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ELECTRIC LAUNCHES AT THE COLUMBIAN EXPOSITION.

No electrical feature at the World's Columbian Exposition was entered upon with more uncertainty than the introduction of electric launches on the lagoons, as up to this time such launches had not been made use of in this country except in an experimental way. In spite of these uncertainties, however, the launches were among the first electrical features that were ready and they have fulfilled their requirements during the entire period that the Exposition has been open, with gratifying results, carrying over one million passengers and earning \$314,090.

There are fifty of these launches that did service for the public, all of the type shown in our first page illustration. Each boat is 35 feet 10 inches over all in length and 31 feet 6 inches on the waterline. The beam is 6 feet 2½ inches and the draught 27 inches. The lines are as near perfection as they well can be. At whatever rate the launch runs there is practically no wake, so that the wash on the shore, even in such narrow waterways as the lagoons, is of no consequence. The hulls of these boats were constructed of white oak frames, with white cedar planking. The inner paneling, decks and other parts are of mahogany. All the woodwork is finished in its natural color, thus giving a very rich appearance. Cut No. 4 shows the launch complete, with the pilot in the forward end controlling the supply of electricity and steering. The passengers are scattered about, the full seating capacity being 30 people. Cut No. 5 gives an idea of how the launches looked when laid up. Their berths were at the southeastern corner of the Agricultural building, in the South Pond, 30 boats being on the left in the picture and 20 on the right. When the boats were

to be charged they were laid up here, and whenever a boat needed repairs it was hauled up in its berth. The charging was all done at night, so as not to interfere with regular trips during the day.

Cut No. 1 gives a sectional view of a launch. It will be noticed that the motor is placed low down and in the center of the boat. This motor was designed and made especially for this use by the General Electric Company for the Electric Launch and Navigation Company, whose offices are at 44 Broad Street, New York City, which holds and owns the patent rights for the launches.

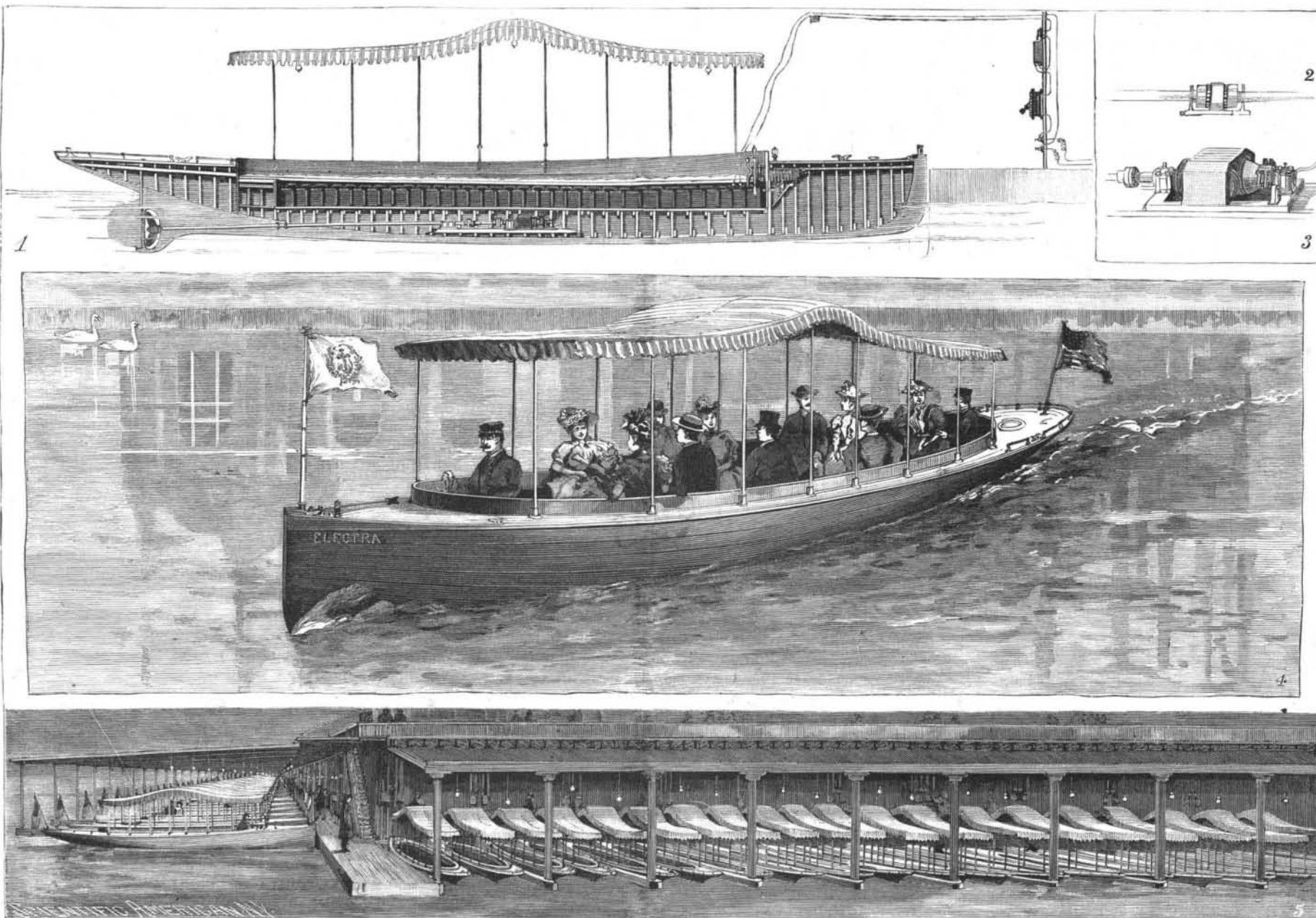
The motor is protected by a box which rises flush with the main deck of the boat, and is so set that all working and wearing parts can be readily reached. The storage batteries are placed around the sides of the boat, under the seats and entirely out of sight. The motor is nominally of four horse power, and is coupled direct to the propeller shaft. The type of this motor is shown in cut No. 3, while cut No. 2 illustrates the thrust ball bearing in which the shaft runs. By this combination of direct coupling and thrust bearing, all gearing and loss of power, as well as unnecessary noise and jar, are done away with.

The batteries used are of the Consolidated Electric Storage Company's type, of 150 ampere hours' capacity. Each boat has 66 cells, and these cells can be arranged in three groups of 22 cells in series or in two groups of 33 cells in series. Several improved devices have been brought out to adapt these cells to this use, so that there shall be no danger of the liquid spilling or of the efficiency of the cells being unnecessarily impaired. The cells are readily charged. The manner in which this is done is shown in the illustration. A charging station can be fitted up at little expense, and there is

probably no lake, river, or harbor in the country with sufficient water to float a launch where such a station could not be readily had. A current of 18 amperes per group is the one generally used to charge after a run of fifty or sixty miles at nominal speed, and from six to seven hours time is required. In case of necessity, however, a current of 30 amperes can be used, when the batteries can be charged in four or five hours. The plant which provided the current at the Exposition comprised a direct current shunt-wound Edison generator, giving a current of 110 volts. Any form of electric energy, however, arc or incandescent, can be used. Even when only an alternating current is to be had, a charging station can be arranged with not very great expense. When the station is once completed, all that is necessary is to connect the charging wires to a set of binding posts on the boat, as shown in the illustration, and turn on the current.

The operation of one of these boats is exceedingly simple, as shown by the experience of the Electric Launch and Navigation Company at the Exposition. Not one of the pilots or guards that managed the fleet had ever before handled an electric launch, yet they experienced no trouble whatever from the first. The control is by means of a small lever switch at one side of the steering wheel, which is located in the forward part of the boat. This lever allows of four speeds forward and two backward. The nominal speed at which the boats are run is from six to seven miles an hour, but they have a reserve speed of from eight to ten miles. At the ordinary speed the launches at the Exposition have been in constant use from twelve to fourteen hours a day on one charging, and the cost of this charging has never exceeded sixty cents per day per

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