Nov. 20, 1923 1,474,952

C. H. ALLEN ET AL

PERSONAL PROPELLING DEVICE

Filed May 31, 1922

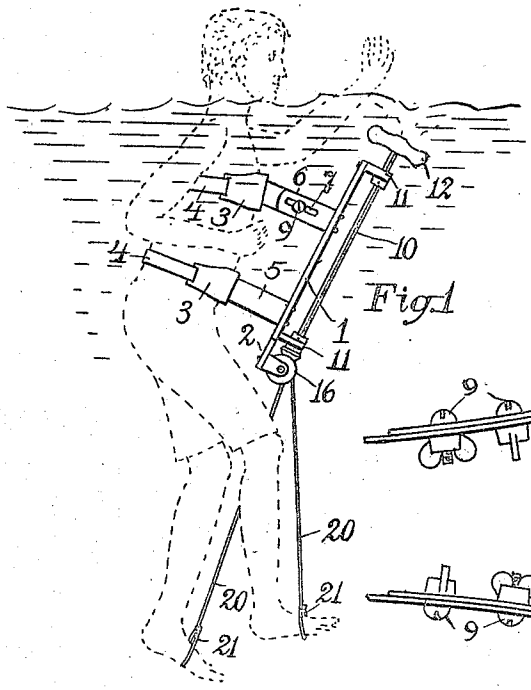


Fig. 1

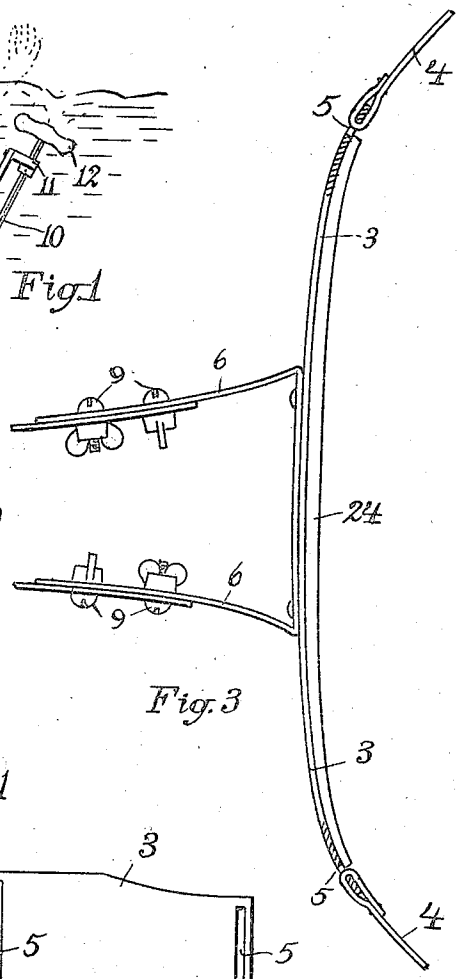


Fig. 3

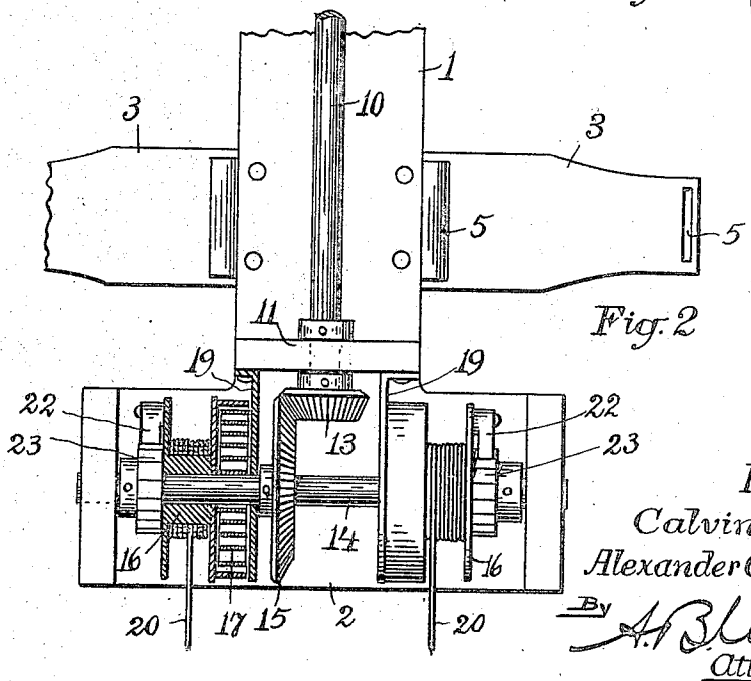


Fig. 2

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Patented Nov. 20, 1923. 1,474,952

UNITED STATES PATENT OFFICE.

CALVIN H. ALLEN, OF MATTAPAN, AND ALEXANDER C. HENDERSON, OF BROOKLINE, MASSACHUSETTS.

PERSONAL PROPELLING DEVICE.

Application filed May 31, 1922. Serial No. 564,863.

To all whom it may concern:

Be it known that we, CALVIN H. ALLEN, of Mattapan, in the county of Suffolk and Commonwealth of Massachusetts, and ALEXANDER C. HENDERSON, of Brookline, in the county of Norfolk and said Commonwealth, have invented certain new and useful Improvements in Personal Propelling Devices, of which the following is a full, clear, and exact specification.

The object of this invention is the effecting of improved means for enabling a swimmer, or other person in the water, to propel himself with increased speed, or to keep himself afloat therein; the same being preferably constructed in a manner to leave the hands and arms entirely free for other purposes whenever desired.

To this end, we provide a frame, which is adapted to be strapped to the user's body, with a screw propeller actuated by an up-and-down motion of his feet such as a swimmer uses in treading water, and by the movements of his feet in the act of swimming. In accomplishing this we prefer to mount the propeller upon the upper end of a vertical shaft, or one approximately parallel with the swimmer's body, which is rotatably supported by the frame, and gear to this shaft a short horizontal jack shaft bearing spring-returned drums connected with the jack shaft by pawls and ratchet wheels, and flexible links wound on these drums and attached to the user's feet, whereby as the feet are raised and lowered the drums and hence the remainder of the mechanisms are given the desired rotary motion, the parts being so disposed that the rotated propeller urges the water toward the person's feet.

In the drawings forming part of this specification, Fig. 1 is a side view of mechanism embodying our invention, showing the same attached to a person. Fig. 2 is an elevation on a larger scale of the lower part of the mechanism. Fig. 3 is a detail view of one of the attaching means.

The frame comprises a longitudinal section 1 and a shorter transversely disposed section 2 at its lower end, adapted to be strapped to the body of the user by means of arms 3 curved to fit the adjacent portions of the body, and straps 4 engaging slots 5 at the ends of the arms. These arms are joined to the frame member 1 by struts 5, 6, the uppermost one of which is made longitudinally adjustable, as by means of slots 7 and bolts 9, in order to give the shaft 10 different angles of adjustment.

The shaft 10 is rotatably supported in bearings 11, and has at its upper end a screw propeller 12, and at its lower end a small bevel gear 13. Below the shaft 10 is a jack shaft 14 having near its midlength a larger bevel gear 15 meshing with the gear 13. Upon this jack shaft are two drums 16 mounted loosely thereon and each connected with one extremity of a coiled spring 17 whose other end is attached to a disk 19 which is fastened to the frame.

Around each drum 16 is wound an end of a cord or other form of flexible link 20 whose other end has a loop 21 into which the user thrusts his foot. Pivoted to each drum is a pawl 22 adapted to engage a ratchet wheel 23 fastened upon the shaft 14.

The inner surface of each of the arms or yokes 3 is supplied with leather or fabric 24 for preventing any irritation to the skin of the user in case he is wearing no bathing suit or other garment.

In using this device, the straps 4 are buckled or otherwise tightened about the waist and chest substantially as illustrated in Fig. 1, the propeller 12 being uppermost and preferably below the level of his neck. He then thrusts his feet into the loops 21 and, if he desires to float in a substantially vertical position, he raises and lowers his feet as though in the act of treading water, thereby unwinding the cords 20 with the downward movements and rotating the propeller 12, while the upward movements permit the springs 17 to rewind the cords on the drums 16. The propeller blades being disposed for the purpose, their rotation forces the adjacent water downward and hence gives the mechanism and the connected person the buoyancy desired.

If the user of the device desires to swim, he throws his body into the attitude therefor, which brings the propeller shaft into a substantially horizontal position, and then works his legs in the usual manner combined with the proper action of his arms. In the usual method of swimming, the feet are advanced and retreated from the body in a manner to unwind and wind the cords 20,

thereby actuating the propeller and adding its propulsive effect to the swimmer's effort.

If the user does not know how to swim, he can remain in a nearly vertical position or in one somewhat inclined forward, and by elongating the strut 5 by means of its slots 7 and bolts 9, the propeller shaft can be further inclined in a manner to give a more pronounced propulsive effect by the propeller 12 to advance him along the water, while at the same time acting to hold his head above its surface.

By having the cords 20 acting upon spring-wound drums, it is not necessary for the feet of its user to move alternately, but they can act in any way simultaneously or otherwise, alternately as in treading water, or both moving in the same direction at the same time as in swimming, and the strokes of the feet can be shorter or longer.

What we claim is:

A personal propelling device comprising a screw propeller, a frame rotatably supporting the same, means for attaching said frame to the front portion of the body of the user, said means embracing two devices one of which is longitudinally adjustable toward and from the body for the purpose of varying the axial angle of said propeller, and means operated by movements of the user's feet for rotating said propeller.

In testimony that we claim the foregoing invention, we have hereunto set our hands this 27th day of May, 1922.

CALVIN H. ALLEN.
ALEXANDER C. HENDERSON.