

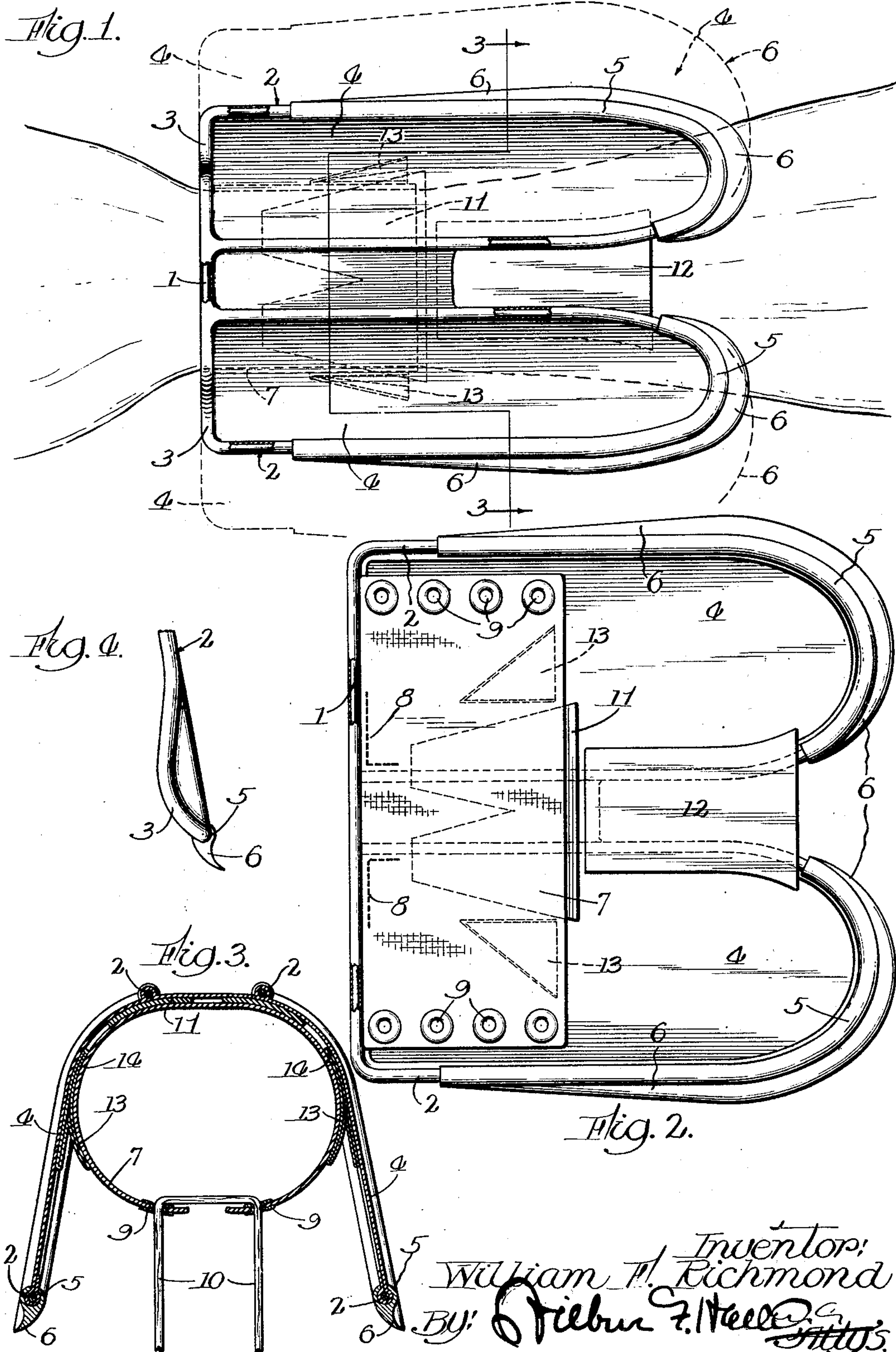
May 9, 1933.

W. F. RICHMOND

1,908,184

SWIMMING APPLIANCE

Filed May 23, 1932





## UNITED STATES PATENT OFFICE

WILLIAM F. RICHMOND, OF CHICAGO, ILLINOIS

## SWIMMING APPLIANCE

Application filed May 23, 1932. Serial No. 612,944.

This invention relates to improvements in swimming appliances having for an object to provide a device of the character mentioned, capable of ready and convenient attachment to the wrist or near fore portion of a user's arm, operable in such a manner, during the execution of swimming strokes to increase the proficiency of the swimmer user and also, to enable said user to traverse his swimming course at a greater speed than that attainable from the same physical effort were the swimmer not equipped with the appliance.

It is also an equally important object of the invention to provide a swimming appliance so constructed and positioned with relation to a user's arm or arms, that when an equipped arm is moved in a predetermined direction in the effecting of a propelling swimming stroke, the same will be caused to immediately and automatically move to an operative position and in so doing, afford material aid to the user in attaining a maximum of propulsion from the then executed swimming stroke with but a minimum of physical effort.

It is likewise an object of the invention to provide a device of the character stated which, during and throughout the return of a user's arms from executed swimming or propelling strokes to positions for execution of others, will be caused to automatically move to an inoperative or feathered position with respect to the equipped arm or arms, hence, avoiding resistance by the same to the water and allowing the user's arms to be carried through their respective return movements prior to initiating propelling strokes without adding burden to and by consequence prematurely tiring the swimmer.

Yet another object of the invention may be stated to reside in the provision of a swimming appliance, the construction of which is of strong and durable character, and furthermore, of such a simple nature as to permit its manufacture at a minimum cost.

Other objects of the invention will be in part obvious and in part pointed out hereinafter.

In order that the invention and its mode of operation may be readily understood by

those skilled in the art to which it appertains, I have in the accompanying drawings and in the detailed description based thereupon, set out one possible embodiment of my invention.

In this drawing:

Figure 1 is a top view of the improved appliance showing the same attached to the wrist of a user and showing the operative positions of the blade frames in dotted lines;

Figure 2 is a top plan view of the device in which the basal portion and the blade frames, together with the wrist attaching band have been illustrated in flattened positions whereby to show, more clearly, the construction and arrangement of the parts of the appliance;

Figure 3 is a vertical transverse section taken on the line 3—3 of Figure 1 looking in the direction in which the arrows point, and,

Figure 4 is a fragmentary detail in end elevation, looking toward the normally forward end of one side of the appliance, illustrating the curvature of the inner end portion of the blade frame and the arrangement of the water deflecting beading engaged about portions of each of the blade frame sides.

Having more particular reference to the drawing, in connection with which like characters of reference will designate corresponding parts throughout, the device consists of a body portion, preferably constructed of spring wire or its equivalent, made from a single piece of such material, which, as will be noted upon reference to the Figure 2 of the accompanying drawing, is bent upon itself to provide a basal part 1 and a pair of correspondingly formed juxtaposed loop-like or elongated blade frames 2. The basal part 1 has the intermediate portion thereof curved upon itself so as to substantially conform to the contour of the wrist or near forearm portion of a user's arm, while the opposite extremities of said part, together with the adjacent portions of the outer sides of the blade frames are curved or flared outwardly, as indicated at 3, the purpose of which will be subsequently described.

The blade frames 2 are tautly covered with a suitable material, such as sheet rubber, rub-



berized fabric or the like, indicated by the numeral 4, the marginal portions of which are molded or vulcanized over and about the side and end portions of the blade frames and the adjacent portions of the basal part 1, as is clearly shown in the Figure 1. It will be thus seen that the blade frames, together with their respective coverings 4, will provide the device with water engaging surfaces. Each of these blade frames 2 are provided upon their outer or free ends with a strip-like beading 5 of channel-like formation in order to permit of engagement over and about adjacent portions of said frames 2 and affixation thereto by molding or vulcanizing. It will be noted that not only are the beading strips 5 engaged over the normally outer or rearward ends of the frames 2 but also, that the strips each extend inwardly along the outer sides of their respective frames for portions of the lengths thereof. Each of the beadings is provided with a fin-like web 6. Each of the webs are curved upon themselves in outward directions so as to substantially correspond to the curvature and disposition of the portions 3 of the blade frames 2, and also, it will be noted that the webs 6 taper off along the respective outer sides of said frames. These webs, while not being rigid, do possess a certain degree of inherent stiffness which will prevent an excessive flexing of the same.

In order that the device may be effectually attached to the wrist of a user, it is provided with a wrist engaging band, preferably formed of inelastic material, such as rubberized heavy webbing or the like, indicated by the numeral 7. The band is fixedly connected, adjacent portions of its inner edge to corresponding portions of the basal part 1, as by molding or vulcanizing the same to said adjacent portions of the basal part or by stitching, as indicated at 8. To facilitate securing of the band about the wrist of a wearer, I preferably provide the opposite ends thereof with series of eyelets 9, through which a suitable lace 10 is adapted to be passed for drawing the band tightly about the user's wrist, whereupon it is secured in such engaged position by tying the free ends of the lace. Because of the manner in which the inner or normally forward end of the appliance is connected to the basal part 1, as heretofore referred to by the numeral 8, it will be understood that outward swinging movement of the spring wire blade frames with relation thereto, will be permitted at times. To limit this outward swinging movement of the blade frames 2 with respect to the wrist band 7 and a user's forearm, and also, to place each blade frame under spring tension or a normal urge toward inward movement, upon such outward swinging thereof, I provide an elastic checking or tethering device 11, as is shown in the Figure

2, arranging said device or element adjacent the outer side and intermediate portion of the wrist engaging band 7 and vulcanizing or otherwise fixedly connecting the side and normally inner marginal portions thereof to said band. The elastic element 11 is adapted to have straddling arrangement with respect to adjacent portions of the juxtaposed sides of the blade frames 2 and is molded or vulcanized to or about said adjacent portions of the frames whereby to effect positive connection therewith. Thus, it will be seen that upon outward swinging movement of the frames 2, to wit, movement of said frames in a pivotal manner away from the wrist attaching band 7, the elastic element 11 will be caused to stretch and by such stretching, will place the engaged portions of the frames 2 under tension, i. e., a normal inward urge or pull will be applied to said engaged portions of the blade frames 2 as they are moved in their outward swinging paths with respect to the user's forearm, and particularly, to those positions as shown by dotted lines in the Figure 1. Consequently upon this, it will be manifest that when the blade frames are disengaged from the water following the execution of a propelling swimming stroke, they will be caused to automatically return to their inoperative or feathered positions with respect to the user's arm, as is shown in full lines in the Figure 1.

To close the gap between those portions of the inner sides of the blade frames extending beyond the element 11 and to thereby afford a greater area of water engaging surface for the appliance; also, to prevent excessive spreading as between the blade frames when they move in their outward swinging positions, I attach an elongated piece of elastic material 12 to said frames, as shown in the Figure 2, vulcanizing or molding the same into fixed connection with the wire engaged portions of the coverings 4. In this way, not only is the appliance provided with a greater water engaging surface, but also, it will be understood that the free ends of the blade frames 2 will be permitted to move apart at those times when they are swung outwardly to the positions as shown in dotted lines in the Figure 1; furthermore, by reason of the elastic connection of the piece 12 with the frames, their return to their initial positions will be insured, during and following their respective movements to the aforesaid feathered positions.

To provide the appliance with additional water engaging surfaces, whereby to increase the traction efficiency thereof, with opening or outward swinging of the blade frames during and throughout the execution of propelling swinging strokes, I may, and preferably do provide said appliance with fin-like elements consisting of pieces of rubberized inelastic material 13. The rearward marginal



portions of each of these pieces 13 are obliquely disposed with respect to the longitudinal axis of each of the blade frames 2 and certain of their side portions are vulcanized or otherwise fixedly connected to adjacent portions of the normally outer side of the wrist engaging band 7, while other portions of the device are vulcanized or similarly connected to adjacent portions of the normally underside of the coverings 4 of the blade frames 2, as indicated by the numeral 14. Because of the disposition of the pieces 13 with respect to the wrist band and the blade frames, it will be understood that when the appliance is attached to the wrist of a user and is in that position as shown in the full lines in Figure 1, said pieces will be folded upon themselves so as to not interfere with the feathered arrangement of the blade frames. However, when the blade frames are swung to their operative positions, away from a user's forearm, as during the execution of a propelling swinging stroke, the outward swinging or spreading movement of said blades will be such that the pieces 13 will be caused to assume positions at substantially right angles with relation to the inner sides of the coverings 4 by reason of their spanning connection therewith and with the aforesaid portions of the wrist engaging band 7. By reason of this positioning of the pieces 13, it will be understood that pockets will be formed thereby adjacent the inner surfaces of the coverings 4 and that these pockets will serve as additional means for increasing the propelling efficiency of the appliance.

In usage of my improved swimming appliance, the same is placed upon a user's wrist, in the manner as is shown in the Figure 1. The wrist engaging band 7 is drawing snugly about the user's wrist by means of the lace 10, which is tied adjacent the normally inner or underside of the wrist. In this way, it will be seen that the appliance will be firmly or securely positioned in an embracing-like engagement over or about the wrist and forearm portion of the user, with the free or normally inner ends of the blade frames 2 in snug or juxtaposed relation to said users' forearm. When the user executes a propelling swimming stroke, it will be understood that the equipped arm will be drawn rearwardly and downwardly through the water. At the beginning of this propelling swimming stroke; that is, as the equipped arm is moved downwardly and rearwardly through the water, it will be seen that the engagement of the water under the normally inner ends of the blade frames 2 will be sufficient to cause an outward flexing or spreading of the same. The engaging of the water under the blade frames to effect this outward flexing or spreading is facilitated by reason of the curvature 3 of the blade frames and the basal part 1, together with the outwardly curved web por-

tions 6 of the strip-like beads 5. Consequently upon this spreading or outward flexing of the blades 2 from the basal part 1, a lifting efficiency will be imparted to the device, which will serve as a means for enabling the user to more effectually keep and maintain his body upon or near the surface of the body of water in which he is swimming. As the user draws his equipped arm rearwardly in a continuation of the propelling swimming stroke, it will be seen that the resistance of the water offered to the normally free or inner ends of the blades 2 will be such as to cause said blades to be swung outwardly with respect to the user's forearm, to positions at a substantially 45 degree angle, as illustrated in the dotted lines of the Figure 1. This outward swinging of the blades to the dotted line positions, obviously, provides an increased water engaging surface, and in so doing, enables the user to attain a maximum propelling efficiency from the executed stroke. As the propelling swimming stroke is completed, the user's equipped arm is now returned or moved forwardly to a position for execution of a following or another propelling stroke. Such forward movement, following the completion of a propelling stroke, obviously, removes the water resistance to the previously outwardly swung blades 2 and thereupon, the inherent resiliency of the wire constituting said blades and the inward pull imparted to the blades from the stretched elastic element 11 will cause said blades to immediately return to their normal or initial positions with respect to the user's arm, hence, providing for what may be aptly described as a feathering of the blades 2 upon their return stroke and thereby preventing that impedance to the forward propulsion of the user's body which would be encountered were the blades 2 permitted to remain in their outwardly swung positions or in substantially outwardly swung positions. Also, it will be understood that with the return movement of the user's arm from a propelling swimming stroke, the inherent resiliency of the wire constituting the basal part 1 will be such that this part, together with the adjacent portions of the blades 2 will be returned to their snug or embracing-like engagement with relation to the user's wrist, hence, preventing impedance or undue resistance to the efficient return of the arm.

Manifestly, the construction shown is capable of still further modification, and such modification as is within the scope of my claims, I consider to be within the spirit of my invention.

I claim:

1. A swimming appliance comprising blade-like spring bodies, a wrist attaching band connected to certain of the ends of said bodies in a manner to permit of swinging movement of the latter with respect to the band,



and yieldable means connected to a portion of the wrist attaching band and having tethering connections to portions of said bodies for placing the same under spring tension upon and during times of outward swinging movement of the bodies with respect to said band.

2. A swimming appliance, comprising a spring basal part adapted to have embracing engagement over and about the wrist of a user, spring blades carried by portions of said basal part and extending therefrom, a wrist attaching band connected to said basal part in a manner to permit of outward swinging movement of the blades with respect to that portion of a user's body to which the appliance is attached, at times, a spring means connected to said band and to portions of the blades for normally retaining said blades in juxtaposed relation to the user's arm and with outward swinging of the blades to the band and said user's arm, to impart an inward pull thereto whereby to cause automatic return of the blades to their normal positions following an outward swinging of the same.

3. A swimming appliance, comprising a wrist embracing spring basal portion, the opposite extremities of which are adapted to be extended beyond the wrist of a user, spring blades carried upon the opposite portions of said basal part adapted to be disposed co-incidentally with respect to the user's arm and to be normally arranged in an embracing-like engagement with respect to said arm, a wrist attaching band secured to said basal part in a manner to permit of outward swinging movement of the blades with respect to the band and with respect to the user's forearm, elastic means connected to the intermediate portion of one side of said band and having tethering connection to adjacent portions of said blades whereby to normally retain the blades in their embracing-like engagement with respect to the user's forearm and with outward swinging movement of said blades with respect to the user's arm, to cause their automatic return to said embracing-like engagement, and means upon certain of the marginal portions of said blades for causing the deflection of water engaged thereby to the undersides of the same in the execution of a propelling swimming stroke.

4. A swimming appliance comprising a body consisting of a piece of spring material, including a basal part curved to have snug embracing-like engagement with the wrist of a user's arm and the opposite sides thereof being fashioned into elongated complemental and juxtaposed loop-like frames, covering material engaged over each of said loop-like frames whereby to constitute water engaging blades adapted to be normally arranged in embracing-like engagement over and about an adjacent portion of the user's arm, water deflecting means upon certain of the mar-

ginal portions of said blades for causing water to be deflected to the under sides of the blades during the execution of a swimming stroke, a wrist attaching band connected to said basal part in a manner to permit, at times of outward swinging movement of said blades with respect to the band and the user's arm, spring means connected to a portion of the band and to adjacent portions of said blades operable, with outward swinging movement of said blades, to impart an inward pull thereto, whereby to return the blades to their normal positions with respect to the user's arm following a swimming stroke, and fin-like means connected to other portions of the wrist attaching band and to portions of the normally under sides of said blades, operable with outward swinging of the blades to provide water engaging means.

5. A swimming appliance, comprising a spring basal element, having the opposite extremities thereof outwardly curved, loop-like frames carried upon opposite portions of the basal element, co-incidentally disposed with respect to each other, coverings for each of said frames, an attaching band disposed transversely of and connected to portions of said loop-like frames, and yieldable means connected to portions of said attaching band and having tethering connections to portions of said loop-like frames for placing the same under spring urge upon and during times of outward swinging movement of the frames with respect to said band.

In witness whereof he has hereunto set his hand.

WILLIAM F. RICHMOND.