L. F. SNAPP.

SWIMMING APPLIANCE.

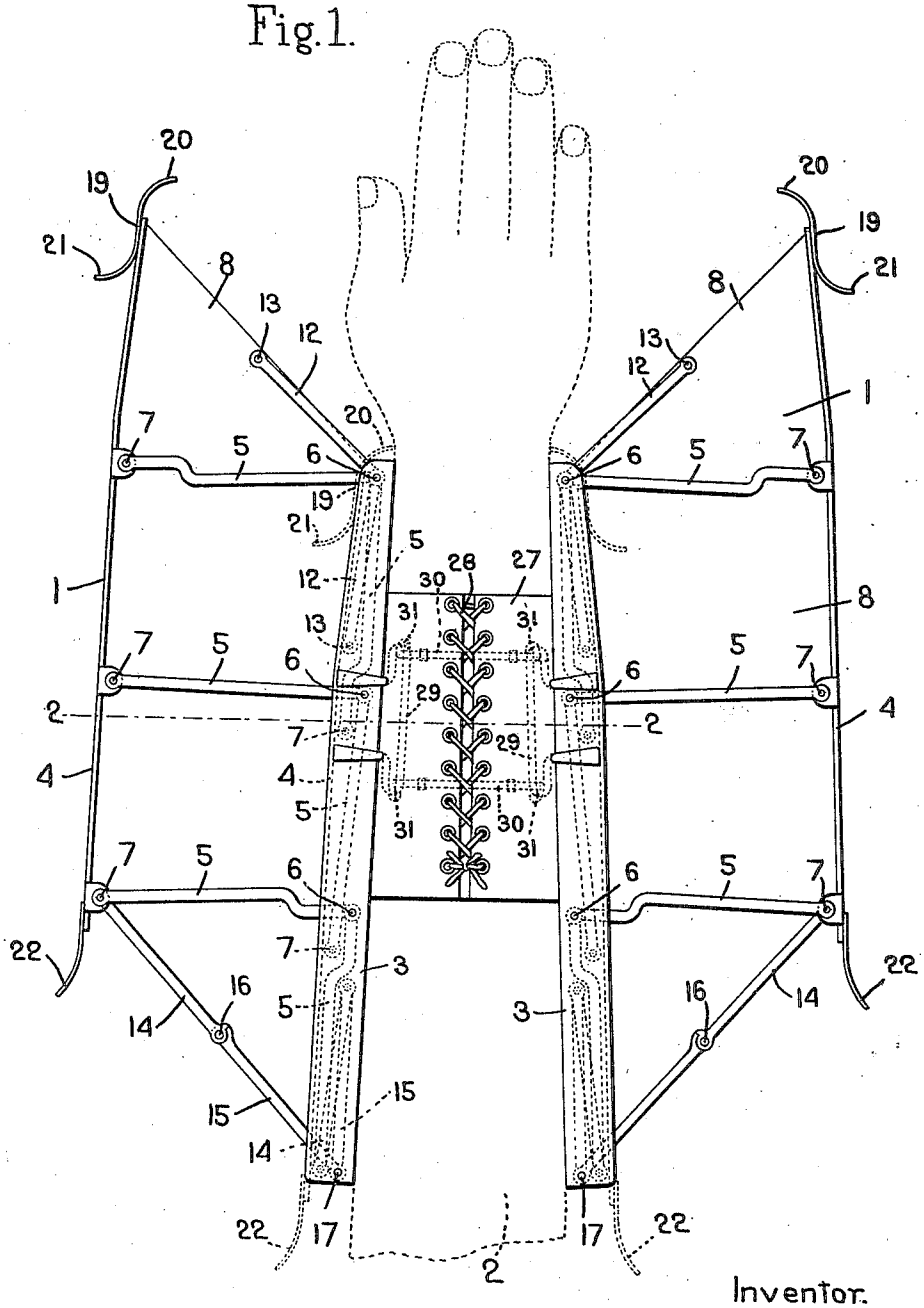
APPLICATION FILED NOV. 8, 1921.

1,430,600.

Patented Oct. 3, 1922.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig.2.

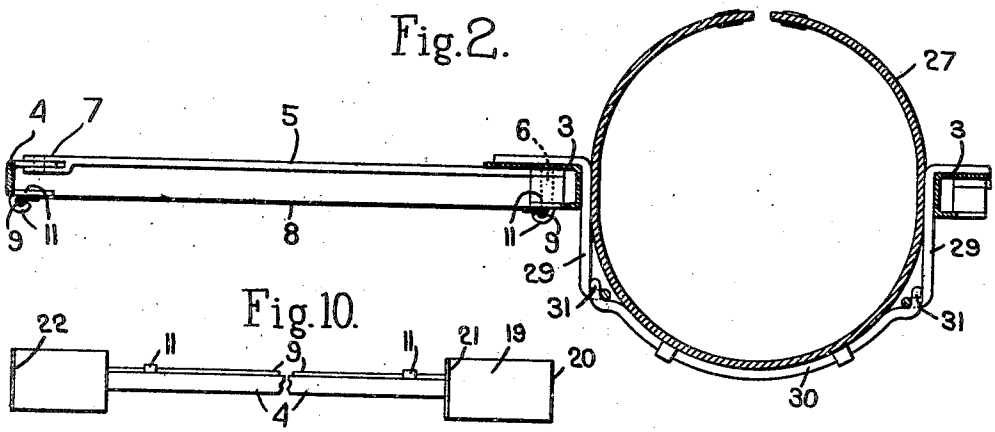


Fig.10.

Fig.3.

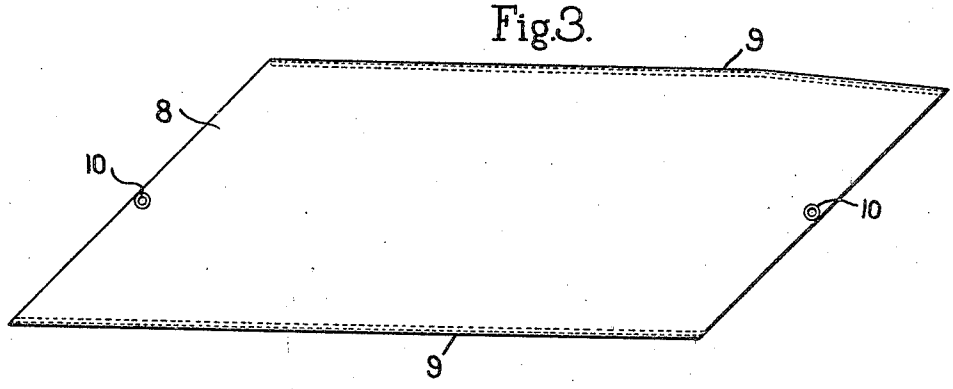


Fig.4.

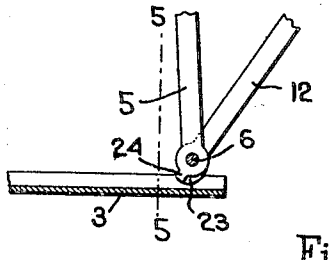


Fig.5.

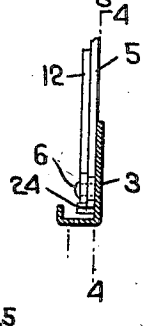


Fig.6.

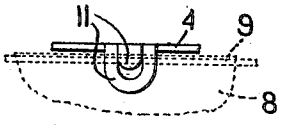


Fig.7.

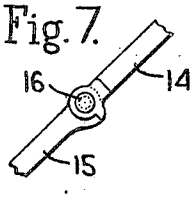


Fig.8.

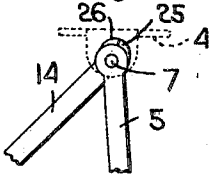
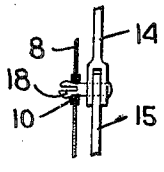


Fig.9.



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UNITED STATES PATENT OFFICE.

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SWIMMING APPLIANCE.

Application filed November 8, 1921. Serial No. 513,704.

To all whom it may concern:

Be it known that I, LEROY FLETCHER SNAPP, a citizen of the United States, and resident of Malden, county of Middlesex, State of Massachusetts, have invented an Improvement in Swimming Appliances, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to swimming appliances and has for its object to provide a novel swimming appliance comprising two wings adapted to be attached to the fore arm of a person and each arranged to occupy a plane extending longitudinally of the arm, said wings being foldable in the plane which they occupy and arranged so that when the swimmer moves his arm forward for the forward reach the wings will automatically fold while when he moves his arm backward for the propelling stroke the wings will automatically open out and thus afford resistance to the water.

Another object of the invention is to provide an improved swimming appliance of this type which is so constructed that when it is folded it occupies a position close to the fore arm directly back of the palm of the hand and does not increase the resistance to the movement of the arms forwardly through the water.

Another object of my invention is to provide an improved swimming appliance in which the web portion which provides the resistance surface is removable from the supporting frame so that if it becomes damaged it can be readily removed and a new one placed thereon.

Other objects of the invention are to improve generally swimming appliances of this sort all as will be more fully hereinafter set forth.

In order to give an understanding of the invention I have illustrated in the drawings a selected embodiment thereof which will now be described after which the novel features will be pointed out in the appended claims.

In the drawings:

Fig. 1 is a view of my improved swimming appliance showing it applied to the arm.

Fig. 2 is an enlarged section on the line 2—2, Fig. 1.

Fig. 3 is a view of the web portion removed.

Fig. 4 is a section on the line 4—4, Fig. 5.

Fig. 5 is a section on the line 5—5, Fig. 4.

Fig. 6 is a detail view showing the manner of attaching the web to the frame.

Fig. 7 is a detail view of one of the joints of the frame.

Fig. 8 is another detail view of the frame.

Fig. 9 is a view showing the manner of attaching the web to the frame.

Fig. 10 is a plan view of one of the wings.

My improved device comprises two wings indicated generally at 1 and adapted to be secured to opposite sides of the fore arm 2 of a swimmer, each wing occupying a plane extending longitudinally of the arm. Preferably the two wings will occupy the same plane but be situated on opposite sides of the fore arm. Each wing is foldable in the plane it occupies and is constructed so that when the swimmer moves his arms forwardly through the water for the forward reach the wings will be automatically folded against the fore arm thus reducing the resistance, while when the arm is given a backward propelling motion the wings will be opened out thereby giving a greatly increased resisting surface. Each wing comprises a foldable frame having a web attached thereto to form the resistance surface. Each frame comprises the two longitudinally-extending members 3 and 4 which are pivotally connected together by struts or braces 5 so that they may be opened away from each other, as shown in full lines Fig. 1 or may be folded together, as shown in dotted lines Fig. 1. The struts or braces 5 are pivoted to the longitudinal member 3 at 6 and to the longitudinal member 4 at 7. The web is indicated at 8 and it may be of any suitable sheet material which can be readily folded, such for instance as cloth or rubber. The web 8 is preferably rhomboidal in shape and is stiffened at its longitudinal edges by means of a suitable stiffening wire 9 which may be attached to the web in any suitable way. The web 8 is also provided with eyelets 10 at its ends.

This web is detachably attached to the folding frame, one stiffened edge of the web being secured to each of the longitudinal members of the frame.

The web may be attached to the frame in any suitable way without departing from the invention. Where the members 3 and 4 of the frame are made of sheet metal I may provide for attaching to the web to the

frame by striking up from the sheet metal pairs of ears 11. The ears of each pair being adapted to receive the reinforced edge 9 of the web between them as shown in Fig. 6. When the web has been inserted between the ears then one of the ears may be bent around the web slightly, as shown in Fig. 2, thus holding the web in place.

The frame is provided at one end with a single reinforcing arm 12 which is pivoted to the inner longitudinal member 3 of the frame at 6 and this arm 12 carries at its end a stud 13 adapted to enter one of the eyelets 10. At the other end of the frame the two members 3 and 4 are connected by a jointed link comprising the two parts 14 and 15 pivotally connected together at 16 by a knuckle joint which is straightened when the wing is opened out but which breaks inwardly when the frame is folded. The member 15 of this jointed brace is pivoted at 17 to the inner longitudinal member at 3. The pivotal connection 16 is preferably in the form of a stud having an expansible head 18 adapted to be inserted through the eyelet 10 as shown in Fig. 9.

The jointed braces 14 and 15 serve to hold the rear edge of the web taut when the wing is opened, and also serves to guide said edge into an exact fold when the wing is folded.

Means are provided for automatically folding each wing during the forward stroke and for opening the wing during the swimming stroke. For this purpose the outer member of each frame 4 has at its forward end a curved blade 19 having the inwardly-curved portion 20 at its forward end and the outwardly-curved portion 21 at its rear end. Said member 4 is also provided at its rear end with an outwardly-curved blade 22. When the wing is moved forwardly through the water or to the right in Figure 1, the resistance of the water against the outer face of the blades 20, 21 and 22 will create a force against the member 4 rearwardly in the direction of its length and this force will be sufficient to collapse the frame and fold the wing as shown in dotted lines Fig. 1. When the hand of the arm of the swimmer has reached its forward position it begins to move rearwardly for this propelling stroke when the resistance of the water against the blades 20, 21 and 22 will exert a force in the opposite direction or one tending to open the frame into the full line position.

With this device, therefore, the wings will automatically fold during the forward movement of the arms and will be automatically opened when the arms begin to move backwardly.

The brace 14, 15 is constructed so that the two parts will not be quite in line with each other when the wing is opened and therefore this element serves to brace the wing which does not prevent its automatically folding during the folding stroke.

It will be noted that the members 3 are secured to the fore arm directly back of the hand and the construction is such that when the wings are folded they lie closely against the fore arm and in the rear of the hand which is wider than the wrist so that the folded wings do not occupy any greater width than the hand and, therefore, they offer no resistance to the forward movement of the arm to the water.

I have provided herein a construction wherein when the frame is collapsed the arm 12 will be positively swung backwardly to a point where it will not interfere with the inward movement of the longitudinal member 4. Figs. 4 and 5 show a construction for this purpose. The brace 5 is provided with a lateral projection or finger 24 which is adapted to engage a shoulder 23 on the arm 12 so that when the brace 5 swings rearwardly during the folding of the frame the projection 24 will operate against the shoulder 23 and thus fold the arm 12. A similar construction is provided between the rear brace 5 and the member 14 of the jointed brace. In this construction said rear brace 5 has a projection 25 thereon adapted to engage the projection 26 on the section 14 so that when the brace 5 begins to swing backwardly during the folding operation the member 14 will be given a similar movement thus insuring that the jointed brace will be properly folded.

The device may be attached to the arm in any suitable way without departing from the invention. One way is herein shown wherein the device is secured to a cuff 27 which may be attached to the wrist or arm by a suitable lacing 28. The inner longitudinal member 3 of each wing is shown as having a wire loop 29 rigidly secured thereto either by being soldered or riveted thereto. The cuff 27 has a two-wire attaching member 30 secured thereto and these attaching members are fastened at their ends to the loop 29 as shown at 31. Any other suitable way of securing the parts to the wrist may be used, however, without departing from the invention.

I claim:

1. In a swimming appliance, the combination with two wings, of means to attach said wings to the fore arm of a swimmer, each wing occupying a plane extending longitudinally of the arm and being foldable in said plane.

2. In a swimming appliance, the combination with two wings, of means to attach said wings to the fore arm of a swimmer, each wing occupying a plane extending longitudinally of the arm and being foldable in said plane, and means

carried by each wing to cause it to fold during the forward movement of the arm and open out during the rearward movement thereof.

3. In a swimming appliance, the combination with two wings, of means for attaching said wings to the fore arms, each wing occupying a plane extending longitudinally of the arm, and comprising a frame foldable in said plane against the arm, and a flexible web secured to the frame.

4. In a swimming appliance, the combination with two wings, of means for attaching said wings to the fore arms, each wing occupying a plane extending longitudinally of the arm, and comprising a frame foldable in said plane against the arm, and a flexible web detachably secured to the frame.

5. In a swimming appliance comprising a wing adapted to be attached to the fore arm of a swimmer and occupying a plane extending longitudinally of the arm, said wing comprising a foldable frame formed of two longitudinal members and braces pivotally connecting said members, whereby they may be folded together or opened away from each other, and a sheet of flexible material detachably secured to the frame and constituting a resistance surface.

6. In a swimming appliance comprising a wing adapted to be attached to the fore arm of a swimmer and occupying a plane extending longitudinally of the arm, said wing comprising a foldable frame formed of two longitudinal members and braces pivotally connecting said members, whereby they may be folded together or opened away from each other, and a sheet of flexible material detachably secured to the frame and constituting a resistance surface, an outer longitudinal member of the frame having blades at each end constructed to cause the frame to fold when the wing is moved forwardly through the water and to be opened out when the wing is moved rearwardly through the water.

In testimony whereof, I have signed my name to this specification.

L. FLETCHER SNAPP.