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54 Plaything.

57 A plaything is provided comprising a plurality of pieces (H, P) each of which has a surface portion (10, 12) which is part of a hollow sphere and each of which has a stem portion (14) extending radially inwardly thereof, and a core member (15, 31, 33) with which said stem portions (14) are engageable to enable said pieces to be assembled together around said core to form a ball (1) having a generally spherical substantially continuous surface formed by said surface portions (10, 12).

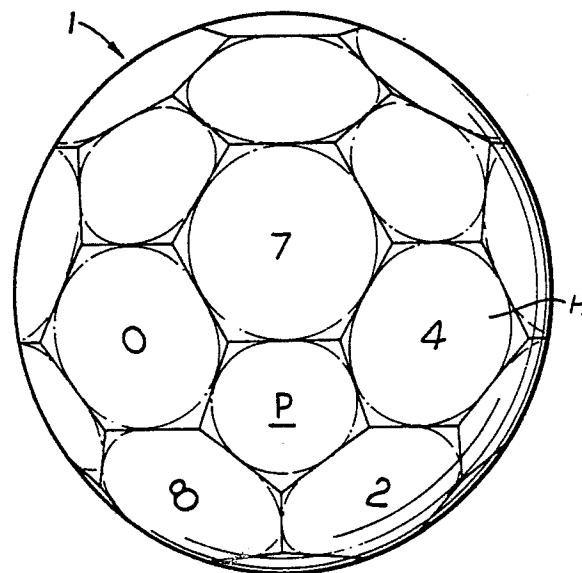


Fig. 1

EP 0 295 787 A2

PLAYTHING

This invention relates to a plaything.

The present invention provides a plaything comprising a plurality of pieces each of which has a surface portion which is part of a hollow sphere, each of said pieces having a stem portion extending radially inwardly thereof, and a core member with which said stem portions are engageable to enable said pieces to be assembled together around said core to form a ball having a generally spherical substantially continuous surface formed by said surface portions.

The surface portion of each of said pieces may be bounded by a generally polygonal edge, e.g. may be generally in the form of a triangle, square, pentagon and/or hexagon. The edges of said surface portions may all be of the same generally polygonal form or said pieces may have surface portions of at least two visually distinguishable types.

According to one embodiment of the present invention the plaything comprises four, either or twenty identical generally triangular pieces. In another embodiment the plaything comprises six identical generally square pieces and in another embodiment twelve pentagonal pieces. According to a further embodiment the plaything comprises pieces of different types, e.g., one type having a polygonal edge in the form of a regular pentagon and the pieces of the other type having a polygonal edge in the form of a regular hexagon. Thus the plaything according to this further embodiment may comprise twelve pentagonal pieces and twenty hexagonal pieces which can be assembled in a manner such that each pentagonal piece is surrounded by five hexagonal pieces in the assembled plaything.

Preferably said pieces are such that they can be assembled together around said core to form a ball in which each edge of each piece is abutted along its entire length by an edge of another piece.

At least the outer surfaces of different ones of said pieces may be of different colours. For example, where the plaything comprises pieces of different types as described above, the pieces of one type may be of one colour and the pieces of the other type may be of a contrasting colour, e.g. the pieces of one type may be black and the pieces of the other type may be white.

Said core member may comprise a mass of non-setting modelling material into which the stem portions of said pieces can be inserted. Alternatively, the core member may comprise radial projections with which said stem portions of said pieces are engageable. For example, said stem portions of said pieces may make spigot-and-socket engage-

ment with said projections or said core may comprise a sphere having ribs on the external surface thereof and said stem portions of said pieces may be engageable with said ribs, as by said stem portions having end portions which are engageable between said ribs or by said stem portions having bifurcated end portions which engage over said ribs.

At least some of said pieces may have markings or indicia on the outer surface thereof and rules may be provided requiring that the pieces be assembled with the markings or the indicia disposed in a particular manner in the completed ball. Said markings or indicia may, for example, comprise numerals and the rules may require that the numbers on the difference pieces be arranged in a particular order or sequence or to fulfil a particular numerical requirement. For example, where the plaything comprises twelve pentagonal pieces and twenty hexagonal pieces as hereinbefore described, each of the twenty hexagonal pieces may have one of the numerals 0 to 9 thereon, there being two pieces of each number, and the rules may require that in the completed ball the sum total of the numerals carried on the hexagonal pieces surrounding each pentagon amount to a particular total, e.g., twenty one.

In another embodiment of the present invention, the pieces are arranged in groups which in the assembled ball can be rotated relative to an adjacent group or groups to enable said markings or indicia to be rearranged. To this end each group may be rotatable about the axis of the core or each group may be rotatable about its own axis.

The invention will be more particularly described with reference to the accompanying drawings, in which:

Figure 1 illustrates a ball assembled from a plurality of pieces according to one embodiment of the invention;

Figures 2 and 3 show respectively a side view and a bottom plan view of one type of piece used in the assembly of the ball illustrated in Figure 1;

Figures 4 and 5 show respectively a side view and bottom plan view of a different type of piece used in the assembly of the ball of Figure 1;

Figure 6 illustrates a core used in the assembly of the ball illustrated in Figure 1;

Figures 7 and 7A illustrate a ball and playing piece according to another embodiment of the invention;

Figures 8 and 8A illustrate a ball and playing piece according to a further embodiment of the invention;

Figures 9 and 9A illustrate a ball and playing piece according to a yet further embodiment of the invention;

Figures 10, 10A and 10B illustrate a ball, playing piece and core according to yet a further embodiment of the invention, and

Figures 11, 11A and 11B illustrate a ball, playing piece and core according to a still further embodiment of the invention.

The ball 1 shown in Figure 1 is assembled from twenty pieces H of a first type and twelve pieces P of a second type. A typical piece H is illustrated in Figures 2 and 3 and will be seen to comprise a surface portion 10 bounded by a regular hexagonal edge 11. A typical piece P is illustrated in Figures 4 and 5 and will be seen to comprise a surface portion 12 bounded by a regular pentagonal edge 13.

The length of each side of the hexagonal edge 11 is equal to the length of each side of the pentagonal edge 12, with the result that the pieces can assume the close-packed formation shown in Figure 1 in which the surface portions 10, 12 together form a substantially spherical surface which is continuous - i.e. each side of each piece P is abutted along its entire length by a side of a piece H, and each side of each piece H is abutted along its entire length by a side of a pentagonal piece P or a side of a hexagonal piece H.

To enable the pieces to be assembled together into the ball 1 each piece includes a stem portion 14 which extends radially inwardly of the assembled ball 1. The ball 1 is assembled by inserting the stem portions 14 into a ball or mass 15 of a suitable non-setting modelling material as shown in Figure 6.

In the use of the plaything illustrated in Figures 1-6, a user may simply use the plaything as a constructional toy for assembling the ball 1 from a collection of individual pieces H and P using the modelling material 15 as the core into which the stem portions 14 are inserted to hold the pieces in position. Rules may be provided which require that in performing this action a spherical ball must be formed in which each pentagonal piece P is surrounded by five hexagonal pieces H.

In a preferred embodiment, each of the hexagonal pieces H carries a numeral, two such pieces being provided carrying each of the numerals from 0 to 9. In this case, as a second and a more difficult challenge, the user of the plaything may be invited to assemble the ball together as aforesaid, but with the additional constraint that the numerals on the hexagonal pieces must be arranged in a particular disposition. For example, in the preferred embodiment of the invention, the user is challenged to assemble the ball together so that the sum total of the numerals on each ring of five

pieces H surrounding a piece P is some specified value. In the particularly preferred embodiment of the invention, the player is told that the pieces marked "6" and "9" may be regarded at the option of the player as being marked either with "6" or with "9" and the player is invited to assemble the ball together so that the sum total of the numerals of each ring of hexagonal pieces is twenty one. A typical ring of hexagonal pieces assembled together in accordance with this rule is illustrated in Figure 1 - the sum total of the numerals carried by the ring being $0 + 7 + 4 + 2 + 8 = 21$. In order to complete the ball in accordance with this rule a player must now arrange all the remaining pieces to achieve the same desideratum - i.e. that the sum total of the numerals on each ring of pieces H is twenty one.

In the embodiment shown in Figures 7 and 7A the ball is assembled from twenty identical substantially triangular pieces. In the embodiment of Figures 8 and 8A the ball is assembled from twelve identical substantially pentagonal pieces whilst in the embodiment of Figures 9 and 9A the ball is assembled from eight substantially triangular pieces. In each of the embodiments of Figures 7 to 9 the pieces each have a stem portion 14 (not shown) and the ball is assembled by inserting the stem portion 14 into a ball or mass 15 of modelling material as shown in Figure 6.

In the embodiment shown in Figures 10, 10A and 10B, the ball is assembled from six substantially square pieces the stems 14 (not shown) of which are engaged spigot-and-socket fashion with radial projections 30 of a core member 31. Likewise, in the embodiment of Figures 11, 11A and 11B the ball is assembled from four substantially triangular pieces the stem portions 14 (not shown) of which are engaged spigot-and-socket fashion with radial projections 32 of a core member 33. To enable the stem portions 14 of the pieces shown in Figures 10 and 11 to engage the radial projections 30 and 32 of the core members 31 and 33, the stem portions 14 of the pieces may be in the form of split sleeves which engage over the radial projections 30 and 33.

The embodiments illustrated in the drawings are suitable for various age groups, e.g., ranging from older children or adults for the embodiment of Figs. 1 to 6 down to young children of five years old or less for the embodiment of Fig. 11.

Claims

1. A plaything comprising a plurality of pieces (H, P) each of which has a surface portion (10, 12) which is part of a hollow sphere, each of said pieces having a stem portion (14) extending radi-

ally inwardly thereof, and a core member (15, 31, 33) with which said stem portions (14) are engageable to enable said pieces to be assembled together around said core to form a ball (1) having a generally spherical substantially continuous surface formed by said surface portions.

2. A plaything according to claim 1, wherein said surface portions of each of said pieces is bounded by a generally polygonal edge (11, 13).

3. A plaything according to claim 2, wherein the edge of each said surface portion is generally in the form of a triangle, square, pentagon and/or hexagon.

4. A plaything according to claim 3, wherein the edges of said surface portions are all of the same generally polygonal form.

5. A plaything according to claim 3, wherein said pieces have surface portions of at least two visually distinguishable types.

6. A plaything according to claim 5, wherein the pieces of one type have a polygonal edge in the form of a regular pentagon and the pieces of the other type have a polygonal edge in the form of a regular hexagon.

7. A plaything according to claim 6, comprising twelve pentagonal pieces and twenty hexagonal pieces which can be assembled in a manner such that each pentagonal piece is surrounded by five hexagonal pieces.

8. A plaything according to any one of the preceding claims, wherein said pieces can be assembled together around said core to form a ball in which each edge of each piece is abutted along its entire length by an edge of another piece.

9. A plaything according to any one of the preceding claims, wherein at least the outer surfaces of different ones of said pieces are of different colours.

10. A plaything according to claims 6 or 7 and 9, wherein the pieces of one type are of one colour and the pieces of the other type are of a contrasting colour.

11. A plaything according to any one of the preceding claims, wherein said core member comprises a mass of non-setting modelling material into which the stem portions of said pieces can be inserted.

12. A plaything according to any one of claims 1 to 10, wherein said core member comprises radial projections with which said stem portions of said pieces are engageable.

13. A plaything according to claim 12, wherein said stem portions of said pieces make spigot-and-socket engagement with said projections.

14. A plaything according to claim 12, wherein said core comprises a sphere having ribs on the external surface thereof and said stem portions of said pieces are engageable with said ribs.

15. A plaything according to any one of the preceding claims, wherein said least some of said pieces have markings or indicia on the outer surface thereof and rules are provided requiring that the pieces be assembled with the markings or indicia disposed in a particular manner in the completed ball.

16. A plaything according to claim 15, wherein said markings or indicia comprise numerals and the rules require that the numbers on the different pieces be arranged in a particular order or sequence or to fulfil a particular numerical requirement

17. A plaything according to claims 7 and 16, wherein the twenty hexagonal pieces each have one of the numerals 0 to 9 thereon, there being two pieces of each number, and the rules require that in the completed ball the sum total of the numerals carried on the hexagonal pieces surrounding each pentagon amount to a particular total.

18. A plaything according to claim 15 or 16, wherein the pieces are arranged in groups which in the assembled ball can be rotated relative to an adjacent group or groups to enable said markings or indicia to be rearranged.

19. A plaything according to any one of the preceding claims, comprising four, six, eight, twelve twenty or thirtytwo pieces.

20. A plaything according to claim 19, comprising four, eight or twenty generally triangular pieces, six generally square pieces, twelve pentagonal pieces, or twelve pentagonal and twenty hexagonal pieces.

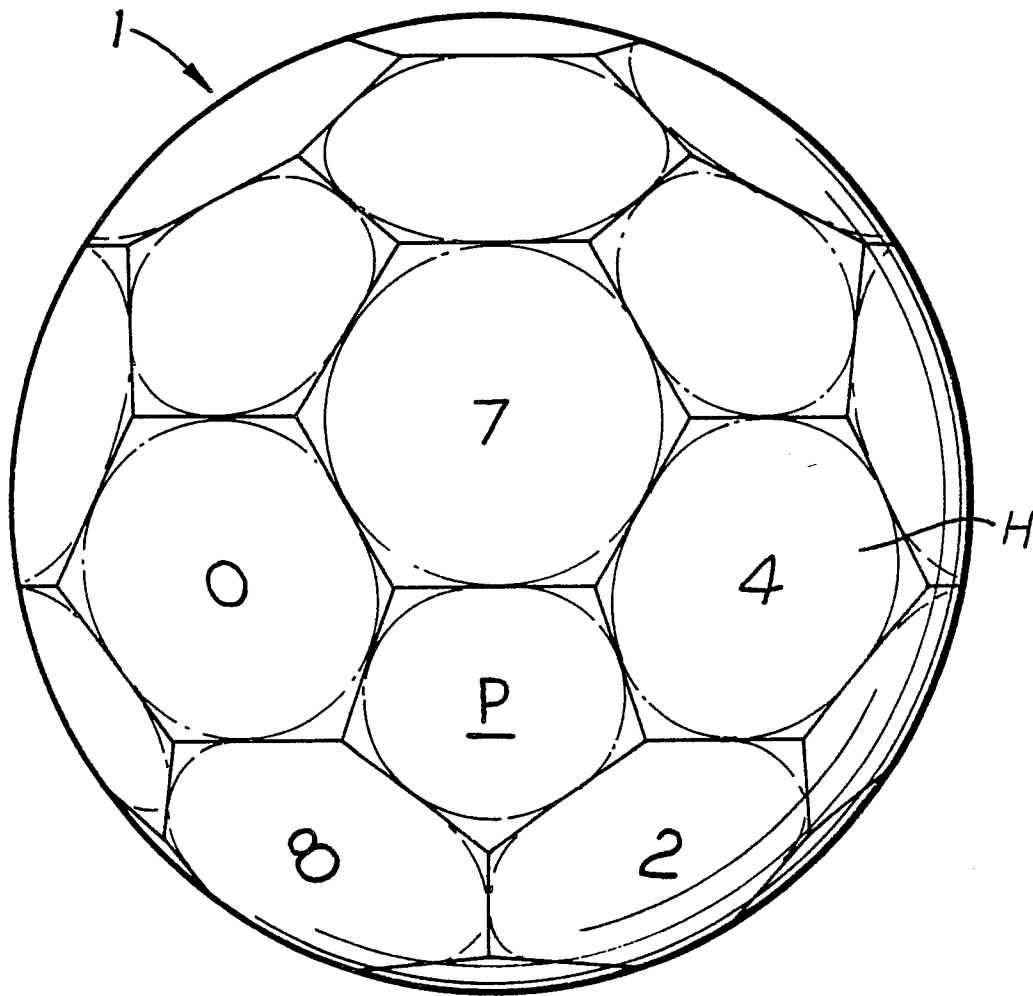


Fig. 1

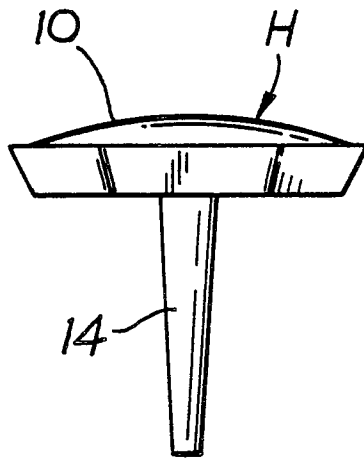


Fig. 2

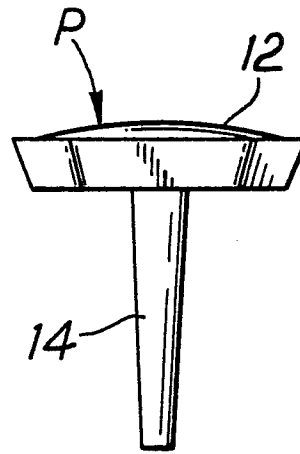


Fig. 4

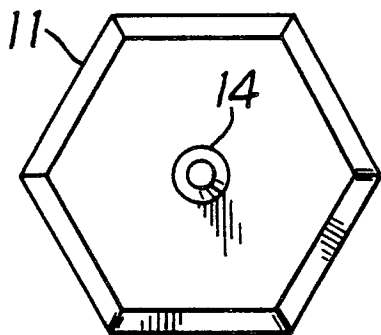


Fig. 3

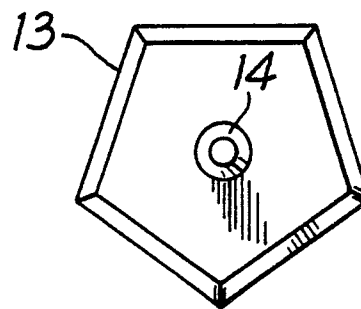


Fig. 5

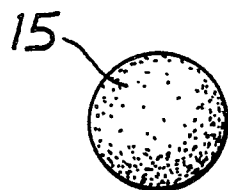


Fig. 6

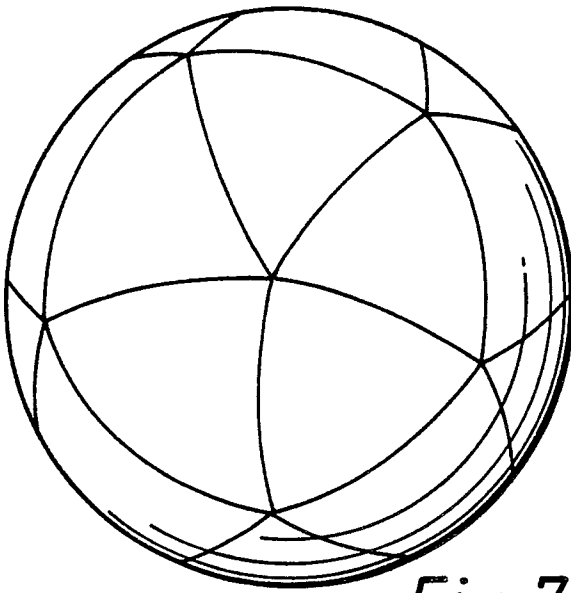


Fig. 7

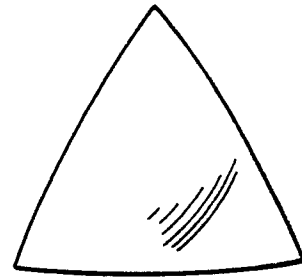


Fig. 7A

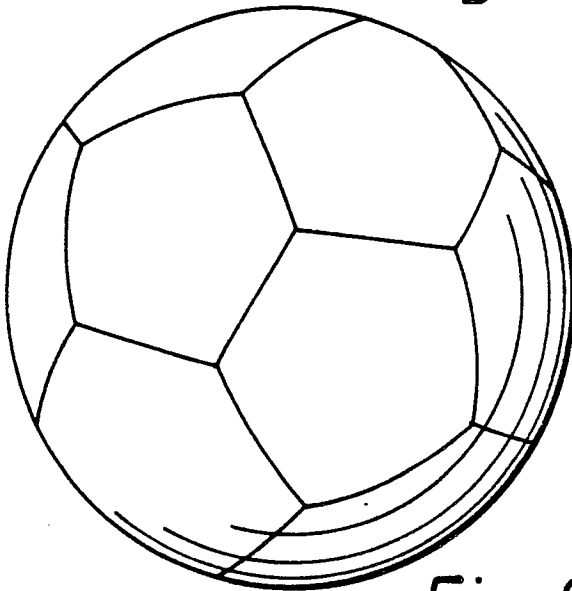


Fig. 8

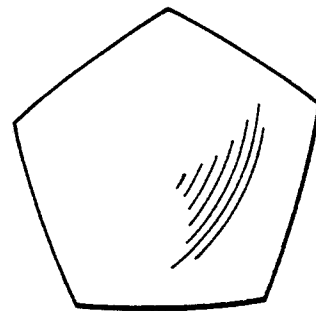


Fig. 8A

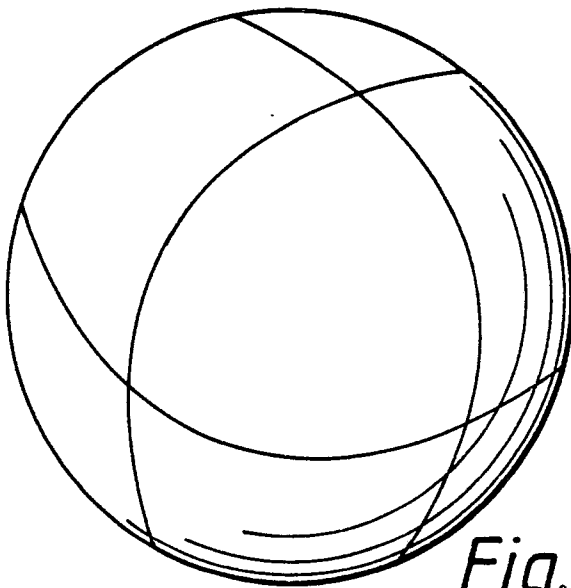


Fig. 9

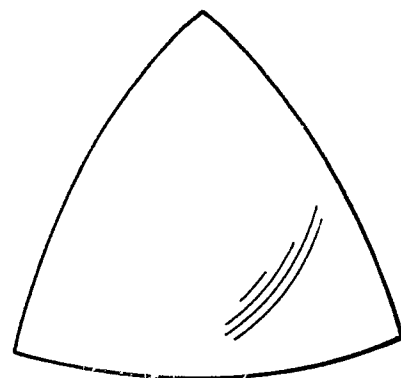


Fig. 9A

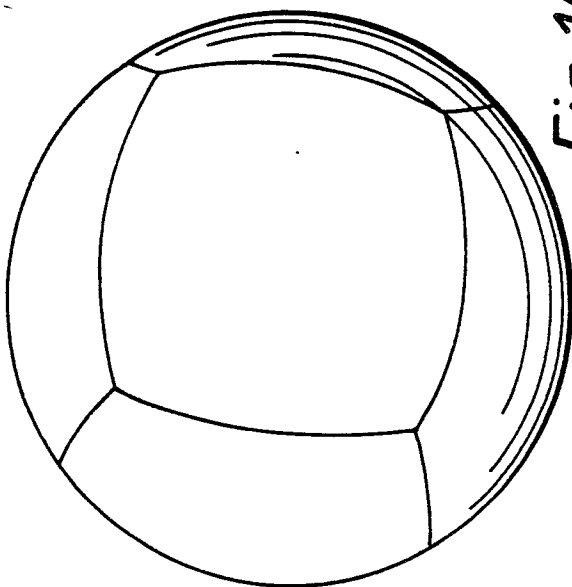


Fig. 10

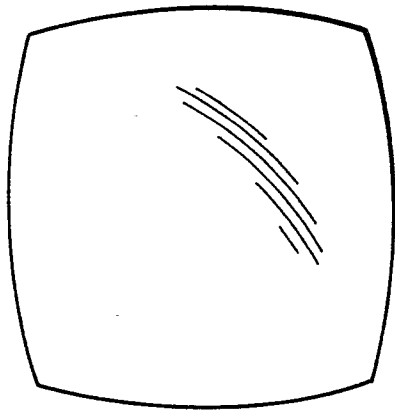


Fig. 10A

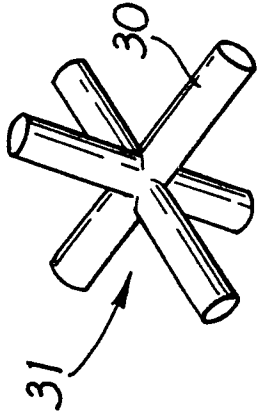


Fig. 10B

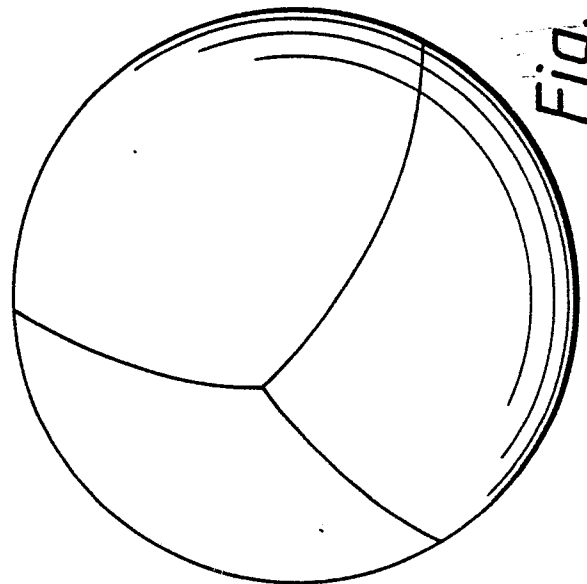


Fig. 11

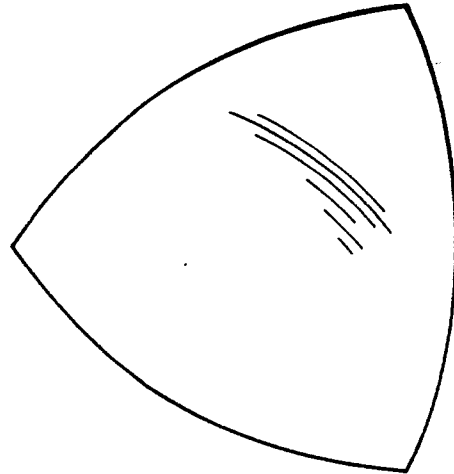


Fig. 11A

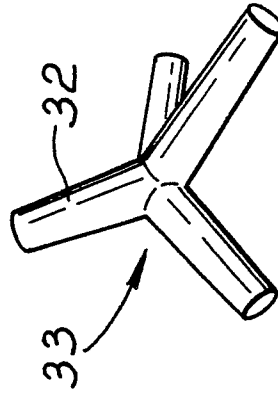


Fig. 11B