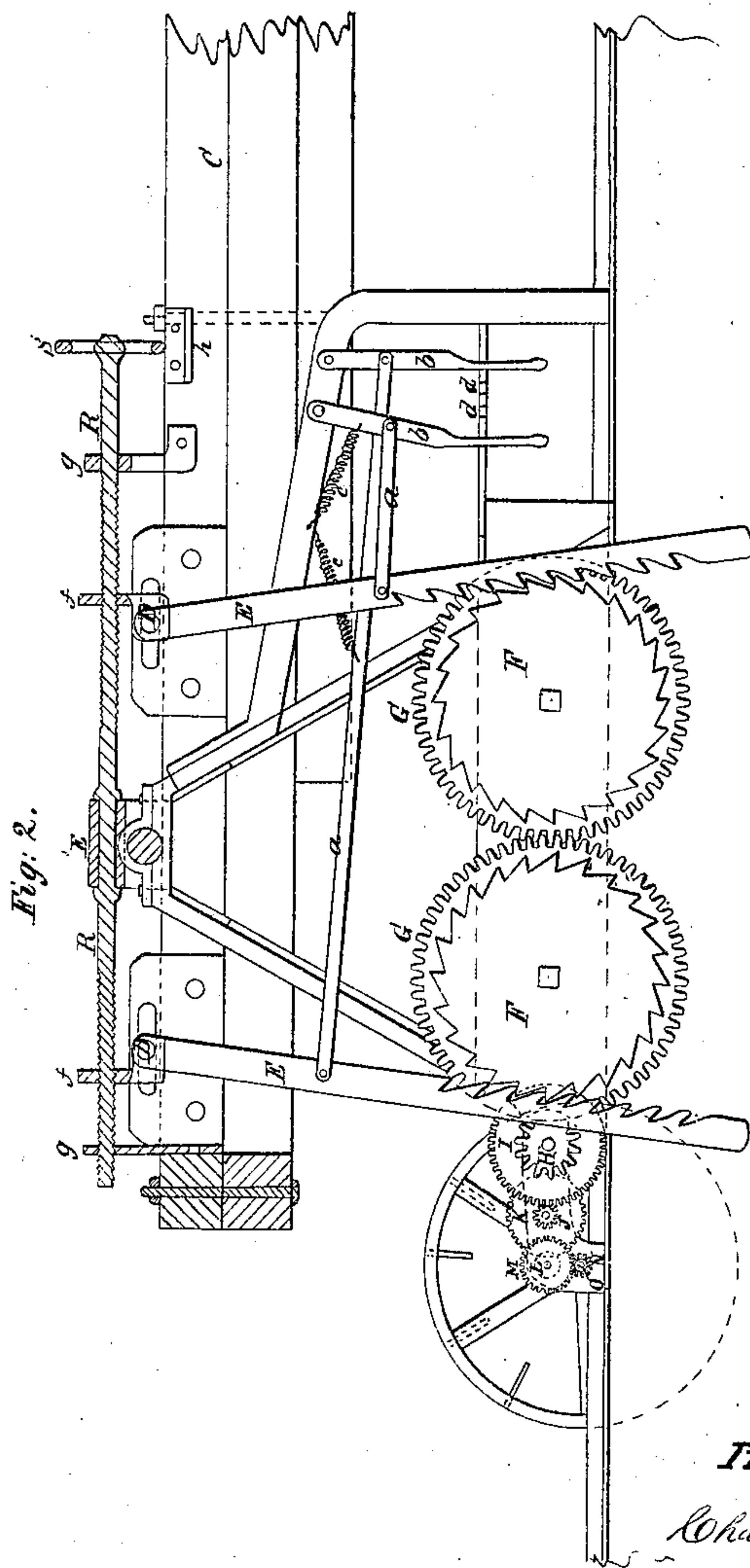
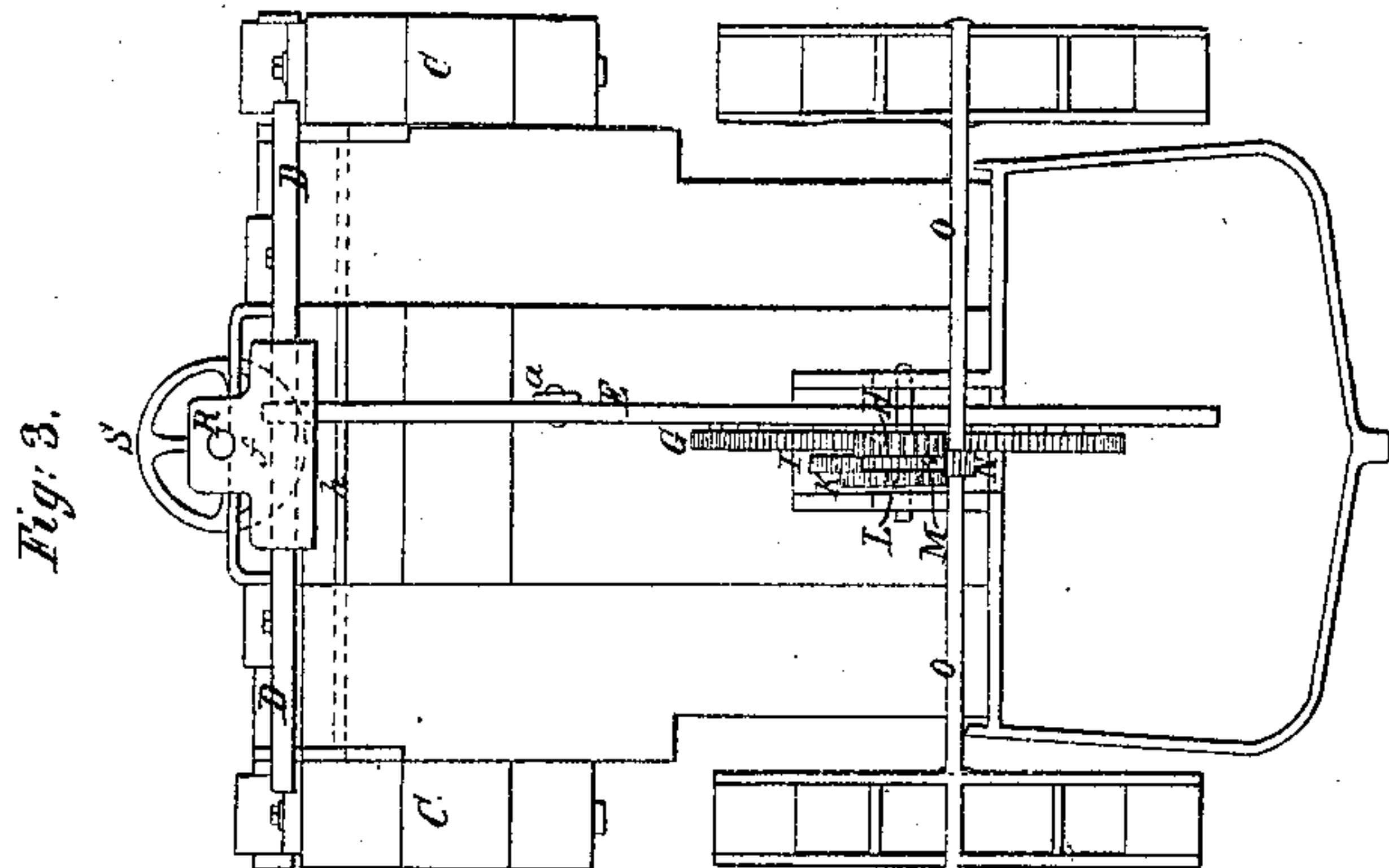
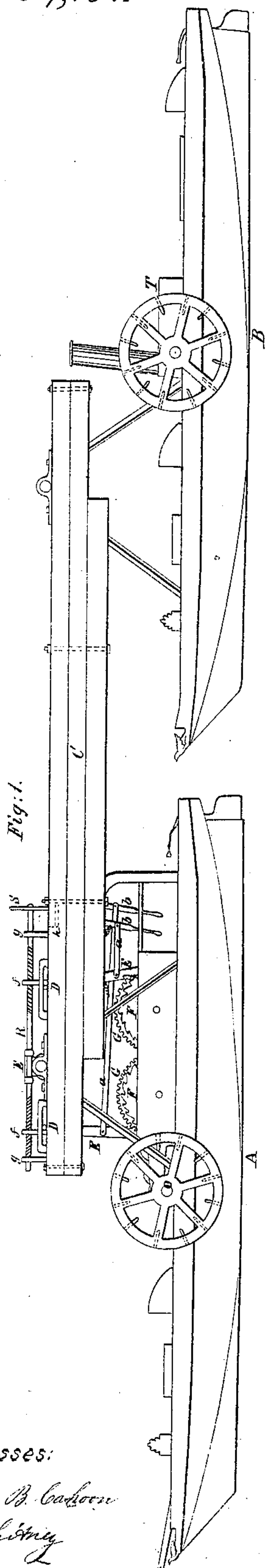


*C. W. Cahoon,  
Paddle Wheel.*

*N<sup>o</sup> 54,107.*

*Patented Apr. 24, 1866.*



*Witnesses:*  
*James B. Cahoon*  
*A. H. Whitney*

*Inventor:*  
*Chas W. Cahoon*



# UNITED STATES PATENT OFFICE.

CHARLES W. CAHOON, OF PORTLAND, MAINE.

## IMPROVED WAVE-POWER PROPULSION.

Specification forming part of Letters Patent No. 54,107, dated April 24, 1866.

*To all whom it may concern:*

Be it known that I, CHAS. W. CAHOON, of Portland, in the county of Cumberland and State of Maine, have invented a new and useful Improvement in Propelling Vessels at Sea; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 represents a side elevation of my invention; Fig. 2, a longitudinal section; Fig. 3, a transverse section.

Similar letters of reference indicate corresponding parts in the three figures.

The object of this invention is to obtain an improved means of propelling vessels at sea; and it consists in connecting together two vessels by means of a lever, so that as the relative positions of the vessels are changed by the action of the waves the movement of the lever thereby will act upon machinery and cause the vessels to be moved through the water.

The invention also consists in a means of regulating the speed of the vessels and in disconnecting the wave-motor; also, in combining a steam-engine with the wave-motor.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A B represent two sea-going vessels. C represents a lever, rectangular in form and made of frame-work, the parts being bolted and dovetailed together, the fulcrum of which is on the vessel A and attached to frame-work built upon the deck, which frame-work answers for side bearings to the lever, said lever also being pivoted to frame-work on vessel B.

Crossing the lever laterally on each side of of the fulcrum on vessel A are shafts D D, movable in slots attached to the lever. To these shafts are attached ratchet-rods E E, leading downward and connecting with ratchet-wheels F F, said ratchet-wheels being fastened to two gear-wheels, G G, gearing into each other and held by shafting to the frame-work holding the lever.

Geared into one of the wheels G is a pinion, H, attached to the same shaft with a gear-wheel, I, said wheel I gearing into another pinion, J, on another shaft, on which is a gear-

wheel, K, said wheel K gearing into a pinion, L, on another shaft, to which is also attached a gear-wheel, M, which wheel M gears into a pinion, N, on the propelling-shaft O, to which shaft O are attached two paddle-wheels on each side of vessel A.

The operation is this: One of the vessels, for instance, being at the bottom of a wave and the other at the top, when a change of their positions takes place the lever will be moved, causing the ratchet-rods to move also, one up and the other down, so that as their teeth catch into the teeth of the ratchet-wheels the ratchet-wheels will be turned, moving also the gear-wheels and turning the shaft to which are attached the propelling-wheels. It will be noticed that whichever way the lever may move, whether up or down, the propelling-wheels will always move in one direction.

As the waves of the sea are constantly changing their positions, a motive power to produce the operation of the above arrangement is given, which may be estimated as the weight of the vessels is to the power required to propel them.

Connected with each ratchet-rod are rods *a*, running horizontally and connecting with levers *b b*, fastened to the framing holding the lever C, for the purpose of disconnecting the ratchet-rods when desired. Springs *c c* are attached to the levers *b b* and the framing, so that the ratchet-rods will always be held against the wheels, whatever the position of the vessel may be. Notches *d d* are made in the frame-work to hold back the ratchet-rods when out of gear.

To disconnect the ratchet-rods, press them away from the ratchet-wheels, when they are on the upward stroke, by taking hold of the handles of the levers *b b*, and to keep them disconnected place the handles into the hold-backs *d d*.

The speed of the vessels is regulated by shaft R, which is set into box *e*, about the middle of its length, said box *e* being hung loosely on the fulcrum-shaft of the main lever. On each side of box *e* the shaft R has screw-threads cut upon it in opposite directions, and attached to each thread are nuts *f f*, hung loosely upon the ratchet-rod shafts D D, so that these shafts may be allowed to move in



them. The shaft R is held to the lever by boxes *g g*, and on the end toward the stern of the vessel is a handle-wheel, S, for operating it, a platform, *h*, being attached to the lever for the operator to stand upon. The operation is this: By turning the handle-wheel S one way the two ratchet-rods will be drawn nearer together and nearer the fulcrum of the main lever, and will therefore not receive so much motion from the lever; and by turning in the opposite direction the ratchet-rods will be carried farther from the fulcrum, and will receive more motion, by which means the speed of the vessels may be easily regulated.

Having thus described my invention, I would remark that similar machinery may be attached to the lever on vessel B as on vessel A, and connected with the propelling-wheels in a similar manner, in which case less strength of some of the parts would be required.

Screw-propellers may be used instead of paddle-wheels by attaching bevel-wheels to the shaft O, and connecting therewith bevel-wheels attached to shafts running longitudinally through the stern of the vessel with screw-propellers on their ends. In case screw-propellers were used at the stern of the vessels the sides of the lever C may be extended to nearly the entire length of each vessel, so as to obtain long and broad bearings, and they might also extend below the upper parts of the hulls of the vessels.

A steam engine and boilers (represented by letter T) may be upon one or both of the ves-

sels to propel them in harbors, or in case of derangement of the wave-motor, or as auxiliaries, or sails may be used, a foremast and bowsprit being on the forward vessel and a mainmast on the hinder one.

The lever C may be constructed in distinct parts, bolted together, so that in case it should be desired to separate the two vessels, by stress of weather or otherwise, the parts could be unbolted and allowed to drop into the water or taken on board.

What I claim as new, and desire to secure by Letters Patent, is—

1. Connecting two vessels together, by means of a lever or its equivalent, so that the motion of the waves of the sea may cause the lever to act upon machinery and thereby propel the vessels through the water.

2. For the purpose, the machinery, or its equivalent, substantially as described.

3. The shaft R, in combination with the lever C, or equivalents, for regulating the speed of the vessels, substantially as described.

4. The levers *b b*, in combination with the ratchet-rods E E, or equivalents, for disconnecting the wave-motor, substantially as described.

5. The combination of a steam-engine, or its equivalent, with a wave-motor, substantially as represented.

CHAS. W. CAHOON.

Witnesses:

JAMES B. CAHOON,  
A. H. WHITNEY.