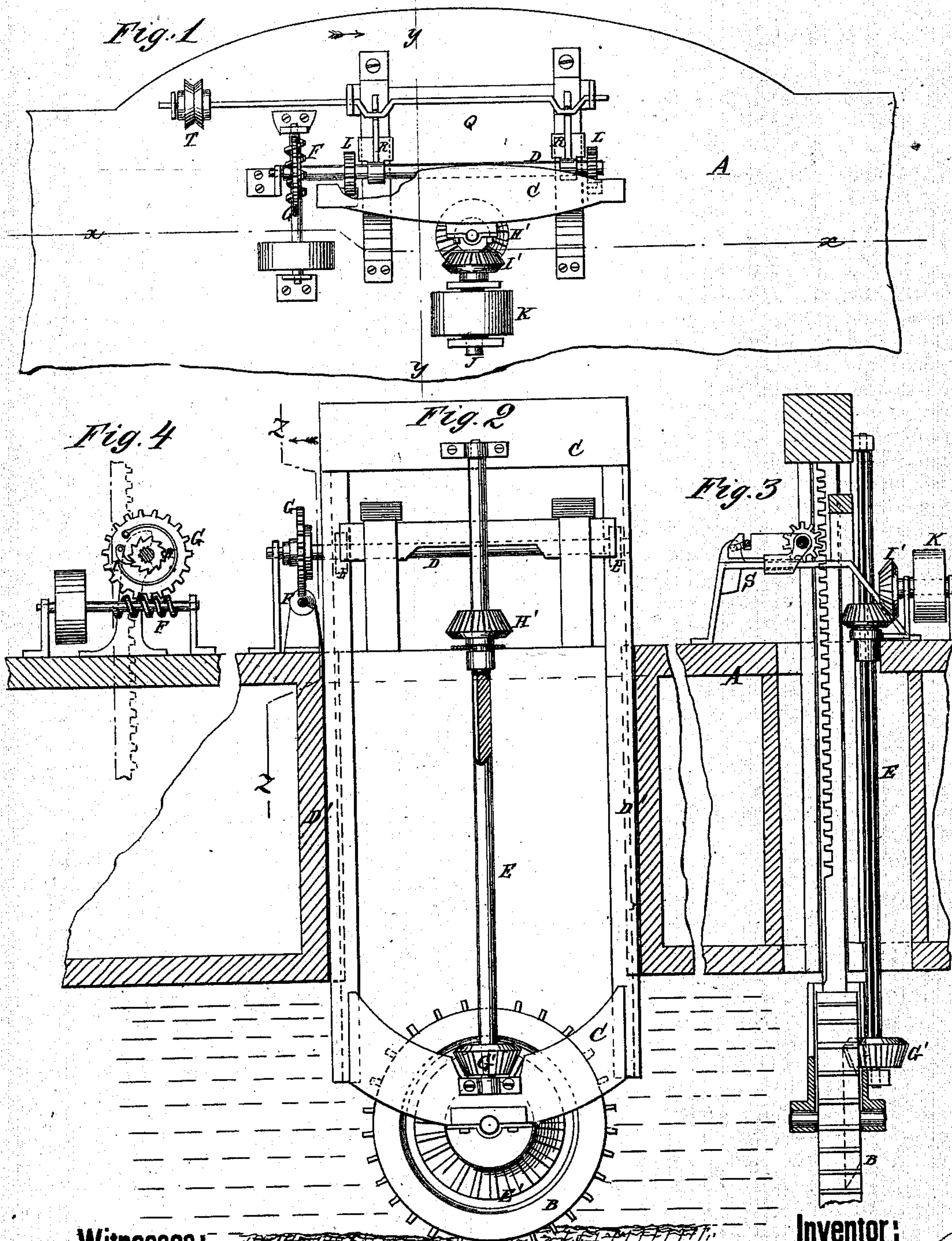


W. F. MILLER.
Propelling Canal-Boats.

No. 139,727.

Patented June 10, 1873.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM F. MILLER, OF EAST WALPOLE, MASSACHUSETTS.

IMPROVEMENT IN PROPELLING CANAL-BOATS.

Specification forming part of Letters Patent No. **139,727**, dated June 10, 1873; application filed April 12, 1873.

To all whom it may concern:

Be it known that I, WILLIAM F. MILLER, of East Walpole, in the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Mode of Propelling Canal-Boats, of which the following is a specification:

My invention is an improvement in the class of canal-boat propellers wherein a vertically-adjustable wheel is arranged to run on the bottom of the canal, or a rail laid thereon; and consists in the connection of a locally-fixed driving-gear with the rotary vertically-sliding driving-shaft of the propelling-wheel, and in the arrangement for throwing the mechanism by which the wheel is raised in and out of gear, as hereinafter described.

In the drawing, Figure 1 is a plan or top view. Fig. 2 is a vertical section of Fig. 1 taken on the line *x x*. Fig. 3 is a vertical cross-section of Fig. 1 taken on the line *y y*. Fig. 4 is a vertical section of Fig. 2 taken on the line *z z*.

Similar letters of reference indicate corresponding parts.

A represents the boat. B is the propelling-wheel. C is a vertical frame, to the lower end of which the wheel is hung so that it may be freely revolved. The frame C is confined in guides D D' so that it may play freely up and down, and so that the wheel will rest upon the bottom of the canal and conform to all the inequalities thereof. Upon the shaft of the propelling-wheel is a bevel-wheel, E'. E is a vertical shaft which is supported in boxes on the ends of the frame. G' is a pinion on the lower end of the shaft E, which meshes into the bevel-wheel E'. H' is a bevel-wheel on the deck of the boat through which the shaft E passes on a feather, as it is grooved for that purpose. I' is a bevel-wheel which meshes into H'; this wheel is on the short horizontal shaft J. K is a pulley on this shaft, to which the power is applied for driving the propelling-wheel. The sides of the frame C form racks, and L L are pinions which mesh into the cogs of these racks, and by means of

which the frame and propelling-wheel are raised and lowered. These pinions are on the shaft D, which shaft is revolved by means of the worm-wheel G (on the shaft D) and the pulley P. They are thrown in and out of gear with the racks by means of the crank rock-shaft Q, which moves two sliding plates, R R, which plates rest on the stand S. The boxes in which the shaft D revolves are attached to the sliding plates. The shaft Q is partially revolved for moving the plates back and forth by means of the pulley I. The wheel G, which engages with the worm F, is loose on the shaft D. In Fig. 4 will be seen the ratchet-wheel and spring-pawl. The ratchet-wheel is fastened to the shaft, and the pawl is attached to the wheel G so that the shaft may be revolved independently of the worm.

When the propeller is in motion and the boat under way the frame C, with the wheel, is allowed to play freely up and down, the weight of which gives sufficient traction on the bottom to propel the boat.

The propeller may be located forward or aft, or in the middle of the boat, and would be revolved by means of a belt from the shaft of a steam-engine or other motive power.

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

1. The combination of a fixed gear, H', and vertical sliding shaft E, the same having a spline connection, with the gears G' E', and a propelling-wheel mounted in a vertically-sliding frame, substantially as shown and described.

2. In combination with the vertically-sliding frame C and the propelling-wheel, the pinions L L, movable shaft D, crank rock-shaft Q, worm F, spur-gear G, ratchet-wheel H, and pawl I, all as shown and described.

WILLIAM F. MILLER.

Witnesses:

T. B. MOSHER,

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