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54 **Water ski shoes.**

57 A water ski shoe (1) to be fitted on a skier's foot for skiing on a body of water, comprising:

a sole (20) with a heel (22) and a toe (21) section including a top (23) for said skier's foot and a bottom (24) for gliding on said body of water;

a boot (10), secured to said sole (20); and

EP 0 218 779 A1 a water channel (30) carved substantially through length of said sole (20).

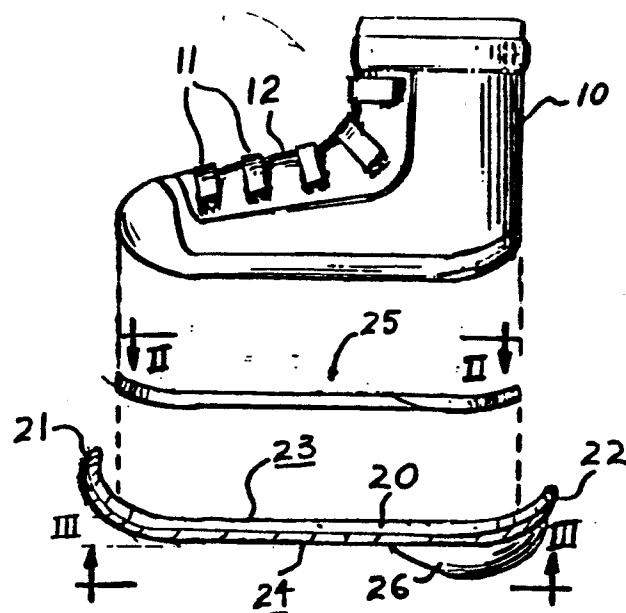


FIG. 1.

WATER SKI SHOES

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention generally relates to water skis and more particularly to adjustable shoes which serve as water skis.

2. General Discussion of the Background

The oldest skis that have been found in the bogs of Sweden are between 4,000 and 5,000 years old (A.H.M. Lunn, History of Skiing, 1927). Water skiing, on the other hand, has only become popular since the advent of the motorboat. The long thin shape of the bottom of conventional water skis provide the longitudinal directional stability and hydrodynamic forces adequate to support the skier at the surface of the water. The sport is most popular in the coastal states such as Florida, California, South Carolina and Texas.

In the 1970's, a new phenomenon emerged in the water skiing: barefoot water skiing. Although the barefoot skiers enjoyed the new sport, the fun had its perils. Pollutants and debris of modern time provided treacherous conditions and discouraged barefoot skiers because of the speed at which a barefoot skier must be towed. Many injuries from impacting even mere splinter particles caused pain and anguish to barefoot skiers who simply wanted to have fun. Consequently, very few people risk the dangers of barefoot skiing.

Buoyant forces resulting from displacing relatively large volumes of water may be used to support a person, but this is of course not water skiing. Such "water walking" apparati are disclosed in U.S. Patent Nos. 1,275,727 (Niec), 1,413,602 - (Michalski), 3,108,296 (Smith), 3,833, 956 - (Meehan), 3,936,897 (Schaumann), 4,117,562 (Schaumann), and 4,261,069 (Schaumann).

Clearly, a skier would not experience the thrill of barefoot skiing by using such devices, for they are too cumbersome for skiing with speed and adequate maneuverability. Hence, conventional water skis, boards, discs, etc. which are large by comparison to human feet, are used instead. One cannot attain the effect of barefoot skiing by using water skis.

Consequently, it is the object of applicant's invention to construct a water ski shoe which is relatively small, maneuverable and will protect the skier's feet.

It is further the object of the applicant's invention to construct a water ski shoe which will allow the skier to attain maximum speed and maneuverability.

Another object of the invention is to provide an adjustable water ski shoe which will fit many sizes.

It is further the object of this invention to attain any or all of the above objectives without losing the effect of barefoot skiing.

SUMMARY OF THE INVENTION

To achieve the objects of the invention, the applicant's water ski shoe is built to comprise a fiberglass sole which is curved upward at the ends to minimize friction and facilitate gliding on water. The rear end of the sole converges to a point to better "cut" the water and for better balance. A foot plate pressed onto the sole, is designed to conform to the shape of a skier's foot.

The bottom of the fiberglass sole which is in the water during skiing, possesses an inverted, V-shaped water channel along part of the length of the sole to help prevent the shoe from gliding randomly on the water surface. At the rear portion of the underside of the fiberglass sole, is an egg-shaped protrusion which disperses the water which has travelled through the channel. In addition to the water channel, pressure holes, drilled into the sole at a sufficient angle to meet the water channel, serves as an outlet for the water which enters the channel.

The boot portion of the water ski shoe is made of silicon rubber. A small rubber wings may be attached to the boot for aerodynamic stability.

The water ski shoe may be adjustable so that the heel and toe may converge or move apart by sliding on a track system which locks at incremental segments. The length of the shoe may be further fixed by use of Velcro™ straps attached to the heel section and fastened to strip-mating straps on the toe section.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a side view of the applicant's water ski shoe showing its main components.

Fig. 2 is a plan view of the foot plate of the applicant's water ski shoe as looking along line II-II of Fig. 1.

Fig. 3 is a plan view of the sole of applicant's water ski shoe looking along line III-III of Fig. 1.

Fig. 4 is a cross-sectional view of the sole of applicant's water ski shoe looking along line IV-IV of Fig. 3.

Fig. 5 is a cross-sectional view looking along line V-V of Fig. 3 of the rear section of the sole and boot of applicant's invention.

Fig. 6 is a perspective view of another embodiment of applicant's water ski shoe.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A water ski shoe 1 as shown in Fig. 1 broadly comprises a boot 10, and a sole 20.

The sole 20 is preferably made of a rigid fiberglass composite of a well known type and is curved upwards (away from the water surface) at its toe and heel ends (21, 22) to facilitate gliding on the water. Heel end 22 of the sole 20 includes certain contour features which facilitate directional stability and better balance while skiing. To the top 23 of sole 20 is affixed a foot plate 25 which is designed to conform to the shape of a typical skier's foot (not shown). The footplate 25 and boot 10 may come in several sizes, although every size on half-size increments may not be necessary. Foot plate 25 is typically made of magnesium or similar metal and is molded into the top 23 of the fiberglass sole 20 during the molding process. It may alternatively be riveted or screwed or held by adhesive. The overall area in plan of the sole 20, in contrast to that of conventional water skis, approximates that of the foot of the skier.

Built into the bottom 24 of fiberglass sole 20 is an inverted V-shaped water channel 30 (see Figs. 3 and 4) substantially parallel to and along center line 31 of the sole 20 to help prevent the water ski shoe 1 from gliding randomly on the water surface 3. The water channel 30 runs much of the length of the sole 20 (see Fig. 3). Near the heel end 22 of the underside 24 of the fiberglass sole 20 is a projection 26 having the shape of an oblate spheroid which, among other things, disperses water which has travelled through the channel 30.

In addition to the water channel 30 and projection 26 at the bottom 24 of the fiberglass sole 20, pressure holes 27 (see Figs. 3 and 4) are drilled along two parallel axes (shown as dashed lines 28 and 29 in Fig. 3) on each side of the water channel 30. The holes 42 are drilled into the bottom 24 of the fiberglass sole 20 and are paired such that each pressure hole 27a along axis 28 will have a corresponding pressure hole 27b along axis 29. The pressure holes 27 are drilled into the bottom 24 of the fiberglass sole 20 at a sufficient angle to "meet" the water channel 30 and serve as an outlet for water which has entered the water channel 30

as shown in Fig. 4. The pressure holes 27 may also be drilled at such an angle that water expelled through the pressure hole will enhance the volumetric flow of water towards the rear of the shoe 1.

The boot 10 is preferably made of silicon rubber. Rubber straps 11 are adapted to the top 12 of the boot 10 and are secured by typical buckles - (not shown).

Fig. 6 shows an alternative system for adjustably fastening the shoe to the skier's foot. Heel section 12 and toe section 13 may converge or separate by sliding on a track system 14 which will lock in incremental segments. The shoe size may be further fixed by Velcro™ straps 15 onto heel section 12 fastened to strip-mating strap 16 extending from the toe section 13.

A rooster tail 40 may be generated by water ski shoe 1 passing along the water, by directing water channel 30 which passes through projection 26, and outwardly and upwardly through heel portion 22 of sole 20 with a channel outlet 41 near converging point 42 of the fiberglass sole 20. This construction allows the water which has entered the channel 30 to be shot in an arc 43 as shown (see Fig. 4).

It is clearly understood that this is the preferred embodiment only and that modification and variation may be made to the disclosed embodiment without departing from the subject of the invention as defined in the following claims. For example, sole 22 could be built virtually up over the heel and toe encasing portion of the whole boot 10 and wings 50 (Figs. 3) which are attached directly to this rigid sole for aerodynamic stability and even to provide a slight "lift" for the skier.

Claims

1. A water ski shoe to be fitted on a skier's foot for skiing on a body of water, comprising:

a sole with a heel and a toe section including a top for said skier's foot and a bottom for gliding on said body of water;

a boot, secured to said sole; and

a water channel carved substantially through length of said sole.

2. The water ski shoe of Claim 1, wherein a plurality of pressure holes are defined in said bottom of said sole, each hole having an inlet and an outlet, wherein each outlet is at said bottom of said sole and each inlet is in said water channel.

3. The water ski shoe of Claim 1, further comprising a means for dispersing water accumulated in said water channel.

4. The water ski shoe of Claim 3 wherein said means for dispersing comprises a projection adapted to the heel section of the bottom of the sole.

5. The water ski shoe of Claim 1 further comprising a foot plate adapted to the top of said sole, for receiving a skier's foot.

6. The water ski shoe of Claim 1 further comprising a means for providing aerodynamic stability when said ski shoe is operating on said body of water.

7. The water ski shoe of Claim 6 wherein said means for providing aerodynamic stability comprises wings secured to said boot.

8. The water ski shoe of Claim 4 wherein said water channel includes an outlet at said heel section of said sole.

9. The water ski shoe of Claim 1 further comprising a means for securing said shoe around the skier's foot.

10. A water ski shoe, comprising:

a sole;

a heel portion;

a toe portion; and

an adjusting means so that the heel and toe may converge or move apart to sizably adapt to the skier's foot.

11. The water ski shoe of Claim 8, further comprising a securing means to fix the position of the heel and toe portions.

12. A method of water skiing by a skier with feet on a body of water comprising the steps of providing:

a sole with a top, a bottom, a toe section and a heel section whereon said skier's foot may rest on said top of the sole;

a boot covering said skier's foot;

13. The method of Claim 12, further providing a water channel into said sole to prevent said skier from gliding randomly on said body of water.

14. The method of Claim 12, further providing a projectrrr at said bottom of the sole at the heel section.

15. The method of Claim 14, further providing wings adapted to said boot for aerodynamic stability.

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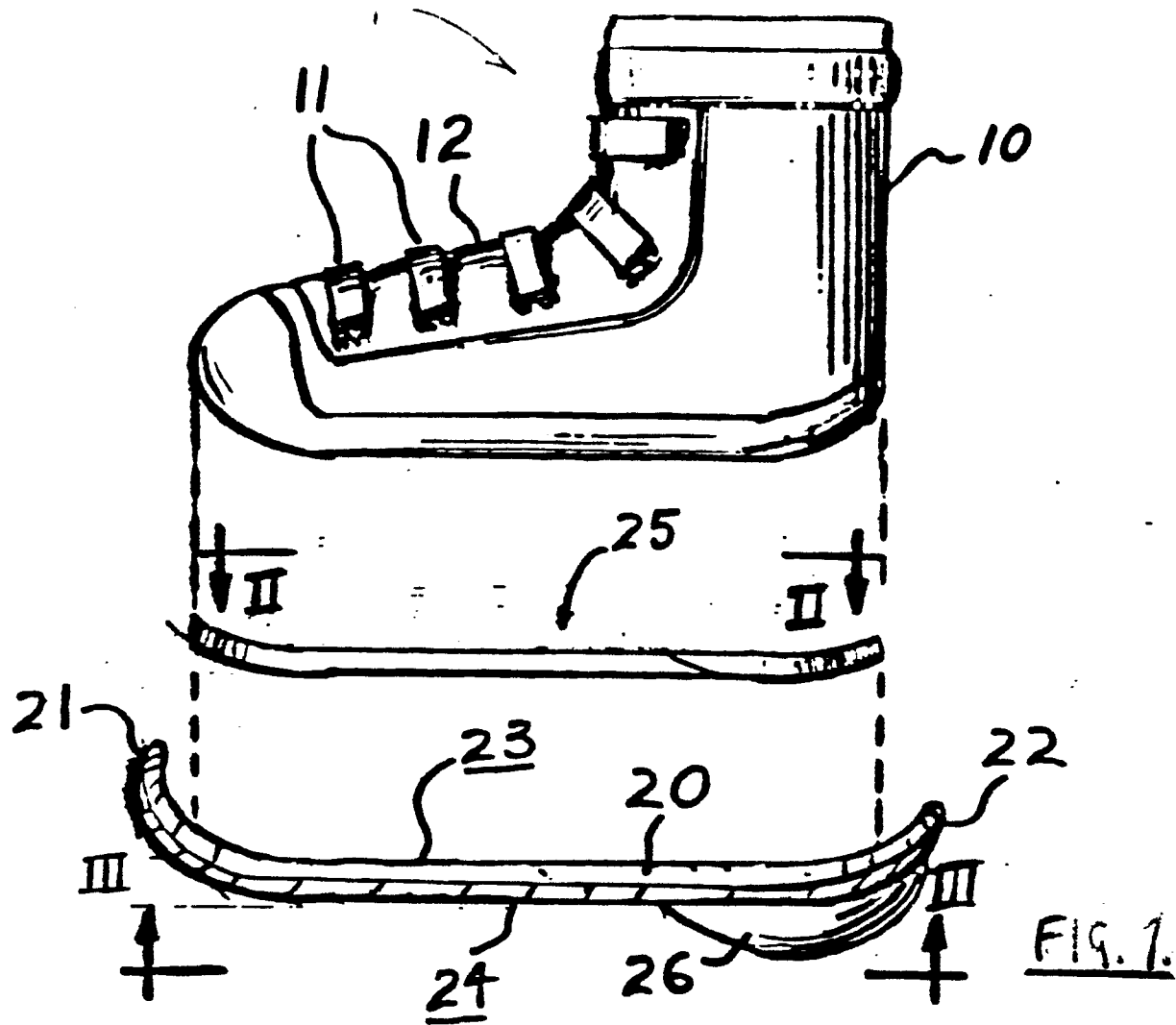


FIG. 1.

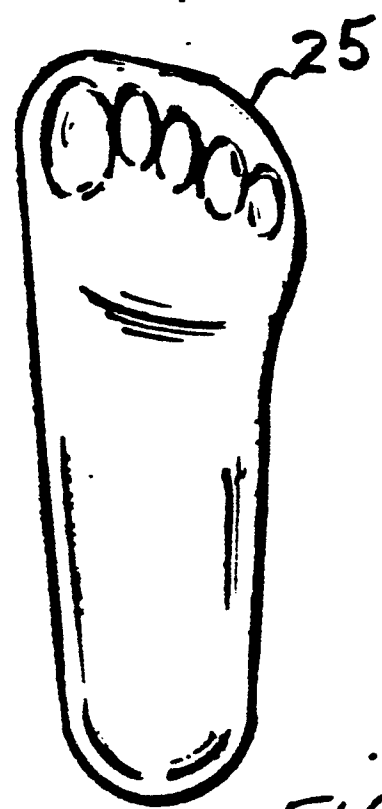


FIG. 2.

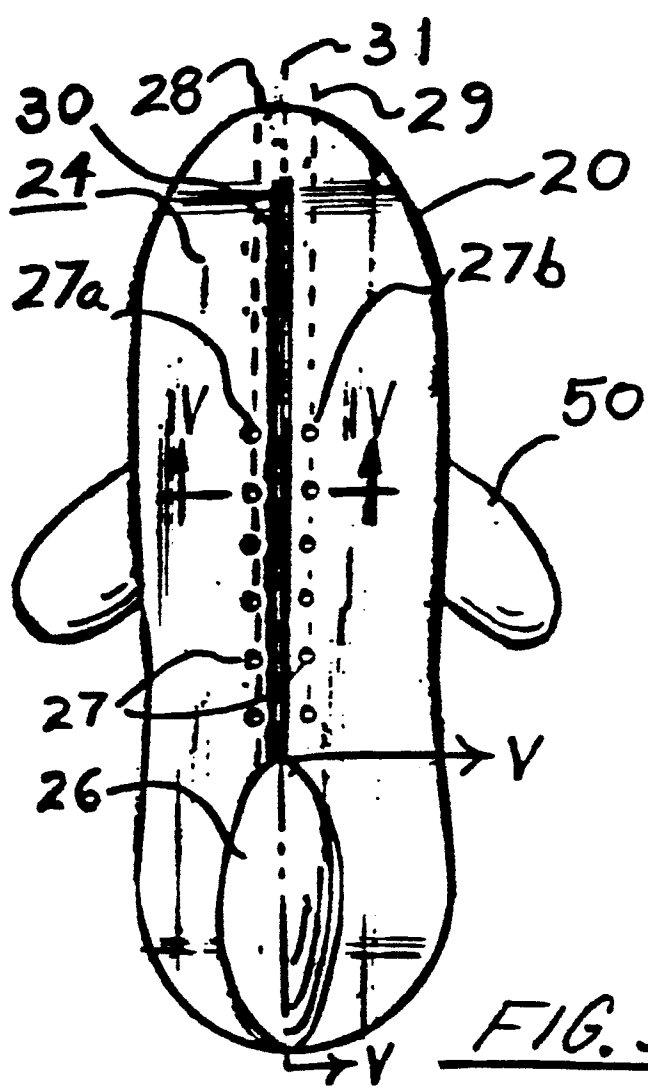
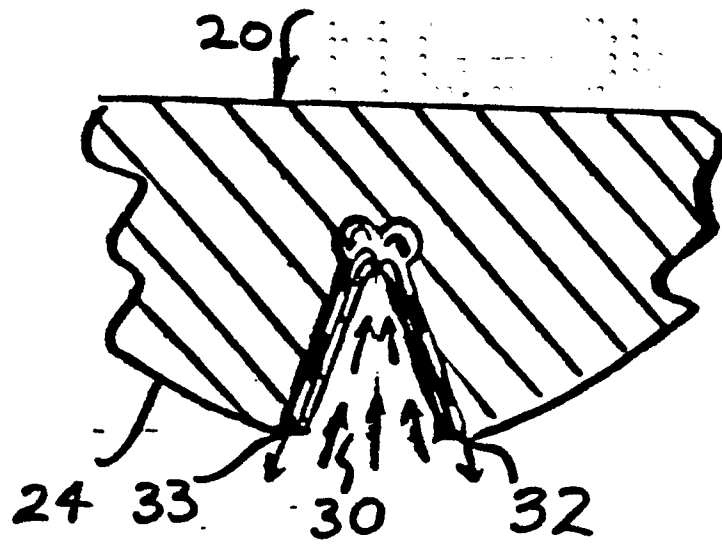
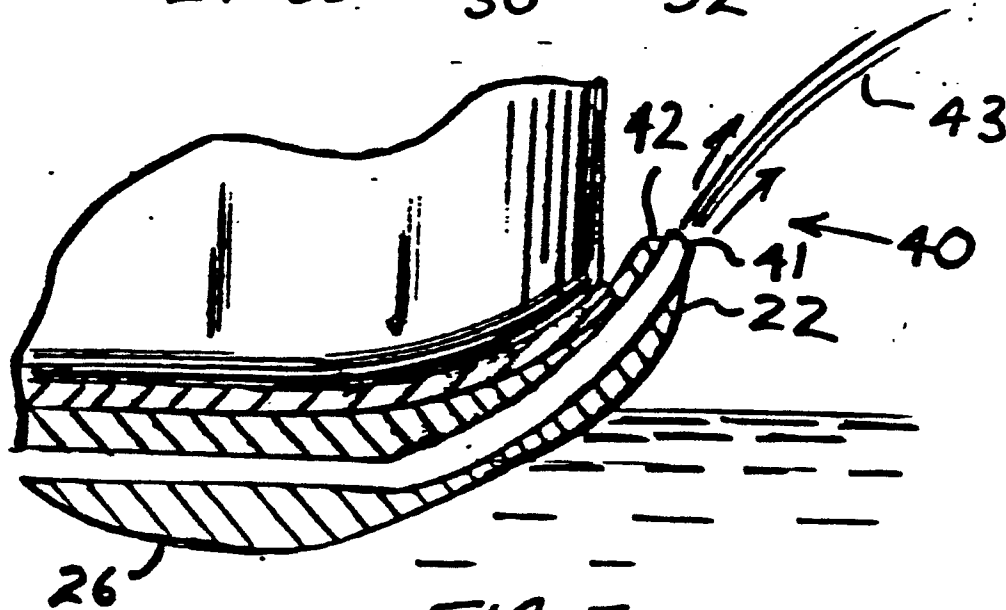
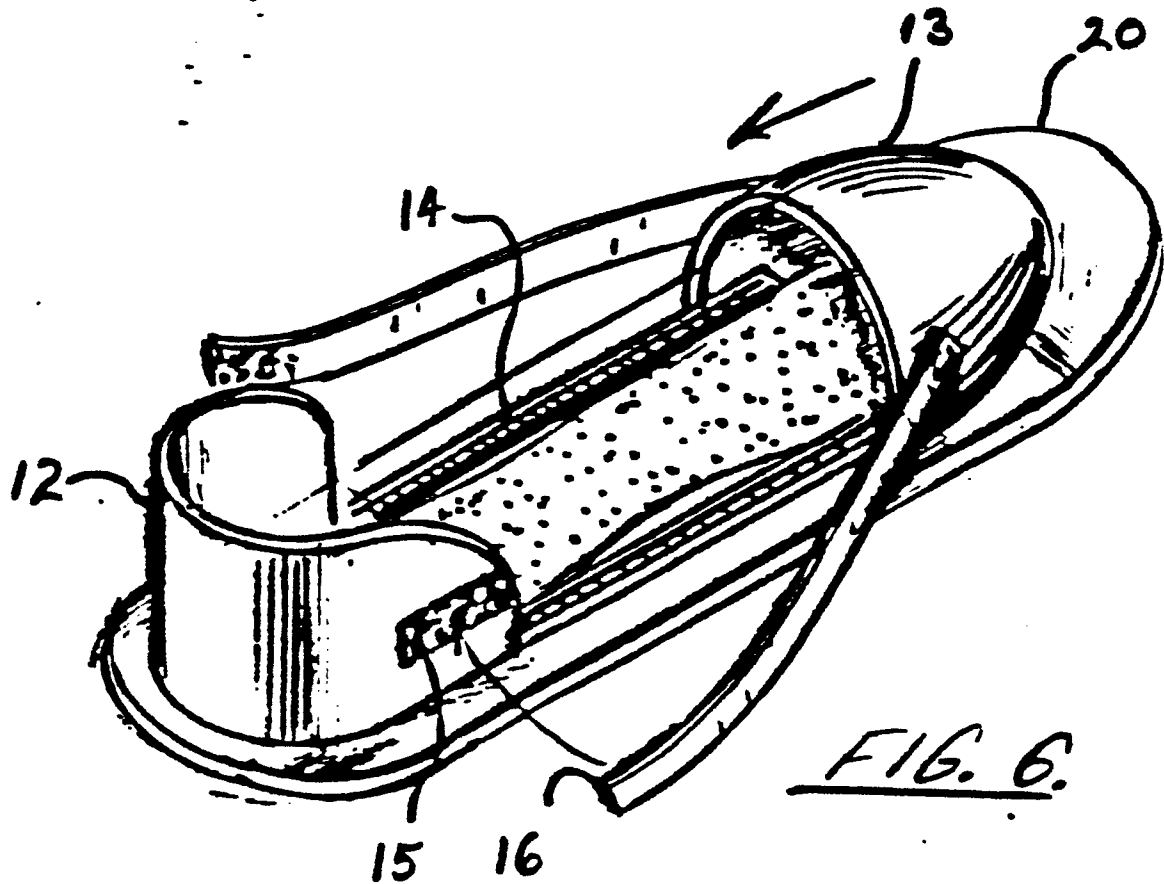


FIG. 3.

FIG. 4.FIG. 5.FIG. 6.



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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	US-A-4 296 511 (WRIGHT) * Column 4, line 3 - column 5, line 22; column 7, lines 1-27; figures *	10-14	A 63 C 15/00
Y		1,3-6, 8,9,15	
A		2,6,7	
X	--- US-A-4 227 274 (RICHARDSON) * Column 2, lines 13-45; figures *	10,11, 12,14	
Y		1,3-6, 8,9	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A		6,8	A 63 C
Y	--- US-A-3 090 978 (HANSON) * Figure 1 *	15	
A		6,7	
A	--- US-A-4 188 046 (FLECKENSTEIN) * Abstract; figures * --- -/-		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 10-01-1987	Examiner GERMANO A.G.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			



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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	Page 2 CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	US-A-1 545 013 (RIEBE)		

A	US-A-3 103 673 (MARTIN)		

A	US-A-3 731 328 (RUSSELL)		

			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 10-01-1987	Examiner GERMANO A.G.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone		T : theory or principle underlying the invention	
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