

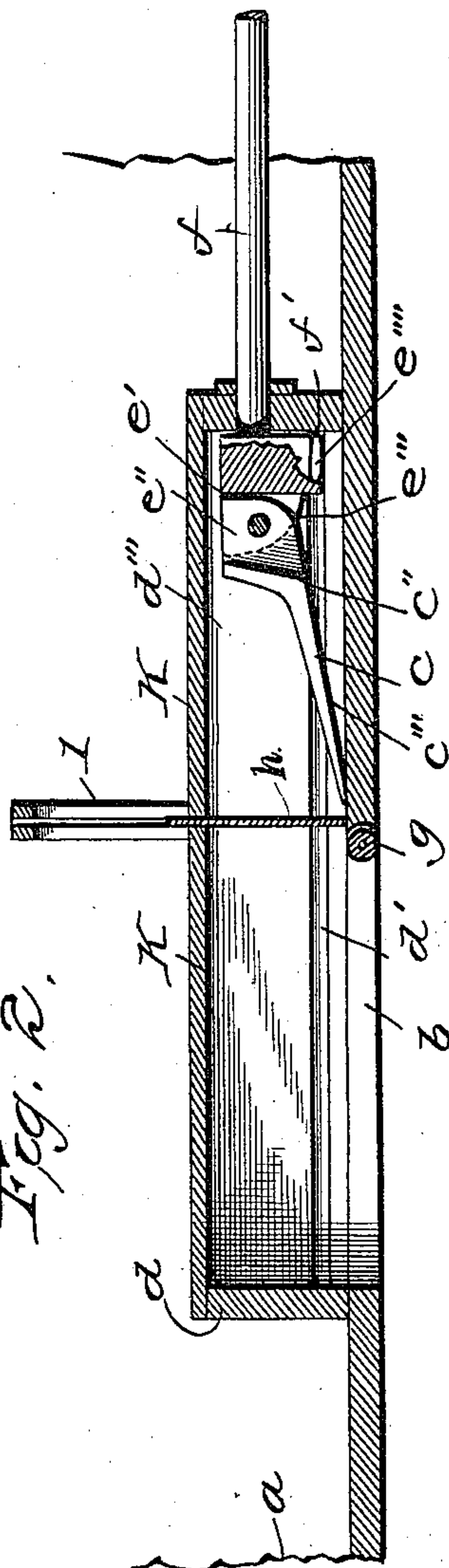
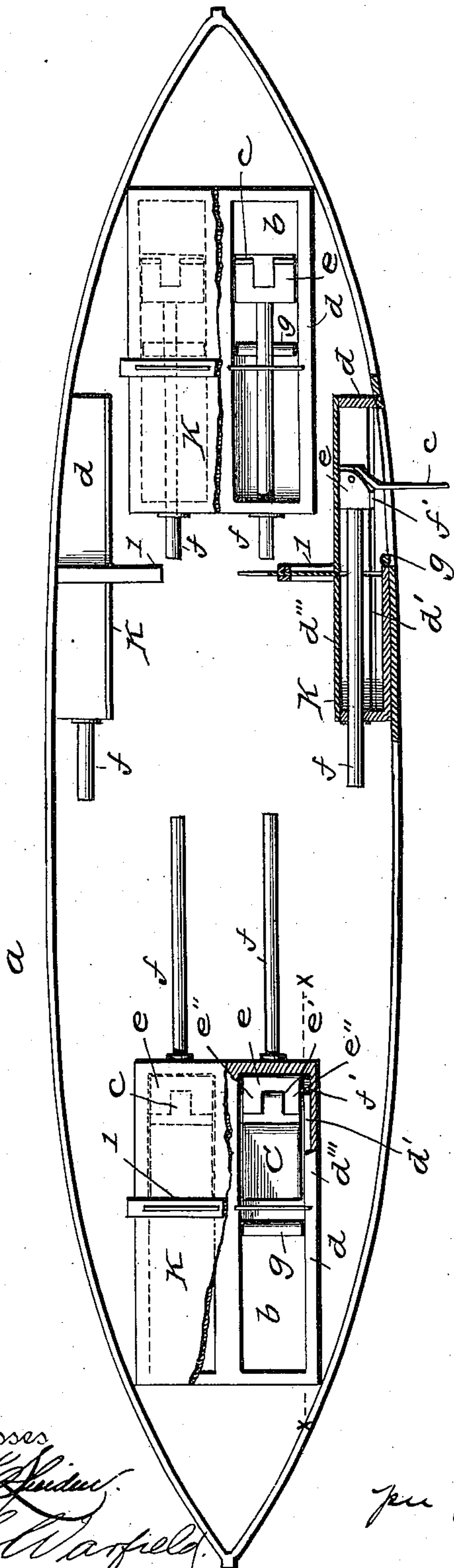
(No Model.)

H. COMPTON.

# RECIPROCATING PROPELLER FOR VESSELS.

No. 577,421.

Patented Feb. 23, 1897.



Witnesses  
"M. F. Linder."  
R. S. Wafield.

Inventor:  
Harmon Lompton,  
per Chesatt Dupois,  
Attorney



# UNITED STATES PATENT OFFICE.

HARMON COMPTON, OF DUNMORE, PENNSYLVANIA.

## RECIPROCATING PROPELLER FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 577,421, dated February 23, 1897.

Application filed July 23, 1896. Serial No. 600,282. (No model.)

*To all whom it may concern:*

Be it known that I, HARMON COMPTON, a citizen of the United States, residing at Dunmore, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Propellers for Boats; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to those propellers for vessels wherein the propeller-blades are knuckle-joined or hinged to reciprocating shafts, so that they will swing out laterally and engage the water to urge the vessel forward in their outward stroke and swing out of action on the return stroke.

The object of my invention is to provide a propeller-blade which will project beyond the lines of the vessel's hull beneath the water, like the fins of a fish, and when urged backward against the water impel the vessel forward, but which will retreat within the lines of the hull on the idle stroke backward, so that it will meet with little or no resistance to the water to impede the progress of the vessel. In other words, my object is to project beyond the lines of the vessel only that portion of the propeller-blades which actively engages the water in the propelling action, the piston-head and hinge to which the blade is attached lying wholly within the hull and the active end of the propelling-blade having no external casement or inclosure around it.

As my device can be propelled by hand or mechanical power, according to the exigencies of the occasion, I have omitted illustrating the driving mechanism and have shown only the propelling mechanism proper.

The preferred embodiment of my invention is shown in the accompanying drawings, in which—

Figure 1 represents a plan view of my complete invention, wherein a pair of twin propeller-blades in the bottom of the boat are shown in action and a corresponding pair at the opposite end of the boat are shown out of

action, one of the side propellers being also shown in and the other out of action. Fig. 2 represents a longitudinal vertical section through  $xx$  of Fig. 1.

The reference-letter  $a$  denotes the hull of the vessel to which my invention is applied. Rectangular oblong openings  $b$  are made in the bottom of the hull, and blades  $c$  project through and reciprocate in these openings. To prevent the ingress of water and to guide the propellers, the openings are surrounded by rectangular water-tight boxes  $d$ , extended at  $d''$  over the bottom of the boat. The boxes  $d$  are provided with covers  $k$  and gates  $h$ , held and guided in a frame  $l$ , rising from the top of the box. In the present instance I have shown a pair of twin propellers adapted to alternate in the boxes  $d$ . Each propeller-blade is constructed alike and is attached to a head  $e$  on the end of a horizontal driving-rod  $f$ , extending through the end wall of the box to any suitable actuating devices, which it is not deemed necessary to show, inasmuch as the essence of my invention consists in the propelling mechanism proper, as hereinbefore stated.

I will now describe the peculiar characteristics of the individual propellers, all of which are precisely alike, so that a description of one will suffice for all. The head  $e$  is provided with a vertical bifurcation  $e'$  to form a pair of lugs  $e''$ , which loosely embrace a tongue  $c'$  on the inner end of the propeller-blade  $c$ . The under or outer faces of the lugs  $e''$  are rounded or curved to form a convex surface  $e'''$ , while the end wall  $c''$  of the blade slants at an angle of about forty-five degrees to its back  $c'''$ , whereby the two surfaces  $e'''$  and  $c''$  will come in rolling friction with each other during the oscillations of the blade on its pivot. The blade is limited in its backward oscillation by a contact-wall  $e'''$ , which holds it out at right angles to its line of motion to engage the water and propel the vessel.

The propeller-head  $e$  is guided in its reciprocations by means of a pair of oppositely-projecting guide-lugs  $f'$ , moving in longitudinal grooves  $d'$  in the opposite inner walls of the boxes  $d$ . The propeller-head and its associated parts lie wholly within the hull of the vessel and only the active or engaging



surface of the blade is allowed to project beyond, so that no resistance is offered to the water other than the smooth surface of the hull, and as the propellers can be drawn entirely within the latter there will be no dragging action, as in the case of a screw-propeller when not in operation. An antifriction-roller *g* is placed at the end of the opening *b* where the propeller-blades slide in and out of their boxes. Water is excluded from one end of the propeller-box by means of the removable gates *h*.

Thus constructed the operation of my device can be briefly described as follows: When it is desired to propel the boat forward, the front propellers are withdrawn to lie idly in the extended ends of their boxes, as shown in Fig. 1, while the rear ones are dropped down through the water-holes in the bottom of the boat and are made to reciprocate alternately backward and forward. In the forward thrust of the propeller the blade *c* flies back into a position transverse to its motion and engages the water, and in the return movement the blade swings out of action and in alinement with the direction of motion without engaging the water nor producing any back pressure or resistance, for it will be observed that only the working part of the blade projects beyond the outer surface of the hull, so that there is nothing to interfere with the return movement. To turn the vessel around, either one of the side propellers can be brought into action. The backing of the boat is effected by withdrawing the rear propellers and bringing the front ones into action.

Additional advantages gained by my construction are that the boat can be more readily backed off a sand bar or beach, that the propeller-blades and all parts of the propeller can be repaired with greater facility and without the necessity of docking or stopping the boat at sea, that the force of the propeller is brought to bear at a point where it is most needed and can be utilized to the best advantage.

Having thus described my invention, what

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

1. In a propeller for vessels and in combination with a hull provided with openings therein, of a pair of twin propellers located in water-tight boxes at the bow and stern of the vessel and projecting beyond the lines of the hull, said propellers each consisting of a propeller-blade knuckle-joined to a head located within the lines of the hull of the vessel, a driving-rod to which the head is secured, an internal box surrounding the openings and adapted to contain the head, and guiding mechanism within the box, all arranged and adapted to operate substantially as described.

2. In a propeller for vessels and in combination with a hull provided with a pair of rectangular, oblong openings in its bottom at the bow and stern thereof, interiorly-disposed boxes around said openings, said boxes being extended beyond the inner end of the openings to provide a compartment for the reception of the propellers when withdrawn from the water, twin propellers located within said boxes and having knuckle-joined blades adapted to project through the openings, means for guiding the propellers in their reciprocations, and an antifriction-roller located at the inner ends of the openings, substantially as described.

3. In a propelling apparatus for vessels, and in combination with the hull having openings in its bottom and sides through which the propeller-blades project, twin propellers located at the bow and stern of the vessel and having blades hinged to project through said bottom openings when moving to press against and engage the water, and side propellers projecting through openings in the opposite sides of the hull, substantially as described.

In witness whereof I affix my signature in presence of two witnesses.

HARMON COMPTON.

Witnesses:

F. J. JORDAN,  
JNO. A. MEARS.