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(54) **APPARATUS FOR PLAYING TABLE TENNIS**

VORRICHTUNG ZUM TISCHTENNISSPIELEN

APPAREIL POUR JOUER AU TENNIS DE TABLE

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Description

Field of the Invention

[0001] This invention relates to apparatus for playing table tennis.

Background

[0002] The game of table tennis has been played for many years and is extremely popular world wide and is indeed an Olympic sport. The rules of table tennis are administered by the International Table Tennis Federation (ITTF) which had its first Congress in 1926. Whilst the basic table and net geometry as well as the rules of table tennis have essentially remained unchanged over the past 100 years there have nonetheless been developments. These include a change in ball size and the length of games. Numerous improvements have also been made in relation to racquet technology.

[0003] Table tennis is frequently played as a team competition with teams of 3 to 6 players. However in these competitions the game is only played as singles or doubles matches. This means that a whole team cannot play at the same time. To address this problem the present inventor has developed a game known as "table tennis triples" which preferably, but not exclusively, utilises a round table. Extensive rules have been developed for the game. A description of the game can be found in: G. Arndt (2007): "Table Tennis Triples - A New Team Sport". Trafford Publishing, Canada, ISBN 978-1-4251-2136-5; and G. Arndt (2007): "Triples in Table Tennis: A Promising New Team Competition Sport - Introduction and First Findings". Proc. 10th ITTF Sports Science Congress, Zagreb, Croatia: May 2007: pp 444-462..

[0004] In the course of refining the table tennis triples game the inventor has developed a number of unique pieces of apparatus required to implement the game in the most desirable fashion.

[0005] Accordingly it is an object of the invention to provide apparatus for playing table tennis that will improve the game or at least provide an alternative.

[0006] Document JP-9164232 A discloses a table tennis net having an increasing height zone and an outer zone that extends beyond the table.

Summary of the Invention

[0007] Accordingly, in one aspect the present invention provides a table tennis net to divide a playing surface into two regions by extending across the table surface; said net including a first centre zone to extend a selected substantially constant net height across the centre part of the table; transition zones to each side of the centre zone to respectively extend outwardly toward the table edges and provide a region of increasing net height toward the table edges; and outer zones joined to each of

the transition zones extending outwardly beyond the respective table edges and below the playing surface.

[0008] In another aspect this invention provides an extension for a substantially conventional table tennis net which when positioned adjacent to the conventional net provides a transition zone extending from one side of the centre zone of substantially constant net height to extend outwardly toward the table edge and provide a region of increasing net height toward the table edge, said extension further including outer zone joined to the transition zone to extend outwardly beyond the table edge and below the playing surface.

[0009] In a preferred embodiment of the invention, the extension is adapted to be releasably anchored to the table at a single position. Preferably, said single position is at the outer edge of the table.

[0010] Preferably, the transition zone provides a substantially linear increase in net height from the boundary of the centre region to the edge of the table tennis table.

[0011] In a preferred embodiment of the invention, each outer zone is substantially symmetrical about an axis extending along the table surface.

[0012] The outer zones preferably extend outwardly, and, in a preferred embodiment of the invention, the edge of the net defines an arcuate portion. The arcuate portion is preferably a smooth curve of radius centre on the edge of the table.

[0013] In a preferred form of the invention the centre zone has a length of approximately one third of the table width and each of the transition zones extend across approximately one third of the table each.

[0014] One form of the invention is a round table and has a diameter of 3.14 m. In this configuration the centre zone has a length of 105 cm, each of the transition zones is also 105 cm. In this form of the invention the radius of the outer zones is 41 cm.

[0015] In a preferred embodiment of the invention, the height of the centre zone above the table is the conventional table tennis net height of 6 inches (15.25 cm), and the transition zones linearly increase the net height from 15.25 cm to 41 cm where the outer zone commences.

[0016] In a preferred embodiment of the invention, the centre zone comprises a net portion which is movable to adjust the height of the centre zone. Preferably, the centre zone comprises a lower net portion and an upper net portion which is arranged to overlap the lower net portion and is movable relative to the lower net portion to adjust the height of the centre zone.

Brief Description of the Drawings

[0017] The invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 depicts a round table form of the invention complete with net, centrepiece and table tennis triples markings.

Figure 2 illustrates dimensions of a standard rectangular table tennis table as superimposed on the dimensions of a table tennis triples table with the preferred diameter of 3.14m.

Figure 3 depicts a standalone major side portion extension with integrated triples net section for use in the assembly of a composite triples table.

Figure 4 depicts a table with folding side and end portion capability for alternation between standard and triples table configurations.

Figure 5 depicts a version of the 3.14m diameter composite triples table with opposing truncated ends for use as an approximation to the smaller training model.

Figure 6 depicts a hexagonal version, preferably for use in training.

Figure 7 depicts a standalone triples net for use in conjunction with table tennis tables.

Figure 8 depicts an attachable triples net extension for use in conjunction with composite tables.

Figure 9 depicts an alternative attachable triples net extension for use in conjunction with composite tables.

Figure 10 depicts the single-segmented triples table construction.

Figure 11 depicts the hinged-pair segmented table construction.

Figure 12 depicts a net section for use in the segmented table construction

Figure 13 depicts a modular centrepiece assembly for use in conjunction with the segmented table construction.

Figure 14 depicts an alternative net arrangement incorporating upward as well as downward peripheral support posts and a central net post.

Figure 15 depicts a net arrangement according to another embodiment having a central net portion which is adjustable in height.

Detailed Description of the Preferred Embodiments

[0018] In the following detailed description of various embodiments, the same reference numerals will, where appropriate, be used to refer to common features among the embodiments.

[0019] The present invention relates to apparatus developed for the game of table tennis triples. Apart from the standard table tennis racquets and balls, the three basic equipment elements of the triples game are the table, the centrepiece and the net assembly.

[0020] In order to fully describe the present invention, various configurations of the triples table, net and centrepiece assemblies will firstly be explained in general terms. The height of the triples table tennis table is the same as the conventional table tennis table but it differs significantly in that it is preferably of a round configuration. There are two preferred table sizes - the "practice table" with a diameter of 2.74 m and "the standard" (or competition) table of 3.14 m in diameter. The practice size is appropriate for practice and club matches particularly in confined venues.

[0021] There are a number of ways in which the triples table tennis table may be constructed. Although a rigid one piece 3.14 m diameter table is technically possible, the construction of the triples table generally would make use of separable or rotatably interconnected components which, amongst other benefits, confer advantages of storage and transport.

[0022] In one embodiment, the table is constructed in a two-leaf folding manner analogous to that commonly used for conventional tables, the table surface being divided into two halves, both of which are hingedly attached to table support structures. Conventional table tennis table support structures can be used in the construction of this embodiment of the invention.

[0023] In further embodiments, the triples table may be composed of modular sectors. In comparison to the two-leaf folding table, these embodiments confer greater flexibility, reduced propensity to warp or deform and increased compactness for handling and storage. Figure 10 depicts one such embodiment, in which the table is comprised of six free-standing 60° sectors. Figure 11 illustrates another such embodiment in which six 60° sectors comprise three rotatably interconnected pairs. The folding mechanism in each pair may operate in a manner analogous to the embodiment described in the previous paragraph. It is obvious that the components of these and other embodiments of the modular sector table design may be interchangeably combined to form a whole table.

[0024] As an alternative to table configurations designed specifically for playing triples, a further embodiment of the invention is a composite triples table incorporating a standard rectangular table and specialist extensions that together form the circular triples table. Figure 2 depicts the dimensions of a conventional table tennis table as superimposed upon the dimensions of the 3.14m diameter triples table, the length 2A and width B of the conventional table being 2.74m (9 feet) and 1.525m (5 feet) respectively. As can be seen, the conventional table is completely encompassed by the triples table, with the outlying triples table portions consisting of four circular segments comprising 2 major side

portions 34 and 2 minor end portions 36. The composite triples table can be constructed from a standard rectangular table and a set of extensions corresponding in dimension to these outlying portions.

[0025] The extensions comprising the two major side portions 34 may typically consist of either two free-standing circular segments or two pairs of hinged, attachable or free standing half circular segments (hereinafter referred to as "quarter segments"). In their preferred embodiments, the circular segments are 2.74m long and the quarter segments are 1.37m long. Figure 3 depicts a single free standing major side portion extension consisting of a circular segment-shaped playing surface 42 and integrated net extension 44, supported by a number of legs 46. Other free-standing table extensions may not necessarily have this integrated net extension. The free-standing embodiments of the extensions may be placed against the existing rectangular table either without any direct connection to it, or preferably may be secured in place by a combination of docking clips, pins and dowels 48 to achieve firm attachment and exact alignment. As commercially available conventional tables can vary somewhat in height, a further useful feature of the standalone embodiment of the extension is that it be height-adjustable in order to accommodate such variations. Where this is a serious consideration, it is clear that standalone quarter segments will provide more versatility and ability to conform with height variations of a standard table - in particular where the standard table is comprised of 2 halves which may have independent variations in height. In a manner similar to the free-standing circular segment extensions, the quarter segment extensions may also be constructed with or without integrated net extensions.

[0026] As an alternative to using free-standing extensions for the major side portions, it may be preferable to use hinged extension sections in the construction of the composite table embodiment. Figure 4 depicts a composite table where the major side portion extensions are composed of quarter sections 52 hingedly attached to the rectangular table along axis 54 and supported by collapsible support legs 56. The hinges 58 are positioned so that they do not protrude upon the playing surface when the quarter segments are in use. When not in use, the hinged major side portion extensions of the preferred 3.14m diameter table will come to rest at an angle of substantially 70° to the floor as they are wider than the table is tall. When in this position and sheathed in a protective cover, the quarter segments, advantageously, confer the benefit of clearly visible advertising space, which is of major significance in public events where sponsorship logos etc. need to be prominently displayed. Owing to the provision of the hinged major side portion extensions, the table configuration can quickly and easily be transformed from rectangular to round and vice versa.

[0027] In a manner analogous to the major side portion extensions, the minor end portion extensions may also be free standing, or hingedly attached (59 in Figure 4) to

the rectangular table. In their preferred embodiment, the minor end portions are 1.525 m long. Furthermore, due to their relatively smaller size, detachable end portion extensions without independent legs may also be possible.

[0028] It is not possible to perfectly incorporate a conventional rectangular table into a composite practice table (2.74m) as its dimensions are such that its corners protrude beyond the bounds of such a circular practice table. Thus, in order to make use of a conventional table in a practice environment, various embodiments of the invention use approximations to the 2.74m table. Figure 5 demonstrates a first embodiment in this regard, wherein a conventional table 62 is deployed along with major side portion extensions 64 designed for the 3.14m table, but without the corresponding minor end portions 36. Figure 6 depicts a second embodiment in this regard wherein the conventional table 72 is incorporated into an hexagonal shape by the addition of equilateral triangle-shaped major side portion extensions 74 (or pairs of smaller triangle-shaped extensions 76). The extensions for this hexagonal shape may be constructed in any of the previously described fashions. An advantage of employing straight-edged shapes such as the extensions 74 is that they are generally easier to manufacture than shapes with curved edges. It should be noted that the rules of the triples game are independent of the table shape.

[0029] Another aspect of this invention provides a net assembly for the triples game. Figure 1 shows a round table fitted with a net according to this invention. As for the conventional table, the triples net is arranged over the parting line between the two table halves, and such that the portion of its bottom edge which overlies the table is as close as possible to, or touching, the playing surface. It also has substantially the same height as the conventional net, but only over its central portion. Given the shape of the triples table, some players (the "wing court players") will be significantly closer to the net than in standard table tennis. To counterbalance this advantage, it has been deemed necessary to raise the net height in the region adjacent to their area of play 2. In one embodiment of the invention, this has resulted in the net being composed of a central portion of conventional height 4 and two transitional side portions of linearly increasing height 6, each of which terminate in a substantially semicircular end portion 8 which extends outward and downward from the periphery of the playing surface 9. In a preferred embodiment, the length of each of the sloping portions and of the central horizontal portion is the same (1.05m in the standard 3.14m table embodiment), each being substantially one-third of the overall table diameter (measured along the table surface). This is a simple and logical solution, with each player essentially "in charge" of one-third of the net, which still presents the wing court players with sufficient challenge for ball returns even when leaning forward as far as possible to reach the lower net portion. In a preferred embodiment, the side portions increase to a final height of 41cm. In one embodiment,

the net is composed of the same material used for conventional nets, though, in other preferred embodiments it may be composed of any material or combination of materials suitable for the purposes of forming a net.

[0030] In Figure 1, a preferred embodiment of the triples net 1 is seen, attached to the table by means of net posts 3 placed at the periphery of the playing surface 9. These peripheral net posts 3 may have upward 151 as well as downward 152 extensions as per Figure 14, but should preferably only point downwards from the playing surface. In one embodiment, the latter can be accomplished by using a strong (e.g. metal) frame running right around the net periphery and covered by cloth, firmly supporting the tensioned net, as will be described later. In an embodiment incorporating an upward peripheral post, self-supporting wire mesh net material may be used. Alternatively, if standard "soft" net material is used, a tension cord 153 may be inserted along the top edge as in conventional nets, this cord being continued from the sloping parts 154 to the centre 157, where it is anchored at a point (preferably 1.54 cm) above the table, as shown in Figure 14.

[0031] Figure 14 shows an embodiment of a net which is for a standard table but which is provided with a triangular net adaptor 159 which fits to the peripheral post 151/152 and extends inwardly therefrom to be clamped to the edge of the narrower practice table, thus enabling the net to be used therewith.

[0032] Obviously the net on the preferred embodiment of the triples table is much longer than that on the rectangular table, i.e. 3.14 m (without the substantially semicircular side portions) as against 1.83 m (including the 15.25 cm overhangs). It has been found in practice that the strength and quality of today's nets does in fact allow these relatively long distances to be bridged in one span with essentially no central sag, though that is also guaranteed by additionally providing a central support post 156 as shown in Figure 14, which then also serves as anchor for the abovementioned top net cord 153.

[0033] With respect to table embodiments that do not constitute a single piece, alternative net variants are possible. For variants of the modular sector embodiment of the triples table, it is possible that the net be composed of two symmetrical halves, each constituting one end portion, one transitional portion and one half each of the central portion of the net (as seen in Figure 12). In a manner similar to the aforementioned net embodiments, these half-nets may feature peripheral net posts that either extend downward or else both upward and downward from the playing surface (and in the case of the latter, the aforementioned addition of a tension cord 153 is also possible). In such an embodiment, it may be necessary for both net halves to possess a central support post, such that when deployed, the support posts of both halves of the net are directly adjacent at the centre of the table, where there is sufficient space to accommodate and secure them. Alternatively, both halves may be clipped to a pre-existing central post.

[0034] Further net variants are possible for use in conjunction with the composite embodiment of the triples table that incorporates a standard rectangular table tennis table. The object of such variants must be to achieve the net contour shown in Figure 1 whilst leaving the standard net assembly of the rectangular table untouched. In one such embodiment (Figure 3), the outlying portions of the triples net (i.e. the portions that do not overlap with regions of a conventional net) 44 are rigidly attached to each of the two standalone major side extensions 42. In another embodiment incorporating the four standalone quarter segments, said net portions can similarly be attached to two of the standalone quarter segments. Apart from the higher net posts 40 at the table periphery, each leaf has an inside net post 45. In one embodiment, these additional "inside" posts are slightly longer than the 15.25 cm preferred net height. Appropriate recesses are preferably provided under the net to accommodate the existing net posts 47 and support clamp structure. One possible embodiment that achieves the overlap with the standard net incorporates a horizontal bar 49a, passing through both posts 40 and 45, and supporting a cantilevered net portion 49b. The overall triples net shape is therefore generated by the combination of the existing conventional and the two triples extension nets. The fact that the three net sections are an "integral", i.e. preassembled part of the three major table segments, results in the least amount of effort and disturbance in switching between table shapes.

[0035] Further embodiments of such net variants may feature the outlying portions of the triples net as attachable extensions, as seen in Figures 8 and 9.

[0036] The attachable extension 140 shown in Figure 8 is an example of an extension in which the peripheral net post 40 comprises only a downward extension 152. The attachable extension 140 comprises a strong (e.g. metal) frame 141 incorporating both an inside net post 45 and peripheral net post 40. The frame 141, unlike that of the extension shown in Figure 3, does not comprise the horizontal bar 49a, whereby the section of net material of the cantilevered net portion 49b is not bounded by a frame member along its horizontal edge (which edge is received adjacent the top edge of the central portion 4). That section of net material comprises a cutout which defines the recess 142 accommodating the existing net post 47 and support clamp structure 143. The section of net material 149 covering the area to the outer side of the inside net post 45 is attached to post 45, in addition to being attached to the remainder of the frame 141, so as to be kept taut. The net material (in all of the embodiments) may comprise standard netting or a suitable alternative such as cloth, wire mesh or thin plastic sheet.

[0037] The extension 140 comprises clamps 144A and 144B (but may instead comprise alternative suitable attachment means) provided at the ends of the posts 40 and 45, respectively, adjacent the playing surface 9 for attaching the extension 140 to outermost 146 and inner 147 edges, respectively, of the table segment, the inner

edge being defined at the blind (outer) end of a slot 49c (similar to that shown in Figure 3) through the segment extending perpendicularly outwardly from the innermost edge of the segment, the slot 49c allowing for the recess to be formed.

[0038] No frame member extends between the clamps 144A and 144B (i.e. the frame 141 does not run right around the net periphery), the lower edge of the net material 149 between them being received closely adjacent or touching the playing surface 9. Because the clamps 144A, 144B engage opposed edges of the table segment, they cannot be deflected towards each other under the tension of the net material 149, whereby deflection of the frame 141 is prevented, thus eliminating the need for a frame member between the clamps.

[0039] In the extension 140 shown in Figure 8, the end portion 8' is triangular, rather than semicircular (though could alternatively be semicircular, i.e. conform to the broken lines shown in Figure 8). In this particular embodiment, the triangle is isosceles.

[0040] The attachable extension 140' shown in Figure 9 is another example of an extension in which the peripheral net post 40 comprises only a downward extension 152. The attachable extension 140' similarly comprises a strong (e.g. metal) frame 141' incorporating both an inside net post 45 and peripheral net post 40. The frame 141' is the same as that of the extension 140 shown in Figure 8 though comprises an end portion 8" which is instead isosceles trapezoidal and further comprises a frame member 141A interconnecting the ends of the posts 40 and 45 such that the frame 141' is continuous and closed around the area of net outward of post 45. Unlike the extension 140 shown in Figure 8, this extension 140' comprises only a single attachment clamp 144, provided at the upper end of the peripheral net post 40, and further comprises a panel 145 which is attached to the post 45 and the frame member 141A, over substantially their whole lengths, to define a triangular brace or gusset 148 therebetween, the gusset 148 defining part of the net surface. The frame member 141A rests on the table surface 9, with the gusset 148 stiffening the extension 140' sufficiently to prevent it skewing or otherwise deforming, whereby it can stand upright on the table. The extension 140' can thus be attached to the table at only a single point, namely the outer edge 146 of the table segment, increasing the speed and simplicity of its installation. A section of the frame member 141 B defining the upper edge of the transitional side portion extends inwardly beyond the post 45, as it does in the extension 140, to be cantilevered therefrom so as to provide the requisite support for the cantilevered net portion. In this embodiment, a triangular portion of the panel 145 extends inward of the post 45 and is attached to the section of frame member 141B to define therewith the cantilevered net portion 49b'. The panel 145, may be made of plastic, or an alternative suitably rigid material, and may have either or both of the post 45 and frame member 141A embedded therein.

[0041] It will be clear that end portion may be formed in a variety of shapes, including those shown in Figures 3, 8 and 9, regardless of whether it is incorporated into an attachable or integrated extension or provided integrally with the centre zone, though preferably it will be generally convergent, i.e. of progressively reducing vertical dimension, in an outward direction and, in particular, symmetrical about the plane of the table surface. Advantages of the extensions 140 and 140' are that they comprise only straight edge sections and may thus be easier to manufacture.

[0042] Moreover, in both of the attachable extensions shown in Figures 8 and 9, since there is no horizontal bar 49a or upwardly extending peripheral net post, the surface of the end portion is unbroken and continuous with the surface of the transition portion adjacent thereto, thus providing an enlarged, unbroken area which may advantageously be exploited for bearing advertising or promotional information.

[0043] In a further embodiment, seen in Figure 7, the table-net interaction solution is to provide two completely self-contained, independent net units 80 supported off the floor, which are simply placed against the table edge 81 and slipped into place, with two "half-nets" protruding to the centre of the table. These "standalone nets" can in fact be used on any of the three table designs - or any others, for that matter. Since they extend right to the floor they also have the beneficial effect of indicating the territorial "boundaries" between the two teams, i.e. acting as mini-barriers between the two opposing wing courts.

[0044] Many designs are possible, the main requirements being lightness, stability and ease of assembly and storage. One variant consists of a half-net 80 supported on an independent stand 82, with the cantilevered net end joining up with that of its counterpart at the centre 83 to form the complete triples net. For exact locating the net ends may be clipped to a central post 156. In a preferred embodiment, the unit consists of a main support post 84 through which net support rod 85 passes at point 86. This rod 85 supports the horizontal portion of the net 87, and in a preferred embodiment is embedded in a fold at the top of said portion of the net. A suspension wire or cord 88a (which in a preferred embodiment is also embedded in the net) holds up the net at point 88b, then passes over the main support post 84 at point 88c and down to its anchor point 88d at the base. A counterweight may be necessary there to counteract the weight of the cantilevered net. Also, an optional screen 89 may be fitted for safety and aesthetics, and to remind wingcourt players of their "action space boundaries".

[0045] The unit may be fitted with fixed feet, or with lockable wheels 79. This allows easy set up and is also particularly useful for "handicap" games. Also, the net support rod 85 may be adjusted lengthwise, so that, for example during practice or for special effects, the horizontal part of the net may be shortened or "eliminated".

[0046] An aspect not covered by the claims, includes a centrepiece 5 for a table tennis table. The centrepiece

5 serves two functions. Firstly, to prevent balls coming to rest "irretrievably" at the centre of the table, and secondly to effect an angled rebound for balls landing within the central region - a new challenge for table tennis players. Whilst the centrepiece 5 is technically only needed for the preferred "standard" (3.14 m) table; its use in conjunction with the "practice" (2.74 m) table may nevertheless be desired in order to practise the unaccustomed and less predictable rebounds off the centrepiece 5. The same applies for the versions of the composite table depicted in Figures 5 and 6.

[0047] In traditional table tennis the distance between the net and the ends on the conventional table, i.e. 1.37 m represents the maximum distance a player has to stretch (including the length of his/her racket), in order to play close to the net. This distance must not be exceeded for triples. The 2.74 m round table satisfies this requirement, however the preferred 3.14 m table exceeds it by 20 centimetres. This means that balls landing close to the centre of the latter can usually not be played, nor can they be easily retrieved from there. To accommodate the 1.37 m requirement, and as an extra feature of "competitive" triples, a low-set conical body of preferred diameter 40 cm, (hereinafter referred to as the centrepiece) is situated at substantially the centre of the 3.14 m table. It fits essentially under the net, and assures that balls roll outwardly toward the periphery of the table, should they come to rest on said centrepiece.

[0048] The surface of the centrepiece is part of the playing area and must therefore have the same bounce characteristics as the parent table. The angle of inclination of the centrepiece is chosen such that it deflects the balls landing on it (or purposely played there) in a way which still enables them to be reasonably played/returned. Trials with central conical body of varying heights have suggested a preferred conical body height of 31 mm as this best satisfies the dual objectives of ball retrieval and angled rebound.

[0049] The centrepiece may be attached permanently to the table surface, either as an integral part or in two halves, or may be constructed as a removable unit - particularly suitable for use in conjunction with the composite or modular sector table embodiments. In one instance of the removable unit embodiment, two halves of the centrepiece are simply placed against the existing conventional net and are aligned with each other by means, for instance, of dowel pins which readily fit through or under the existing net. In another example, well suited for use with modular sector tables seen in Figures 10 and 11, the centrepiece 130 (see Figure 13) is also composed of six 60° sectors 133-138.

[0050] A central cut-out may be formed by truncating four of the six sectors 133-136 leaving two gaps 132 in the centrepiece suitable for a support post incorporated into an embodiment of the net assembly designed to accompany said modular table designs. One such embodiment is net assembly 120, shown in Figure 12, which comprises support post 156. This post can, for example,

be used to anchor tension strings 153 extending from the sloping net portions at the centre for extra strength and stability. Furthermore, the relatively large diameter of the centrepiece enables the space underneath it to be utilised beneficially, for example to house electronic equipment needed for sensor-assisted umpiring. This applies particularly to the modular sector table embodiment discussed above.

[0051] In some instances, such as for social play and/or "Large Ball" (44 mm ball diameter) adaptations, it may be desirable to increase the height of the central net portion by an adjustable amount. One way in which this may be achieved is shown in Figure 15, which is partial view of a net 160 consisting of a conventional table tennis net 161, outlying portions in the form of attachable extensions 162, and a height-adjustable tensioned cord 163 attached to the extensions 162 above the level of the top edge of the net 161 and extending between the extensions 162 to define the top edge of the central portion 165. A curtain or skirt 166 hangs from the cord 163, the skirt 166 being formed from a sheet of material which is doubled over about the cord 163 to define a pair of flaps 167 which overlap opposite sides of the net 161, such that the skirt 166 and net 161 together form the central portion 165 of the net 160, with the net 161 defining a lower net portion and the skirt 166 defining an upper net portion. The flaps 167 also overlap opposite sides of the cantilevered net portion 49b of each extension 162 and are arranged such that the configuration of the net 160, and in particular the spacing between the outer surfaces of the flaps 167 and the conventional net 161 is the same on each side of the net.

[0052] Each extension 162 comprises a peripheral net post having an upward extension 151 in which holes 164 are provided at predetermined heights to receive a respective end of the cord 163, the heights corresponding to desired heights of the central portion 165, which will preferably range between 15.25 cm and 22cm and include a height of 17.25 cm which is the height used in the aforementioned "Large Ball" adaptation, which is popular in Japan. A releasable stopper 168 is provided at each end of the cord 163 and received against an outer side of the upward extension 151 to retain the cord 163 in the post.

[0053] As the height of the cord 163 is altered, so too will be the lateral position at which the cord 163 intersects each extension 162, that position marking the boundary between the central portion 165 and the transition portion 169. Where the skirt 166 is set at a height below its maximum height, the top edges of the flaps 167 will cross the upper edge of the cantilevered net portion 49b and must thus be separated, or at least separable, at their outer ends. To this end, slits are provided in the top edge of the skirt 166 at its outer ends. The flaps 167 may be reinforced at those ends so as not to fall away from the net portion 49b/cord 163 at those positions. The reinforcement may comprise, for example, a thin strip of plastic, which may extend along the full length of the skirt 166

and thus double as the conventional visible strip which runs along the top edge of the central net. Alternatively, the ends of the flaps 167 may be rendered releasably attachable to net material, or to each other through the net material, for example by means of hook and loop or snap-lock fasteners.

[0054] It will be appreciated that the height adjustability of the central portion may not only be a feature of the net as comprising an attachable extension, such as is described above, but also one in which the outlying zones are provided integrally with the centre zone.

[0055] Throughout this specification and the claims which follow, unless the context requires otherwise, the word "comprise", and variations such as "comprises" and "comprising", will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

[0056] The reference in this specification to any prior publication (or information derived from it), or to any matter which is known, is not, and should not be taken as an acknowledgment or admission or any form of suggestion that that prior publication (or information derived from it) or known matter forms part of the common general knowledge in the field of endeavour to which this specification relates.

[0057] While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example only, and not by way of limitation. It will be apparent to a person skilled in the relevant art that various changes in form and detail can be made therein without departing from the scope of the invention. Thus, the present invention should not be limited by any of the above described exemplary embodiments, but is limited by the appended claims.

Claims

1. A table tennis net (1) to divide a playing surface (2) into two regions by extending across a table surface; said net including a first centre zone (14) to extend a selected substantially constant net height across the centre part of the table; transition zones to each side of the centre zone (6) to respectively extend outwardly toward the table edges (9) and provide a region of increasing net height toward the table edges; and outer zones (8) joined to each of the transition zones (6) extending outwardly beyond the respective table edges (9) and below the playing surface (2).
2. A table tennis net according to claim 1, wherein the transition zones (6) provide a substantially linear increase in net height from the centre zone (9) to the table edges (9).
3. A table tennis net (1) according to claim 1 or claim 2, wherein the outer zones (8) comprise arcuate edges.
4. A table tennis net (1) according to any one of claims 1 to 3, wherein each outer zone is substantially symmetrical about an axis extending along the table surface.
5. A table tennis net (1) according to any one of the preceding claims, wherein the centre zone has a length of approximately one third of the table width and each transition zone extends across approximately one third of the table width.
6. A table tennis net (1) according to any one of the preceding claims, wherein the centre zone (9) comprises a net portion which is movable to adjust the height of the centre zone (9).
7. A table tennis net (1) according to claim 6, wherein the centre zone comprises a lower net portion and an upper net portion which is arranged to overlap the lower net portion and is movable relative to the lower net portion to adjust the height of the centre zone.
8. An extension for a substantially conventional table tennis net which when positioned adjacent to the conventional net provides a transition zone (6) extending from one side of a centre zone (4) of substantially constant net height to extend outwardly toward the table edge and provide a region of increasing net height toward the table edge (9), said extension further including an outer zone (8) joined to the transition zone (6) to extend outwardly beyond the table edge (9) and below the playing surface.
9. An extension according to claim 8, wherein the transition zone (6) is configured to provide a substantially linear increase in net height from the boundary of the centre region to the table edge.
10. An extension according to claim 8 or claim 9, wherein the outer zone (8) comprises an arcuate edge.
11. An extension according to any one of claims 8 to 10, wherein the outer zone (8) is configured to be symmetrical about an axis which extends along the table surface (2).
12. An extension according to claim 11, wherein the transition zone (6) is configured to extend across approximately one third of the table width.
13. An extension according to any one of claims 8 to 12, the extension being adapted to be releasably anchored to the table at a single position.

14. An extension according to claim 13, wherein said single position is at the outer edge (9) of the table.

Patentansprüche

1. Tischtennisnetz (1) zum Aufteilen einer Spielfläche (2) in zwei Regionen, indem es sich über eine Tischoberfläche erstreckt, wobei das genannte Netz Folgendes umfasst: eine erste mittlere Zone (14), um eine im Wesentlichen konstante Netzhöhe über den mittleren Teil des Tisches zu erstrecken; Übergangszonen an jeder Seite der mittleren Zone (6), um sich jeweils nach außen zu den Tischrändern (9) hin zu erstrecken und eine Region mit zunehmender Netzhöhe zu den Tischrändern hin vorzusehen; und mit jeder der Übergangszonen (6) verbundene äußere Zonen (8), die sich über die jeweiligen Tischränder (9) hinaus nach außen und unter die Spielfläche (2) erstrecken.
2. Tischtennisnetz nach Anspruch 1, wobei die Übergangszonen (6) eine im Wesentlichen lineare Zunahme der Netzhöhe von der mittleren Zone (9) zu den Tischrändern (9) vorsehen.
3. Tischtennisnetz (1) nach Anspruch 1 oder Anspruch 2, wobei die äußeren Zonen (8) bogenförmige Ränder umfassen.
4. Tischtennisnetz (1) nach einem der Ansprüche 1 bis 3, wobei die äußeren Zonen jeweils im Wesentlichen symmetrisch um eine Achse sind, die sich entlang der Tischoberfläche erstreckt.
5. Tischtennisnetz (1) nach einem der vorangehenden Ansprüche, wobei die mittlere Zone eine Länge von ungefähr einem Drittel der Tischbreite aufweist und sich die Übergangszonen jeweils über ungefähr ein Drittel der Tischbreite erstrecken.
6. Tischtennisnetz (1) nach einem der vorangehenden Ansprüche, wobei die mittlere Zone (9) einen Netzabschnitt umfasst, der bewegbar ist, um die Höhe der mittleren Zone (9) zu verstellen.
7. Tischtennisnetz (1) nach Anspruch 6, wobei die mittlere Zone einen unteren Netzabschnitt und einen oberen Netzabschnitt umfasst, der dazu angeordnet ist, den unteren Netzabschnitt zu überlappen und relativ zu dem unteren Netzabschnitt bewegbar ist, um die Höhe der mittleren Zone zu verstellen.
8. Verlängerung für ein im Wesentlichen herkömmliches Tischtennisnetz, die, wenn sie angrenzend an das herkömmliche Netz positioniert ist, eine Übergangszone (6) vorsieht, die sich von einer Seite einer mittleren Zone (4) mit im Wesentlichen konstanter

Netzhöhe erstreckt, um sich nach außen zu dem Tischrand hin zu erstrecken und eine Region mit zunehmender Netzhöhe zu dem Tischrand (9) hin vorzusehen, wobei die genannte Verlängerung weiter eine mit der Übergangszone (6) verbundene äußere Zone (8) umfasst, um sich nach außen über den Tischrand (9) hinaus und unter die Spielfläche zu erstrecken.

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9. Verlängerung nach Anspruch 8, wobei die Übergangszone (6) dazu ausgebildet ist, eine im Wesentlichen lineare Zunahme der Netzhöhe von der Grenze der mittleren Region zum Tischrand vorzusehen.

10. Verlängerung nach Anspruch 8 oder Anspruch 9, wobei die äußere Zone (8) einen bogenförmigen Rand umfasst.

11. Verlängerung nach einem der Ansprüche 8 bis 10, wobei die äußere Zone (8) dazu ausgebildet ist, um eine Achse symmetrisch zu sein, die sich entlang der Tischoberfläche (2) erstreckt.

12. Verlängerung nach Anspruch 11, wobei die Übergangszone (6) dazu ausgebildet ist, sich über ungefähr ein Drittel der Tischbreite zu erstrecken.

13. Verlängerung nach einem der Ansprüche 8 bis 12, wobei die Verlängerung dazu angepasst ist, an einer einzigen Stelle lösbar an dem Tisch verankert zu sein.

14. Verlängerung nach Anspruch 13, wobei sich die genannte einzige Stelle am äußeren Rand (9) des Tisches befindet.

Revendications

1. Filet de tennis de table (1) pour diviser une surface de jeu (2) en deux régions grâce à son extension en travers d'une surface de table ; ledit filet englobant une première zone centrale (14) afin d'étendre une hauteur de filet sélectionnée sensiblement constante en travers de la partie centrale de la table ; des zones de transition de chaque côté de la zone centrale (6) afin de s'étendre respectivement vers l'extérieur en direction des bords de la table (9) et de procurer une région à hauteur de filet croissante vers les bords de la table ; et des zones externes (8) jointes à chacune des zones de transition (6) lesquelles s'étendent vers l'extérieur au-delà des bords de table respectifs (9) et en dessous de la surface de jeu (2).

2. Filet de tennis de table selon la revendication 1, les zones de transition (6) offrant un accroissement sensiblement linéaire en termes de hauteur de filet à partir de la zone centrale (9) vers les bords de la

- table (9).
3. Filet de tennis de table (1) selon la revendication 1 ou la revendication 2, les zones externes (8) comprenant des bords arqués. 5
 4. Filet de tennis de table (1) selon l'une quelconque des revendications 1 à 3, chaque zone externe étant sensiblement symétrique autour d'un axe s'étendant le long de la surface de la table. 10
 5. Filet de tennis de table (1) selon l'une quelconque des revendications précédentes, la zone centrale ayant une longueur approximativement égale à un tiers de la largeur de la table et chaque zone de transition s'étendant en travers d'un tiers approximativement de la largeur de la table. 15
 6. Filet de tennis de table (1) selon l'une quelconque des revendications précédentes, la zone centrale (9) comprenant une portion de filet qui est apte à être déplacée afin de pouvoir ajuster la hauteur de la zone centrale (9). 20
 7. Filet de tennis de table (1) selon la revendication 6, la zone centrale comprenant une portion de filet inférieure et une portion de filet supérieure qui est agencée de façon à chevaucher la portion de filet inférieure et est apte à être déplacée par rapport à la portion de filet inférieure afin de pouvoir ajuster la hauteur de la zone centrale. 25
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 8. Extension pour un filet de tennis de table sensiblement classique qui, lorsqu'elle est placée en position adjacente au filet classique, procure une zone de transition (6) laquelle s'étend d'un côté d'une zone centrale (4) ayant une hauteur de filet sensiblement constante pour s'étendre vers l'extérieur en direction du bord de la table et procurer une région à hauteur de filet croissante vers le bord de la table (9), ladite extension englobant en outre une zone externe (8) jointe à la zone de transition (6) pour s'étendre vers l'extérieur au-delà du bord de la table (9) et en dessous de la surface de jeu. 35
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 9. Extension selon la revendication 8, la zone de transition (6) étant configurée de façon à offrir un accroissement sensiblement linéaire en termes de hauteur de filet à partir de la limite de la région centrale vers le bord de la table. 50
 10. Extension selon la revendication 8 ou la revendication 9, la zone externe (8) comprenant un bord arqué.
 11. Extension selon l'une quelconque des revendications 8 à 10, la zone externe (8) étant configurée de façon à être symétrique autour d'un axe qui s'étend le long de la surface de la table (2). 55
 12. Extension selon la revendication 11, la zone de transition (6) étant configurée de façon à s'étendre en travers d'un tiers approximativement de la largeur de la table.
 13. Extension selon l'une quelconque des revendications 8 à 12, l'extension étant conçue pour être ancrée de façon détachable à la table au niveau d'un emplacement unique.
 14. Extension selon la revendication 13, ledit emplacement unique se situant au niveau du bord externe (9) de la table.

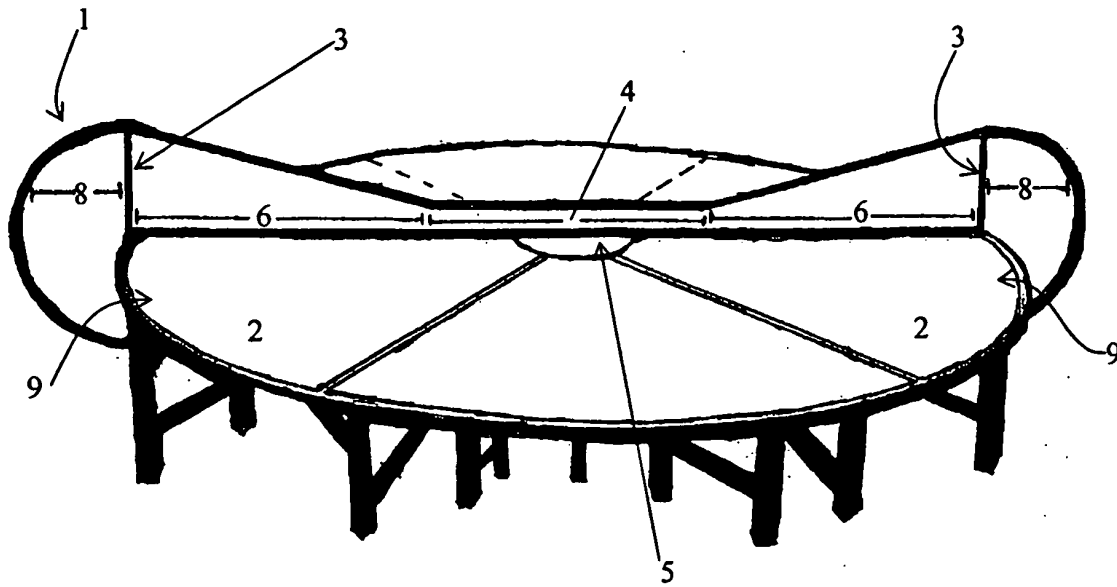


Figure 1

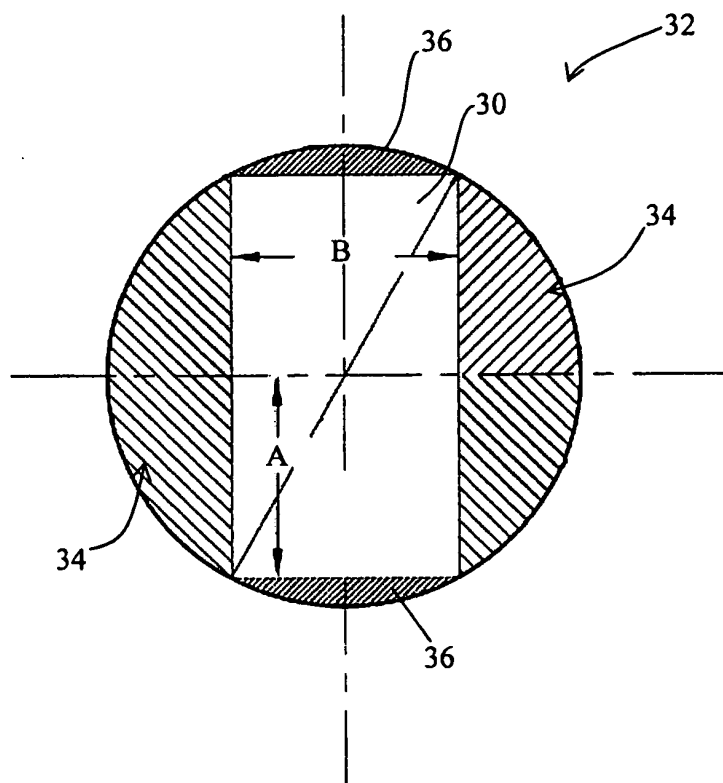


Figure 2

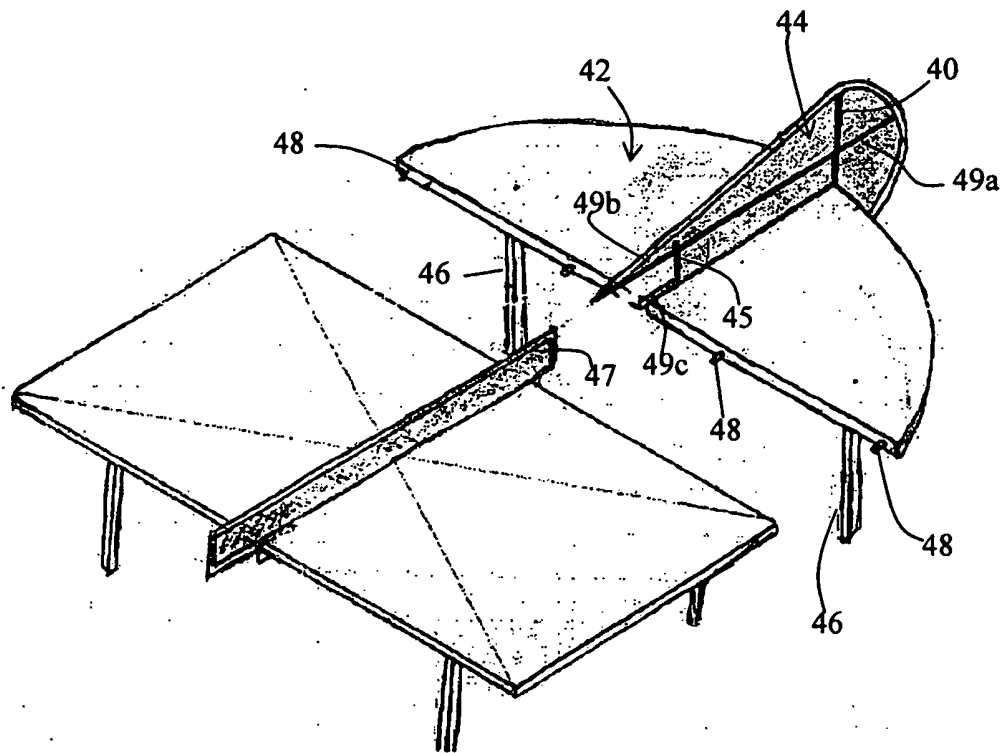


Figure 3

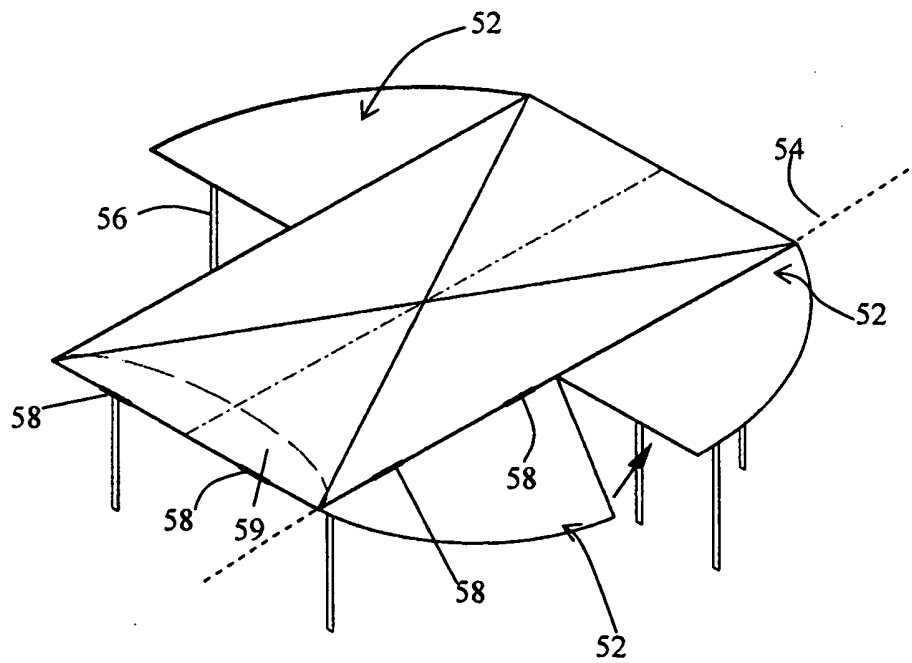


Figure 4

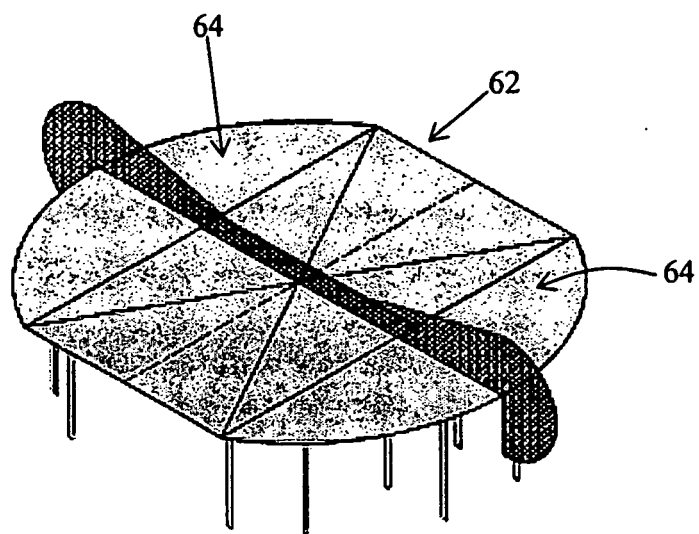


Figure 5

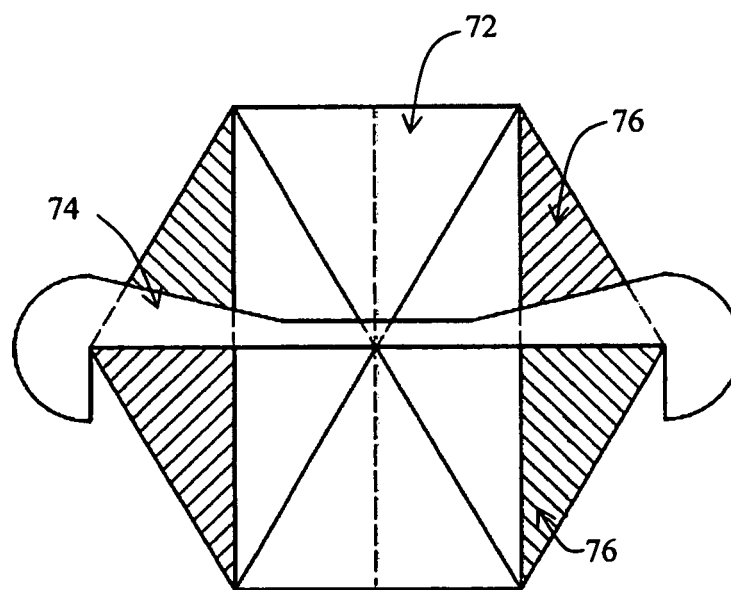


Figure 6

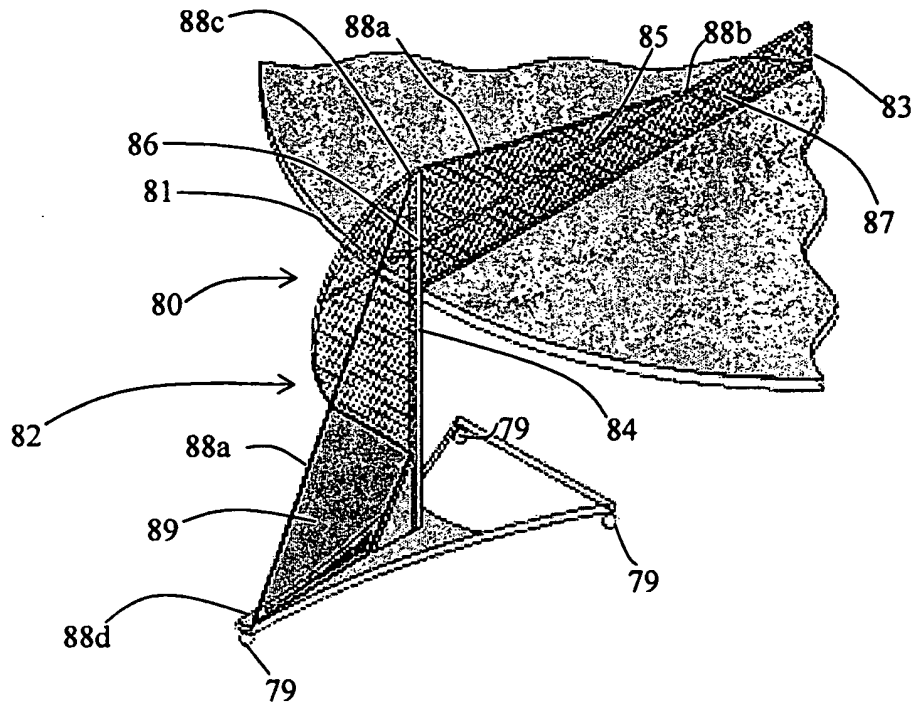


Figure 7

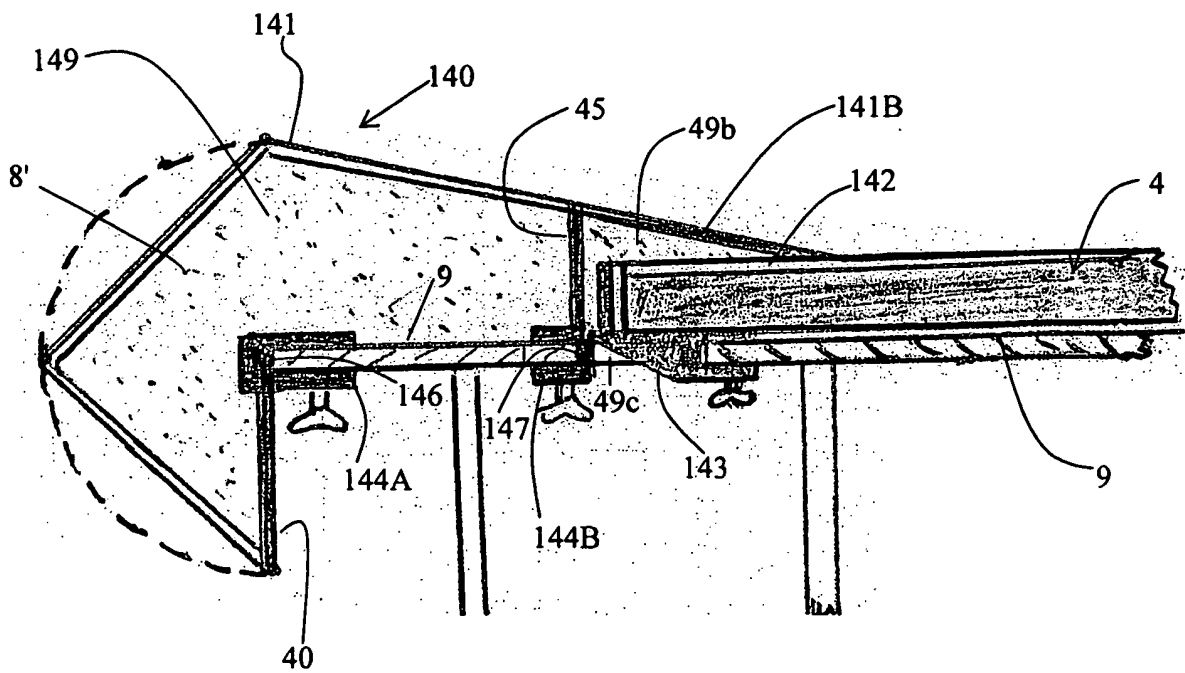


Figure 8

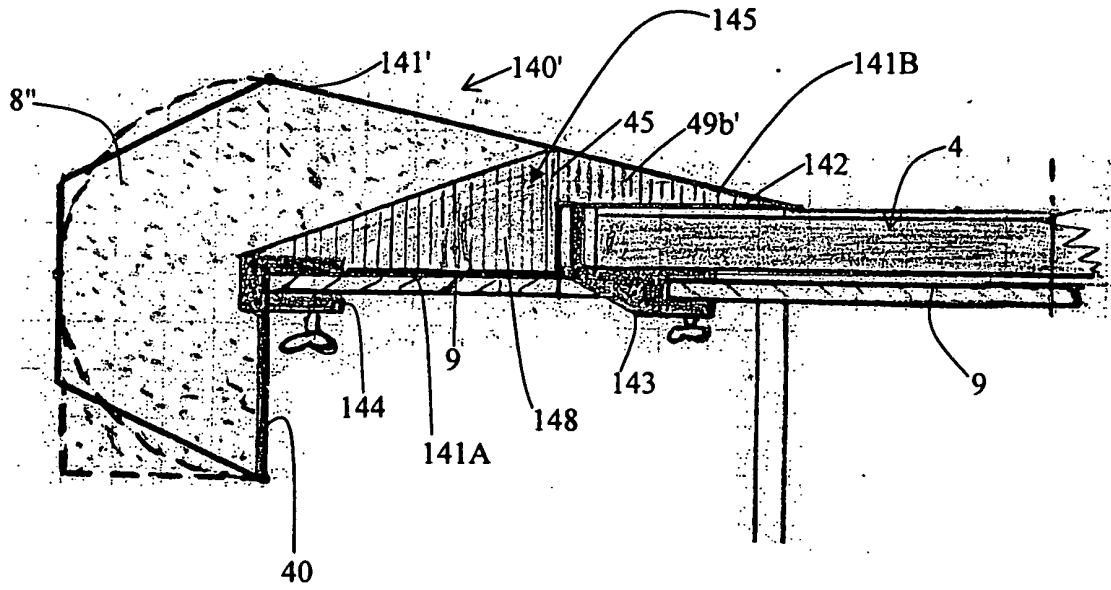


Figure 9

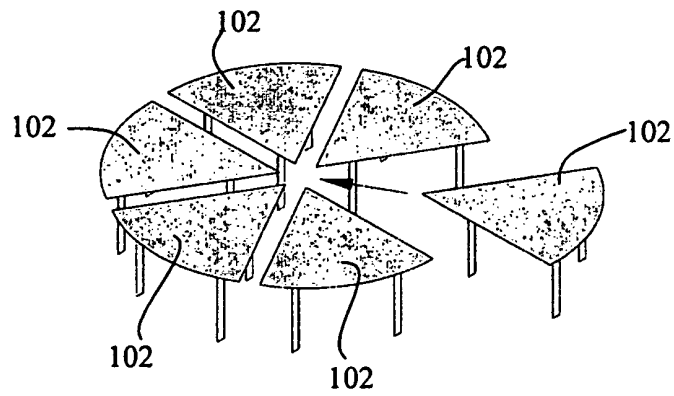


Figure 10

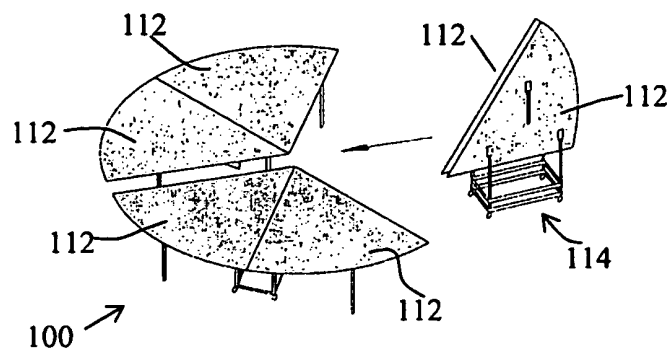


Figure 11

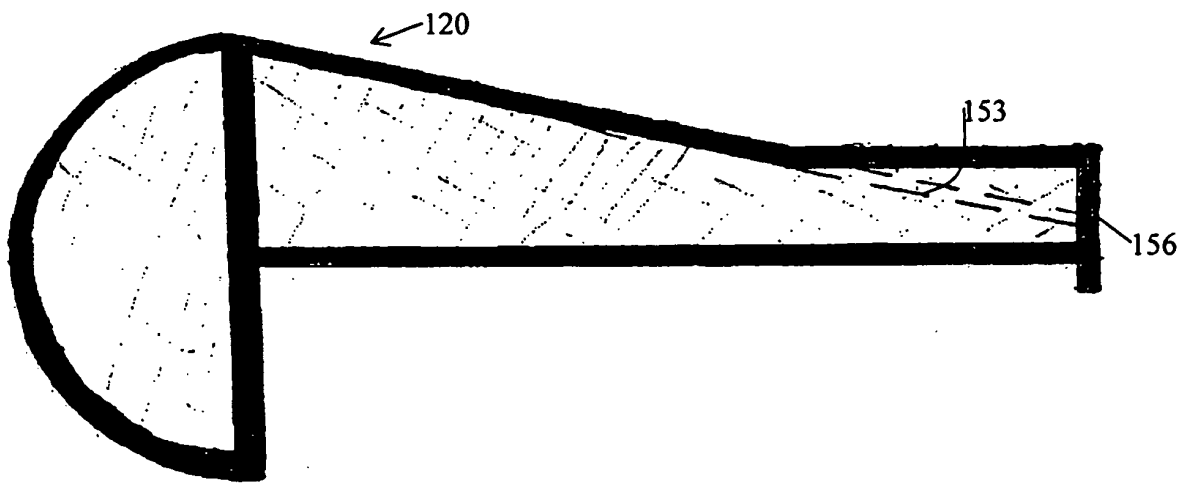


Figure 12

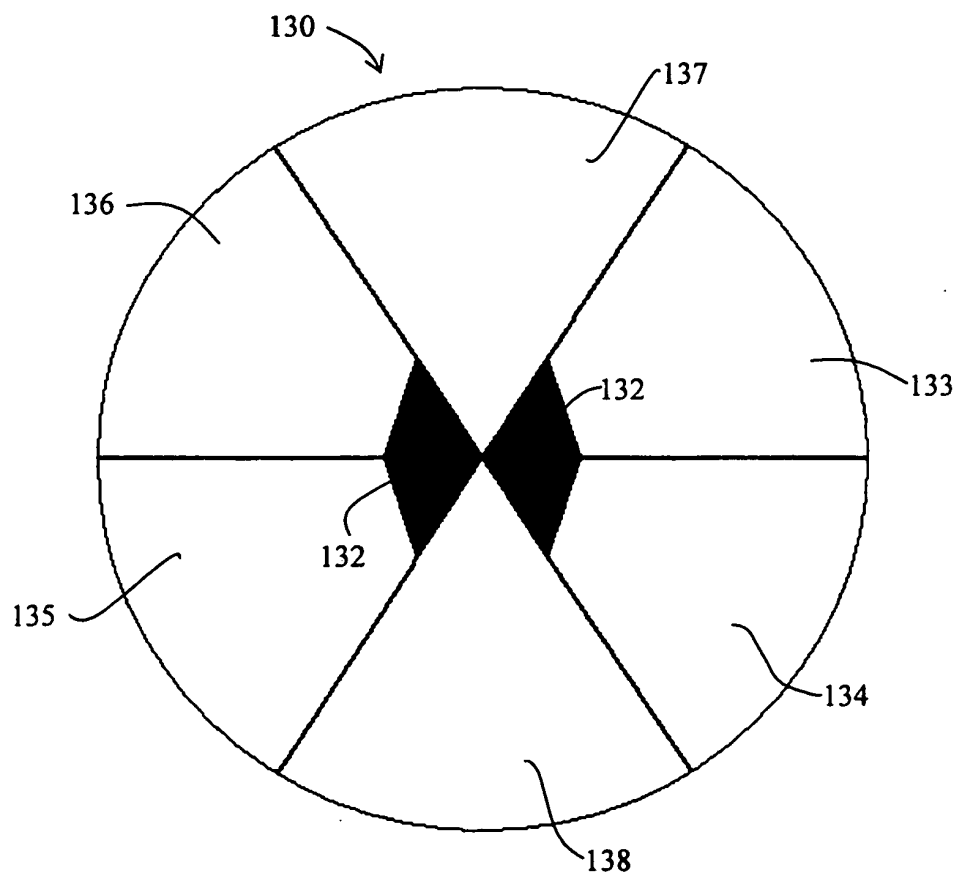


Figure 13

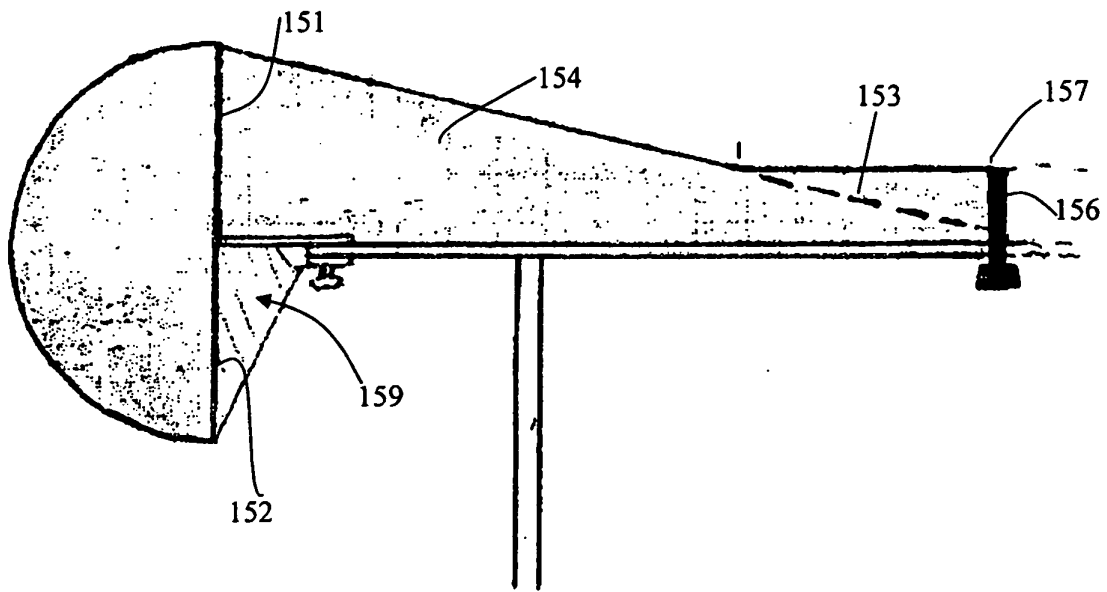


Figure 14

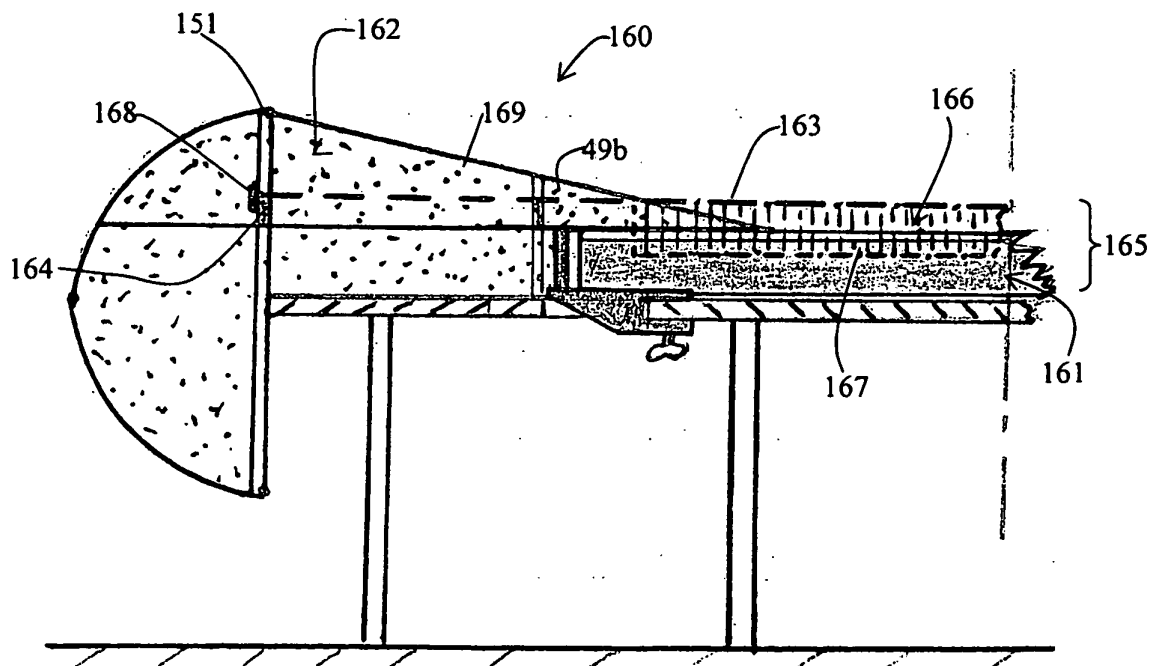


Figure 15

REFERENCES CITED IN THE DESCRIPTION

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- **G. ARNDT**. Triples in Table Tennis: A Promising New Team Competition Sport - Introduction and First Findings. *Proc. 10th ITTF Sports Science Congress*, May 2007, 444-462 [0003]