

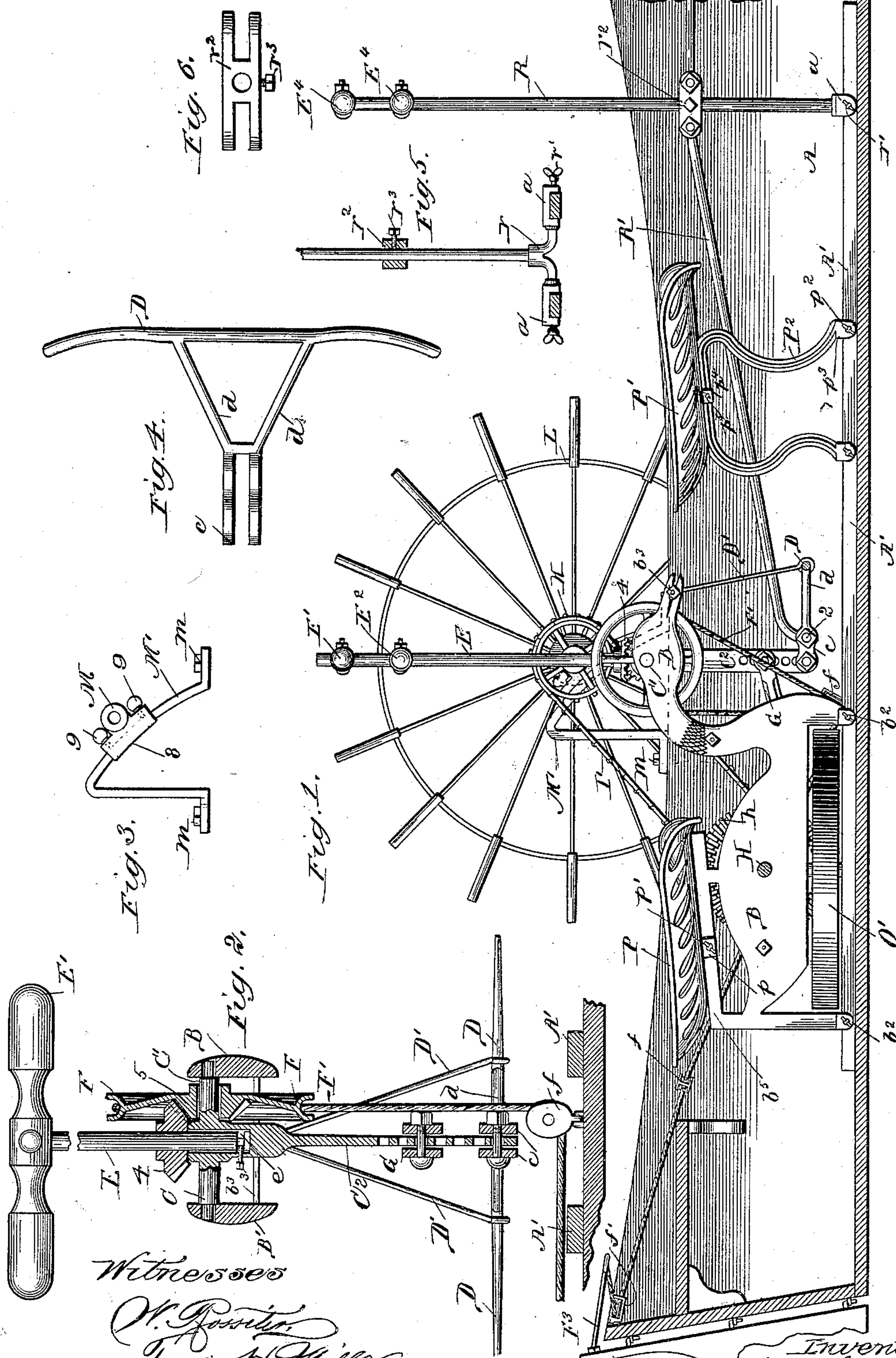
(No Model.)

4 Sheets—Sheet 1.

S. CURLIN.
MARINE VELOCIPED.

No. 401,736.

Patented Apr. 23, 1889.



Witnesses
W. G. Foster
J. H. Mills.

Inventor
S. Curlin
By Price & Fisher
Attys.

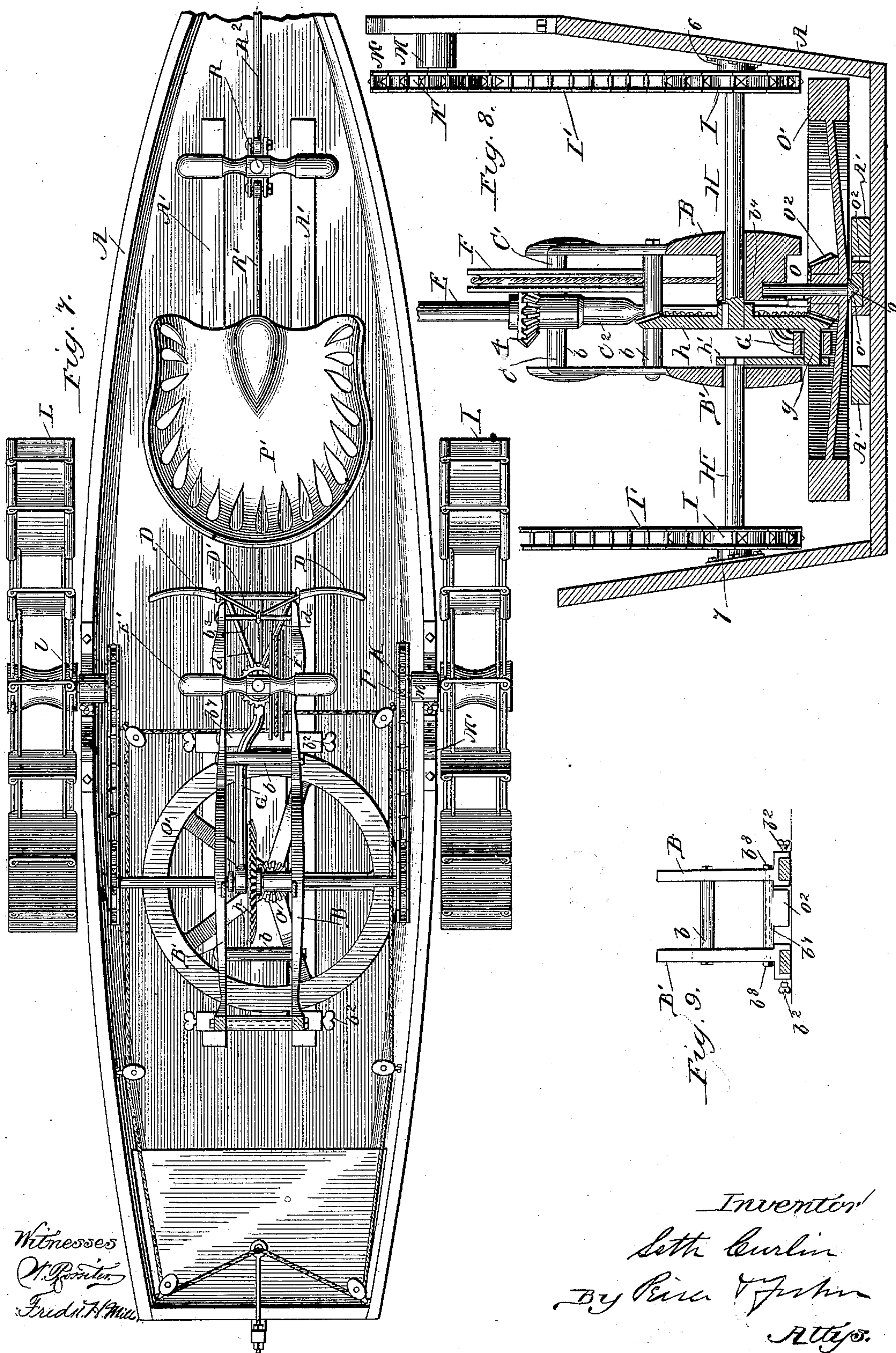
(No Model.)

4 Sheets—Sheet 2.

S. CURLIN.
MARINE VELOCIPEDE.

No. 401,736.

Patented Apr. 23, 1889.



Witnesses
W. B. Smith
Frederick A. Munn

Inventor
Seth Curlin
By R. W. Johnson
Attys.

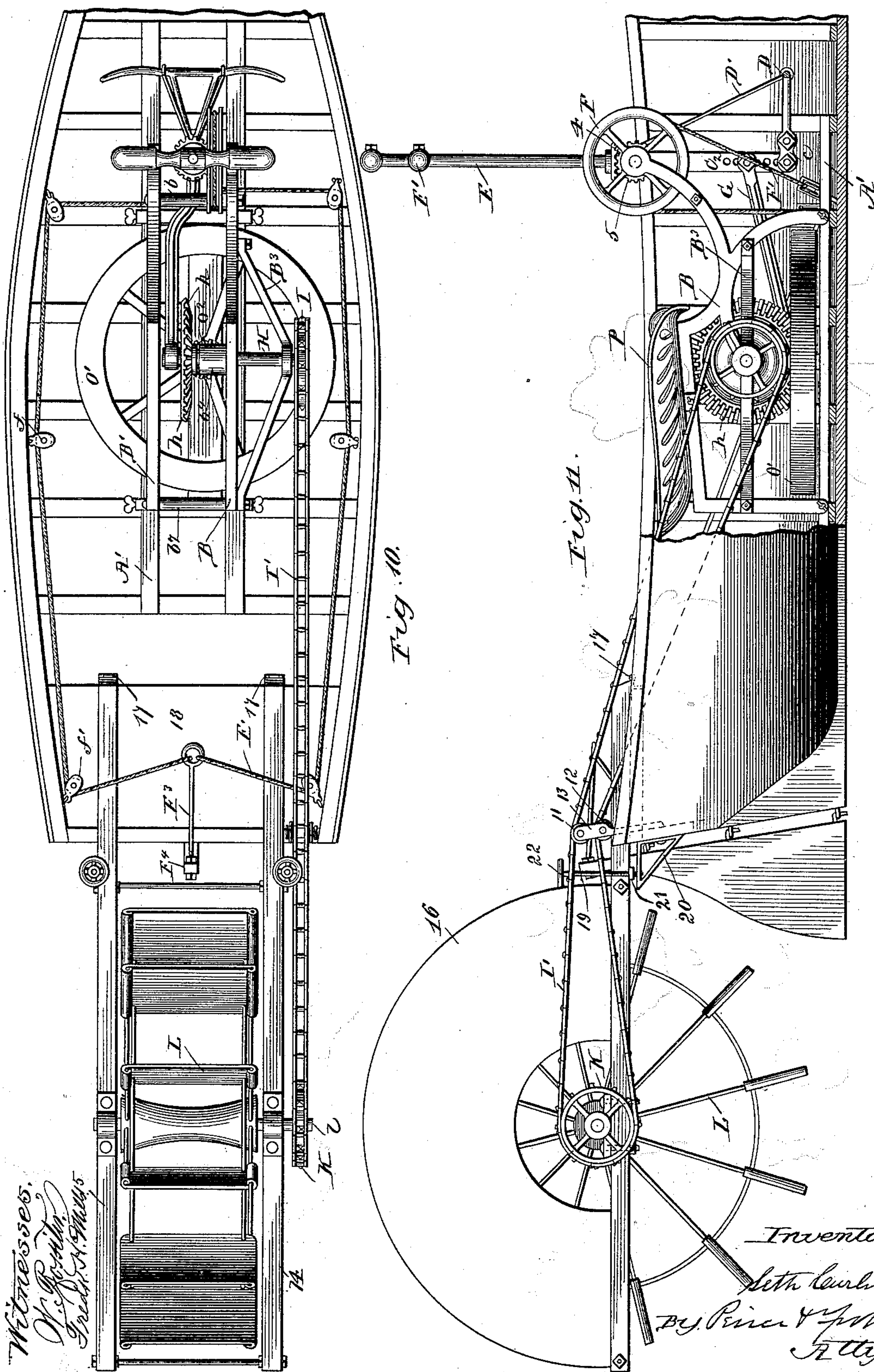
(No Model.)

4 Sheets—Sheet 3.

S. CURLIN.
MARINE VELOCIPED.

No. 401,736.

Patented Apr. 23, 1889.



Witnesses.
W. R. Smith.
Fred. H. Smith.

Inventor
Letha Curlier
By Pierce & John
Attys.

(No Model.)

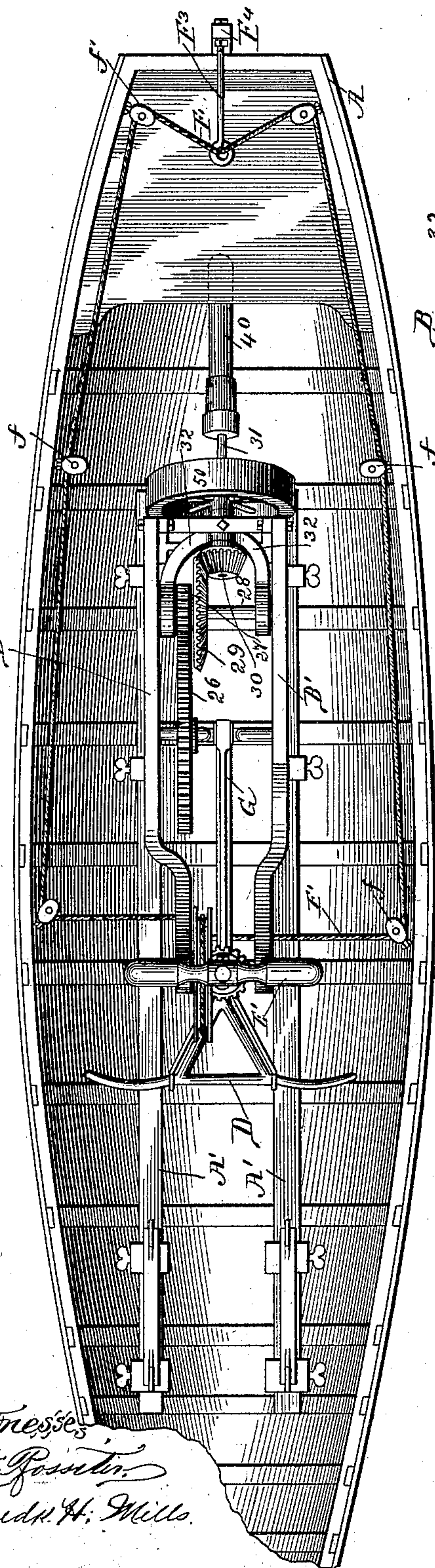
4 Sheets—Sheet 4.

S. CURLIN.
MARINE VELOCIPED.

No. 401,736.

Patented Apr. 23, 1889.

Fig. 12.



Witnesses
H. Gossett
Fred H. Mills

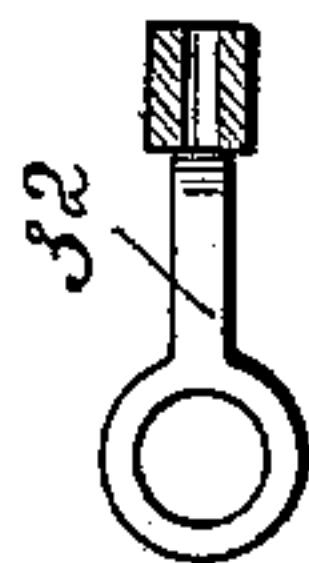
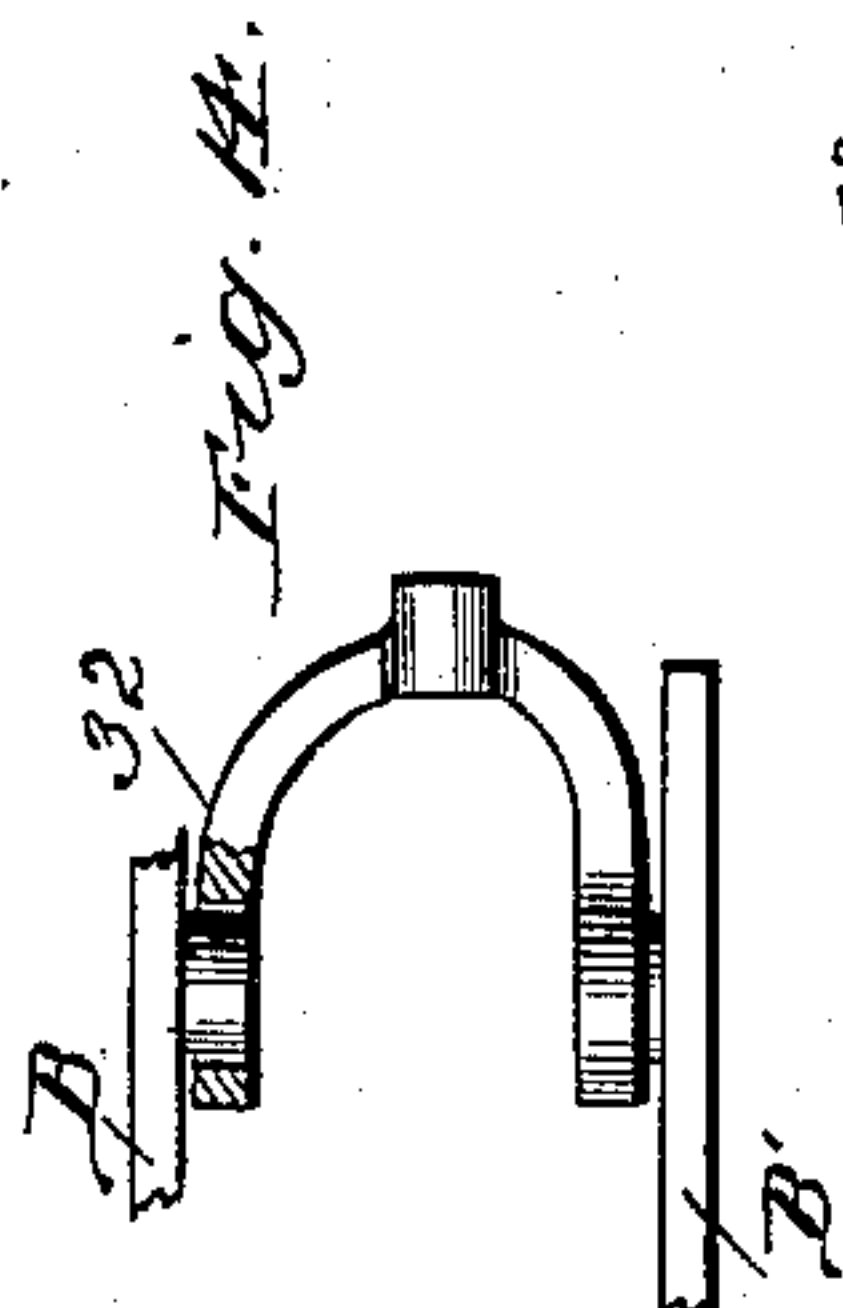
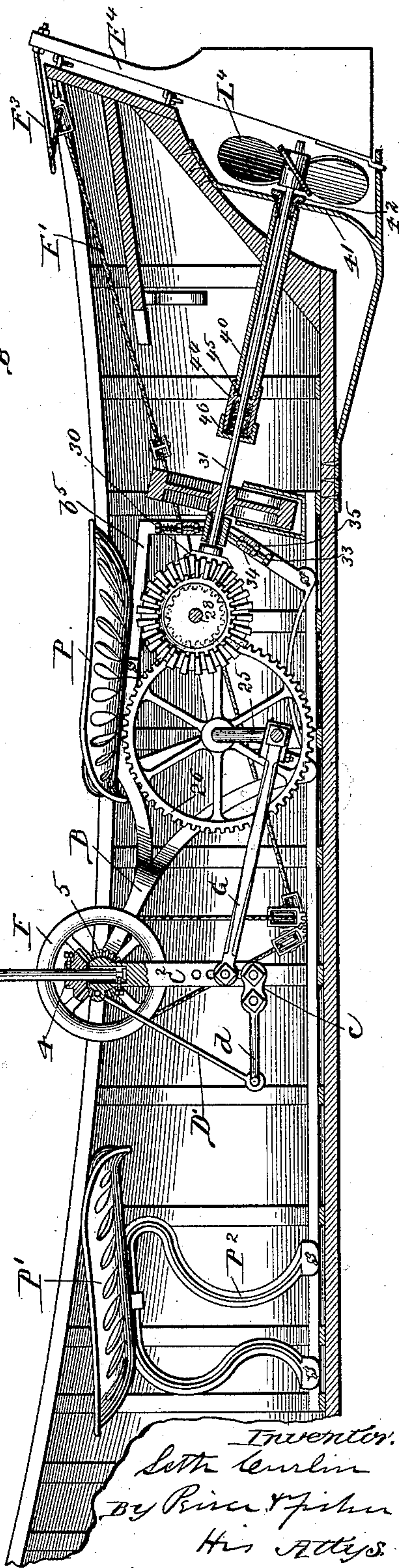


Fig. 13.
Fig. 15.



Inventor
Seth Curlin
By Price & Fisher
His Attys.

UNITED STATES PATENT OFFICE.

SETH CURLIN, OF UNION CITY, TENNESSEE, ASSIGNOR TO THE SETH CURLIN MARINE VELOCIPEDE COMPANY, OF SAME PLACE.

MARINE VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 401,736, dated April 23, 1889.

Application filed April 9, 1888. Serial No. 270,023. (No model.)

To all whom it may concern:

Be it known that I, SETH CURLIN, a citizen of the United States, residing at Union City, in the county of Obion, State of Tennessee, have invented certain new and useful Improvements in Marine Velocipedes, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

In Letters Patent No. 315,743, granted to me April 14, 1885, is set forth certain improved mechanism for propelling pleasure-skiffs or similar boats by means of paddle-wheels or a propeller-wheel operated by hand and foot power within the boat.

My present invention has for its object to improve and simplify the construction of mechanism set out in said patent; and to this end it consists in the various novel features of construction hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the claims at the end of this specification. I wish it distinctly understood, however, that while, for convenience of description, my invention may be designated as a "marine velocipede," features of the invention are applicable also to the improvement of mechanism whereby the propulsion of the boat is effected simply through hand-power, and I do not therefore wish the invention to be understood as restricted to mechanism in which foot-power is necessarily employed.

Figure 1 is a view in vertical longitudinal section through the hull of the boat, the main frame and operating mechanism being shown in side elevation. Fig. 2 is an enlarged detail view in vertical transverse section through the driving-lever and connected parts, certain parts being shown in elevation. Fig. 3 is an enlarged detail side view of one of the journal-blocks and bearing-brackets of the paddle-wheels. Fig. 4 is an enlarged detail plan view of the treadle-bar and its connected parts. Fig. 5 is an enlarged detail front view of the supplemental hand-rod, the link of this rod being shown in section, and the upper portion of this rod being broken away. Fig. 6 is an enlarged detail plan view of the

link upon the supplemental hand-rod. Fig. 7 is a plan view of a side-wheel boat having my invention applied thereto. Fig. 8 is an enlarged view in transverse section through the main frame and fly-wheel, Fig. 7, parts being shown in side elevation and the paddle-wheels being omitted. Fig. 9 is a view in transverse section through the stringers just behind the sustaining-frame, parts being shown in elevation. Fig. 10 is a plan view of a boat having my invention applied thereto in connection with a stern paddle-wheel. Fig. 11 is a view in side elevation (parts being broken away) of the construction illustrated in Fig. 10. Fig. 12 is a plan view of a boat embodying certain features of my invention as applied to the driving of a stern propeller-wheel. Fig. 13 is a view in vertical longitudinal section through the hull of the boat illustrated in Fig. 12, certain parts of the mechanism being shown in vertical section. Fig. 14 is an enlarged detail plan view of the yoke at the inner end of the propeller-shaft. Fig. 15 is a detail side view of the yoke shown in Fig. 14.

A designates the hull of the skiff or other boat, upon the inner face of the bottom of which are fastened suitable rails or stringers, A', whereon are sustained the operators' seats and the mechanism by which the movement of the paddle-wheels is effected. Upon these rails A' is mounted the main frame, the sides B and B' of which are connected by tie-rods b and cross-bars b', the bottom of the frame B being adjustably held upon the rails A' by means of the set-screws b², which serve to determine the position of the frame upon the rails.

Within the sides B and B' of the main frame, near the upper end thereof, and which sides in the drawings, Fig. 1, are made approximately in the shape of a goose body, neck, and head, are journaled the trunnions C and C', that project from the upper end of the driving-lever C², to the lower end of which lever is bolted the yoke c, the opposite end of this yoke being formed in piece with the rods d, the outer ends of which rods are united to a treadle, D. From this treadle D extend the suspension-rods D', that are sustained by

the tie-rod b^3 , that extends through the forward ends of the sides B and B' of the main frame.

To the upper end of the driving-lever C² will be connected the hand-rod E, which serves both as a means of enabling the operator to use his hands in propelling the boat and also as a convenient device for controlling the steering apparatus. This hand-rod E, which is provided at its top with the operating-handle E', adjustably bolted on the rod, is preferably connected with the operating-lever in the following manner—that is to say, the operating-lever is provided at its top with a seat or recess to receive the lower end of the hand-rod E, this hand-rod being formed with an annular groove, e , near its end, wherein will set the end of the pin 3, which serves to prevent the accidental withdrawal of the hand-rod from its seat.

Upon the hand-rod E is keyed the bevel gear-wheel 4, that engages with a corresponding bevel gear-wheel, 5, formed upon the hub of the steering-wheel F, this wheel being journaled, by preference, upon the trunnion or rock-shaft C' of the driving-lever C². Over this steering-wheel F passes the rudder-rope F', that runs through suitable pulley-blocks, f and f' , at the bottom, sides, and stern of the boat, and connects with the bar F³ of the rudder F⁴.

To the lower part of the driving-lever C² is connected the front end of the pitman-rod G, the opposite end of this rod receiving a wrist-pin, g , that is formed upon the face of a shaft-wheel, h , which is keyed to the inner end of the section H of the main drive-shaft. The inner end of this main drive-shaft H is journaled within a suitable boss or arbor, b^4 , formed on the side B of the main frame, while its outer end is journaled in a suitable step or block, 6, attached to the side of the boat.

The drive-shaft is, by preference, formed of two sections, the section H' having its inner end journaled in the side B' of the main frame and its outer end journaled in a step or block, 7, attached to the side of the boat, the inner end of the section H' of the main shaft being connected with the wrist-pin g by means of a suitable link, h' , so that the two sections H and H' of the main shaft move in unison. Upon the outer ends of the sections H and H' of the main shaft are keyed the sprocket-wheels I, from which extend the drive-chains I', that pass around corresponding sprocket-wheels, K, that are keyed to the inner ends of the shafts of the paddle-wheels L. The shafts which carry the paddle-wheels L are sustained within the journal-blocks M, the under sides of which, as seen in Figs. 1 and 3, are slightly curved and rest upon the correspondingly-curved upper faces of the bracket-plates M', that are bolted, as shown at m , to the sides of the boat. The journal-blocks M are adjustably held upon the brackets M' in any suitable manner—as, for example, by flanges 8, that retain the blocks on the brackets, the po-

sition of the blocks being determined by means of the set-screws 9, that pass through threaded holes in these blocks. My purpose in thus sustaining the paddle-wheels within adjustable bearings or blocks is to enable these wheels to be raised or lowered to accommodate the mechanism to boats of different sizes and according as the boat is loaded or light.

Within the boss or arbor b^4 , formed upon the side B of the main frame, is journaled the upper end of the vertical shaft O, upon which is keyed the fly-wheel O', the lower end of this shaft being preferably provided with an enlarged conical head, o , that is sustained within a suitable step or block, o' , that rests upon the casting o^2 , the ends or cross-bars b^7 of which are bolted, as at b^8 , to the sides B and B' of the main frame. Upon the hub of this fly-wheel O' is keyed the bevel gear-wheel O², that engages with the bevel-gear h of the shaft-wheel h' , keyed to the inner end of the section H of the main drive-shaft. At the top of the sides B and B' of the main frame are formed the rails b^5 , on which is mounted the operator's seat P, from the under side of which project the lugs p , that hold the seat in position upon the top edges, and by means of the set-screws p' , that pass through threaded holes in the lugs p , the seat can be readily adjusted to bring the operator into the desired position with respect to the driving-lever.

The operation of my improved mechanism as thus far described will be seen to be as follows: The operator occupying the seat P will place his feet upon the ends of the treadle D and his hands upon the handle E' of the hand-lever E. He will thus be enabled by both hand and foot power, or either, to readily operate the driving-lever C², which in turn will communicate motion through the pitman-rod G to the shaft-wheel h and the main drive-shaft H H', the sprocket-wheels I, and thence through the chains I' and sprocket-wheels K and their shafts to the paddle-wheels L. It will also be seen that as motion is thus imparted to the sections H and H' of the main drive-shaft and to the shaft-wheel h the engagement of this wheel h with the corresponding bevel gear-wheel, O², on the hub of the fly-wheel O' will cause this fly-wheel to be revolved.

My purpose in providing the fly-wheel O' is to give increased steadiness to the movement of the paddle-wheels and to carry the pitman G over the dead-centers, and as well also to relieve the operator from the necessity of both pushing and pulling in order to keep up the speed of the boat, and I regard this feature of importance, because in propelling the boat it is desirable that the operator should be relieved as much as possible from the necessity of pushing the hand-lever from him, since such movement is apt to speedily become tiresome. The drive-wheel O' is located, by preference, in horizontal position and near the bottom of the boat, in order that its weight may tend to increase

rather than to interfere with the steadiness of the boat.

In Fig. 1 of the drawings the hand-rod E is shown as provided with a supplemental handle, E^2 , the purpose of which is to enable a second operator, who may occupy the seat P' , to assist in working the hand-rod E, and thus aid in propelling the boat. The supplemental seat P' is mounted upon the frame P^2 , the bottom of which is adjustably connected with the stringers A' by means of set-screws p^2 and feet p^3 , and the seat P' is held upon the frame P^2 by means of the flanges p^4 and set-screws p^5 , which enable the position of the seat to be adjusted either backward or forward, or enable it to be reversed. It is apparent that if the operator occupying the seat P' is to assist in working the hand-rod E the seat P' will be turned to a position the reverse of that shown in the drawings, Figs. 1 and 2. If desired, however, the operator occupying this supplemental seat may operate a separate hand-rod, R, the lower end of which is stepped in the forked casting r , that enters holes in and is pivotally connected to the cuffs or blocks a , that are adjustably attached by set-screws r' .

The upper end of this rod R is provided with one or more handles, E^4 , and this rod R passes through the link or casting r^2 , to the yoke-shaped ends of which is attached by a suitable bolt the drive-rod R' , that is connected with the yoke c at the bottom of the main drive-lever C^2 by means of the bolt 2. The link or casting r^2 is held on the supplemental hand-rod R by a set-screw, r^3 , and, if desired, a further supplemental drive-rod, R^2 , may lead from the hand-rod R to another supplemental hand-rod for another operator near the bow of the boat. It will thus be readily seen that any desired number of operators may assist in the propulsion of the boat, although for ordinary pleasure-boats one or two will usually be sufficient.

In order to effect the steering of the boat, it is only necessary for the operator to turn the handle E' and the hand-rod E, as by so doing the bevel gear-wheel 4, by reason of its engagement with the corresponding wheel, 5, will revolve the steering-wheel F and cause the rope F' , which passes over this wheel, to shift the rod F^3 of the rudder, according as the handle E' is turned in either direction. It will thus be seen that the mechanism for steering the boat is under the constant control of the operator, and by mounting the hand-rod E so that it can be freely turned I am enabled to avoid the necessity of using a supplemental sleeve or similar device for controlling the movement of the steering-wheel. By mounting the steering-wheel F in vertical position, as shown, I am enabled to lead the steering-rope directly therefrom to the bottom of the boat, where it will be out of the way. My object in mounting the bevel gear-wheel 4 immediately above the trunnions C and C' of the driving-lever C^2 is to hold this

wheel, so that as the hand-rod is moved back and forth the corresponding movement of the wheel 4 will be so slight as to not affect the steering-wheel F or the rudder.

My purpose in adjustably mounting the main frame, which sustains the operating mechanism upon the stringers A' , is to enable this frame and such mechanism to be moved either back or forth in order to properly balance the boat; and it is apparent that when any shift in the position is thus made it will only be necessary to correspondingly lengthen or shorten the drive-chains I, which may be of the well-known link-belt type.

My object in sustaining the journals of the paddle-wheels L in adjustable bearings M is to enable these wheels to be raised or lowered to compensate for the variations in height of the sides of the boat to which the operating mechanism may be applied, and to compensate also for the change in the draft of the boat, according as it is loaded or light. The upper faces of the brackets M' are preferably curved, as shown, and correspond with an arc drawn from the center of the main drive-shaft H H' , so that when the main frame has been set within the boat, and it is simply desired to vary the position of the journals of the paddle-wheels, they can be moved up or down upon the standards without shifting the position of the main frame.

In Figs. 10 and 11 of the drawings my invention is shown as applied to a boat having a single paddle-wheel at its stern. In this construction the sides B and B' of the main frame, which support the operating mechanism, are connected by tie-rods b and cross-bars b' , but are of somewhat different shape from those hereinbefore described. The precise shape, however, of the main frame I do not regard as important. In the upper ends of these sides B and B' is journaled the driving-lever C^2 with the adjacent and connected parts, as above described; but in this modification the main drive-shaft H is a single undivided shaft that is journaled in the boss b^4 upon the side B of the frame and in a brace-bar, B^3 , that is bolted to and extends outwardly from the side B of the frame, and upon the inner end of this drive-shaft is keyed the shaft-wheel h , similar to that above described, and in like manner engaging with the bevel-gear O^2 of the fly-wheel O' .

On the outer end of this drive-shaft H is keyed the sprocket-wheel I, over which passes the sprocket chain or belt I' , that leads to a sprocket-wheel, K, upon the end of the journal 1 of the stern paddle-wheel L, and in this construction suitable idlers, 11 and 12, held within a standard, 13, bolted to the stern of the boat, are employed to guide the sprocket chain or belt from the main drive-shaft to the shaft of the paddle-wheel. In this modified construction the steering apparatus is the same as that already described. The stern paddle-wheel L is sustained within the rearwardly-projecting beams 14 and 15, that may

be provided with a suitable hood, 16, over the top of the paddle-wheel, and the front ends of these beams are by preference connected by hinges 17 to the rear seat or cross-bar, 18, so that the outer ends of the beams can be raised or lowered in order to enable the paddle-wheel to be vertically adjusted. This vertical adjustment of the paddle-wheel is effected by means of the threaded spindles 19, the reduced lower ends of which are stepped in the brackets 20, that are affixed to the stern of the boat, and these spindles extend through the threaded bars 21, bolted to the under sides of the beams 14 and 15, and have their upper ends provided with suitable hand-wheels, 22, by which they can be readily turned. My purpose in thus adjustably mounting the beams that sustain the stern paddle-wheel is to enable this wheel to be raised or lowered to compensate for the height of the stern, either when the mechanism is applied thereto or when this may be rendered desirable by the variation of the load of the boat, and it will be readily seen that by turning the spindles 19 by means of the hand-wheels 22 the adjustment of the paddle-wheel L can be easily effected.

From the foregoing description it will be understood that the rotation of the stern-wheel L necessary to effect the propulsion of the boat will occur when the drive-lever C² is operated, the movement of this lever being communicated to the shaft-wheel h through the pitman G, and from this shaft-wheel through the main shaft H, the sprocket-wheel I, and the chain I', and sprocket-wheel K to the paddle-wheel L.

In the modification illustrated in Figs. 12 and 13 of the drawings my invention is shown as applied to the propulsion of the boat through the medium of a propeller-wheel, L⁴, and in this construction the drive-lever C² and its connections and the steering apparatus are the same as that already described.

In this construction, however, the ends of the main drive-shaft H are journaled in the sides B and B' of the main frame, and this main drive-shaft is provided with a crank, 25, to which the end of the pitman G is connected. Upon the main drive-shaft H is keyed the shaft-wheel 26, that engages with the pinion 27, keyed upon the shaft 28, the ends of which are journaled in the sides B and B' of the main frame, the sides of the main frame in this construction being provided with bosses, through which the ends of the shaft 28 pass. Upon the shaft 28 is also keyed the bevel gear-wheel 29, that engages with a corresponding bevel gear-wheel, 30, affixed to the inner end of the propeller-shaft 31. This propeller-shaft 31 has its inner end journaled within a yoke, 32, the ends of which are sustained upon the bosses, and the position of this yoke can be shifted vertically by means of the threaded spindles 33, that pass through the bars 34 and bear upon the opposite sides of the yoke, the position of these spindles being determined

by means of suitable set-nuts, 35. The propeller-shaft 31 by preference extends through a tubular casing, 40, that passes through the stern of the boat, and has its rear end held within the bracket-plate 41, that is bolted to the stern and bottom of the boat. The rear end of the tubular sleeve 40 is provided upon its interior with a screw-thread adapted to receive the corresponding exteriorly-threaded bearing-sleeve 42, through which the propeller-shaft 31 passes, the flange of this bearing-sleeve 42 being, by preference, upon the rear side of the bracket-plate 41 and serving to hold the sleeve 40 in proper position with respect to said plate. The forward end of the tubular sleeve 40 is exteriorly threaded to engage with the corresponding threads upon the interior of a tubular stuffing-box, 44, that is provided with a perforated division-plate, 45, between which and the cap 46, that screws onto the end of the stuffing-box 44, will be held suitable packing. By thus sustaining the propeller-shaft within a tubular sleeve, 40, I am enabled to provide a very secure bearing for this shaft and to obtain an effective means for packing the bearings of the shaft and preventing all leakage of water into the boat.

My purpose in mounting the inner end of the propeller-shaft 31 within the adjustable yoke 32 is to enable the shaft and propeller-wheel to be properly set in position upon any boat notwithstanding the variations in the size or draft thereof, and it will be readily seen that if it is desired to change the angle of the propeller-shaft in order to accommodate it for a boat of greater or less draft, this can be readily accomplished by varying the position of the yoke through the medium of the adjusting-bolts, it being understood, however, that a corresponding change in the opening through the stern of the boat will be made.

From the foregoing description it will be seen that when motion is imparted to the driving-lever C² by the operator in the manner hereinbefore described the shaft-wheel 26, through the medium of the cog-wheel 27, shaft 28, and bevel-gears 29 and 30, will cause the rotation of the propeller-shaft and wheel necessary to effect the propulsion of the boat. Upon the propeller-shaft 31 is mounted a fly-wheel, 50, corresponding with the fly-wheel O', in the construction hereinbefore described, and serving the same purpose.

I wish it distinctly understood that features of the invention may be employed without the adoption of the invention as an entirety. Thus, for example, the steering apparatus may be used in connection with other forms of propelling mechanism, and so also the driving-lever and its connections may be operated simply by hand-power or foot-power, although I prefer the employment of both.

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

1. In a marine velocipede or similar apparatus, the combination, with suitable mechanism for imparting movement to the propeller or paddle wheels and suitable steering mechanism, of a single main hand-rod consisting of a single bar pivotally sustained with respect to the mechanism for propelling the boat and connected directly with the steering mechanism, whereby said single hand-rod serves to effect both the movement of the driving mechanism and of the steering mechanism, substantially as described.

2. In a marine velocipede or similar apparatus, the combination, with a driving-lever for imparting movement through suitable intermediate mechanism to the propeller or paddle wheels, said driving-lever having a socket in its upper end, of a main hand-rod having its lower end fitted within the socket of the driving-lever, and suitable steering mechanism connected with said hand-rod, whereby said hand-rod serves to effect both the movement of the driving-lever and of the steering mechanism, substantially as described.

3. In a marine velocipede or similar apparatus, the combination, with the driving-lever C^2 , of a hand-rod, E, mounted upon the end of said driving-lever in a manner free to turn, a steering-wheel, F, gear-wheels 4 and 5, and suitable connections from said gear-wheel to the rudder, substantially as described.

4. In a marine velocipede or similar apparatus, the combination, with the driving-lever C^2 , of a suitable hand-rod, E, mounted in a manner free to turn, a steering-wheel, F, journaled upon the trunnion or shaft of said driving-lever, suitable gear-wheels connecting said hand-rod with the steering-wheel, and suitable ropes leading from said steering-wheel to the rudder, substantially as described.

5. In a marine velocipede or similar apparatus, the combination, with the driving-lever C^2 , of a hand-rod for moving said driving-lever, said hand-rod being mounted in a manner free to turn, a steering-wheel provided

with a bevel-gear, and a bevel-gear upon the hand-rod, and suitable connections leading from said steering-wheel to the rudder, substantially as described.

6. In a marine velocipede or similar apparatus, the combination, with the hull, of suitable stringers or supports, A', attached thereto, the operating mechanism, and a main frame for sustaining said operating mechanism, said main frame being movably mounted upon said stringers and within said hull, and suitable means for adjusting said main frame in the direction of the length of the hull, substantially as described.

7. In a marine velocipede or similar apparatus, the combination, with the sides B and B', of the main frame for supporting the driving-lever and operating mechanism, said main frame having rails b^5 , extending lengthwise of the boat, of the operator's seat P, adjustably mounted upon said rails, whereby said seat can be moved in the direction of the length of the boat, substantially as described.

8. In a marine velocipede or similar apparatus, the combination, with the paddle-wheels, of the brackets M', having the curved bearing portions, and the vertically-movable journal-blocks M for the shafts of said wheels, said journal-blocks being adjustably mounted upon the curved portions of said brackets, substantially as described.

9. In a marine velocipede or similar apparatus, the combination, with the main frame, of a driving-lever, C^2 , sustained within said main frame, a suitable hand-rod and treadle connected with said driving-lever, a main shaft and shaft-wheel sustained within said main frame that supports the driving-lever, a pitman for imparting motion to said main shaft from the driving-lever, and suitable mechanism leading from said shaft-wheel to the paddle-wheels or propeller-wheel, substantially as described.

SETH CURLIN.

Witnesses:

GEO. T. FISHER, Jr.,
I. B. CARPENTER.