June 14, 1966 C. E. SMITH 3,256,020

FINNED FOOTBALL

Filed April 23, 1963

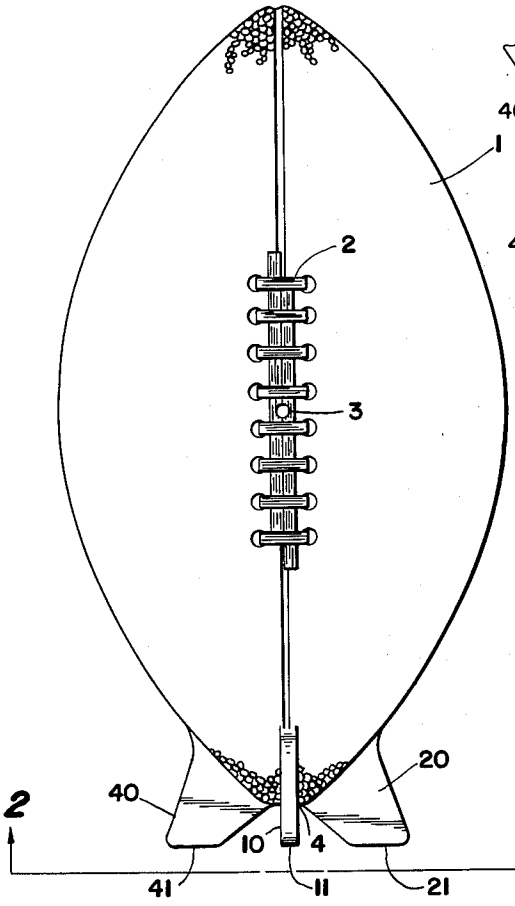


Fig. 1

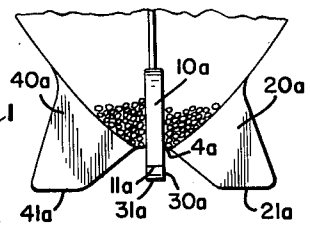


Fig. 3

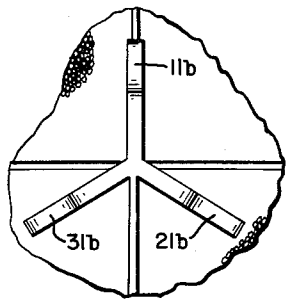


Fig. 4

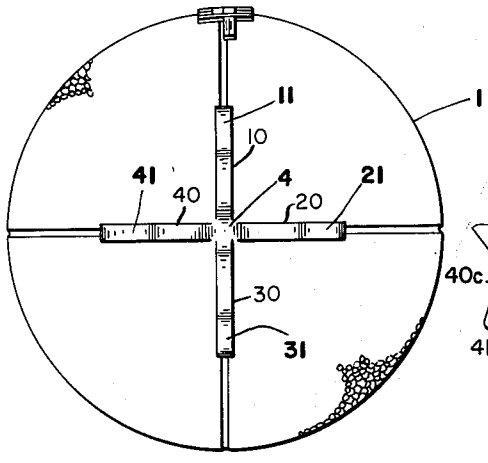


Fig. 2

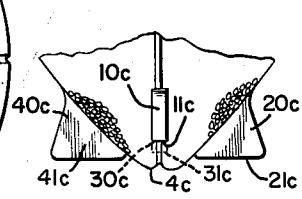


Fig. 5

INVENTOR.

CHARLES E. SMITH

BY Ely, Pearne & Gordon

ATTORNEYS

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FINNED FOOTBALL

Charles E. Smith, Sandusky, Ohio, assignor to The Barr Rubber Products Company, Sandusky, Ohio, a corporation of Ohio

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This invention relates to an improvement in footballs and, more particularly, to footballs provided with external fins, preferably integral with the outer cover.

A conventional football, having the shape of a prolate spheroid, requires, for place-kicking, that it be held with its longitudinal axis in a generally vertical position for the kicker. This is normally done by holding the ball by hand or supporting it on a separate kicking tee, which is usually kicked away when the ball is kicked. The assistance of a teammate, acting as a "spotter," is required if the ball is held by hand; especially in practice kicking, this can be a boring task and provides a source of complaint (or excuse) by the kicker for inaccurate kicks; that is, that the ball was moved or, at least it was not held at the moment of kicking at the angle which the kicker believes proper. If a tee is used, a spotter is not required but time may be lost in placing the ball at the desired angle and in recovering the tee after the kick.

It is the object of this invention to provide a football having fins located at one end so that the ball may be positioned with its axis in a generally vertical direction. In addition to the advantage of eliminating the need for the spotter and loss of time in locating a tee which may be kicked away, an unexpected advantage of this invention is that the fins do not appreciably alter the flight of the ball when place-kicked. At the same time, the fins appear to make the ball have a truer "spiral" flight when passed or punted; in actuality, this latter effect may be more psychological than real, due to the tendency of a passer or punter to try to make a finned ball produced according to this invention take a truer "spiral" flight.

Another object and advantage of this invention is that practical embodiments thereof permit the ball to be stood, with respect to the direction it is approached by the place kicker, at varying angles and, when the desired angle between the longitudinal axis and vertical is determined, the ball may thereafter be quickly re-spotted at substantially the desired angle.

Thus, a major advantage of this invention is that, in addition to the attractiveness of the generally rocket-shaped appearance of the ball, it may be used in actual play and behaves substantially the same as conventional footballs, and, even where league rules prohibit its use in league play, a football made according to this invention may be used in practice for improving the players' skill.

Other objectives and advantages of this invention will be apparent from the following specification, claims, and drawings, in which:

FIG. 1 is an elevation, showing one embodiment of a football made according to this invention.

FIG. 2 is a bottom plan view taken from lines 2—2 of FIG. 1.

FIG. 3 is an elevational view of the lower end of a second embodiment of a football in accordance with the present invention.

FIG. 4 is a fragmentary bottom plan view of a third embodiment of the present football.

FIG. 5 is an elevational view of the lower end of a fourth embodiment of the present football.

The embodiment of this invention illustrated in FIGS. 1 and 2 comprises a conventional prolate spheroid football 1 provided with actual or simulated lacing 2 and an inflating valve opening 3. This football has a major diameter and a transverse minor diameter which intersect each other at their mid-points. The cross-sections of the football transverse to its major diameter are essentially circular, and these cross-sections progressively decrease in area from the middle cross-section which includes the aforementioned minor diameter toward the ends of the major diameter to locate and define end poles at the opposite ends of the major diameter. Attached to and integral with the ball 1 above its lower pole point 4 are four equally spaced, radially extending fins 10, 20, 30, and 40. The outer ends of the fins terminate longitudinally in bearing surfaces 11, 21, 31, and 41, respectively. The axial distance of each bearing point or surface with respect to the pole point 4 and each other is such that when the ball is placed in a substantially upright position on a horizontal surface, the outermost bearing points on at least two such bearing surfaces will be located at the corners of a polygon within those boundaries will fall a perpendicular from the center of gravity of the football. Consequently, with the ball being supported at other corners of the polygon, it will be maintained in a substantially vertical position.

In the specific embodiment shown in FIGS. 1 and 2, all bearing surfaces 11, 21, 31, and 41 may be co-planar and the axis of the ball 1 may be perpendicular to the plane on which all bearing surfaces will touch. In such a situation, when the ball is placed on a precisely horizontal surface, it will be supported in precisely vertical position and will also accommodate a substantial variety of irregularities in the actual surface of a practice or playing field. When the actual field surface is irregular, the ball may be turned until it provides the desired tilt, usually toward the kicker. The lacing 2 then provides a convenient index so that the tilt may be quickly duplicated in placing the ball for subsequent kicks.

In accordance with another embodiment of the present invention, shown in FIG. 3, the bearing surfaces 41*a* and 21*a* are both axially equidistant from the pole point 4*a*, and the remaining bearing surfaces 11*a* and 31*a* of shorter and different axial distances from the pole point 4*a*. In such instances, the ball will rest on a horizontal surface on either the combination of bearing surfaces 41*a*, 11*a*, and 21*a*, or the combination of bearing surfaces 41*a*, 31*a*, and 21*a*, thus providing a choice of two different pre-determined angles of tilt toward the kicker.

It is apparent that a minimum of three fins, rather than four, as shown in FIGS. 1–3, will provide stability. Where three fins are employed, as shown in FIG. 4, two are usually located at 120° from a fin 11*b* aligned with the lacings, such as the fins 21*b* and 31*b*. It is also possible to employ fins having bearing surfaces which are each at a different axial distance from the lower pole point; in such cases, the available number of pre-set angles of tilt will vary according to the number of fins employed.

In the specific embodiments shown in FIGS. 1–4, the bearing surfaces of the fins are located axially beyond the lower pole point so that the lower pole point is raised above the plane upon which at least three bearing surfaces will rest. However, as shown in FIG. 5, by providing fins whose bearing surfaces fall within the axial distance between the longitudinal pole points of the ball, the lower pole point may serve as a bearing point in combination with the bearing surfaces of any two fins and the ball will be stably supported on a horizontal surface—provided the bearing surfaces are located to meet the requirements of the bearing surfaces for fins which extend longitudinally beyond the lower pole point. That is, that a perpendicular from the center of gravity will fall within the polygon defined by the bearing points

on which the ball will rest. In FIG. 5, all four fins terminate short of the lower end pole **4***c*, the fins **20***c* and **40***c* presenting the lowermost bearing surfaces **21***c* and **41***c*, respectively, which are coplanar with each other and above the lower end pole **4***c*, the fin **30***c* presenting a bearing surface **31***c* slightly higher than **21***c* and **41***c*, and the remaining fin **10***c* presenting a bearing surface **11***c* slightly higher than **31***c*.

The fins are preferably flexible but the material employed and the method of forming the fins so that they are integral or otherwise relatively permanently attached to the ball will depend upon the material and construction of the ball and the variety of available procedures in producing it. Thus, in the case of one-piece balls formed by rotationally casting a vinyl plastisol or latex, for example, the fins may be formed by appropriately shaped recesses in the mold cavity in which the ball is cast. If the ball is of a construction having an internal carcass with a separately-formed rubber or plasticized plastic cover cured on it, it is generally preferable to form the fins on the cover when it is separately formed. If the ball is provided with a sewn cover, the outstanding fins may be sewn in the seams. It is possible, but generally less preferable, to adhere or otherwise bond the fins to the ball after the ball is formed.

Each fin should be in a plane including the longitudinal axis of the ball; so located, each fin may be attached to the football between the lower pole point and the circumference of the ball surface at the minor diameter of the ball, this minor diameter being that of the ball at the midpoint of the major diameter extending between the upper and lower pole points. To avoid appreciable interference by the fins with the behavior of the ball in play, the radially outermost points should not have a radial distance from the major diameter or axis of the ball greater than the radius of the ball at the minor diameter. The thickness and area of the fins are preferably not significantly greater than that which is permitted by the relative stiffness of the material from which the fins are made.

From the foregoing, it is apparent that the invention is not to be limited to the specific embodiments disclosed for illustrative purposes, but may be varied by those skilled in the art within the scope of the appended claims.

What is claimed is:

1. A football comprising a body having a major diameter and a substantially transverse minor diameter essentially intersecting each other at their midpoints, the cross-sections of said body transverse to said major diameter being essentially circular, said cross-sections progressively decreasing in area from the middle cross-section which includes said minor diameter toward the ends of said major diameter to locate and define end poles of the opposite ends of said major diameter, a minimum of three fins united with said body between one end pole thereof and the circumference at the minor diameter of the ball, said fins extending radially outward from said body to a distance less than the radius at the said minor diameter, said fins terminating in bearing surfaces so located and oriented with respect to said body that, when the ball is placed on a horizontal surface in a substantially up-right position, the ball will rest on points constituting the corners of a polygon within whose area a vertical line from the center of gravity of the ball will fall.

2. A football as defined in claim **1**, in which the bearing surfaces are spaced an axial distance beyond said end pole and the ball will rest on the three bearing surfaces of at least three fins.

3. A football as defined in claim **2**, in which at least one fin has a bearing surface spaced a greater axial distance from the said end pole than an adjacent bearing surface provided by another fin to support the ball at a predetermined inclination of its axis to a horizontal surface.

4. A football as defined in claim **3**, in which the number of fins is at least four and at least a pair of oppositely disposed fins have bearing surfaces at a greater axial distance from said end pole than the remaining fins, whereby the ball provides the option of a plurality of predetermined inclinations at which it may be set on a horizontal surface.

5. A football as defined in claim **1**, in which the bearing surfaces of at least two adjacent fins do not extend an axial distance beyond the lower end pole, whereby the ball may be supported on a horizontal surface and the said polygon constitutes a triangle defined by the lower end pole and points on the bearing surfaces of two of said fins.

6. A football as defined in claim **5**, in which the bearing surface of at least one of said fins is at an axial distance from said pole different from the axial distance of other fins, whereby the user has an option of a plurality of pre-set tilts at which the ball may be rested on a horizontal surface.

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DELBERT B. LOWE, *Primary Examiner.*