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MACHINE FOR EFFECTING THE RAPID PROPULSION OF THE HUMAN BODY IN WATER.

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1,226,768. Patented May 22, 1917.

Fig. 1.

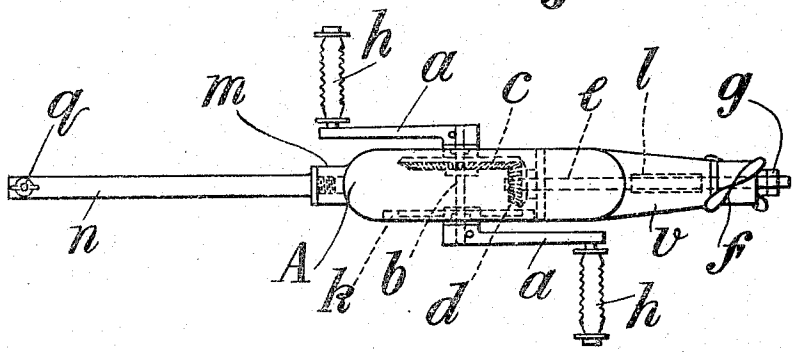


Fig. 2.

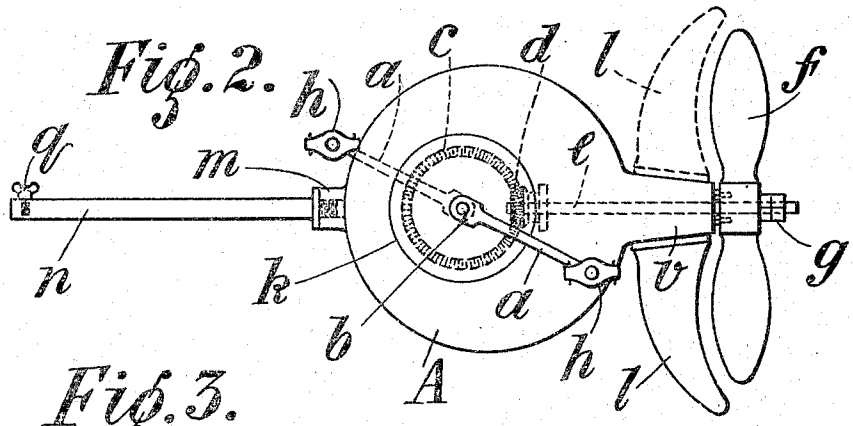


Fig. 3.

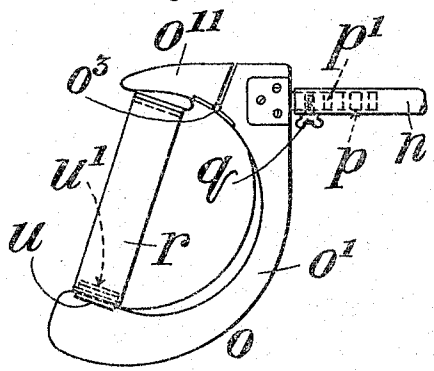
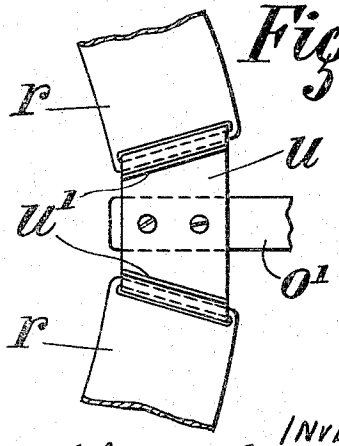


Fig. 4.



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MACHINE FOR EFFECTING THE RAPID PROPULSION OF THE HUMAN BODY IN WATER.

1,226,768. Specification of Letters Patent. Patented May 22, 1917.

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To all whom it may concern:

Be it known that I, THOMAS SMITH HARAN, a subject of the King of Great Britain, residing at Wishaw, Scotland, have invented a certain new and useful Machine for Effecting the Rapid Propulsion of the Human Body in Water, of which the following is a specification.

The object of the invention is to provide improved means for enabling a person to progress rapidly in water. The human body is singularly ill-adapted for this purpose and a very small percentage of the energy used in swimming is transformed into forward motion. Accordingly, it is desired to provide a simple machine by means of which the energy of the body will be utilized for propulsion to a much greater extent.

Many devices have been heretofore proposed to effect this object such devices usually consisting of a buoyant framework with pedal gear for driving a propeller, but these have not, to my knowledge, been successful as they did not meet the following requirements, viz:—simplicity, cheapness and durability of construction, a buoyancy such that the device would have no distinct tendency either to sink or to project above the surface of the water so that it could be driven either along the surface of the water or in any direction below it or be made to stand with the operator in an upright position thereby enabling him to recover without difficulty any position which may be temporarily lost.

The machine, as constructed under my invention, is characterized by a narrow casing which constitutes a gear box and in which the gearing for driving the propeller is inclosed the construction being such that water is excluded and the gearing thereby protected against corrosion as well as the interference of foreign bodies. This casing also acts as a float for the whole machine and for this purpose it contains an air space its buoyancy being such that the machine will have no distinct tendency either to sink below or to project above the surface of the water. The casing also serves the purpose of keeping the machine normally in the proper position in the water and its position with reference to the rest of the machine is so chosen that the center of gravity and the center of buoyancy of the machine coincide. The casing is, or may be, made circular with flat sides so that its passage through the water is facilitated and lateral oscillation is prevented or reduced. The propeller spindle is, or may be, carried through an extension at the rear of the casing while the propeller would be mounted upon the end of the spindle.

In order that the invention may be clearly understood I have hereunto appended an explanatory sheet of drawings whereon I have shown, by way of illustration or example, one mode of constructing the machine.

Figure 1 is a plan view of the machine.

Fig. 2 is a side elevation thereof.

Fig. 3 is a side elevation, and Fig. 4 a plan of a portable device to be used in connection with the machine.

The machine shown on the drawings comprises a narrow and floatable structure consisting of a gear box or casing A which is preferably of the circular shape shown, and within which is a driving gear comprising a crank shaft *b*, running in suitable bearings in the casing and having on it a bevel wheel *c* capable of driving a bevel pinion *d* at the inner end of a propeller shaft *e* on whose outer end there is a propeller *f* retained in position by means of nuts *g* or in any other suitable manner. The propeller shaft is inclosed in an extension *v* of the casing.

In the example shown the shaft *b* is operated by means of cranks *a*, *a*, with pedals *h*, *h*, the same as for an ordinary push bicycle. The person using the machine, when in the water, applies his feet to the pedals and rotates the shaft *b* in the same manner as with a bicycle and the multiplying gear *c*, *d*, puts the propeller *f* in rapid rotation.

The buoyant casing or box A is, of course, made watertight and constitutes an air chamber, its dimensions being such that the water displaced by it and the uninclosed parts of the machine is equal, as nearly as may be, to the weight of the machine, so that the machine will have no inherent tendency to sink below or project above the surface of the water. The casing further serves the purpose of keeping the machine normally in a horizontal plane, the position of the casing with reference to the rest of the machine being determined so that the center of gravity and the center of buoyancy of the machine coincide. It is made narrow to facilitate its passage through the water while its flat sides help to prevent lateral oscil-

lation. It is provided with a watertight door *k* which can be removed whenever the internal machinery requires attention. A fin *l* may be arranged to project downwardly from the rear part of the casing to act as a protector for the propeller and as means for assisting in the prevention of oscillation. A similarly upwardly projecting fin may also be used if desired, as indicated in dotted lines at Fig. 2.

The machine is fixed firmly to the body of the operator in order to give the necessary resistance or purchase and this may be done in the following manner.

At the front of the casing A there may be a boss *m* into which is screwed a metal tube *n*. A metal or wooden frame *o* is provided and is shaped to suit the body being provided with a saddle part o^1 which passes between the legs and a plate *u* with catches u^1. At the rear of this frame is a short projecting rod *p* having a number of circular holes p^1 therethrough, and the frame is attached to the machine by inserting the rod *p* telescopically into the end of the tube *n* and fixing it by passing a thumb screw *q*, on the tube *n*, into one or other of the holes p^1 according to the adjustment of the frame *o* requisite to suit the length of the operator's legs. The frame *o* is kept in position on the operator by means of straps *r* passed around the waist, the one end of each strap being secured to the catches u^1 of the plate *u*. The parts o^{11} may be hinged at o^3.

When in use the machine may be driven along the surface of the water or easily driven in any direction below the water, or be made to stand with the operator in an upright position and so as to enable him to recover without difficulty any position which may be temporarily lost.

The arms and hands are left free so that they can be used for changing position rapidly or for grasping any implement which the operator may desire to use.

Having now fully described my invention what I claim and desire to secure by Letters Patent is:—

1. A machine for effecting the rapid propulsion of the human body in water comprising, in combination, a hollow self-buoyant body of circular formation, a propeller shaft carried thereby, a propeller on said shaft, gearing within the hollow body for rotating said shaft and pedal means for driving said gear.

2. A machine for effecting the rapid propulsion of the human body in water comprising, in combination, a hollow self-buoyant body with rearward extension, a propeller shaft extending partly through the hollow body and partly through the extension and out at the end thereof, a propeller on said shaft, gearing within the hollow body for rotating said shaft and pedal means for driving said gear.

3. A machine for effecting the rapid propulsion of the human body in water comprising, in combination, a hollow self-buoyant body of circular formation with flattened sides, a propeller shaft carried thereby, a propeller on said shaft, gearing within the hollow body for rotating said shaft and pedal means for driving said gear.

4. A machine for effecting the rapid propulsion of the human body in water comprising, in combination, a hollow self-buoyant body with means at its forward end whereby it can be attached to a person in the water, a propeller shaft carried by the hollow body, a propeller on said shaft, gearing within the hollow body for rotating said shaft and pedal means for driving said gear.

5. A machine for effecting the rapid propulsion of the human body in water comprising, in combination, a self-floatable body constituted by a hollow chamber of circular formation, a propeller shaft carried thereby, a propeller on said shaft, gearing within the hollow body for rotating said shaft, pedal means for driving said gear and a water tight door for giving access to the interior of the hollow body.

6. A machine for effecting the rapid propulsion of the human body in water comprising, in combination, a hollow circular self-buoyant body with rearward extension, a propeller shaft extending partly through the hollow body and partly through the extension and out at the end thereof and means on the extension for protecting the propeller.

7. A machine for effecting the rapid propulsion of the human body in water comprising, in combination, a hollow circular self-buoyant body with rearward extension, a propeller shaft extending partly through the hollow body and partly through the extension and out at the end thereof and means on the extension for protecting the propeller and also preventing oscillation of the hollow body.

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

THOMAS SMITH HARAN.

Witnesses:
JOHN N. McCANN, Jr.,
MARGARET THOMLINSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."