This invention has for its object a motor propulsion device for boats and particularly what for convenience I have called an electric oar, or a motor and propulsion mechanism actuated thereupon which is applied to the ordinary type of oars for row boats, and is simple and economical in construction, economical to operate and efficient in use for all purposes that row boats are used, such as for trolling, or for transportation.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawing in which like characters designate corresponding parts in all the views.

Figure 1 is a side elevation of this electric oar, the contiguous part or stem of the boat being shown in section.

Figure 2 is a rear end view of the oar blade and the propeller showing the relation of the propeller to the blade.

Figure 3 is a view similar to figure 2 showing the motor as resiliently mounted or cushioned on the oar, and the oar so mounted on the oar lock.

This propulsion device comprises an oar having an oar lock mounted in its support, an electric motor mounted on the oar, a propeller supported adjacent the blade and a propeller shaft connecting the motor and the propeller and extending lengthwise of the oar and the oar blade at one side of the shaft of the oar.

The oar is of the usual row boat type and is not an oar specially designed to support a motor and the propeller with the motor and propeller mechanism built thereinto. It is preferably of wood, although it may be aluminum, or any other material. The essential feature is that it is an oar, of the ordinary row boat type.

The motor is mounted on the oar in such a position as to partly counterbalance the weight of the blade and the propeller and the propeller shaft so as to tend to tilt the oar to lift the blade upwardly, although the blade, propeller shaft and propeller are heavier than the motor, and the motor is so located that the propeller is just submerged when the propeller is in motion.

The motor is an electric motor and arranged with its shaft extending lengthwise of the handle portion of the oar. The electric current is supplied to the motor from a battery carried in the boat and having wire connections through a suitable control switch to the motor. The battery may be of the usual six volt automobile type.

1 designates the oar supported with its blade 2 in a vertical plane, by an oar lock 3 to which it is pivoted on a horizontal axis at 4. The oar lock is provided with a suitable support 5 by which it may be clamped or mounted on the boat, as on the rear wall or stern 6 of the boat so that when the oar is mounted on the boat, it is in a position occupied by a scull oar. The support 5 includes a suitable fixed jaw 7 and a movable jaw 8 which is actuated by a clamping screw 9. Means is preferably provided for retarding the swirling action of the oar lock in order that the oar may stay in any angular position to which it is adjusted to steer the boat, and as here shown, the oar lock is provided with a friction plate 10 engaging a stem 13 on the movable part of the oar lock and thrusting at one end against the lower side of the fixed plate 11 and at its other end against a shoulder or adjustable nut 14 on the stem 13.

15 designates the electric motor of any suitable construction mounted on the oar with its shaft 16 extending lengthwise of the oar. 17 is a propeller shaft connected to the motor shaft and extending lengthwise of the oar and the blade, being here shown as extending over the upper edge of the blade 2 and as journaled in a bearing 18 supported by the blade. The propeller shaft and the motor are thus located external of the oar and above the oar in the plane thereof.

19 is a propeller mounted on the rear end of the shaft 17 over the upper edge of the blade 2. The shaft 17 is connected with the motor shaft through a flexible coupling 20 of any suitable construction. The motor is mounted on the oar in front of the oar lock or the axis 4 in order to partly counterbalance the weight of the oar in the rear of the axis 4, the propeller shaft 17 and propeller 18.

21 are feed wires for connecting the motor in circuit with a battery not shown, these wires being preferably connected to suitable terminals as 22. The terminals are connected to the windings of the motor through a suitable control switch 24. The control switch is here shown as of the double throw type and when thrown into one position engages contacts 25 and into another position, contacts 26. The motor is of the type 110.
having variable windings, and the throwing of the switch 24 into engagement with the contacts 25 effects full speed of the motor and into engagement with the contacts 26, a low or trolling speed. In accordance with the grade of battery, a motor will propel a boat approximately twenty-four hours at trolling speed and at full speed for eight hours, more or less, and at full speed will propel a boat in smooth water faster than it can be rowed by hand. Preferably the propeller 19 is located beyond the rear edge of the blade 12, or overhanging the rear end of the blade, and the blade is provided with a shield or guide 31 along its lower edge, which shield has an extension 31 beyond the rear end of the blade and under the propeller 19 to guard the same from fouling on rocks, weeds, and other obstructions, the extension curving upward.

The thrust of the propeller tends to lift the oar blade 2 and hence tilt the oar. When the propeller stops, the blade end of the oar drops. Means is provided to limit the dropping of the oar blade. This means is here shown as a set screw 35 threading in a plate 36 secured to the lower side of the oar and having its head 37 arranged to strike the friction plate 10 and limit the downward tilting of the oar. The screw is held from unintentional turning by a spring pressed friction plug 38 pressing laterally against the screw and located in a socket in the plate 36. In the form shown in Figure 3, the plate 36 has a bearing for the pivot 4 of the oar.

As seen in Figure 4, in order to insulate the oar from vibrations originating in the motor, the motor is resiliently mounted or cushioned on the oar by cushions or rubber spacers 40 between the motor housing and the upper side of the oar, cushions 41 between the oar lock 4 and the lower side of the oar, and cushions 42 between the oar lock and the bolts 43 which secure the oar lock, oar, and motor casing together, the cushions 40, 41, 42, encircling the bolts 43. The cushions constitute vibration dampening means between the motor and the oar, and between the oar and its mounting.

This motor oar is particularly advantageous in that it provides means for propelling a row boat at extremely low cost as ordinarily a battery can be procured at the rate of 25 cents per day and one going on an outing or fishing trip can carry the oar on the running board of the automobile, and can also carry the battery. The battery is set in the boat and the wires on the oar attached to the terminals of the battery. The clamp 5 is mounted on the end or stern of the boat and when the switch 24 is thrown into one position or the other, the motor is energized to turn the propeller. The action of the propeller tends to lift the oar blade upwardly and the motor 15 is so located relatively to the axis of the oar lock that this lifting force is sufficient to keep the propeller near the surface of the water.

To steer the boat, the oar is swung to the right or left against the friction between the plates 10, 11, the friction being sufficient to hold the oar in any adjusted position under ordinary conditions.

What I claim is:

1. A propulsion device including an oar, an oar lock to which the oar is pivoted on a horizontal axis, a support for the oar lock and to which the oar lock is swivelled, the oar lock and support having coating discoidal friction plates concentric with the swivel joint between the oar and the lock and a spring pressing one plate against the other, a motor mounted on the oar, a propeller shaft connected to the motor and extending lengthwise of the oar and the oar blade and a propeller on the rear end of the shaft.

2. A propulsion device including an oar, an oar lock for supporting the oar with its blade in a vertical plane, a motor mounted on the oar, a propeller shaft connected to the motor and extending lengthwise of the oar and the upper edge of the blade, the propeller shaft extending above the upper edge of the oar blade and in the plane thereof, a propeller on the rear end of the shaft, and a guard carried by the oar blade and extending under the propeller, the guard extending in the rear of the oar blade in line with the lower edge of the blade.

3. A propulsion device including an oar, an oar lock for supporting the oar with its blade in a vertical plane, a motor mounted on the oar, a propeller shaft connected to the motor and extending lengthwise of the oar and the upper edge of the blade and a propeller on the rear end of the shaft, the propeller shaft and motor being external of the oar and in the plane thereof.

CHARLES P. GRIMES.