Sept. 28, 1971 J. C. HUNT 3,608,199

LOCATING AND MEASURING DEVICE FOR A FOOTBALL PLAYING FIELD

Filed Dec. 4, 1969 3 Sheets-Sheet 1

FIG 1

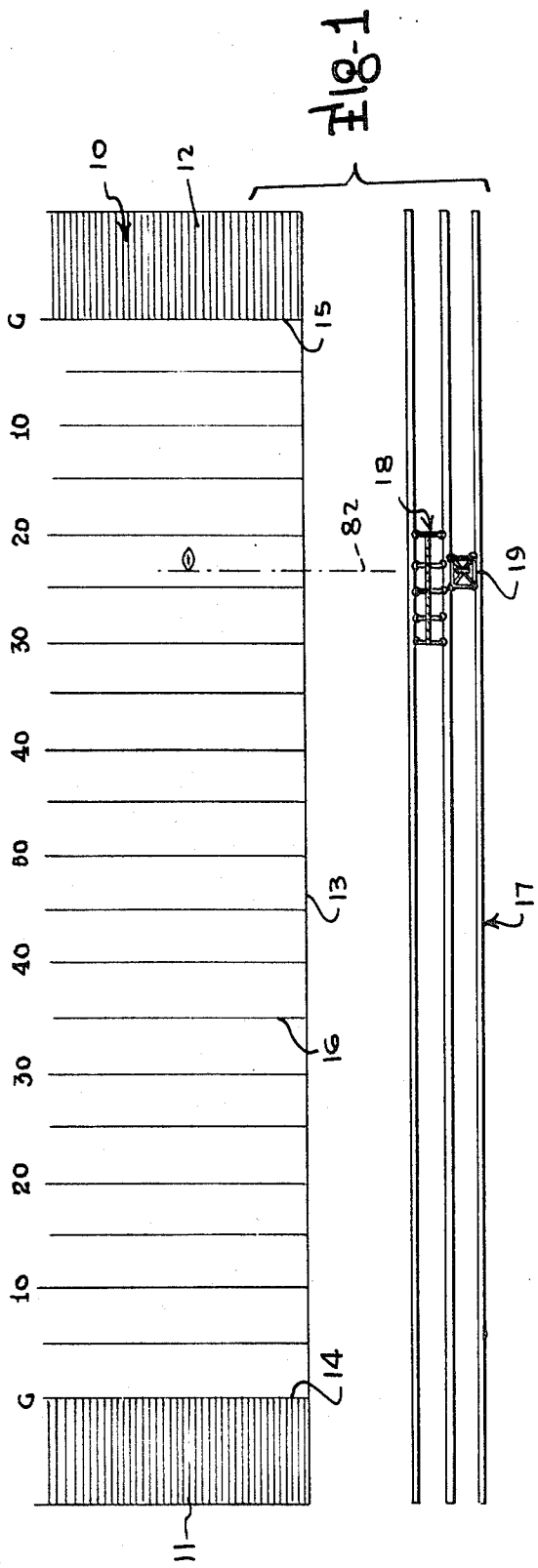
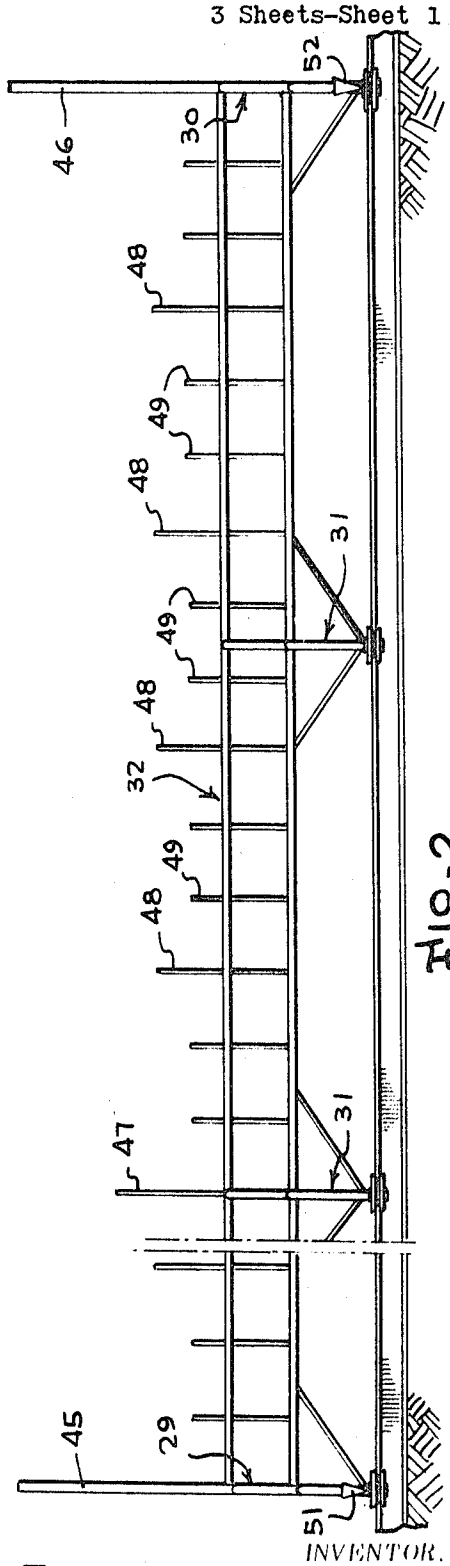



FIG 2

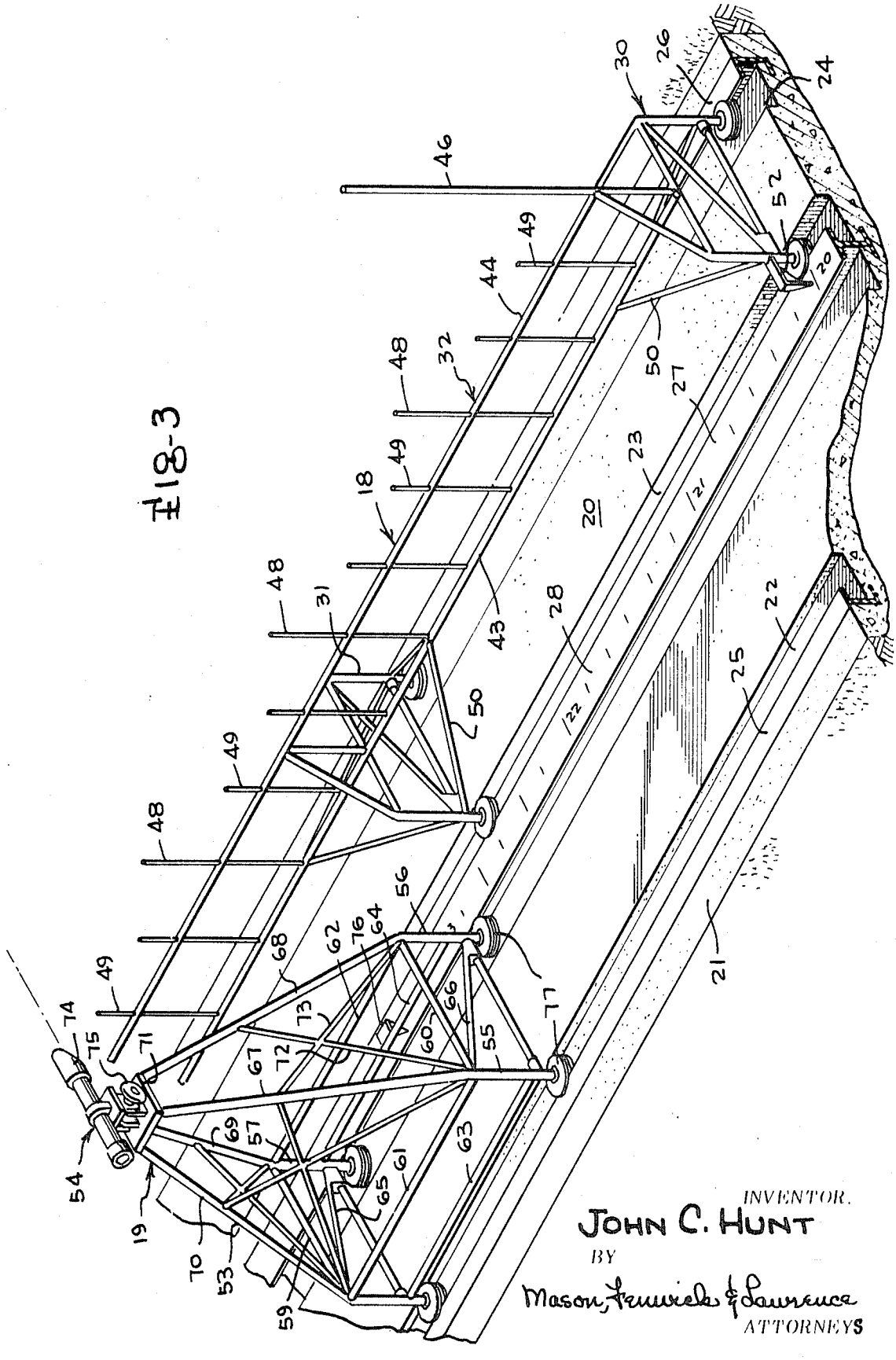



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LOCATING AND MEASURING DEVICE FOR A FOOTBALL PLAYING FIELD

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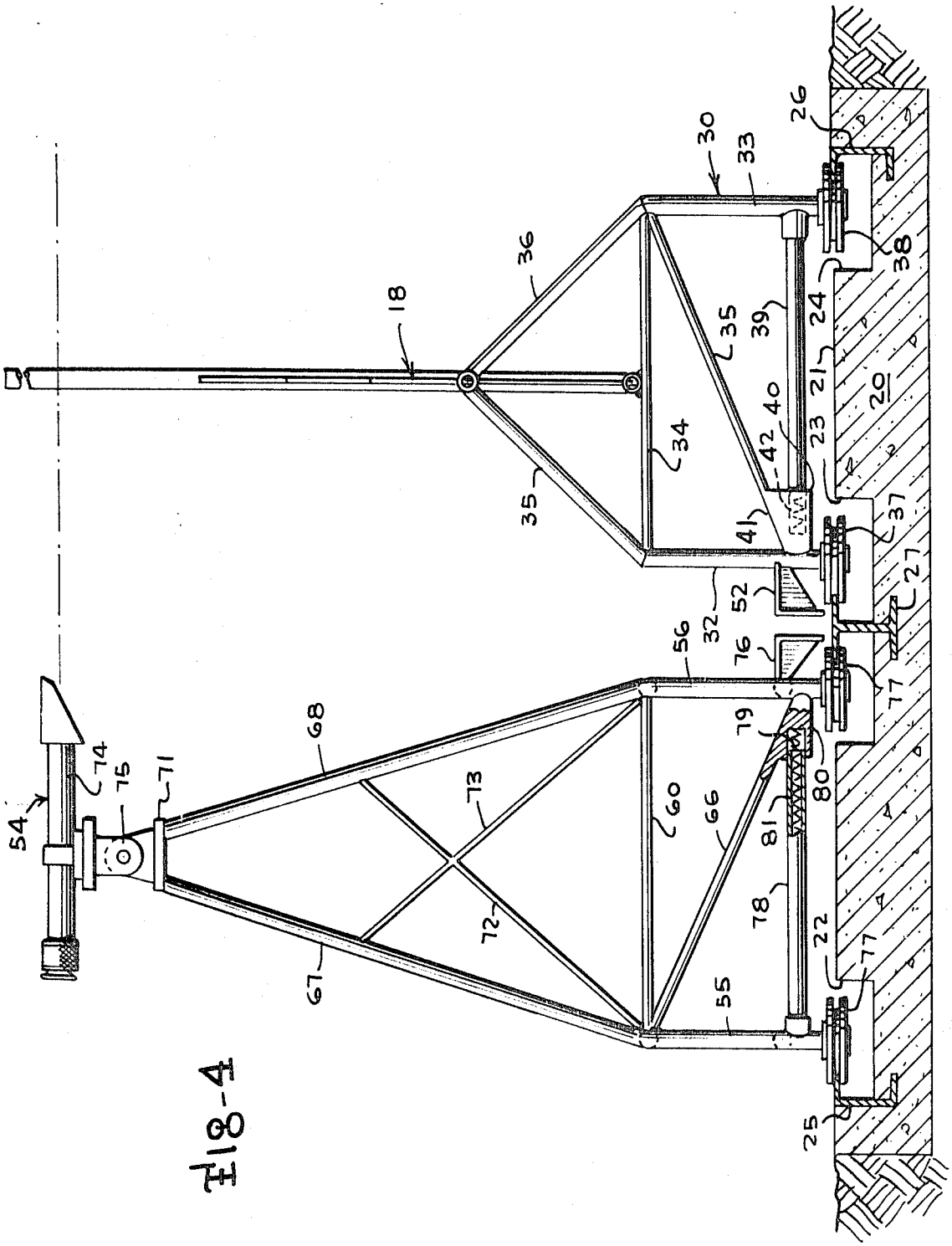



FIG-4

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# LOCATING AND MEASURING DEVICE FOR A FOOTBALL PLAYING FIELD

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## ABSTRACT OF THE DISCLOSURE

A locating and measuring device adapted for use with a football playing field generally including a pair of guide means disposed parallel to a side line of the playing field, a yardage scale disposed parallel and between the guide means, a first carrier member mounted on one of the guide means and freely movable therealong, a sighting device mounted on such carrier means, having a sighting axis disposed in a vertical plane disposed perpendicular to the guide means, a pointer disposed on the carrier means having a marker cooperable with the scale for indicating the location of the ball on the playing field viewed through the sighting means, a second carrier means mounted on the second guide means and freely movable therealong independently of the first carrier means, and the second carrier means having a pair of longitudinally spaced pointers with markers cooperable with the scale, the markers being spaced ten yards apart.

This invention relates to the game of football, and more particularly to a device for precisely locating the position of a football on a playing field, and measuring distances along the length of the playing field.

In the prior art, there are numerous devices which have been developed for locating a football on a playing field, indicating the position on the field to which a team on offense must move the football to attain a first down, and indicating the necessary yardage which must be attained by the team on offense to attain a first down. It has been found, however, that most of such prior art devices have not been found to be entirely satisfactory either in performance or construction. It particularly has been found that such prior art devices often are complicated to operate, and comparatively expensive to manufacture and install.

Accordingly, it is the principal object of the present invention to provide a locating and measuring device for a football playing field.

Another object of the present invention is to provide a device for locating the precise position of a football on a playing field while the game is in progress.

A further object of the present invention is to provide a device for precisely locating the position of a football on a playing field, without causing delaying the game in progress.

Another object of the present invention is to provide a device for rapidly and precisely locating a position on a playing field beyond which a team on offense must move the football to attain a first down.

Another object of the present invention is to provide a novel device for rapidly and accurately measuring the specific distance a team on offense must carry the football to attain a first down, particularly in instances where the amount of yardage required exceeds ten yards.

A further object of the present invention is to provide a novel device for locating a football and measuring distances on a football playing field which is comparatively simple in construction; relatively inexpensive to manufacture, and easy to install.

Other objects and advantages of the present invention will become more apparent to those persons having skill



in the art to which the invention pertains, from the following description taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a top plan view of an embodiment of the invention;

FIG. 2 is a front elevational view of a component of the embodiment illustrated in FIG. 1;

FIG. 3 is a perspective view of the embodiment illustrated in FIG. 1, having portions thereof broken away; and

FIG. 4 is an enlarged side elevational view of the embodiment illustrated in FIG. 1.

Briefly described, the present invention relates to a locating and measuring device adapted for use with a football playing field generally including first and second guide means disposed parallel to a side line of the playing field, a yardage scale disposed parallel and between the guide means, a first carrier means mounted on the first guide means and freely movable therealong, a sighting device mounted on the first carrier means, having a sighting axis disposed in a vertical plane disposed perpendicular to the guide means, a pointer disposed on the carrier means having a marker cooperable with the scale for indicating the location of the ball on the playing field viewed through the sighting means, a second carrier means mounted on the second guide means and freely movable therealong independently of the first carrier means, and a second carrier means having a pair of longitudinally spaced pointers with markers cooperable with the scale, the markers being spaced ten yards apart.

In the preferred embodiment of the invention, the sighting means consists of a telescopic device which is mounted for pivotal movement in a vertical plane, the second carrier means is provided with a yardage scale between the markers and a plurality of vertical posts disposed in a common plane, spaced in five yard, one yard, and one foot increments, and the guide means comprises longitudinally disposed tracks. In addition, the carrier means include rollers mounted on the tracks, and the tracks include a pair of inwardly opening channel shaped members and an I-beam member spaced parallel between the channel shaped members so that the rollers of the carrier members ride on the upper flange portions thereof.

Referring to the drawings, there is illustrated an embodiment of the invention which is adapted to be installed along a football playing field **10**, having end zones **11** and **12**, a side line **13**, a pair of goal lines **14** and **15**, and a plurality of yardage lines **16** spaced between the goal lines and disposed perpendicular to the side line **13**. Specifically, the embodiment includes a track assembly **17**, a measuring assembly **18** mounted on the track assembly for movement along the length thereof, and a locating assembly **19** which also is mounted on the track assembly for movement along the track assembly independently of the measuring assembly **18**.

As best illustrated in FIGS. 3 and 4, the track assembly **18** includes a concrete strip **20** which extends the entire length of the field **10**, in spaced parallel relation and approximately thirty yards therefrom. The strip **20** is embedded in the ground and has an upper surface **21** which is disposed at ground level. Formed in the surface **21** of the strip, are longitudinally extending channels **22**, **23** and **24** in which there are located track members **25** and **26** consisting of a pair of inwardly opening channel beams, and an intermediate track member **27** which consists of an I-beam. The lower ends of the track members **25**, **26** and **27** are embedded in the concrete strip **20**, and the upper surfaces of the upper flanges of the track members lie in the plane of the upper surface **21** of concrete strip **20**. As shown in FIG. 3, the upper surface of the track member **27** is provided with a scale **28** along the

entire length thereof which is divided into yard, foot and inch increments with appropriate markings.

The measuring assembly **18** comprises a carrier including a pair of transversely disposed, end support sections **29** and **30**, a plurality of transversely disposed intermediate support sections **31** which are disposed in spaced relation between the end support sections **29** and **30**, and a longitudinally disposed section **32** which is supported on the sections **29**, **30** and **31**. Each of the support sections **29**, **30** and **31** lie in planes disposed substantially perpendicular to the tracks **25**, **26** and **27**, and are substantially similar in construction. As best illustrated in FIG. 4, the support section **30** consists of a pair of transversely spaced, vertical leg members **32** and **33**, interconnected at the upper ends thereof by a transversely disposed member **34**, and further connected together by a diagonal brace member **35**. The upper end of the section is provided with a pair of inwardly inclined members **35** and **36** which are secured at the upper ends thereof to an end of the longitudinal section **32**.

Mounted on the lower ends of the leg members **32** and **33** are horizontally disposed rollers **37** and **38** which are provided with circumferentially disposed grooves for receiving opposed edges of the upper flanges of track members **27** and **26**, to mount the support section on the tracks **27** and **26** for rolling movement along the lengths thereof. As shown in FIG. 4, the support section **30** further is provided with a transversely disposed sleeve **39** secured at one end to the leg member **33** and having the opposite end thereof received within an opening **40** within a bracket **41** secured to the lower portion of leg member **32**. Disposed within the sleeve **39** and the opening **40** in the bracket **41**, is a compression spring **42** which functions to urge the lower portions of the leg members **32** and **33** apart, and, correspondingly, the rollers **37** and **38** into engagement with the upper flanges of track members **27** and **26**.

The longitudinal section **32** of the measuring assembly includes a lower spanning member **43** secured to the transversely disposed members **34** of the support sections, and an upper spanning member **44** which lies in the same vertical plane as the lower spanning member **43** and is connected to the upper ends of the members **35** and **36** of the support sections. The spanning members **43** and **44** support a first set of post members **45** and **46** which are spaced ten yards apart, an intermediate post member **47** having a height less than the post members **45** and **46**, which is spaced five yards from the post members **45** and **46**, a set of post members **48** which have heights less than the height of the post member **47** and are spaced one yard apart between the post member **47** and a post member **45** or **46**, and a set of post members **49** having heights less than the height of the post members **48**, which are spaced one foot apart between successive one yard markers.

The section **32** including the spanning members **43** and **44**, and the yard markers **45** through **49**, lies in a vertical plane which is disposed perpendicular to the transversely disposed planes of the support sections **29**, **30** and **31**. As shown in FIG. 3, the section **32** is further secured to the support sections **29**, **30** and **31** by a plurality of bracing members **50** which interconnect the lower ends of the leg members **32** and **33** and the lower spanning member **43**. In addition, as best illustrated in FIG. 2, the end support sections **29** and **30** are provided with pointers **51** and **52** having markers lying in the same vertical planes as the post members **45** and **46**, and cooperating with the scale **28** provided along the center track **27**.

The locating assembly **19** consists of a carrier **53** mounted on the tracks **25** and **27** for movement along the length thereof, and a sighting device **54** mounted on the carrier device. Specifically, the carrier device includes four vertical leg members **55**, **56**, **57** and **58** which are interconnected at their upper ends by transversely disposed members **59** and **60** and longitudinally disposed members **61** and **62**. The leg members further are interconnected by a pair of longitudinally disposed members **63** and **64** and a pair of transversely disposed diagonal members **65** and **66**.



Projecting upwardly and inwardly from the upper ends of the leg members **55** through **58** is a set of support members **67** through **70** which support a platform **71** at the upper end thereof. Successive support members **67** through **70** are provided with cross brace members **72** and **73**, which further enhance the rigidity of the entire structure.

The sighting device **54** consists of a telescope **74** mounted on a fixture **75** which is secured on the platform **71** to permit the sighting axis of the telescope to be pivoted in a vertical plane disposed perpendicular to the side line **13** of the playing field and, correspondingly, to the tracks **25**, **26** and **27**. The telescope further is provided with a hairline to precisely locate the position of a football on the playing field. The precise position of the ball on the field can be indicated on the scale **28** on the track **27** by means of a pointer **76** which has a marker lying in the same vertical plane as the sighting axis of the telescope **74**, and which cooperates with the scale **28**. The assembly **19** is adapted to ride freely along the length of the tracks **25** and **27** by means of horizontally disposed rollers **77** mounted on the lower ends of the leg members **55** through **58**, and which are provided with circumferential grooves cooperating with the upper, inwardly projecting flanges of the tracks **25** and **27**, similar to the rollers **37** and **38** of the measuring device. As best shown in FIG. 4, each of the sets of leg members **55** and **56**, and **57** and **58**, is provided with a transversely disposed sleeve **78** secured at one end thereof to one leg member and having the opposite end thereof received within an opening **79** of a bracket **80** secured to the opposite leg member, and a compression spring **81** disposed therein for urging opposed leg members apart and, correspondingly, urging the rollers **77** into engagement with the upper flange portion of the tracks **25** and **27**.

Referring to FIG. 4, it will be noted that all of the rollers **37**, **38** and **77** lie in substantially the same horizontal plane and the pointers **51**, **52** and **76** cooperate with the scale **28** as the measuring assembly **18** and the locating assembly **19** are moved along the tracks independently of each other to designate a ten yard distance on the scale **28** and also to designate the position of the ball on the field on the same scale.

In the use of the embodiment of the invention as described, after the football has been put in play, the locating assembly **19** is moved by a sideline official along the track assembly to a position whereby the football on the field may be sighted through the telescope **54** along the line of sight **82**, as illustrated in FIG. 1. When the the ball is thus precisely located on the field, the pointer **76** on the carrier **19** will indicate the position of the ball on the scale **28**. A second official then will align either the pointer **51** or the pointer **52** of the measuring device **18**, depending on the direction in which the offensive team is moving the football, with the pointer **76** of the carrier device, to designate the ten yard distance which the offensive team must attain in a series of four attempts or downs to achieve a first down. Each time the ball is moved following either a play by the offensive team or perhaps a penalty assessed either against the offensive or defensive team, a first sideline official will move the locating assembly **19** to precisely locate the football on the playing field with the telescope **54** and correspondingly indicate the position of the ball with respect to the scale **28** by means of the pointer **76**. In each instance the official will be able to determine rapidly and accurately whether or not a first down has been achieved by the offensive team, or the distance in terms of yards, feet and inches which the offensive team must gain in order to obtain a first down.

The scale consisting of the post members **45** through **49** will easily permit the sideline official, officials on the playing field, the offensive or defensive teams and the coaching staff on the sidelines, to determine the yardage to be gained by the offensive team in making a first down. When the ball on the playing field is close to either of the post members **45** and **46**, thus denoting the possibility that there may be a first down, the determination can be made rapidly and accurately by the use of the sighting device **54**. In any event, the distance between the pointer **76** and either of the pointers **51** and **52**, again depending on the direction in which the offensive team is moving the ball, will indicate the distance which the ball must be moved to attain a first down.

The measuring assembly **18** and the locating assembly **19** may be constructed of any suitable rigid material, although a material such as aluminum bar stock is preferred, which will permit either of the assemblies to be moved easily along the track assembly. In addition, it is contemplated that the rollers **37**, **38** and **77** be mounted on suitable bearings and be constructed of a suitable wear resistant material such as bronze, which will permit a free rolling action of the rollers. It will be appreciated that the compression springs **42** and **81** provided in the sleeve members **39** and **78** will provide a sufficient biasing action to maintain the rollers in rolling engagement with the track members **25**, **26** and **27**, yet will permit the rollers to yield relative to the engaging tracks, thereby preventing either of the assemblies **18** and **19** binding on the tracks.

It is contemplated that the invention as described, will permit the rapid and precise locating of the football on the playing field and the measurement of distance along the length of the field while a game is in progress, which will eliminate the exercise of judgment of the game officials which might be inaccurate. The invention thus permits the players, the coaching staffs of the teams and the officials to be quickly apprised of the posture of the game, in order to assist them in their strategy planning and officiating.

It further is contemplated that a camera may be mounted in place of the sighting device **54**, so that the position of the ball on the playing field can be continuously monitored. Furthermore, each of the assemblies **18** and **19** may be provided with means for releasably locking the assemblies to the track assembly, thus preventing the inadvertent displacement of either of the assemblies relative to the scale **28** between plays on the field.

From the foregoing detailed description, it will be evident that there are a number of changes, adaptations and modifications of the present invention which come within the province of those skilled in the art. However, it is intended that all such variations not departing from the spirit of the invention be considered as within the scope thereof as limited solely by the appended claims.

I claim:

**1.** A locating and measuring device adapted for use with a football playing field comprising first and second guide means disposed parallel to a side line of said playing field, a yardage scale disposed parallel and between said guide means, a first carrier means mounted on said first guide means and freely movable therealong, a sighting device mounted on said first carrier means, having a sighting axis disposed in a vertical plane disposed perpendicular to said guide means, a pointer disposed on said carrier means having a marker cooperable with said scale for indicating the location of the ball on the playing field viewed through said sighting means, a second carrier means mounted on said second guide means and freely movable therealong independently of said first carrier means, and said second carrier means having a pair of longitudinally spaced pointers with markers cooperable with said scale, said markers being spaced ten yards apart.

**2.** A locating and measuring device adapted for use with a football playing field according to claim **1**, wherein said sighting means consists of a telescopic device.

**3.** A locating and measuring device adapted for use with a football playing field according to claim **1**, wherein said sighting device is mounted for pivotal movement in a vertical plane.

**4.** A locating and measuring device adapted for use with a football playing field according to claim **1**, including means for releasably locking at least one of said carrier means in a selected position relative to said scale.

**5.** A locating and measuring device adapted for use with a football playing field according to claim **1**, wherein said second carrier means is provided with a yardage scale between said markers.

**6.** A locating and measuring device adapted for use with a football playing field according to claim **1**, wherein said second carrier means is provided with a plurality of vertical posts disposed in a common plane, spaced in five yard, one yard and one foot increments.

**7.** A locating and measuring device adapted for use with a football playing field according to claim **1**, wherein said carrier means are mounted on rollers.

**8.** A locating and measuring device adapted for use with a football playing field according to claim **1**, wherein said guide means comprises longitudinally disposed tracks and said carrier means include rollers mounted on said tracks.

**9.** A locating and measuring device adapted for use with a football playing field according to claim **1**, wherein said tracks include a pair of inwardly opening channel shaped members and an I-beam member spaced parallel between said channel shaped members, and said rollers ride on upper flange portions thereof.

**10.** A locating and measuring device adapted for use with a football playing field according to claim **1**, wherein said sighting means consists of a telescopic device and is mounted for pivotal movement in a vertical plane, said second carrier means is provided with a yardage scale between said markers and a plurality of vertical posts disposed in a common plane spaced in five yard, one yard and one foot increments, said guide means comprises longitudinally disposed tracks, said carrier means include rollers mounted on said tracks, and said tracks include a pair of inwardly opening channel shaped members and an I-beam member spaced parallel between said channel shaped members, and said rollers ride on upper flange portions thereof, and including means for releasably locking at least one of said carrier means in a selected position relative to said scale.


**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,539,560 | 1/1951 | Wilson | 33—46F |
| 2,795,853 | 6/1957 | Benfield et al. | 33—46F |
| 3,181,241 | 5/1965 | Middleton | 33—46F |
| 3,512,260 | 5/1970 | Tomlinson et al. | 33—46F |


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