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ADJUSTABLE HAND PLATES FOR THERAPEUTIC AQUATIC EXERCISES AND SWIMMING

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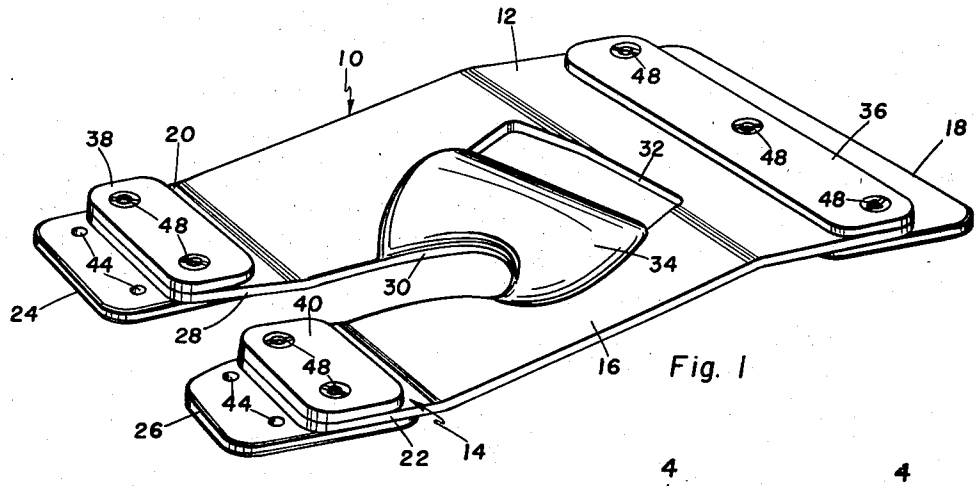


Fig. 1

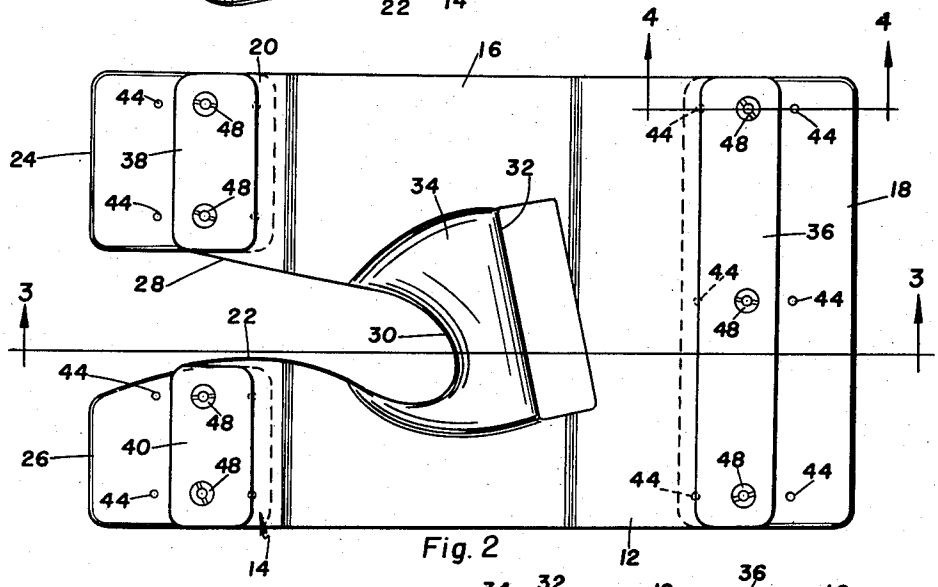


Fig. 2

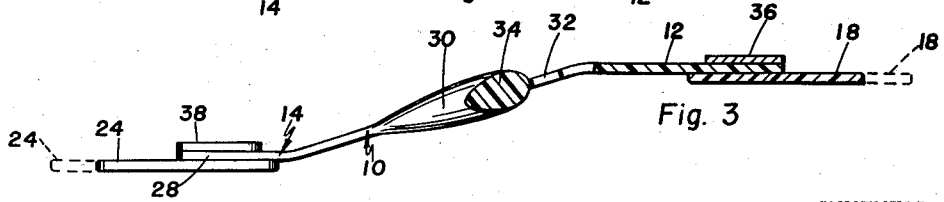


Fig. 3

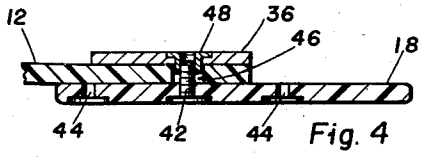


Fig. 4

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ADJUSTABLE HAND PLATES FOR THERAPEUTIC AQUATIC EXERCISES AND SWIMMING

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7 Claims. (Cl. 9—21)

The present invention relates generally to physical exercising apparatus and more particularly to hand plates for swimming and therapeutic aquatic exercises.

The primary object of this invention is to provide hand plates having considerable surface area and designed to be held comfortably in the hands for therapeutic aquatic exercises, the area of the plates being large so that the water offers a high resistance when the hands are moved in the prescribed strokes.

Another object of this invention is to provide hand plates which are perfectly adapted for use by swimmers, the hand plates having means for adjusting their surface area so that the aquatic resistance can be altered to suit particular requirements such as dictated by training needs or for attaining greater speed.

Another object of this invention is to provide hand plates having interchangeable ballast weights to allow further adjustment of the weight and consequent muscle developing properties of the device.

Another object of this invention is to provide hand plates which are particularly suited for therapeutic muscle training and development of the physically handicapped as well as athletes.

Another object of this invention is to provide hand plates which are adapted for fabrication from many different materials, so that the choice of material can be according to the dictates of availability and price considerations, the exact sizes and proportions being matters easily determined to suit particular conditions and needs.

Another object of this invention is to provide hand plates which are inexpensive and practicable to manufacture.

Finally, it is an object to provide hand plates of the aforementioned character which are simple and convenient to use, and which will give generally efficient and durable service.

With these and other objects definitely in view, this invention consists in the novel construction, combination and arrangement of elements and portions as will be hereinafter fully described in the specification, particularly pointed out in the claims and illustrated in the drawing which forms a material part of this disclosure and wherein similar characters of reference indicate similar or identical elements and portions throughout the specification and throughout the views of the drawing, and in which:

Fig. 1 is a perspective view of a hand plate, that shown being for use in the left hand.

Fig. 2 is a top plan view of the device.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged fragmentary sectional view taken on the line 4—4 of Fig. 2.

Referring now to the drawing in detail, the hand plate comprises a unitary generally rectangular plate **10** having a flat front end portion **12**, and a flat rear end portion **14** substantially parallel and offset relative thereto, said end portions being interconnected by a flat central portion **16** angularly disposed therebetween. Removably and adjustably attached to the front end portion **12** is a blade **18**. The rear end portion **14** is bifurcated to define ends **20** and **22**, to which are attached adjustable blades **24** and **26**, respectively.

The rear end portion **14** is bifurcated by the open end **28** of a thumb slot **30**, of distinctive shape, which extends forwardly from the extremity of the end portion **14** into the central portion **16**. Also in the central portion **16** and spaced forwardly of the end of the thumb slot **30** is a generally rectangular finger slot **32**, disposed at an acute angle relative to the ends of the plate **10**. The finger slot **32** is closed at both ends and extends transversely across the middle part of said central portion. The central portion **16**, between the thumb slot **30** and the finger slot **32**, is thickened to provide a hand grip **34**, which is shaped to be a comfortable fit in the hand and to eliminate all sharp edges. The front and rear end portions **12** and **14** of the hand plates and all other portions thereof are disposed substantially symmetrically with reference to the hand grip **34** to provide for effective balancing of the complete hand plate about the hand grip.

Attached to the front end portion **12** is a ballast weight **36**, while similar ballast weights **38** and **40** are attached to the ends **20** and **22**, respectively. These ballast weights are secured together with the blades **18**, **24** and **26**, by means of screws **42**, flush mounted in counterbored openings **44** in said blades, the screws extending upwardly through bores **46** in the plate **10** and being locked by gland nuts **48** projecting downwardly through said ballast weights, as shown in Fig. 4. The blades **18**, **24** and **26** are provided with several sets of counterbored openings **44** to permit longitudinal adjustment, so that the total surface area of the plate **10** and the blades may be varied, as shown in dotted line in Fig. 3. The ballast weights **36**, **38** and **40** may be removed entirely or in part if desired to alter the effective weight of the hand plates.

The hand plates are primarily for use in aquatic exercising for therapeutic purposes, either in swimming or in stationary exercises. Many physically handicapped patients are bathed or take some form of water treatment and, by using the hand plates described herein, may use the opportunity to develop the use of their muscles. By means of the adjustments provided the hand plates can be altered for the particular user, so that the water resistance and the weight are best suited to the user's physical condition, age and strength. Since muscular proficiency increases with progressive exercises and since there is normally a simultaneous increase in effort expended as well as in the adjusted area and weight of the plates, there is what is called a double progressive effect attained in their employment. The hand plates may also be used purely for exercising to develop muscles for swimming, or may be used as swimming aids, the thrust developed being far in excess of that possible with the hands alone.

It has been found that the particular arrangement of the thumb slot **30** and finger slot **32**, together with the shaped hand grip **34**, provides a very comfortable holding means for the hand plates. However, the general shape and disposition of the hand receiving elements is critical but may be altered somewhat to suit particular needs. Likewise, the angular disposition of the end portions **12** and **14**, relative to the central portion **16** is important and it has been found that results are most favorable with said end portions angulated at approximately twelve degrees from the central portion. This angulation and offset relation allows the ends **20** and **22** to fit under the wrist so that the hand and arm are in a comfortable position with the hand plate held for maximum thrust or resistance. The axis of the hand grip **34** is at an angle of approximately eighteen degrees relative to the longitudinal axis of the hand plate, to correspond with the natural

angular disposition of the hand grip relative to the forearm, for maximum comfort and efficiency.

Various types of screw fastenings may be used to secure the portions of the device together, although the flush type shown are preferable. The plates 10 and blades 18, 24 and 26 may be made from any suitable material such as natural or synthetic rubber, metal, plastic, or the like, while the ballast weights 36, 38 and 40 are of suitably heavy material such as lead.

The operation of this invention will be clearly comprehended from a consideration of the foregoing description of the mechanical details thereof, taken in connection with the drawing and the above recited objects. It will be obvious that all said objects are amply achieved by this invention.

Further description would appear to be unnecessary.

It is understood that minor variation from the form of the invention disclosed herein may be made without departure from the spirit and scope of the invention and the specification and drawing are to be considered as merely illustrative rather than limiting.

I claim:

1. A hand plate for swimming and aquatic exercise, comprising a plate having hand receiving openings therein, and generally flat blades adjustably and removably secured to the opposite ends of said plate so that the effective area of the hand plate can be adjusted.

2. A hand plate for swimming and aquatic exercise, comprising a plate having hand receiving openings therein, and generally flat blades adjustably and removably secured to the ends of said plate so that the effective area of the hand plate can be adjusted, and ballast weights removably secured to said plate adjacent said blades.

3. A hand plate for swimming and aquatic exercise, comprising a generally rectangular plate having hand receiving openings therein, the forward and rear end portions of said plate when disposed in operative position as on a forwardly outstretched hand being substantially parallel and being angularly disposed relative to the intermediate portion of the plate.

4. A hand plate for swimming and aquatic exercise, comprising a generally rectangular plate having hand receiving openings therein, the end portions of said plate being disposed at a small acute angle relative to the intermediate portion thereof, generally flat blades removably and adjustably secured to said end portions, and ballast weights removably secured to said ends adjacent said blades.

5. A hand plate for swimming and aquatic exercise, comprising a generally rectangular plate having an intermediate portion and end portion disposed at a small acute angle relative thereto, an opening in said intermediate portion dimensioned to receive all the fingers of a swimmer's hand grasping the hand plate, a slot dimensioned to receive the thumb only of a swimmer's hand, said slot having a closed end adjacent said openings and said slot having an open end bifurcating one of said end portions, and a thickened hand grip portion between said opening and said slot.

6. A hand plate for swimming and aquatic exercise, comprising a generally rectangular plate having an intermediate portion and end portions disposed at an angle of approximately twelve degree relative to the intermediate portion, an elongated finger receiving opening in said intermediate portion and disposed substantially transversely thereof, a thumb receiving slot extending substantially longitudinally into said intermediate portion and having a closed end adjacent said opening, said slot having an open end extending through and bifurcating one of said end portions, a thickened hand grip portion between said opening and said slot and extending at an angle of approximately eighteen degrees relative to the longitudinal axis of the hand plate, generally flat blades removably and adjustably secured to said end portions, and ballast weights removably secured to said end portions.

7. A hand plate for swimming and aquatic exercise, comprising a generally rectangular plate having hand receiving openings therein, the forward and rear end portions of said plate when disposed in operative position as on a forwardly outstretched hand being substantially parallel and being angularly disposed relative to the intermediate portion of the plate, said openings including a thumb slot extending from adjacent the center of said intermediate portion rearwardly through the rear end portion, a hand grip constituting a thickened portion immediately in front of said thumb slot, and a finger slot immediately in front of said thickened portion, said intermediate portion being substantially flat aside from said thickened portion, and said end portions also being substantially flat.

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