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FOOT ATTACHMENT FOR FACILITATING SWIMMING

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Fig. 1.

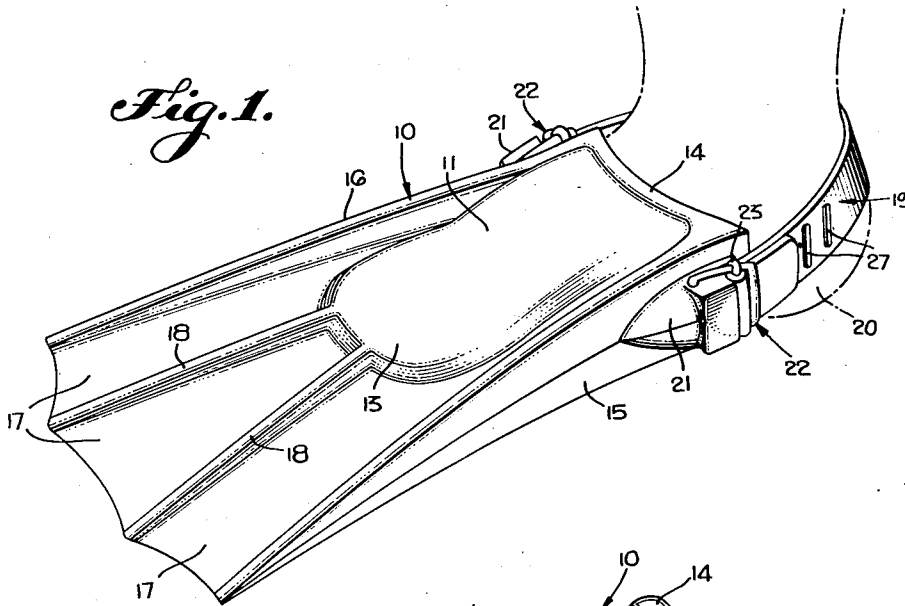


Fig. 2.

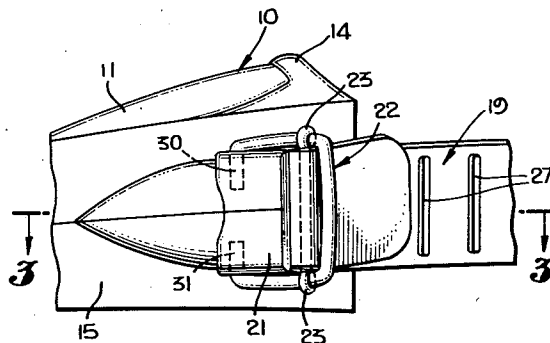


Fig. 3.

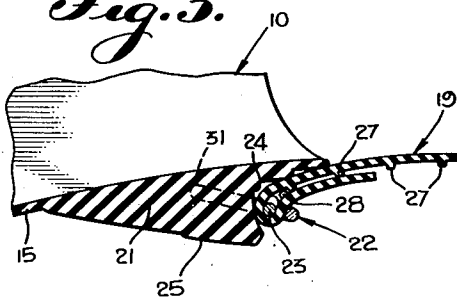
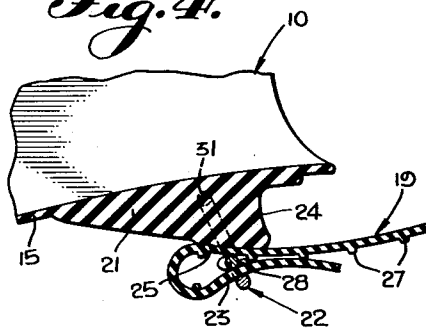


Fig. 4.



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FOOT ATTACHMENT FOR FACILITATING SWIMMING

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2 Claims. (Cl. 24—191)

This invention relates to athletic equipment, and more particularly to devices adapted to be worn on the feet of a swimmer in order to increase swimming efficiency.

Devices of this general character have been used for a considerable period of time, and their value appreciated. It is one object of this invention to improve, in general, such devices.

The most satisfactory types of such devices are those made from flexible material such as molded rubber or the like, and in which the main body portion thereof is provided a recess into which the foot of the user is inserted, the walls of the recess extending at least substantially over the metatarsal area of the foot. Furthermore, a strap terminating in opposite sides of the main body portion is adapted to slip over the heel of the user and thereby secure the device. The effectiveness of such straps depends upon how high tightly it engages above the heel of the user. Yet the strap must not be so tight as to cramp the foot or otherwise produce discomfort. It is another object of this invention to provide a device of this character that without producing discomfort, may properly be secured to the foot of the wearer, insuring against accidental dislodgment. For this purpose, a strap is provided that is highly resilient, strong, yet small in thickness, such that it may closely conform to the shape of the foot of the wearer.

Customarily, such devices have been manufactured as a single piece, the strap merely being a continuation of the main body portion. While such construction may have the attribute of strength, it is accompanied by the disadvantage that different sizes must be provided for different users.

It is still another object of this invention to obviate these disadvantages; specifically it is an object of this invention to provide a device of this character that can be adjusted to suit the requirements of the user. For this purpose, an adjustable strap, and novel securing means therefor, are provided, the strap preferably being separate from the main body portion of the device.

It is still another object of this invention to provide novel securing means for an adjustable strap in a device of this character such that, once being adjusted, it is insured that the strap will not deviate from such adjusted position. For this purpose a special resilient locking arrangement is provided between the main body portion and the strap, and the strap itself may be furthermore provided with means for limiting movement out of adjusted position.

It is still another object of this invention to provide adjustable securing means for a heel strap in such a device wherein adjustment of the length of the strap may be easily effected by simple manipulations.

This invention possesses many other advantages, and has other objects which may be made more clearly apparent from a consideration of one embodiment of the invention. For this purpose there is shown a form in the drawings accompanying and forming part of the present specification. The form will now be described in detail,

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illustrating the general principles of the invention; but it is to be understood that this detailed description is not to be taken in a limiting sense, since the scope of this invention is best defined by the appended claims.

Referring to the drawings:

Figure 1 is a pictorial view of a device embodying this invention, the device being shown as accommodated on the foot of the wearer;

Fig. 2 is a fragmentary elevation of the side portion of the device, particularly illustrating the improved securing means;

Fig. 3 is a sectional view taken along the plane indicated by line 3—3 of Fig. 2; and

Fig. 4 is a view similar to Fig. 3 illustrating how the device may be adjusted.

The device comprises a main body portion 10 which may preferably be made of a single piece molded resilient plastic such as rubber. The body portion 10 is generally of hollow wedge shape, having at one end thereof a top wall 11 and a corresponding bottom wall, as well as side walls, together defining a space adapted to circumscribe a substantial portion of the foot of the user. As illustrated in Fig. 1, the top wall 11 extends from a toe portion 13 to a beaded edge 14, extending beyond the metatarsal area of the foot. Tapered side portions 15 and 16 are of substantial thickness on opposite sides of the pocket and determine a spaced relationship between the top and bottom walls. Webbing 17 is provided between spaced integral reinforcing ribs 18 and the tapered side portions 15 and 16. This webbing 17 adjoins the toe portion 13 and forms a flat fin-like extension for the foot.

The configuration of the main body portion 10 may take any desired form. The device here illustrated, however, can be used either for the right or left foot of the user. Other forms may be provided, however, since the actual shape of this main body portion forms no part of the present invention.

A separate strap 19 is secured to the main body portion 10 at the tapered side portions 15 and 16, respectively. The strap 19 may be of highly resilient character and may be made of rubber.

After the foot is inserted into the pocket, the strap 19 may be slipped over the heel 20 of the user for resiliently maintaining the device on the foot.

A pair of lugs or projections 21 are respectively integrally formed on the side walls 15 and 16. These lugs serve to mount the means for securing the strap 19 to the main body portion 10, as well as to prevent the securing means from being dislodged. Each of the lugs 21 has a substantially flat shoulder 24 that extends laterally from the side portions 15 and 16, and faces rearwardly toward the heel 20. These shoulders are spaced slightly forward of the edge 14.

Buckles 22, cooperable with the strap 19, are adapted to be pivotally mounted on each lug 21. This buckle 22 is generally of rectangular frame configuration. One side of the frame is formed inwardly turned ends 30 and 31 extending into recesses formed in the opposite sides of the lug 21. These ends 30 and 31 pivotally mount the buckle 22. The buckle 22 is adjustable about its pivotal mounting between the position illustrated in Fig. 3 and the position illustrated in Fig. 4.

The buckle 22 carries a sliding cross bar 23 mounted on opposite parallel portions thereof. The strap 19 is adapted to be threaded or looped around the cross bar 23, returning on itself, and resiliently maintained in position by the shoulder 24 of the lug 21. In the position illustrated in Fig. 3, the shoulder 24 is normally spaced from the end of the buckle 22 in an amount that is less than the combined width of the cross bar 23 and twice the normal thickness of the strap 19. Accordingly, the strap 19 is resiliently gripped against slipping on the cross

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bar 23. Tension in the strap 19 causes the buckle structure to be urged in a counter-clockwise position as viewed in Fig. 3, thereby maintaining it in the position illustrated. Furthermore, the shoulder 24 slopes inwardly toward the corresponding wall 15 or 16. Such configuration maintains the buckle in the position of Fig. 3 even if there is no tension in the strap 19, such as when the device is removed from the foot of the user.

Should it be desired to adjust the strap 19, the device is removed from the foot, and then the buckle 22 can be rotated out of engagement with the sloping shoulder 24 to the position of Fig. 4. In this position the outer transverse wall 25 of the lug 21 is spaced substantially from the end bar and cross bar 23 of the buckle 22, and accordingly the strap 19 is no longer urged into firm engagement with the buckle 22. Thus the position of the strap 19 can be adjusted by a simple manipulation so that any desired portion thereof can be caused to cooperate with the cross bar 23. Such manipulation will adjust the tension in the strap 19 for a particular size of foot, or it may be furthermore adjusted to a greater extent in order to conform substantially to the size requirements of the foot of various users.

The strap is provided with a series of spaced transverse ribs 27, one of which 28 may abut the cross bar 23, as illustrated in Fig. 3. These ribs 27, therefore, further provide a positive engagement, preventing accidental dislodgment of the strap, even if there is a large tension in the strap 19.

Another buckle, cooperating with the lug on the opposite side of the device, similarly cooperates with the other end of the strap 19. The strap 19 is of sufficient length such that adjustment of the length thereof between the buckles may be made throughout a substantial range. Accordingly, not only may the particular requirements of the user be precisely met, but by virtue of this construction, one size of such device can be made to satisfy the requirements of different users.

While the strap 19 is preferably of conformable resilient material, substantially the same operation of the device can be achieved by providing an inelastic strap. In such case the device will yet resiliently engage the foot of the wearer by virtue of the fact that the main body portion 10, to which the strap is attached, is of yielding material.

The inventor claims:

1. In combination: a resilient body having a wall and a projection extending from the wall; a buckle having a slidable bar as well as an end bar toward which the slidable bar is movable; means pivotally mounting the buckle on the body for angular movement about an axis; the buckle having a limited path of angular movement, the end bar describing an arcuate space; the projection

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extending in the arcuate space, and having an operative surface opposed to the bars and located between them and said axis when the bars are at one position, at least a portion of said surface diverging outwardly away from said axis in a direction transversely of said path; and a resilient strap having an end adapted to be looped about the slidable bar; said diverging portion of said surface having a minimum clearance with respect to the slidable bar that is less than the thickness of said strap, thereby forming a releasable restraint against movement of the buckle and strap away from said one position.

2. In combination, a body having a wall and a projection extending from the wall, a bar, a strap having an end adapted to be looped about the bar, means pivotally mounting the bar on the body for angular movement over a limited arc about an axis with a fixed limit of radial distance of said bar from said axis, said axis being fixed relative to said body, at least a portion of said projection being embraced within said arc, said projection having a first surface area within said limited arc radially spaced from said axis a distance such that the strap is frictionally gripped between said surface and said bar when said bar is angularly moved to adjacent said surface with said strap interposed therebetween, said projection having a second surface area within said limited arc radially spaced from said axis a distance such that the strap is slidably movable between said second surface and said bar when said bar is angularly moved to adjacent said second surface with said strap interposed therebetween, said projection having a portion intermediate said first and second surfaces radially projecting from said axis a distance greater than that of the first area and into the path of said arc, said intermediate portion being yieldable in the line of said arc, thereby forming a yieldable releasable restraint against movement of said bar from adjacent said first surface to adjacent said second surface.

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