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(54) **Flipper**

(57) A flipper (10) comprises a blade (14), a shoe member (12), configured to fit a foot of a wearer, and releasable engaging means (18, 20) for releasably en-

gaging the blade and the shoe member, the engaging means being located in an engagement zone corresponding to a proximal portion of the length of the foot.

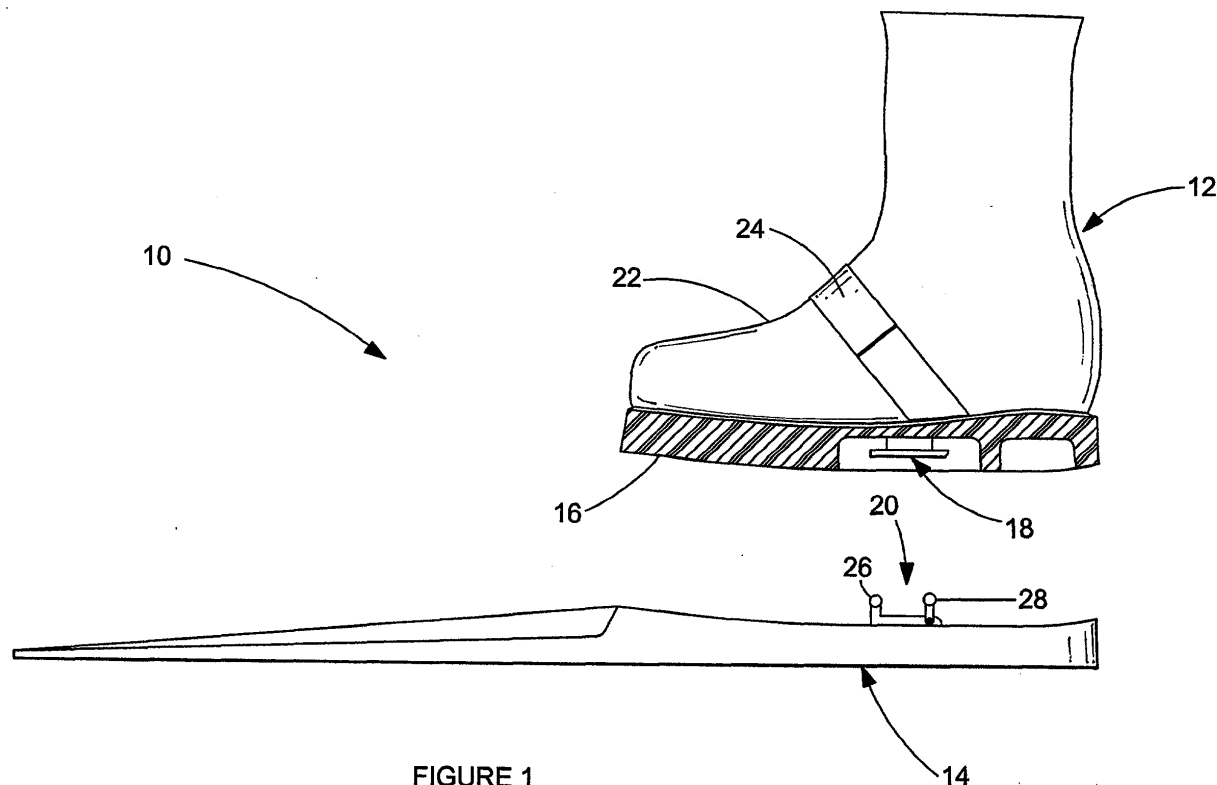


FIGURE 1

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Description

[0001] Flippers to be worn on the feet of swimmers and divers are well known. Such flippers are typically moulded in a plastic or rubber material and comprise a blade portion and a shoe portion, for attachment to the foot of the diver.

[0002] Typically, the blade portion and the shoe portion are permanently connected to one another, often being integrally moulded together. The shoe portion is configured to fit tightly around the foot of the diver. Donning and doffing the flippers while standing requires the diver to stand on one leg and use one or both hands. Also, because of the length of the blade portion, walking while wearing the flippers is awkward.

[0003] Various solutions to the above problems have been proposed, including those disclosed in US patents no's. 5,324,219 and 6,290,560. The flippers described in these patents provide a separable shoe portion and blade portion. The known prior art, however, all relies on attachment of the shoe portion to the blade portion at the toe and at the heel. This necessitates the shoe portion having a rigid sole in order to prevent unintentional disengagement. The lack of flexibility in the sole makes walking difficult when wearing the shoe portion. The toe and heel mechanism that attaches the shoe portion to the blade portion is likely to get clogged with sand and debris. Also, a different sized mechanism, or at least adjusting means, is required to accommodate different shoe sizes.

[0004] Other disadvantages of known prior art detachable flippers include the necessity for the diver to use his/her hands in at least one of the donning and doffing of the flippers; and the exposed nature of the mechanisms results in a risk of snagging and unintentional disengagement.

[0005] It is accordingly an object of the invention to provide a flipper which will overcome or minimize at least some of the above disadvantages.

[0006] According to the invention a flipper is provided, comprising a blade; a shoe member, configured to fit a foot of a wearer; and engaging means for releasably engaging the blade and the shoe member; the engaging means being located in an engagement zone corresponding to a proximal portion of the length of the foot.

[0007] Also within the scope of the invention, there is provided a blade for a flipper, the blade having releasable engaging means for engaging a shoe member; the engaging means being located in an engagement zone corresponding to a proximal portion of the length of the foot.

[0008] Still within the scope of the invention there is provided a shoe member having engaging means for releasably engaging a blade, the engaging means being located in an engagement zone corresponding to a proximal portion of the length of the foot.

[0009] Preferably, the engaging means, located in the engagement zone of the blade or shoe member is

adapted to engage complementary engagement means on the other of the blade or shoe member.

[0010] In a preferred embodiment of the invention the engaging means is configured to allow engagement of the shoe member and the blade by a step-on action. Alternatively, the engaging means is configured to allow engagement of the shoe member and the blade by a slide-in action.

[0011] The shoe member is preferably composed of a flexible material and is deformable to the shape of the foot received therein. Such shoe member may have a sole with rigid portion provided in the engagement zone. Alternatively, the sole may be composed of a rigid material. The engaging means may be integrally moulded into the sole. Alternatively, the engaging means may be connected or connectable to the sole.

[0012] The engaging means may comprise complementary male and female members provided, one each, on the shoe member and blade, the male and female members being configured to enable a snap-fit engagement therebetween.

[0013] One of the male member and the female member may be provided with a catch; and the other of the male member and the female member with a recess into which the catch is at least partially receivable, so as to secure the engagement of the male member and the female member.

[0014] The catch may be moveable between a first position, wherein the catch is located so as to engage the recess, and a second position wherein the catch is retracted so as to allow disengagement from the recess.

[0015] The catch is preferably biased towards the first position.

[0016] The catch may be integral with the one of the male member and female member to which it is provided, which member may be manufactured of a resilient material.

[0017] Alternatively, the catch may be attached to one of the male member and the female member, and biased towards the first position by means of a spring.

[0018] As a further alternative, the one of the male member and female member to which the recess is provided is manufactured of a resilient material, allowing disengagement of the catch from the recess by deformation of the member. Alternatively, the engagement means may be provided in the form of a tongue and groove formation, the tongue being provided on either one of the shoe member or the blade and a complementary groove being provided on the other of the shoe member or the blade.

[0019] The flipper may include a reinforcing strap attached to the shoe member in the engagement zone. The strap may extend around the midfoot, the foot being received within the shoe member, in use.

[0020] The invention will now be described by way of non-limiting example only, with reference to the accompanying figures, wherein

Figure 1 is a side view of a first embodiment of a flipper in accordance with the invention, showing the shoe member and the blade member separated from one another, the sole portion of the shoe member being sectioned;

Figure 2 is a sectioned partial side view of the flipper shown in figure 1, showing the engagement of the shoe member and the blade member;

Figure 3 is a sectioned partial side view of the flipper shown in figure 1, with the shoe member and the blade member in an engaged position;

Figure 4 is a sectioned partial side view of the flipper shown in figure 1, showing the disengagement of the shoe member and the blade member;

Figure 5 is an exploded perspective view of a shoe member and intermediate member of a second embodiment of the flipper according to the invention;

Figure 6 is an exploded cross sectional front view of the shoe member and intermediate member of the second embodiment of the flipper;

Figure 7 is an exploded perspective view of the blade member and engaging means of the second embodiment of the flipper;

Figure 8 is a cross sectional front view of the second embodiment of the flipper, when assembled;

Figure 9 is an exploded perspective view of the second embodiment of the flipper;

Figure 10 is a perspective view of the second embodiment of the flipper in an assembled arrangement;

Figure 11 is an exploded perspective view of a shoe member according to a third embodiment of the invention;

Figure 12 is an exploded cross sectional front view of the shoe member and intermediate member of the third embodiment of the flipper;

Figure 13 is an exploded perspective view of a shoe member according to a fourth embodiment

of the invention; and

Figure 14 is an exploded cross sectional front view of the shoe member and intermediate member of the fourth embodiment of the flipper;

[0021] A flipper 10 according to the invention, and illustrated in figures 1 to 4, includes a shoe 12, configured to fit a foot of a wearer (not shown); and a blade member 14. The shoe 12 has a sole portion 16, preferably constructed from a resiliently deformable material, such as a hard rubber, having a first engaging means 18 located thereon. The engaging means 18 is configured to engage a complementary second engaging means 20 provided on the blade member 14, so as to render the shoe 12 and the blade member 14 releasably securable to one another.

[0022] The first and second engaging means 18, 20 are located in an engagement zone, which corresponds to the proximal portion of the length of the foot. In this embodiment, the engagement zone is centrally located below the arch of the foot. The upper portion 22 of the shoe 12 is comprised of a flexible material, such as neoprene, providing comfort to the wearer.

[0023] A reinforcing band 24 is provided across the upper portion 22 of the shoe 12, in the engagement zone. The band 24 can be tightened by directing it through a buckle and securing it to itself with a hook and pile connector.

[0024] The engaging means 18, 20 are configured to allow engagement of the shoe 12 and the blade member 14 in a step-on action, and disengagement by relative movement of the shoe 12 and the blade member 14 in a plane substantially parallel to that of the blade member 14, as shown in figure 4.

[0025] Further, the engaging means 18, 20 are configured to engage one another in a snap-fit manner. The second engaging means 20 has a fixed catch member 26 and a displaceable catch member 28, extending upwardly therefrom. The displaceable catch member 28 is movable between an open position in which it is generally horizontally disposed and a closed position in which it is generally vertically disposed, as shown in figure 3. The displaceable catch member is biased towards the closed position. The first engaging means 18 comprises a rigid T-member extending downwardly from the sole portion 16 of the shoe 12. The T-shaped member includes two oppositely disposed ridges 32a, 32b. The catch members 26 and 28 are configured to hook over the ridges 32. It is preferable for at least one ridge 32a to have a bevelled edge to urge the displaceable catch member 28 towards its open position during the step-on action, as shown in figure 2.

[0026] To disengage, the displaceable catch member 28 is pushed towards its open position by moving the shoe 12 rearwardly over the blade member 14 in a generally horizontal plane until the ridge 32b is released

from the fixed catch member 26; and the shoe 12 is then lifted from the blade member 14, as shown in figure 4.

[0027] In a second embodiment of the invention, the sole portion 31 of the shoe 30 releasably engages an intermediate member 32 as shown in Figures 5 and 6. The intermediate member 32 has a base 37 including oppositely disposed rails 38a, 38b, which are outwardly directed. An elongate cavity 34 is spaced upwardly from the base, and co-axially disposed with the intermediate member 32. A complementary elongate protrusion 33 extends downwardly from the sole portion 31 of the shoe 30 in an engagement zone corresponding to a proximal portion of the length of the foot (not shown). The protrusion 33 is received in the elongate cavity 34. Pins 35 may be inserted through holes 36a, 36b provided in the protrusion 33 and intermediate member 32, respectively, to releasably secure the shoe 30 to the intermediate member 32. Similarly to the first embodiment, a reinforcing band 39 is provided across the upper portion of the shoe 30.

[0028] A blade member 40 is sandwiched between an upper and a lower plate 41a, 41b, as shown in Figures 7 and 8. Oppositely disposed catch members 42a, 42b extend upwardly from opposing sides of the lower plate 41b in the engagement zone thereof. The catch members 42 are comprised of a resiliently deformable material, such as a polymeric material, which enables them to return to an original position when forced open and released. Further, the lower plate 41b has upwardly directed lugs 43a, 43b protruding from the upper surface thereof.

[0029] Holes 44a, 44b are provided in the blade member 40 through which the lugs 43 are received to engage the upper plate 41a, thereby to sandwich the blade member 40 between the plates 41.

[0030] The configuration of the shoe 30 and intermediate member 32 is now engaged with the configuration of the blade member 40 and plates 41, in a step-on action, as shown in Figures 9 and 10. The catch members 42 protruding from the lower plate 41b each have an inwardly directed elongate lip 46 at the upper portion thereof. When a user wearing the shoe 30 steps on the blade configuration, the rails 38 on the intermediate member 32 slide against the inclined upper surfaces of the lips 46, forcing the catch members 42 to be displaced outwardly. The rails 38 become trapped underneath the lips 46 when the catch members 42 return to their original position.

[0031] To disengage the shoe 30 with the blade member 40, at least one of the catch members 42a or 42b is outwardly displaced and the shoe is lifted from the blade configuration until the lips 46 disengage the rails 38.

[0032] In a third embodiment of the invention as shown in Figures 11 and 12, the sole portion 51 of the shoe 50 is configured to receive C-shaped clips 52a, 52b therein. The c-shaped clips 52 engage the lips 46 on the catch members 42 of the blade configuration described in the second embodiment of the invention, to

secure the shoe 50 with the blade member. The C-shaped clips 52 perform a similar function to that of the rails 38 on the intermediate member 32 in the second embodiment. To disengage the shoe 50 with the blade member 60, at least one the catch member 42a or 42b is outwardly displaced and the shoe 50 is lifted from blade member 40 until the C-clips 52 disengage the lips 46.

[0033] In a fourth embodiment of the invention, as shown in figures 13 and 14, the sole portion 61 of the shoe 60 includes a set of lugs 62, integrally moulded into the sole portion 61. The blade 63 is provided with a pair of upright catch members 64, each having a set of apertures 65 corresponding to the lugs 62 and into which the lugs are receivable so as to engage the shoe 60 and the blade 63.

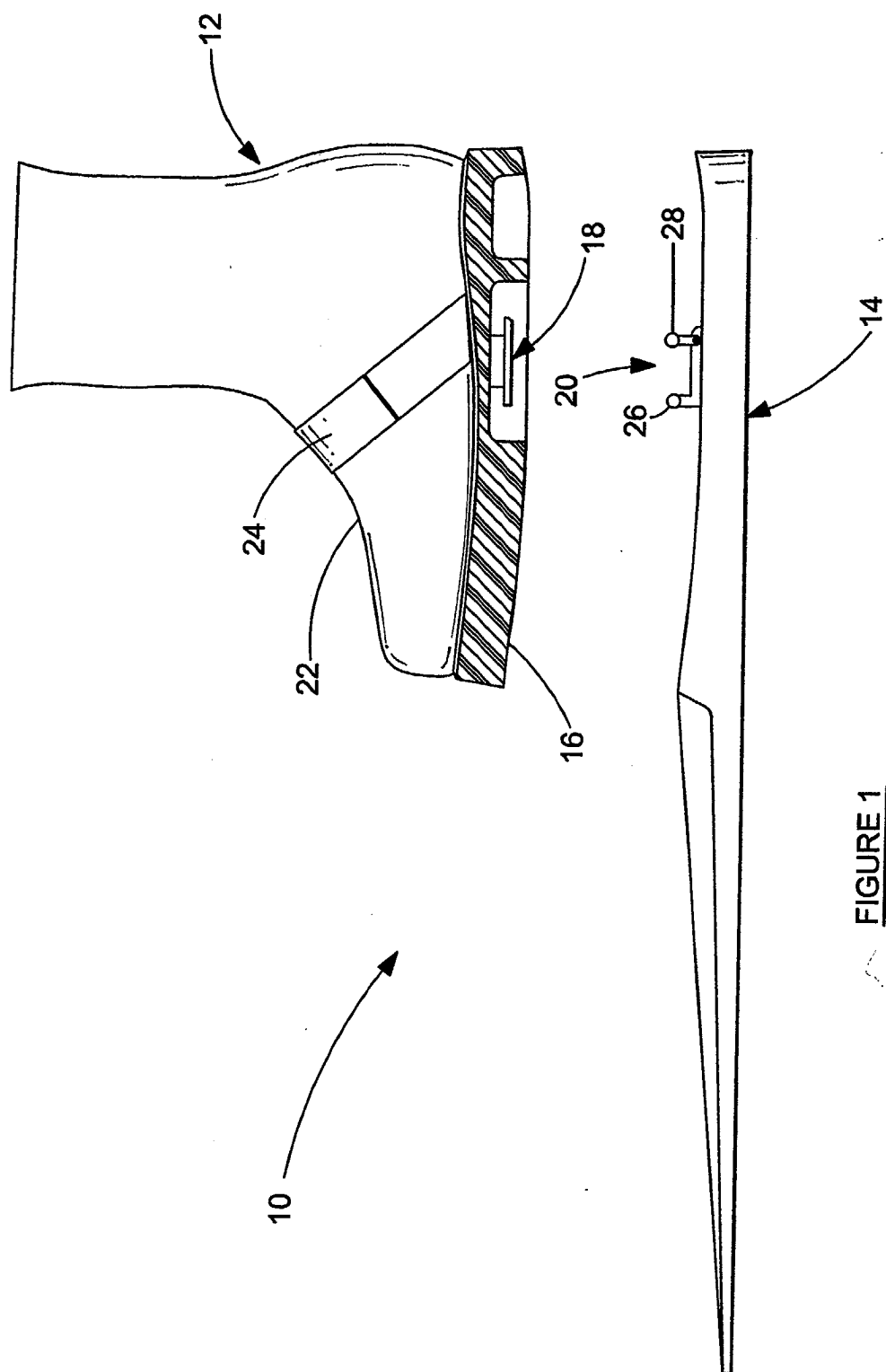
[0034] It is envisaged that the flipper will be useful to divers or swimmers because when worn, the flexible shoe will not inhibit walking; the mechanism that enables engagement between the shoe and blade member will function effectively despite the sandy conditions in which the flipper may be used; donning and doffing the flippers while standing does not require the user to stand on one leg or use one or both hands; the use of an intermediate member enables a single blade to be used in conjunction with a number of different sized shoes; and a user having a particular shoe size is not restricted to using a corresponding blade size, but can use a blade size that suits them best.

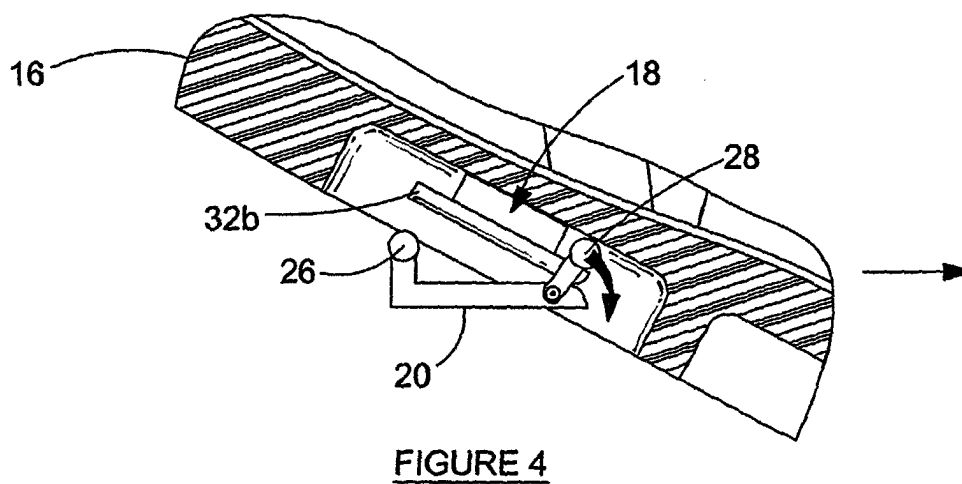
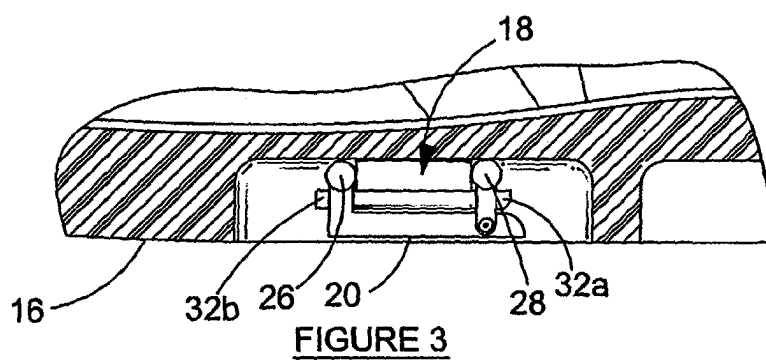
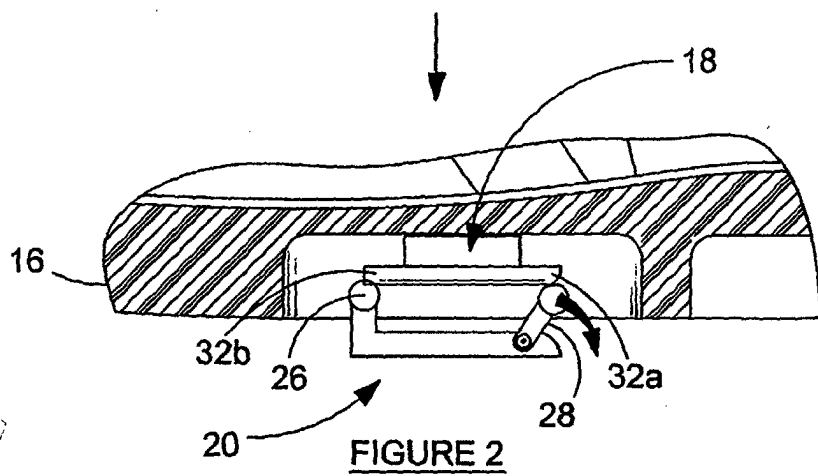
[0035] It will be appreciated that numerous embodiments of the invention may be made without departing from the scope of the invention as claimed hereinbelow.

Claims

1. A flipper comprising a blade; a shoe member, configured to fit a foot of a wearer; and releasable engaging means for releasably engaging the blade and the shoe member; **characterized in** the engaging means being located in an engagement zone corresponding to a proximal portion of the length of the foot.
2. The flipper according to claim 1 wherein the releasable engaging means comprises complementary engaging members located on the shoe member and the blade respectively.
3. The flipper according to claim 1 wherein the releasable engaging means is configured to allow engagement of the shoe member and the blade by a step-on action.
4. The flipper according to claim 1 wherein the releasable engaging means is configured to allow engagement of the shoe member and the blade by a slide-in action.

5. The flipper according to claim 2 wherein the engaging members comprise complementary male and female members, one each on the shoe member and blade, the male and female members being configured to enable a snap-fit engagement therebetween.
6. The flipper according to claim 5 wherein one of the male member and the female member is provided with a catch; and the other of the male member and the female member is provided with a recess into which the catch is at least partially receivable, so as to secure the engagement of the male member and the female member.
7. The flipper according to claim 6 wherein the catch is moveable between a first position, wherein the catch is located so as to engage the recess, and a second position wherein the catch is retracted so as to allow disengagement from the recess.
8. The flipper according to claim 7 wherein the catch is biased towards the first position.
9. The flipper according to claim 8 wherein the catch is integral with the one of the male member and female member to which it is provided, and wherein the one of the male and female member is manufactured of a resilient material.
10. The flipper according to claim 8 wherein the catch is attached to one of the male member and the female member, and biased towards the first position by means of a spring.
11. The flipper according to claim 6 wherein the one of the male member and female member to which the recess is provided is manufactured of a resilient material, allowing disengagement of the catch from the recess by deformation of the member.
12. The flipper according to claim 2 wherein the engaging means is provided in the form of a tongue and groove formation, the tongue being provided on either one of the shoe member and the blade; and a complementary groove being provided on the other of the shoe member and the blade.
13. A blade for a flipper, the blade having releasable engaging means for engaging a shoe member, configured to fit a foot of a wearer, **characterized in** the engaging means being located in an engagement zone corresponding to a proximal portion of the length of the foot.
14. A shoe member, configured to fit a foot of a wearer and having engaging means for releasably engaging a flipper blade, **characterized in** the engaging means being located in an engagement zone corresponding to a proximal portion of the length of the foot.
15. The shoe member according to claim 14, wherein the shoe member includes a reinforcing strap attached to the shoe member in the engagement zone.
16. The shoe member according to claim 15 wherein the strap extends about the midfoot.





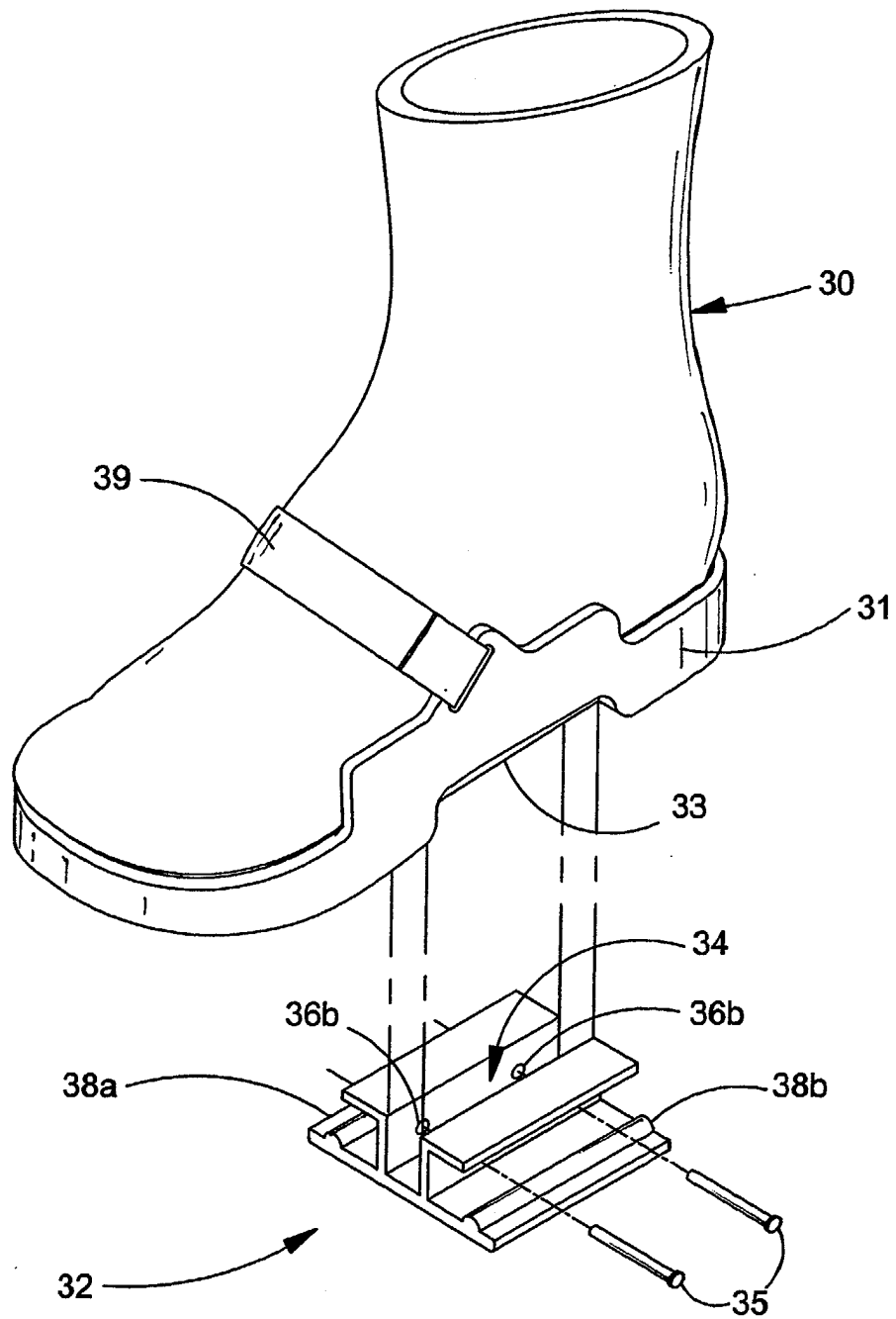


FIGURE 5

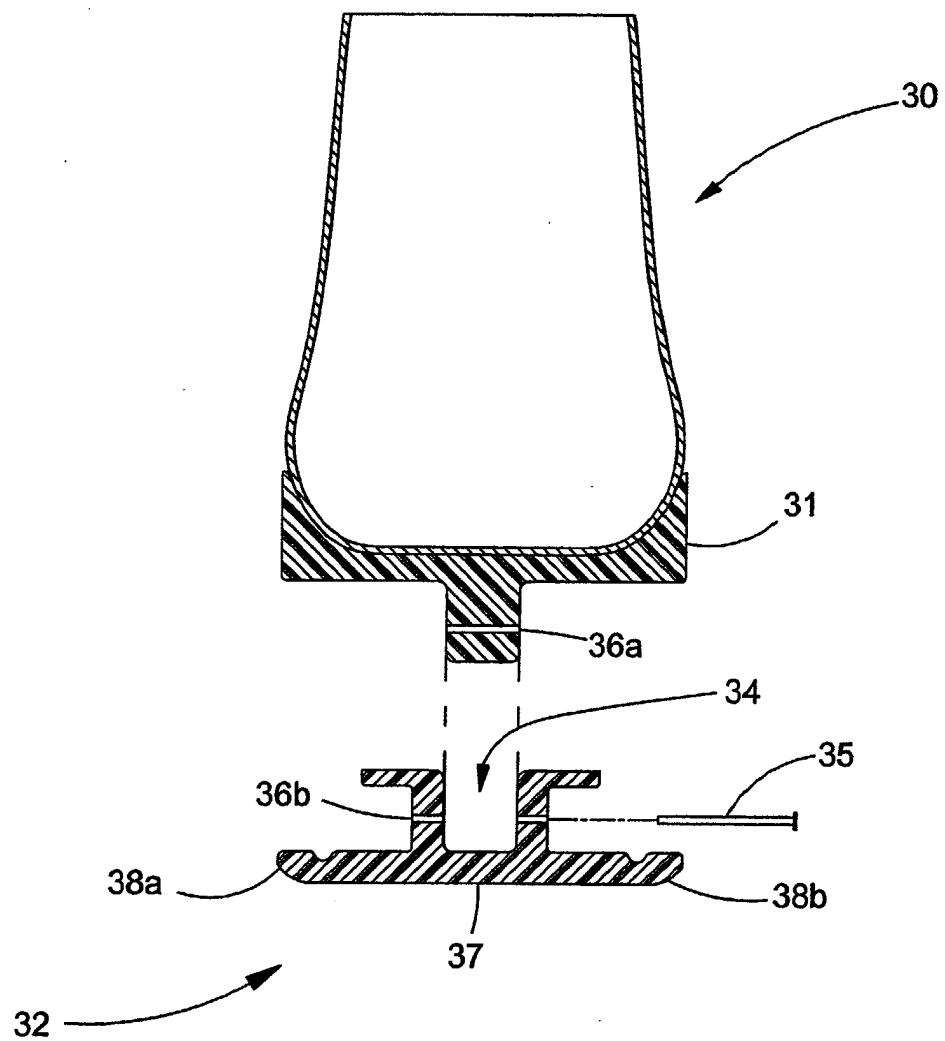


FIGURE 6

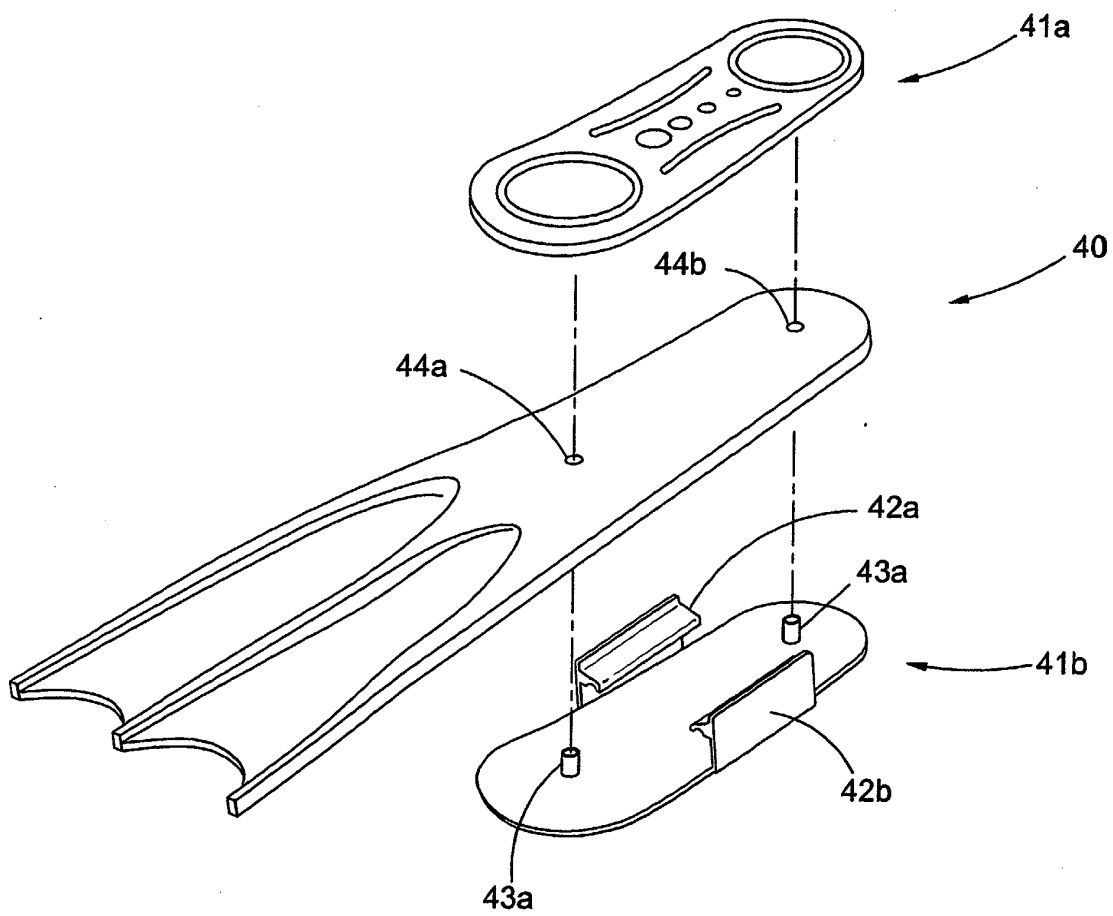


FIGURE 7

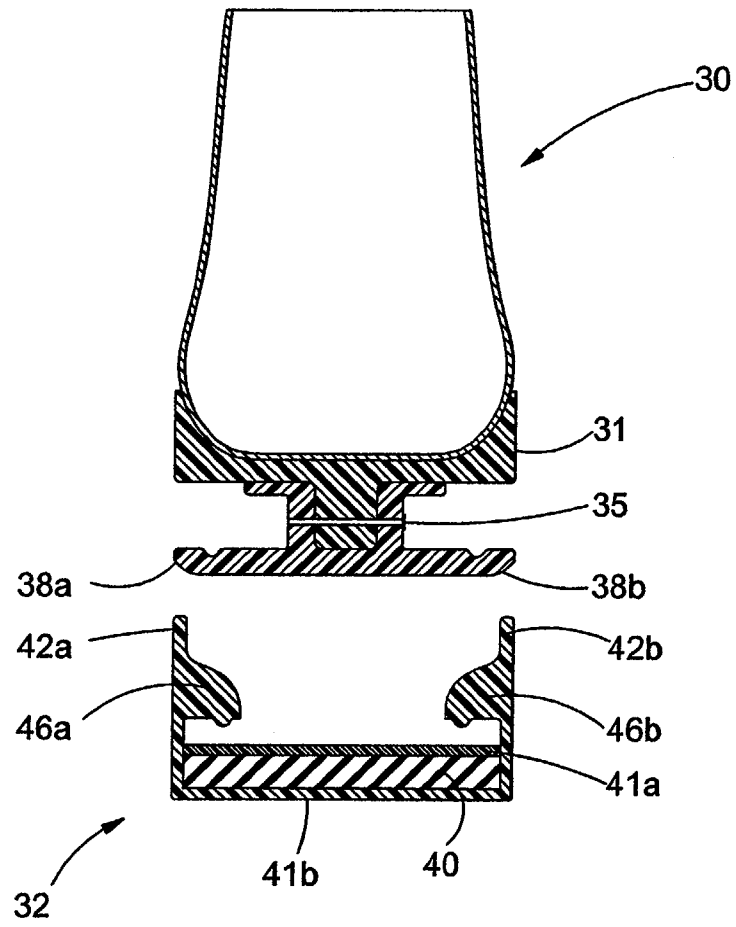
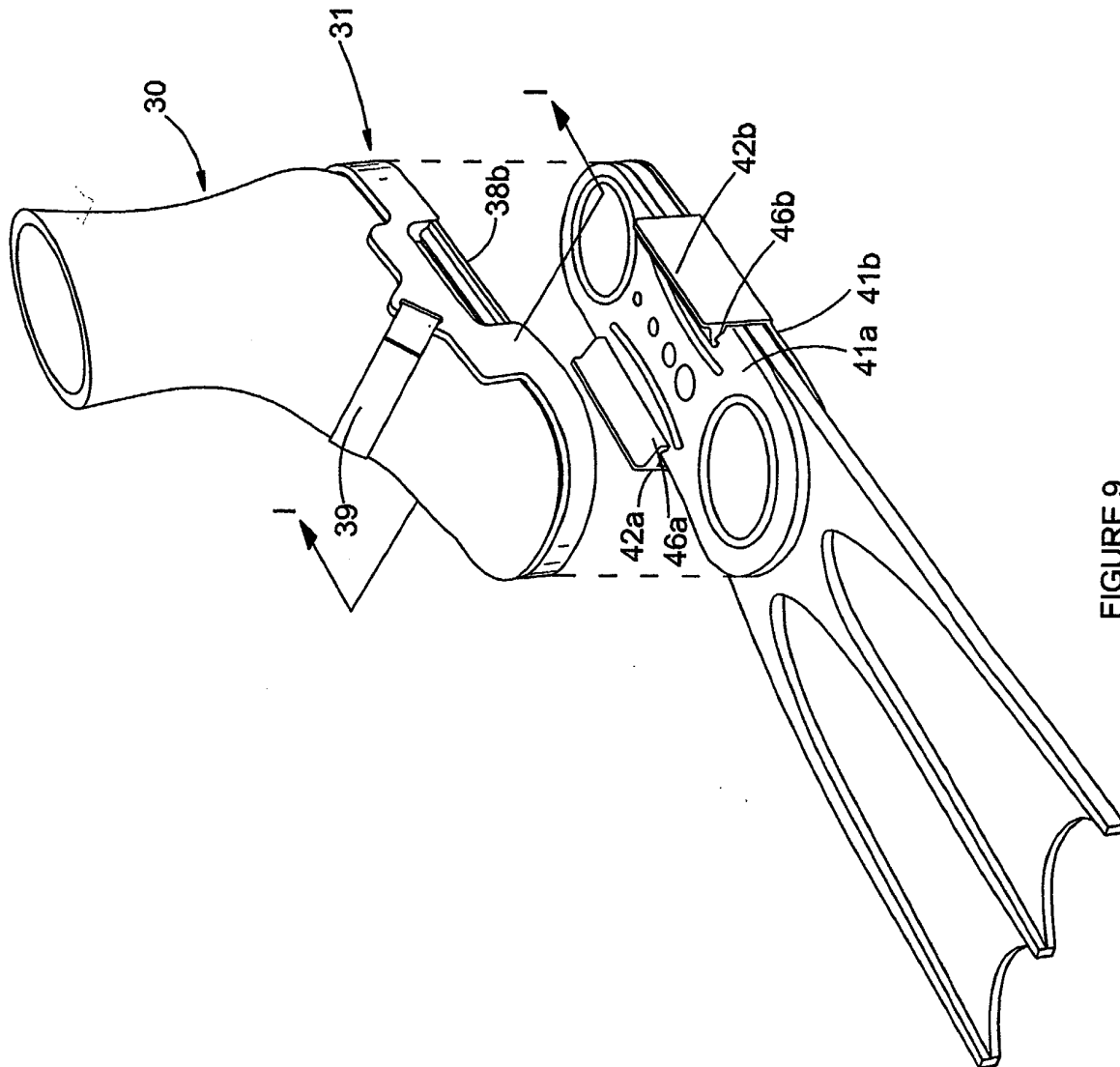


FIGURE 8



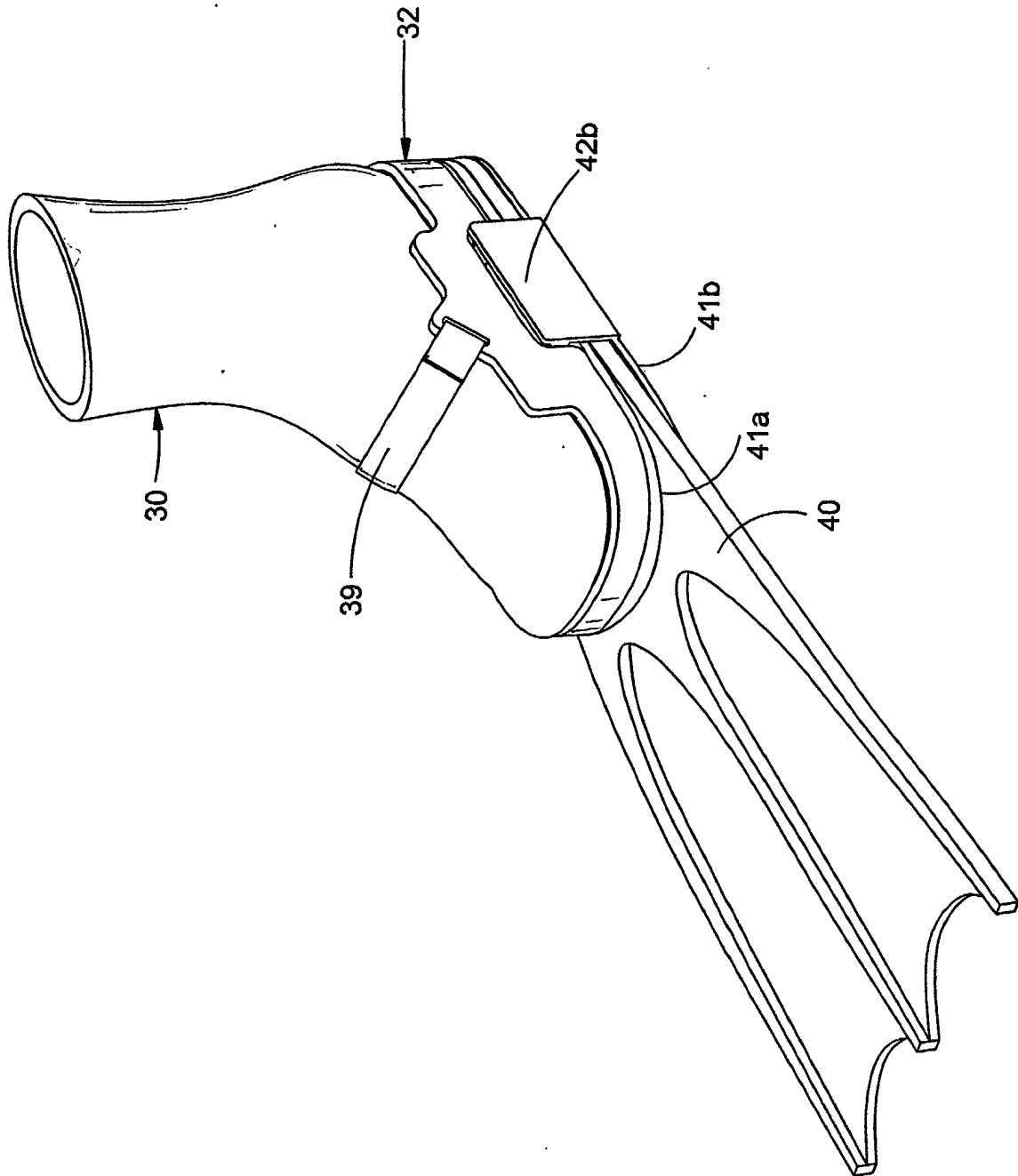


FIGURE 10

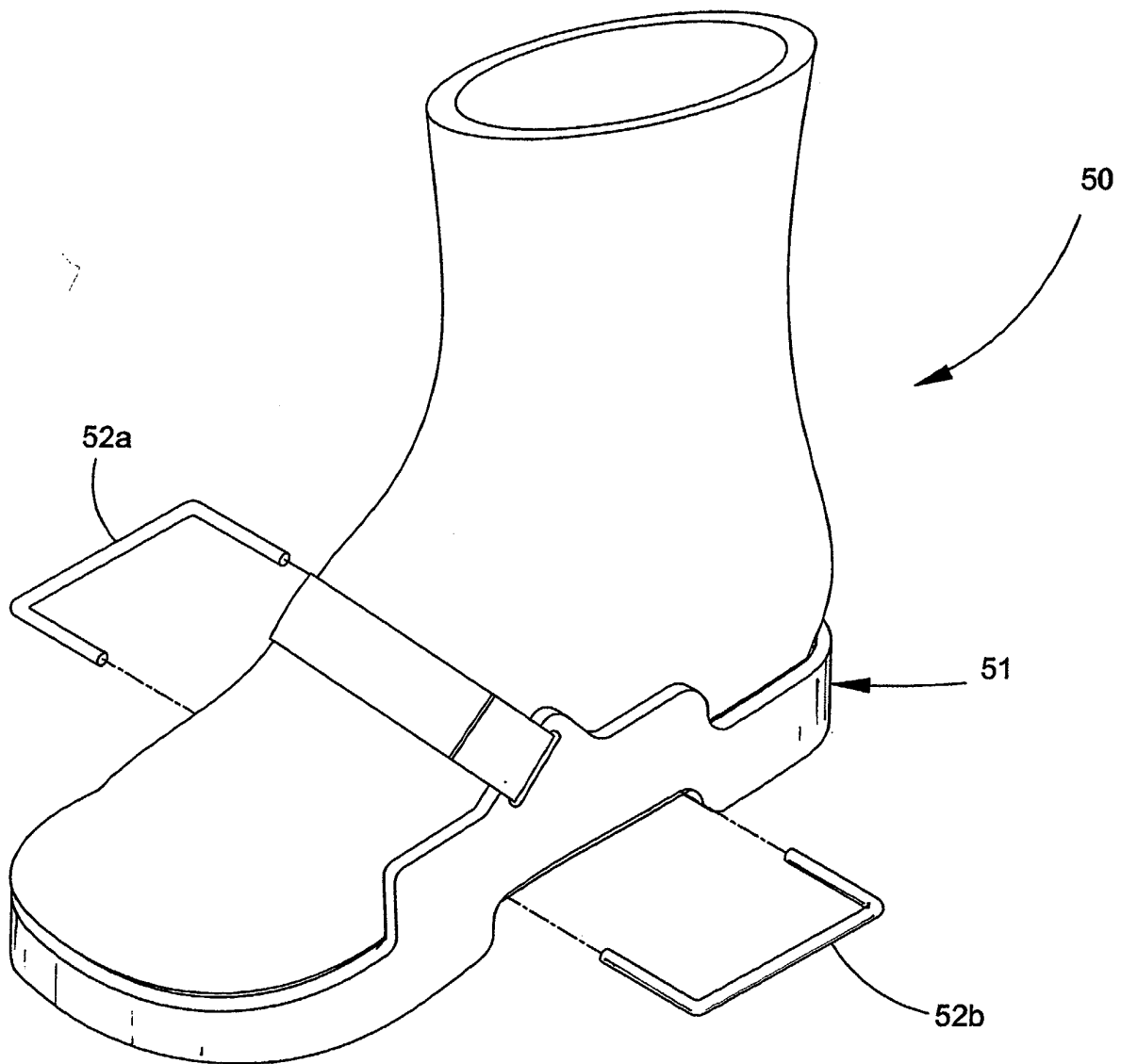


FIGURE 11

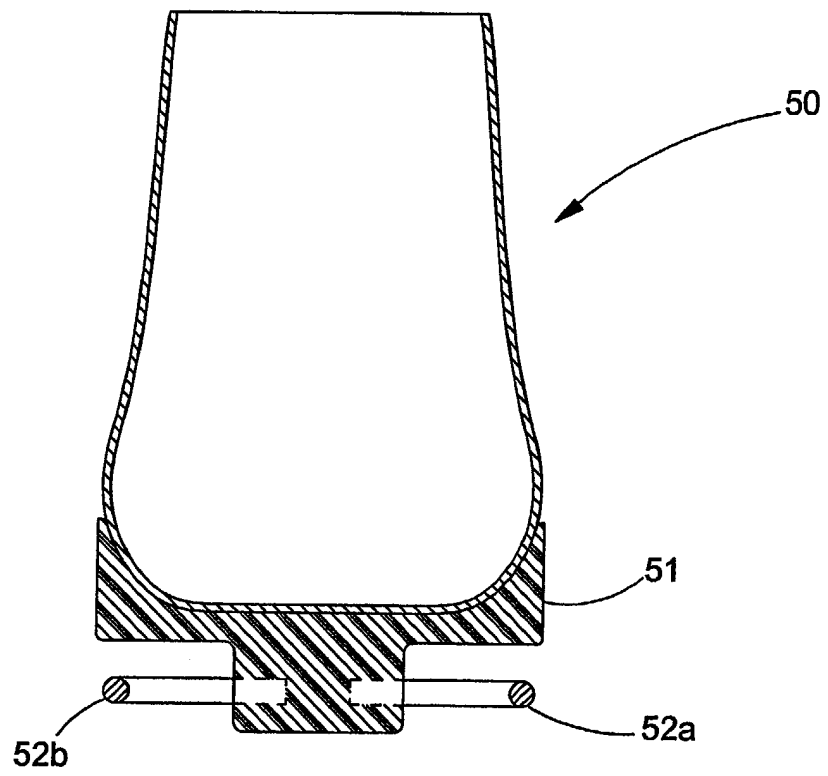


FIGURE 12

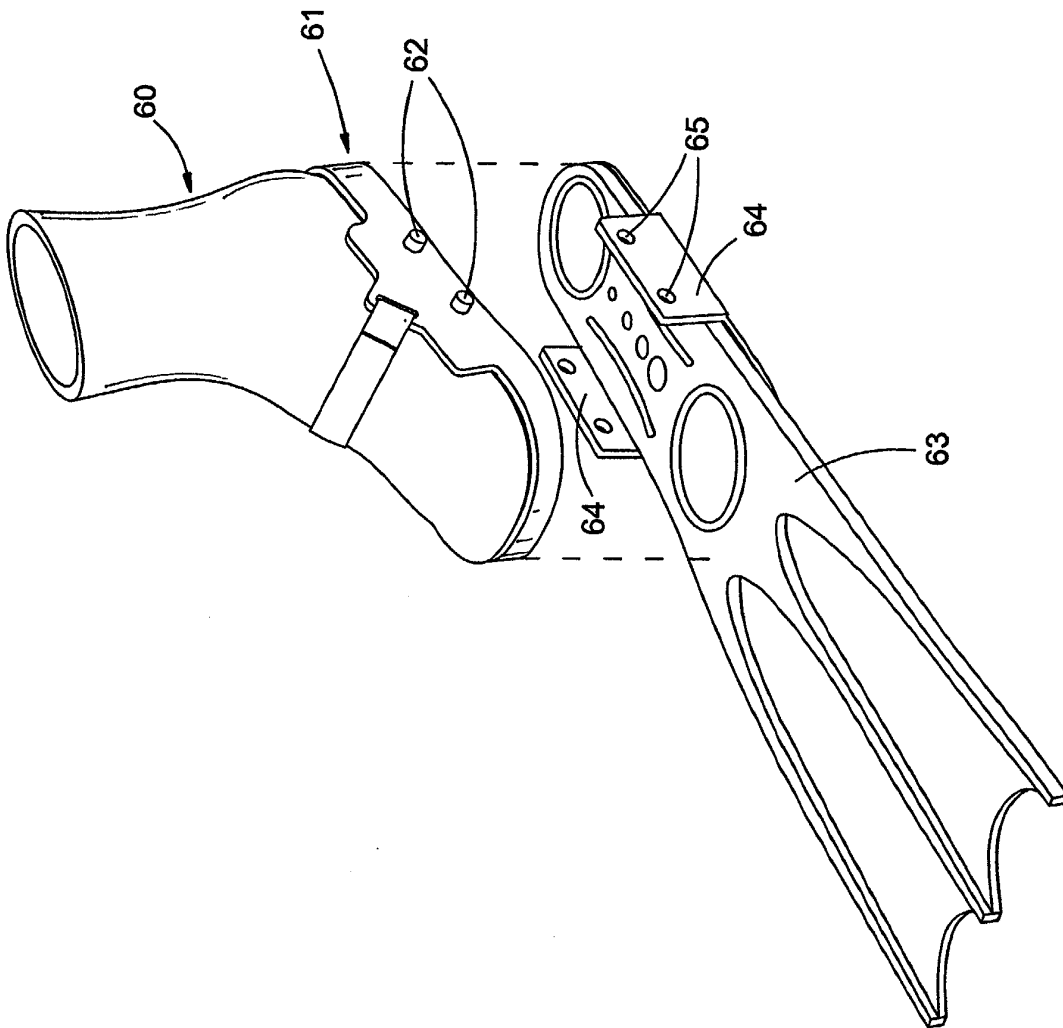


FIGURE 13

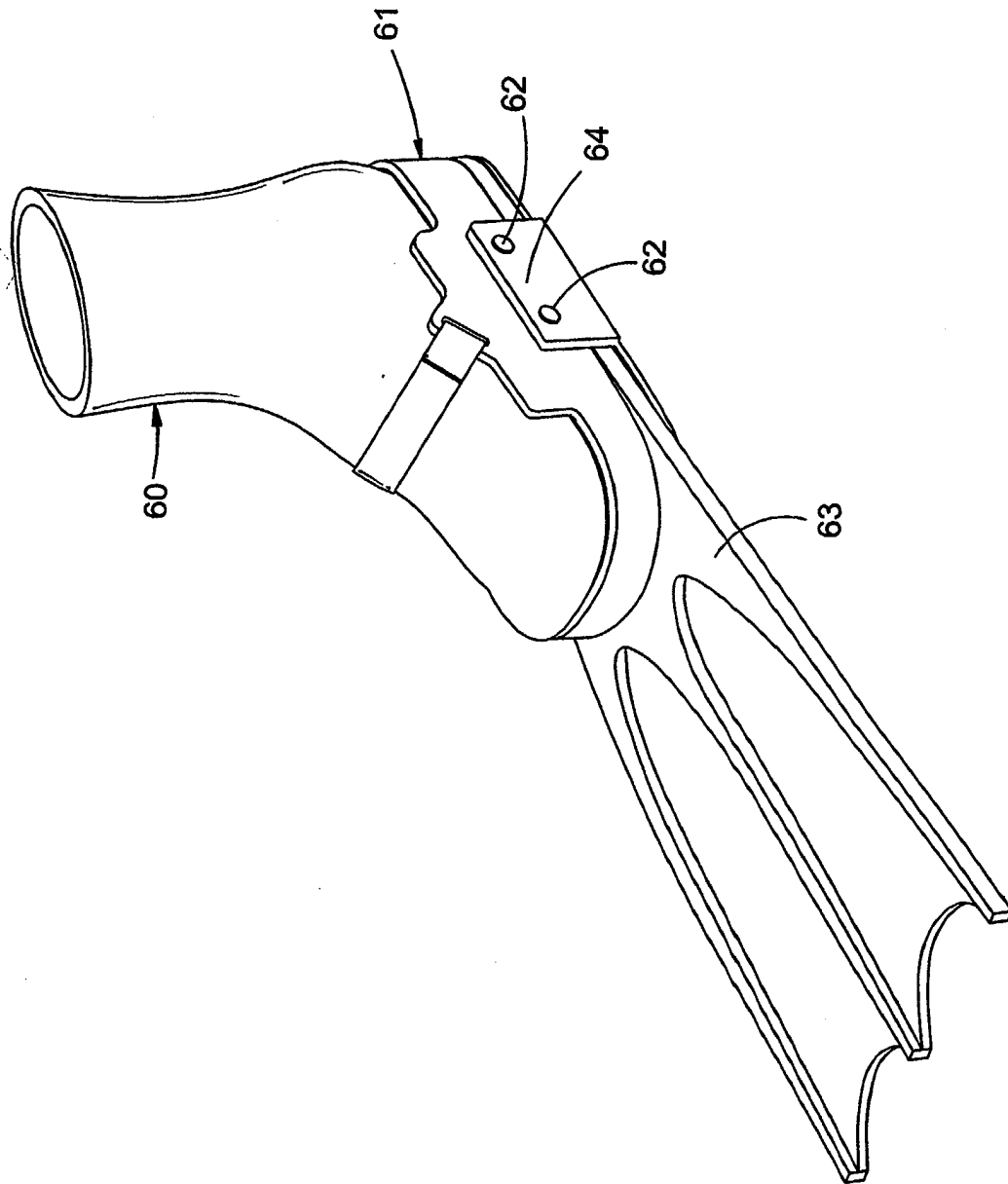


FIGURE 14



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EUROPEAN SEARCH REPORT

Application Number
EP 03 25 4992

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 13 November 2003	Examiner Knoflachner, N
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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