

(No Model.)

2 Sheets—Sheet 1.

J. S. POST.

MARINE SPEED PROPELLER.

No. 312,381.

Patented Feb. 17, 1885.

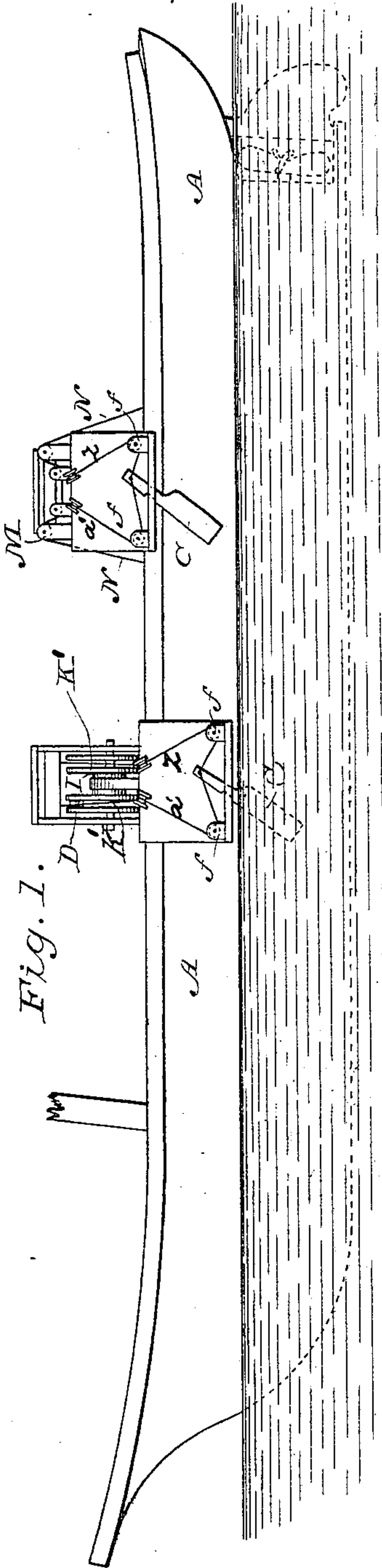


Fig. 1.

Fig. 2.

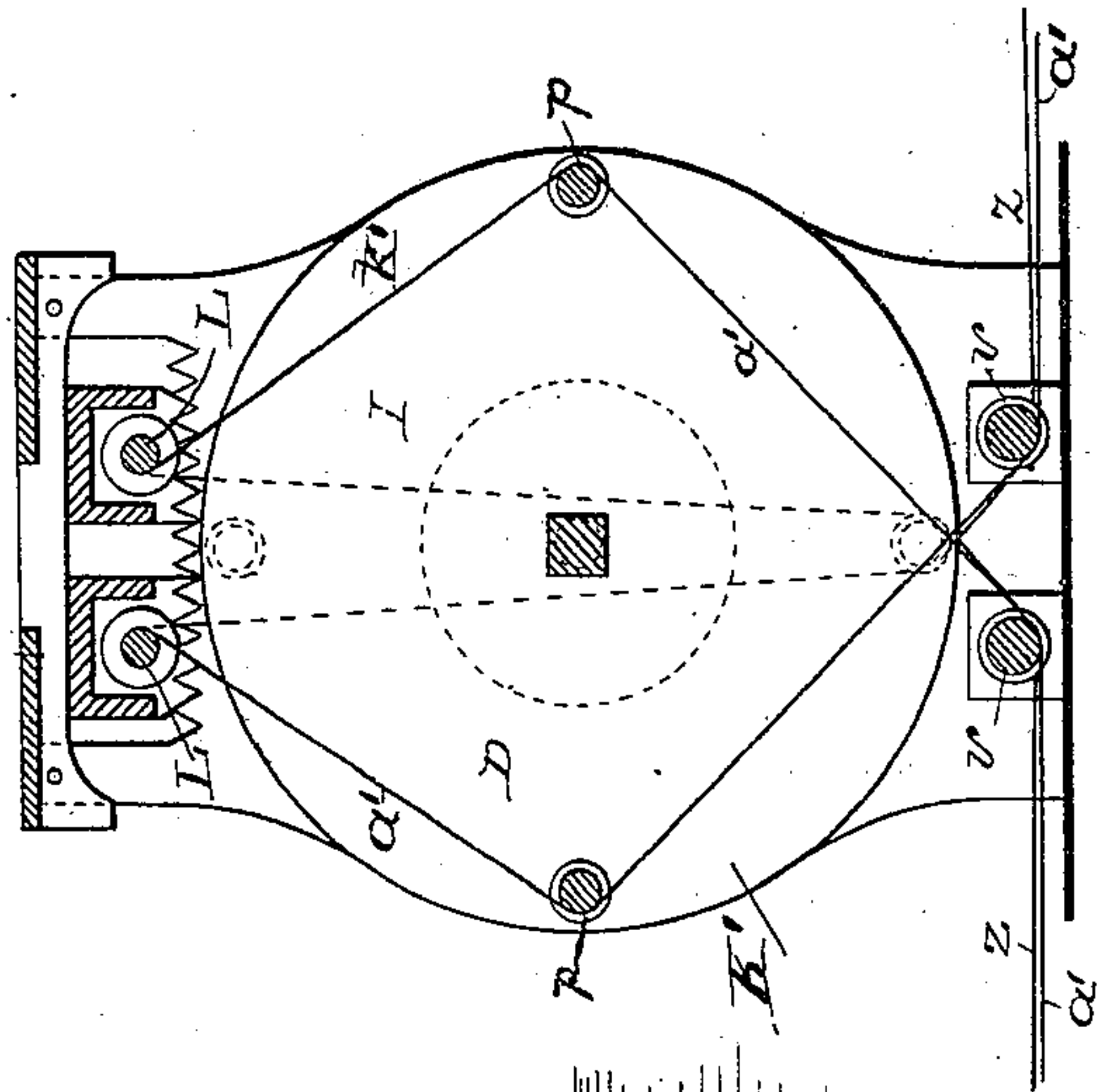
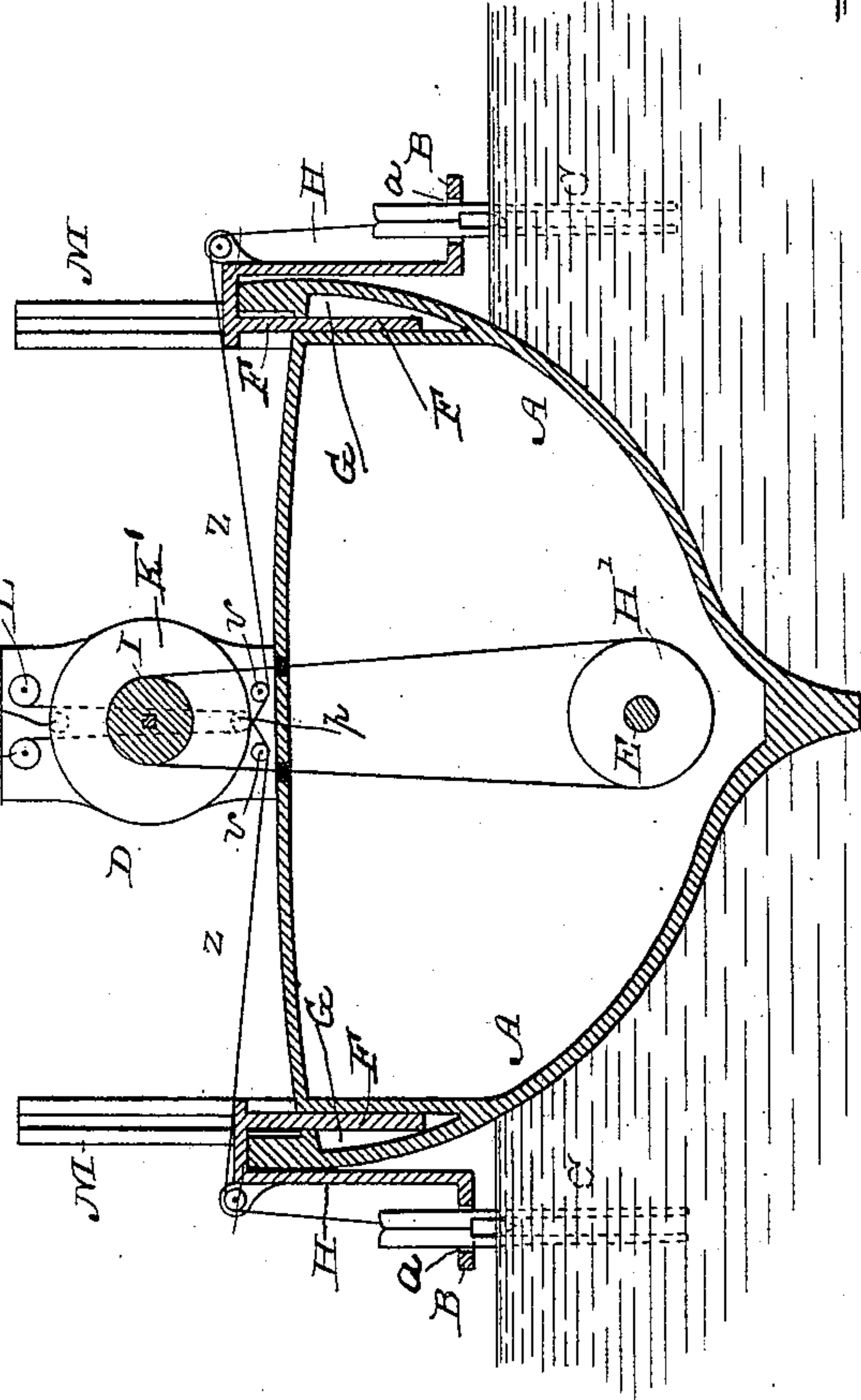


Fig. 3.

WITNESSES

P. C. Massie
E. H. Bates

INVENTOR

J. S. Post.

By his Attorneys

Andrews Smith

(No Model.)

2 Sheets—Sheet 2.

J. S. POST.
MARINE SPEED PROPELLER.

No. 312,381.

Patented Feb. 17, 1885.

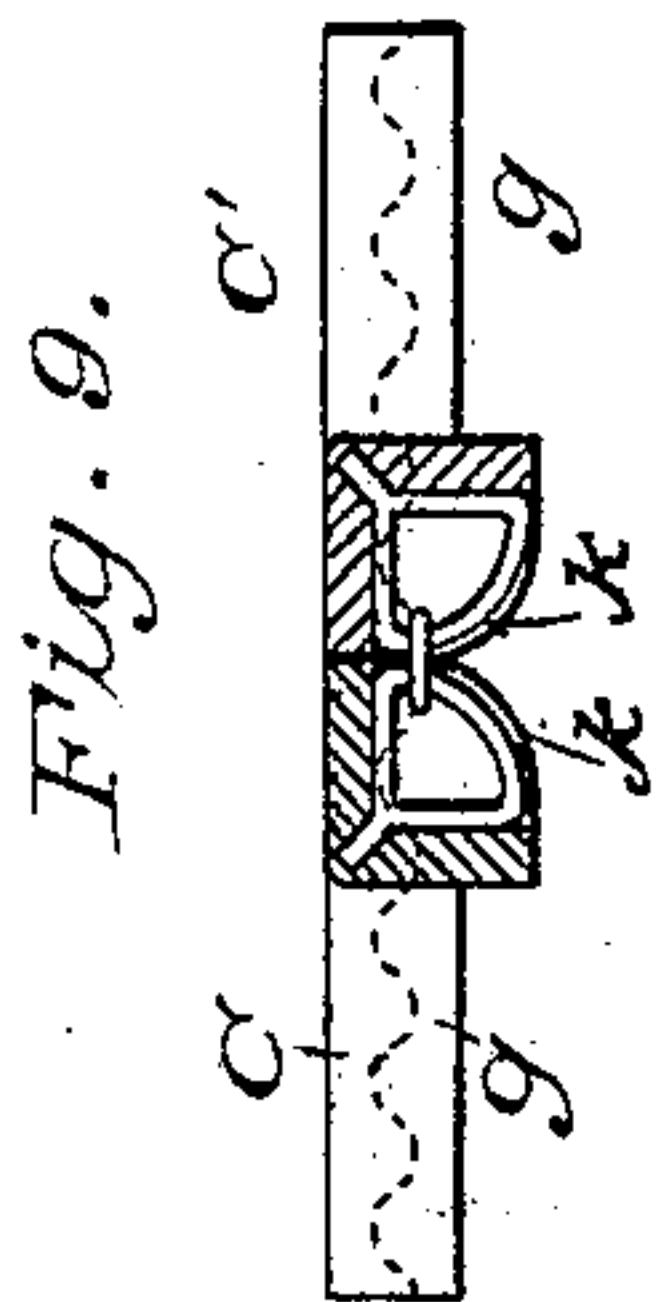


Fig. 10.

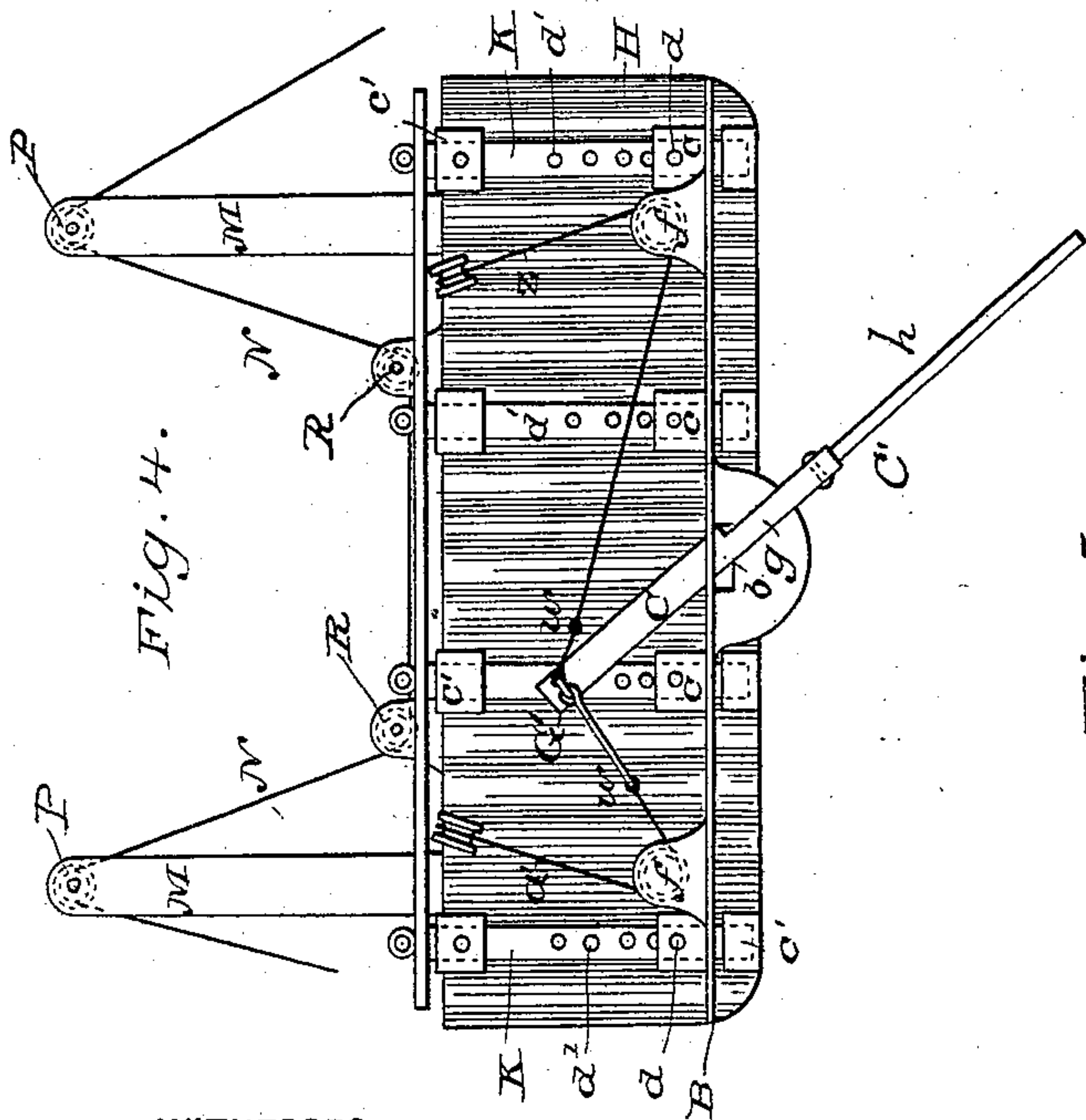
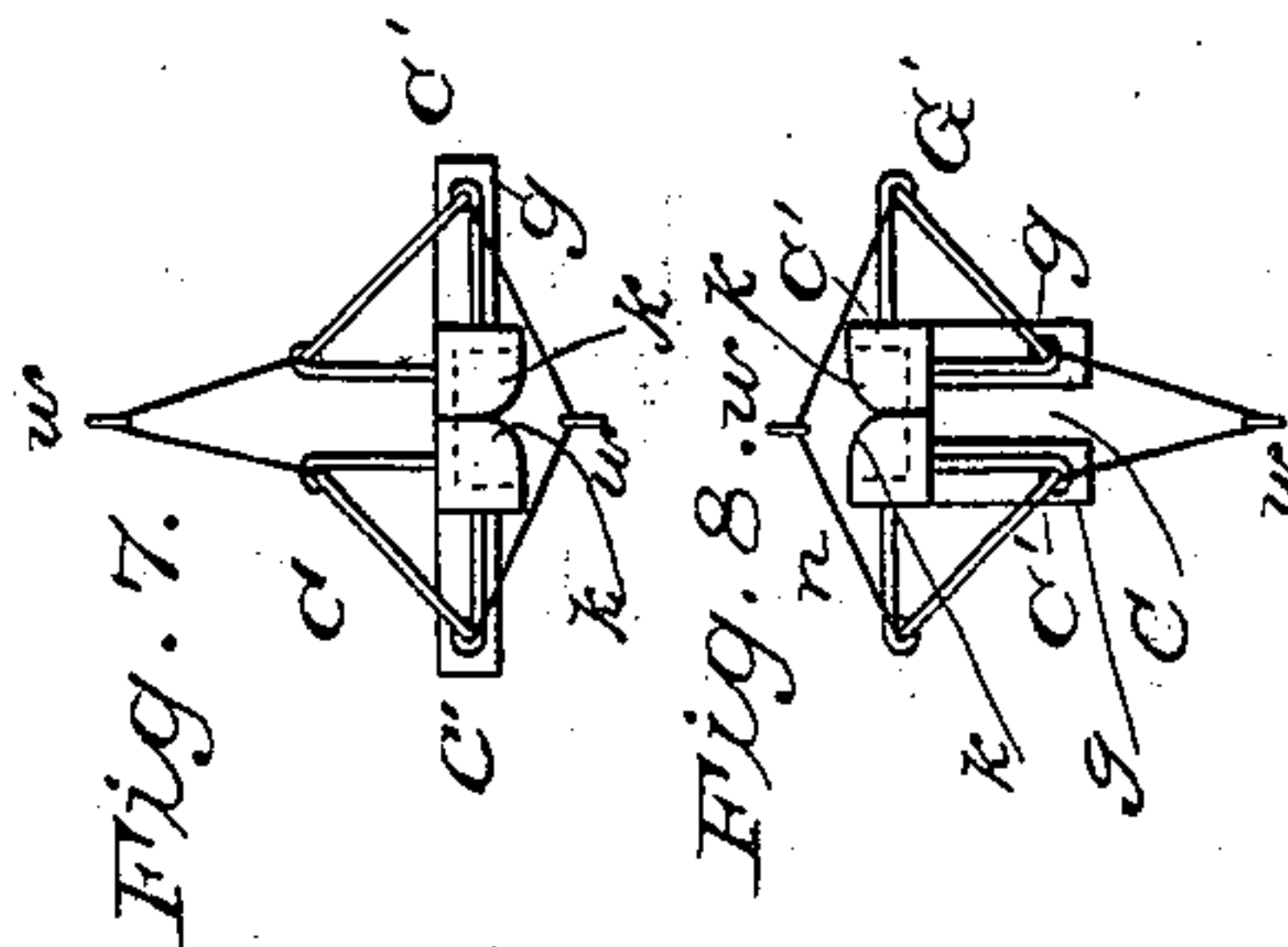
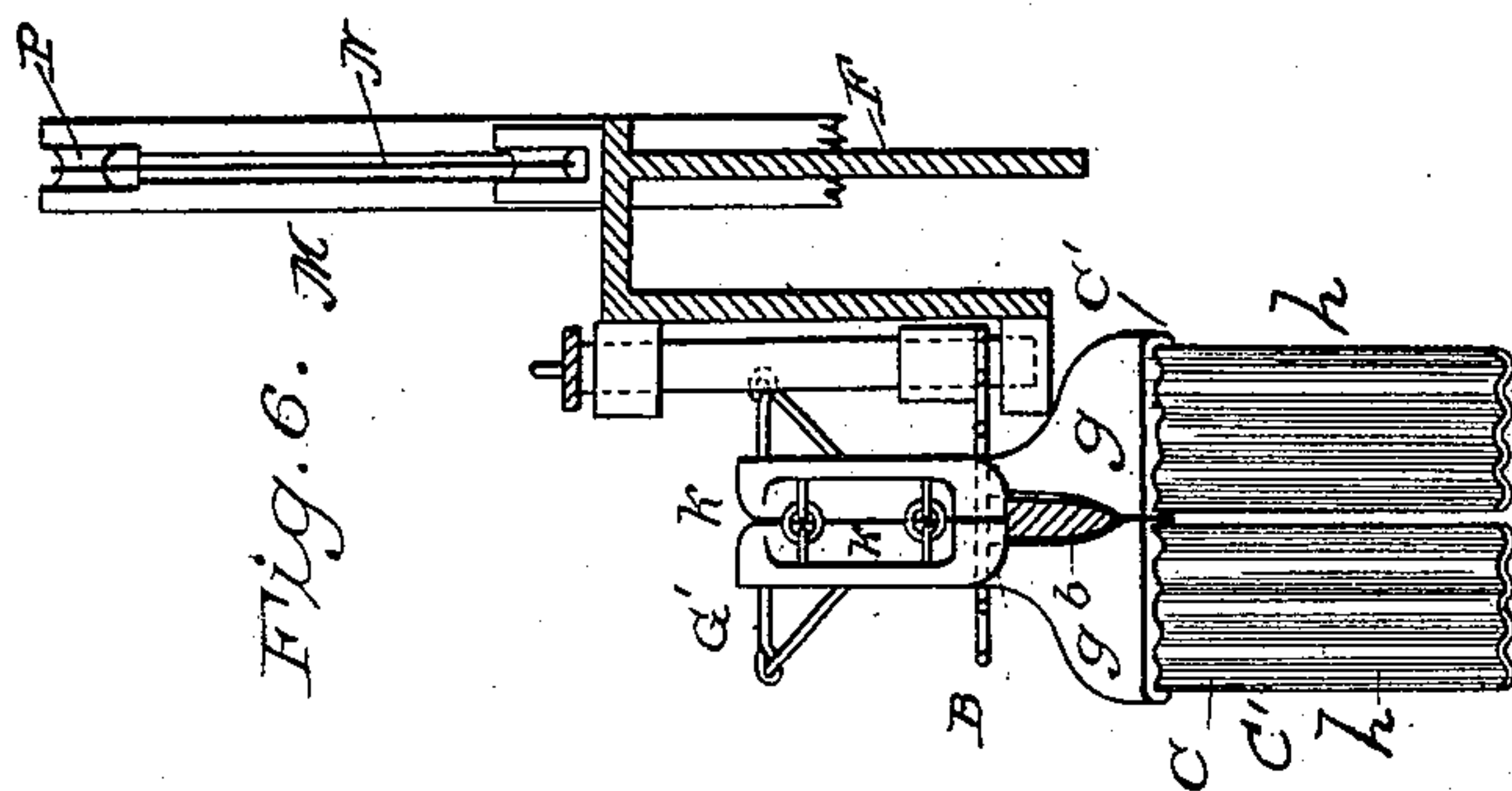
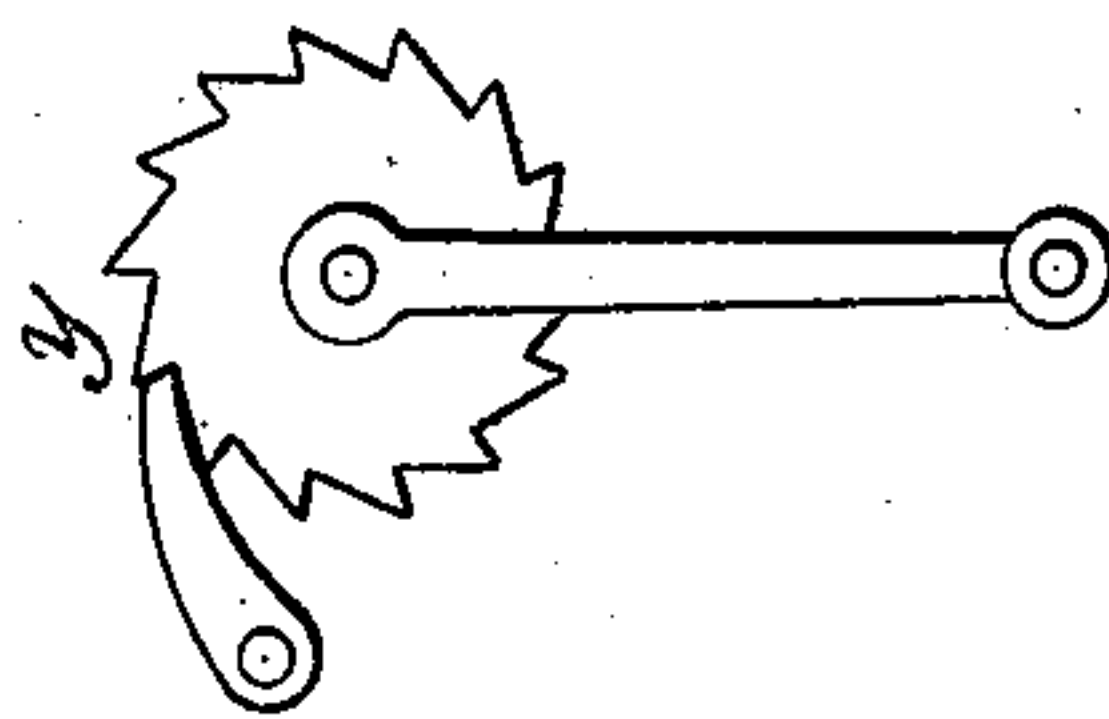
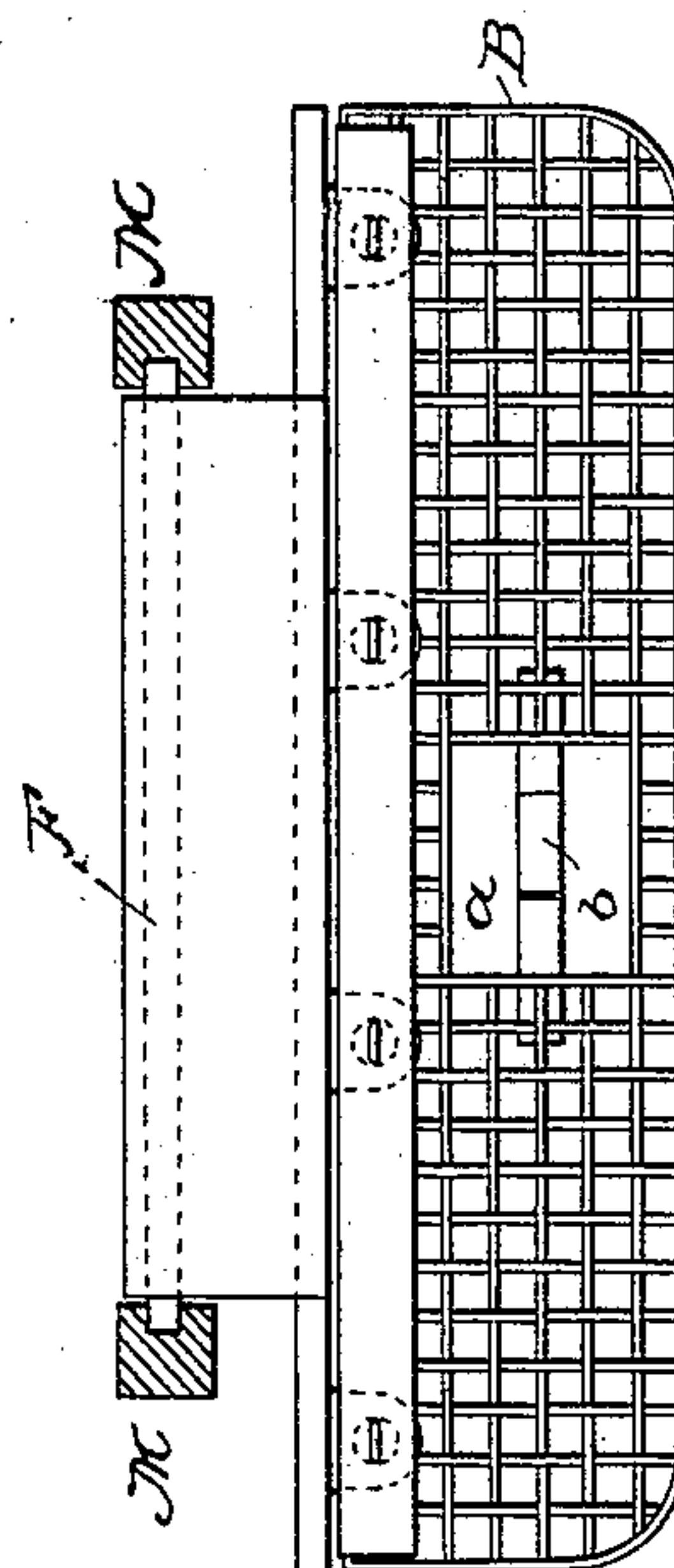


Fig. 5.



WITNESSES

P. C. Massi,
E. H. Bates

INVENTOR

J. S. Post.

By his Attorneys

Andrews & Smith

UNITED STATES PATENT OFFICE.

JUDSON S. POST, OF ST. LOUIS, MISSOURI.

MARINE SPEED-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 312,381, dated February 17, 1885.

Application filed May 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, JUDSON S. POST, a citizen of the United States, residing at St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Marine Speed-Propellers; 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 letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a side view of my device. Fig. 2 is a transverse sectional view of the same. Fig. 3 is a transverse sectional detail view. Fig. 4 is a side view. Fig. 5 is a detail view. Fig. 6 is a transverse sectional detail view, and Figs. 7, 8, 9, and 10 are detail views.

This invention has relation to the propulsion of boats; and it consists in the construction and novel arrangement of devices, as hereinafter set forth, and pointed out in the claims appended.

In the accompanying drawings, the letter A designates the hull of a steam-vessel.

B represents a vertically-adjustable fulcrum-shelf, connected to the vessel on each side.

C indicates the folding paddle, which has its bearing in the fulcrum shelf, and D the rotary transmitter or triple wheel, whereby power is transmitted from the propeller-shaft E or other rotary shaft operated by the steam-engine, or any other motive power, to the paddles. The propeller-shaft is the most convenient bearing for the belt-pulley which operates the transmitter. In some vessels, however, and in boats of limited size, rotation may be communicated to the transmitter by any power at hand.

The fulcrum-shelf B may be made of wood or metal. For a steam-vessel it should be made of metal and strongly constructed to withstand all strain. It consists of the open-work horizontal portion or shelf proper and the vertical brace portion connecting the shelf to the slide-bar F, which engages a well-bearing, G, sunk in the ship in the vertical direc-

tion. The shelf B is an open frame-work of great strength, having a central longitudinal slot or opening, *a*, under the middle portion of which extends, from front to rear, a fulcrum-bearing, *b*. The location of the fulcrum-shelf is at the side of the vessel, just above the water-line, and it should be adjusted to this position before leaving port. The shelf is connected to the vertical portion or holder H by means of the sliding rods, tubes, or columns K, which pass vertically through bearings *c* of the shelf, and through bearings *c'* of the holder plate or frame H, to which the slide-bar F is connected. The shelf is made adjustable on the guide rods or tubes K, and is held in position by means of pins *d*, passing through perforations *d'* in said rods or tubes after adjustment. The holder and its guides are made of some extent, in order to distribute the strain that may be brought upon them by the working-paddles through the shelf. The fulcrum-bearing *b* on which the pair of folding paddle-sections works runs parallel to the central vertical plane of the vessel, being, however, slightly inclined outward aft, to influence the paddle-blades below, while working, to force the water outward from the hull. The depth of the bar *b* is greater than its thickness, and from its upper edge it extends downward on each side, curving so that it is narrower at its lower edge. This fulcrum-bar is on each side clear of obstruction for a distance equal to the breadth of the paddle-blade, so that the folding paddle can be passed downward astride of the bearing, its blades respectively passing through the openings at the sides of the bar. Its vertical extension is designed to prevent the paddle from swaying out of its oscillating course during the rolling of the vessel. The location of the fulcrum-bar is about the middle of the shelf, or sufficiently far toward its outer edge to obviate any danger of the open paddle fouling with the hull of the vessel. The pulley-blocks *f*, through which the wire or other ropes, called "reins," pass to connect with the paddle arms or handles, should be securely set and fastened to the shelf fore and aft a sufficient distance apart to permit the free working of the paddle-arms and connections. The pulleys should

be arranged on a level, or nearly so, with the points of connection to the paddle-arms when at the extreme ends of their oscillating movements, the pulley aft being usually somewhat lower than its mate forward to allow for the downward turn of its paddle-arms. Except to provide surface-protection for the paddles, it is not necessary to extend the shelves outward from the vessel's hull much beyond the fulcrum-bearings.

The folding paddle C may be made of wood, iron, steel, or other proper material. When made of metal, the blade portions should be longitudinally corrugated to give the fullest strength with the least weight and flexibility.

The folding paddle consists, ostensibly, of two paddles or paddle-sections, C', which are permanently connected together by hinge or link connections. In their lower portions, below their fulcrum-rests, the paddle-sections are entirely disconnected. In the larger sizes the upper or body portions, g, of the paddles are made separate from the blade portions h, and they are secured together by bolts, rivets, or screws. The body portions of the paddle-sections are formed with horizontal rounded or rolling bearings k on their inner or contiguous edges. The upper bearings k are a little larger than the lower bearings, being so made in order to incline the blades below toward each other. These bearings and the connecting devices permit a free lateral swinging movement of each section to the extent of a quarter of a circle. This movement is checked when the blades are opened by the hinge-connections and the abutting edges of the body portions of said sections. When the blades are closed, the closing movement is checked by the connections and by the stress of the water through which the blades are moved. The shoulder-bearings respectively merge into each other, as shown. Each paddle-section is provided with an arm, G', which extends outward horizontally at right angles to the length of the paddle and in the plane of its breadth. Each folding paddle can be raised from the fulcrum-shelf on board the vessel at any time, and can be easily lowered in position to bear upon the saddle-bar b.

The connections with the driving mechanism are made through the arms G', whose leverage is such as to effect the opening and closing of the paddle-sections, the operation of the arms being supplemented by the action of the water, which as the blades are moved forward tends to close them, and as they are moved backward to force them open. The movement of the paddles backward and forward is communicated from the shaft of the propeller, or other shaft operated by a steam-engine or other motive power in larger vessels, through a rotary transmitter, D. The transmitter is strongly made of wood, iron, steel, or other metal, and its proportions depend on the work required, the diameter of the rotary wheel depending, however, in all cases upon the distance traversed by the

points of attachment of the motor-connections to the arms of the paddle-sections. The position of each transmitter is between the brace of paddles on opposite sides of the ship with which it is in connection. It is located in the central line of the ship, fore and aft, and the wheel is axially mounted athwart ship, so that it revolves at right angles to the plane of the keel. A belt passing from a pulley, H', on the propeller-shaft over the pulley-bearing I of the transmitter communicates motion thereto. By shifting the belt to a loose pulley, which may be on the propeller-shaft, the rotation of the transmitter may be stopped. This transmitter or triple wheel works in strong bearings bolted to the ship's deck-timbers. Its middle portion is a broad pulley, I, on each side of which is a pulley, K', having guide-flanges. The interval between the said flanges on each side of the middle or belt bearing is comparatively small, being only sufficient to afford play for the small pulleys p p, which are seated in bearings near the margins of the disks. Each pulley K' consists, therefore, of the rotating disks and the pulleys p p, which are arranged at the opposite ends of a diametrical line; but in one of the pulleys K' this diametrical line is at right angles to the line connecting the pulley-bearings p p of the other pulley K'. Above the triple wheel are placed, in bearings of the transmitter-frame, take-up rollers L, which may be provided at their ends with ratchet-wheel and pawl-holding devices. From one of these rollers extends the wire or other rope, called "rein," a', downward between the rim portions of the front wheel-pulley K', over its pulleys p p and through guiding-pulleys v, securely fastened to the deck and guards of the vessel in proper position, to the fulcrum-shelf, where it engages the front pulley of said shelf, and, passing backward, is connected to the arms of the paddle-sections. By means of this rope or rein the paddles are moved to force their blades backward in the water and at the same time to open them. From the other roller a similar rope, z, passing down between the rim portions of the rear pulley K', engages its pulleys p p, and thence passes through guiding-pulleys v, fastened to the vessel, to the rear pulley of the fulcrum-shelf, whence it extends to the arms of the paddle-sections, to which it is fastened in rear. By this rope or rein the paddle-blades are moved forward in the water and closed. Jointed connections w are fastened to the ends of the ropes or reins a and z, and connect them to the ends of the paddle-arms, which regulate their opening and closing when working. Tubular guides or other covering devices should be employed to protect the operating-ropes where they are exposed on the deck. When the triple wheel is rotated, the diameter bearings or pulleys p p of the front and rear pulleys K' will pass alternately from the horizontal to the vertical position, and onward from the vertical to the horizontal posi-

tion continuously. By this movement the ropes or reins a' and z are alternately drawn upward from the deck-guides, and therefore act alternately to pull the upper portions of the paddles forward or backward. At the same time one of the diameter-pulleys is moving toward the horizontal position, taking up the ropes a , the other one is moving toward the vertical position and thus paying out the ropes z . So in the next quarter-revolution of the transmitter the ropes z are taken up and the ropes a paid out. In this manner the transmitter operates to give two complete strokes of the paddles at each revolution.

I prefer in large vessels to make the holder H adjustable, as hereinbefore described, so that when the vessel is in port said holder, with its fulcrum-shelf and paddle, can be elevated as high as may be desirable. For this purpose strong stanchions M are provided, extending vertically from the edge of the upper or spar deck, to afford bearings for pulleys P, over which extend the hoisting rope or chains N, which are connected with the holder H by passing through pulleys R in Fig. 4. The hoisting wire, rope, or chains may be operated by windlass or strong ratchet-wheel and pawl, Y, Fig. 10, water-tight wells G, in Fig. 2, extending down vertically inside and adjoining the ship's side from the upper or spar deck, to engage and hold the tang or slide-bar of the paddle-fulcrum shelf-holder, of proper size and shape for easy vertical movement of said tang or sliding bar, when required. With said vertical stanchions are davits at fore and aft end of said wells, topped by pulleys, and grooved for secure vertical sliding of said tang-bar.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. The folding paddle consisting of lateral sections having disconnected blades and hinged or link-connected upper portions formed with upper and lower rounded bearings, fulcrum-shoulders, and arms extending outward in the planes of the blades at right angles to their length, substantially as specified.

2. The fulcrum-shelf having a longitudinal opening, provided with a fore and aft saddle-

bar or fulcrum-bearing extending downward to keep the paddles true, and the transverse chucks in front and rear of said opening, substantially as specified.

3. The rotating triple wheel-transmitter having a middle pulley-bearing for a drive-belt, and on each side thereof a pair of guide-disks between which are diametrically-opposite pulleys, near the rims thereof, the diameter connecting the pulleys of one wheel being at right angles to the diameter connecting the pulleys of the other wheel, substantially as specified.

4. The combination, with the triple wheel-transmitter, of the ropes connecting the same to the paddle-arms, the paddles, and the fulcrum-shelves having fore and aft pulleys through which said ropes, called "reins," pass.

5. The combination, with a brace of folding paddles adapted to vibrate one on each side of a boat, of a rotary transmitter engaging by diameter-bearings the forward pulling ropes or reins, a , and the rearward pulling ropes or reins, z , to tighten these ropes alternately while paying out the loose ropes, to effect the vibration or oscillation of said paddles, substantially as specified.

6. The combination, with the rotary transmitter and the vertically-adjustable fulcrum-shelf, of a folding paddle, its front rope, a , and rear rope, z , and the take-up rollers seated in bearings of the frame of the transmitter, substantially as specified.

7. A boat provided with a brace or braces of adjustable fulcrum-shelves on its sides, detachable folding paddles working on fulcrum-bearings of said shelves, front pulling-ropes, a , and rear pulling-ropes, z , their take-up devices, and a transmitter or transmitters rotated by belt from the propeller-shaft or other motive power, and engaging said ropes or reins a and z to operate the same, substantially as specified.

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

JUDSON S.

Witnesses:

LOUISE E. DAVENPORT,
JULIUS B. CURTIS.