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C. KNOBLOCH

WATER SHOE

Filed Feb. 5, 1924

Fig. 1.

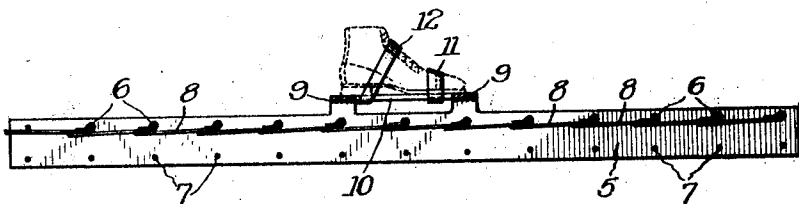


Fig. 2.

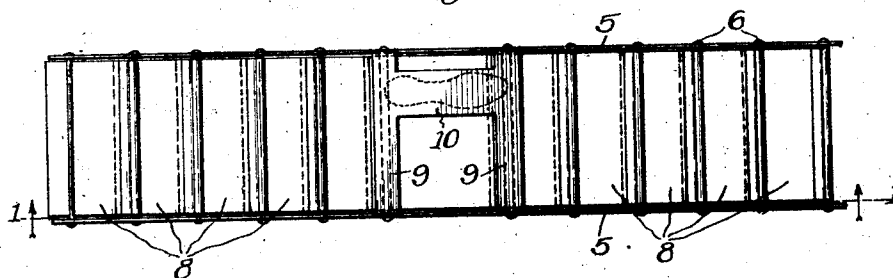
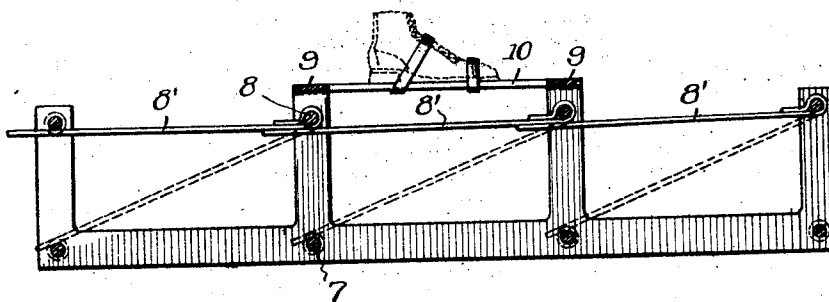


Fig. 3.



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WATER SHOE.

Application filed February 5, 1924. Serial No. 690,687.

To all whom it may concern:

Be it known that I, CARL KNOBLOCH, a citizen of the United States, residing at Madison, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Water Shoes, of which the following is a specification.

This invention relates to a device designed to facilitate the practice of an aquatic sport commonly known as treading water; and the principal object of the invention is to provide an improved water shoe of the type having hinged shutter valves mounted in a frame carrying a foot-rest, said valves opening under the upward movement of the shoe and closing in overlapping relation on the downward movement thereof, and to provide in association therewith means for limiting the extent of opening movement of the valves to prevent possible reversal of the latter, which limiting means shall also constitute elements of the shoe frame.

Still other objects, advantages and merits of the invention will be apparent from the following detailed description, taken in connection with the accompanying drawing in which I have illustrated in a very simple form, and somewhat diagrammatically, the broad principle underlying my invention, and wherein—

Fig. 1 is a vertical longitudinal section of my improved water shoe taken on the line 1—1 of Fig. 2;

Fig. 2 is a top plan view; and

Fig. 3 is a view similar to Fig. 1 showing a device embodying the same principle as that of Figs. 1 and 2 but employing a lesser number of valves of larger individual areas.

Referring to the drawing, 5 designates a pair of parallel thin metal plates or strips that are rigidly connected and spaced by upper and lower rows of tie-rods 6 and 7, respectively. Hinged on the upper tie-rods 6 are a series of shutter vanes 8 that, in the closed position indicated in Fig. 1, overlap each other thus presenting a practically closed continuous transverse surface, and in their open positions, wherein their free edges are arrested by the lower series of tie-rods 7 (as shown by dotted lines in Fig. 3), provide a corresponding series of inclined openings or passages between adjacent vanes. Supported upon and extending between the side frames 5, substantially mid-length of the latter, are a pair of cross strips 9 in turn

supporting a foot rest 10; this foot rest being preferably located nearer one side of the shoe than the other as shown in Fig. 2. By means of straps indicated at 11 and 12 in Fig. 1 or any other suitable or convenient fastening devices, the foot of the user, indicated by dotted lines in Fig. 1, may be securely attached on and to the foot rest 10.

When the user of the device, with one attached to each foot, proceeds to tread the water under an ordinary walking movement, the downward and forward pressure alternately exerted by the two feet instantly closes the shutter vanes 8, and afford substantial buoyancy. While one device is thus bearing up the weight of the user, slowly sinking through the water, the other is being rapidly drawn up through the water substantially to or above the surface, owing to the fact that its upward and forward movement causes the vanes 5 to instantly open, allowing ample free passage for the water between the vanes, so that the wearer, in raising the device is required to exert but slightly more muscular energy than is needed to overcome its gravity.

The device particularly facilitates what might be termed a forward walking movement on the water involving alternate downward and forward and upward and forward movements of the two feet; since, as above-noted, the combined downward and forward movement being substantially normal to the open position of the shutter valves (shown by dotted lines in Fig. 3) causes an instantaneous closing of the valves, and the upward and forward return movement instantly opens the valves, providing a flow passage between adjacent valves which is substantially parallel with the upward and forward movement of the device through the water as the foot is raised.

Fig. 3 represents merely a very simple form of the device employing a lesser number of valves 8' (three being shown) individually of greater size than those shown in Figs. 1 and 2; and otherwise identical with the form of the invention already described. This form of the invention is practicable but is not as steady and uniform in its action as the form employing a greater number of smaller valve shutters shown in Figs. 1 and 2.

The stops, such as the lower rods 7, for limiting the opening movement of the valve

shutters are, of course, important, since to insure the quick return of the shutters to closed position the instant downward pressure is applied, the extent of opening of the
5 shutters must be limited to about that indicated in the drawings, and in no event should exceed an angle of forty-five degrees.

10 By locating the foot rests nearer one side of the shoe than the other, the foot rests of right and left shoes may, when the shoes are applied to the feet, be sufficiently close to avoid the necessity of unduly spreading the feet of the wearer. Moreover, this
15 somewhat facilitates walking with a slight outward thrust of each foot as it descends,

thereby enabling the user to effectually brace himself against upsetting sidewise.

I claim—

A water shoe of the character described, 20 comprising a frame consisting of flat thin side frame members and upper and lower series of tie-rods rigidly connecting and spacing said side frame members, a foot rest on said frame, and a series of shutter 25 valves hinged on said upper series of tie-rods and overlapping each other when closed, said lower series of tie-rods also constituting stops to limit the opening movement of said shutter valves.

CARL KNOBLOCH.