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FENCE BRACE

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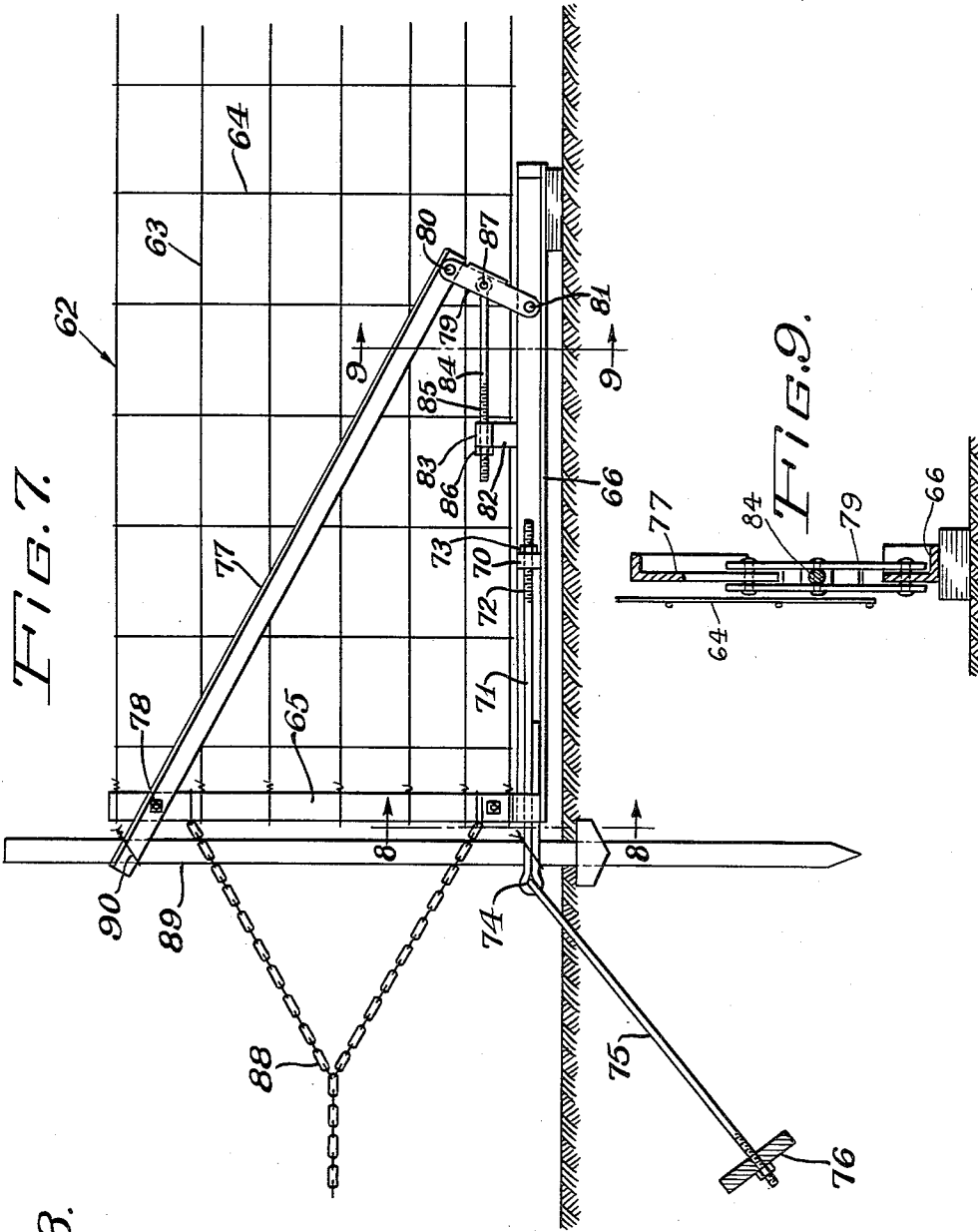
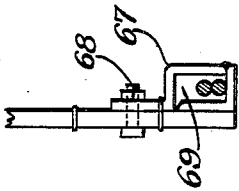


FIG. 8.



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FENCE BRACE

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This invention relates to improvements in a fence brace for a flexible fence and refers particularly to a fence brace which may be employed to set up quickly and conveniently a fence constructed of flexible material such as wire or the like.

In the art of farming and the utilization of available land to the best advantage, it frequently becomes desirable to set off different portions of the land for different purposes at different times of the year. For instance, at a predetermined period of the year it may be desirable to employ one portion of the land for pasturage purposes, whereas at a different predetermined period of the year said portion of the land may be most efficiently used for other purposes and other portions of the land may then be best adapted for pasturage purposes. This requires the setting up of fences at different portions of the land and the dismantling of fences at other portions of the land.

The present invention is ideally adapted to render the procedure described hereinbefore most convenient. For example, a flexible wire fence may be moved most conveniently in rolled form to the situs of a fence and one end thereof may be anchored; the fence may then be laid out and tensioned and braced in a minimum of time with a minimum of labor. To dismantle the fence, the same procedure, in reverse, may be performed with equal convenience.

The features, objects and advantages of the present invention will be more apparent from the accompanying drawings and following detailed description.

Fig. 1 is a fragmentary elevational view of a fence supported and tensioned by my improved fence brace.

Fig. 2 is an enlarged detailed sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is an enlarged detailed sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a view similar to Fig. 1 of a modification of my invention.

Fig. 5 is an enlarged detailed sectional view taken on line 5—5 of Fig. 4.

Fig. 6 is an enlarged detailed sectional view taken on line 6—6 of Fig. 4.

Fig. 7 is a view similar to Figs. 1 and 4 of another modification of the invention.

Fig. 8 is an enlarged detailed sectional view taken on line 8—8 of Fig. 7.

Fig. 9 is an enlarged detailed sectional view taken on line 9—9 of Fig. 7.

Referring in detail to the drawings, 1 indicates a flexible fence such as a wire fence having longitudinal tension strands 2 and transverse strands 3. The longitudinal strands 2 are anchored upon a fence bar 4 at their ends, the bar 4 conveniently being of rectangular section or said bar may assume any desired cross-sectional shape. The opposite end of the fence 1 is anchored upon a suitable fixed anchor post or other rigid support (not shown).

A base compression member 5 comprises a portion of

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the present invention, said compression member being preferably constructed of iron or steel or other metallic material and being of angle section. Of course, if desired, the base compression bar 5 may be of any desired cross-sectional shape. A link 6 having bifurcated ends 7 is pivotally connected at one of its ends to one leg or flange of the angle member 5, said pivotal connection being effected by means of pivot pin 8.

The opposite end portion of the base compression bar 5 is secured to an offset lug 9 (Fig. 2) which is secured by means of bolts or the like 10 to the lower portion of the fence bar 4. The lug 9 is secured to the bar 5 preferably by welding as indicated at 11 in Fig. 2.

The opposite end of link 6 is pivotally connected to one end portion of an upper compression bar 12, said bar being preferably of angle section similar to the bar 5, the pivotal connection between link 6 and bar 12 being effected by means of pin 13. The bar 12 at its opposite end is pivotally secured to the upper portion of the fence bar 4 by means of bolt 14.

Thus, a triangular structure is formed comprising base compression bar 5, upper compression bar 12 and fence bar 4, all of said members being pivotally connected to each other by bolts 10 and 14 and link 6.

A slidable connecting bar 15 is positioned longitudinally of the base compression bar 5, said bar 15 being embraced between lug 9 and the flanges of the angle member 5. A strap 16, spaced from the lug 9 is secured to the angle member 5 and the bar 15 is slidably positioned within said strap. Thus, the bar 15 is constrained to longitudinal slidable movement in a direction parallel to the length of the base compression bar 5.

A rod 17 is pivotally secured to a lug 18 carried by the bar 15. The opposite end of rod 17 extends through link 6 and said end portion of the rod is provided with screw threads 19 with which a nut 20 is engageable, the nut 20 being adapted to bear upon the central portion of link 6.

An anchor rod 21 is pivotally connected at one end to the slidable bar 15 and at its opposite end said anchor bar carries an anchor plate 22.

In setting up the fence 1 the remote end of the fence is anchored upon a fixed post or other fixed support (not shown). The fence is then extended in the direction that it is intended to occupy. A chain hitch 23 is secured to the fence bar 4 adjacent its upper and lower end portions and said chain hitch may be secured by means of chain 24 to a tractor or the like (not shown). Hence, when the remote end of the fence 1 has been properly anchored, the tractor exerts force upon the fence bar 4 tending to tension the strands 2 of the fence 1. When the fence bar 4 is thus moved by the tractor the base compression bar 5 and the upper compression bar 12 are moved therewith. When the strands 2 have been tensioned to a desired degree, a block 25 may be positioned beneath the base bar 5 to hold the end portion of said bar substantially parallel to the ground 26.

A hole is then dug in the ground and the anchor rod and anchor plate are securely embedded in the ground, the nut 20 being positioned adjacent the end of the threads 19 carried by rod 17. After the anchor rod and anchor plate have been securely embedded in the ground, the nut 20 is tightened so as to bear upon the central portion of the link 6. This action exerts a compressive force upon the base bar 5 and the upper bar 12 tending to maintain the strands 2 in tension. This compressional force of bars 5 and 12 is resisted by the tension established in rod 17 and the slidable bar 15. The nut 20 is thus manipulated until a desired tension is produced in the strands 2. Thereafter, the tractor hitch comprising the

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chains 23 and 24 is removed and the fence 1 will be maintained in desired tension.

A fence post 27 is then driven into the ground and the end portion of the upper compression bar 12 is tied to the fence post by means of wire 28 and the lower portion of the fence post is tied by means of wire 29 to the end portion of the slidable bar 15. The only function of the fence post 27 is to prevent lateral movement of the fence 1. It can readily be seen that the tension of the fence 1 is ultimately resisted by the anchor rod 21 and anchor plate 22 through the agency of the compression bars 5 and 12 and the tension members 17 and 15.

To dismantle the fence 1, the reverse procedure is carried out. A tractor or the like may be secured to the fence bar 4 by means of chains 23 and 24 and force may be exerted by said tractor until the compression in bars 5 and 12 is relieved at which time the nut 20 is moved to the end portion of the rod 17 thus relieving tension upon the anchor rod 21 and anchor plate 22 which is then swung upwardly from its embedded position in the ground.

Referring particularly to Figs. 4, 5 and 6, a modification of the present invention is shown wherein 30 indicates a flexible wire fence having longitudinal tension strands 31 and cross strands 32. The fence 30 is adapted to be anchored upon a fixed support or post at one end and carries at the opposite end a fence bar 33 to which the tension strands 31 are secured.

A bracket 34 is secured to the lower end portion of the fence bar 33 and said bracket, in turn, being rigidly secured to a compression tube 35. A lug 36 is welded to an intermediate portion of the tube 35, said lug carrying a rod 37 which extends above and parallel to the tube 35. A collar 38 slidably embraces tube 35 and terminates in a pair of lugs 39. A pair of compression bars 40 are pivotally secured at their ends upon the lug 39, said compression bars being disposed on opposite sides of the fence 30. At the opposite ends, said compression bars are pivotally secured as at 41 to the upper portion of the fence bar 33.

The rod 37 extends through the slidable collar 38 and carries screw threads 42 at its end. A coil spring 43 embraces the rod 37 and is confined between a washer 44 disposed adjacent the collar 38 and a washer 45 which is disposed adjacent a nut 46 which, in turn, is threadedly engaged with the threads 42 upon the rod 37.

Thus, a triangle is formed comprising fence bar 33, the compression bars 40 and the compression tube 35, the lower ends of the compression bars 40 being resiliently associated with the tube 35 by means of the slidable collar 38 and coil spring 43.

A rod 47 is telescopically positioned within the tube 35, the end of rod 47 being threaded as indicated at 48 in Fig. 4. A coil spring 49 embraces rod 47 and is confined between the outer end of tube 35 and a washer 50 which, in turn, abuts against nut 51 which is threadedly engaged with threads 48. The opposite end of rod 47 terminates in a relatively flat bar 52 which is pivotally secured to pin 53 which, in turn, is carried by the bifurcated end 54 of anchor rod 55. The anchor rod 55 carries at its outer end an anchor plate 56 which, as will be hereinafter more fully described, is adapted to be buried in the ground.

In utilizing this form of the invention the fence 30 is anchored to a fixed post or support (not shown) at one end and at the opposite end, the fence bar 33 is secured to chains 57. Chain 58 connects with the chains 57 and may be secured to a tractor (not shown). The tractor which is connected to chain 58 may be operated to apply tension to the fence 30 until a desired degree of tension is established in the tension strands 31. The nut 51 and the nut 46 are disposed respectively at the end portions of rods 47 and 37. A hole is dug in the ground 59 and the anchor rod 55 and anchor plate 56 are securely embedded in the ground. Nut 51 is manipulated to compress spring 49 which applies tension to the rod 47. The

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compressed spring 49 thus tends to urge tube 35 to the left, as viewed in Fig. 4 thereby establishing a stress of compression in the tube 35. Simultaneously, the lug 36 tends to move toward the left thereby tending to compress spring 43 which bears upon collar 38 and establishes a stress of compression in the compression bars 40. In this fashion a force is exerted upon the fence bar 33 tending to tension the strands 31 of the fence 30. This force is essentially sustained by the anchor rod 55 and anchor plate 56 and the tension of the fence 30 is brought to a desired degree by the proper manipulation of the nuts 46 and 51. By the provision of the slidable arrangement of collar 38 upon the tube 35, the upper portion of the fence may be adjusted independently of the lower portion thereof. However, in the ideal condition all longitudinal strands 31 of the fence 30 should be tensioned equally.

After the tension of the fence 30 has been sustained by the anchor rod 55 and anchor plate 56, the chains 57 are disconnected from the fence bar 33. A collar 60 is pivotally connected to the upper portion of the fence bar 33 and a fence post 61 is positioned within said collar, the lower end of the fence post being driven into the ground 59. The fence post 61 does not sustain any of the tension of the fence 30 but merely prevents lateral movement of the fence, that is, it maintains the fence in a substantially vertical plane.

To disassemble the fence 30, the reverse operation is performed, that is, the nuts 51 and 46 are loosened and the anchor is removed from the ground, the fence post 61 being previously removed from the ground.

Referring particularly to Figs. 7, 8 and 9, a modification of the present invention is shown wherein 62 indicates a flexible wire fence having longitudinal tension strands 63 and cross strands 64. The fence 62 is adapted to be anchored upon a fixed support or post (not shown) at one end and carries at the opposite end a fence bar 65 to which the tension strands 63 are secured. A compression member 66 is secured at one end to the lower end portion of the fence bar 65, said compression member preferably being welded to the fence bar. A keeper 67 is secured to the lower portion of fence bar by means of a bolt 68 or the like, the keeper defining with the angle iron a guide space 69 (Fig. 8).

A guide collar 70 is rigidly secured to an intermediate portion of the compression member 66 and a rod 71 is adapted to be loosely positioned within the guide collar. An end portion of the rod 71 carries screw threads 72 which are adapted to be engaged by an adjusting nut 73. The opposite end portion of the rod 71 is looped upon itself to form an eye 74, the rod proper and the looped end thereof being adapted to be disposed within the guide space 69. An anchor rod 75 is pivotally secured to the eye 74 and carries at its end an anchor member 76.

An upper angle iron 77 is pivotally secured as at 78 in Fig. 1 to the upper portion of the fence bar 65. The lower end portion of the angle iron 77 is pivotally connected to a pair of links 79, said links embracing a flange portion of the angle iron and being pivotally secured thereto by means of pivot pin 80. The opposite ends of said links embrace the flange portion of the compression member 66 and are pivotally secured thereto by means of pivot pin 81. A lug 82 is rigidly mounted upon the flange of the compression member 66 and said lug carries at its upper end a guide collar 83. A rod 84 is loosely positioned in the guide collar 83, said rod carrying screw threads 85 which are adapted to be engaged by an adjusting nut 86. The opposite end of the rod 84 is pivotally connected between the links 79, being pivotally secured to said links intermediate their length by means of pivot pin 87.

In assembling the fence brace illustrated in Figs. 7, 8 and 9 a chain hitch 88 is secured to the fence bar 65 and the opposite end thereof is secured to a tractor or

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other tensioning means (not shown). The opposite end of the fence 62 is secured to a fixed support as has been hereinbefore described and tension is applied to the hitch 88 whereby the longitudinal strands 63 of the fence are brought into tension.

Initially, the nut 73 engaged upon the rod 71 is disposed adjacent the extreme end of said rod. When a desired degree of tension has been exerted upon the fence 62, the rod 71 is moved until the nut 73 contacts the guide collar 70. The anchor 76 is then buried firmly in the ground. The nut 73 is then manipulated to apply tension to the rod 71 which tends to apply tension to the fence 62. Eventually, the tension applied by the manipulation of the nut 73 eliminates the necessity for the tension applied to the hitch 88 and said hitch is removed from the fence bar 65.

It is desirable that the upper and lower tension strands 63 of the fence 62 be placed in the same degree of tension. This can be done by properly manipulating the nut 86. If the nut 86 is so turned as to effectively shorten the rod 84, that is, to rock the links 79 in a counter clockwise direction as viewed in Fig. 7, compression is imparted to the angle iron 77 and hence the upper strands 63 of the fence have their tension increased. If the upper strands of the fence are initially under greater tension than the lower strands thereof, the tension of said upper strands may be relieved by the proper manipulation of the nut 86 to effectively lengthen the rod 84. Thus, the relative tension of the upper and lower strands of the fence 62 may be adjusted independently of the over-all fence tension by the manipulation of the nut 86 and the swinging of the links 79.

When the fence 62 has been properly tensioned and the upper and lower strands have their tensions equalized, a fence post 89 is driven into the ground and the end of the angle iron 77 and the looped end of the rod 71 is secured to the fence post by means of a wire wrapping 90. As in the case with the other forms of the present invention, the fence post 89 does not sustain tension of the fence but merely prevents lateral displacement of the fence.

In disassembling the fence and fence brace illustrated in Figs. 7, 8 and 9 it is merely necessary to manipulate nut 73 so as to effectively lengthen rod 71 thus relieving tension in said rod. When said tension has been effectively relieved the anchor 76 is removed from the ground.

It can readily be seen that in all forms of the present invention a fence brace is contemplated which permits the quick and convenient setting up of a fence and also permits the dismantling of the fence in a minimum period of time and with a minimum expenditure of effort.

I claim as my invention:

1. A fence brace for a flexible fence, comprising a fence bar to which an end portion of the fence is secured, a compression member secured at one end to the lower portion of the fence bar on a predetermined side thereof, an upper compression member secured at one end to the upper portion of the fence bar on the same side of said fence bar, an anchor for substantially immovable disposition in the ground on the opposite side of said fence bar, a tension member connected at one end to said anchor, movable means connecting the end portions of said compression members together remote from said fence bar, and adjustable means connecting the opposite end of said tension member to said movable means.

2. A fence brace for a flexible fence, comprising a fence bar to which an end portion of the fence is secured, a substantially horizontally disposed compression member secured at one end to the lower portion of the fence bar, an upper inclined compression member secured at one end to the upper portion of the fence bar, said compression members being disposed in a plane parallel to and adjacent said fence, an anchor for sub-

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stantially immovable disposition in the ground, a tension member connected at one end to said anchor, a portion of said tension member being disposed between said compression members, means connecting portions of said compression members together for limited relative movement therebetween remote from said fence bar, and adjustable means connecting the opposite end of said tension member to said compression members' connecting means.

3. A fence brace for a flexible fence, comprising a fence bar to which an end portion of the fence is secured, a lower compression member secured at one end to the lower portion of said fence bar, an upper compression member secured at one end to an upper portion of the fence bar, an anchor for substantially immovable disposition in the ground, a tension member pivotally secured at one end to said anchor, a link pivotally connecting the opposite end portions of said compression members together, and adjustable means connecting the opposite end of said tension member to said link.

4. A fence brace for a flexible fence, comprising a fence bar to which an end portion of the fence is secured, a lower compression member secured at one end to the lower portion of said fence bar, an upper compression member secured at one end to an upper portion of the fence bar, an anchor for substantially immovable disposition in the ground, a bar slidably carried upon said lower compression member and pivotally connected at one end to said anchor, a tension rod connected at one end to said slidable bar, a link pivotally connecting the opposite end portions of said compression members, the opposite end of said tension rod being longitudinally movable with respect to said link, and means carried by said tension bar and bearing upon said link for changing the effective length of said tension rod relative to said link and said slidable bar.

5. A fence brace for a flexible fence, comprising a fence bar to which an end portion of the fence is secured, a lower compression member secured at one end to the lower portion of said fence bar, an upper compression member secured at one end to an upper portion of the fence bar, an anchor for substantially immovable disposition in the ground, a tension member connected at one end to said anchor, resilient means interposed between the opposite end of said tension member and the opposite end of said lower compression member, resilient means interposed between said lower compression member and the opposite end of said upper compression member, means carried by said tension member for changing the resilience of said first-mentioned resilient means to change the compressive stress in said lower compression member and to change the tensile stress in said tension member, and separate means carried by said lower compression member for changing the resilience of said second-mentioned resilient means to change the compressive stresses in both of said compression members.

6. A fence brace for a flexible fence comprising, a fence bar to which an end portion of the fence is secured, a tubular member secured at one end to the lower portion of the fence bar, a compression bar secured at one end to the upper end portion of the fence bar, a collar slidably positioned upon said tubular member, the opposite end of said compression bar being secured to said collar, resilient means carried by said tubular member and bearing upon said collar to urge resiliently said compression bar toward said fence bar, an anchor for substantially immovable disposition in the ground, a tension bar secured at one end to said anchor, and resilient means interposed between the opposite end of said tension bar and the opposite end of the tubular member to tension said tension bar and compress said tubular member.

7. A fence brace for a flexible fence comprising, a fence bar to which an end portion of the fence is

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secured, a tubular member secured at one end to the lower end portion of the fence bar, a compression bar secured at one end to the upper end portion of the fence bar, a collar slidably positioned upon said tubular member, the opposite end of said compression bar being secured to said collar, resilient means carried by said tubular member and bearing upon said collar to urge resiliently said compression bar toward said fence bar, means carried by said tubular member and bearing on said resilient means for changing the resilience of said resilient means, an anchor for substantially immovable disposition in the ground, a tension bar secured at one end to said anchor, resilient means interposed between the opposite end of said tension bar and the opposite end of the tubular member to tension said tension bar and compress said tubular member and means carried by said tension bar and bearing on said last-mentioned resilient means for changing the resilience of said last-mentioned resilient means.

8. A fence brace for a flexible fence, comprising a fence bar to which an end portion of the fence is secured, a compression member secured at one end to the lower portion of the fence bar, an upper compression member secured at one end to the upper portion of the fence bar, an anchor for substantially immovable disposition in the ground, a tension member connected at one end to said anchor, and adjustable means connecting the

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opposite end of said tension member to portions of said compression members spaced from said fence bar, said adjustable means comprising a guide collar carried by said lower compression member through which said tension member is positioned, means carried by said tension member and bearing upon said guide collar for moving said tension member relative to said lower compression member, a second guide collar carried by said lower compression member, a link pivotally connecting said upper and lower compression members, and adjustable tension means connecting said second guide collar and said link together to move said upper tension member relative to said lower tension member.

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