No. 656,012. Patented Aug. 14, 1900.

J. C. CHAMBERLAIN.

ELECTRIC LAUNCH.

(Application filed Mar. 27, 1899.)

(No Model.)

Fig. 1.

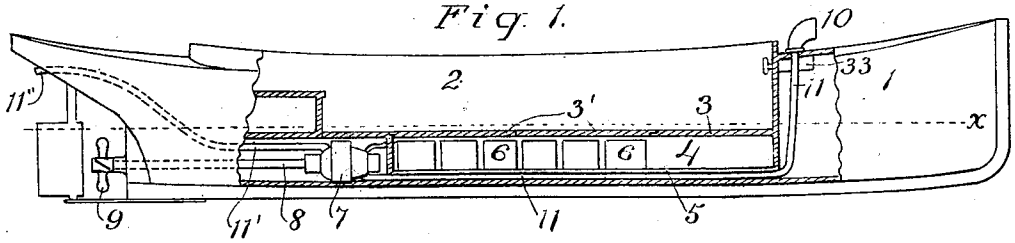


Fig. 2.

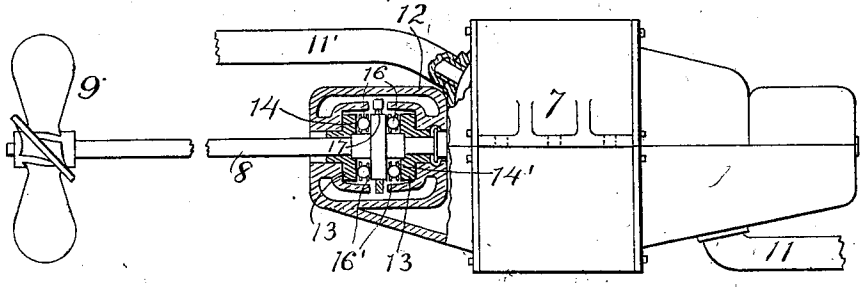
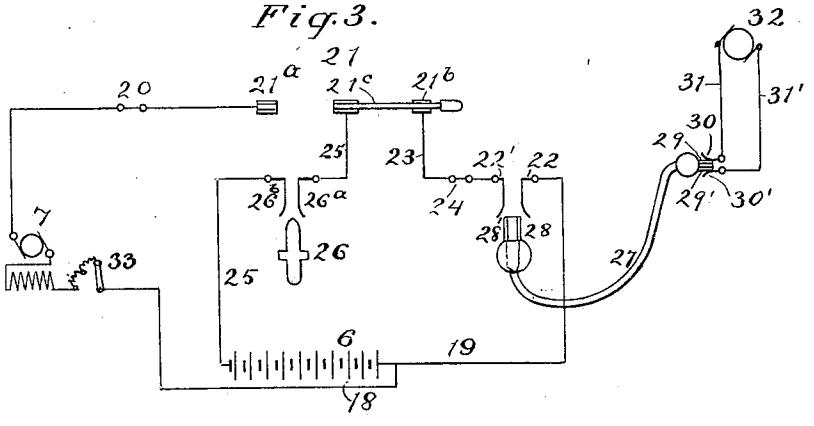


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ELECTRIC LAUNCH.

SPECIFICATION forming part of Letters Patent No. 656,012, dated August 14, 1900.

Application filed March 27, 1899. Serial No. 710,596. (No model.)

To all whom it may concern:

Be it known that I, JACOB CHESTER CHAMBERLAIN, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Electric Launches, of which the following is a specification.

This invention relates to improvements in electric launches, some of the features of the invention being also applicable to other electrically-propelled vehicles.

One feature of my invention relates to the arrangement of the motor and batteries within the boat or launch in such manner that they are altogether below the floor of the vehicle, thus not only giving a maximum amount of space, but utilizing their weight as ballast for the boat.

My invention further comprises special means for ventilating the motor, such means being especially necessary and advantageous when the motor is entirely inclosed in the boat structure, as in this case.

A further feature of my invention is an antifrictional journal-bearing for the motor, adapted to take without undue friction the end thrust of the propeller-shaft of the boat, which is continuous with the motor-shaft.

A feature of my invention which is applicable to electric vehicles in general is a system for connecting and disconnecting the storage battery with the motor or with charging-terminals, such system comprising a detachable key or plug which controls the circuit of the battery through both of such connections, so that when such plug is removed the circuits cannot be closed by unauthorized persons.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a longitudinal sectional view, partly in elevation, of an electric launch embodying my invention. Fig. 2 is a partly-sectional side elevation of the motor and propeller. Fig. 3 is a diagram showing the circuit connections.

Referring to Fig. 1, the body or hull of the launch is indicated at 1, the seating or passenger space thereof at 2, and the floor of such space at 3. Trap-doors or removable boards 3′ in this floor give access to a space 4 between such floor and the bottom of the boat, and on a suitable frame or tray 5 in this space the batteries 6 are supported. The motor 7 is located back of this space and also below the floor-level, and its shaft 8 or a continuation thereof extends rearwardly and carries the propeller 9. The motor and batteries being thus located beneath the floor are out of sight and out of the way, leaving the passenger-space unencumbered, and, moreover, since they are below the water-line, indicated, for example, at *x x* of the boat structure, they serve as ballast for the boat.

At any suitable point in the forward part of the boat a funnel 10 is placed with its mouth directed forwardly, so that when the boat is advancing a current of air will pass into and through this funnel. From the throat of the funnel a pipe 11, preferably a flexible rubber tube, leads down to the bottom of the boat and thence back under or alongside the batteries to the motor. This tube enters the motor at the front end of the motor-casing, and a similar pipe or tube 11′ leads from the rear end of the motor-casing to the extreme rear of the boat, projecting or opening from the boat at 11″. By this means a continual supply of air is forced through the motor-casing and over the armature as long as the motor is in operation, thus efficiently ventilating the motor at the times when ventilation is especially desirable. The tubing being of flexible insulating material, it does not tend to strain or loosen under the vibration of the motor and there is no danger of it causing short-circuiting or exposing "live" contacts outside the boat.

The action of the propeller results in a considerable end thrust on the motor-shaft, and to take this thrust I provide an end-thrust ball-bearing in the motor-bearing, as shown in Fig. 2, where 12 indicates the rear bearing-block of the motor, and 13 the linings thereof, provided with the usual bearing for receiving and supporting the shaft 8, and also with end-thrust faces 14 14′, between which and a collar 15 on shaft 18 are arranged two sets of antifriction-balls 16. By this ball-bearing the end thrust due to the propeller action does not result in any undue friction on the bearing. Cages 16′ may be provided to keep the balls in proper relative position, thus obviating noise due to their rattling or dropping

around in the bearing-channel. It will be seen that this ball-bearing is contained within the usual bearing 12 13, and the oiling devices 17, which serve to oil the shaft-bearing, also serve to oil the ball-bearing.

In Fig. 3 I have shown a system of connection for the electromotive plant on the boat whereby the storage battery may be connected either to the motor or to charging-terminals and whereby in either of such conditions of the circuit the connection may be broken by a detachable plug or key, so that on removing this plug the system is dead and cannot be energized by any one not having a proper plug or key. The storage battery 6 is connected at one pole to wires 18 19 in multiple, the wire 18 leading to the motor 7 and thence through fuse 20 to one contact 21^a of a double-throw switch 21 and the other wire 19 leading to one of the charging-terminals 22. From the opposite charging-terminal 22′ a wire 23 leads through fuse 24 to the other terminal 21^b of the double-throw switch 27. The blade 21^c of such double-throw switch is connected by a wire 25 to the opposite pole of battery 6. This wire thus constitutes a common return for both branches of the circuit, and a detachable key or plug 26, coöperating with terminals 26^a 26^b on either side of a break in this circuit, serves to close this common return and when removed to interrupt the same. 27 represents a changing coupling or cable, connecting through terminals 28 28′ with the charging-terminals 22 22′, and also connecting through terminals 29 29′ 30 30′ and wires 31 31′ with a source of electric energy 32. The motor 7 may be regulated by an adjustable resistance or controller 33.

In the normal operation of the vehicle the switch 21 is kept in the left-hand position, connecting contacts 21^a 21^c, establishing the connection through the motor and its controller for the storage battery. When it is desired to charge the battery, the switch is thrown over to position to open the motor connection and to connect contacts 21^c 21^b. The changing coupling 27 is then put in place, and assuming that the key or plug 26 is also in place the charging connection will be established.

When the operator leaves the boat or vehicle, he removes the key or plug 26 and takes it with him, thus breaking the common return of both the motor and the charging circuit and rendering it impossible or at least difficult for any unauthorized person to close the circuit by operating the switch 21 or the controller 33.

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

1. In an electric boat, the combination with an electric motor completely inclosed in the boat structure, and located beneath the floor thereof of ventilating-pipes communicating with different portions of the motor-casing and extending forwardly and rearwardly therefrom to points outside of the boat structure.

2. In an electric boat, the combination with an electric motor completely inclosed in the boat structure, and located beneath the floor thereof of flexible insulating ventilating-pipes communicating with different portions of the motor-casing and extending forwardly and rearwardly therefrom to points outside of the boat structure.

3. In an electric boat, the combination with a propelling-motor, its storage battery and a changing connection, of a double-throw switch, multiple connections from said battery respectively through said motor and said changing connections, to different terminals of said double-throw switch and a common return from said double-throw switch to the battery, such connection including a detachable plug.

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