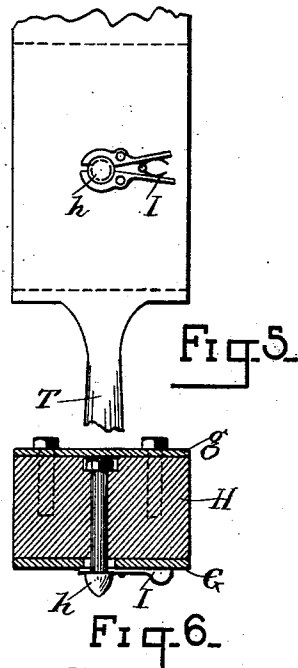
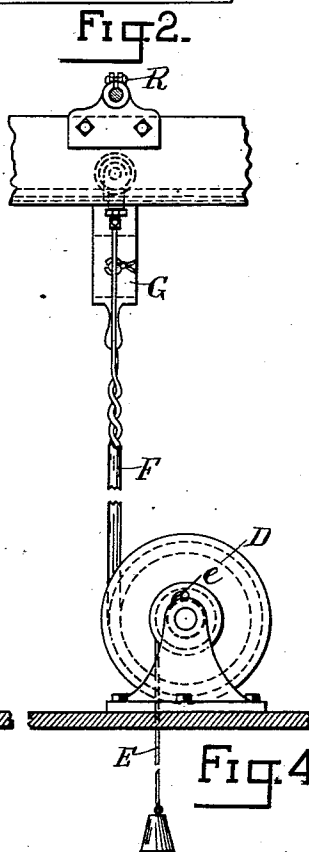
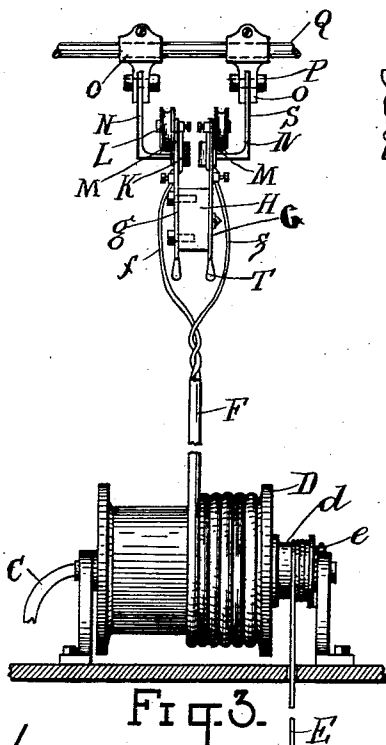
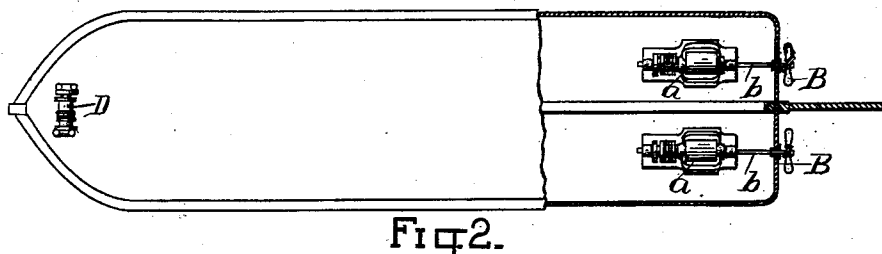
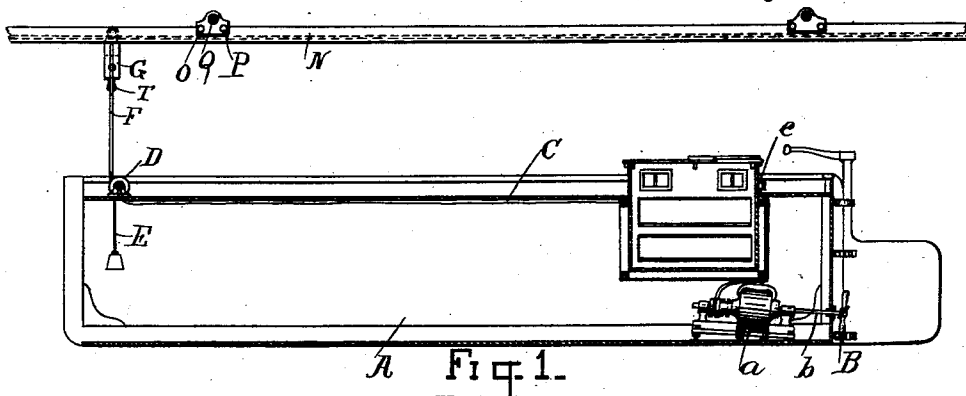


(No Model.)

A. C. MATHER.
ELECTRICAL PROPULSION OF CANAL BOATS.
No. 564,629. Patented July 28, 1896.



WITNESSES:
Fred W. Hersey.
J. J. McCarthy.

INVENTOR:
A. C. Mather

UNITED STATES PATENT OFFICE.

ALONZO C. MATHER, OF CHICAGO, ILLINOIS.

ELECTRICAL PROPULSION OF CANAL-BOATS.

SPECIFICATION forming part of Letters Patent No. 564,629, dated July 28, 1896.

Application filed December 1, 1893. Renewed May 20, 1896. Serial No. 592,367. (No model.)

To all whom it may concern:

Be it known that I, ALONZO C. MATHER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in the Electrical Propulsion of Canal-Boats and a Trolley for Use in Such Propulsion, of which the following is a specification.

10 The object of my invention is to have a means by which a canal-boat may be run practically by electrical power and again to have a means by which the boat may be run from beneath the trolley-wires and yet have
15 a connection with them, also to have a means by which a boat when lying at a dock or beside a canal may be started by electrical power directly from those places instead of having to be placed beneath the trolley-wires
20 before electrical power can be used, as now has to be done; also to inclose the trolley-wires so they will not be liable to be stretched or broken by the strain of the boat on them or liable to injure people on the boat by coming
25 in contact with them when passing under bridges and low places. I accomplish these objects by the means illustrated in the accompanying drawings, in which—

30 Figure 1 is a longitudinal section of a canal-boat, showing the trolley-wires, trolley, motor, &c., in elevation. Fig. 2 is a partial plan and partial sectional view showing a plan of the windlass and motors, &c. Fig. 3 is a side elevation of my peculiarly-constructed trolley
35 and a section of the trolley-wires and supports as used in this construction. Fig. 4 is a front elevation of said trolley with wire-supports. Fig. 5 is a detail view of the clasp-
40 ing device on the trolley, and Fig. 6 is a sectional view of the same.

Similar letters refer to like parts throughout the various views.

In the drawings, A represents a canal-boat. a represents a motor placed in the stern of
45 the canal-boat, one being placed on each side of the keelson, and are so placed on the bottom of the boat or bed that they may be adjusted up and down, as may be desired, by screws. Directly connected with the shaft
50 of the motor is the propeller-shaft b, which passes through the stern of the boat and is attached to the propeller B. Thus a direct

connection between the motor and propeller is made, no use being had of intermediate gears. By this means a great loss of friction 55 is saved.

The trolley-wire supports and the trolley used as a part of my invention are of peculiar construction, which is as follows: The trolley-wire M, which carries the electrical 60 current, is placed on the inside of the L-shaped iron N. Attached to the top of said iron is the union-iron O, which is placed at the joints of the pieces of L-iron or more often, if found necessary to do so. Through this union-piece 65 passes the bolts P, which also pass through each end of the joining-irons. By means of these bolts P the L-irons are firmly clamped together and held in place. Passing through the top of this union-piece O is the stay-rod 70 Q, which rod passes from bank to bank of the canal, being supported by posts on said banks till it is of the required height. This rod Q may be made of a steel or iron rod, or, if more convenient, of a wire rope. The L- 75 irons N are made in sections with the copper trolley-wire M attached to it, and in placing in position the copper wire may be united by a lap union or any other means giving a full and ready current of electricity. There 80 are two L-irons with the lower part of the L, upon which is placed the trolley-wire, facing each other, and thus the trolley-wire is entirely inside of these L-irons. Said irons are covered on the outside with an insulating- 85 paint S, and thus any danger of a shock from it is obviated.

My trolley is a double-wheel trolley, one wheel being used to take the current and the other to return it, making a return-circuit by 90 means of the two wires M M. The trolley is composed of the trolley-wheel L, which runs on the trolley-wire, and the side plates G g, which form the main construction of the trolley. Attached securely to the side g of this 95 construction is the filling-block H. Fixed in this block is the bolt h, having on it a conical head. This bolt passes through a hole in the side piece G (see Fig. 6) and far enough beyond the outside of said side piece to allow 100 the clamping-jaws I to fall in behind it and prevent it pulling back. These jaws are ordinary curved levers turning on a pivot, and the points are held together by a spring be-

tween the thumb-pieces, which are on the back. This construction is clearly shown in Figs. 5 and 6 of the drawings. By this means the sides may be readily separated and placed together. This is necessary and a very important feature of my invention, as by it I am enabled to readily take the trolley from the wires and their supports and just as readily replace it. It is done as follows: A pressure is made on the end of the clamping-jaws I, which pulls the points up and lets the point of the bolt *h* pass through the hole in the plate G. Then by taking hold of the handles T on the bottom of each of the side pieces the trolley-wheels may be thrown a little to the side and lifted out. When placing on, the reverse is done, one trolley-wheel being placed on, then the other canted and placed on, when the two sides may be clamped by pressing the point of the bolt *h* through the hole in G and between the points of the clamping-jaws I till they drop in back of it and hold it.

In the side pieces where they come opposite the bottom of the L-irons is placed a small roller K. This is to reduce the friction in a side strain on the trolley by the boat being out from under the trolley.

The trolley-wire is held taut by means of passing over a windlass D, which windlass has on it a smaller drum, over which passes a cord E, attached to a weight. This cord is wound opposite from the trolley-cable and thus a constant tension is brought on it, tending at all times to hold the boat under the cable. The current is taken from the windlass to the motors by the wire C, having in it a switch *c* near the back of the cabin, by which switch the power may be readily thrown from the motors.

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

1. In a system of canal propulsion a rigid elevated track, a trolley traveling thereon, a flexible line extending from the trolley to a canal-boat, and means for taking up the slack in said line, whereby the boat may be guided by said trolley and electrical connection, substantially as shown and described.

2. In an overhead trolley system, a set of two trolley-wires, hung on the inside of a

slotted continuous incasement, combined with a trolley in such a manner that said trolley is guided by the slot in said incasement which incasement is so arranged as to bear upon and prevent any lateral movement of said trolley, all substantially as set forth.

3. A trolley composed of the trolley-wheels L, the side pieces G, *g* forming the main support for said trolley-wheels, the filling-block H, the bolt *h*, the clamping pieces or jaws I for holding the bolt *h*, and the friction-rollers K, all substantially as and for the use set forth.

4. The construction for conveying electricity composed of the two trolley-wires M, the two L-irons N, with the lower part of said L facing each other and having near its ends the trolley-wires, the clamping-pieces O and the support-rods Q, passing through said clamping-pieces, all substantially as is described.

5. In a canal-boat, the combination of a trolley and the conducting-wire F with the construction for taking up the slack of said conducting-wire composed of the windlass D upon which said wire winds, the small drum *d*, the weight and the weight-cord or its equivalent, which winds on said drum in such a manner that the pull of the weight turns the windlass in the proper direction to wind up the conducting-wire F all as set forth and described.

6. An insulated incasement for electric trolley-wires, composed of two L-irons so arranged that their edges form a guiding-slot for a trolley, all as is set forth and described.

7. A trolley composed of two parts, each having a wheel for contact with an electric circuit-wire, said parts being separated by an insulated filling-block, which is combined with a clamping-catch in such a manner that said parts are held firmly together, when in position and said wheels cannot change their relation to each other except by removing said parts from said block which is done by unfastening said clamping-catch, all as is described and set forth.

ALONZO C. MATHER.

Witnesses:

J. J. MCCARTHY,
A. E. T. HANSMANN.