W. L. CASADAY.

PROPELLER AND BOAT CONSTRUCTION.

APPLICATION FILED JUNE 21, 1909.

965,870.

Patented Aug. 2, 1910.

2 SHEETS—SHEET 1.

Fig. 1

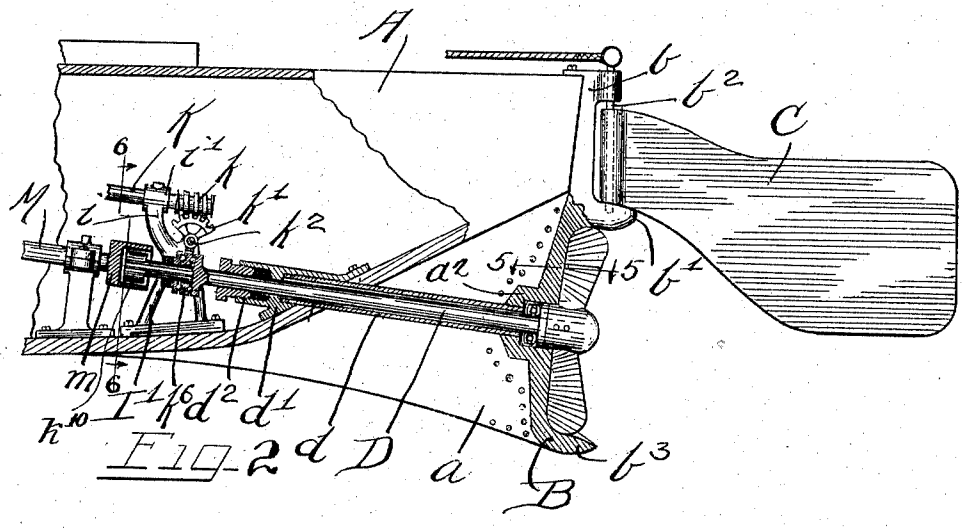


Fig. 2

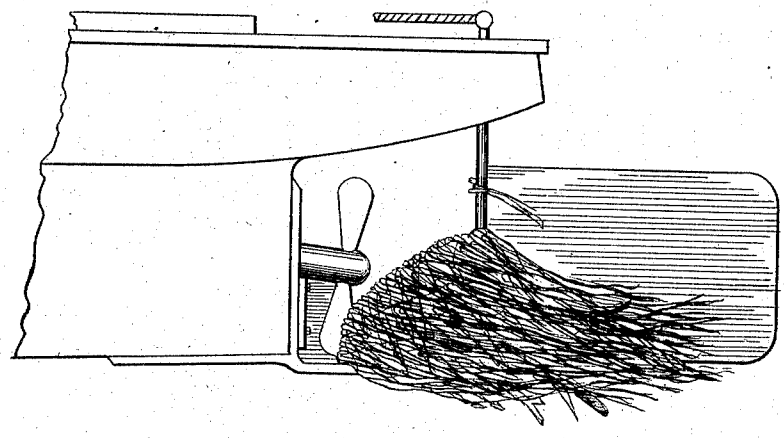
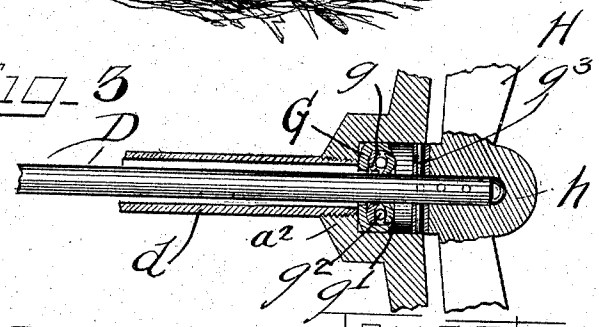


Fig. 3



Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

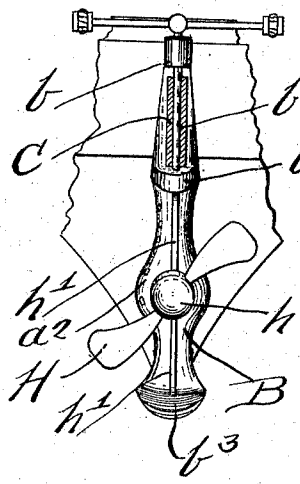


Fig. 5.

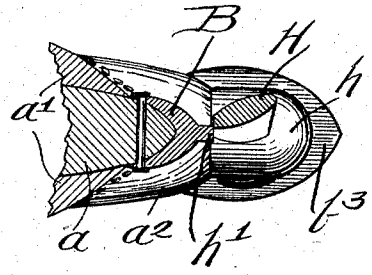


Fig. 7.

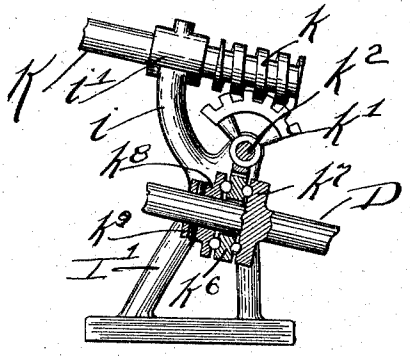
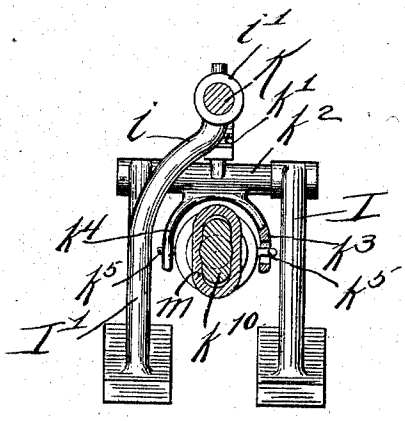


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

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PROPELLER AND BOAT CONSTRUCTION.

965,870. Specification of Letters Patent. Patented Aug. 2, 1910.

Application filed June 21, 1909. Serial No. 503,302.

To all whom it may concern:

Be it known that I, WILLIAM L. CASADAY, a citizen of the United States, and a resident of the city of South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Propellers and Boat Constructions; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates more particularly to a construction for boats such as launches for use in weedy waters.

Many devices have been constructed for the purpose of enabling launches to be propelled in grassy or weedy waters to avoid the accumulation of weeds and water plants upon the rudder shaft and rudder stem. As ordinarily constructed most launches are comparatively helpless in waters containing any considerable quantity of floating vegetation and to obviate this difficulty, so-called "weedless propellers" have been devised, the same being usually so constructed as to enable the weeds to slide off the propeller. In some instances the propeller has also acted to some extent as a cutter to sever the weeds coming into contact therewith, but in such constructions a considerable portion of the weeds may be drawn between the propeller and rudder stem and upon the rudder stem, soon forming such a serious impediment to the progress of the boat or launch that it becomes necessary to stop the boat to clear away the weeds clinging to the rudder stem and skeg. In consequence it is generally recognized that no entirely satisfactory device has heretofore been devised to enable boats of the kind to be driven or propelled through weedy waters and in consequence, many lakes or portions of lakes are well-nigh inaccessible to the sportsman or pleasure seeker.

The object of this invention is to provide a boat and propeller construction adapted to insure satisfactory operation in waters howsoever weedy and to absolutely preclude possibility of the propeller clogging by weeds winding around the propeller shaft and jamming between the propeller and the stern post of the boat or by lodging between the propeller and the rudder stem.

It is also an object of the invention to afford a construction adapted to afford means for cutting away any weeds, grass or other vegetation passing between the propeller and stern bearing and in which the rudder is secured upon the boat in a manner to entirely prevent weeds or vegetation clinging thereto.

It is also an object of the invention to afford a construction whereby the propeller can be adjusted toward or from the coacting cutting element secured to the boat thereby enabling the propeller to act as a cutter in weedy water, but permitting the same to be adjusted to run entirely clear in clear water.

It is another very important object of the invention to afford a construction by means of which the propeller is at all times protected from injury should the boat ground or should the boat pass over a log or other object in the water.

It is also an important object of the invention to afford means whereby the propeller can be adjusted from or toward the stern bearing from within the boat by the steersman.

The invention embraces many novel features and consists in the matters hereinafter described and more fully pointed out and defined in the appended claims.

In the drawings: Figure 1 is a fragmentary view in side elevation, showing the hull of the boat broken away and the shaft tunnel skeg and part of the adjusting mechanism in longitudinal section. Fig. 2 is a fragmentary side elevation illustrating certain objectionable features in certain other boat constructions. Fig. 3 is an enlarged fragmentary section of a construction embodying my invention showing the shaft in elevation. Fig. 4 is a fragmentary rear elevation partly in section. Fig. 5 is an enlarged fragmentary section on line 5—5 of Fig. 1. Fig. 6 is an enlarged fragmentary section on line 6—6 of Fig. 1. Fig. 7 is an enlarged fragmentary side elevation of the adjusting mechanism.

As shown in the drawings: A, indicates the hull of a boat, which, of course, may be of any size or preferred construction and beneath the stern of which is provided a rearwardly extending shoe or web a, faced with metal or board strips a^1, affording no opening between the same and boat, and to the outer end of which is secured the stern post.

Secured to the stern of the boat is the stern post or member B, constructed of cast metal or any suitable material and which is

shaped to engage about the stern of the boat and to be engaged to the stern by means of rivets, bolts or other suitable attaching elements. Said stern post or member, as shown, extends upwardly to the top of the counter and preferably above the load water line is provided with rearwardly extending knuckles b—b^1, apertured to receive therein the rotatable rudder post b^2, on which is rigidly secured the rudder C, which is cut away on its under side and forward end to incline downwardly and rearwardly, as shown in Fig. 1, to afford an easy entrance into the water, and a rearwardly inclined face adapted to afford no surface to which weeds or the like can cling. Said stern post or member is provided with a boss a^2, in which is provided a cylindric recess extending forwardly thereinto in axial alinement with the shaft D, and threaded therein is a sleeve or tube d, which affords a shaft tunnel and which at its forward end fits into a boxing d^1, the forward end of which is provided with a gland d^2, adapted to prevent leakage about the shaft and through which the shaft extends.

Seated in the cylindrical recess in the stern post or member before described is an anti-friction thrust bearing comprising a retainer or cage G, adapted to be pressed into said recess in the stern post or member and in which, as shown in Fig. 3, is pressed a cup g, at all times out of contact with the shaft and fitted into the cage or shell G, on the outer side is a corresponding cup g^1, which bears against the shaft, but normally not against the cage and between said cups are provided balls g^2. Secured on the outer end of the propeller shaft D, and fitting into said recess in the stern post or member is a collar g^3, adapted to bear against said outer cup when the propeller is at its maximum forward adjustment, and rigidly secured on said shaft by means of keys or drift pins extending through the hub h, thereof and through the shaft, is a propeller, the blades H, of which adjacent the stern post or member are provided with cutting edges adapted to coact with corresponding cutting edges on a web h^1, integral with the stern post or member, said edges of the propeller paddles being adapted to fit closely to the cutting web of the stern post or member for the entire length of each blade or paddle as the propeller revolves. As shown also, the lower end b^3, of said stern post or member extends downwardly and rearwardly below the paddles or blades, as shown in Figs. 1 and 4, to protect the propeller at all times in the event of grounding or in passing over any obstruction likely to otherwise injure the propeller.

Means are provided for adjusting the propeller from or toward the stern post or member. For this purpose, as shown, standards I—I^1, are secured in the bottom of the boat and extend upwardly on each side of the shaft D, near its inner end, the standard I^1, as shown, being provided with an upwardly extending arm or bracket i, which extends upwardly and over the inner end of the shaft D, and affords a bearing i^1, for the adjusting shaft K, adapted to be rotated by means of a crank or any suitable means not, however, shown in the drawings and on the rear end of which is provided a worm k, adapted to mesh with a segment k^1, rigidly secured upon a transverse shaft k^2, which is journaled in the top of the standards I—I′, as shown in Fig. 6, and on the under side of which is provided a downwardly extending fork, the arms k^3 and k^4, of which are apertured to receive therein the pins k^5, secured on the opposite sides of a plate or disk k^6, through which the end of the shaft D, extends without contact, and as shown, said disk or plate is provided on opposite sides with grooves concentric with the shaft adapted to afford one half of a ball race; the other half in one instance is afforded by a corresponding groove in a collar k^7, on the shaft D, and for the forward side of said disk in a collar k^8, removably secured on the shaft by means of a drift pin k^9, or other suitable means. The forward extremity of the shaft D, is provided with a flattened head k^{10}, which fits somewhat loosely in a complemental socket member m, rigidly secured on the rear end of the motor shaft M.

The operation is as follows: In clear water the propeller may be readily adjusted out of contact with the stern post or member by rotation of the shaft K, in a direction to throw the segment k^1, forwardly, thus forcing the shaft D, and propeller rearwardly to the desired extent, and, of course, the rudder in that event serves as is usual with all rudders, and in its normal and usual manner. Should weedy water be encountered a slight rotation of the shaft K, in the opposite direction is sufficient to swing the segment rearwardly, thus drawing the shaft D, and propeller forwardly so that the forward edges of the blades or buckets on the propeller coöperate with the cutting web or element on the stern post or member, as shown in Fig. 5, to cleanly sever any weeds or other floating debris of a nature to otherwise be likely to clog upon the propeller. This adjustment is accomplished at any time and in either direction without stopping the motor or changing the driving rate inasmuch as the head k^{10}, of the shaft D, is constructed readily to slide inwardly and outwardly in the socket member m, on the shaft M, and, of course, inasmuch as the rudder post does not extend to the surface of the water and inasmuch as the under edge of the rudder inclines rearwardly and down-

wardly it follows that any material severed or otherwise passing the propeller passes readily beneath the rudder without engaging thereon.

While I have shown and described a particular thrust bearing for the propeller shaft, it is quite obvious that any suitable bearing may be employed for the purpose and that the only bearing release required in the stern post or member for the stern bearing is such that will act to hold the shaft at all times centralized inasmuch as an effective anti-friction thrust bearing is afforded at the inner end of the shaft.

Of course, while I have described a particular coupling for the propeller and motor shaft, it is quite obvious that any suitable coupling may be employed capable of permitting movement of one shaft longitudinally with reference to the other inasmuch as the adjusting shaft K, is provided with a worm acting upon a worm segment, it is evident that once having adjusted the propeller shaft in the desired running position no further attention is required from the operator inasmuch as the propeller is firmly held from longitudinal movement by the worm and segment.

Of course, I am aware that the adjustment of the propeller shaft may be accomplished otherwise than by the means herein described, and, of course, the particular form and manner of engagement of the stern post or member and rudder bearing upon the stern of the boat will vary dependent upon the boat construction and whether or not the counter overhangs the stern post to a greater or less extent. I have, therefore, shown but one construction embodying my invention and I do not purpose limiting this application for patent otherwise than necessitated by the prior art.

I claim as my invention:

1. Propelling mechanisms for boats embracing a propeller, a stern post adapted to be secured to the boat and shaped to fit to the inner edges of the buckets of the propeller as the same revolves and to afford a continuous cutting edge for the entire length thereof in conjunction with the edges of the buckets and a downward and rearward extension secured to said stern post extending beneath the propeller and rearwardly therefrom.

2. In a device of the class described a cutting element adapted to be secured upon the stern of a boat, a shaft extending therethrough, a propeller secured on said shaft and having cutting forward edges on its buckets adapted to coact with said cutting element and means for adjusting the propeller from or toward said cutting element.

3. In a boat construction a member adapted to be secured to the stern of the boat affording at its upper end a pivot bearing for the rudder above load water line, and having a continuous cutting edge adapted to coact with the forward edges of the propeller below load water line, a propeller shaft extending through the member, a propeller thereon and means for adjusting said shaft outwardly or inwardly.

4. A metallic member adapted to be secured to the stern and counter of a boat, a rudder pivotally engaged thereon above load water line and extending downwardly and rearwardly therefrom, a shaft extending through said member, a propeller thereon, co-acting cutting edges on the member and the blades of said propeller, a centralized bearing on said shaft and seated in said member, a thrust bearing on the shaft and a worm and segment operatively connected with the thrust bearing to adjust the propeller shaft longitudinally.

5. A metallic member adapted to be secured to the stern and counter of a boat, a rudder pivotally engaged thereon above load water line, and extending downwardly and rearwardly therefrom, a shaft extending through said member, a propeller thereon, coacting cutting edges on the member and the blades of said propeller, a centralizing bearing on said shaft and seated in said member, a thrust bearing on the shaft, a worm and segment operatively connected with the thrust bearing to adjust the propeller shaft longitudinally, and a coupling connecting the inner end of the propeller shaft with the motor shaft and affording relative longitudinal movement of said shafts.

6. The combination with a boat of a cutting element secured on the stern thereof, a propeller shaft extending therethrough, a propeller rigidly secured thereon, and coacting with said cutting element for the entire length of its blades or buckets, means for adjusting the propeller relative said cutting element, and a rudder pivotally engaged on said boat above load water line and extending downwardly and rearwardly therefrom and affording an open unobstructed space behind the propeller.

7. The combination with a boat of a stern post secured thereon and affording a cutting element for the entire diameter of the propeller and adapted to coact with the forward edges of the blades thereof and a shoe integral with the stern post and extending beneath the propeller.

8. The combination with a boat of a unitary structure adapted to be secured to the stern thereof and to afford in conjunction with the forward edges of the propeller buckets, a continuous cutting element and affording above load water line outwardly extending apertured knuckles, a vertical rudder stem extending through the knuckles

and a rudder secured thereon and extending rearwardly and downwardly therefrom.

9. The combination with a propeller shaft of a thrust bearing near the inner end thereof, adjusting means connected with said thrust bearing and adapted to shift said shaft longitudinally and a slip coupling connecting said propeller shaft with suitable driving means, a propeller on said propeller shaft and a stationary cutting edge coacting with the propeller when the propeller shaft is shifted to its inner limit.

10. In a boat construction a stern post having bearings at its upper end and a cutting edge extending from the bearings to the lower end, a shaft pivoted in the bearings, a rudder having its inner end secured to said shaft above the water line and its outer end extending below the water line with its lower edge curved to permit material sliding therefrom and a propeller adapted to coact with the cutting edge.

11. In a boat construction a rudder having its outer end only below the water line and means pivotally supporting the rudder secured above the water line to prevent weeds clinging thereto, a cutting edge secured to the stern of the boat and a propeller adapted to coact therewith or to be adjusted outwardly therefrom.

12. In a boat construction a cutting edge secured to the boat, a propeller, each blade of which has a cutting edge and means for adjusting the propeller adapting its blades to coact with the cutting edge or to adjust the propeller adapting its blades to clear the cutting edge.

13. In a device of the class described a cutting device, a propeller and means for adjusting the propeller to coact with the cutting device or away from the cutting device.

14. In a device of the class described a cutting device, a propeller, means for adjusting the propeller to coact with the cutting device or away from the cutting device, and a rudder pivoted above the propeller with the outer end extending below the water line.

15. In a device of the class described a cutting device, a propeller, means for adjusting the propeller to coact with the cutting device or away from the cutting device, and thrust bearings for the propeller and an extensible coupling between the propeller shaft and motor shaft.

16. In a device of the class described a cutting device, a propeller having cutting edges to coact with the cutting device and means for adjusting the propeller to clear the cutting device or to coact therewith.

17. In a device of the class described a member shaped to provide a cutting edge, a rearward extension at its lower end, a plurality of knuckles at its upper end, a shaft journaled in the knuckles and a rudder secured thereto and curved downwardly to extend below water line.

18. In a device of the class described a member shaped to provide a cutting edge, a rearward extension at its lower end, a plurality of knuckles at its upper end, a shaft journaled in the knuckles, a rudder secured thereto and curved downwardly to extend below water line, a propeller adapted to coact with the cutting edge, a shaft extending forwardly therefrom and mechanism for adjusting said shaft to shift the propeller to clear the cutting edge.

19. In a device of the class described a propeller, a member having a lower rearward projection concave on its upper face to receive the propeller blades therein, and a rudder pivoted to said member above the water line and curved downwardly to extend below the water line.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

WILLIAM L. CASADAY.

Witnesses:

JOHN M. STAPLES,

ADOLPH S. GINZ.