

(No Model.)

2 Sheets—Sheet 1.

S. N. SMITH.
BOAT PROPELLING ATTACHMENT.

No. 570,613.

Patented Nov. 3, 1896.

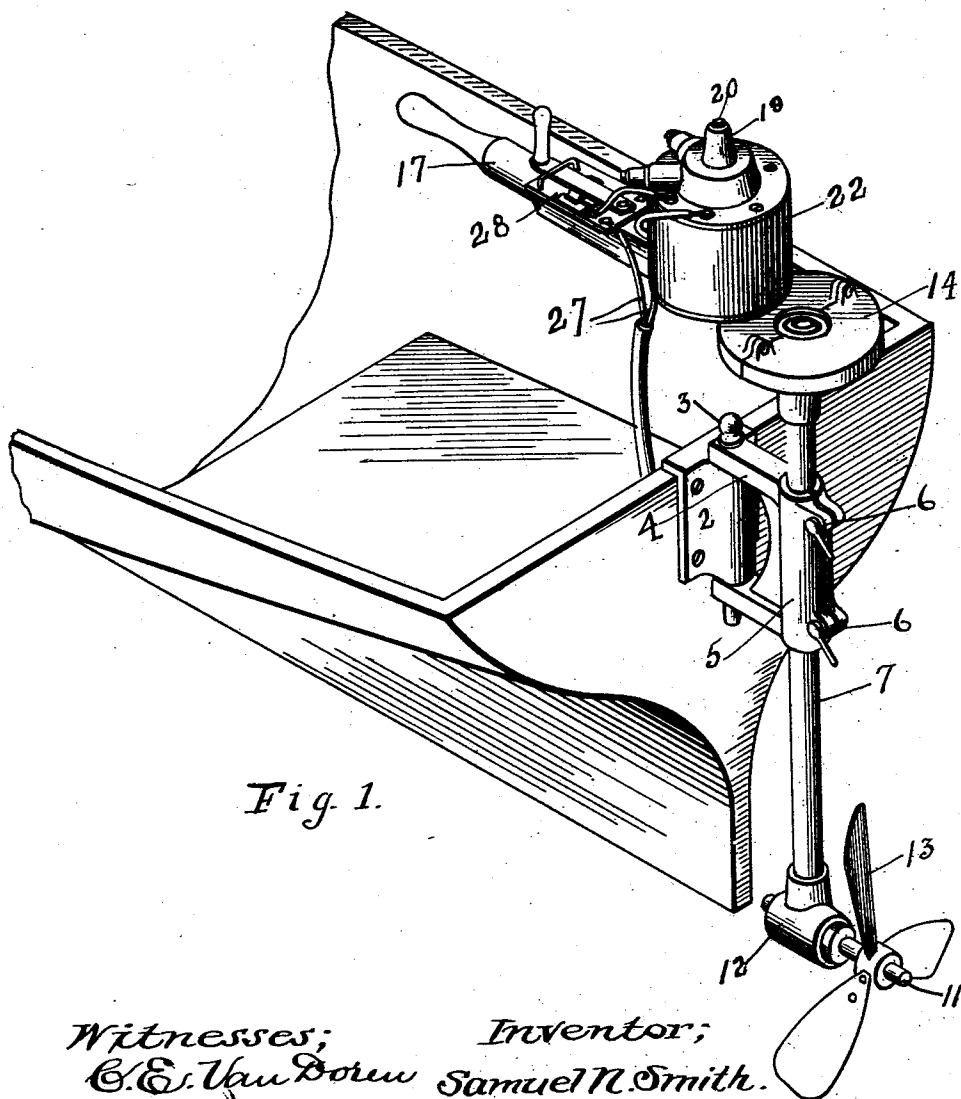


Fig. 1.

Witnesses;

C. E. Van Doren

Inventor;

Samuel N. Smith.

C. E. Van Doren

By *Paul O'Hawley*

his Attorneys.

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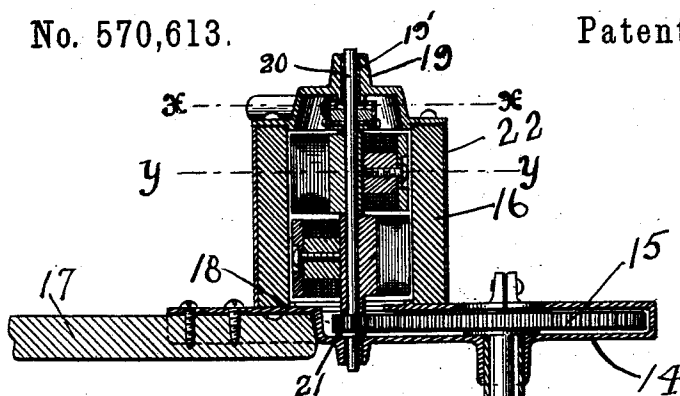


Fig. 2.

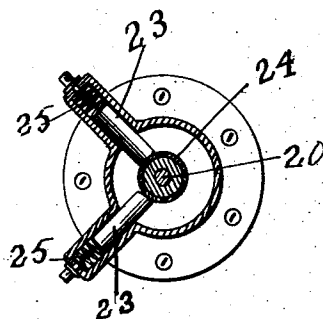
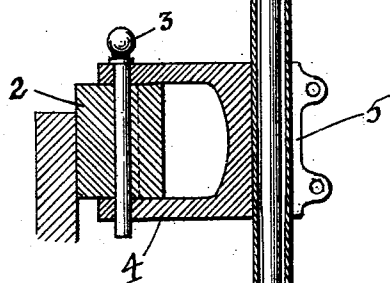


Fig. 3.

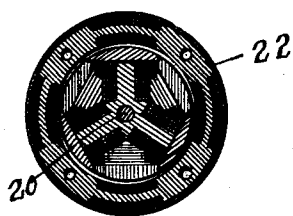
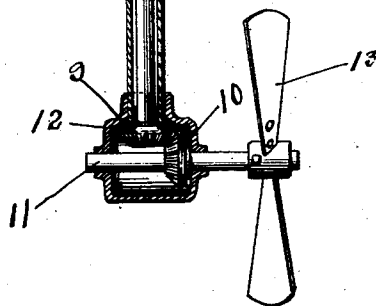


Fig. 4.



Witnesses;
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UNITED STATES PATENT OFFICE.

SAMUEL N. SMITH, OF MINNEAPOLIS, MINNESOTA.

BOAT-PROPELLING ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 570,613, dated November 3, 1896.

Application filed November 16, 1895. Serial No. 569,151. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL N. SMITH, of the city of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Boat-Propelling Attachments, of which the following is a specification.

My invention relates to means for propelling boats, and the object I have in view is to provide a propelling attachment for row-boats, small sail-boats, yacht-tenders, &c., which attachment will be adjustable to boats of various sizes, and by means of which the boat may be propelled by a small power, and not only propelled, but steered with ease and convenience.

To this end my invention consists in the combination, with the propeller to revolve in a vertical plane, of a vertical shaft whereby the same is driven, suitable means for supporting said shaft upon the side or end of a boat, and a motor, also carried by the supporting means and movable therewith; and, further, in pivotal means for supporting the said parts, whereby the propeller may be moved to steer the boat; further, to a particular motor arrangement and connection, and in details of construction and combinations of parts, all as hereinafter described, and particularly pointed out in the claims.

The invention will be more readily understood by reference to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a perspective view illustrating a device embodying my invention. Fig. 2 is an enlarged vertical section thereof, showing the arrangement of the brushes of the electric motor. Fig. 3 is a horizontal section on the line yy of Fig. 2, illustrating the construction of the motor.

As indicated in the drawings, this device is readily attachable to either the stern or the side of a boat, and as no part of the mechanism pierces the boat, the same need be in no way altered or rebuilt to receive this device. A block 2, secured upon the stern or side of the boat, has a pin-hole through which extends the pin 3, by which a swinging arm or block 4 is pivoted to the boat. The outer end of this block or arm 4 is in the form of a split sleeve 5, adapted to be tight-

ened by screws 6, and when so tightened to securely grip the vertical tube 7. The tube supports the remaining parts of the mechanism and is adjustable at any desired height in the swinging arm. Within this tube are suitable bearings for the shaft 8, at the lower end of which is a bevel-gear 9, meshing with a similar gear 10 upon the short propeller-shaft 11. This propeller-shaft has bearings in a box 12, secured upon the lower end of the tube 7 and inclosing the said gears. A propeller-wheel 13 is secured upon the rear end of the shaft 11. On the upper end of the fixed tube 7 is a casing 14, which serves as a housing for the large gear-wheel 15, and more particularly as a bracket whereon the driving-motor 16 and the handle or tiller 17 are secured and supported. The rear part of the casing 14 is preferably removable. Upon the bracket thus formed is an annular seat 18 for the "field" portion of the electric motor. The upper bearing 19' of the armature-shaft 20 is carried upon the field portion, while the lower end of the shaft is provided with a convenient bearing in the part 14. On the lower end of the armature-shaft is a pinion 21, meshing with the large gear-wheel 15, by which the necessary reduction in speed is obtained.

The motor is completely housed in a brass or other non-magnetic covering 22, and the upper part 19, containing the bearing 19', is also of non-magnetic material. In this part are insulated holders for the commutator-brushes 23, which are preferably simple carbon sticks pressed upon the commutator 24 by springs 25. To these brushes the battery-wires 27 are connected through the medium of a three-pole switch 28, arranged upon the tiller 17, and having poles representing ahead, stop, and reverse movements of the motor. As the vertical shaft is set at considerable distance from the stern or side of the boat, the same has a considerable latitude of movement, and thus it may be swung from side to side to change the angle of propulsion, as required, in steering the boat, a rudder being thus dispensed with.

The axis of the motor is supported upon the bracket, and the upper end of the shaft is substantially coincident with the axis of the pin whereon the arm or pivotal bracket 4 is

adapted to swing. Therefore in throwing the tiller from side to side the propeller will be shifted, while the motor will not leave its original position.

5 Any desired form of motor may be employed in connection with the other parts of my device; but I prefer to use a motor of the construction shown in the drawings, particularly in Figs. 2 and 4, inasmuch as a motor
10 of this construction is considerably lighter than others in proportion to the power derived therefrom. This motor comprises an annular field portion of iron, preferably divided into four pole portions and provided
15 with suitable field-windings. The armature is provided with a different number of pole-pieces, two sets of three each being preferably employed, as shown, and the two sets being placed differentially upon the armature-shaft,
20 whereby there are always four poles in positive action. In use a battery of either primary or secondary type is placed in the boat and the flexible connections 27 lead therefrom to the motor-switch.

25 As the arm 4 is the only connection between the device and the boat, and as this arm is arranged at a point near the upper part of the boat, it follows that the device may be readily placed in position by a person
30 in the boat and while the boat is in the water, it being only necessary to bring the ends of the arm 4 above and below the block 2 and pass the pin 3 through the hole in the arm and through the hole in the block, and as the
35 entire apparatus is carried by the vertical tube 7, which is adjustably supported in the split sleeve 5 of the arm 4, a person in the boat is enabled to vertically adjust the entire apparatus by loosening the screws 6 and
40 moving the tube 7 up and down in the sleeve 5 and then tightening said screws. By this means the propeller can be adjusted to bring it at the right distance beneath the surface of the water. In some instances, where the boat
45 is to be used in shallow water, it will be necessary to raise the propeller so as to bring it in position where it will be only a short distance below the surface of the water, and the advantages of having the propeller and the
50 entire apparatus vertically adjustable will be readily seen.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

55 1. The combination, with an arm or bracket, pivotally secured to the boat, of an upright tube adjustably secured to said arm or bracket, a driving-shaft arranged within said tube, a propeller and propeller-shaft supported by said tube, said propeller-shaft being connected by suitable gearing to said driving-shaft, a motor also supported upon said tube and means connecting said motor and said driving-shaft, for the purpose set forth.

65 2. The combination, with a pivotal arm or bracket, secured to the boat, of an upright supporting-tube, adjustably secured upon

said arm or bracket, a driving-shaft arranged in said tube, a propeller and propeller-shaft supported upon said tube, gearing connecting
70 said propeller-shaft and said driving-shaft, a motor arranged above said arm or bracket and supported upon said tube, suitable gearing connecting said motor with said driving-shaft, all of said parts being arranged to swing
75 or turn upon the pivotal connection between said arm or bracket and the boat, for the purpose specified.

3. The combination, with the pivotal arm or bracket to be secured to the boat, of a vertically-arranged tube adjustable therein, a vertical shaft provided within said tube, a box provided upon the lower end thereof, the propeller-shaft having bearings therein, gears upon said vertical shaft and the propeller-
85 shaft, the same meshing with one another, a propeller, a bracket provided upon the upper end of said tube, the motor supported upon said bracket, gears connecting the shaft thereof and said vertical shaft, and steering
90 means also provided upon said bracket, substantially as described.

4. The combination, with the pivotal arm or bracket to be secured upon the boat, of a vertical supporting-tube, secured upon said
95 bracket, a propeller having a longitudinal shaft, a vertical driving-shaft geared thereto, a motor geared to said driving-shaft above said arm or bracket, and the axes of said motor and said pivotal arm or bracket being
100 substantially coincident, as and for the purpose specified.

5. The combination, with the pivotal arm or bracket to be secured upon the boat, of a vertical supporting-tube, means for adjustably
105 locking said tube upon said arm or bracket, wherein the same is vertically adjustable, a propeller having a longitudinal shaft, a vertical driving-shaft geared thereto, a motor geared to said driving-shaft above said arm
110 or bracket, and the axes of said motor and said pivotal arm or bracket being substantially coincident, as and for the purpose specified.

6. The combination with the boat of the
115 block 2 secured thereto, the swinging arm 4, provided with a split sleeve 5 at its outer end and pivoted to the block 2 by the pin 3, a vertical tube 7 passing through said split sleeve, screws 6 for tightening said sleeve upon said
120 tube, the propeller and propeller-shaft, a shaft passing through said vertical tube and connected with said propeller-shaft, a motor supported upon said vertical tube, and means connecting said motor with said vertical shaft,
125 for the purpose specified.

In testimony whereof I have hereunto set my hand this 25th day of September, A. D. 1895.

SAMUEL N. SMITH.

In presence of—

RICHARD PAUL,
A. C. PAUL.