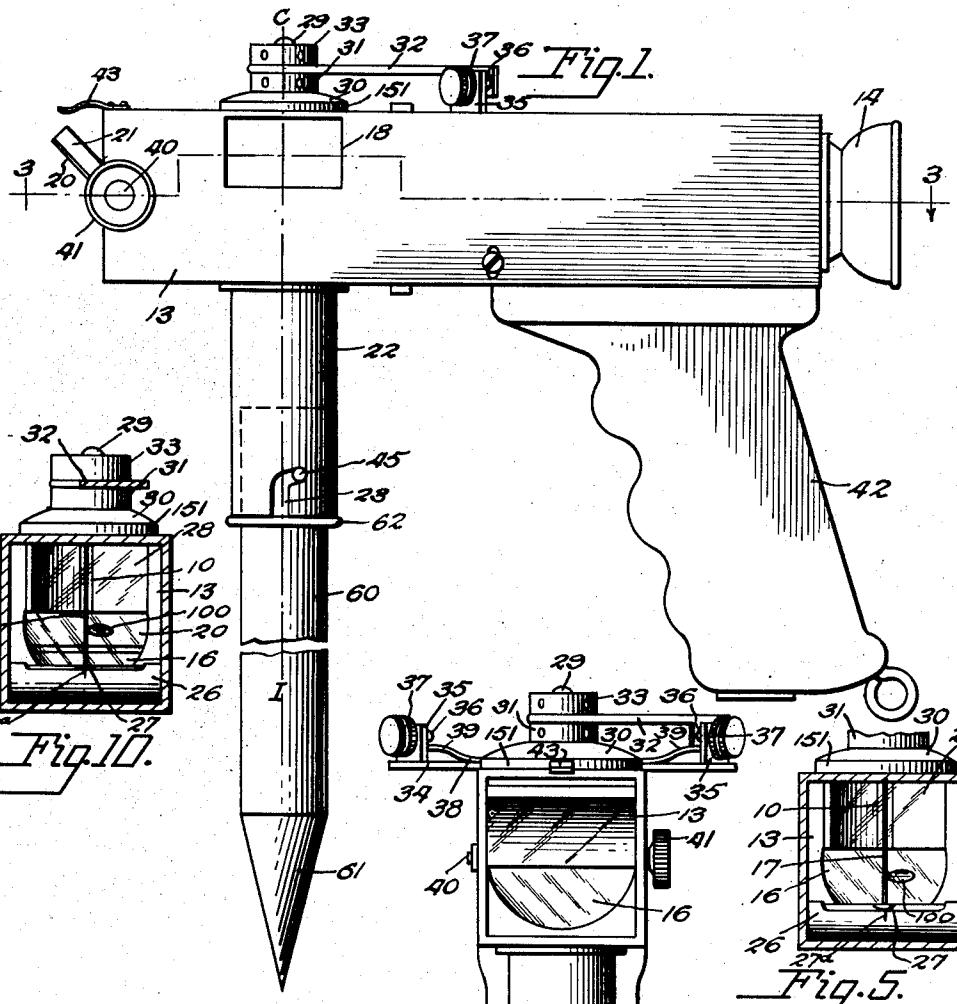
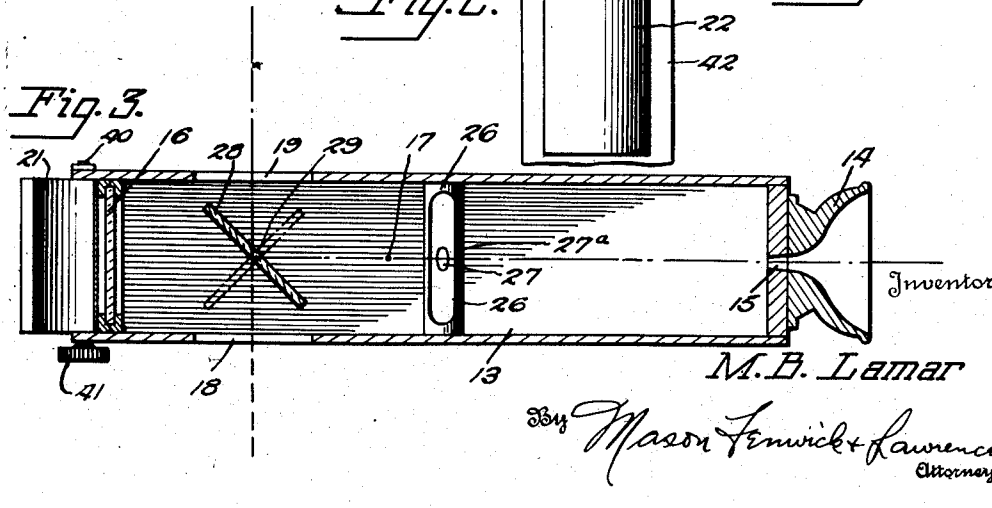
Nov. 23, 1943. M. B. LAMAR 2,335,066

FOOTBALL GAME DEVICE

Filed Sept. 15, 1941 2 Sheets-Sheet 1





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Fig. 4.

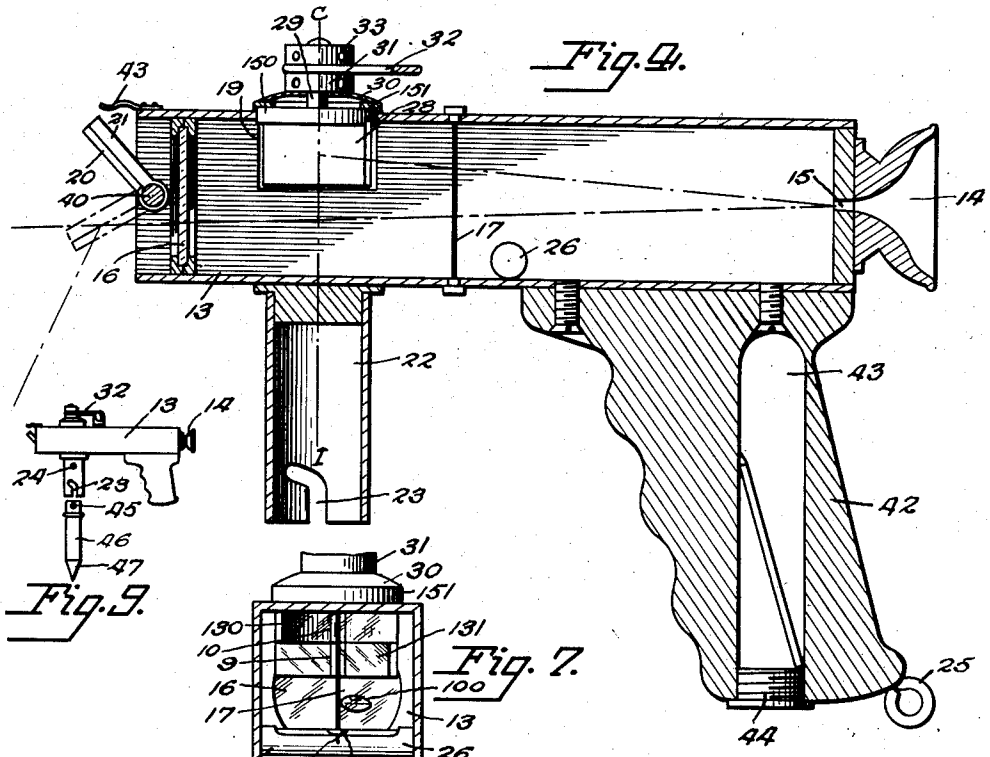


Fig. 9.

Fig. 7.

Fig. 6.

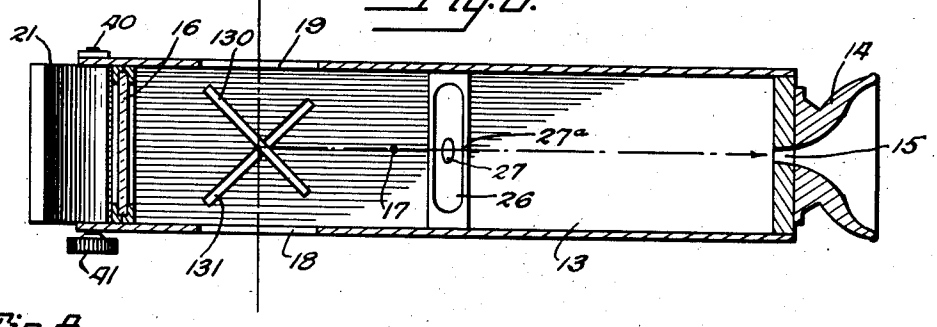
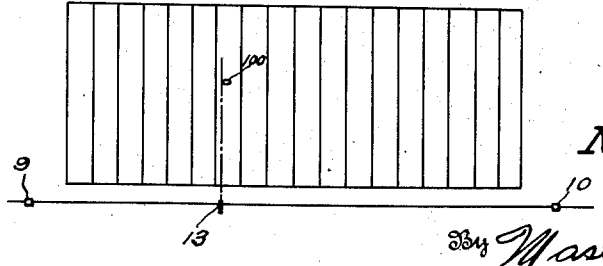


Fig. 8.



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UNITED STATES PATENT OFFICE

2,335,066

FOOTBALL GAME DEVICE

Mirabeau B. Lamar, Manassas, Va.

Application September 15, 1941, Serial No. 410,928

12 Claims. (Cl. 88—2.3)

My invention consists of a sighting device for increasing the accuracy and speed of football game officiating, for speeding up play in the game, for more accurately indicating the position of the ball in relation to the lineman's chain-stakes or to certain lines or points upon the field, and for more visibly indicating the "down" of play to all players, officials and spectators.

It is an object of my invention to provide a means of accurately and quickly determining and marking the location of a movable game piece in relation to a base line or a boundary line of a playing field or to other lines and points which may be projected or located upon the playing field or adjacent thereto.

It is a further object of my invention to provide a means of quickly and very accurately determining whether or not a movable game piece, after being moved or while in the process of being moved upon the field of play, did move, or was caused to be moved to a point in or beyond the vertical plane of a selected or designated line before the forward progress or movement was halted or stopped; said line being a line which may be drawn or projected upon the field of play or which may be an imaginary line projected from a point on a boundary of the field or from a point near a boundary.

It is still a further object of my invention to provide a means of accurately and quickly directing the return, placement or location of a movable game piece to or at a point upon the field of play so that the movable game piece will bear a desired relation to a former location of the game piece or to various points or lines which may be located or projected upon the field or adjacent thereto.

It is an additional object of my invention to provide a means whereby more accurate determinations of "off side" play may be made during the course of a football game.

Additional objects, advantages and features of invention will become apparent from the following description when read in conjunction with the accompanying drawings which form a part of the application, with the understanding, however, that the invention is capable of extended application and is not confined to the exact showing of the drawings nor to the precise construction described and, therefore, such changes and modifications may be made therefrom as do not affect the spirit of the invention nor exceed the scope thereof.

In the drawings which accompany and form a part of the following specification, and throughout the several figures of which the same characters of reference have been used to denote identical parts:

Figure 1 is a side view in elevation of a sighting device embodying the principles of the invention, a portion of the staff being broken away;

Figure 2 is a front end view in elevation;

Figure 3 is a horizontal section taken along the line 3—3 of Figure 1;

Figure 4 is a vertical section, the staff being omitted;

Figure 5 is a detail view of the objective end of the sighting device showing the composite image of the ball directly viewed, the hair line and the image of the reference post in that form of the invention in which a single reflecting member is employed;

Figure 6 is a horizontal section through a modification of the invention in which two reflecting members perpendicular to one another are employed;

Figure 7 is a detail view of the objective end of the sighting device showing the composite image of the ball directly viewed, the hair line 17 and the vertically aligned reference posts reflected from the perpendicular reflecting members;

Figure 8 is a plan view of a football field showing a characteristic position of the sighting device over a line parallel to the side line of the playing field, the ball, and the reference posts;

Figure 9 is a side view in elevation of a modified form of the invention employing the drop bob;

Figure 10 is a detail view of the objective end of the sighting device showing the composite reflecting image of the ball with reference to the hair line and the image of the reference post where a single reflecting member is employed.

In reference to my sighting device, sighting tube 13 has eye piece 14 located in its rearward end so that rays of light entering the forward end of the sighting tube and passing through transparent member 16, which seals said forward end of the sighting tube, will pass through the length of the tube, passing by reflecting member 28 and through eye aperture 15 in eye piece 14 to meet the eye.

Forwardly in the sighting tube are provided side apertures 18 and 19 in the left and right sides of the sighting tube respectively.

Between side apertures 18 and 19 reflecting member 28 is pivotally mounted on the lower end of shaft 29 so that the plane of the reflecting surface is held vertically in the bore of

the sighting tube and so that the lower edge of said reflecting member extends downwardly approximately to the horizontal center line of the bore of the sighting tube. Reflecting member 28 is also so mounted that when shaft 29 is rotated about its longitudinal axis the vertical plane formed by the reflecting surface of said member will pivot on a vertical line of pivot lying in said vertical plane of said reflecting surface at or near the center of the central portion thereof, which vertical line of pivot may be said to vertically bisect the bore of the sighting tube and to define a vertical line which, if extended downward, will at all times coincide with the longitudinal center line of tubular seat 22 and, if extended vertically upward, will pass through and coincide with the longitudinal axis of shaft 29 as represented by broken line CI. Being thus pivotally mounted, reflecting member 28 may be pivoted or rotated by rotating shaft 29 on its longitudinal axis so that the reflecting surface of the reflecting member, while lying generally across the bore of the sighting tube, may be presented to either one of the two side apertures 18 or 19, or to both alternately, and light rays entering said apertures will impinge the reflecting surface of reflecting member 28 at a point on its vertical line of pivot CI and be deflected at an angle backward through the sighting tube 13 to pass through eye aperture 15 and meet the eye.

Shaft 29 is held rotatably vertical in the bore of the sighting tube through contact maintained between flange-type disc bearing 150 Figure 4, and circular bearing seat 151 by nut 31 which is drawn down the threaded upper portion of shaft 29 upon the convex surface of split-skirt spring-washer 30 which, by resisting upwardly against nut 31 holds flange disc bearing 150 in desirable frictional contact and alignment with and within circular bearing seat 151.

Horizontally extending operating arm 32 is keyed to the upper portion of shaft 29 above nut 31 to provide a means of easily rotating said shaft about its longitudinal axis by manually induced horizontal pressure against the outward end or portion of said operating arm. Nut 33 holds operating arm securely on shaft 29.

Means of limiting the arc of movement which may be imparted to operating arm 32 are provided in stop-screws 36 Figure 4, adjustably inserted through engaging threads in lugs 35, which are mounted near the ends of flat bar 34, which in turn is mounted on the top of the sighting tube so that it extends at right angles to the length of the sighting tube. The stop-screws are provided with locking nuts 37 as means for holding said stop-screws in desired inwardly extended positions where they will contact horizontal operating arm 32 to stop it in a desired position.

Ribbon spring 38 Figure 4, with upwardly bent end portions 39 is fastened to the upper surface of flat bar 34 to provide means of holding operating arm 32 in suitable temporary contact with either stop-screw by frictional contact between said arm and the upwardly bent end portions of ribbon spring 38. Thus, it is understood that when proper adjustments of the stop-screws have been made the reflecting surface of reflecting member 28 may be quickly presented as desired to either side aperture 18 or 19 and so held in position that rays of light from vertical lines or rods erected in the same vertical plane with vertical line of pivot CI may pass through either side aperture 18 or 19 to impinge the reflecting surface along the vertical line of pivot thereof and be deflected at angles of 90 degrees backward through the sighting tube to pass through eye aperture 15 in eye piece 14 to meet the eye.

A means of visibly defining the vertical line of pivot CI and projecting direct or indirect lines of sight is provided in vertical wire 17 located suitably forward from eye aperture 15 and positioned so that said vertical wire vertically bisects the optical field seen from eye aperture 15 through either side aperture as reflected on the reflecting surface of reflecting member 28, and to likewise vertically bisect the optical field as seen under the lower edge of the reflecting member and through the forward opening in the sighting tube thus forming an optical axis in the reflecting member which coincides with the observational axis of the direct optical field. It will be also understood that the lower portion of vertical wire 17, which bisects the optical field directly observed under the lower edge of reflecting member 28 and through the forward opening in the sighting tube 13 will enable a vertical plane or a straight line, either or both to be visually projected, which plane or line will be at an angle of 90 degrees to the vertical plane or to the straight line, either or both, projected between the vertical line of pivot CI of the reflecting surface of reflecting member 28 and an object or a vertical line or rod lying or erected to one side of the sighting tube so that as seen reflected in the reflecting surface from eye aperture 15 said sidewardly lying object, vertical line or rod appears to be bisected longitudinally by vertical wire 17, or appears to lie in the vertical line of pivot CI as visually described by said vertical wire 17 when viewed through eye aperture 15 as shown in Figure 5 and Figure 6. It will also be understood that the line of intersection between such projected planes and the point of intersection between such projected straight lines will coincide with or lie in the vertical line of pivot as represented by that portion of line CI, which lies in the vertical plane of the reflecting surface of reflector 28 as defined by vertical wire 17 when viewed through eye aperture 15, which vertical line will be hereinafter referred to as center of instrument, or CI.

It will be further understood from the above that means of leveling the sighting tube on its long axis are provided in the combination of vertical wire 17, reflecting surface of reflecting member 28 and a vertically erected line or rod viewed through eye aperture 15 for, when so viewed in combination, a visual check may be readily and quickly made with the eye to observe that the vertical rod or line, as seen reflected in the reflecting surface, is bisected lengthwise by, or to appear to coincide with, the upper portion of the vertical wire 17 which vertically bisects the optical field thus seen reflected.

Means of leveling the sighting tube on its short axis is provided by spirit level tube 26 Figures 5 and 6, with a leveling bubble 27 and a centering or level mark 27a, said spirit level tube being mounted on the lower inner side of the sighting tube at right angles to the length of the tube and forwardly from the eye piece end of said tube so that the level bubble and leveling mark may be easily observed through eye aperture 15 while other observations are being made through said aperture.

From the above it will be understood that means of quickly and accurately plumbing and retaining in plumb the vertical center of instru-

ment while a sight is being taken have been provided for.

I have provided a means for modifying the reflecting means as described above, by providing for the arrangement of reflectors as shown wherein two single plane reflectors 130 and 131 are used, being so positioned in the sighting tube 13 that the vertical plane of the reflecting surface of reflector 130 lies above and at right angles to the vertical plane of the reflecting surface of the lower reflector 131 so that said reflecting surfaces appear in or assume an X shape when viewed from directly above. In consideration of this optional arrangement of the reflecting means it will be understood that the upper reflecting surface 130 is positioned suitably opposite aperture 18 so that rays of light entering said aperture will strike said reflecting surface on line CI and be deflected at an angle of ninety degrees backward through said sighting device to pass through eye aperture 15 in eye-piece 14 and meet the eye. In further consideration of said optional arrangement of the reflecting means it will also be understood that the reflecting surface of the lower reflector 131 is positioned suitably opposite the side aperture 19 so that rays of light entering said aperture will strike said reflecting surface on line CI and be deflected at an angle of ninety degrees backward through the sighting device to pass through eye aperture 15 in eye-piece 14 and meet the eye. The backing plates upon which said X-type reflectors are mounted are integral with an identical assembly previously described in reference to parts consisting of shaft 29, flange-type disc bearing 150 and previously described parts are similarly employed to hold the modified assembly in which said X-type reflectors are incorporated as described suitably within the sighting device.

One advantage offered by the modification of the reflecting means in the form of the above described arrangement of X-type reflectors is that it permits sighting upon three objects simultaneously; one each through the side apertures 18 and 19 and one through the forward opening in the end of the sighting tube so that a point on the straight line which might be projected between the two objects on either side of the sighting tube may be determined without said straight line being defined and a line at right angles to said straight line from the determined point thereon projected simultaneously.

Reflector 20 is located in the forward opening of the sighting tube, or in the "muzzle" end thereof, being mounted as a "butterfly" wing on backing plate 21 which may be integral with shaft 40 so that the reflecting surface may be placed in position by turning thumb screw 41 to reflect objects lying on the ground close to the point of the sighting staff upon the head of which the sighting device is attached, thus enabling an object lying close to the position occupied by the sighting device to be sighted upon quickly and easily while the sighting device remains in "plumb" adjustment. This reflector 20 moves upon its shaft 40, which is located horizontally across the bore of the sighting tube at about the middle line thereof, so that when reflector 20 drops as a flap partially over the lower half of the forward opening of the sighting device (see Figure 5) rays of light from an object on the ground 100 will strike the reflecting surface of said reflector and be deflected through sighting tube 13 and eye aperture 15 in eye-piece 14 to meet the eye, thus enabling the level position of the sighting tube to be maintained and eliminating the necessity of foreshortening the staff or stake upon which the sighting device is seated or located when sighting upon a "close" object while the sighting device is held level. Spring clamp 43 securely holds reflector 20 upright above the position of shaft 40 and out of the way when not in use.

To provide means for locating the center of instrument directly over and vertical to a selected point on the surface of the earth I have provided a sighting staff, upon the upper end of which the sighting device, Figure 1, may be quickly attached or detached as desired. This sighting staff may consist of a light metal shaft 60 which is provided with a metal point 61 at its lower end for implanting in the earth and a metal seating collar 62 having a flat upper surface said seating collar being attached about the tubular staff a suitable distance from the upper end thereof. Suitably spaced above metal seating collar 62 are pins 45 extending horizontally from opposite locations on the staff. The upper portion of the tubular staff above seating collar 62 is sized to fit closely into tubular seat 22 on the sighting device, thus when it is desired to seat the sighting device on the head of the sighting staff tubular seat 22, Figure 1, is slipped over the upper end of the staff so that pins 45 on the staff enter the vertical parts of L type bayonet slots 23 in the tubular seat; Then, by rotating either the staff or the sighting device, pins 45 may be forced into the slanting portions of said slots so that the lower edge of tubular seat 22 is forced firmly down upon the flat upper surface of seating collar 62 to hold sighting tube 13 in a desirable position at right angles to the long axis of sighting staff. When the sighting device is so seated upon the collar 62 of the sighting staff an extension of the vertical line of pivot CI would pass through point 61 so that when point 61 is placed in a selected point of location and the assembly of sighting device and sighting staff "plumbed" or brought to an exactly vertical position by previously described means, line CI is located vertically over the point occupied by the metal point 61. Thus, a point lying vertically beneath the point of intersection between lines of sight projected through the forward opening in the sighting tube and lines of sight projected angularly from reflecting member 28, or from either of the X-type reflectors 130 and 131, sidewardly through one of the side apertures 18 or 19 in the sighting tube, may be located and marked upon the surface of the ground by point 61 of the sighting staff.

A modification of the means of marking a point lying vertically beneath line CI is provided in a drop-bob, Figure 9, which is actually a very short staff having a body 46 in the lower end of which is fixed a weighty point 47. Horizontally extending pins 45 are located on opposite sides of the tubular body suitably spaced below the upper end thereof. The uppermost portion of the body 46 is sized so as to fit closely yet easily into tubular seat 22 on the sighting device. When the uppermost portion of the tubular body of the drop-bob is fitted into the tubular seat 22 the vertical portion of L type bayonet slots 23 in said tubular seat are fully engaged by pins 45; then the drop-bob is rotated about its long axis forcing pins 45 into the more horizontal portions of the bayonet slots and held in place by the hand. When thus engaged point 47 is in exact alignment with line

CI. The sighting device then may be sighted in an "off hand" manner, that is, free of stationary support like one would hold a pistol when sighting it. When the desired alignment between the ball **100**, the lines projected by vertical wire **17** and the sighting reference rods **9** and **10** has been obtained the drop-bob may be released from hand so that pins **45** slide in the slanted portions of the bayonet slots until the vertical portions thereof are reached and the released drop-bob falls point first to the ground to mark a point vertically below line CI. Vent hole **24** is provided in tubular seat **22** on the sighting device, so that the falling drop-bob will not create a vacuum in the tubular seat which may check the fall of the drop-bob or cause it to fall off line. A small amount of practice will enable each individual operating the sighting device to so position his feet and body when sighting the sighting device with drop-bob that the drop-bob, when released, will strike the side line.

Pistol grip **42** is fastened to the lower rearward side of sighting tube **13** to provide a means of easy sighting and a secure grip upon the device. A receiving space **43**, Figure 1*a*, is provided within the pistol grip for small tools and spare parts. Said receiving space is closed by threaded plug **44** so that the tools and spare parts may be retained within the receiving space until needed.

Ring **25** is provided in the butt of the pistol grip so that the device may be suspended from a suitable support so that when so suspended the operator may have both hands free.

For purposes of my invention, the side line, the straight base-line, or sighting reference line upon which the reference rods are erected may be the side line of a football field or preferably extensions thereof, so that the apparatus comprising my invention will be sufficiently removed from the field of play to lessen the chances of being struck by a player in the game, thus offering a further advantage over the usual practice of locating measuring apparatus on a side line of a playing field.

I claim:

1. Sighting device for determining on the side line of a football field or a line parallel thereto, the point of intersection of a sight line perpendicular to said side line and passing through a point on a football on said field, comprising a telescope having an eye piece at one end, a reflector in a vertical plane at an angle of 45° within said telescope restricted to a portion only of the cross-section of said telescope so that an object beyond said reflector may be directly viewed through said telescope, means forming a vertical hairline within said telescope, said reflector and hairline intersecting the vertical axial plane of said telescope, a staff member upon which said telescope seats having a lower pointed end in a line in the plane of said reflector which line perpendicularly intersects the longitudinal axis of said telescope, said telescope being provided with a lateral opening at the side of said reflector adapted to admit a beam from a vertical linear indicator located on said side line or said line parallel thereto, the coincidence of said hairline, the image of said indicator and the sighted point on said football in the same vertical line, obtained by shifting the position of said sighting device, determining the positioning of the axis of said staff member at the desired point of intersection.

2. Sighting device as claimed in claim 1, including means for indicating the plumb position of said sighting device.

3. Sighting device for determining on the side line of a football field or a line parallel thereto, the point of intersection of a sight line perpendicular to said line and passing through a point on a football on said field, comprising a telescope having an eye piece at one end, a reflector in a vertical plane within said telescope adjustably rotatable about a vertical axis to alternative opposite positions at angles of 45° with respect to the vertical axial plane of said telescope, restricted to a portion only of the cross section of said telescope so that an object beyond said reflector may be directly viewed through said telescope, means forming a vertical hairline within said telescope, the axis of rotation of said mirror, and said hairline perpendicularly intersecting the vertical axial plane of said telescope, a staff member upon which said telescope seats having a lower pointed end in the downwardly produced axis of rotation of said reflector, said telescope being provided with lateral openings at the sides of said reflector adapted respectively to admit a beam from a vertical linear indicator located on said side line or said line parallel thereto, on either side of said sighting device, the coincidence of said hairline, the image of said indicator and the sighted point on said football, in the same vertical line, obtained by shifting the sighting device, determining the positioning of the axis of said staff member at the desired point of intersection.

4. Sighting device as claimed in claim 1, including a mirror on a horizontal axis at the objective end of said telescope for deflecting longitudinally into said telescope the image of the football when the latter is close to said sighting device.

5. Sighting device as claimed in claim 3, including a mirror on a horizontal axis at the objective end of said telescope for deflecting longitudinally into said telescope the image of the football when the latter is close to said sighting device.

6. Sighting device for determining on the side line of a football field or a line parallel thereto, the point of intersection of a sight line perpendicular to said line and passing through a point on a football on said field, comprising a telescope having an eye piece at one end, a pair of reflectors in vertical planes within said telescope intersecting a vertical line passing through the axis of said telescope, said reflectors being at angles of 45° to the axis of said telescope and restricted to a portion only of the cross section of said telescope so that an object beyond said reflectors may be directly viewed through said telescope, means forming a vertical hairline within said telescope passing through the axis thereof, a staff member upon which said telescope seats having a lower pointed end in the downwardly produced line of intersection of said reflectors, said telescope being provided with lateral openings at the sides of said reflectors adapted respectively to admit a beam from a vertical linear indicator located on said side line or said line parallel thereto, on either side of said sighting device, the coincidence of said hairline, the image of said indicator and the sighted point of said football, in the same vertical line, obtained by shifting the sighting device, determining the position of the axis of said staff member at the desired point of intersection.

7. Sighting device as claimed in claim 6, including a mirror on the horizontal axis at the objective end of said telescope for deflecting longi-

tudinally in the said telescope the image of the football when the latter is close to said sighting device.

8. Sighting device for determining on the side line of a football field or a line parallel thereto, the point of intersection of a sight line perpendicular to said side line and passing through a point on a football on said field, comprising a telescope having an eye piece at one end, a reflector in a vertical plane at an angle of 45° within said telescope restricted to a portion only of the cross section of said telescope so that an object beyond said reflector may be directly viewed through said telescope, means forming a vertical hairline within said telescope, said reflector and hairline intersecting the vertical axial plane of said telescope, a socket member secured to said telescope having its axis perpendicular to the axis of said telescope, a staff member detachably connected within said socket member, having a lower pointed end in a line in the plane of said reflector which line perpendicularly intersects the longitudinal axis of said telescope, said telescope being provided with a lateral opening at the side of said reflector adapted to admit a beam from a vertical linear indicator located on said side line or said line parallel thereto, the coincidence of said hairline, the image of said indicator and the sighted point on said football in the same vertical line, obtained by shifting the position of said sighting device, determining the positioning of the axis of said staff member at the desired point of intersection.

9. Sighting device for determining on the side line of a football field or a line parallel thereto, the point of intersection of a sight line perpendicular to said line and passing through a point on a football on said field, comprising a telescope having an eye piece at one end, a reflector in a vertical plane within said telescope adjustably rotatable about a vertical axis to alternative opposite positions at angles of 45° with respect to the vertical axial plane of said telescope, restricted to a portion only of the cross section of said telescope so that an object beyond said reflector may be directly viewed through said telescope, means forming a vertical hairline within said telescope, the axis of rotation of said reflector, and said hairline perpendicularly intersecting the longitudinal axis of said telescope, a socket member secured to said telescope having its axis perpendicular to the axis of said telescope, a staff member detachably connected within said socket member, having a lower pointed end in the downwardly produced axis of rotation of said reflector, said telescope being provided with lateral openings at the sides of said reflector adapted respectively to admit a beam from a vertical linear indicator located on said side line or said line parallel thereto, on either side of said sighting device, the coincidence of said hairline, the image of said indicator and the sighted point on said football, in the same vertical line, obtained by shifting the sighting device, determining the positioning of the axis of said staff member at the desired point of intersection.

10. Sighting device for determining on the side line of a football field or a line parallel thereto, the point of intersection of a sight line perpendicular to said side line and passing through a point on a football on said field, comprising a telescope having an eye piece at one end, a reflector in a vertical plane at an angle of 45° within said telescope restricted to a portion only of the cross section of said telescope so that an object beyond said reflector may be directly viewed through said telescope, means forming a vertical hairline within said telescope, said reflector and hair line intersecting the vertical axial plane of said telescope, a hand grip rigidly secured to said telescope for supporting same, a socket member secured to said telescope having its axis perpendicular to the axis of said telescope, a staff member releasably connected within said socket having a lower pointed end in a line in the plane of said reflector which line perpendicularly intersects the axis of said telescope, said telescope being provided with a lateral opening at the side of said reflector adapted to admit a beam from a vertical linear indicator located on said side line or said line parallel thereto, the coincidence of said hairline, the image of said indicator and the sighted point of said football in the same vertical line, obtained by shifting the position of said sighting device determining the positioning of the axis of said staff member above the desired point of intersection whereby, when released, said staff member falls, the point of said staff member impinging upon said side line or said line parallel thereto at the desired point of intersection.

11. Sighting device for determining on the side line of a football field or a line parallel thereto, the point of intersection of a sight line perpendicular to said line and passing through a point on a football on said field, comprising a telescope having an eye piece at one end, a reflector in a vertical plane within said telescope adjustably rotatable about a vertical axis to alternative opposite positions at angles of 45° with respect to the vertical axial plane of said telescope restricted to a portion only of the cross section of said telescope so that an object beyond said reflector may be directly viewed through said telescope, means forming a vertical hairline within said telescope, the axis of rotation of said reflector, and said hairline perpendicularly intersecting the longitudinal axis of said telescope, a hand grip rigidly secured to said telescope for supporting same, a socket member secured to said telescope having its axis perpendicular to the axis of said telescope, a staff member releasably connected within said socket having a pointed lower end in the downwardly produced axis of rotation of said reflector, said telescope being provided with lateral openings at the sides of said reflector adapted respectively to admit a beam from a vertical linear indicator located on said side line or said line parallel thereto on either side of said sighting device, the coincidence of said hairline, the image of said indicator and the sighted point on said football, in the same vertical line, obtained by shifting the sighting device determining the positioning of the axis of said staff member above the desired point of intersection whereby, when released, said staff member falls, the point of said staff member impinging upon said side line or said line parallel thereto, at the desired point of intersection.

12. Sighting device for determining on the side line of a football field or a line parallel thereto, the point of intersection of a sight line perpendicular to said line and passing through a point on a football on said field, comprising a telescope having an eye piece at one end, a pair of reflectors in vertical planes within said telescope intersecting a vertical line passing through the axis of said telescope, said reflectors being at angles of 45° to the axis of said telescope and

restricted to a portion only of the cross section of said telescope so that an object beyond said reflectors may be directly viewed through said telescope, means forming a vertical hairline within said telescope, the line of intersection of said reflectors and said hairline perpendicularly intersecting the axis of said telescope, a hand grip rigidly secured to said telescope for supporting same, a socket member secured to said telescope having its axis perpendicular to the axis of said telescope, a staff member releasably connected within said socket having a pointed lower end in the downwardly produced line of intersection of said reflector, said telescope being provided with lateral openings at the sides of said reflectors adapted respectively to admit a beam from a vertical linear indicator located on said side line or said line parallel thereto, on either side of said sighting device, the coincidence of said hairline, the image of said indicator and the sighted point of said footiball, in the same vertical line, obtained by shifting the sighting device, determining the position of the axis of said staff member at the desired point of intersection whereby, when released, said staff member falls, the point of said staff member impinging upon said side line or said line parallel thereto, at the desired point of intersection.

MIRABEAU B. LAMAR.