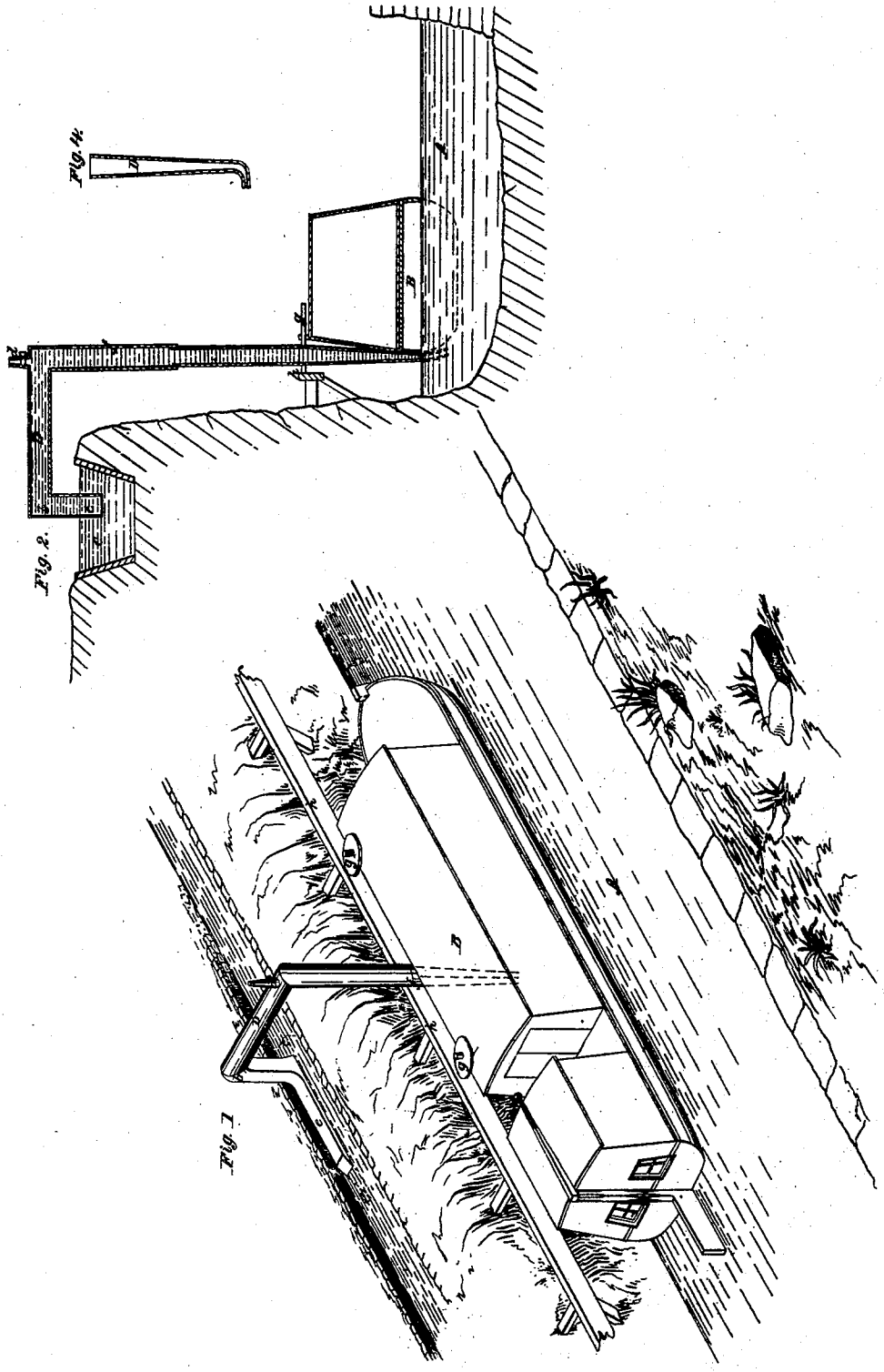
2 Sheets. Sheet 1.

J. Echols,

Hydraulic Propeller.

No 4,293. Patented Nov. 26, 1845.

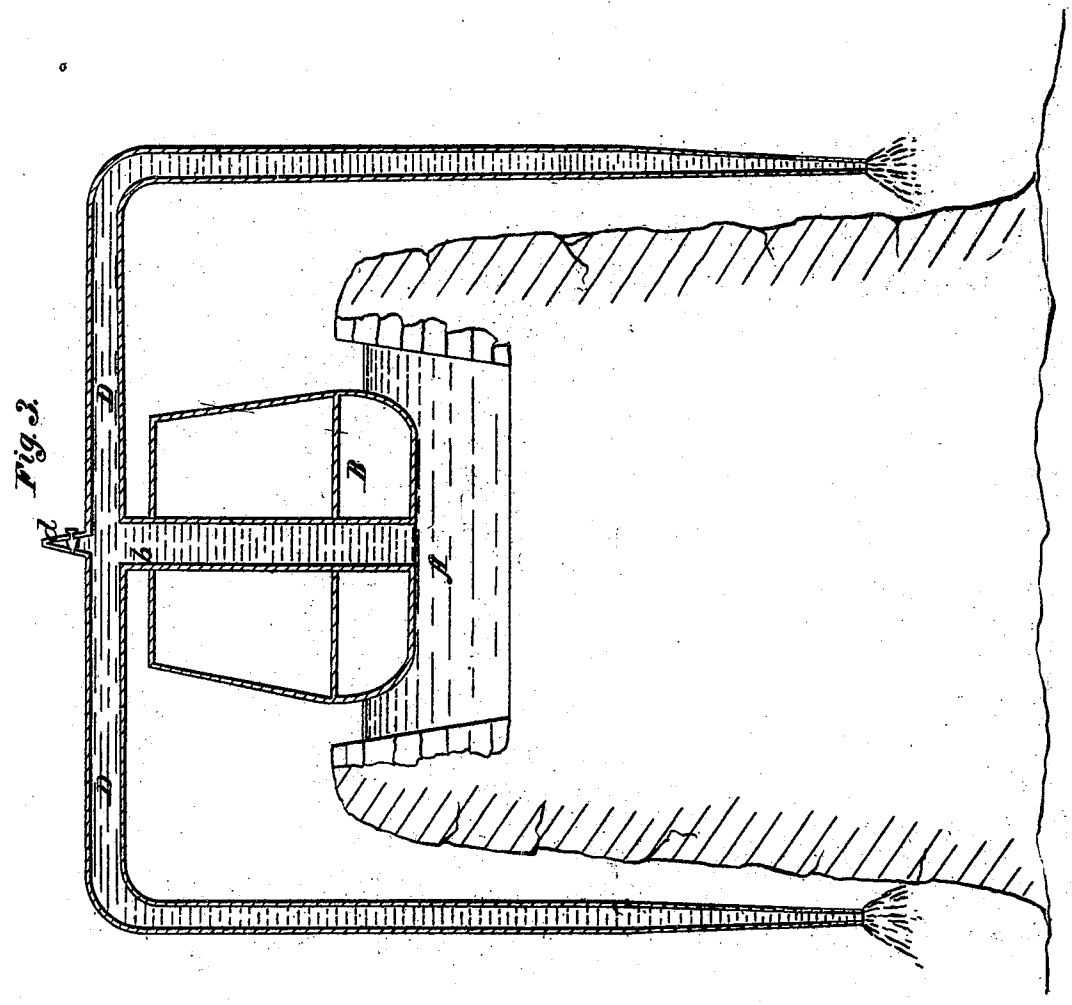


2 Sheets. Sheet 2.

J. Echols,

Hydraulic Propeller.

No. 4,293. Patented Nov. 26, 1845.



UNITED STATES PATENT OFFICE.

JOSEPHUS ECHOLS, OF COLUMBUS, GEORGIA.

IMPROVEMENT IN PROPELLING CANAL-BOATS, &c.

Specification forming part of Letters Patent No. **4,293**, dated November 26, 1845.

To all whom it may concern:

Be it known that I, JOSEPHUS ECHOLS, of the city of Columbus, in the county of Muscogee and State of Georgia, have invented a new and useful Method of Propelling Boats on Canals and Cars on Railroads by Water-Power; and I do hereby declare that the following is a full, clear, and exact description of the principle or character thereof which distinguishes it from all other things before known, and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective representation of the mode of applying my invention to the propulsion of boats on canals; Fig. 2, a transverse vertical section of the same, and Fig. 3 a transverse vertical section of a modification thereof.

The same letters indicate like parts in all the figures.

The source of power in my mode of propulsion is the weight of a column or columns of water descending from one level to another and issuing horizontally from an aperture or apertures in pipes attached to the body to be propelled and actuating it by the force of reaction as water is applied to drive that class of mill-wheels known under the general appellation of "reaction water-wheels," in which the issuing force of the current, due to the height and bulk of the column of water, reacts on the body of the wheel and impels it in the reverse direction. The reacting force of an issuing stream of water has long since been suggested for the propulsion of boats, &c.; but in all such cases the stream of water has been forced out by steam or other power applied to pumps, whether reciprocating or rotary; but my invention consists in applying the force of a descending column or columns of water by means of a siphon or siphons attached to the boat, &c., and moving with it and receiving the water from one level and discharging it at another.

In the accompanying drawings, A represents a canal with a boat B therein, and C a small canal containing only the quantity of water necessary for the purposes of propulsion and so much above the level of the main canal as to furnish the height of column required. To the side of the boat is attached a vertical siphon-tube D, the lower end of which descends into the lower canal and is curved, as at *a*, (see Fig. 4,) and gradually reduced in capacity to make the issue horizontal and smaller than the vertical part of the tube, and the upper end is curved over, as at *b*, to form the short leg of the siphon, which dips into the water of the upper canal, and is there turned at right angles to make the aperture *c* for the reception of the water in the direction of the boat's bow. To the back of this may be attached a buoy *e* to sustain the weight of the siphon, the bend of the siphon being provided with an exhaust-tube *d*, connected in any desired manner with a pump to exhaust the air and permit the water to fill in.

For the purpose of permitting the boats to pass each other the siphon-tube should be made in two parts, the one sliding on the other with an air-tight joint, as at *f*, so that the short leg may be raised above the bank or side of the small canal and permit one boat to move out of the way of the other or instead of this the short leg of the siphon may be connected with the long leg by a water and air tight joint, that it may be turned up and permit the boat to move out of the way.

It is proposed for the purpose of steering the boat to make the buoy *e* of sufficient capacity to incline the boat toward that bank of the main canal on the side of the small one and to provide it with horizontal guide-wheels *g g* to run against the side of a rail *h* on the side of the canal, so that by this means the boat will follow all the curves of the canal without the necessity of a rudder.

Instead of only one long leg to the siphon, it may be made with two to branch off on either side of the boat and canal, and in this case the short leg instead of the long one of the siphon is attached to the boat, the water supplying the siphons being taken from the same canal in which the boat rides and discharged below it on either side; or when only one is used, instead of having it attached to the side of the boat, it may be placed in the middle, with the issue for the water at the stern; but I prefer placing it at the side or sides to avoid as much as possible the disturbance of the water at the stern of the boat,

which would have a tendency to retard the motion of the boat by preventing the water from filling in rapidly at the stern.

It will be obvious that by substituting a car on a railroad for the boat B and permitting the siphon or siphons to discharge the water in the air the same effect, if not a better, will be produced.

In situations which will admit of making the canal on an embankment the small auxiliary canal may be dispensed with by having the short leg of the siphon pass through the bottom or side of the boat and the long leg or legs pass over and down the bank or banks of the canal and discharge the water in the air, as represented at Fig. 3, which is a vertical cross-section of a canal and boat in accordance with this modification.

Having thus described the principle of my invention and the various modes in which I have contemplated its application, I wish it to be understood that I do not claim the propelling of boats, &c., by the reaction of issuing streams of water when effected by steam or other power on the boat, &c.; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

The method of propelling boats on canals or cars on railroads by means of a column or columns of water discharged from an upper level or reservoir not in or moving with the boat to a lower level by means of a siphon or siphons attached to and moving with the boat or car, in manner substantially as herein described.

JOSEPHUS ECHOLS.

Witnesses:
ISAAC O. BARKER,
JAMES A. CROMBIE.