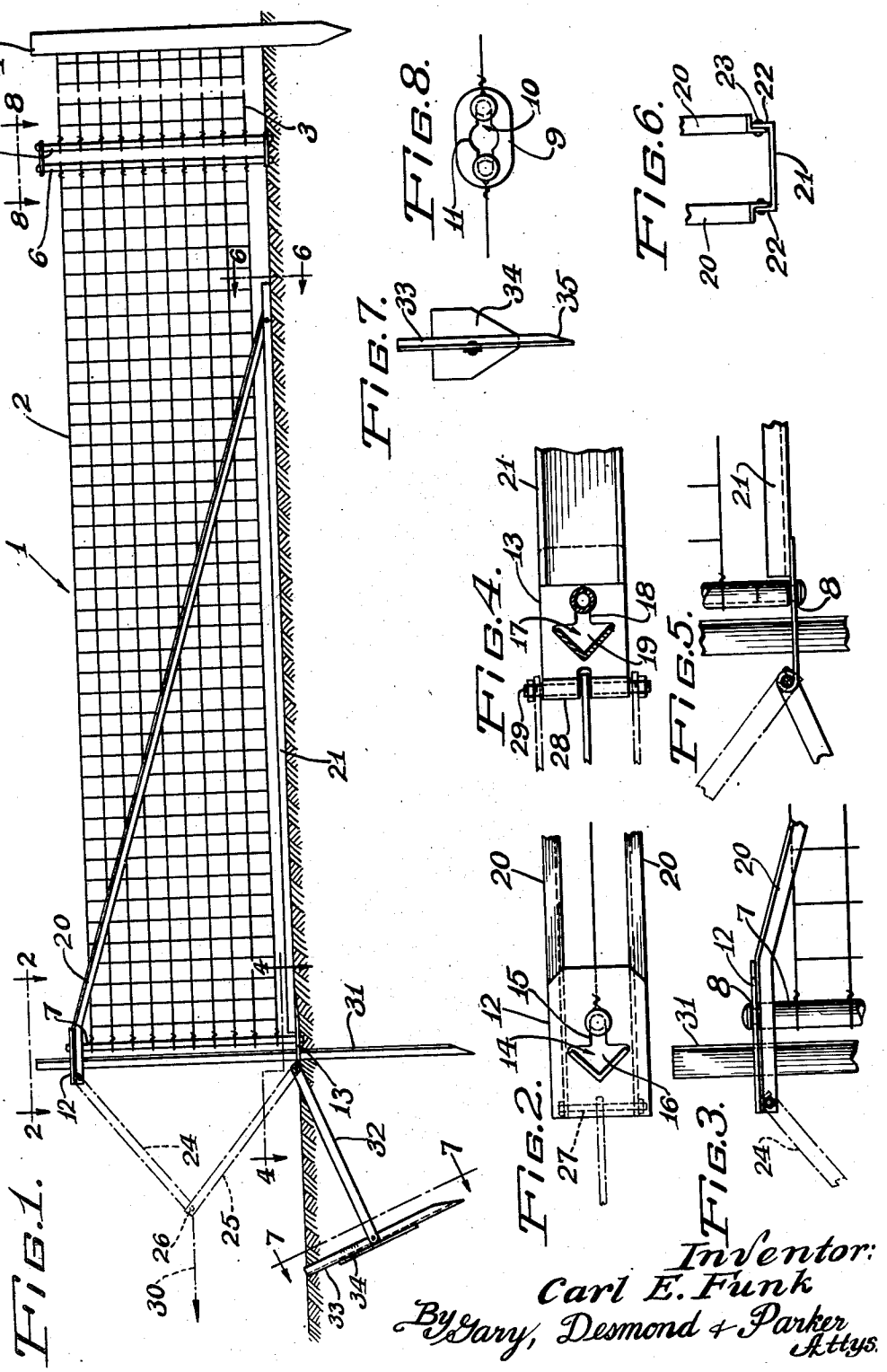
May 18, 1954 C. E. FUNK 2,678,807

FENCE CONSTRUCTION

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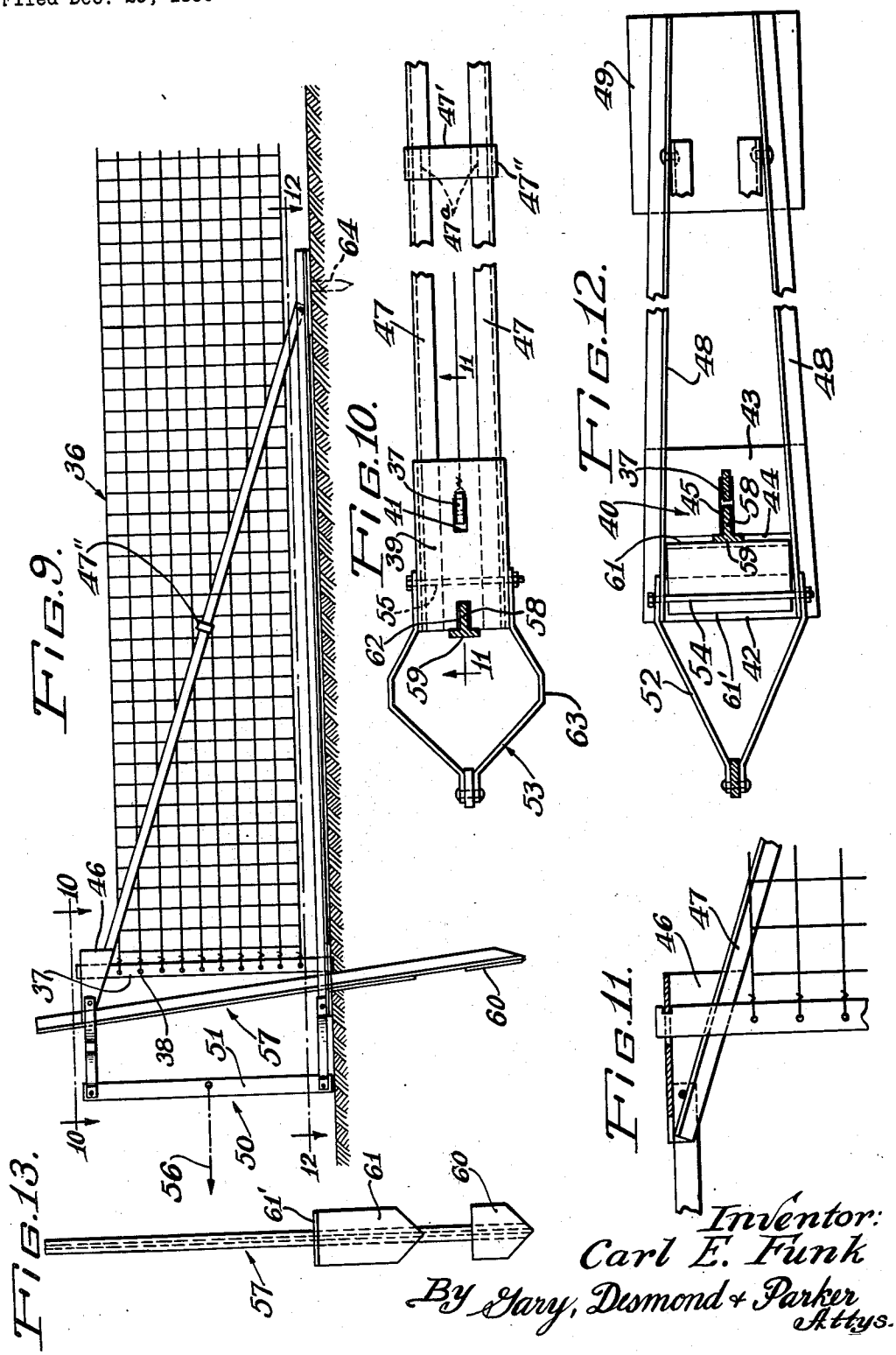


Inventor:
Carl E. Funk
By Gary, Desmond & Parker
Attys.

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FENCE CONSTRUCTION

Carl E. Funk, Earl Park, Ind., assignor to
Rosemary R. Funk, Earl Park, Ind.

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This invention relates to improvements in a fence post construction and refers particularly to an end fence post which can be conveniently employed in rapidly setting up a fence constructed of flexible material such as a wire, tensioning it and dismantling it.

In the operation of a farm it is frequently desirable to erect a fence for temporary purposes. For instance, in pasturing live stock, it is often necessary at different times of the year to confine the stock at different portions of the farm. A fence which may be quickly and conveniently erected and dismantled proves most advantageous for this purpose, permitting a most efficient and flexible use of available land. A quickly and conveniently erected and dismantled fence is also most desirable for purposes of wind breaks or snow breaks not only on farms but for purposes of maintenance of open rights of way and the like.

One of the features of the present invention resides in a fence post construction which permits of quick and simple erection of a fence of the flexible type, such as a wire fence or a slat fence supported by wire, the constructional features of the invention permitting the fence to be quickly tensioned and anchored and supported in tensioned position.

Another feature of the invention resides in the provision of means for erecting and tensioning a fence comprising one or more sections, the connecting means between adjacent sections, if more than one section is used, being such as to transmit tension from one fence section to the next, such connecting means being characterized by the simplicity with which plural sections may be added or dismantled.

Other objects and advantages of the present invention will be apparent from the accompanying drawings and following detailed description.

In the drawings,

Fig. 1 is an elevational view of a fence embodying the concepts of my invention.

Fig. 2 is an enlarged detailed plan view looking in the direction of the arrows 2—2 of Fig. 1.

Fig. 3 is a fragmentary detailed side elevational view of the portion of the device illustrated in Fig. 2.

Fig. 4 is an enlarged sectional view taken on line 4—4 of Fig. 1.

Fig. 5 is a detailed elevational view of that portion of the device illustrated in Fig. 4.

Fig. 6 is an end elevational view looking in the direction of the arrows 6—6 of Fig. 1.

Fig. 7 is a sectional view taken on line 7—7 of Fig. 1.

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Fig. 8 is a detailed top plan view of one of the fence section connecting members.

Fig. 9 is a view similar to Fig. 1 showing a modified form of end brace post construction.

Fig. 10 is an enlarged detailed sectional view taken on line 10—10 of Fig. 9.

Fig. 11 is a detailed sectional view taken on line 11—11 of Fig. 10.

Fig. 12 is a sectional view taken on line 12—12 of Fig. 9.

Fig. 13 is a front elevational view of the end post shown in Fig. 9.

Referring in detail to the drawing, the present invention comprises a fence body 1 which is of flexible character such as the usual mesh type wire fence or other similar flexible fence. The fence body 1 may, if desired, comprise a continuous length of material from one supporting post to the next adjacent supporting post or the fence body may be constructed in conveniently joined sections 2 and 3. In employing the present invention a stationary post 4 is contemplated to which one end of the fence body or one end of one section thereof is permanently secured. The post 4 may comprise a conventional post which is driven into the ground to provide a firm anchorage for one end of the fence or the post 4 might, if desired, be some other fixed object such as a building or the like.

If the fence body 1 comprises sections 2 and 3 each section will be secured at one end to a rod 5 which will be disposed in parallel relationship to a similar rod 6 to which one end of the next adjacent section is connected, the flexible components of the fence being rigidly or immovably secured to the rods 5 and 6. Of course, as many sections 2 and 3 as desired may be employed and each section will be similar to the next adjacent section with the exception of that section which is anchored to the permanent support or post 4. In this section only one rod 5 will be employed whereas in the normal intermediate sections or the opposite end section each section will terminate in a similar rod. For example, in the illustration shown the section 2 is connected at one end to the rod 6 and at the opposite end said section is connected to a similar rod 7, the latter being hereinafter referred to as a tension rod.

The rods 5, 6 and 7 are identical with each other and may conveniently comprise a metal rod of any convenient cross section provided adjacent each end with an annular slot 8 as shown best in Figs. 3 and 5. Where the sections are joined, juncture plates 9 are employed. The juncture plates 9 comprise relatively flat metal plates pro-

vided with an aperture 10. The aperture 10 is enlarged at its central portion, as shown best at 11 in Fig. 8, the ends of the aperture being of restricted width relative to the central portion of the aperture. In joining two fence sections together the rods are disposed in the aperture 10. For instance, in joining the sections 2 and 3 together the end of rod 5 may be inserted in the enlarged portion 11 of the plate 9 and when the plate is disposed in alignment with the annular groove 8 the plate may be moved relative to the rod to dispose the rod at one end of the aperture 10. The adjacent rod 6 may then be inserted in the enlarged portion 11 of the aperture 10 and the plate may be moved relative to the rod to dispose the rod at the opposite end of the aperture. The same procedure may be adopted at the opposite ends of the rod, there being conveniently two plates 9 used for connecting the adjacent rods 5 and 6 together.

It can readily be seen that in this fashion a fence of substantially any length may be employed, the sections of the fence body being constructed in substantially similar form. Hence, where it is desired to erect temporary fences at different portions, for instance, of a farm or the like, the desired number of sections 2 and 3 may be employed, the sections being conveniently added in multiple to produce a fence of a desired length.

As has been hereinbefore described, one end of the fence body 1 is fixedly connected to a support 4 which is immovable with respect to the ground. The opposite end of the fence body 1, as will be hereinafter more fully described, is also connected to a brace post.

As a feature of the present invention a pair of tension plates 12 and 13 are employed. The tension plate 12 comprises a relatively flat metal member provided with a central aperture 14. The aperture 14 has a slot portion 15 of relatively restricted width which opens into an enlarged opening 16. In the form of my invention illustrated the end brace post, to be hereinafter more fully described, may be of angular construction and to conform with the sectional shape of the post the enlarged aperture 16 is of substantially triangular shape. It is to be understood, however, that the present invention is not to be limited to the specific shape of the enlarged opening 16 since said shape will conform substantially with the sectional shape of the end brace post.

Rigidly secured to the lower face of the upper tension plate 12 are two spaced angle braces 20, said braces being secured to the lower face of the plate 12 by welding or other convenient manner of securement. A channel member 21 is secured at one end to the upper face of the lower tension plate 13, the opposite flanges 22 of the channel member 21 extending upwardly. The angle braces 20 are disposed in an inclined direction with respect to the plane of the tension plate 12 whereas the channel member 21 is disposed in substantially plane-parallel relationship to the plate 13. At a predetermined distance from the plates 12 and 13 the angle members 20 are joined with the channel member 21, said angle members being secured by bolts or rivets 23 to the opposite flanges 22 of the channel member 21. As will be hereinafter more fully described, when the device is in assembled position the angle members 20 and the channel member 21 function as compression members.

In assembling the fence 1 that end of the fence

body 1 which carries the rod 7 is positioned between the spaced angle members 20 and is moved between said angle members and the ends of the rod 20 are inserted in the enlarged portion 16 and 19 respectively of the apertures 14 and 17. When the planes of the plates 12 and 13 are respectively in alignment with the annular slots 8 adjacent the ends of the rod 7 the plates 12 and 13 are moved relative to the rod 7 so as to dispose the rod 7 within the slots 15 and 18 respectively.

To tension the fence body 1 a hitch comprising rods 24 and 25 is secured to the upper and lower tension plates 12 and 13, the ends of the rod 24 and rods 25 being jointed together, as at 26 in Fig. 1. A pin 27 may be secured to the flanges of the opposite angle members 20 and the end of rod 24 may be provided with an open aperture in the form of a hook which may be engaged with the pin 27 to connect the rod 24 to the upper tension plate 12. The end of the lower tension plate 13 may be rolled to form a hollow bead 28 in which a pin 29 is positioned. The ends of bars 25 may also be provided with open apertures in the form of hooks which may be engaged with the pins 29. In this fashion the hitch comprising the bars 24 and 25 may be conveniently detachably connected to the tension plates 12 and 13. To apply tension to the hitch, a cable, indicated by the dotted line 30 in Fig. 1 may be secured to the juncture 26 of the hitch. The opposite end of the cable may be secured to a tractor, windlass or other mechanical device adapted for pulling. When tensional force is exerted upon the cable 30 this tension is transmitted to the tension plates 12 and 13 and by means of rod 7 engaged by said plates the tension is transmitted to the fence body 1.

As a feature of the present invention while the plates 12 and 13, rod 7 and fence body 1 are being subjected to tension an end brace post 31 is passed downwardly through the enlarged aperture 16 of plate 12 and the enlarged aperture 19 of plate 13 and said post may be driven into the ground. In order to accomplish this operation the end brace post 13 must be of a sectional dimension less than the sectional dimensions of the openings 16 and 19 whereby said end brace post may be conveniently passed downwardly through the vertically aligned openings 16 and 19 in the tension plates 12 and 13 respectively. In this fashion the tension imparted to the fence body and its accompanying elements hereinbefore described is retained by the fixed position of the end brace post 13.

An anchor bar 32, at one end, is pivotally connected to pin 29 carried by the lower tension plate 13. At the opposite end of the anchor bar an angle member 33 is rigidly secured, said angle member being preferably disposed at substantially a right angle to the length of the anchor bar 32. The bar 33 rigidly carries a metal plate 34 which may be tapered toward one end thereof. Similarly the bar 33 may be tapered as indicated at 35 in Fig. 7. The anchor bar 32 is pivotally movable about the pin 29 carried by the lower tension plate 13 and when the desired degree of tension has been imparted to the fence body and its accompanying elements and after the end of brace post 31 has been thoroughly anchored in the ground, the bar 33 carried by the anchor bar 32 may be driven into the ground so that the anchor bar is disposed at an angle to the surface of the ground. The position of the bar 33 and

anchor plate 34 after being driven into the ground is illustrated in Fig. 1.

After the end brace post 31 and anchor bar 33 are securely driven into the ground, the tension imparted to the cable 30 may be relieved and the hitch comprising the bars 24 and 25 may be disengaged respectively from the pins 27 and 29 and removed from the assembly. With the tension imparted by the cable 30 removed, the residual tension in the fence body 1 tends to pull the end brace post 31 toward the right, as viewed in Fig. 1. This tendency is resisted by the inherent relative immovability of the end brace post and is also resisted by the channel member 21 which is disposed in contact with the surface of the ground. The function of the channel member 21 is augmented by the angle members 20 which function as compression members to maintain the post 31 in fixed position. In order to prevent raising of the post 31 incident to the residual tension in the fence body 1, the anchor comprising the bar 33 and plate 34 functions, through the agency of the anchor bar 32 to prevent such raising of the post 31, the anchor bar 32 functioning as a tension member.

It is apparent that herein is provided a convenient and effective temporary fence construction. The fence is constructed of units comprising fence body sections 2 and 3, end bars or rods 5, 6 and 7, connecting plates 9 and tension plates 12 and 13 together with the end brace post 31, the compression braces 20 and 21 and the tension member 32. The fence may be conveniently erected at substantially any location and may be made as long as desired, it merely being necessary to add fence body units. Similarly, in disassembling the fence the reverse operation is performed, that is, tension is applied to the fence by a suitable windlass or tractor and the end brace post 31 and anchor bar 32 removed from the ground. The elements comprising the fence may then be removed to a new location or may be stored for further use.

Referring particularly to Figs. 9 to 13 inclusive, a modification of my invention is shown. In this form of my invention, a flexible fence body 36, similar to the fence body 1, and made in sections if desired, is anchored to a fixed support (not shown) at one end. The opposite end of the fence body is secured to tension rod 37, which in this form of my invention may comprise a relatively flat bar provided with a plurality of apertures 38 in which the longitudinal strands of the fence body may be threaded and secured.

The tension rod 37 may be engaged with an upper plate 39 and a lower plate 40, the plate 39 being provided with an elongated aperture 41 in which one end portion of the rod is positioned. Rod 37 may be provided with a notch which when the rod is in position in the aperture 41 engages the edge of plate 39 to prevent endwise movement of rod 37 with respect to aperture 41. The lower plate 40 is made up of two sections 42 and 43 separated from each other by slot 44. The section 43 is provided with an elongated aperture 45 in one end of which the opposite end portion of rod 37 is adapted to be positioned.

Upper plate 39 carries opposite triangular flanges 46 and secured to the inner face of each flange by welding or the like, is the end of an angle-sectioned compression bar 47. The two bars 47 straddle the fence body 36 and extending diagonally downwardly toward an intermediate portion of the length of the fence body. A pair of horizontal brace members 48 are secured at their ends to lower plate 40 and extend horizontally toward an intermediate portion of the length of the fence body. Adjacent the point of intersection of the compression bars and the horizontal brace members, said bars and members are joined to each other and to a base plate 49. To prevent the bars 47 from buckling outwardly away from each other when the bars are subjected to compressional stress, a tie plate 47' embraces an intermediate portion of the opposite bars. The tie plate 47' has opposite angular flanges 47'' which embrace the sides of the opposite bars 47, said flanges at their ends being bent inwardly to embrace the bottom of said bars, as indicated at 47a in Fig. 10.

A hitch 50, comprising a pull bar 51 joined at its lower end to a clevis 52 and at its upper end to a clevis 53 may be secured to the lower and upper plates 40 and 39, each of said plates carrying a pin 54 and 55, secured to the lower plate 40 and upper plate 39 respectively. If desired, the hitch may be permanently secured to plates 39 and 40, or may be detachably secured thereto in the manner hereinbefore described with respect to the hitch bars 24 and 25.

In erecting my modified form of fence, tractive means (not shown) applies tension to the hitch bar 51, as indicated by the arrow 56, and such tension is transferred to fence 36 by means of plates 39 and 40. When the fence body has been tensioned to the desired degree a post 57 is employed in anchoring the fence body, as will be hereinafter more fully described.

The post 57 may conveniently take the form of a T-iron having a web portion 58 and transverse flange portion 59. The post 57 may be brought to a point adjacent its lower end and a plate 60 may be secured to the flange 59 adjacent said lower end of the post. Above the plate 60 and below the central portion of the post, a second plate 61 may be secured to the flange portion 59 of the post. Both plates 60 and 61 are relatively wide with respect to flange 59 and both may be tapered at their lower ends to facilitate entrance into the ground. If desired, a single plate (not shown) may be employed instead of the two plates 60 and 61 in which case the single plate will extend preferably from the bottom of the post to a desired point intermediate the post, preferably below the post's center. The upper portion of plate 61 may be disposed at an angle to the plate proper, as indicated at 61' in Figs. 12 and 13. The purpose of flange 61' will be hereinafter more fully described.

Plate 39 is provided with a slot 62 which opens to the rear of the plate and when the post 57 is in operative position web 58 of the post is disposed in slot 62 and the rear end of slot 45. In this fashion, lateral movement of the plates with respect to the post and vice versa is prevented. It will be noted that when the post is in operative position flange 59 and plate 61 will be disposed in slot 44. The post 57 when driven into the ground, is driven downwardly until flange 61' engages portion 42 of the lower plate 40, said flange lying above the surface of the plate and functioning to prevent raising of the rear ends of bars 48. It will also be noted that plate 40 is wider than plate 39. Hence, in order to pass plates 60 and 61 through clevis 53, the arms of said clevis are constructed in bowed form, as shown at 63 in Fig. 10. By virtue of the width of plate 40, this expedient is not necessary with respect to the lower clevis 52.

In this form of my invention slot 62 is offset

with respect to slot 45 and, hence, post 57 is disposed at an angle to the vertical, that is, the post is inclined at its top away from the end of the fence body. Hence, when the post is driven into the ground and the force 56 released, the lower end of tension bar 37 will tend to move plate 40 to the right as viewed in Fig. 1, by virtue of the residual tension in the fence body. This force will tend to rock the post in a clockwise direction, as viewed in Fig. 1, about a point located beneath the ground and along the length of the post. The width of plates 60 and 61 resist this motion. Simultaneously, the top portion of post 57 tends to move to the right, as viewed in Fig. 1 and hence web 58 is urged toward the closed end of slot 62. This force results in compression of bars 47 and, hence, a balance of all forces is brought about. By virtue of plates 60 and 61 and the length of bars 47 and 48, the tendency for the post to heave, or move upwardly out of the ground is negligible and an anchor, such as anchor 32, is ordinarily unnecessary. If sandy or soft soil is frequently encountered a spike 64 may be secured to the lower portion of plate 49 to prevent lateral movement of said plate.

To dismantle the fence it is merely necessary to apply traction 56; remove post 57; disengage tension bar from plates 39 and 40; roll up or fold fence body 36 and store the parts or transport them to another situs for use.

I claim as my invention:

1. A fence comprising a plurality of units, said units being adapted for assembly and disassembly including a flexible fence body anchorable upon a post maintained stationary with respect to the ground, a tension bar rigidly connected to the opposite end of said fence body, tension plates removably mounted upon opposite end portions of said tension bar, said plates being provided with apertures, and a brace post slidably and removably positioned in said apertures and anchorable in the ground.

2. A fence comprising a plurality of units, said units being adapted for assembly and disassembly including a flexible fence body anchorable upon a post maintained stationary with respect to the ground, a tension bar disposed substantially in the plane of the fence body to which the opposite end of the fence body is rigidly connected, tension plates removably carried by said tension bar adjacent opposite ends thereof, each of said plates being provided with apertures which are in alignment with one another in substantially the plane of the fence body, and a brace post removably positioned in said aligned apertures and anchorable in the ground.

3. A quickly assembled and disassembled fence comprising a plurality of units adapted for assembly and disassembly including, an anchor post stationary with respect to the ground, a flexible fence body connected at one end to said post, said fence body being disposed in a substantially vertical plane, a tension bar disposed in substantially the same plane as the fence body to which the opposite end of said fence body is immovably connected, vertically aligned tension plates removably carried by said tension bar, said plates being provided with companion apertures, a brace post of sectional dimensions less than the sectional dimensions of said apertures, said brace post being positioned in said apertures for carrying said tension plates and having an end thereof for positioning in the ground, a substantially horizontal strut member carried by the lowermost tension plate, and an inclined strut member carried by the uppermost tension plate, said strut members being disposed adjacent the fence body and being connected together at their ends remote from said tension plates.

4. A fence comprising a plurality of units, said units being adapted for assembly and disassembly including a flexible fence body anchorable upon a post maintained stationary with respect to the ground, a tension bar disposed substantially in the plane of the fence body to which the opposite end of the fence body is connected, and relatively immovable therewith, tension plates removably carried by said tension bar, each of said plates being provided with apertures which are in substantially the plane of the fence body, a brace post removably positioned in said apertures and anchorable in the ground, an anchor bar pivotally secured to one of said tension plates, and an anchor carried by said anchor bar positionable in the ground beyond the end of said fence body.

5. A fence comprising a plurality of units, said units being adapted for assembly and disassembly including a flexible fence body anchorable upon a post maintained stationary with respect to the ground, said flexible fence body comprising a plurality of flexible sections, tension bars at the adjacent ends of said sections to which said sections are rigidly secured, connecting plates removably mounted upon the adjacent tension bars to join the adjacent flexible sections together in end to end relation, an end tension bar secured to the end of the endmost section, tension plates removably mounted upon said end tension bar, said tension plates being provided with apertures, and a brace post slidably and removably positioned in said apertures and positionable in the ground.

6. A fence comprising a plurality of units, said units being adapted for assembly and disassembly including a flexible fence body anchorable upon a post maintained stationary with respect to the ground, said flexible fence body comprising a plurality of flexible sections, tension bars at the adjacent ends of said sections to which said sections are immovably secured, connecting plates removably mounted upon the adjacent tension bars to join the adjacent flexible sections together in end to end relation, an end tension bar immovably secured to the end of the endmost section, tension plates removably mounted upon said end tension bar, said tension plates being provided with apertures, a brace post slidably and removably positioned in said apertures and positionable in the ground, an anchor bar pivotally secured to one of said tension plates, and an anchor carried by said anchor bar positionable in the ground beyond the end of said fence body.

7. A fence comprising a plurality of units, said units being adapted for assembly and disassembly including a flexible fence body anchorable at one end with respect to the ground, a tension bar rigidly connected to the opposite end of said fence body, tension plates removably secured upon said tension bar adjacent its opposite ends, said plates being provided with apertures disposed in substantially the same plane as the fence body and offset from each other in said plane, a brace post slidably and removably positioned in said apertures and anchorable in the ground at an angle determined by the offset relation of the apertures in the tension plates.

8. A fence comprising a plurality of units, said units being adapted for assembly and disassembly including a flexible fence body anchorable at

one end with respect to the ground, a tension bar immovably connected to the opposite end of said fence body, tension plates removably secured upon said tension bar adjacent its opposite ends, said plates being provided with apertures disposed in substantially the same plane as the fence body and offset from each other in said plane, a brace post slidably and removably positioned in said apertures and anchorable in the ground at an angle determined by the offset relation of the apertures in the tension plates, a relatively wide ground-abutment plate carried by that portion of the brace post which enters the ground, the plane of said plate being at substantially right-angles to the plane of the fence body.

9. A fence comprising a plurality of units, said units being adapted for assembly and disassembly including a flexible fence body anchorable at one end with respect to the ground, a tension bar immovably connected to the opposite end of said fence body, tension plates removably mounted upon said tension bar adjacent its opposite ends, said plates being provided with apertures disposed in substantially the same plane as the fence body and offset from each other in said plane, a brace post slidably and removably positioned in said apertures and anchorable in the ground at an angle determined by the offset relation of the apertures in the tension plates, a relatively wide ground-abutment plate carried by that portion of the brace post which enters the ground, the plane of said plate being at substantially right-angles to the plane of the fence body, an angular flange carried at the upper end of said ground-abutment plate, said flange overlying the lower tension plate when the brace post is anchored in the ground.

10. A fence comprising a plurality of units, said units being adapted for assembly and disassembly including a flexible fence body anchorable at one end with respect to the ground, a tension bar rigidly connected to the opposite end of said fence body, tension plates removably mounted upon said tension bar adjacent its opposite ends, said plates being provided with apertures disposed in substantially the same plane as the fence body and offset from each other in said plane, a brace post slidably and removably positioned in said apertures and anchorable in the ground at an angle determined by the offset relation of the apertures in the tension plates, a pair of bars carried by the lower tension plate and extending toward an intermediate portion of the length of the fence body, a pair of spaced compression bars carried by the upper tension plate and extending in an inclined direction with respect to said first-mentioned bars, and means for fastening the ends of said first mentioned bars relative to the ends of said compression bars.

11. A fence comprising a plurality of units, said units being adapted for assembly and disassembly including a flexible fence body anchorable at one end with respect to the ground, a tension bar rigidly connected to the opposite end of said fence body, tension plates removably mounted upon said tension bar adjacent its opposite ends, said plates being provided with apertures disposed in substantially the same plane as the fence body and offset from each other in said plane, a brace post slidably and removably positioned in said apertures and anchorable in the ground at an angle determined by the offset relation of the apertures in the tension plates, a pair of bars carried by the lower tension plate and extending toward an intermediate portion of the length of the fence body, a pair of spaced compression bars carried by the upper tension plate and extending in an inclined direction with respect to said first-mentioned bars, means for fastening the ends of said first mentioned bars relative to the ends of said compression bars, and means for securing said first mentioned bars together intermediate their length.

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