No. 693,615. Patented Feb. 18, 1902.

F. MINKUS.

SWIMMING APPLIANCE.

(Application filed Sept. 12, 1900. Renewed June 25, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig: 1.

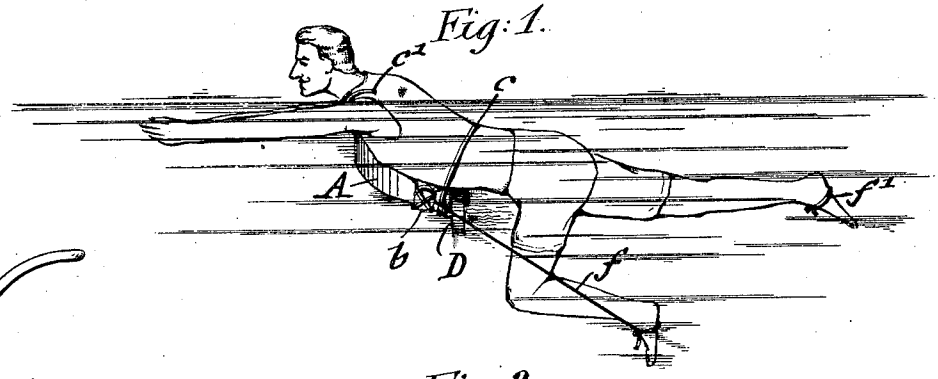


Fig: 2.

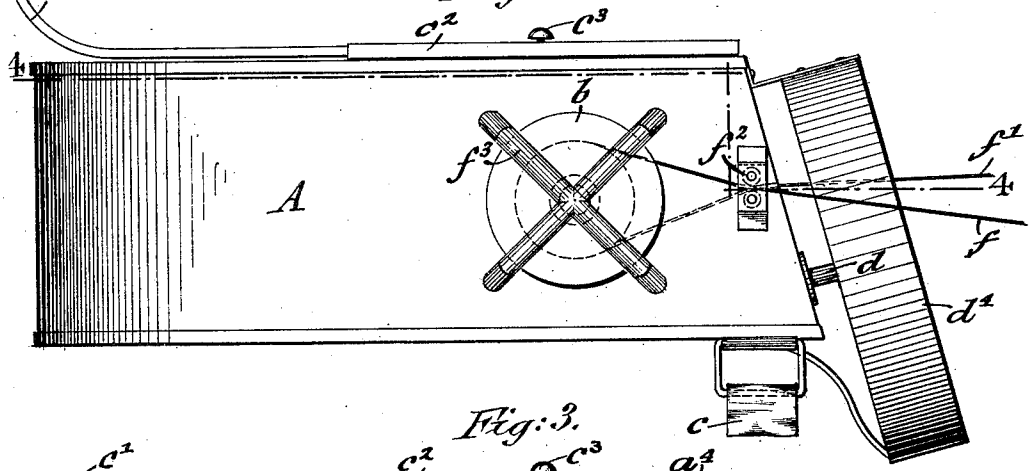
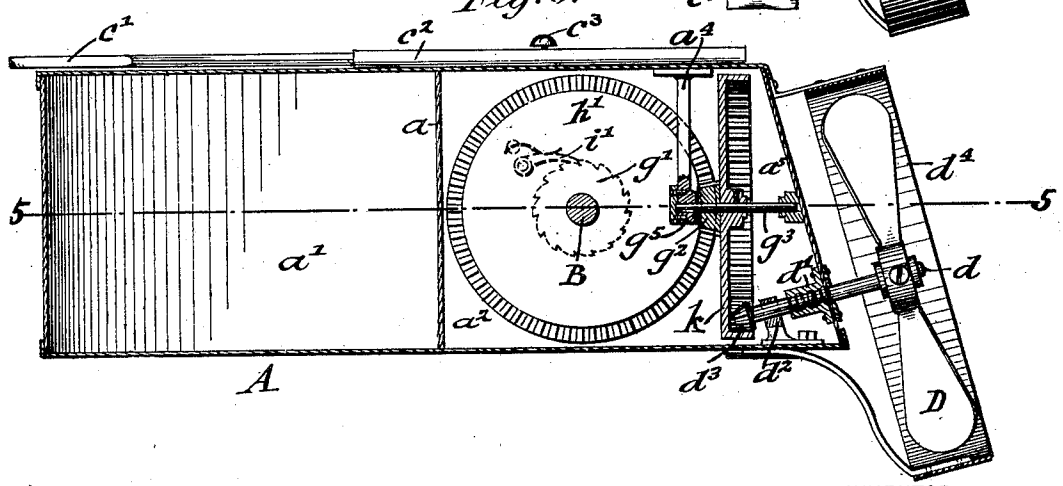


Fig: 3.



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Fig. 4.

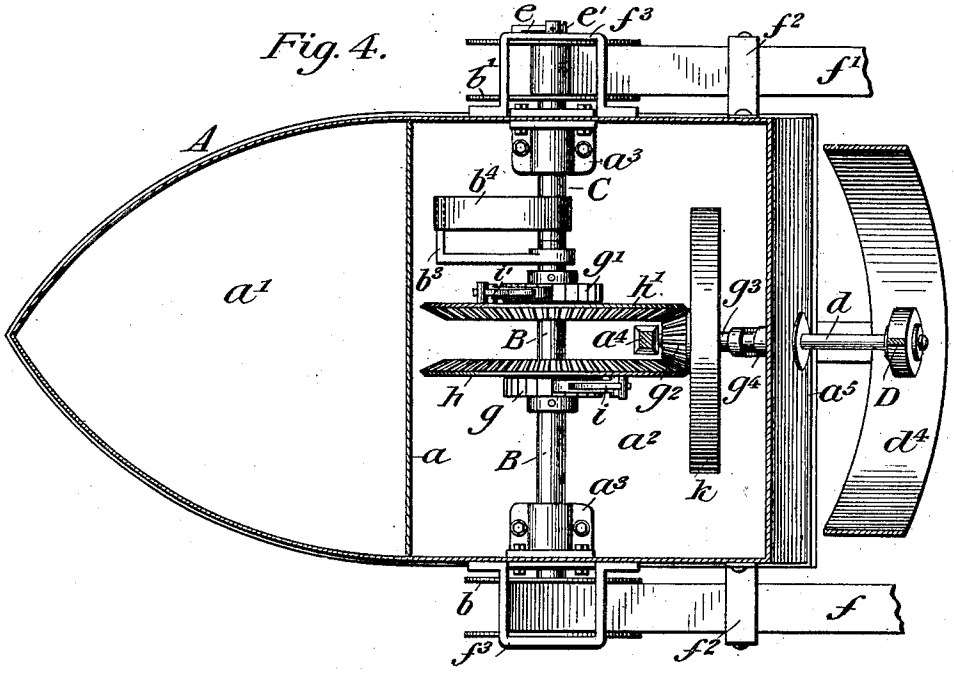
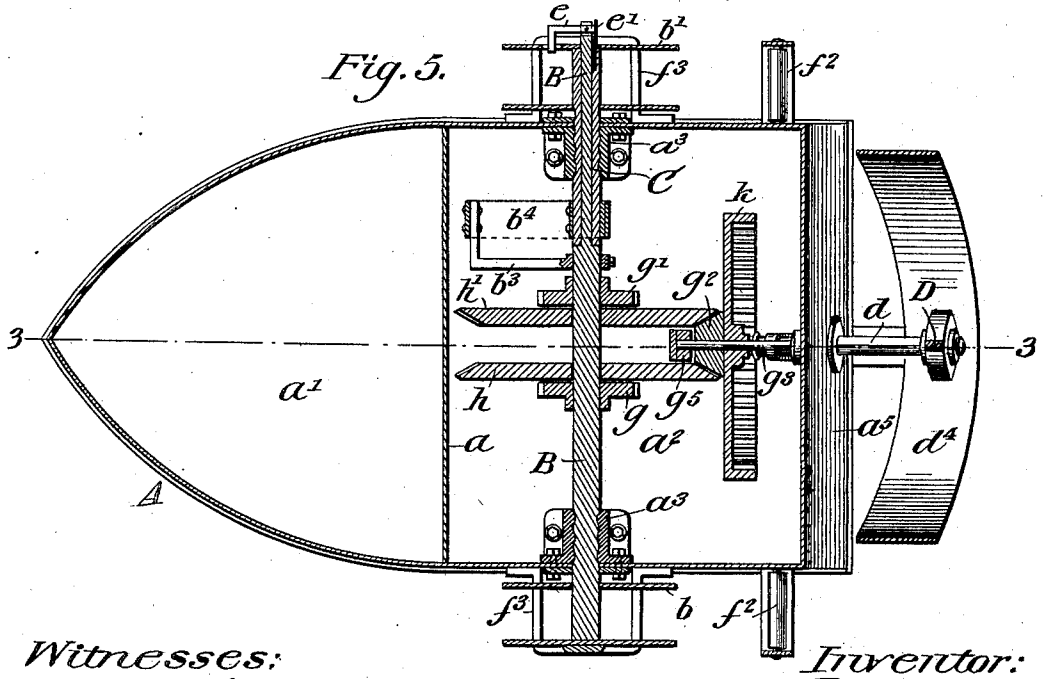


Fig. 5.



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UNITED STATES PATENT OFFICE.

FERDINAND MINKUS, OF NEW YORK, N. Y.

SWIMMING APPLIANCE.

SPECIFICATION forming part of Letters Patent No. 693,615, dated February 18, 1902.

Application filed September 12, 1900. Renewed June 25, 1901. Serial No. 65,995. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND MINKUS, a citizen of the United States, residing in the city of New York, borough of Bronx, in the State of New York, have invented certain new and useful Improvements in Swimming Appliances, of which the following is a specification.

This invention relates to devices intended for propelling or assisting in the propulsion of the human body through water; and the object of the invention is to provide a device of this kind which shall be self-sustaining in the water and by which the power of the swimmer may be very effectively exerted.

The invention consists in certain combinations of operative parts, which will be fully described hereinafter and finally claimed.

In the accompanying drawings, Figure 1 shows the appliance in use. Fig. 2 is a side elevation of the appliance. Fig. 3 is a vertical longitudinal section through the same on line 3 3, Fig. 5; and Figs. 4 and 5 are respectively horizontal sections on lines 4 4, Fig. 2, and 5 5, Fig. 3.

Similar letters of reference indicate corresponding parts.

A indicates the body of the appliance, which is preferably made of sheet metal and of the shape shown. It is divided into two compartments by a partition a, one of said compartments a' being permanently closed and water-tight, and this compartment is preferably made of such size as to render the entire apparatus buoyant, so that the appliance is self-sustaining and the weight of the same is not required to be supported by the swimmer.

B indicates a shaft supported in bearings a^3 in the side walls of the body A and extending through the other compartment a^2. To one projecting end of the shaft B is secured the pulley b, and to a sleeve C, which is loose upon the other end of the shaft, is applied a similar pulley b'. To the end of the shaft, beyond the pulley b', is pivoted a latch e, which is capable of being swung out of or into engagement with the pulley or spool b', thereby permitting movement of said pulley and sleeve relatively to the shaft B or preventing such movement. The latch is retained in either position by a spring e' or any other suitable means. The operating-straps f f' pass in opposite directions over the pulleys b b', respectively, and are guided between guide-rollers f^2. Guards f^3 are placed over the pulleys. Upon the shaft B, within the compartment a^2, are fixed two ratchet-wheels g g', having teeth arranged in opposite directions. Upon the shaft are loosely mounted two bevel-gears h h', carrying pawls i i', engaging, respectively, with the ratchet-wheels g g'. The two gear-wheels g g' are constantly in mesh with a bevel-pinion g^2, which is common to both and which is secured to a shaft g^3, supported at its ends in bearings g^4 g^5, the former being secured to the rear wall of the body A and the latter being located in the lower end of a bracket a^4, depending from the top of the body A. The propeller D is secured to the shaft d, which is journaled in a bearing d' of the rear wall a^5 and a bearing d^2, and is provided at its opposite end with a bevel-pinion d^3, which is in mesh with the internal gear k, secured to the shaft g^3. The propeller is protected by a guard d^4 of any suitable construction, secured to the body A in any suitable manner. The bearings a^3 a^3 and d' are corrugated, and the shaft B, sleeve C, and shaft d are correspondingly corrugated, as shown. This construction is preferred for the purpose of making the bearings water-tight, as it is preferable that the compartment a^2, as well as the compartment a', shall be water-tight, thereby adding to the buoyancy of the device. While it is intended that water shall be excluded from the compartment a^2, should the same fill from any cause the entire appliance will still be self-sustaining and remain buoyant, owing to the capacity of the compartment a'. To the shaft B is attached an arm b^3, to which is secured one end of a spring b^4, the other end of which is attached to the sleeve C.

The appliance is secured to the body of the swimmer by means of a strap c and shoulder-hooks c', adjustable in tubes c^2, secured to the body A in the manner shown, and the straps f f' are connected with the feet, one of the straps being wound up upon its pulley and the other extended. The latch e is placed in engagement with pulley b', so that the shaft B and sleeve C and pulleys thereon are immovable relatively to each other. The feet are now alternately withdrawn and struck out. As the straps are wound in opposite directions upon the pulleys, as indicated in Fig. 2, the unwinding of one causes the wind-

ing up of the other, and motion is imparted to the shaft alternately in opposite directions. By the ratchet-wheels, pawls, and gears described this motion alternately in opposite directions is converted into motion of the pinion g^2 in one direction, as will be readily seen, one of the ratchets engaging the pawl of its bevel-wheel upon motion of the shaft in one direction and the other ratchet engaging when the shaft is turned in the opposite direction, so that at each extension of either strap motion in the same direction is imparted to the propeller D. When upon reaching shore it is desired to stop swimming and to walk, it is necessary that both straps should be extended together, and for this purpose the latch e is disengaged from the pulley, thus permitting the swimmer to extend both feet and stand. This extension of both straps produces, however, the turning of the sleeve C relatively to the shaft B and the winding of the spring b^4. The latch is then reëngaged with the pulley, so that the tension of the spring is removed from the straps ff', and walking is permitted. Upon reëntering the water the latch is disengaged. The spring b^4 winds up one strap upon its pulley. The latch is then reëngaged, and the appliance is ready for use in swimming.

The ratchets and pawls are but one arrangement for engaging alternately the loosely-mounted gear-wheels h h', and any other suitable clutch mechanism which will engage opposite gears on movement of the shaft in opposite directions may be employed. In place of the internal gear a common gear-wheel externally toothed may be used, the direction of the blades of the propeller D in this case being reversed.

The position of the swimmer is not level, or, in other words, parallel with the surface of the water; but to obtain the most effective result it is necessary that the propeller D should be upon a shaft having this position, so as to propel the swimmer forward without upward thrust. For this purpose the shaft d is arranged at an angle to the body A of the appliance, said angle being approximately that of the swimmer in the water, as shown in the figures, so that a direct backward thrust is obtained.

For carrying the appliance the hooks c' are turned flat with the body A, as shown in Fig. 3. The thumb-screws c^3 serve for securing the hooks in any position in which they may be placed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A swimming appliance, consisting of a suitable body, a shaft passing therethrough, pulleys on said shaft, straps wound in opposite directions upon said pulleys, two bevel-gears loose upon said shaft, a clutch mechanism adapted to place the shaft in engagement with one of said gears on movement of the shaft in one direction, and with the other on movement of the shaft in the other direction, a common bevel-pinion with which both said gears are in mesh, a propeller, and means for transmitting the motion of said bevel-pinion to the propeller, substantially as set forth.

2. A swimming appliance, consisting of a suitable body, a shaft passing therethrough, pulleys on said shaft, straps wound in opposite directions upon said pulleys, two ratchet-wheels having teeth oppositely arranged secured to said shaft, two bevel-gears loose upon said shaft and carrying each a pawl engaging with one of said ratchet-wheels, a common bevel-pinion with which said bevel-gears are in mesh, a propeller, and means for transmitting the motion of said bevel-pinion to the propeller, substantially as set forth.

3. In a swimming appliance, a power-shaft, a sleeve rotatable on said shaft, a spring secured to said sleeve and shaft, pulleys, one on the shaft and one on the sleeve, operating-straps wound on said pulleys, and means for coupling said sleeve and shaft so as to render the same relatively immovable, substantially as set forth.

4. In a swimming appliance, a suitable body, means for securing the same to the swimmer, a propeller mounted on said body at an angle corresponding approximately to the angle of inclination of a swimmer in the water, power mechanism in said body for operating said propeller, and operating-straps connected with said power mechanism, substantially as set forth.

5. In a swimming appliance, a suitable body having two water-tight compartments of a capacity rendering the entire appliance buoyant, one of said compartments being permanently closed, power and propeller shafts extending through a wall of the other compartment, said shafts being corrugated at those portions adjacent to the walls of said compartment, and water-tight corrugated bearings in said walls for said shafts for rendering said compartment normally water-tight, substantially as set forth.

6. A swimming appliance, consisting of a body composed of two compartments, one permanently closed and of a capacity rendering the entire appliance buoyant, and suitable power mechanism in the other compartment, said compartment being provided with water-tight bearings for the shafts of said mechanism, substantially as set forth.

7. In a swimming appliance, the combination, with the body of the same, of a strap at the rear end of said body adapted to pass around the swimmer for securing the appliance thereto, and shoulder-hooks secured to said body, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

FERDINAND MINKUS.

Witnesses:

PAUL GOEPEL,

J. H. NILES.