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[Continued on next page]

(54) Title: SIDE STRIP FOR TAKRAW BALL AND TAKRAW BALL

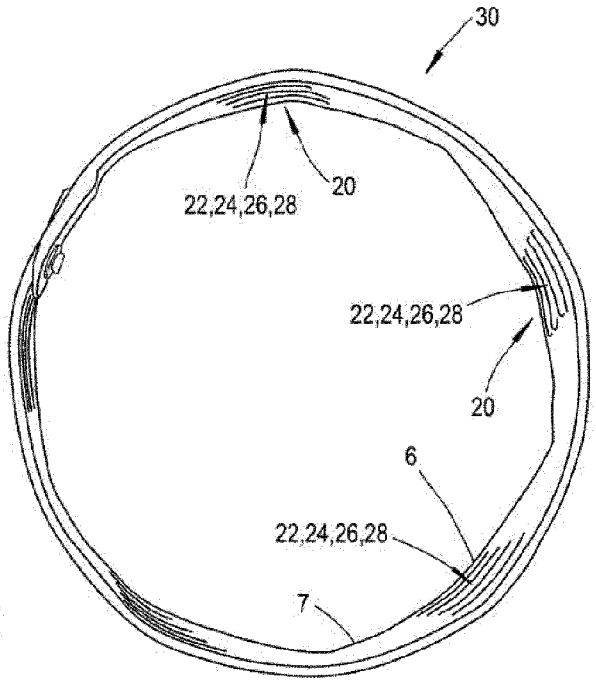

Fig.12

(57) Abstract: A takraw ball side strip (2) comprising an elongate length of plastics material having one side edge of sinusoidally undulating profile having troughs (7) and peaks (6), wherein the strip (2) is shaped or otherwise constructed to be preferentially flexible in peak regions (20) whereby, when the strip (2) is joined by its ends into a hoop (30), peak regions (20) will bend more readily than other regions of the strip. Also disclosed is A takraw ball woven from side strips as described, a more flexible peak region (20) of one strip (20a) may be positioned to overlie a less flexible strip region (34), located between a peak region (20) and a trough (7), of an underlying strip (20b).

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— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*

SIDE STRIP FOR TAKRAW BALL AND TAKRAW BALL

This invention relates to takraw balls and it particularly relates to an improved method of manufacturing takraw balls.

Background

Sepak Takraw is played by opposing teams passing a takraw ball across a chest-high net using feet, knees, head, shoulders etc., i.e. every part of the body except the player's hands and arms. The object of the game is to ground the ball in the opposing team's court; the rules of the game are similar to volleyball. Another form of takraw is hoop takraw, only one team plays at a time and the players co-operate to get the ball into a vertically orientated hoop some 5 meters above the ground.

Prior Art

Document GB 2196861 A (11 May 1988 – Boonchai Lorhpipat) describes the manufacture of traditional takraw balls by conventionally weaving split rattan strips into a spherical basket and the manufacture of takraw balls by weaving strips of plastics material into interwoven hoops.

More particularly and as described in GB 2196861, with reference to the drawings wherein Fig. 1 shows a Thai takraw ball and Figs. 2, 3 and 4 are, respectively, a plan, a side elevation and an underplan of a side strip for the ball of Fig. 1. Such a prior art takraw ball is manufactured by the steps of:

i) weaving strips (2) and (3) into a spherical basket (1) and joining the ends of each woven strip into a hoop, each strip being formed of an elongate, generally flat length (4) of plastics material having one convex side edge (5) of constant radius and the other side edge of sinusoidally undulating profile having troughs (7) and peaks (6), the hooped strip assuming a frusto-conical shape with the convex side edge in a diametral plane.

ii) arranging pairs of hooped strips (2) with the strip convex sides edges (5) opposed in a common plane and the sinusoidal sides edges relatively staggered so that interwoven hooped strips cross-over at troughs (7) of the sinusoidal sides edges, the frusto-conical hoops, being arranged back-to-back conform more to a spherical shape and the sinusoidal side edge troughs permitting hoops to interweave more tightly at cross-overs;

iii) separating each pair of hooped strips (2) by an additional hoop (3) formed of an elongate, narrow, flat and straight-side edged strip of plastics material, the additional hoop being inserted centrally between the opposed side edges (6) of each hoop pair thereby to force each hoop pair apart to tighten the weave of the ball.

The outer faces (8) of the side (2) and central (3) strips may be grooved (12) to lend elasticity to the plastics strip material and to control the weight of the ball. Each side strip is holed (16,17,) at each end with one end of the strip having a depression (15) in the outer face (8) shaped to accommodate the other strip end and enable an essentially flush surface joint to

be formed when the ends have been pop riveted together. The inner face of each strip is preferably plain.

By this method, when formed into a hoop, the side strip (3) would preferentially bend in the trough regions (7), where the strip is weakest (more flexible), this results in a polygonally-shaped hoop (2) being formed (see Fig. 5), the peaks (6) tending to be longitudinally flat and the troughs (7) longitudinally angled. This results in an irregularly shaped ball, as shown by Fig. 6, as can be seen the strip peaks (6) tend to remain flattened after weaving; leaving side-strip peaks (6) not conforming to the shape of the underlying side strip trough (7).

To overcome this irregularity, the side strips have been pre-formed by bending, kinking, the peak regions (6) as shown in Fig. 7, in a separate process prior to weaving. When formed into a hoop (2), these pre-bent peaks (6) compensate for the troughs (7); resulting in the more evenly circular hoop shown in Fig. 8 with the peaks (6) more acutely angled than the troughs (7). The resulting woven ball is shown by Fig. 9 to be more evenly spherical than the ball of Fig. 6 as the result of the peaks being longitudinally angled (of the strip), as opposed to being flattened.

Document WO 95/28206 (26 October 1995 – Satian Industries Co. Ltd.) describes a takraw ball woven from strips of composite material of which one part is of soft material and the other part of woven material; generally component parts are arranged and the strips are so woven that the outer surface of the ball is soft.

Document WO 2006/051248 (18 May 2006 - Satian Industries Co. Ltd.) describes a takraw ball woven from strips of springy material having soft material pads moulded into recesses in a strip outer face.

STATEMENT OF INVENTION

A takraw ball side strip in accordance with the present invention and embodiments thereof are set forth in the appended claims.

A side strip in accordance with the present invention bends more readily in peak regions than in trough regions whereby the hooped side strip is more nearly circular than prior art hooped side strips. A takraw ball woven from side strips in accordance with the present invention is more spherical than prior art balls as the peak regions are rounded, not flattened or angular.

Also, a side strip in accordance with the present invention eliminates one manufacturing step, thereby improving economy and providing an improved takraw ball.

In an embodiment, an inner face of the side strip is relieved in the peak region to provide more flexibility.

BRIEF DESCRIPTION

The above and further features of the present invention are illustrated in the Drawings, wherein:

Fig 10 is an underplan of a takraw ball side strip in accordance with an embodiment of the present invention;

Fig 11 is a section on the line X-X of Fig. 10

Fig 12 is an underplan of a hoop formed from the side strip of Fig 10;

and,

Fig 13 is a perspective view of a takraw ball woven from side strip as illustrated in Fig. 10.

DETAILED DESCRIPTION

The side strip (2) shown in Fig. 10 is generally similar to the side strip shown by Fig 3 and like parts have been given like references. The inner face of that region of the strip bounded on one side by a peak (20), hereinafter "the peak region", is relieved by a series of staggered parallel grooves (22,24,26,28), shown in Fig.11; the grooves are longitudinal of the strip and are in echelon, that is one groove is positioned behind and slightly offset to one side of the groove in front, with groove (22) closest to convex side edge (4) opposite the top of a peak (6) and groove (28) closest to the sinusoidal side edge adjacent a flank of a peak (6).

When riveted through holes (16,17) the thus-formed hoop (30) is shown by Fig. 12 to be generally circular with a smooth, non-angular, circular profile.

In the takraw ball (32) shown by Fig 13 the grooves (22,24,26,28), indicated by dotted lines, overlie that strip region (34) extending from a peak (20) towards a trough (7). The effect of the grooves is that this peak region is preferentially flexible so that the peak region will bend more readily than other regions of the strip; such as the trough region. This results in the near circular hoop (2) shown by Fig. 12. When the ball has been woven, the more flexible peak region (20) of one strip (20a) overlies the less flexible trough region (34) of another strip (20b). This overlying peak region (20) of strip (20a) will mould, longitudinally and laterally, to better conform to the shape of the underlying, less flexible trough region of strip (20b); resulting in the ball shown in Fig. 13 having a spherical shape closer to that of a traditional rattan ball than that of either of the balls shown in Fig. 6 or Fig. 9.

Providing grooves to introduce more flexibility to the peak region leaves full strip thickness adjacent the strip edges; to maintain strength and durability. Other shapes or patterns of relief could be used, such as a trapezoidal recess replacing the grooves.

Side strips are moulded from plastics material and the peak region relief can be moulded along with other strip features.

CLAIMS

1. A takraw ball side strip (2) comprising an elongate length of plastics material having one side edge of sinusoidally undulating profile having troughs (7) and peaks (6), wherein the strip (2) is shaped or otherwise constructed to be preferentially flexible in peak regions (20) whereby, when the strip (2) is joined by its ends into a hoop (30), peak regions (20) will bend more readily than other regions of the strip.

2. A takraw ball side strip as claimed in claim 1 wherein the side strip (2) has an inner face that is relieved (22,24,26,28) in the peak region (20) to provide more flexibility.

3. A takraw ball side strip as claimed in claim 2 wherein the relieving comprises grooves (22,24,26,28).

4. A takraw ball side strip as claimed in claim 3 wherein grooves are a staggered parallel series (22,24,26,28) aligned in echelon longitudinally of the strip (2).

5. A takraw ball side strip as claimed in claim 4 wherein the strip (2) has a convex side (4) opposite to said one side of sinusoidally undulating profile and the groove (22) closest to convex side edge (4) is proximate the top of a peak (6) and that groove (28) closest to the sinusoidal side edge is proximate a flank of a peak (6).

6. A takraw ball as claimed in claim 5 wherein the convex side edge (4) of the side strip (2) is of constant radius.

7. A takraw ball woven from side strips as claimed in any of claims 1 to 6.

8. A takraw ball as claimed in claim 7 wherein a more flexible peak region (20) of one strip (20a) is positioned to overlie a less flexible strip region (34), located between a peak region (20) and a trough (7), of an underlying strip (20b).

Fig.1
PRIOR ART

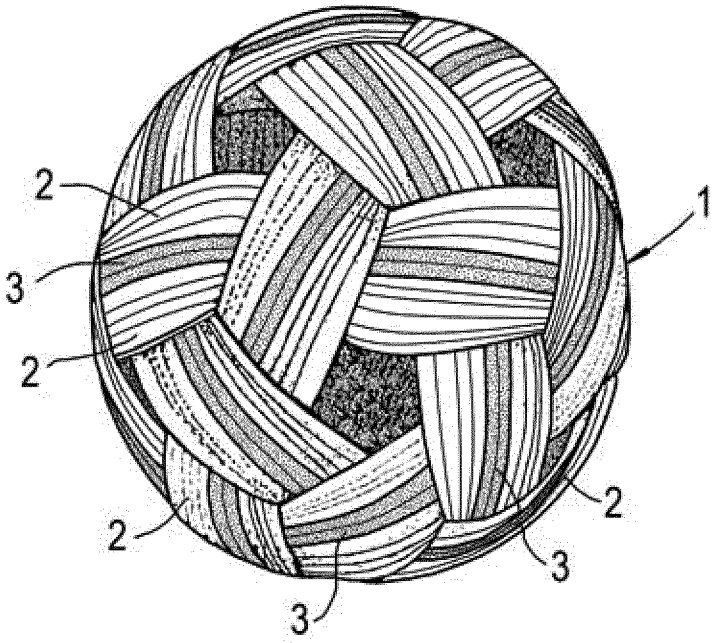


Fig.2
PRIOR ART

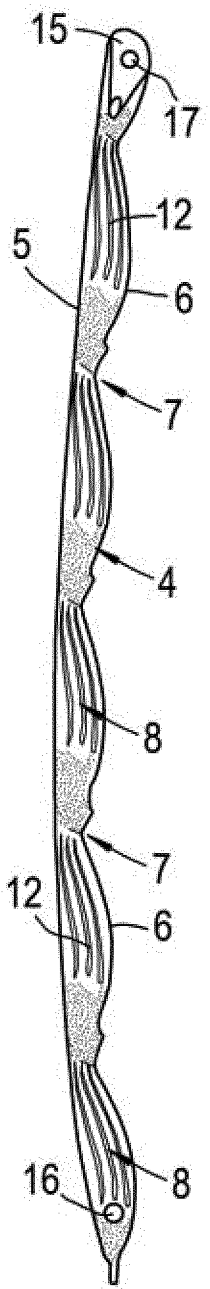


Fig.3
PRIOR ART

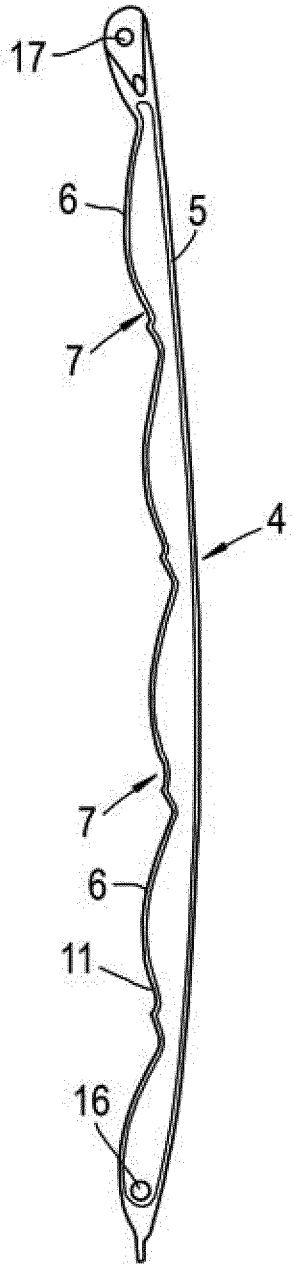


Fig.4
PRIOR ART

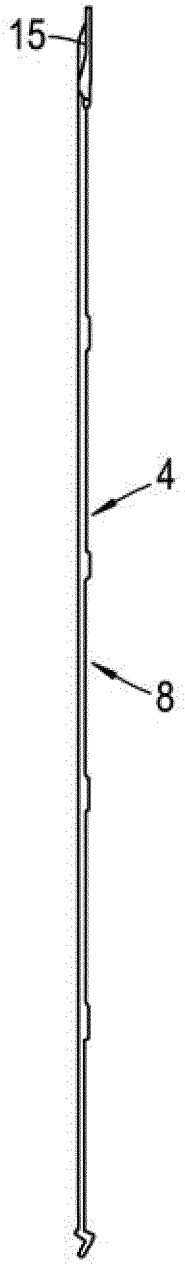


Fig.5
PRIOR ART

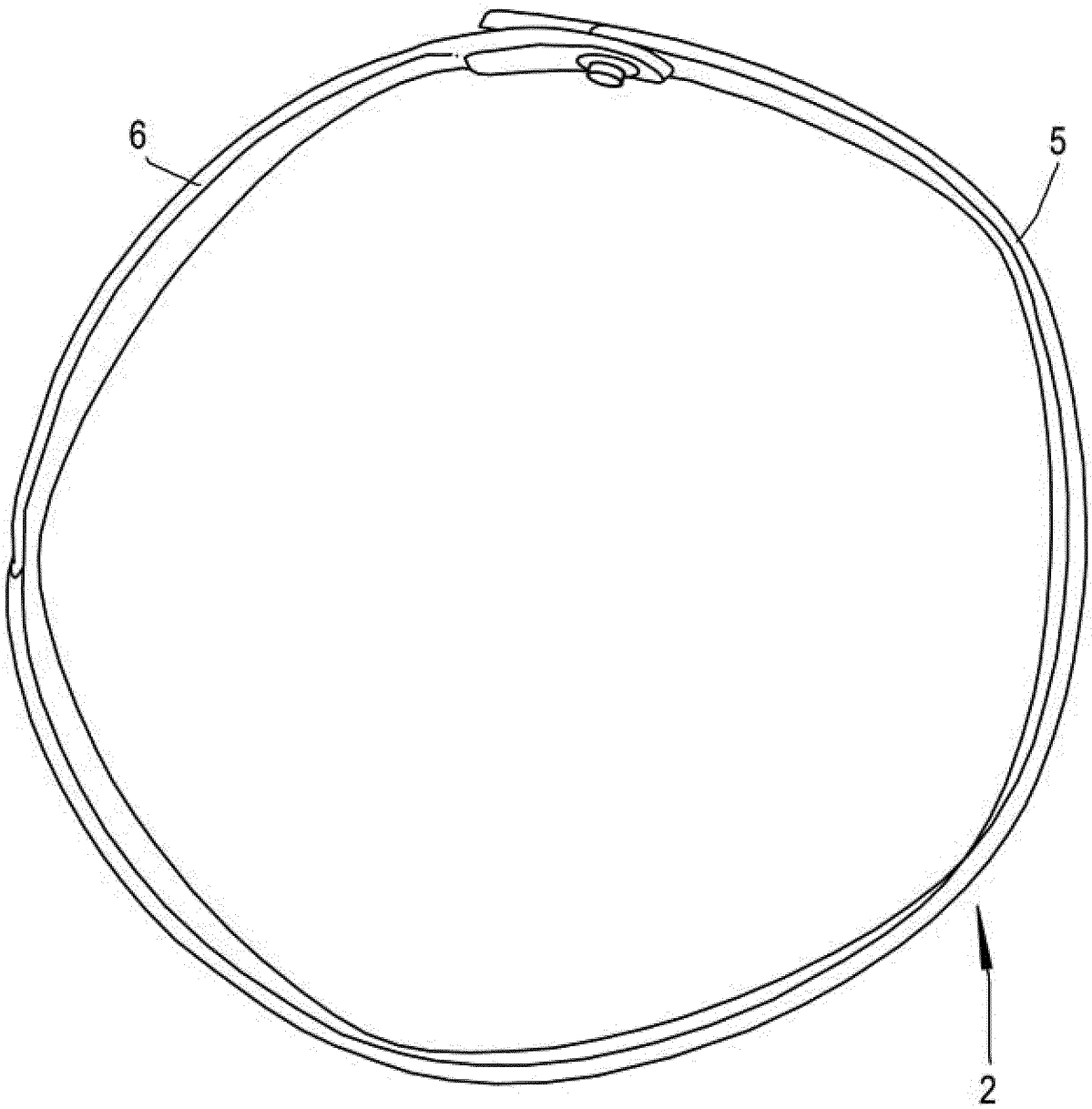
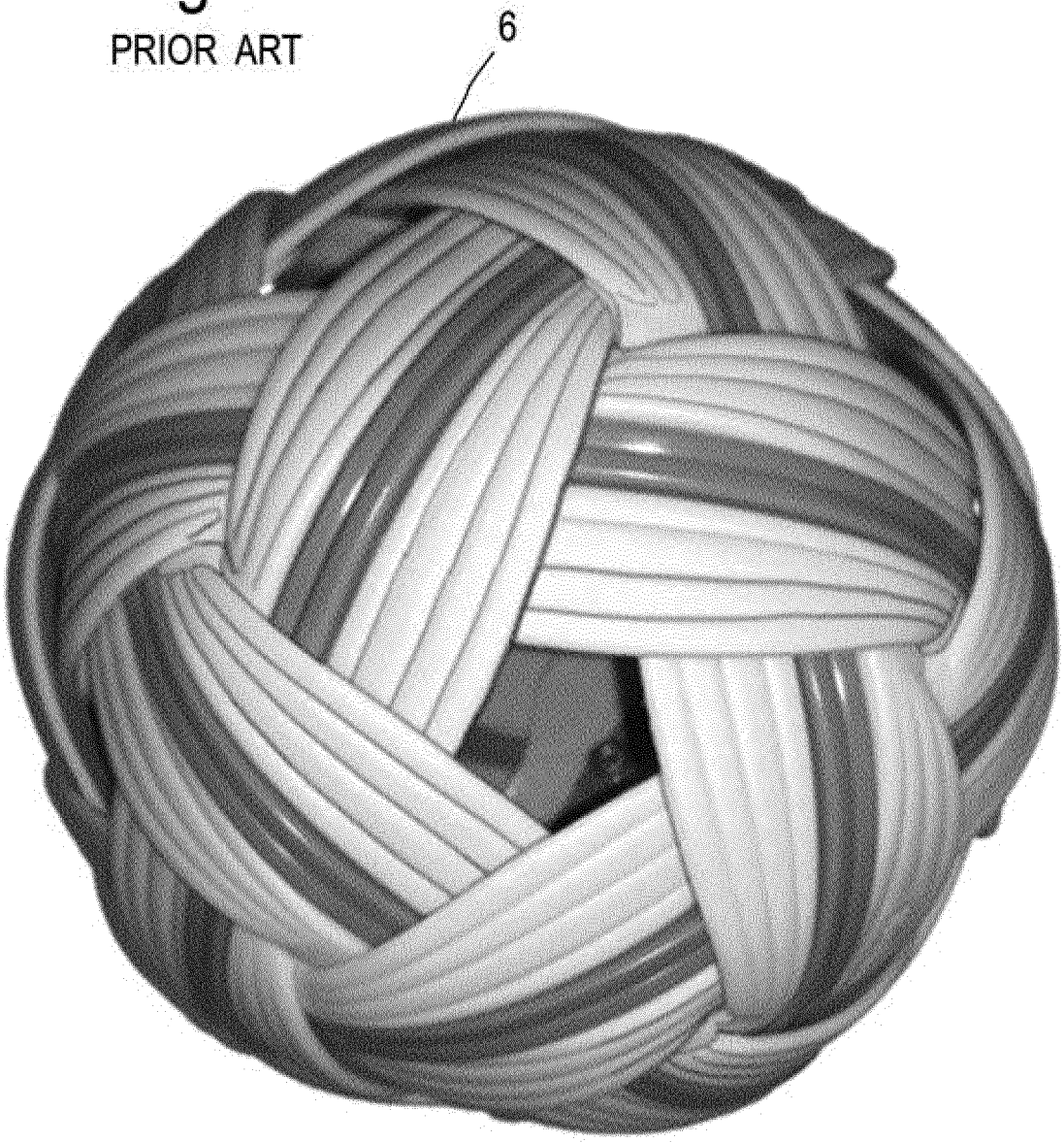


Fig.6
PRIOR ART



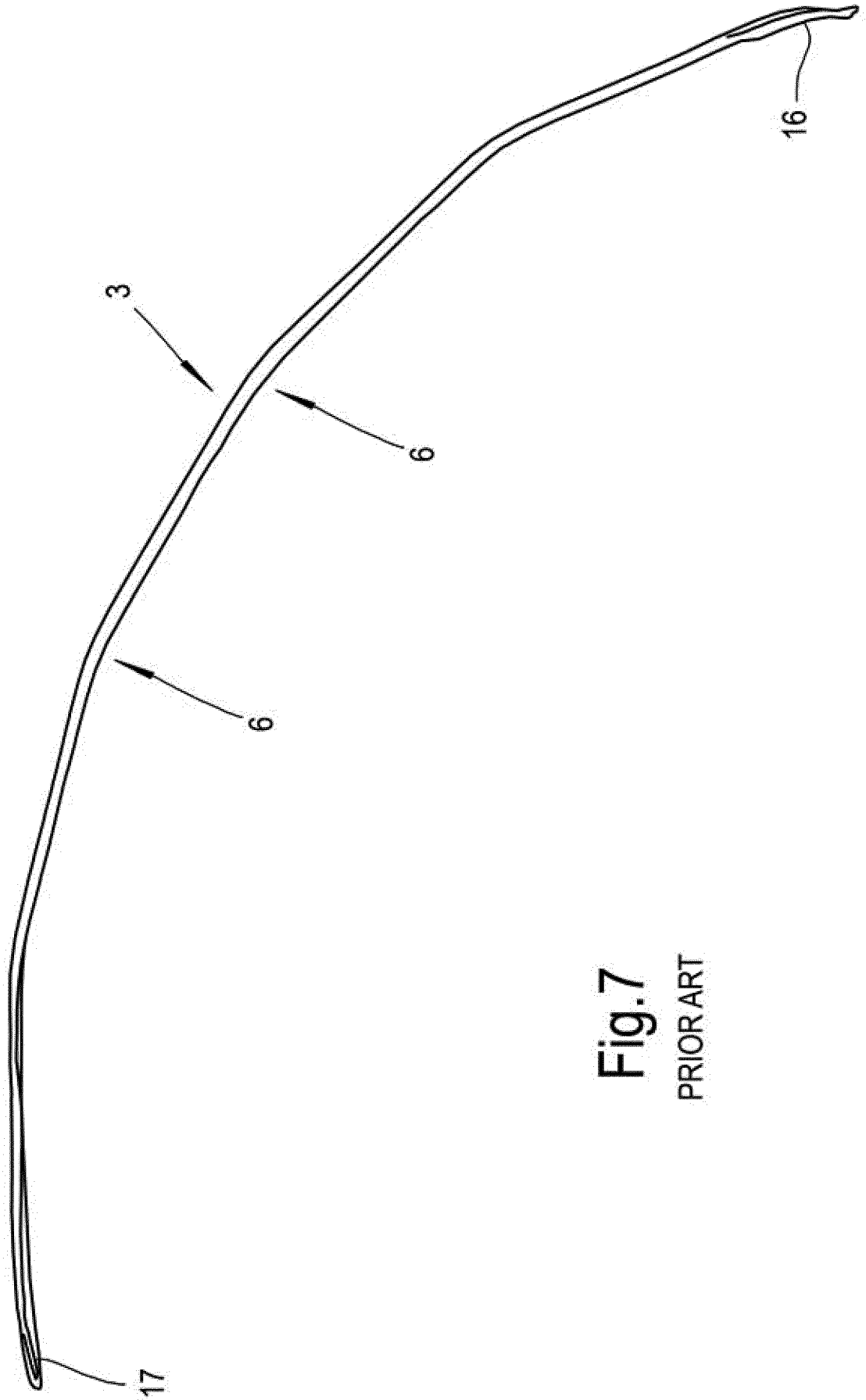


Fig.7
PRIOR ART

Fig.8

PRIOR ART

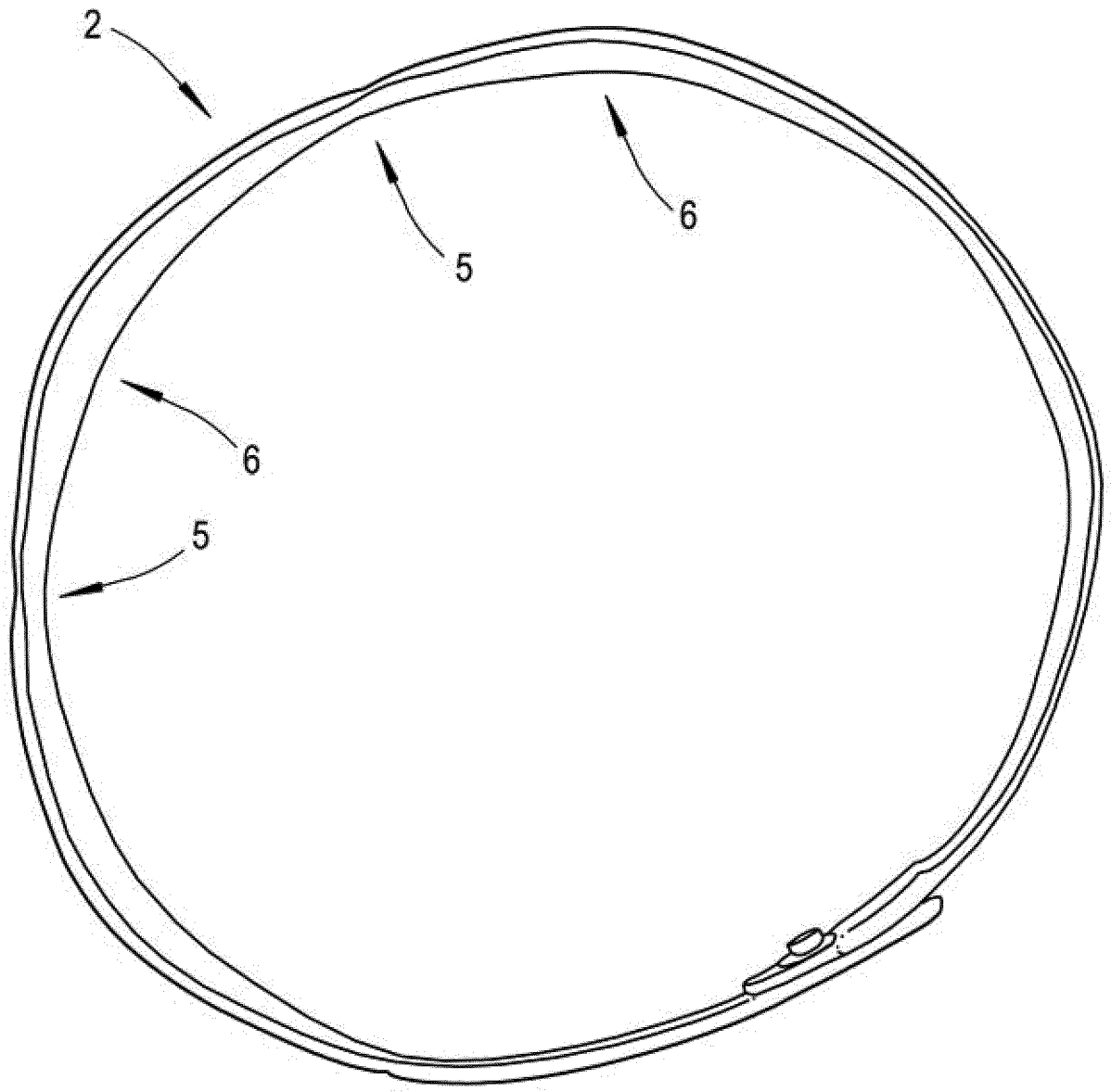


Fig.9
PRIOR ART

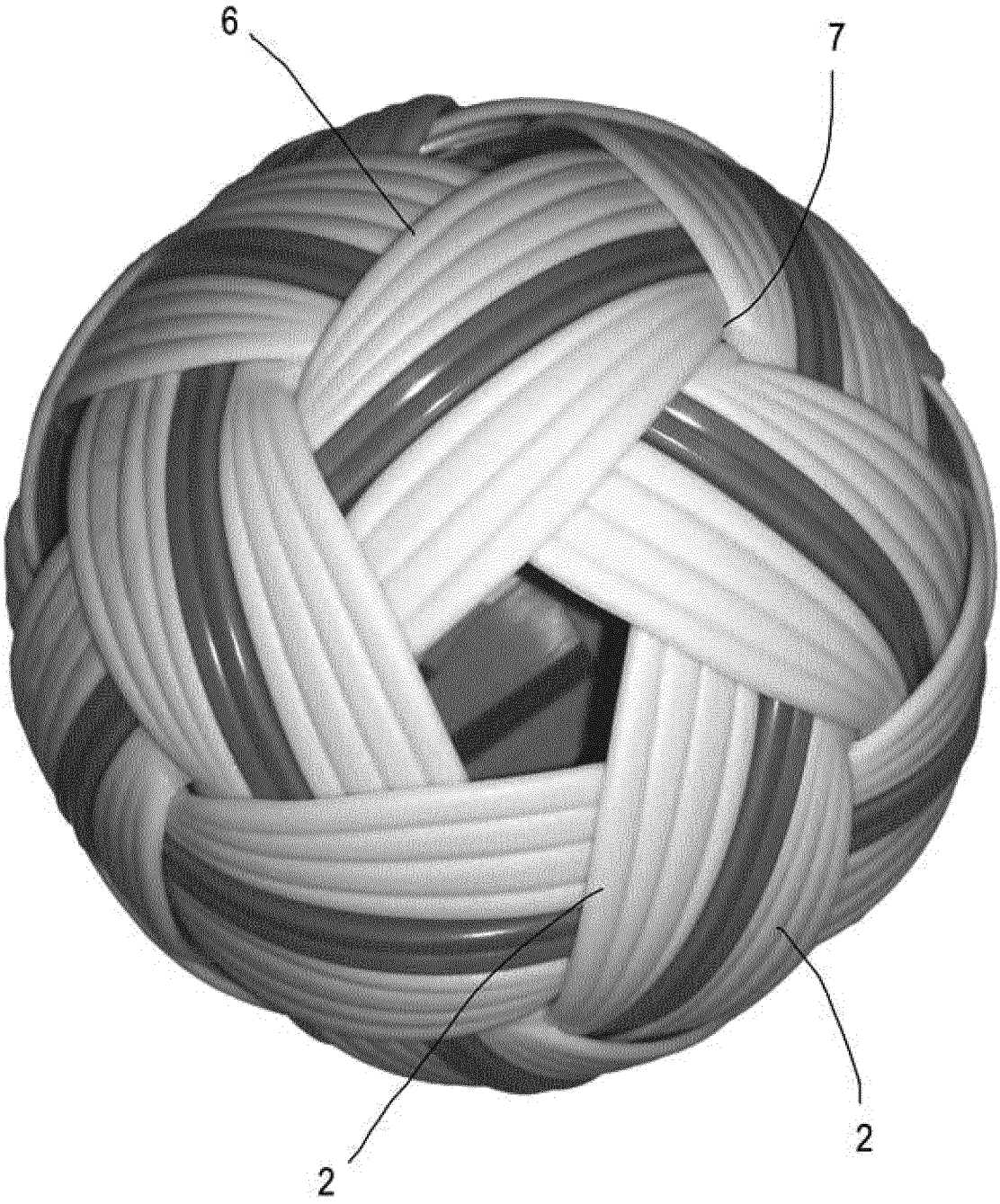


Fig.10

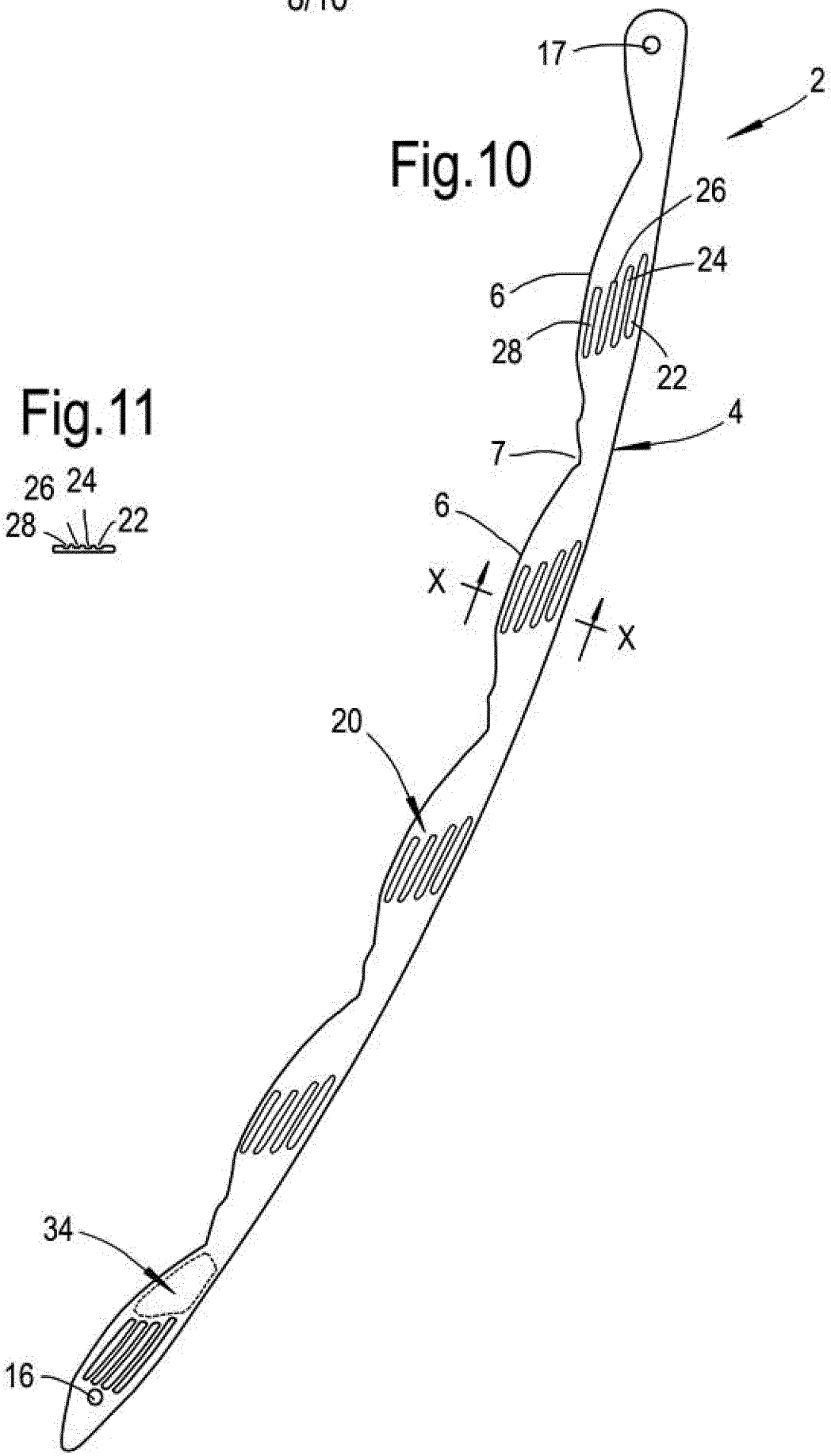


Fig.11

Fig.12

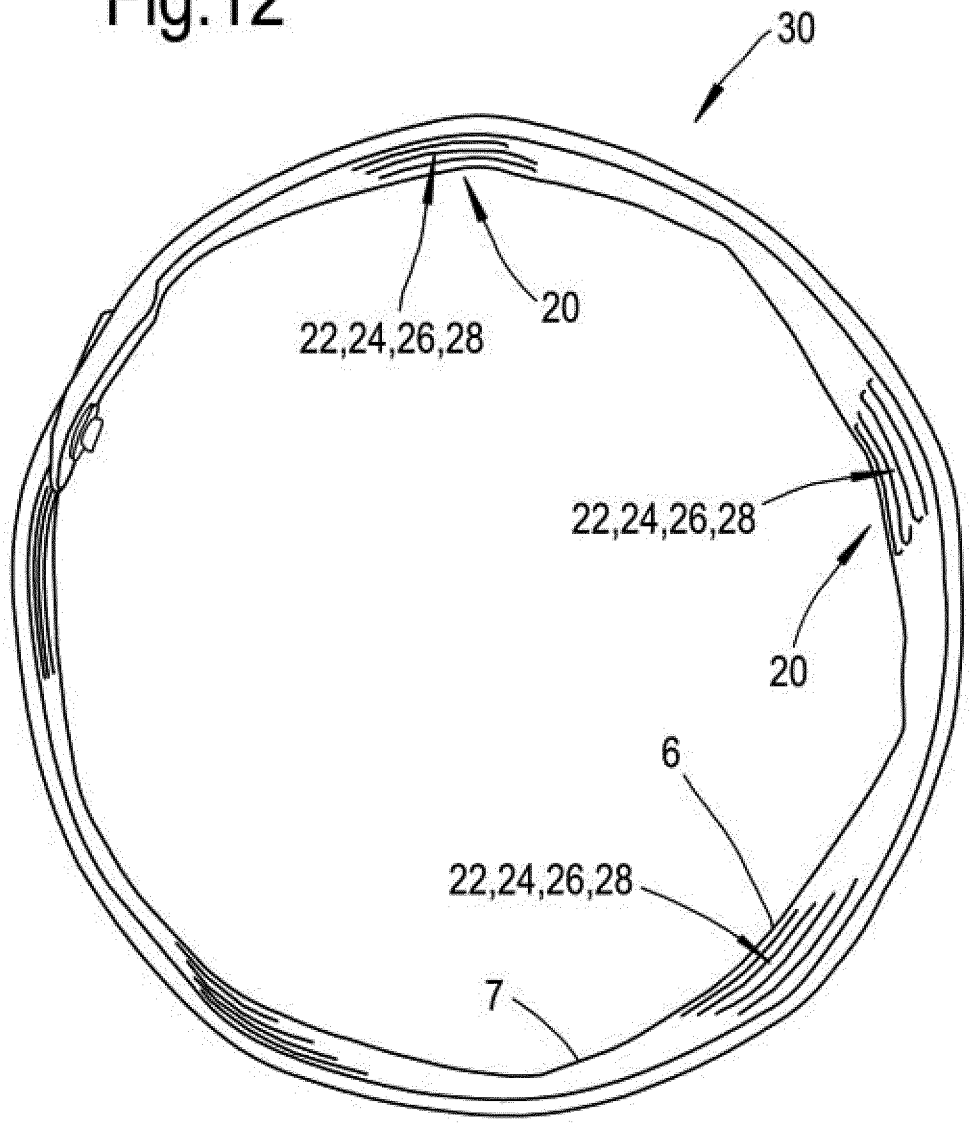
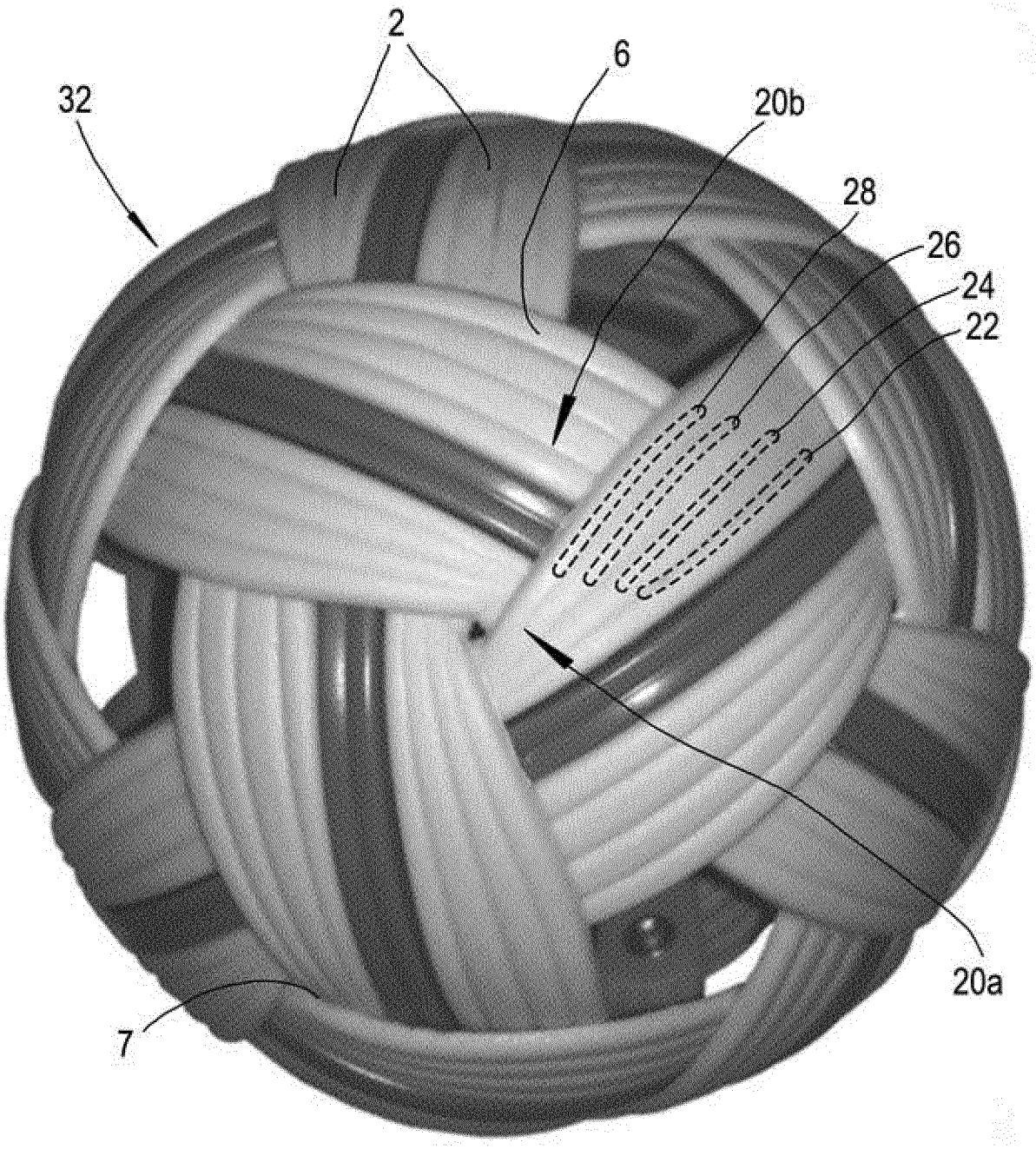


Fig.13



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/069545

A. CLASSIFICATION OF SUBJECT MATTER
INV. A63B39/00
ADD.

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)
A63B

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)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2006/051248 A1 (SATIAN IND CO LTD [TH]; WESTON ROBERT DALE [GB]; LORHPIPAT BOONCHAI [T) 18 May 2006 (2006-05-18) cited in the application the whole document	1-8
A	GB 2 196 861 A (BOONCHAI LORHPIPAT BOONCHAI LORHPIPAT [TH]) 11 May 1988 (1988-05-11) cited in the application the whole document	1-8
A	US 5 566 937 A (LORHPIPAT BOONCHAI [TH] ET AL) 22 October 1996 (1996-10-22) the whole document	1-8

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
6 December 2012	19/12/2012

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
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