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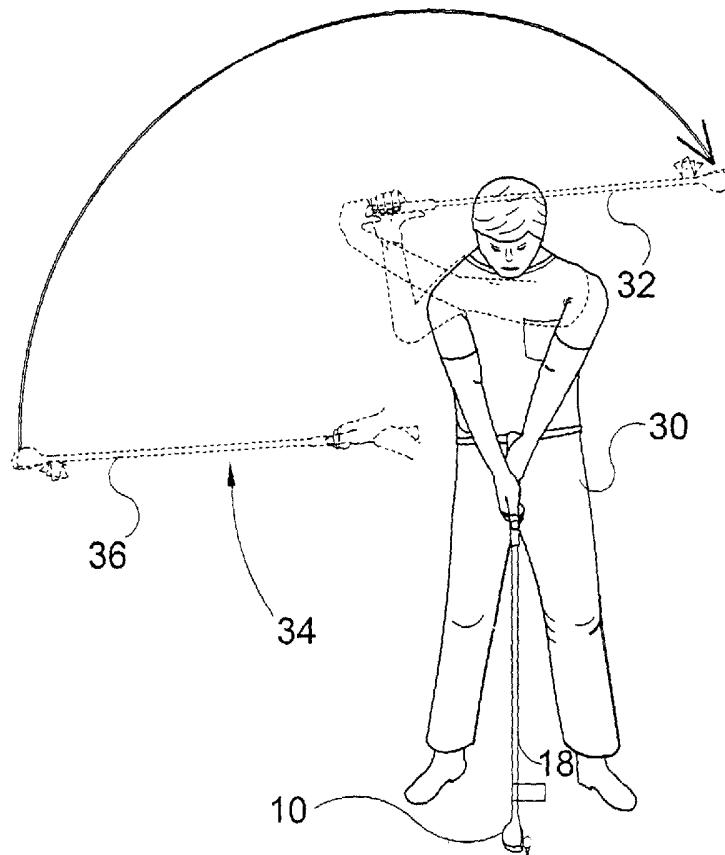
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[Continued on next page]

(54) Title: SPORT EQUIPMENT AUDIBLE DEVICE



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(57) Abstract: The invention (10) discloses a device that attaches to sporting equipment such as golf club (18) and tennis racket (38) that travels through a sweeping motion for the purpose of generating an audible sound under predetermined conditions. Thus, it is possible to cause audible sounds under abrupt increases in velocity. The device comprises a sound generation element (12) made of a pliable material and includes an element (14) serving as a means of attachment. The sound generation element (12) may be permanently fixed to the piece of sporting equipment by means of adhesive (40). Alternatively, the element (14) provides a means of attachment which is semi-permanent and enables selective attachment and detachment of the device to the sporting equipment. The element (14) comprises a snap-on collar or clip (24) or a length of material (2) that can be twisted around a portion of the sporting equipment. The clip (24) includes a slotted aperture (28) formed by flexible divergent arms (26).



**Published:**

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- with amended claims

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## **SPORTING EQUIPMENT AUDIBLE DEVICE**

### **BACKGROUND OF THE INVENTION**

#### **Field of the Invention**

The present invention relates generally to sporting equipment and more specifically to a device that can be selectively attached to some sporting equipment for the purpose of generating an audible sound under predetermined conditions.

The sound-generating device of the present invention is attached to hand held sporting equipment that travel through a sweeping motion, such as golf clubs and tennis racquets. By attachment of the sound-generating device to the aforementioned equipment it will be possible to cause audible sounds during predetermined velocities of the sound-generating device.

## **SUMMARY OF THE PRESENT INVENTION**

The present invention discloses a device that attaches to sporting equipment for the purpose of generating an audible sound under predetermined conditions. The device is selectively attached to hand held sporting equipment, such as a golf club and tennis racquet, that travels through a sweeping motion. By attachment of the sound-generating device to the aforementioned equipment it will be possible to cause audible sounds under abrupt increases in velocity. The device is comprised of a sound generation element and may include a means of attachment element.

The preferred embodiment of the present invention is a sound generation element comprised of a planar sheet of polyester film having an amount of adhesive along one side of said polyester film with a peelable protective element covering the adhesive. The device is fixed to the sporting equipment by removing the adhesive protective element and placing the device in contact with the sporting equipment. The device is wrapped around the sporting equipment with the adhesive element being a fixed to a part of the planar sheet of polyester. The adhesive does not come into contact with the sporting equipment. Thereby the device is free to rotate about the sporting equipment during use.

In another embodiment of the present invention, the device incorporates a means of attachment element. The means of attachment element provides for selective attachment and detachment of the sound generating device and is comprised of a snap-on collar or clip and alternately of lengths of material that can be twisted or tied around a portion of the

sporting equipment. The means for attachment element can be lengths of suitable material, such as cord or wire reinforced cord, having the sound generation element fixedly positioned thereto with sufficient free end lengths that can pass around a selected point on the sporting equipment and tied or twisted as means for securing the sound generation element to the sporting equipment. As an alternate means of securing the sound-generating element to the sporting equipment, a clip is provided. The clip is a substantially cylindrical object having a slotted aperture formed by flexible divergent arms enclosing a throughbore whereby the clip can be pressed onto sporting equipment. The flexible divergent arms aid in the removal of the device from the sporting equipment.

An additional element is provided for the sound generation element in the form of a planar somewhat rigid pliant material such as paper or plastic. That can be attached permanently or semi-permanently by any means known with the art, such as adhesively. Using a means of attachment element, such as a clip, enables selective attachment and removal of the sound generation device.

The sound generation element has a clip mating member formed on one edge. The clip mating member is inserted into a channel or aperture within the clip. The length of the sound generation element can be adjusted by wrapping said element around the clip mating member prior to insertion in the clip.

The purpose of the sound generation device of the present invention is to provide means whereby a golfer may accurately determine whether he is

accelerating the club at a proper point of the swing or during the wrong part of a swing or at the top of the back swing. If the golfer jerks the club back or hits from the top, the sound generation element will make a loud flutter sound at the point of incorrect acceleration. If the swing is correct, the sound generation element will only make the flutter sound at impact of the swing. The size of the flutter flag is inversely proportional to the speed at which is the flutter.

A primary object of the present invention is to provide a sound generation device that can be attached to selective sporting equipment.

Another object of the present invention is to provide a sound generation device that will interact with atmospheric air during a sweeping motion while attached to sporting equipment to generate sound.

Yet another object of the present invention is to provide a sound generation device that can be permanently or semi-permanently attached to sporting equipment.

Still yet another object of the present invention is to provide a sound generation device that can be selectively attached and removed from sporting equipment.

Another object of the present invention is to provide a sound generation device having a sound generation element.

Yet another object of the present invention is to provide a sound generation element that can be fixedly attached to sporting equipment by means of adhesive.

Still yet another object of the present invention is to provide a sound generation element that can be attached to sporting equipment by means of an attachment element.

Another object of the present invention is to provide a sound generation device having a sound generation element and a means of attachment element.

Yet another object of the present invention is to provide a sound generation device comprising a sound generation element formed from a semi-rigid planar material such as, paper, Mylar or nylon or other polyester film.

Still yet another object of the present invention is to provide a sound generation attachment element for a sound generation element comprising lengths of suitable material such as cord or wire reinforced line that can be tied or twisted about sporting equipment as means of securement.

Another object of the present invention is to provide an attachment element for a sound generation element comprised of a cylindrical member having a slotted aperture that can be pressed on sporting equipment.

Yet another object of the present invention is to provide an attachment element having cylindrical walls with opposing divergent arms forming a slotted aperture that can be pressed on sporting equipment.

Still yet another object of the present invention is to provide a sound generation element having a post fixedly attached to one edge of the sound generation element and forming an integral part therewith.

Another object of the present invention is to provide a sound generation element having a post whereby the sound generation element can be inserted into an attachment element and selectively removed therefrom.

Yet another object of the present invention is to provide a sound generation element and an attachment element that form a sound generation device.

Still yet another object of the present invention is to provide a sound generation element that can be adjustably mounted to vary the length of said sound generation element.

Additional objects of the present invention will appear as the description proceeds.

The present invention overcomes the shortcomings of the prior art by providing a sound generating device having a sound generation element that can be permanently/semi-permanently attached to hand held sporting equipment that will generate a sound during an accelerated sweeping motion.

The sound generation element can be formed from a semi-rigid pliant material. The aforementioned sound generation elements can be selectively attached to hand held sporting equipment by means of an attachment element.

The attachment element can form an integral part of the sound generation element, such as length of suitable material bonded to the sound generation element that can be positioned to straddle a portion of the sporting equipment and tied or twisted forming closure and attachment to the sporting equipment.

Alternately the attachment element can be a clip that can be pressed onto selective sporting equipment.

The foregoing and other objects and advantages will appear from the description to follow. In the description reference is made to the accompanying drawings, which form a part hereof, and in which is shown by way of illustration specific embodiments in which the invention may be practiced. These embodiments will be described in sufficient detail to enable those skilled in the art to practice the invention, and it is to be understood that other embodiments may be utilized and that structural changes may be made without departing from the scope of the invention. In the accompanying drawings, like reference characters designate the same or similar parts throughout the several views.

The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the present invention is best defined by the appended claims.

**BRIEF DESCRIPTION OF THE DRAWINGS**

Figure 1 is an illustrative view of the present invention in use.

Figure 2 is a perspective view of the sound generation element of the present invention having an amount of adhesive on a portion thereof.

Figure 3 is a perspective view of the sound generation element of the present invention wrapped around a golf club shaft.

Figure 4 is a cross sectional view of the present invention taken from figure 3 as indicated.

Figure 5 is a perspective view of the sound generation element of the present invention wrapped around a golf club shaft.

Figure 6 is a cross sectional view of the present invention taken from figure 5 as indicated.

Figure 7 is a perspective view of the sound generation device of the present invention.

Figure 8 is a perspective view of the sound generation device with an attachment clip.

Figure 9 is a perspective view of the sound generation element with an attachment clip.

Figure 10 is a perspective view of the sound generation element with an attachment clip.

Figure 11 is a section view of the present invention attached to a golf club shaft by a retaining clip.

Figure 12 is a perspective view of the sound generation element wrapped around a golf shaft with a retaining clip.

Figure 13 is a sectional view of the present invention wrapped around a golf shaft with a retaining clip.

Figure 14 is a perspective view of the sound generation device attached to means for ties.

Figure 15 is a perspective view of the sound generation element of the present invention attached to a tennis racquet.

Figure 16 is a perspective view of the sound generation device of the present invention attached to a tennis racquet.

**LIST OF REFERENCE NUMERALS**

With regard to reference numerals used, the following numbering is used throughout the drawings.

- 10 present invention
- 12 sound generation element
- 14 sound generation attachment element
- 18 golf club
- 20 golf club shaft
- 22 wire reinforced line
- 24 clip
- 26 arm of clip
- 28 aperture
- 30 golfer
- 32 point of back swing
- 34 point of incorrect acceleration
- 36 point of flutter sound
- 38 tennis racquet
- 40 adhesive material
- 42 clip mating member
- 44 slot
- 46 post
- 48 wall
- 50 small clip
- 52 hook and loop material

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following discussion describes in detail one embodiment of the invention and several variations of that embodiment. This discussion should not be construed, however, as limiting the invention to those particular embodiments. Practitioners skilled in the art will recognize numerous other embodiments as well. For definition of the complete scope of the invention, the reader is directed to appended claims.

Turning to Figure 1, shown therein is a perspective view of the present invention 10 disposed on a golf club 18 having a sound generation element attached thereto whereby a golfer 30 will cause the sound generation element to emit a sound by jerking the golf club 18 during the top of the back swing. If the golfer 30 jerks the golf club 18 back at the back swing point 32 or has incorrect acceleration at point 34, e.g., a flutter sound or other sound will be emitted at point 36.

Turning to Figure 2, shown therein is a perspective view of the present invention 10 attached to the shaft 20 of a golf club. The sound generation element may be made of a stiff pliant material, such as paper or plastic or the like that is fixed to the golf club shaft 20 for the purpose of generating a sound under predetermined conditions during a sweeping motion of the golf club 18.

Turning to Figure 3, shown therein is a perspective view of the present invention 10 showing the sound generation element 12 having a partial layer of adhesive material 40 on one portion thereof. The adhesive material will bond the sound generation element 12 to, e.g., a golf club shaft 20, by being wrapped around the shaft 20.

Turning to Figure 4, shown therein is a view of the sound generation device of the present invention 10 attached to shaft 20. The sound generation element 12 is wrapped around the shaft 20 and adhesively attached to itself. The sound generation element 12 encloses shaft 20 without being affixed thereto. Thereby the sound generation element 12 is able to freely rotate around shaft 20. During use of the present invention the sound generation 12 will rotate around shaft 20 lagging during a sweeping motion.

Turning to Figure 5, shown therein is a perspective view of the present invention 10 showing the sound generation element 12 having a mating hook and loop material 52 on one end thereof. The hook and loop material is spaced apart so that a golf club shaft can be placed between said mating members whereupon said mating members will be engaged enclosing the golf club shaft therein. The sound generation element 12 having been releasably fixed to golf club shaft 20 has sufficient circumference to freely rotate about club shaft 20.

Turning to Figure 6, shown therein is a view of the sound generation device of the present invention 10 attached to a shaft 20. The sound generation element 12 is wrapped around the shaft 20 and the mating hook and loop material 52 is attached to itself enclosing shaft 20 without being affixed thereto. Thereby the sound generation element 12 is able to freely rotate around shaft 20. During use of the present invention the sound generation 12 will rotate around shaft 20 lagging during a sweeping motion.

Turning to Figure 7, shown therein is a perspective view of the sound generation device of the present invention 10. The sound generation element

12 being of a semi-rigid pliant material is fixed to a post 46 which is attached to the means of attachment element being a clip 24. The clip 24 has a slotted aperture 44 in the wall 48 thereof wherethrough the post 46 of the sound generation element can be inserted and retained thereby. The clip 24 has a slotted aperture 28 formed by divergent arms 26 whereby the clip attachment element can be pressed onto sporting equipment. The divergent arms 26 provide means for easily dismounting the sound generation element from the sporting equipment.

Turning for Figure 8, shown therein is a perspective view of the sound generation device of the present invention 10 showing the sound generation element 12 wrapped around the post 46 a selective number of times whereby the length of the sound generation element 12 can be varied. Other elements previously disclosed are also shown.

Turning to Figure 9, shown therein is a perspective view of the sound generation device of the present invention 10 showing the sound generation element 12 wherein the post 46 is inserted into a slotted aperture 44 within the wall of the means of attachment element 24. The means of attachment element 24 grips a portion of sporting equipment, such as a golf club. The means of attachment clip 24 can be rotated upon the sporting equipment through a predetermined number of degrees whereby the sound generation element 12 can be rotated to generate a sound through a sweeping motion in either of the back swing or fore swing of a golf club.

Turning to Figure 10, shown therein is a view of the sound generation device of the present invention 10. The sound generation device is comprised

of a sound generation element 12 being a length of semi-rigid pliant material fixedly attached to a post 46 which forms a sound generation attachment element mating member for insertion into a small clip 50 disposed on the back of the large clip 24 opposite to arms 26.

Turning to Figure 11, shown therein is a view of the sound generation device of the present invention 10 attached to a sporting equipment shaft 20. The sound generation device is comprised of a sound generation element 12 having a length of semi-rigid pliant material fixedly attached to a post 46 which forms a sound generation attachment element mating member for insertion into a small clip 50 on the back of the large clip 24.

Turning to Figure 12, shown therein is a perspective view of the sound generation device partially mounted onto a sporting equipment shaft 20. The sound generation device is comprised of a sound generation element 12 and a mounting element 24. The sound generation element 12 can be wrapped around the sporting equipment shaft until a desired length of the sound generation element is exposed, whereupon the clip attachment element 24 is pressed onto the shaft 20 over the sound generation element movably fixedly positioning the sound generation element a desired length onto the sporting equipment shaft 20.

Turning to Figure 13, shown therein is a view of the sound generation device of the present invention 10 attached to a shaft 20. The sound generation element 12 is wrapped around the shaft 20 until a desired length of sound generation element is exposed. The sound generation attachment

element 24 holds the sound generation element 12 at the aforementioned selective positioning onto the sporting equipment shaft 20.

Turning to Figure 14, shown therein is a perspective view of the sound generation device comprised of a sound generation element 12 and a sound generation attachment means forming an integral part therewith. The sound generation device, as shown, is a semi-rigid planar pliant material fixed to multiple lengths of a suitable tying or twisting material, such as cord or wire reinforced cord 22. The sporting equipment is encircled by the opposing lengths of the tie material 22 positioned at each distal end. The lengths of line 22 are then tied or twisted around the portion of sporting equipment. This configuration enables the sound generation element 12 to be attached to irregular objects such as a tennis racquet. It also provides for selective attachment as need be.

Turning to Figure 15, shown therein is a perspective view of the present invention 10 attached to a tennis racquet 38. The sound generation device 10 is comprised of a sound generation element detachably attached to the tennis racquet 38 by means of ties 22 forming an integral part of the sound generation element. The sound generation device will emit a sound during an accelerated jerky sweeping motion of the tennis racquet 38 as opposed to a smooth sweeping motion.

Turning to Figure 16, shown therein is a perspective view of the sound generation device of the present invention comprising a sound generation element 12 and a means of attachment element 22. The sound generation

element is comprised of a semi-rigid pliant material attached to the rim of a tennis racquet 38 by ties 22.

**CLAIMS**

What is claimed to be new and desired to be protected by Letters Patent is set forth in the appended claims:

I claim:

1. A sound producing apparatus for attachment to sporting equipment such as a golf club shaft or tennis racquet rim for use as an aid to improve the swing of an athlete such as a golfer or tennis player, comprising:
  - a) a means for generating a sound, whereby sound is generated during a jerky swinging motion of the athlete; and,
  - b) a means for attaching said means for generating a sound to sporting equipment whereby said means for generating a sound is securely attached to the sporting equipment.
2. The apparatus of Claim 1, wherein said means for generating a sound further comprises pliable material so that said pliable material will flutter during a jerky swinging motion of the athlete.
3. The apparatus of Claim 2, wherein said means for attaching said pliable material to sporting equipment further comprises wrapping said pliable material around the sporting equipment.
4. The apparatus of Claim 3, wherein said means for attaching said pliable material to sporting equipment further comprises adhesive material disposed on a portion of pliable material.
5. The apparatus of Claim 4, wherein said adhesive material bonds said pliable material to said sporting equipment.

6. The apparatus of Claim 4, wherein said adhesive material bonds said pliable material to itself encompassing a portion of said sporting equipment.
7. The apparatus of Claim 3, wherein said means for attaching said pliable material to sporting equipment further comprises mating hook and loop material disposed on a portion of said pliable material.
8. The apparatus of Claim 7, wherein said mating hook and loop material fastens to its opposing member and encompasses a portion of said sporting equipment.
9. The apparatus of Claim 2, wherein said means for attaching said pliable material to sporting equipment further comprises a clip, said clip further comprising a pair of flexible arms, said arms encircling the sporting equipment so as to secure said clip to the sporting equipment.
10. The apparatus of Claim 9, wherein said pair of flexible arms encircles said pliable material and the sporting equipment so as to secure said pliable material to the sporting equipment.
11. The apparatus of claim 9, wherein said clip has a vertically disposed slot therein, said slot disposed on a wall of said clip opposite to said pair of arms, further comprising an elongated post, wherein said pliable material is wrapped around said post, said post passing through said slot, said post disposed internal said clip with said pliable material trailing therebehind.
12. The apparatus of Claim 11, wherein said pliable material is attached to a side of said post, said post disposed internal said clip.
13. The apparatus of Claim 9, further comprising a second smaller clip disposed on a wall of said first clip opposite to said pair of arms, further

comprising an elongated post for insertion into said smaller second clip, said post having said pliant material attached thereto.

14. The apparatus of Claim 3, wherein said means for attaching said pliable material to sporting equipment further comprises a cord, wherein said pliable material is attached to said cord, said cord being tied to the sporting equipment.

15. The apparatus of Claim 14, wherein said cord further comprises reinforced line.

16. A golf swing training device comprising less than 50 square inches of polyester film being easily secured to a golf club or other sports racket shaft.

17. The device of claim 16, wherein said polyester film is attached adhesively to said sporting equipment.

18. The device of claim 16, wherein said polyester film is alternately attached by a plastic clip to said sporting equipment.

19. The device of claim 16, wherein said polyester film is attached by means of a plastic clip to said sporting equipment.

20. The device of claim 16, wherein said polyester film will produce a humming sound at a predetermined club head speed that is set by the planar surface area of the polyester film.

21. The device of claim 16, wherein the surface area of the polyester film can vary to accommodate various swing speeds.

**AMENDED CLAIMS**

[received by the International Bureau on 04 December 2001 (04.12.01);  
original claims 1-21 replaced by amended claims 1-28 (6 pages)]

**1. An apparatus comprising:**

a sound generation element comprised of a means for attaching the sound generation element to a sporting equipment shaft;  
wherein said means for attaching attaches the sound generation element to the sporting equipment shaft so that the sound generation element can freely rotate around the sporting equipment shaft.

**2. The apparatus of Claim 1, wherein**

the sound generation element further comprises pliable material so that said pliable material will flutter during a jerky swinging motion of the sporting equipment shaft by an individual.

**3. The apparatus of Claim 1, wherein**

the sporting equipment shaft is a golf club shaft.

**4. The apparatus of Claim 3, wherein**

said means for attaching comprises adhesive material disposed on a portion of the sound generation element.

**5. The apparatus of Claim 4, wherein said adhesive material is located at a location on the sound generation element which allows the sound generation element to be attached to the sporting equipment shaft and to rotate with respect to the sporting equipment shaft.**

6. The apparatus of Claim 4, wherein

    said adhesive material bonds the sound generation element to itself and causes the sound generation element to encompass a portion of the golf club shaft.

7. The apparatus of Claim 3, wherein

    said means for attaching comprises mating hook and loop material disposed on a portion of the sound generation element.

8. The apparatus of Claim 7, wherein

    said mating hook and loop material fastens to itself to cause a portion of the golf club shaft to be encompassed by the sound generation element.

9. An apparatus comprising

    a sound generation element;

    a first clip;

    wherein the first clip can be attached to a sporting equipment shaft;

    wherein the sound generation element can be attached to the first clip to thereby attach the sound generation element to the sporting equipment shaft;

    wherein the first clip can be attached to the sporting equipment shaft so that the first clip can freely rotate around the sporting equipment shaft.

10. The apparatus of Claim 9, wherein

    the first clip further comprises a pair of flexible arms, said arms encircling the sporting equipment shaft so as to secure said first clip to the sporting equipment shaft while allowing the

clip to rotate with respect to the sporting equipment shaft.

11. The apparatus of claim 9, further comprising

a post connected to the sound generation element;

wherein said first clip has a vertically disposed slot therein, said slot disposed on a wall of said clip opposite to said pair of flexible arms;

and wherein the post can be inserted into the vertically disposed slot of the first clip to attach the sound generation element to the first clip.

12. The apparatus of Claim 11, wherein

said sound generation element is connected to a side of said post.

13. The apparatus of Claim 9, further comprising

a second clip disposed on a wall of said first clip opposite to said pair of arms, wherein the second clip is smaller than the first clip;

further comprising an elongated post connected to the second clip for insertion into said smaller second clip.

14. The apparatus of Claim 2, wherein

said means for attaching said sound generation element to the sporting equipment shaft further comprises a cord, wherein said sound generation element is attached to said cord, said cord being tied to the sporting equipment shaft.

15. The apparatus of Claim 14, wherein

said cord further comprises reinforced line.

16. A golf swing training device comprising  
a material which is less than fifty square inches;  
a means for attaching the material to a sporting equipment shaft so that the material can  
rotate around the sporting equipment shaft.

17. The device of claim 16, wherein  
said means for attaching is comprised of an adhesive.

18. The device of claim 16, wherein  
said means for attaching is comprised of a plastic clip.

19. The device of claim 16, wherein said material is a polyester film.

20. The device of claim 16, wherein when the material is attached to a golf club shaft which is  
attached to a golf club head said material will produce a humming sound at a predetermined  
club head speed of the golf club head that is set by a planar surface area of the material.

21. The device of claim 16, comprising a plurality of materials, each having a plurality of  
corresponding means for attaching to the sporting equipment shaft wherein the surface area of at  
least one of the plurality of materials differs from the surface area of one of another of the plurality  
of materials.

22. A method comprising the step of

attaching a sound generation element to a sporting equipment shaft, so that the sound generation element can freely rotate around the sporting equipment shaft.

23. The method of claim 22 wherein

the sound generation element further comprises pliable material so that said pliable material will flutter during a jerky swinging motion of the sporting equipment shaft by an individual.

24. The method of claim 22 wherein

the sporting equipment shaft is a golf club shaft.

25. The method of claim 22 wherein

the sound generation element is attached to the sporting equipment shaft through a first clip.

26. The method of claim 25 wherein

the clip comprises a pair of flexible arms, said arms encircling the sporting equipment shaft so as to secure said first clip to the sporting equipment shaft while allowing the first clip to rotate with respect to the sporting equipment shaft.

27. The method of claim 26

wherein the sound generation element is connected to a post;

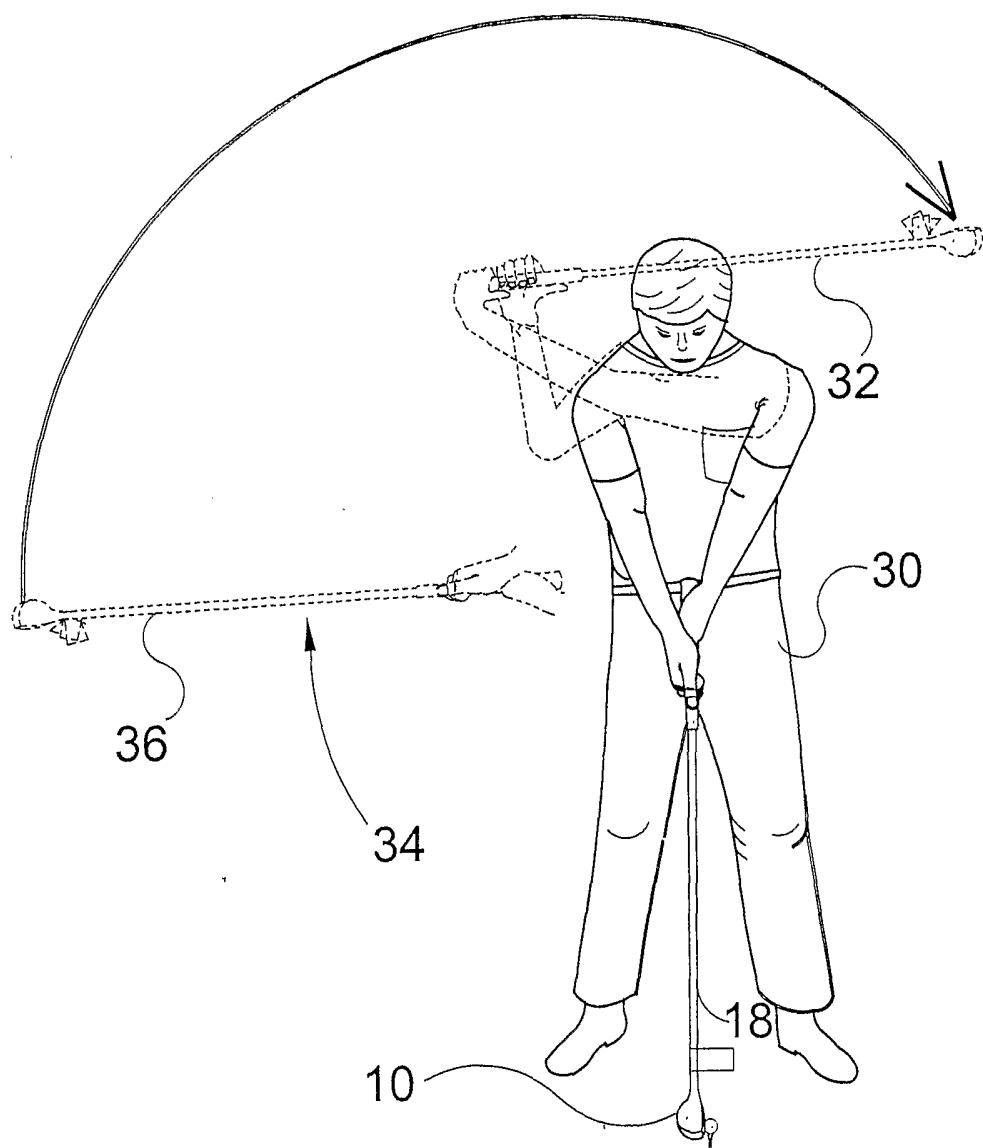
wherein said first clip has a vertically disposed slot therein, said slot disposed on a wall of

said clip opposite to said pair of flexible arms;

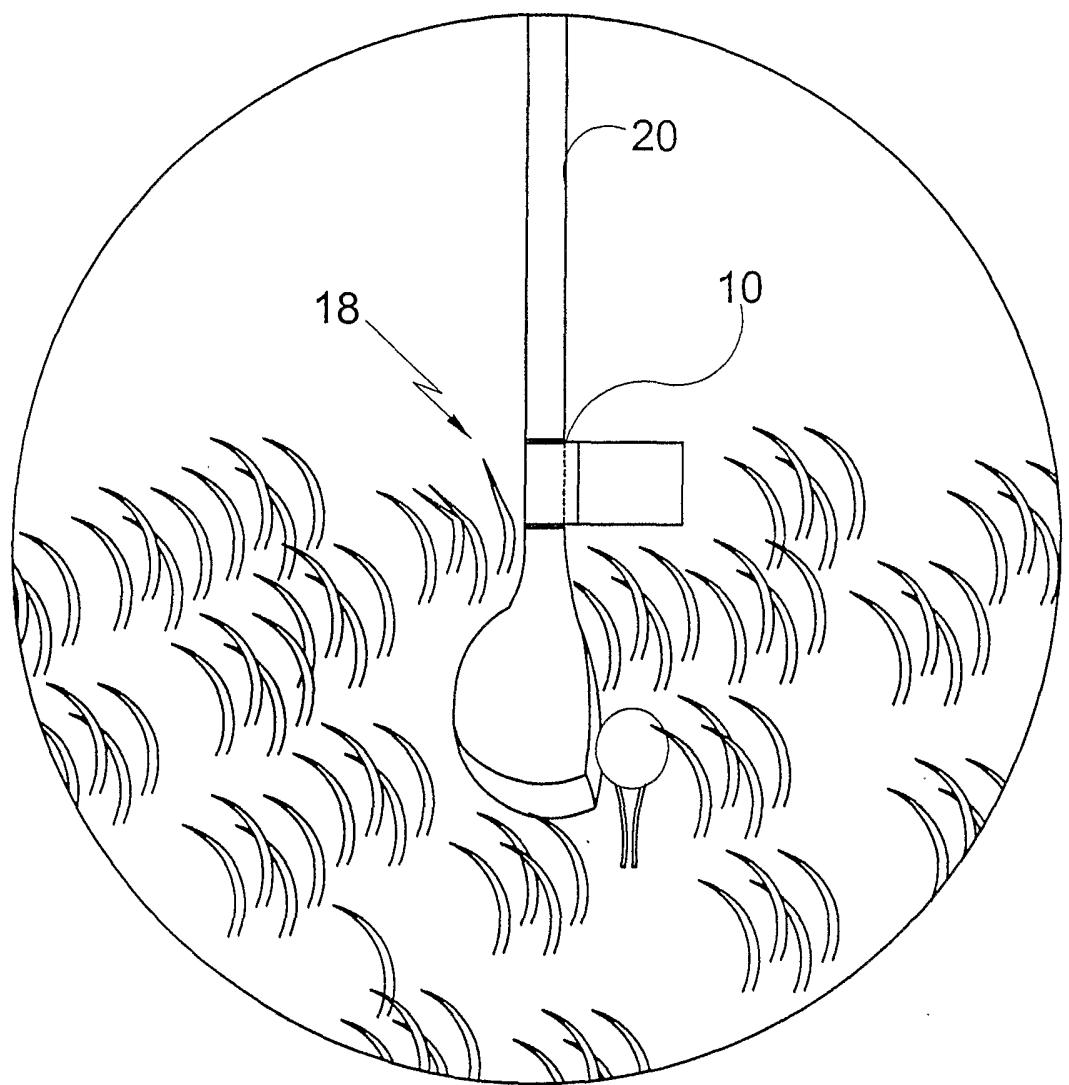
and wherein the post can be inserted into the vertically disposed slot of the first clip to attach the sound generation element to the first clip.

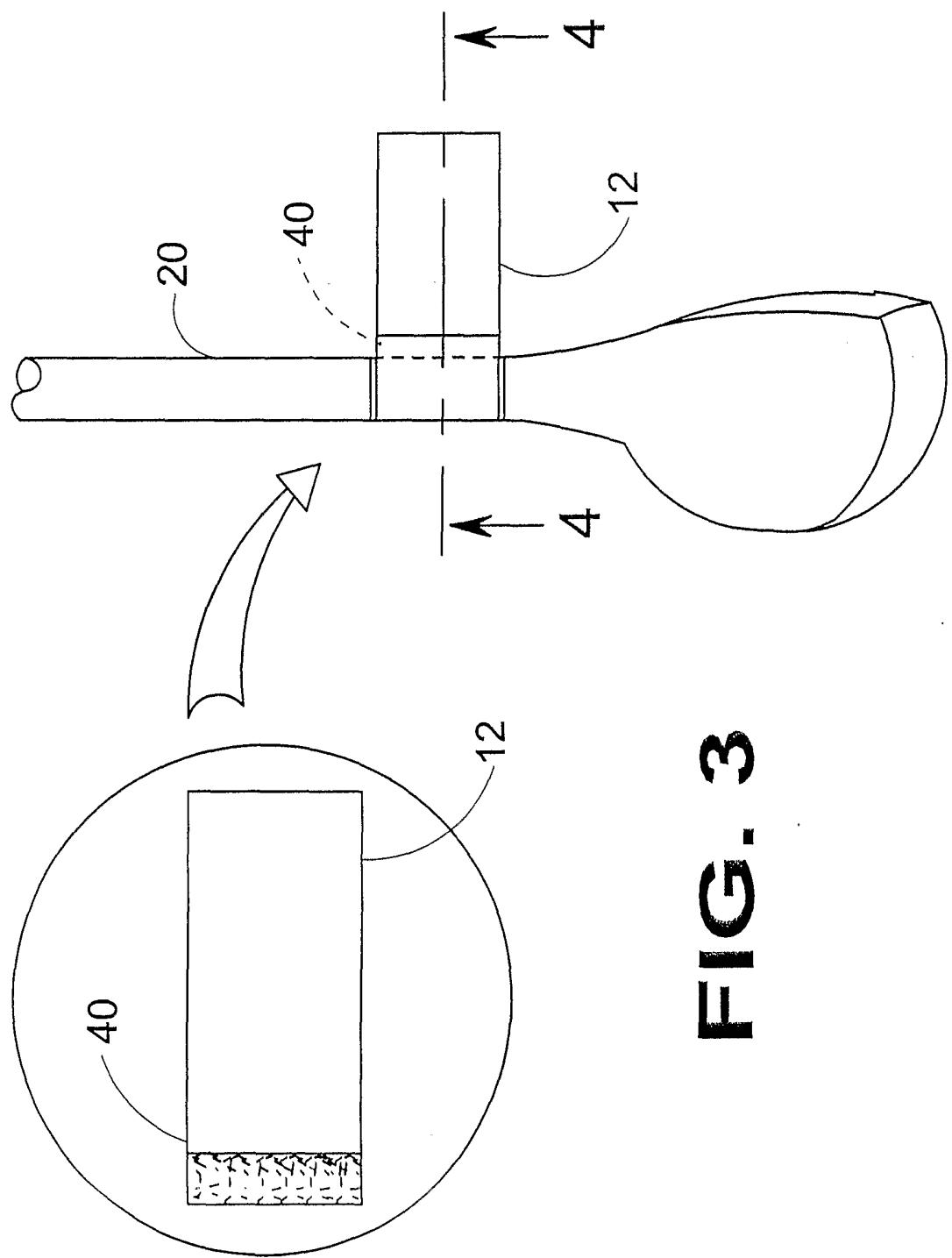
28. The method of Claim 26, wherein

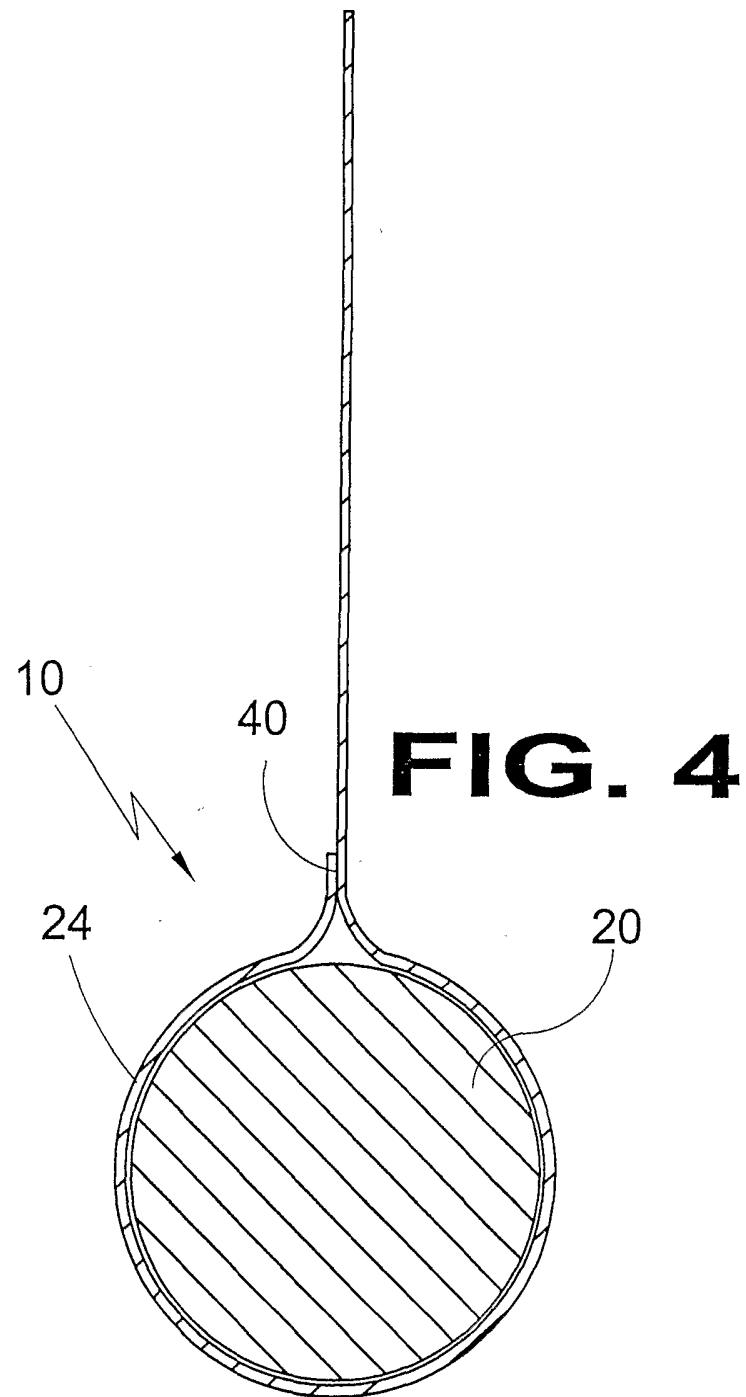
the first clip is connected to a second clip disposed on a wall of said first clip opposite to said pair of arms, wherein the second clip is smaller than the first clip; further comprising inserted an elongated post connected to the sound generation element for insertion into the said second clip.



**FIG. 1**

**FIG. 2**





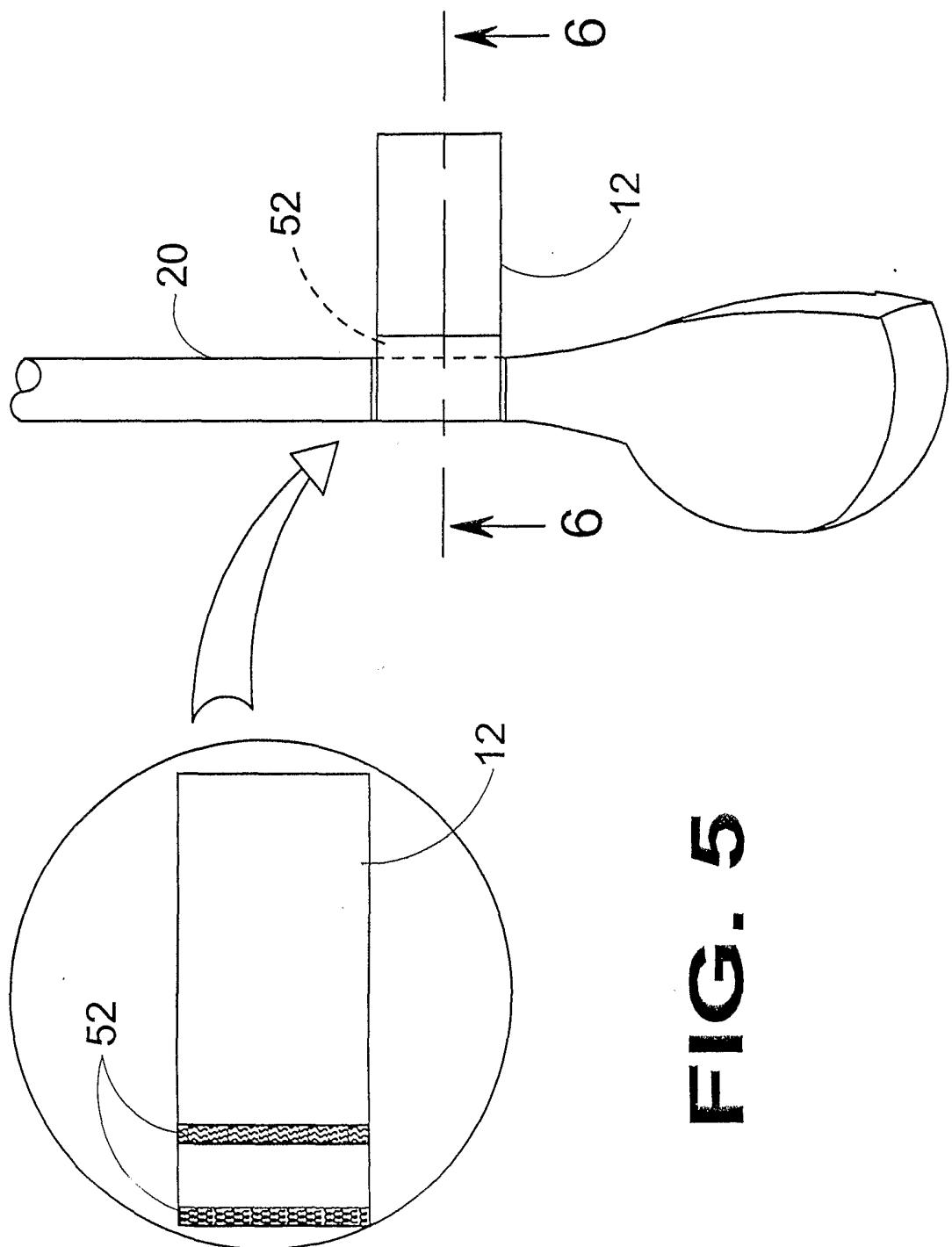
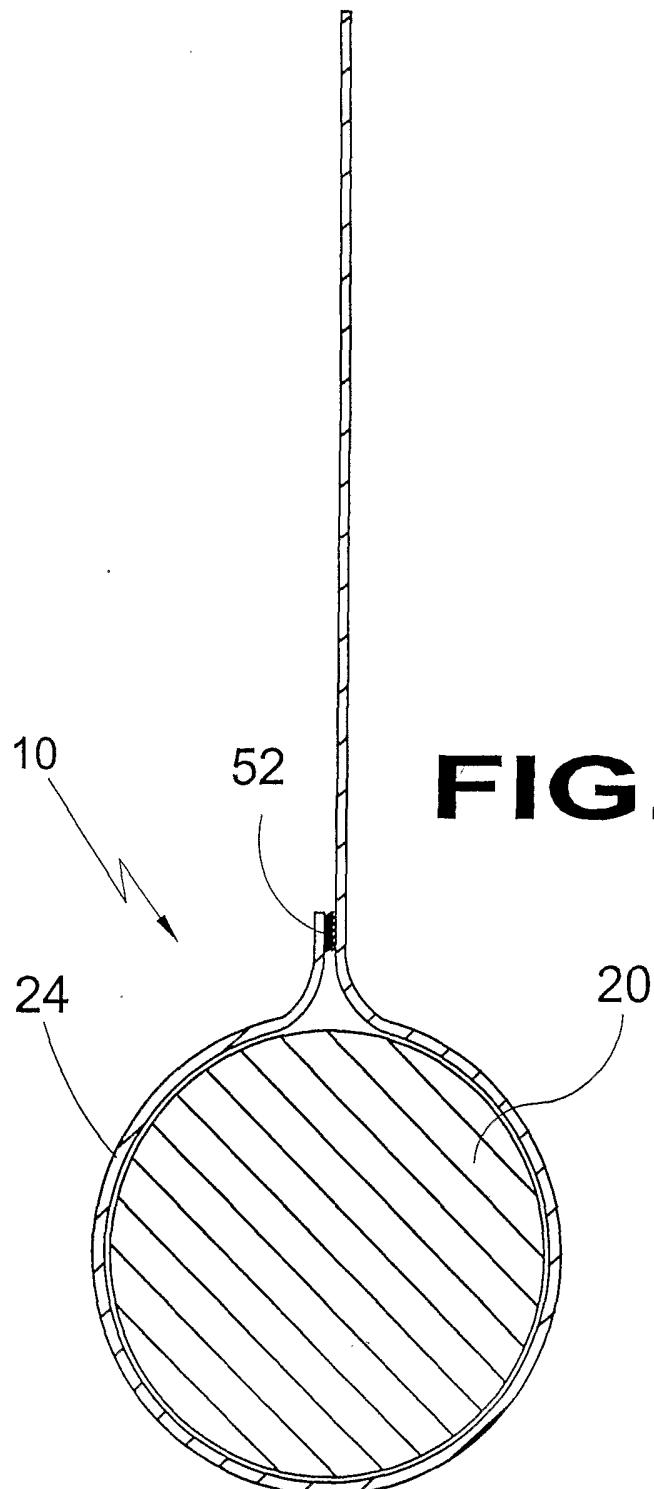
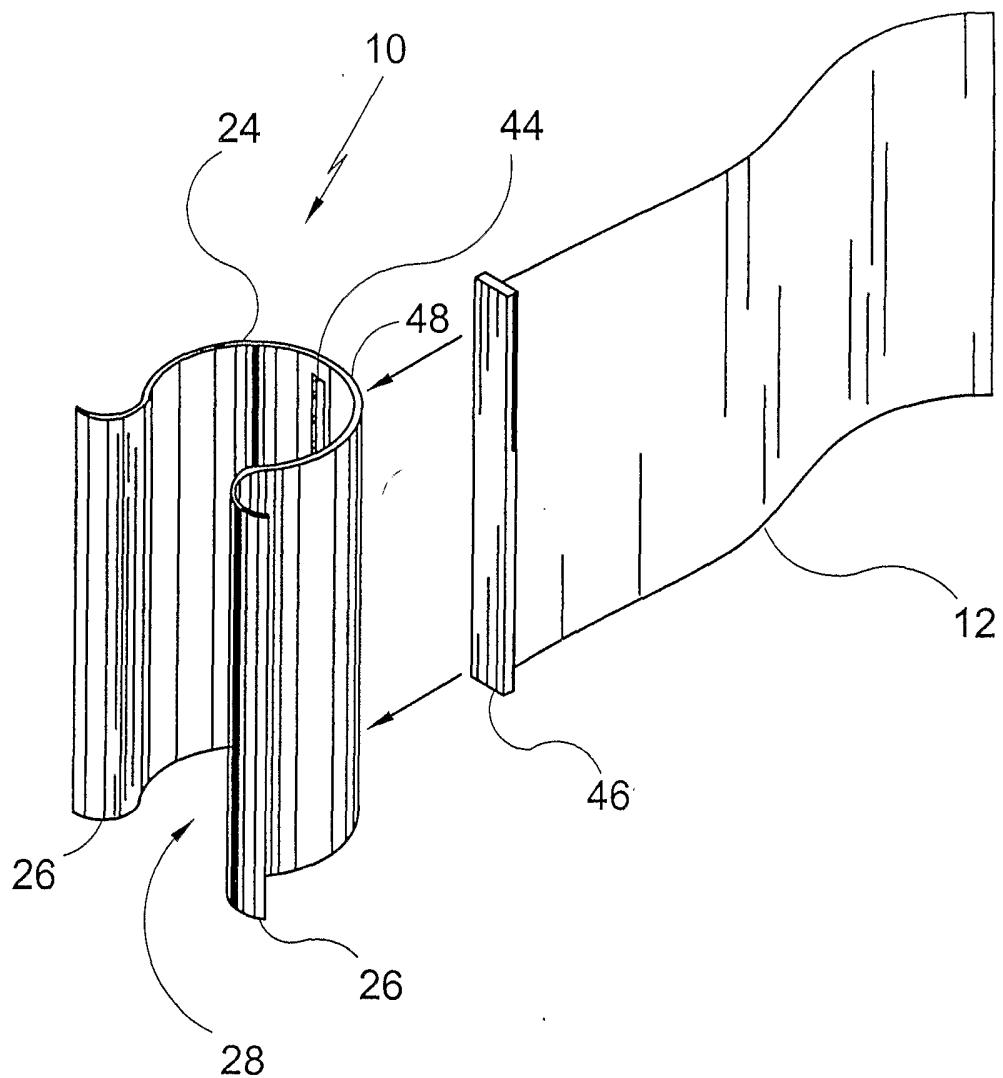
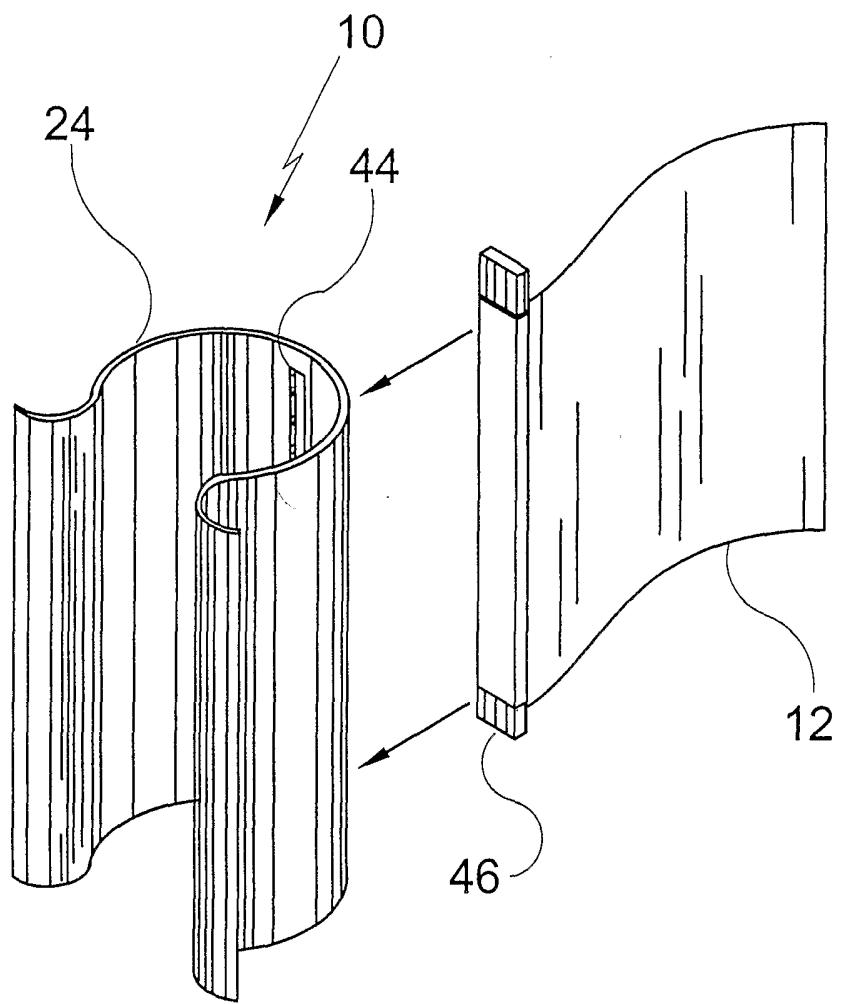


FIG. 5

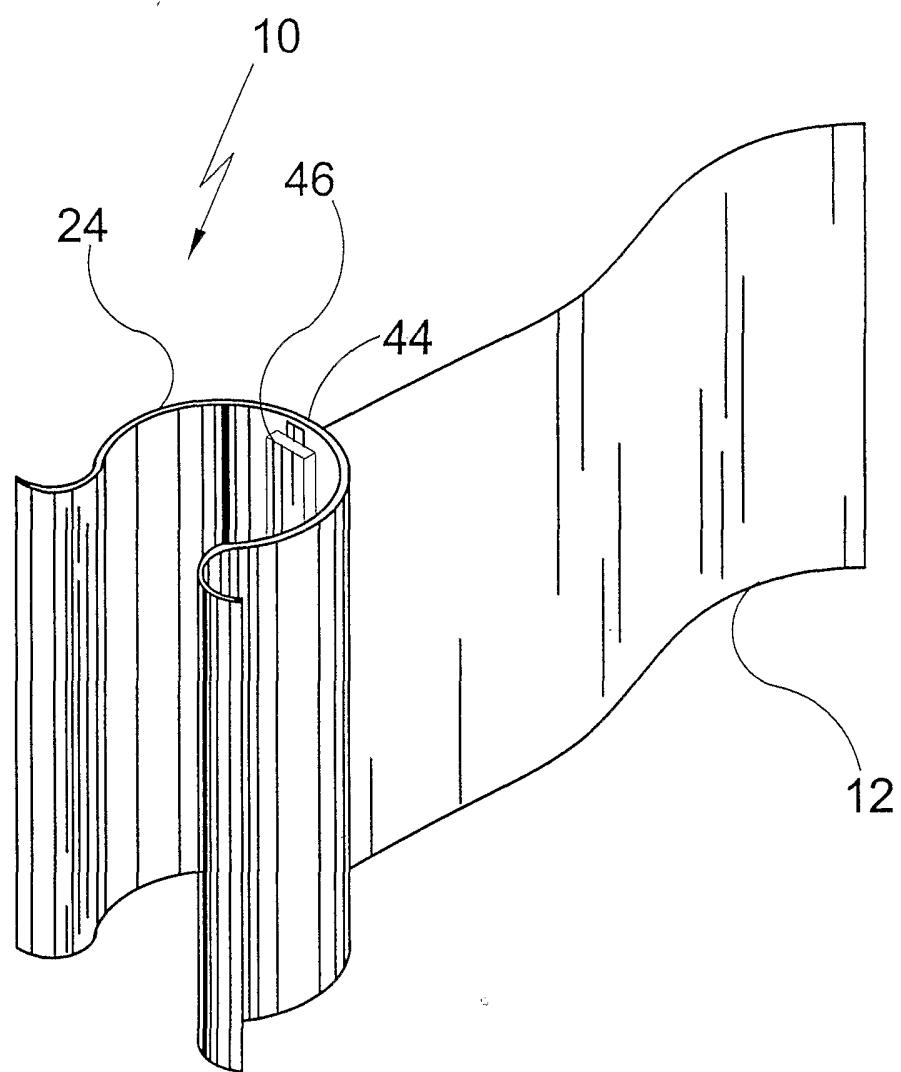
**FIG. 6**

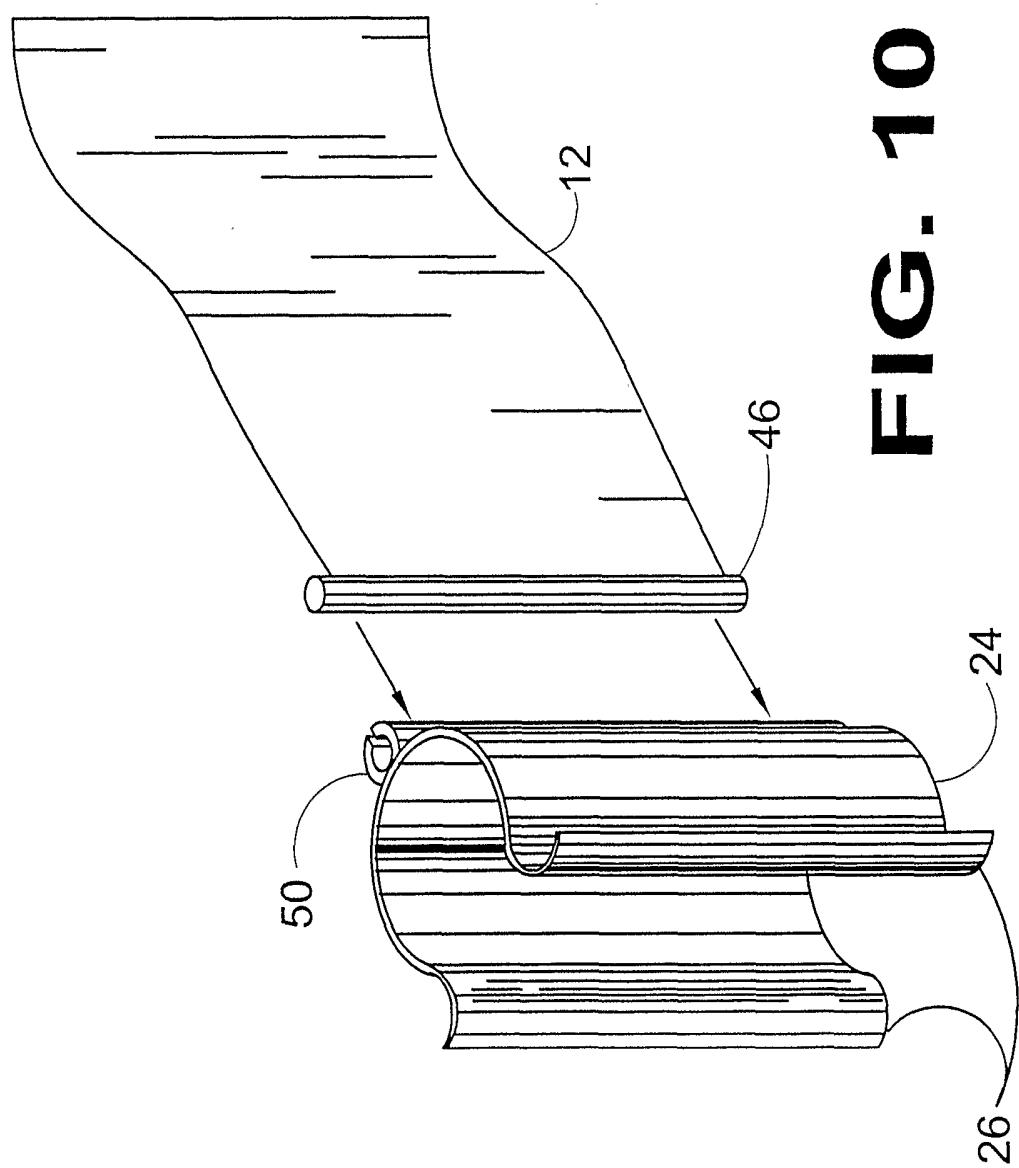


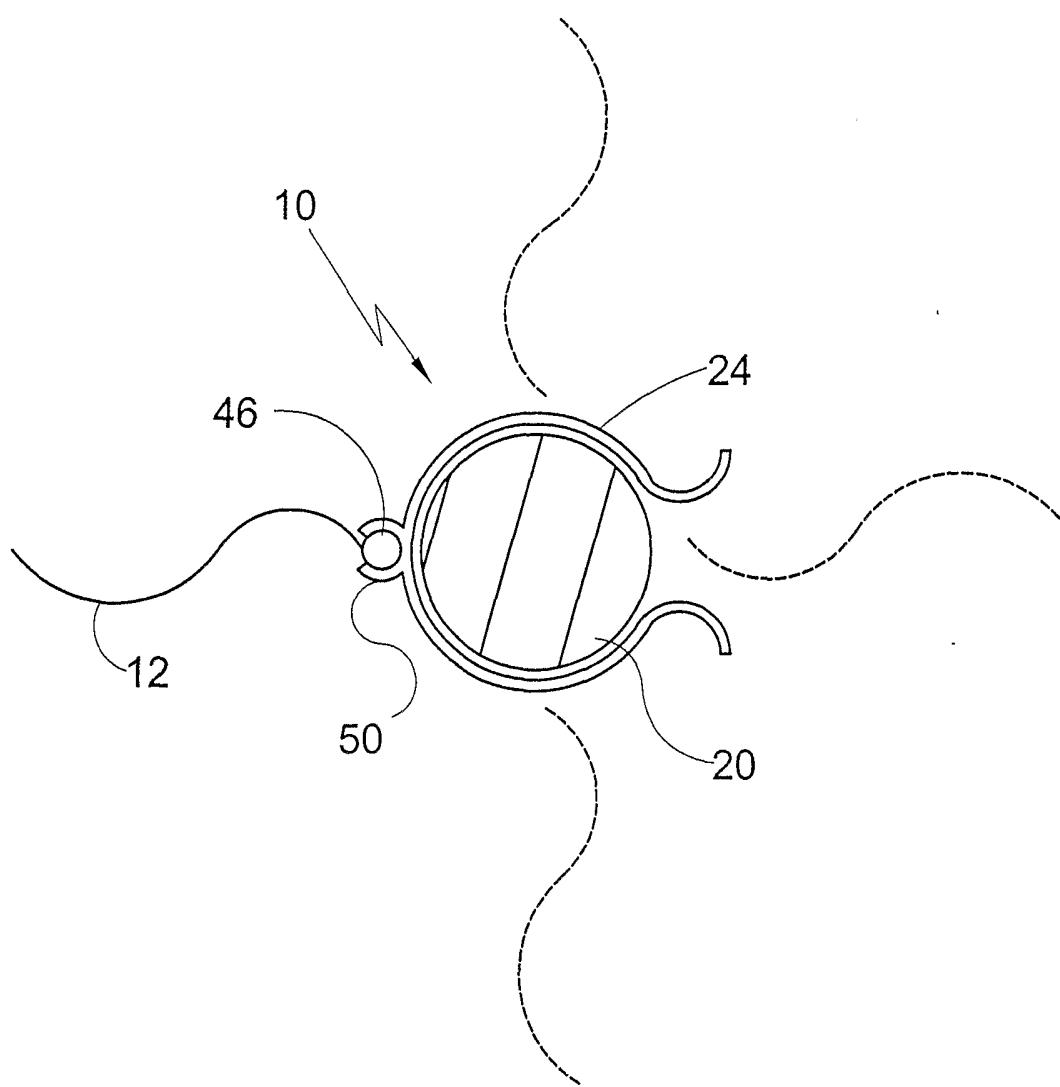
**FIG. 7**



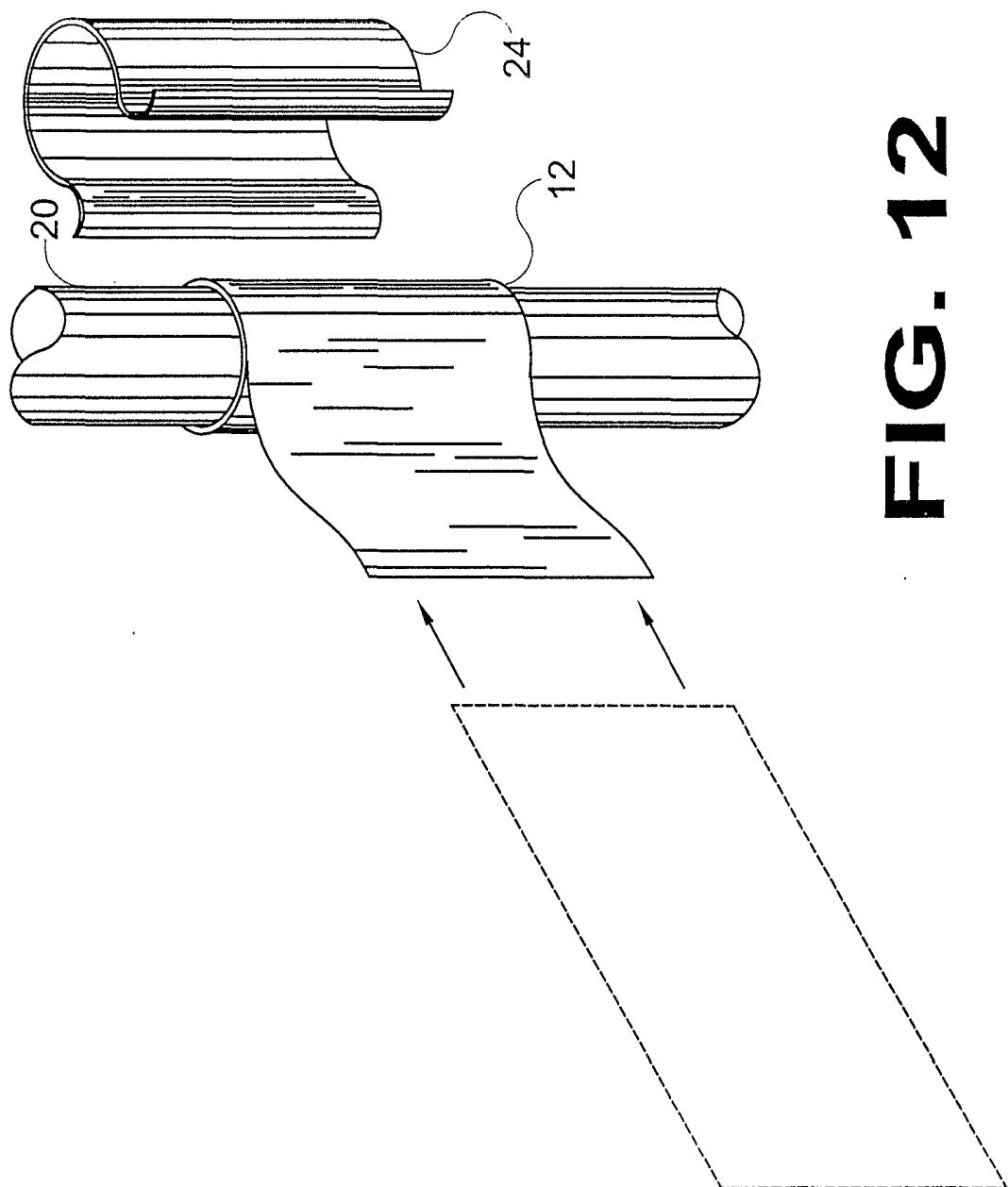
**FIG. 8**

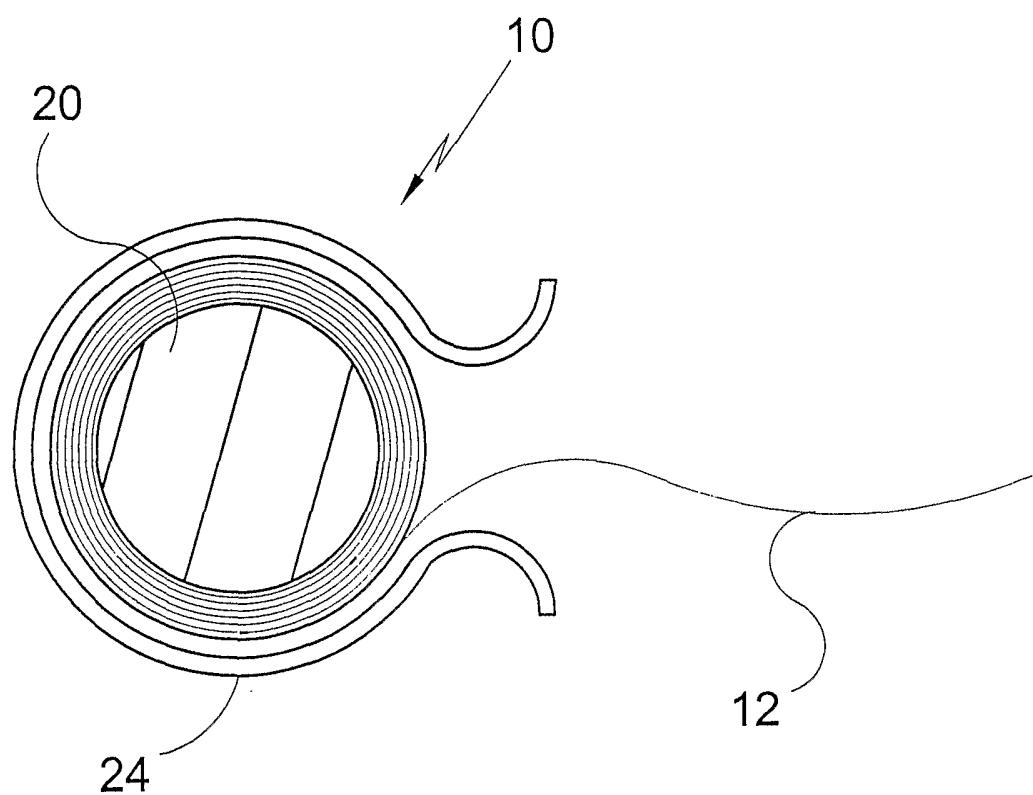
**FIG. 9**

**FIG. 10**

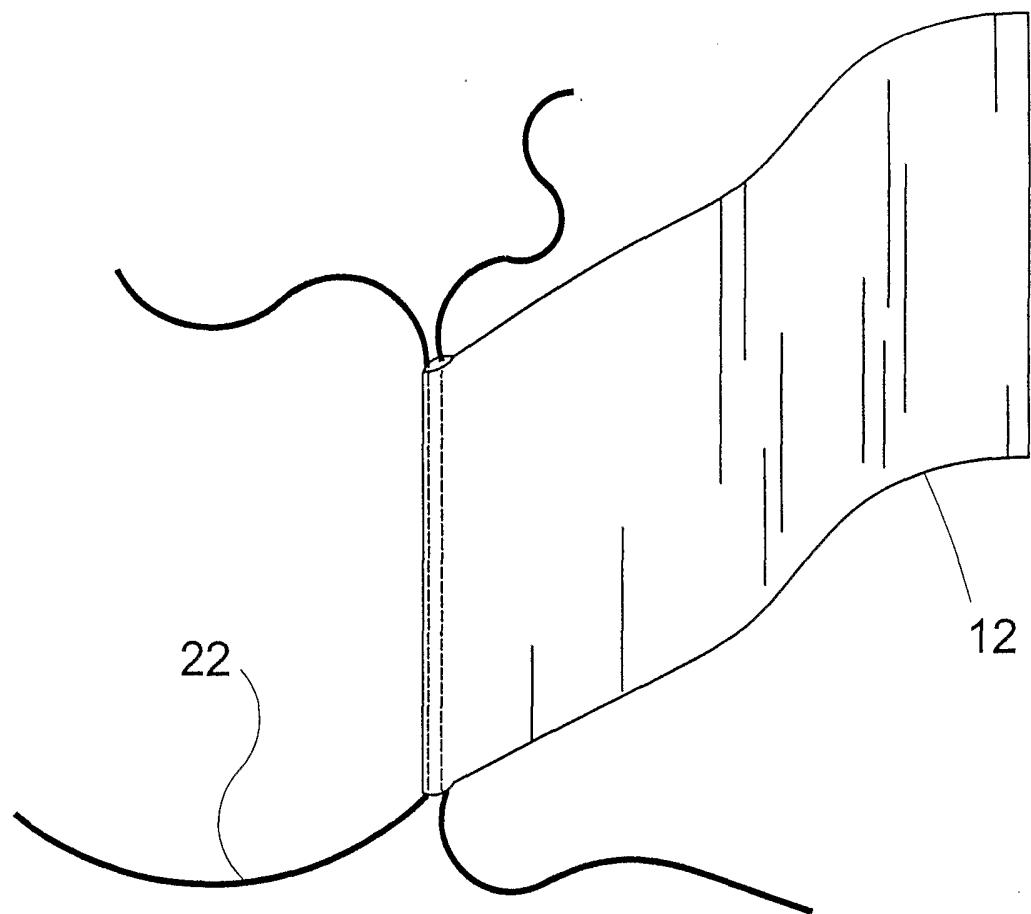


**FIG. 11**

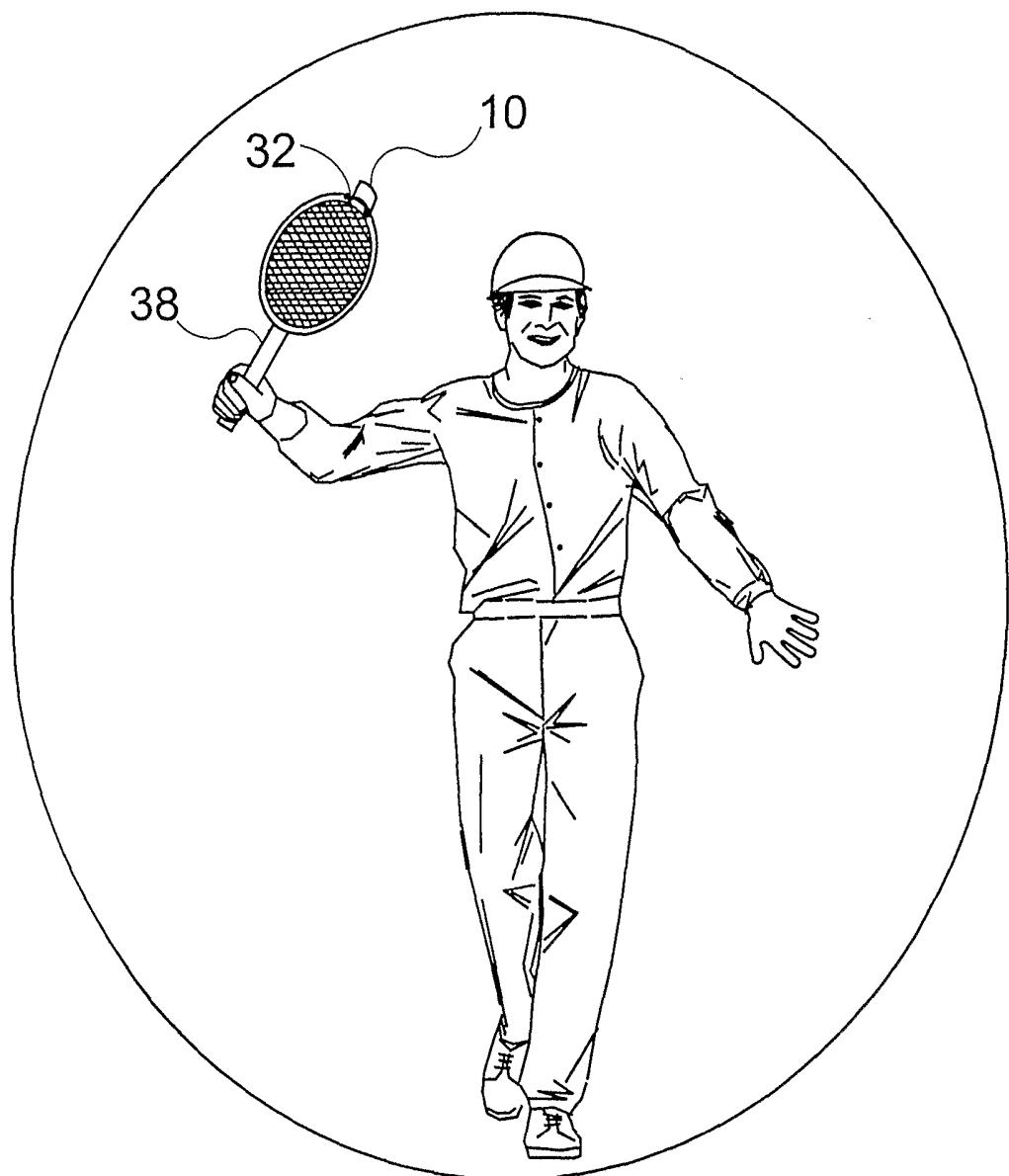
**FIG. 12**



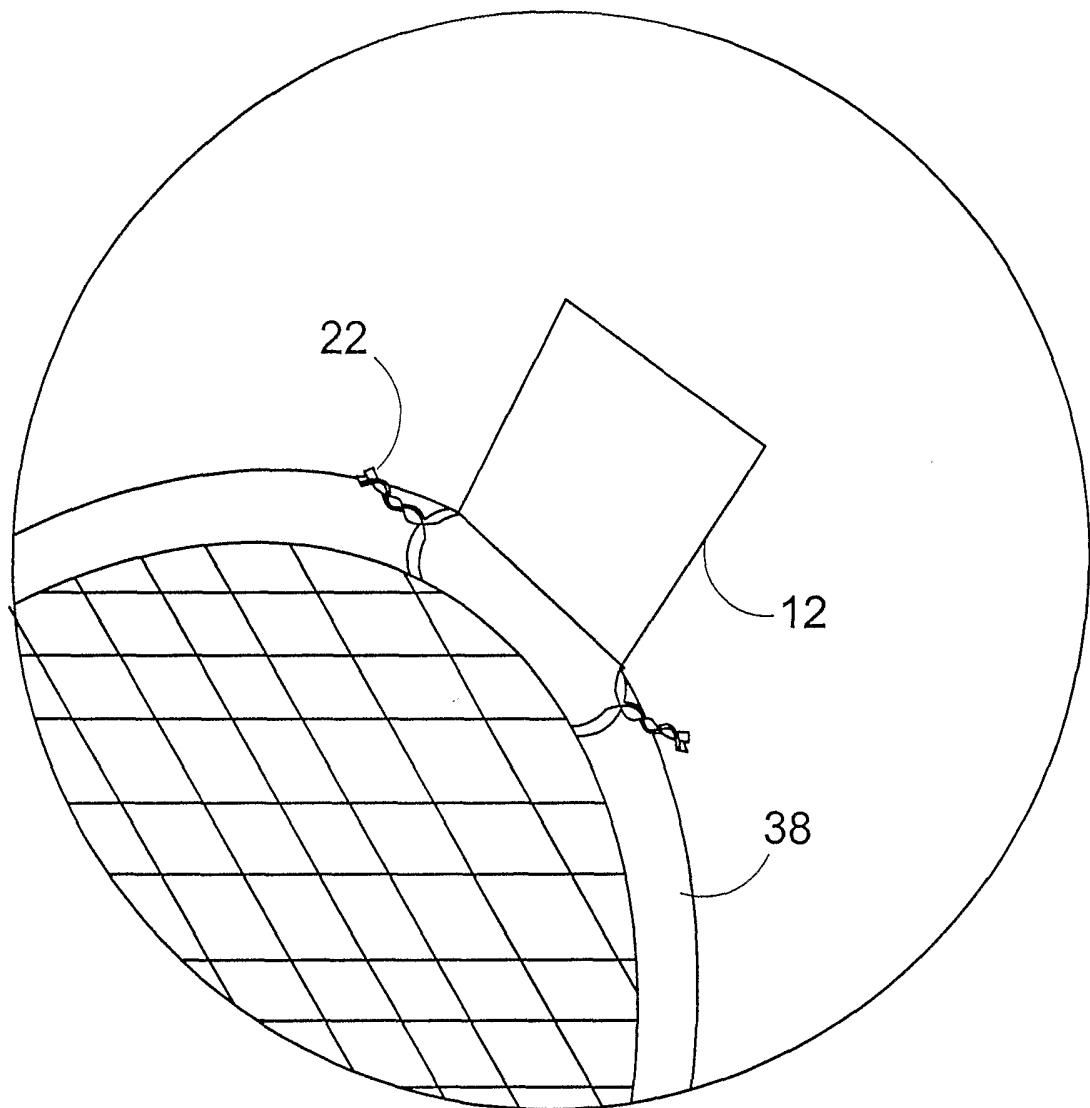
**FIG. 13**



**FIG. 14**



**FIG. 15**



**FIG. 16**

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US01/26686

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :A63B 69/36  
US CL :473/224, 227, 234, 524

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 473/226, 227, 228, 224, 234, 553, 516, 524, 219; 273/186.2, 186.1, 193R, 194R, 194A; 116/173, 174

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Extra Sheet.

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,335,918 A (RUPNICK et al) 09 August 1994, col. 2, line 55 through col. 3, line 20.	1
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Y		9-13
X	US 4,813,369 A (MORELAND) 21 March 1989, col. 2, line 31 through col. 3, line 2.	1, 2, 3, 7, 8, -----
---		4-6
Y		
X	US 4,901,662 A (SANDEEN et al) 20 February 1990, col. 3, line 18 through col. 6, line 50.	16-21
X	US 5,571,048 A (KENNEY) 05 November 1996, col. 3, lines 33-62.	1, 4, 5

Further documents are listed in the continuation of Box C.  See patent family annex.

*	Special categories of cited documents:	"T"	later documents published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)		
"O"	document referring to an oral disclosure, use, exhibition or other means	"g."	document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 19 OCTOBER 2001	Date of mailing of the international search report 16 NOV 2001
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Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer SEBASTIANO PASSANITI Telephone No. (703) 308-0858 <i>Sheila Veney</i> Paralegal Specialist Technology Center 3700
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**INTERNATIONAL SEARCH REPORT**International application No.  
PCT/US01/26686

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,174,577 A (WARDE et al) 29 December 1992, see the abstract and figs. 1, 2.	1
Y	US 1,171,699 A (BROWN) 15 February 1916, page 2, col. 1, line 31 through page 2, col. 2, line 63.	14, 15
A	US 5,398,928 A (RUDELL et al) 21 March 1995, see the entire document.	1-21
A	US 4,236,271 A (MARTINO) 02 December 1980, see fig. 1.	1-21

**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/US01/26686

**B. FIELDS SEARCHED**

Electronic data bases consulted (Name of data base and where practicable terms used):

EAST

search terms: kite, ribbon, banner, flag, polyester, velcro, hook, loop, windsock, film, sound, noise, tennis, golf, auto, car, antenna