March 24, 1931. A. B. CHANCE 1,797,637

SCREW ANCHOR

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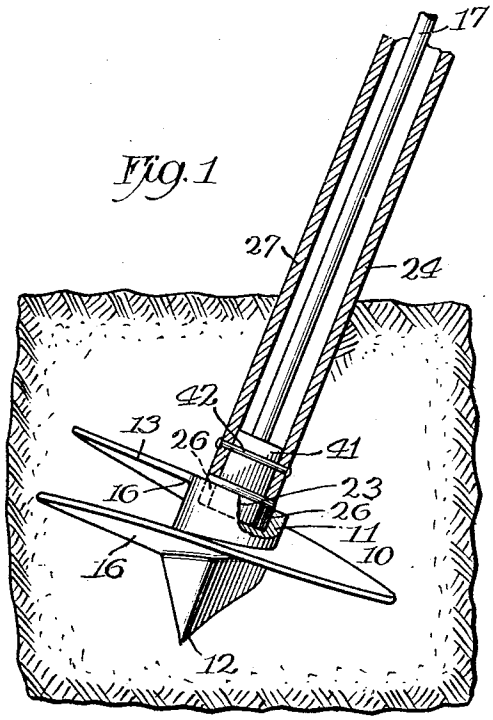


Fig. 1

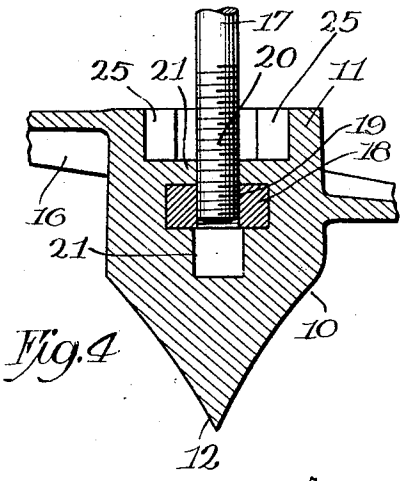


Fig. 4

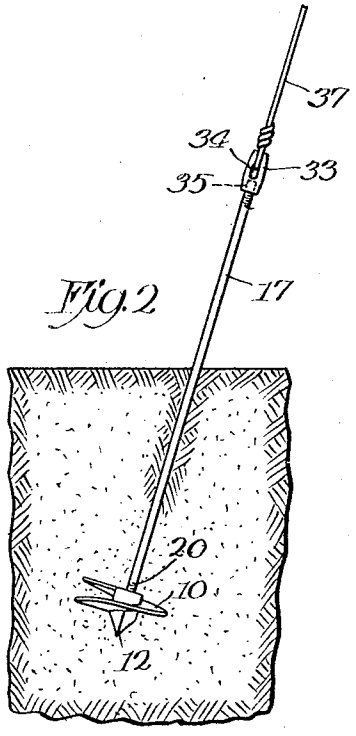


Fig. 2

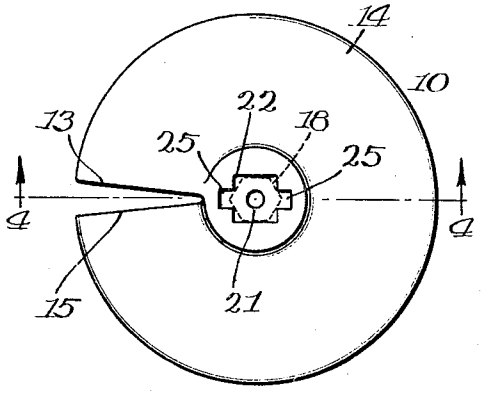


Fig. 3

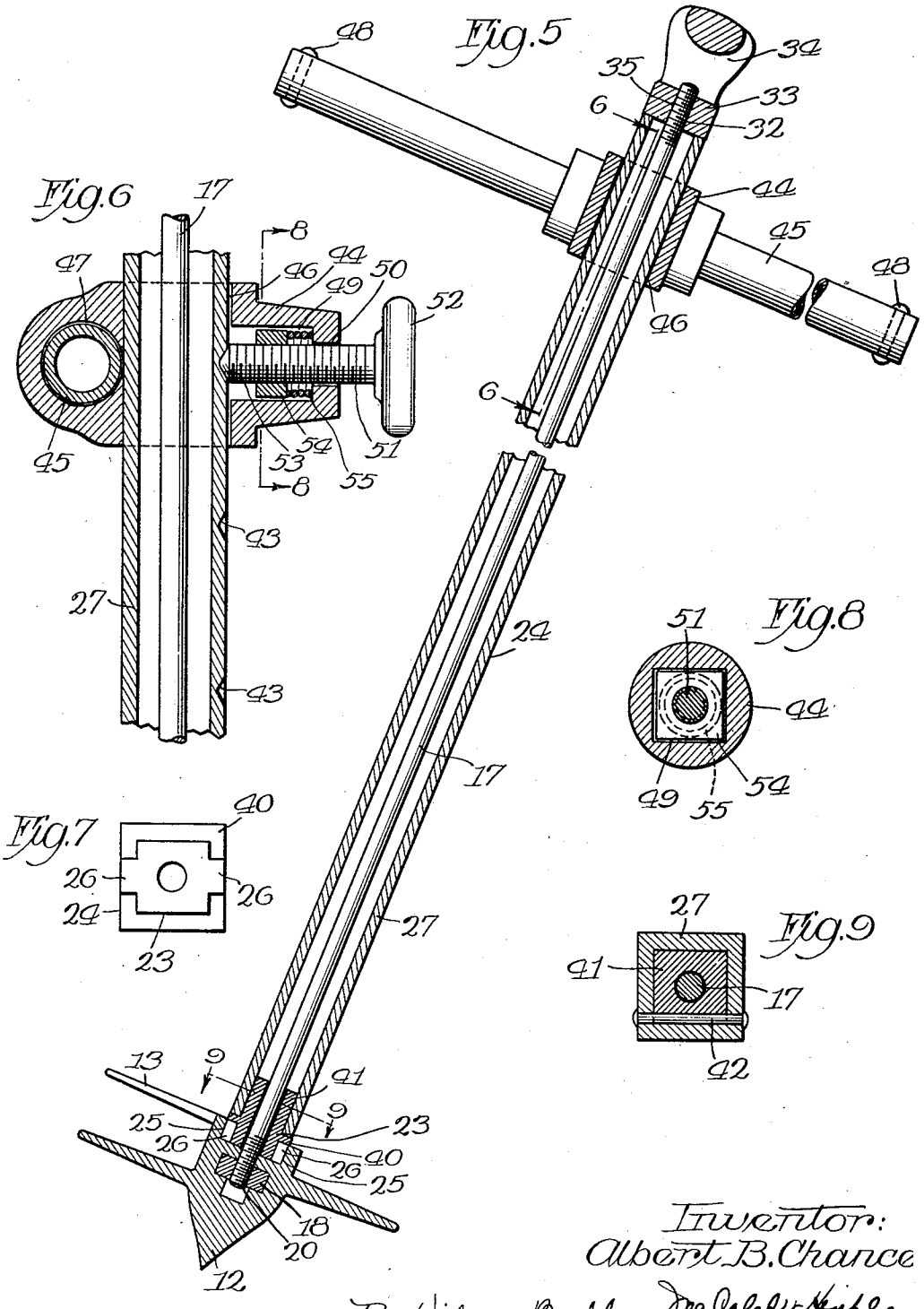
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March 24, 1931. A. B. CHANCE 1,797,637

SCREW ANCHOR

Filed Oct. 24, 1927 2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

ALBERT B. CHANCE, OF CENTRALIA, MISSOURI

SCREW ANCHOR

Application filed October 24, 1927. Serial No. 228,463.

The present invention relates to screw anchors and is more particularly concerned with screw anchors of the type adapted to be used for securing guy wires for telephone posts or the like.

One of the objects of my invention is the provision of a cast metal screw anchor of the class described having an improved form of connection with an actuating wrench comprising a non-circular socket for the wrench and a plurality of radially projecting lugs adapted to engage the anchor at points more remote from its axis, thereby giving increased leverage for the wrench so that it will not turn out of its socket.

Another object of my invention is the provision of an improved screw anchor and wrench of the class described and a novel method of installation of screw anchors and guy rods whereby an anchor may be more firmly driven into the ground or embedded in more compact subsoil than is possible with the ordinary type of anchor and wrench.

Other objects and advantages of my invention will appear more fully from the following description and from the accompanying drawings in which similar characters of reference indicate similar parts throughout the several views.

Referring to the drawings:—

Fig. 1 is an elevational view showing my anchor in the process of installation.

Fig. 2 is a similar view showing the anchor and guy rod embedded in the earth.

Fig. 3 is a plan view of the anchor.

Fig. 4 is a partial cross-sectional view of the same on the line 4—4 of Fig. 3.

Fig. 5 is a vertical cross-sectional view of the anchor and wrench.

Fig. 6 is a detail vertical cross-sectional view taken on the line 6—6 of Figure 5.

Fig. 7 is a bottom plan view of the wrench.

Fig. 8 is a sectional view on the line 8—8 of Fig. 6.

Fig. 9 is a sectional view on the line 9—9 of Fig. 5.

In the drawings 10 indicates in its entirety my anchor which comprises a cast metal member having a central core 11 of substantially cylindrical shape terminating in a point 12 which may have the shape of a pyramid. Cast integrally with the core 11 is a substantially flat flange 13 projecting at approximately right angles to the axis of the core 11 and progressing along the axis in the form of a screw. The external outline 14 of the flange 13 is preferably circular and the flange may make approximately one revolution about the core 11 terminating below in the relatively sharp forward edge 15. The flange 13 is also preferably tapered from the outer edge 14 to a greater thickness as at 16 adjacent the core 11, thereby increasing the strength of the flange in proportion to the distance from the outer edge.

The body of the core 11 and flange 13 is preferably formed of cast iron and in order to provide a means of connection to a guy rod 17 which is of greater strength than permitted by the cast iron I prefer to locate a steel member 18 having a hole or bore within the core 11 of the anchor in such manner that the threaded bore 19 of the member is located axially of the anchor and the member 18 is embedded in the metal of the core and secured by engagement therewith above and below the member as well as on the plane sides of the member.

The member 18 may consist of a blank member and the member and adjacent portions of the bore 21 in the bore 11 may be threaded at the same time. The guy rod 17 is provided with a threaded end 20 which is adapted to be received in the threaded aperture 19 of the member 18 and the core 11 is provided with an aligned bore 21 extending above and below the member 18 to receive the guy rod 17.

The core 11 is provided at its upper end with a non-circular recess or socket 22 which is adapted to receive a complementary non-circular end 23 of a wrench 24. The socket 22 is preferably rectangular though it may be made hexagonal. In the installation of the anchor 10 a relative high torque is transmitted to the anchor 10 by the wrench 24 through the non-circular end 23 and socket 22, and considerable difficulty has been experienced in this operation due to the fact that the wrench tends to turn out of the socket 22.

In order to obviate this difficulty I prefer to provide the socket 22 with a plurality of auxiliary recesses 25 communicating with said socket at the sides thereof and extending into the core 11 to a greater distance from the axis of the anchor. The wrench end 23 is then formed with complementary projecting lugs 26 which fit in the recesses 25 and any number of lugs and auxiliary recesses may be employed.

It will thus be observed that not only do the auxiliary recesses and lugs provide an additional bearing surface through which the wrench may react upon the anchor in the screwing operation, but the lugs engage the anchor at a greater distance from the axis of the same so that the lugs have a longer lever arm with which to engage the anchor. The longer lever arm of the lugs enables them to exert a greater torque upon the anchor 10 without destruction of the socket or wrench and this structure has enabled the installation of anchors in places where ordinary anchors could not be embedded due to unusual difficulties in embedding them in the earth.

The wrench end 23 may be provided with a projecting flange 40 adapted to bear against the upper surface of the anchor core 11 and to aid in fixing the wrench end in a supporting member 27. The wrench which is indicated in its entirety at 24 comprises a tubular supporting member 27 preferably of rectangular cross-section and adapted to receive the square portion 41 of the wrench end. The wrench end 23 may be securely fastened in the tubular supporting member 27 by a transverse rivet 42 and the tubular supporting member may be provided with a plurality of recesses 43 for engaging with an adjustable slide 44 carrying a handle 45. The slide 44 comprises a cast metal member having a non-circular aperture 46 adapted to slidably receive the tubular supporting member 27 of the wrench and also having a transverse bore 47 for receiving the tubular handle 45. The tubular handle 45 may be slidably mounted in the bore 47, being retained therein by stops at each end consisting of transverse rivets 48 and the provision of a slidable handle enables the use of my anchor wrench in many places which another handle could not be turned.

The slider 44 is also provided with a socket 49 formed integrally with the slider and communicating with the non-circular bore 46. The socket 49 has a centrally located bore 50 of sufficient size to receive a threaded bolt 51 without engaging its threads. The threaded bolt 51 is provided with a serrated knob 52 for convenient manipulation and with a substantially conical end 53 adapted to fit in the conical recesses 43. Threaded upon the bolt 51 within the socket 49 is a non-circular nut 54 and the cross-section of the socket 49 is preferably made of the same shape as the nut 54 in order to receive said nut and prevent its rotation but permit reciprocation.

The bolt 51 is also provided with a spring 55 preferably of helical form and confined between the nut 54 and the ends of the socket 49. It will thus be observed that by means of the knob 52 the bolt 51 may be screwed inward and the socket 49 will prevent rotation of the nut 54 so that the nut will progress upon the bolt. The bolt 51 can be screwed in to such extent that its end 53 will firmly engage in the recesses 43 of the tubular member 27 if desired but the bolt is preferably so disposed that there is sufficient spring tension to hold the bolt in one of the recesses 43 under ordinary conditions but if desired the slider 44 may be moved upward or downward without releasing the bolt 51 since the conical recesses 43 will cam the end 53 of the bolt outward.

It will thus be observed that my handle is provided with a slider which will automatically be retained in any one of a plurality of adjustable positions and which may be moved upward to a new adjusted position by mere application of an axial force after which it will be retained in such position for convenient manipulation of the wrench.

The anchor and wrench may be held in assembled position during the operation of installing the anchor by means of a guy rod 17 which may be threaded at its upper end 32 for the reception of a thimble eye 33. The thimble eye 33 has the usual grooved aperture 34 to receive the guy wire and a threaded bore 35 adapted to be threaded on the end 32 of the guy rod. It will thus be observed that the wrench 24 may be placed about the guy rod 17 after which the guy rod may have its lower end 20 threaded in the member 18 of the anchor. The thimble eye 33 may then be threaded upon the upper end of the guy rod, clamping the tubular member 27 between the anchor and the thimble eye and firmly assembling these parts. The anchor may then be installed in the usual manner by holding the axis of the wrench in substantial alinement with the top of the post forcing the point 12 into the earth and turning the anchor by means of the handle 45. The point 12 of the anchor penetrates the earth, wedging the earth apart while the forward edge 15 of the helix cuts into the earth defining the course of the flange 30 and directing the anchor through a helical path into the earth. The anchor may thus be screwed into the earth after which the thimble eye may be removed and the wrench removed over the upper end 32 of the guy rod 17 and the thimble eye may be replaced. The guy wire may then be attached to the thimble eye 33 in the usual manner.

During the installation of the anchor the handle 45 may be slid to a new position on the wrench 24 whenever desired, being auto-

matically retained by the resilient bolt 51, thereby providing a handle which is always at a convenient height for manipulation.

It will thus be observed that I have invented a screw anchor which is adapted to withstand greater loads due to the provision of a steel nut embedded within the anchor and that my anchor may be installed in soil under conditions of unusual difficulty due to the provision of the novel form of socket with the projecting lugs at a greater distance from the axis of the anchor.

While I have illustrated and described a specific embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claim.

Having thus described my invention, what I claim is new and desire to secure by Letters Patent of the United States is:

In an earth anchor, the combination of a pointed anchor body with a screw flange carried by said body forming a screw anchor, a hardened steel member embedded in said body and provided with a threaded guy rod aperture, said body having a cruciform socket in its upper end, a hollow non-circular driving member for said anchor, an adapter having an upper non-circular shank fitting in said hollow driving member, and having a lower cruciform shank fitting in said socket, said adapter having an axial aperture for passing a guy rod threaded complementarily to said nut, and a transverse securing member passing through said driving member and engaging said adapter.

In witness whereof, I hereunto subscribe my name this 11 day of Oct., 1927.

ALBERT B. CHANCE.