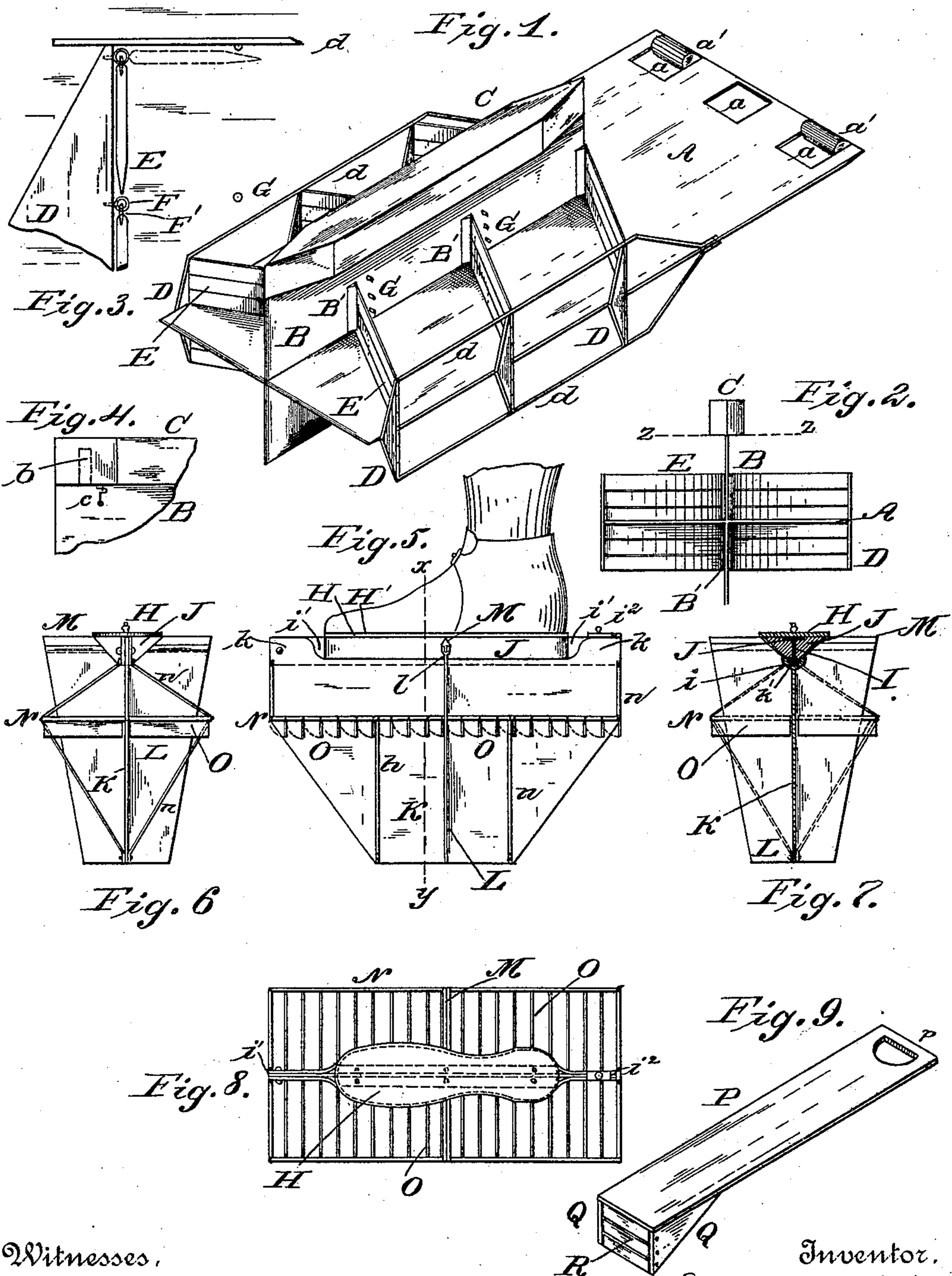


(No Model.)

E. P. JOHNSTON.
SWIMMING APPARATUS.

No. 397,059.

Patented Jan. 29, 1889.



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UNITED STATES PATENT OFFICE.

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SWIMMING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 397,059, dated January 29, 1889.

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To all whom it may concern:

Be it known that I, EDWARD P. JOHNSTON, a citizen of the United States, residing at Washington, in the District of Columbia, have
5 invented certain new and useful Improvements in Swimming Apparatus; 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 ap-
10 pertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specifica-
tion.

15 My invention relates to swimming appliances, and its object is to furnish means by the use of which children and ladies may safely learn the art of swimming, and also to enable persons who are already swimmers to
20 swim with greater speed and at the same time with greater ease.

My invention consists of one or more thin sections of suitable material provided with one or more series of movable hinged slats,
25 which present an opposing surface against the water when the appliance is moved in one direction, but permit the water to pass freely when moved in the opposite direction.

My invention also consists in certain other
30 details and arrangements of parts, as will be hereinafter clearly set forth, and particularly pointed out in the claims.

In the drawings, Figure 1 is a perspective view of the hand device. Fig. 2 is an end view thereof. Fig. 3 is an enlarged detail showing the mode of attachment of the slats. Fig. 4 shows the mode of attaching the float to the center-board. Fig. 5 is a side elevation of the device for the feet. Fig. 6 is an end view
40 thereof. Fig. 7 is a cross-section on line xy , Fig. 5. Fig. 8 is a plan of the same, and Fig. 9 is a modified form of hand device.

The same letters refer to similar parts in all the figures.

45 While the operating principle and in some respects the general construction of the hand and foot devices are the same, it will, however, be clearer to describe them separately.

For children and others to learn the art of
50 swimming a more simple and less expensive form for the hands may be used, as shown in

Fig. 9. The form shown by Figs. 1 and 2 is, however, the preferable one for adults, especially for strong persons. In these figures the base plate or section A is made either of wood 55 or indurated fiber or other suitable material, which should be strong and light, and, if necessary to prevent warping, should be strengthened by cross supporting-strips. The section A is provided at one end with one or more 60 hand-holes, a , in which may be inserted handles a' . This base-plate may be of any desired dimensions, but preferably about four feet in length and eighteen inches in width. A center-board, B, intersects it vertically, ex- 65 tending about an equal distance above and below it, extending also from the end opposite to the hand-holes about two-thirds of the distance toward them. Sufficient space needs to be left between the end of the center- 70 board and the hand-holes to prevent the center-board from striking the face of the person operating the device when it is drawn back to the end of a stroke. To the outer edges of the base-plate A are fastened one or more up- 75 rights, D, at right angles to the plane of the base-plate, and preferably projecting both above and below the base-plate. In the drawings these uprights are three in number on each side of the device. As shown, they are 80 braced by rods d , running along their ends and brought down to the base-plate at each end, as shown. On these uprights D are pivotally supported the slats E. These may be made of a material lighter than water and hinged at 85 their lower edges, thus swinging upward vertically to their places and opposing the water with their surfaces when the device is drawn backward. Preferably, however, I make them of a material slightly heavier than water, or, if 90 otherwise, I weight them with a metallic strip to make them so, and hinge them at their upper edges. Their weight will cause them to swing to a vertical position, thus opposing their surfaces against the water, except when 95 the device is moved forward. Their upper edges are preferably rounded and their lower edges beveled off to a fine edge, as shown in Fig. 3. A convenient way of attaching them to the uprights D is shown in this figure, con- 100 sisting of an eye, F, projecting from the upright and engaging with a staple, F', driven

into the upper edge of the slat. The inner ends of the slats are similarly supported on cleats B', secured to the center-board B. One or more slats may be used, and in the latter case they may be arranged in a series one above the other, so that when they hang vertically all of them are in the same plane.

It is preferred to arrange the slats at an acute angle with the center-board B, the inner ends of the slats being nearer the hand-holes than the outer ends. The purpose of this will be set forth below.

Stops G are inserted in the center-board B at the proper points to arrest the upward movement of the slats E when they have reached a position nearly parallel with the base-plate A.

If the slats E are elastic enough to require it, supports like the uprights D should be placed midway between the extremities of these slats for them to strike against.

For persons who can swim the device for the hands (shown by Figs. 1 and 2) should have about the same weight as an equal volume of water. For those who are learning to swim the device should be sufficiently buoyant to afford considerable sustaining aid to the user. Therefore a float, C, may be attached to the upper edge of the center-board B, either permanently or detachably, by means of hooks c or other fastenings, the center-board being preferably provided with a tongue or dowel, b, near each end, which enters a corresponding hole in the float C to prevent the latter from being displaced. The float C is made of wood or other light material, partly hollow, if much buoyancy is desired, and preferably covered with water-proof paint.

The operation of this device is as follows: When placed in the water, it will be submerged to the line Z Z in Fig. 2, or thereabout, the entire device, except this float, being under the surface of the water. The swimmer grasps the handles a' and pushes the device ahead of him through the water. This causes the slats E to swing upward against their stops G and allows the water to pass freely through between them, thus offering no obstruction to the movement of the device through the water. The swimmer then with a quick movement draws the device back toward him. The slats instantly begin to fall and the pressure of the water accelerates their return to a vertical position against the uprights D and the cleats B', thereby forming a flat surface perpendicular to the line of movement of the device and offering a great resistance to its being drawn through the water. The result is that the swimmer is rapidly pulled up to the device, which by reason of its great hold upon the water is moved backward but a small distance. The swimmer then pushes it forward again, and, repeating these movements again and again, the swimmer rapidly propels himself through the water with a comparatively small amount

of exertion, since the required movements are made by the use of the strongest muscles of the arms.

When the device is pulled back toward the swimmer, if the slats E are attached at right angles with the center-board B the water is forced directly backward against the swimmer, tending to impede his progress. This is obviated by attaching them at an angle, as shown, causing the water to flow outwardly to the right and left.

The handles a' are removable from the hand-holes a, and if it is desired to use the device with one hand one of the handles can be placed in the central hand-hole.

The device for the feet is shown in Figs. 5, 6, 7, and 8. A sole, H, is provided on its under side with a longitudinal metallic rib, I, securely fastened to the sole and having a rounded bead, i, along its lower edge. On each side of the rib is a filling-piece, J, fitting into the V-shaped space between the sole and the rib, as shown. The rib I extends beyond the toe and heel of the sole, as shown, being at these points, however, deprived of its bead i, and consisting simply of a thin blade, i'. Lying in the plane of the rib I is a center-board, K. The center-board K may be rigidly secured to the rib I, if desired, but is preferably secured detachably. At each end the center-board is provided with an upwardly-extending portion, k, composed of two plates side by side, with a space between them adapted to receive the flat blade i' of the rib I. At the front end of the device the plates k are pivoted to the blade i' by a rivet or bolt, as shown. At the rear end of the device the blade i' has a spring-bolt, i², which engages with an eye on the plates k and locks the center-board to the rib in the position in which it is shown in Fig. 5. That portion of the center-board that comes in contact with the bead i is provided with a pair of curved flanges, k', which closely embrace the bead, as illustrated in Fig. 7. Midway of the center-board and at right angles thereto is a plate, L, corresponding to the base-plate A of the hand device. This plate is rigidly fastened to the center-board, and has at its upper edge a grooved bead, l, which fits against the under side of a flanged cross-bar, M, extending from both sides of the rib I. At a convenient distance from the sole is arranged a frame, N, parallel therewith and intersecting the center-board and the plate L at right angles. This frame supports the hinged slats O, which are similar to the slats E in the hand device, and are arranged to close up against the under side of the frame N when it is pushed backward against the water. Suitable stops are provided to limit the movement of the slats O, similar to the stops in the hand device. The frame N is suitably supported by rods n, running to the center-board. The sole H is provided with straps or a shoe to fasten the device upon the foot of the swimmer.

The operation of the device is as follows: When the foot is drawn forward, the water swings the slats O into a position parallel with the line of motion of the device and passes freely through the frame. When the foot is pushed backward, however, the slats resume their closed position, presenting a flat unbroken opposing surface to the water in area equal to the dimensions of the frame N. When the swimmer desires to walk on the bottom or along the shore, he releases the spring-bolt i^2 and swings the lower part of the device up over the forward part of his foot, leaving the sole provided with its rib I, filling-pieces J, and cross-bar M for the swimmer to tread upon. The slats E and O are preferably made quite narrow, so that they will close instantly when the devices are moved against the water, thus preventing any lost motion. Though the center-board B and intersecting plate L may be dispensed with, they are preferably used in each device to prevent them from swerving from the right course when in motion, thus assisting the swimmer very materially in using the device.

A simple modification of the hand device is shown in Fig. 9, consisting of a board, P, having a hand-hole, p , at one end and at the other end two downwardly-depending flanges, Q, between which are pivoted one or more slats, R, similar to the slats E in Fig. 3.

It is evident that other modifications of form may be made without departing from the spirit of my invention.

I claim—

1. A swimming device consisting of one or more thin plates or sections provided with suitable supports rigidly attached thereto at right angles and one or more series of narrow thin slats hinged to the rearward face of the supports and having a different degree of specific gravity from water, and adapted thereby to be swung against the rearward face of the support and oppose their surfaces to the water when the device is pulled backward, and to swing into planes parallel to the line of movement of the device when it is pushed forward, substantially as set forth.

2. In a swimming device, the combination, with one or more thin plates or sections having hand-holes at the rearward end of one plate, and also provided with suitable supports rigidly attached to one or more of the plates at right angles thereto, of one or more series of narrow thin slats hinged to the rearward face of the support and having a different specific gravity from water, and adapted thereby to be swung against the rearward face of the supports, thus presenting their surfaces against the opposing water when the device is moved backward, and swinging into planes parallel with the line of movement of the device when it is pushed forward, substantially as set forth.

3. A swimming device consisting of two or more thin plates or sections intersecting at

right angles, a series of suitable supports attached to one or more of the plates, and one or more series of thin narrow slats having a greater specific gravity than water hinged at their upper edges to the rearward face of the supports, substantially as set forth.

4. A swimming device consisting of two or more thin intersecting plates or sections and provided with one or more series of narrow slats hinged to suitable supports on one or more of the plates and adapted to be brought into parallelism with one another or to be turned into line with one another by the action of the water when the device is moved forward or backward, substantially as set forth.

5. A swimming device consisting of a center-board, a plate intersecting the same at right angles and supporting a series of narrow slats hinged at one edge and in the same plane, and stops to limit the movement of the slats.

6. A swimming device consisting of the plate A, the center-board B, intersecting the plate at right angles, the float C, attached to the upper edge of the center-board, the uprights D, fastened to the outer edges of the plate A, and the series of narrow slats E, hinged upon the uprights D and upon cleats B', attached to the center-board B, substantially as and for the purpose set forth.

7. A swimming device consisting of the combination, with the plate A, having the hand-holes a , of the center-board B, intersecting the plate at right angles, the float C, detachably secured to the upper edge of the center-board B, the uprights D, attached to the outer edges of the plate A, the rods d , strengthening the uprights, and one or more series of narrow slats, E, hinged to the uprights D and to cleats B' on the center-board, substantially as set forth.

8. The combination, with the plate A and center-board B, of the cleats B', the uprights D, the slats E, hinged to the cleats and to the uprights, and the stops G, to limit the upward movement of the slats.

9. The combination, with the plate A and the center-board B, intersecting the same at right angles, of one or more series of slats, E, hinged to suitable supports on each side of the center-board, each series having its inner end nearer to the hand-holes than its outer end, substantially as set forth.

10. In a swimming device, the combination of two or more thin plates intersecting each other at right angles with one or more series of narrow hinged slats adapted to oppose their surfaces against the water when the device is moved backward and permitting the water to pass freely when it is moved forward, substantially as set forth.

11. In a swimming device, the combination, with one or more thin plates or sections constructed of suitable buoyant materials and provided with hand-holes at the rearward end,

of one or more series of hinged slats, as and for the purpose set forth.

12. In a swimming device, one or more thin plates or sections provided with one or more
5 hinged slats suitably supported thereon, in combination with a float secured to the upper edge of one of said plates and having its longitudinal axis parallel to the line of move-

ment of the device, substantially as and for the purpose set forth. 10

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

EDWARD P. JOHNSTON.

Witnesses:

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