from the lower propellers, and through the medium of the cam ribs 4, 5 and 6 and pins 12, 13, 16 and 17, the shaft of each propeller is revolved to a sufficient degree to turn the propeller blades, whereby the blades in one position will not retard the boat, but in another position will facilitate the movement of the boat. The cam surfaces of the ribs 4, 5 and 6 govern the movement of each radially disposed and revoluble propeller shaft, and the curvature of said ribs is such that each propeller shaft will be rotated a quarter of a revolution during one quarter the movement of either the sleeve 8 or the shaft 9. This movement of the propeller shafts allows two of the propeller blades of each set to serve functionally as rudders, while two others propel the boat in the direction in which it is moving. The remaining blades are maintained in a flat or horizontal position, so as not to retard the movement of the boat through the body of water.

It is thought that the operation and utility of my invention will be apparent without further description and while I have previously described the propeller as applicable to boats of a small type, still I reserve the right to use the same in connection with ocean going vessels, particularly those operated by triple propellers.

It is obvious that a boat can be equipped with either the side propellers or simply the stern propeller, it not being necessary to use the three sets of propellers, except where it is desired to accomplish the objects set forth in this application.

Having now described my invention what I claim as new, is:—

1. The combination with a boat having a suitable source of power, of triple propellers carried by the stern of said boat and adapted to be operated by said source of power, each propeller comprising a housing adapted to be carried by the bottom of the boat, cam ribs carried by said housing, a sleeve journaled in the bottom of said boat, a revoluble shaft extending through said sleeve and adapted to be revolved by said source of power in an opposite direction from said sleeve, propeller arms carried by said shaft and said sleeve, and pins carried by said arms and adapted to engage said ribs and rotate said arms in a desired direction.

2. The combination with a boat having a suitable source of power, of triple propellers carried by the stern of said boat and adapted to be operated by said source of power, each propeller comprising a housing adapted to be carried by the bottom of said boat, cam ribs carried by said housing, a sleeve journaled in the bottom of said boat, a revoluble shaft extending through said sleeve and adapted to be revolved by said source of power in an opposite direction from said sleeve, pins carried by said arms and adapted to engage said ribs and rotate said arms in a desired direction, and means within said boat and adapted to control the operation of said propellers independent of the said source of power.

3. The combination with a boat having a suitable source of power, of triple propellers adapted to be carried thereby and operated by said source of power, each propeller comprising a housing, a sleeve extending into said housing, a shaft extending through said sleeve, means actuated by said source of power for revolving said sleeve in an opposite direction from said shaft, radially disposed propeller arms carried by said sleeve and said shaft, and means in conjunction with said housing for rotating said arms during a revolving movement of said sleeve and said shaft.

4. The combination with a boat, of sets of propellers carried thereby, each set comprising horizontal radially disposed revo-

luble arms, blades carried by the outer ends of said arms, means within said boat for revolving one set of arms in the opposite direction from the other set, and means associated with said arms to position one set of blades at an opposite angle to the other set of blades.

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

GEORGE B. MARTIN.

Witnesses:
C. C. EVANS,
CLYDE A. HARNESS.