

(No Model.)

J. F. GRADY & M. HART.
MARINE VELOCIPED.

No. 602,072.

Patented Apr. 12, 1898.

Fig. 1.

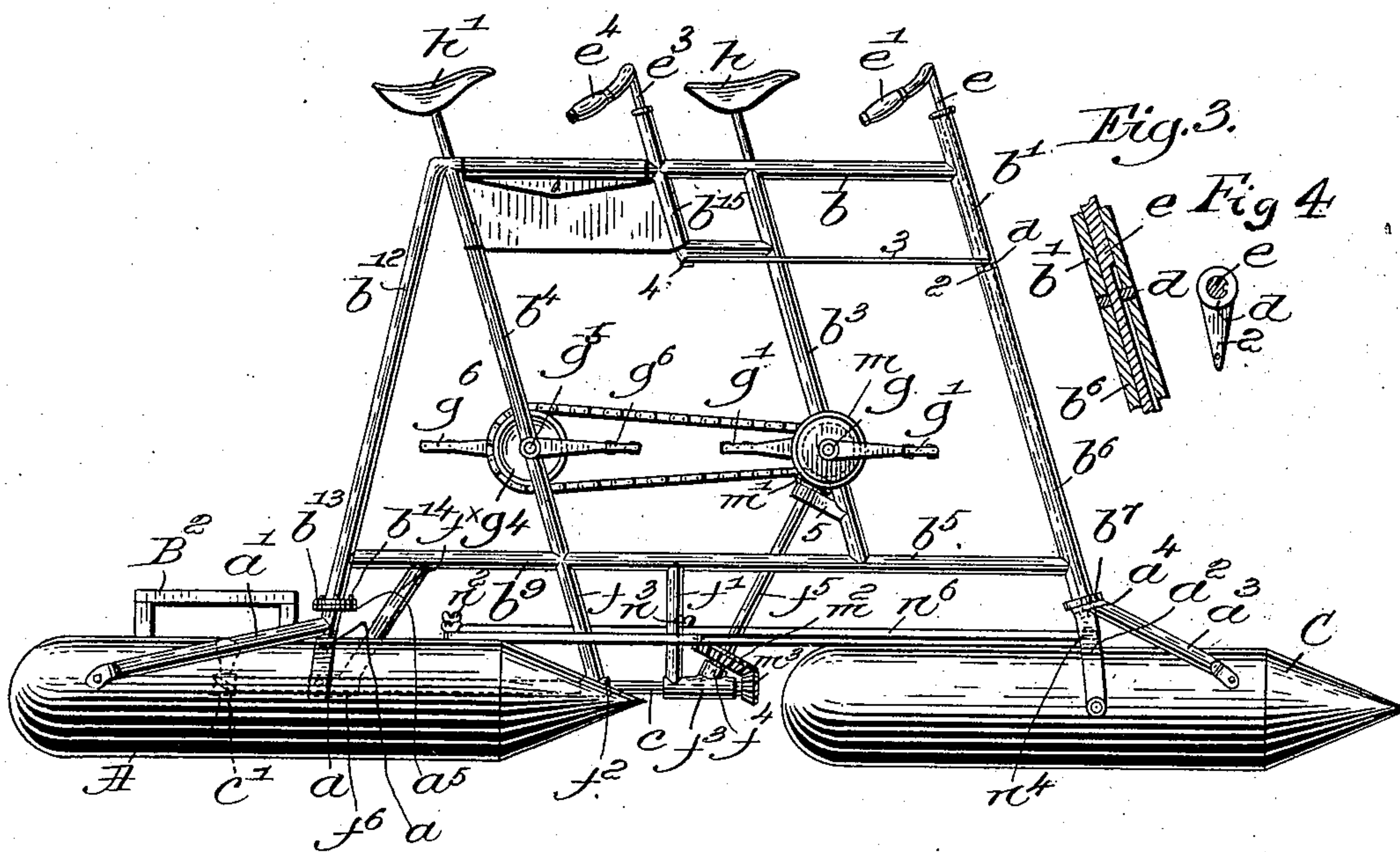
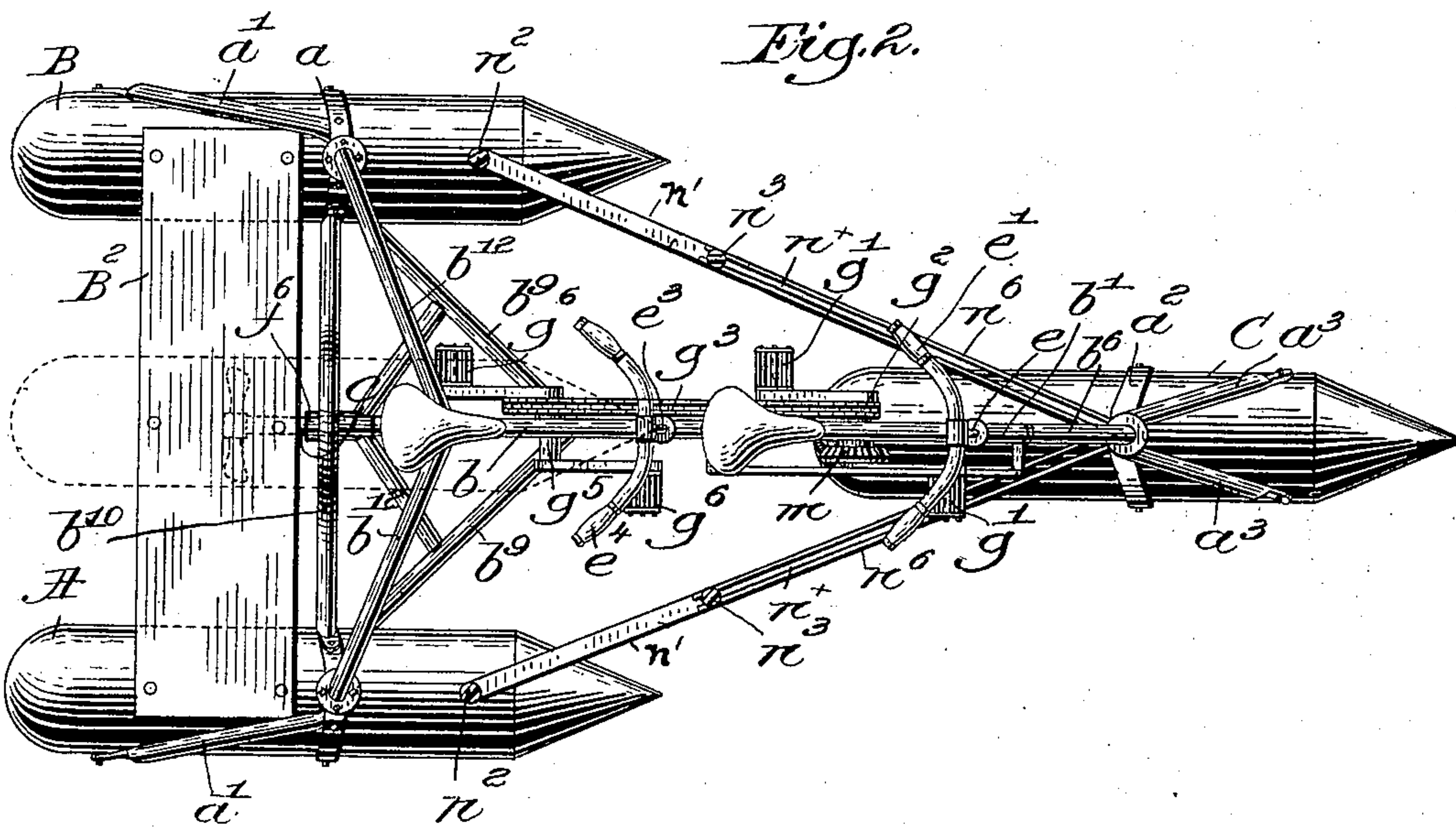


Fig. 2.



Witnesses:
Fred S. Greenleaf.
Edward G. Allen.

Inventors:
James F. Grady.
Michael Hart.
By Crosby Gregory, atty.

UNITED STATES PATENT OFFICE.

JAMES F. GRADY, OF BOSTON, AND MICHAEL HART, OF CAMBRIDGE,
MASSACHUSETTS.

MARINE VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 602,072, dated April 12, 1898.

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To all whom it may concern:

Be it known that we, JAMES F. GRADY, of Boston, county of Suffolk, and MICHAEL HART, of Cambridge, county of Middlesex, State of Massachusetts, have invented an Improvement in Marine Velocipedes, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention has for its object the production of a novel marine velocipede.

In our invention we employ three substantially cigar-shaped pontoons, they occupying in the water a tripod position, the leading pontoon being fixed to the lower end of the bicycle steering-shaft, so that it may be turned freely in either direction, as is the steering-wheel of a bicycle, to direct the course of the velocipede in the water. This leading pontoon is connected with the rear pontoons by substantially sliding connections, whereby when it is desired to pack the same for shipment the leading pontoon may be slid back into position between the rear pontoons. These pontoons have erected upon them a frame substantially such as employed in a bicycle, the said frame being, however, freely detachable from the pontoons, and we have herein shown our invention as applied to a so-called "tandem" frame. The propeller used is connected to a shaft mounted in bearings on the frame, and said shaft is rotated by or through an intermediate shaft and suitable bevel-gears, which are in turn actuated by the pedal-shaft of the frame, said pedal-shaft being connected by a suitable sprocket-shaft with a second pedal-shaft.

Figure 1, in side elevation, represents a marine velocipede embodying our invention; Fig. 2, a top or plan view thereof. Fig. 3 is a sectional detail of the two-part front tube and its contained steering-shaft, and Fig. 4 a cross-section of the same to show the ear to which the steering-rod is attached.

Our improved marine velocipede presents three pontoons A, B, and C, said pontoons being represented as of cigar shape and made hollow and water-tight of any suitable thin

material, so that they will readily sustain a very considerable weight.

The pontoon C is in practice projected considerably ahead of the pontoons A and B, and it is so controlled that it may be swung to direct its pointed forward end to the right or left, as may be desired, to control the direction of movement of the velocipede.

Each pontoon A B has erected upon it a suitable yoke, as a , each yoke being braced backwardly by the braces a' toward the rear end of the pontoon, said yokes having each a flange or collar a^5 . These two pontoons are connected by a rod b^{10} , which is curved upwardly between its ends.

The pontoon C has a yoke a^2 , which is braced forwardly toward the front end of that pontoon by braces a^3 , and the upper end of the yoke a^2 has a shoulder or collar a^4 , through which is a hole.

The velocipede-frame is composed of a series of connected tubes, substantially as follows, viz: an upper horizontal tube b , which is connected at its front end with a short inclined tube b' . Depending from the tube b are two tubes b^3 and b^4 , they being inclined to occupy a position substantially parallel with the tube b' . The tubes b^3 and b^4 are extended downwardly and connected with a cross-tube b^5 , substantially parallel with the tube b . The front end of the tube b^5 is connected with a tube b^6 , having the same inclination as the tube b' and provided at its lower end with a collar or foot b^7 . The rear end of the tube b^5 has extended backwardly and outwardly from it two tubes b^9 , which are connected with two tubes b^{12} , to be described. The tube b has also extended from it at its rear end outwardly and downwardly toward said pontoons A and B two like tubes b^{12} , they having at their lower ends suitable collars b^{13} , provided with bolt-holes, so that bolts b^{14} , put in said holes, may be screwed into the threaded holes of the collar a^5 of the yokes a to thus connect said tubes b^{12} rigidly with the said yokes. The tube b^5 has three depending tubes $f f' f^x$, provided, respectively, with bearings f^2, f^3 , and f^6 for the propeller-shaft c , said bearing f^3 also having a second bearing f^4 for

the end of an inclined shaft f^5 , to be described. The tube b is intersected both above and below by a second handle-receiving tube b^{15} .

The steering-shaft e , having the steering-handle e' , is extended through the tube b' , then through an ear d , composed of a hub and finger, (see Fig. 4,) said ear being splined on the said shaft e , the said shaft being also extended through the tube b^6 , its collar or head b^7 , and the collar a^4 of the yoke a^2 , where said shaft has applied to it a suitable washer or nut to fix it rigidly to the yoke a^2 .

In practice we may place any usual or suitable antifriction or roller bearings between the collars b^7 and a^4 .

The ear 2 of the yoke d has joined to it a rod 3, connected with a cross-arm 4 at the lower end of the auxiliary steering-shaft e^3 , having a handle e^4 , said auxiliary shaft e^3 being extended through the tube b^{15} in usual manner.

We may also place any usual or suitable roller-bearings between the yoke d and the ends of the tubes b' and b^6 .

On the tube b^3 we have mounted a brace 5, it constituting a second bearing for the shaft f^5 .

The tube b^3 contains suitable bearings for the crank-shaft g , having connected to its opposite ends suitable pedals g' , said shaft also being provided at one end with a sprocket-wheel g^2 , (shown by dotted lines in Fig. 2,) over which is extended a sprocket-chain g^3 , extended over a suitable sprocket-wheel g^4 , fast on the second crank-shaft g^5 , having suitable bearings in the tube b^4 , said second crank-shaft g^5 having usual or suitable pedals g^6 connected therewith, so that two riders sitting on the seats h and h' , suitably sustained in the tubes b^3 b^4 in usual manner, may, with their feet on the said pedals, apply their combined power to the rotation of the shaft. This shaft g also has fixed to it at or near one end a bevel-pinion m , which engages a bevel-pinion m' on the upper end of the shaft f^5 , said shaft having in turn at its lower end a second bevel-pinion m^2 , it in turn engaging a bevel-pinion m^3 , fast on the inner end of the propeller-shaft c .

If desired, the two rear pontoons A and B may be connected by a cross-board B^2 , of any suitable width, on which the riders may stand in order to get properly onto the velocipede.

From the foregoing description it will be readily seen that by turning the steering-shaft e the point or leading end of the pontoon may be turned readily to the right or left, according to the direction it is desired that the velocipede shall take in the water.

The pontoon C has joined to it at n two two-part links or connections $n' n^6$, suitably slotted at n^x and joined by set-screws n^3 . The ends of these two-part links are pivoted on pins n^2 , erected, respectively, on the pontoons A and B and on a pin n^4 (see dotted

lines) on the pontoon C, said pins being provided with screw-threads to receive nuts by which to fasten the links $n' n^6$ and enable them to constitute braces for the pontoon C.

When it is desired to remove the frame from the pontoons for shipment or packing, the bolts b^{14} , before described, will be removed and the nut taken off from the lower end of the steering-shaft e and the end of the tube b^{10} unfastened from the yoke a . This leaves the frame and the propeller-shaft free to be removed from the pontoons, and by loosening the nuts on the pins n^2 and the screw n^3 the links $n' n^6$ may be slid one on the other, and the pontoon C may be shoved back into the dotted-line position, Fig. 2, underneath the board B^2 , and then the said nuts may be again set, and by suitable lashings of rope or otherwise the pontoon C may be lashed to the board B^2 .

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a marine velocipede a series of pontoons, each having a yoke, combined with a velocipede-frame detachably mounted on said yokes, a seat on said frame, a crank-shaft having a bevel-gear, a propeller-shaft mounted in bearings carried by said frame and provided with a bevel-gear, an intermediate shaft f^5 , having two bevel-gears and interposed between the crank-shaft and the said propeller-shaft to rotate the same, a steering-shaft connected with the leading pontoon and a handle-bar located in front of the seat ready to be grasped by the hands, to operate substantially as described.

2. In a marine velocipede, a frame supported at its rear end upon two cigar-shaped pontoons to which the rear end of said frame is fixed, a third cigar-shaped pontoon located in front of the two rear pontoons and having a collar upon which the front end of said frame is loosely mounted to turn, a steering-shaft extended through the front tube of said frame and fixed to the yoke of the front pontoon, steering-handles connected with said steering-shaft, a propeller mounted in bearings of said frame, a crank-shaft, an intermediate shaft and gearing interposed between the gearing on the said crank-shaft, and the said propeller-shaft, to rotate the latter, substantially as and for the purpose set forth.

3. In a marine velocipede, three pontoons, each provided with a collar fixed to it at its upper side, a frame having a saddle-seat, a crank-shaft, bearings for a propeller-shaft, and collars b^7 , b^{13} , to rest on the collars fixed to the pontoons, means to hold the said collars together, and a steering-shaft and its handle-bar, the construction being substantially as described, whereby the frame and its propeller may be readily attached and detached with relation to the said pontoons.

4. In a marine velocipede, a series of pontoons, a detachable frame carrying the crank-

5 shaft, steering-shaft and propeller, and a series of links to connect the leading pontoon with the rearmost pontoons, whereby the leading pontoon may be readily braced from the rearmost pontoons, and the leading pontoon may when desired be capable of being slid back into position between the rear pontoons when the frame is removed, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JAMES F. GRADY.
MICHAEL HART.

Witnesses:

JOHN C. EDWARDS,
AUGUSTA E. DEAN.