Feb. 7, 1928. 1,658,155

J. BLACKBURN

EARTH ANCHOR

Filed Nov. 22. 1926 2 Sheets-Sheet 1

Fig. 1.

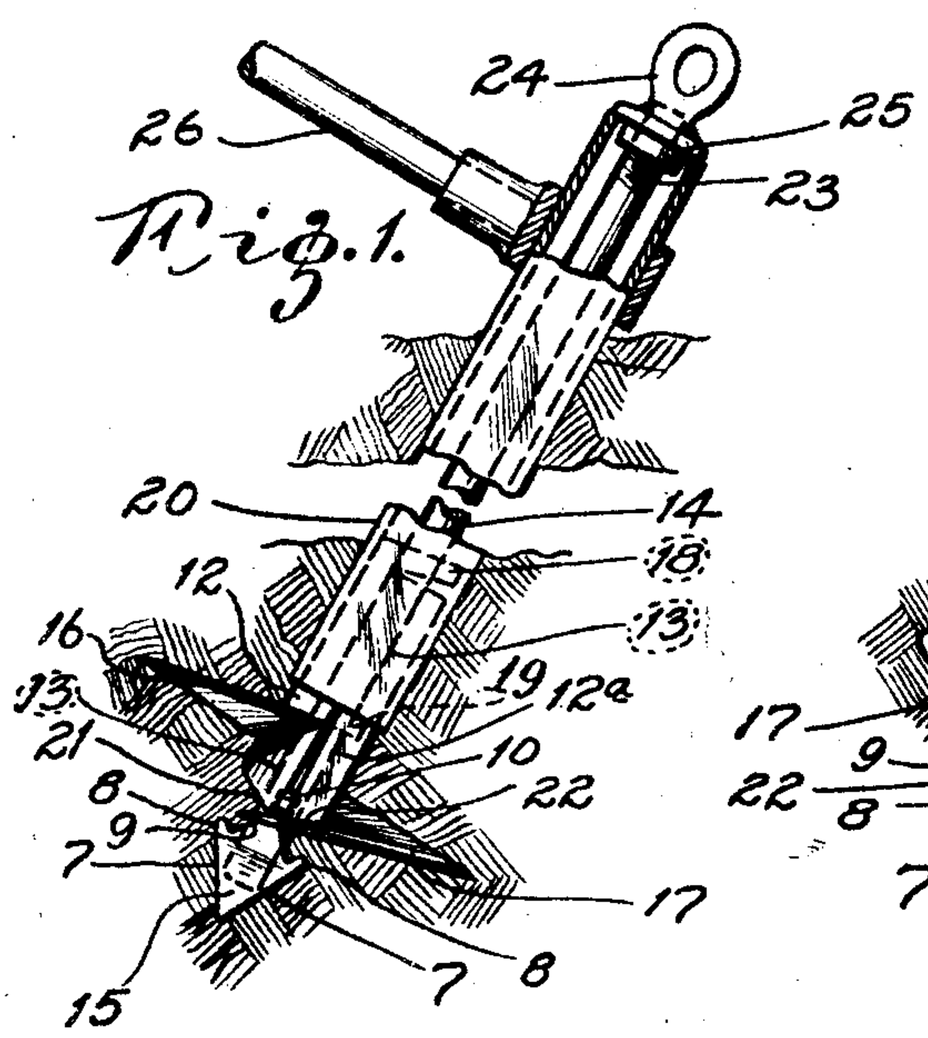

Fig. 2.

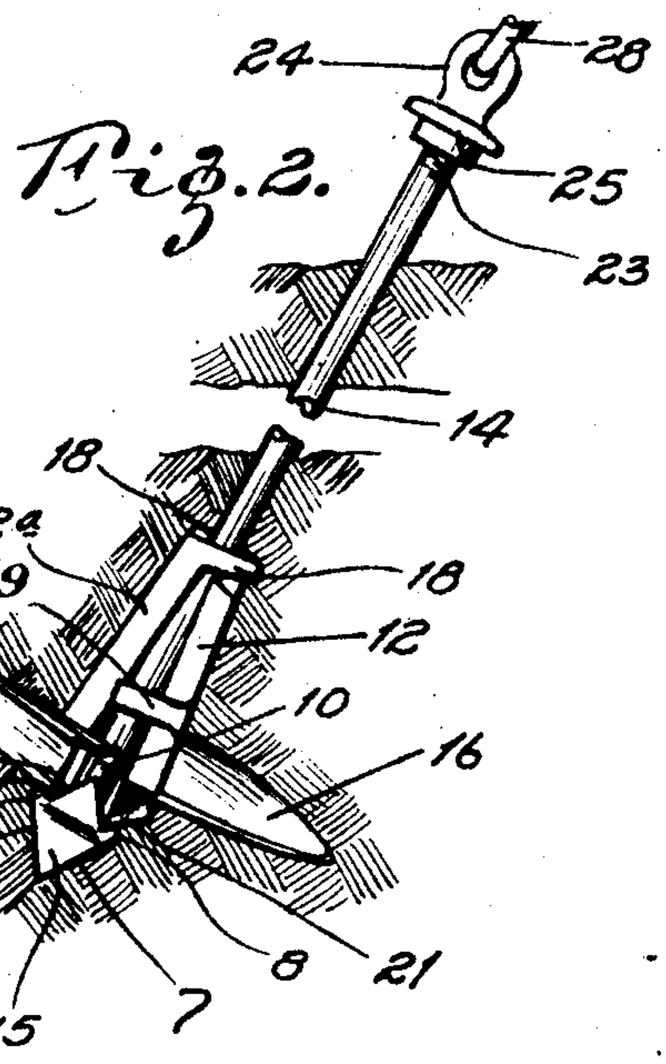

Fig. 4.

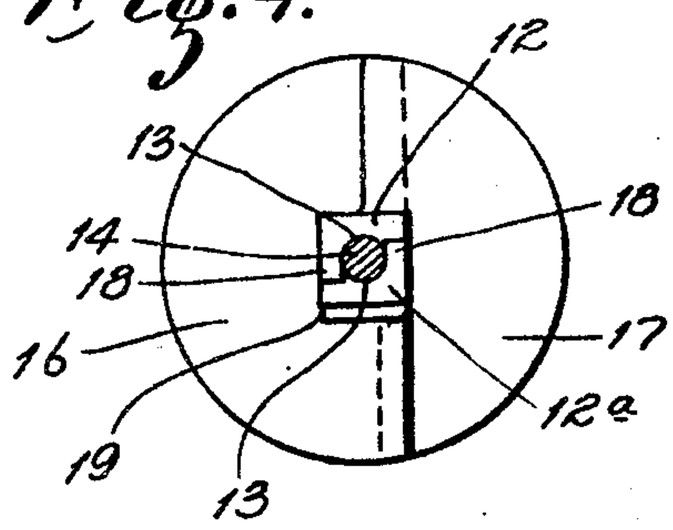

Fig. 3.

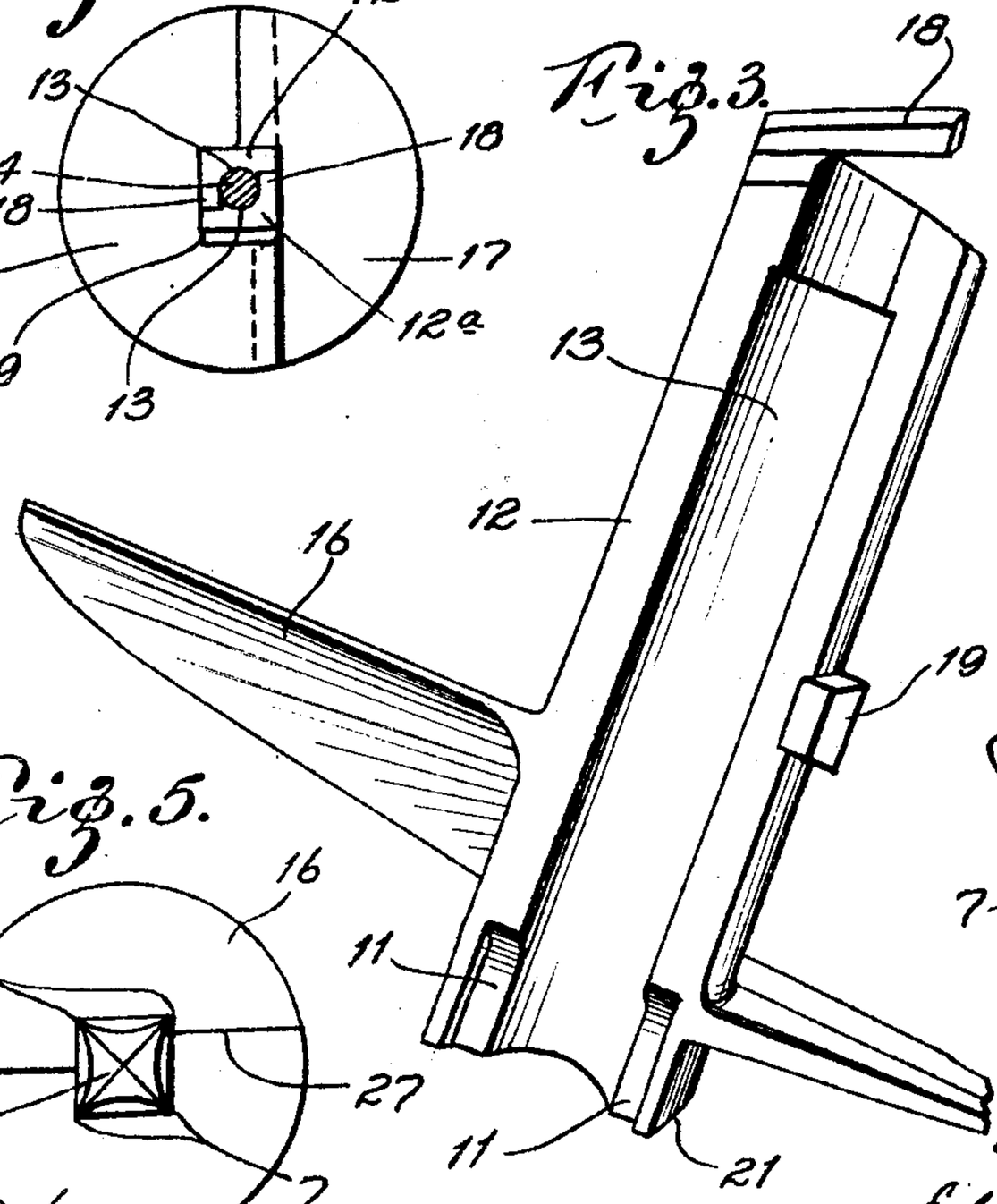

Fig. 6.

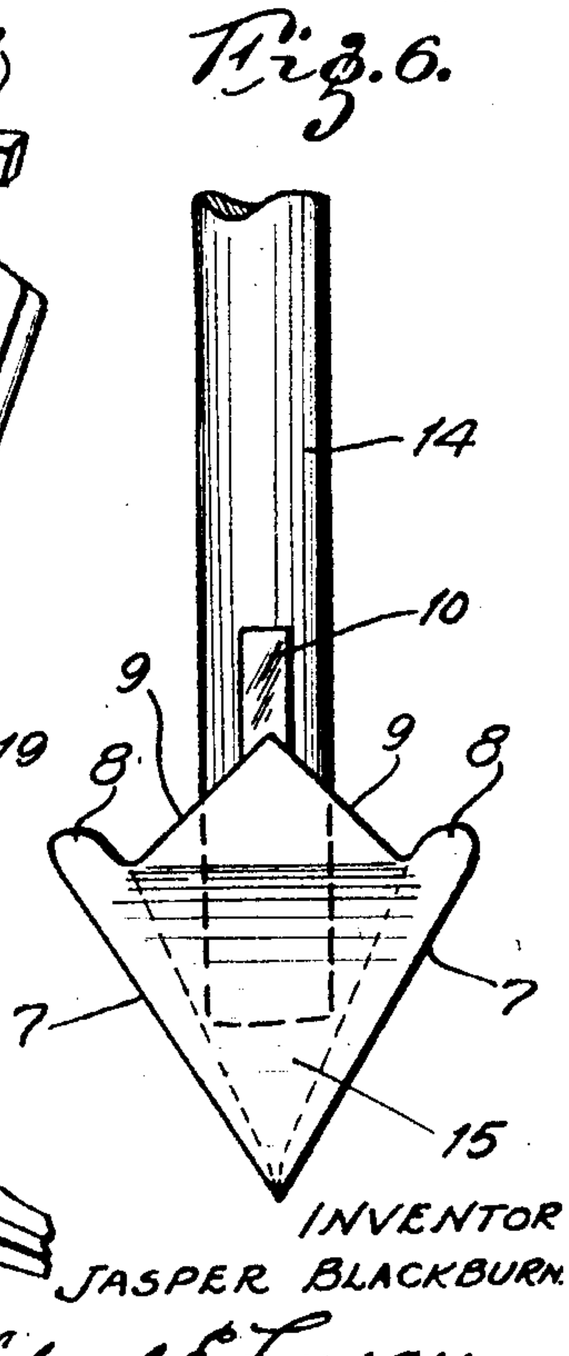

Fig. 5.

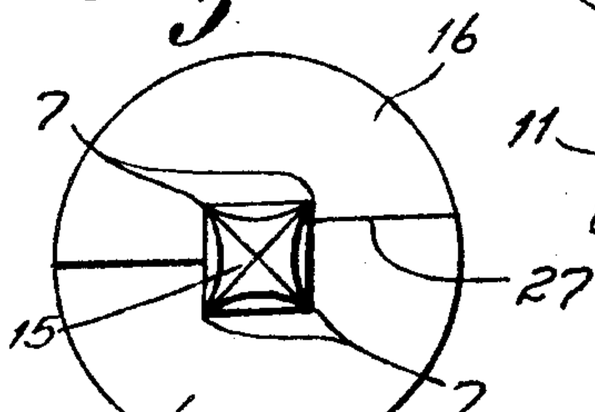

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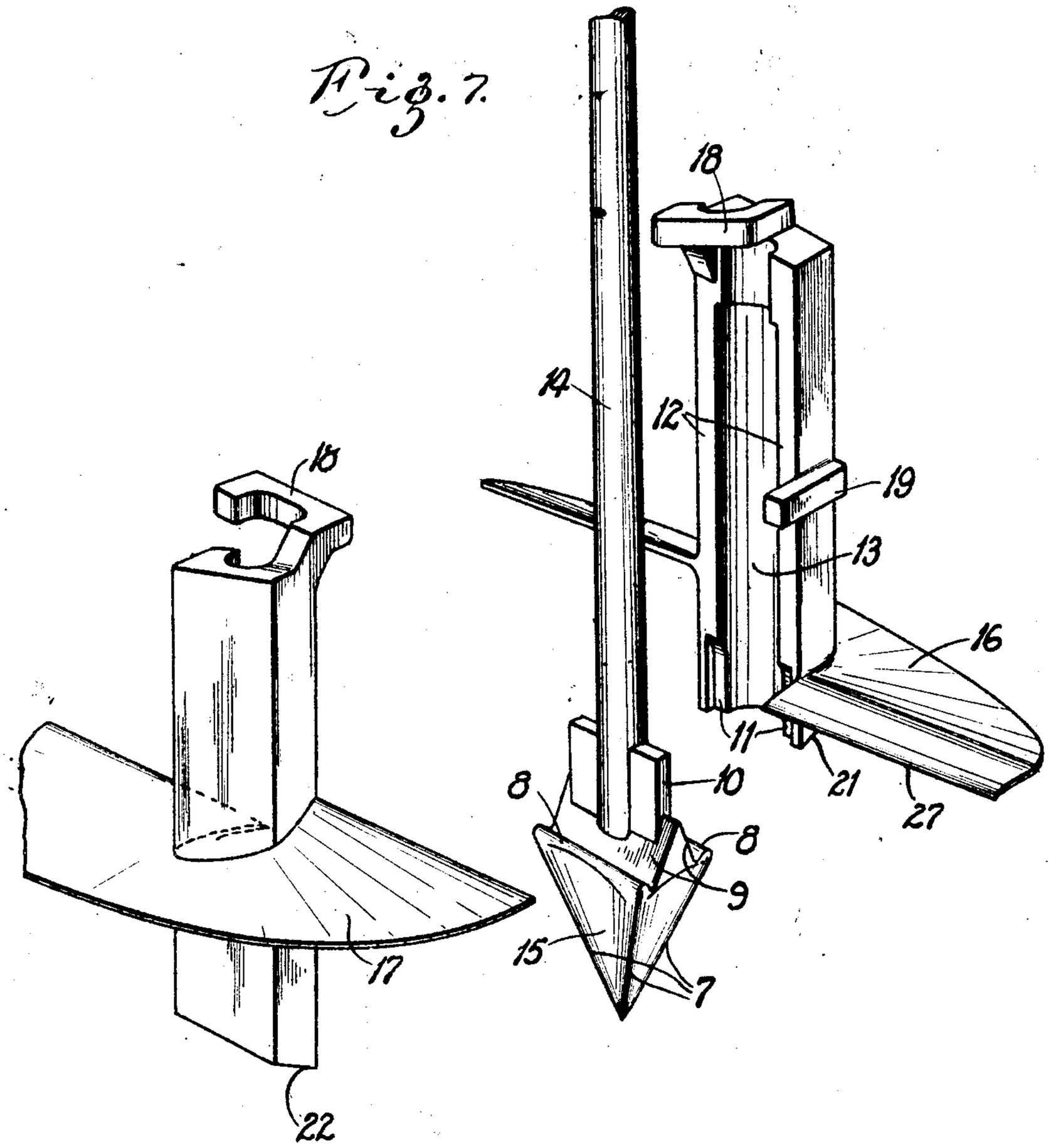
Fig. 7.



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Patented Feb. 7, 1928. 1,658,155

UNITED STATES PATENT OFFICE.

JASPER BLACKBURN, OF WEBSTER GROVES, MISSOURI.

EARTH ANCHOR.

Application filed November 22, 1926. Serial No. 149,857.

My invention relates to improvements in earth anchors, and has for its primary object an earth anchor of the screw type which can be readily inserted in extremely hard soil and which virtually has a cork screw action thereby eliminating excessive friction while placing the anchor in position.

A further object is to construct an earth anchor of the screw type in which the blade is formed in sections, which can be expanded.

A still further object is to construct an earth anchor of the screw type which is provided with expanding blades, the expanding being done by the tension set up on the guy-wire.

A further object is to construct an earth anchor of the screw type which is formed in sections, the sections being so arranged as to form a perfect helix but being separable so that the cutting edge can be readily ground and sharpened. Heretofore in earth anchors of the screw type, it was practically impossible to sharpen the edges, and especially the cutting edge, by placing the same on a grinding wheel, and consequently it required considerable driving force to secure an anchor of that type in the soil.

By my perculiar construction the cutting edge of the helix can be readily sharpened so that relatively little effort is required to secure the anchor in the soil and furthermore by my peculiar construction the tensions set up against the anchor rod is the force used in expanding the blades after the anchor has been seated.

In the drawings:

Fig. 1 is a side elevation with parts broken away and parts in section illustrating the manner of sinking my anchor into the ground;

Fig. 2 is a similar view showing the anchor after it has been installed and expanded;

Fig. 3 is an enlarged fragmental perspective view of one of the anchor sections;

Fig. 4 is a top plan view of the anchor in collapsed position and ready to be screwed into the earth;

Fig. 5 is a bottom plan view of Fig. 4; and

Fig. 6 is a side elevation of the combined point and spreader made use of.

And Fig. 7 is a perspective view of my device showing the parts assembled in disconnected relation.

In carrying out my invention I provide a point which is substantially rectangular in cross section and has the shape of a pyramid, the faces of the pyramid, however, being slightly concave so as to provide cutting edges 7. The corners of the point are provided with hooks 8, the purpose of which will be explained in detail later. Two faces of the point opposite each other are provided with a tapered surface 9, which is for the purpose of spreading the helical sections of the anchor, and with portions 10, which are designed to pass into grooves 11 formed in the shanks 12 and 12ª of each of the helical members. The helical members are provided with a central bore or grove 13 through which the anchor rod 14 passes, the lower end of the rod 14 being secured in the point 15 either by screw threading or by any other well-known means. The shank 12 has an outwardly extending helically arranged member 16, and the shank 12ª has the member 17. The members 16 and 17 form a continuous helix when the sections are together as illustrated in Fig. 1. The upper ends of the shanks 12 and 12ª are provided with hooks 18, which interlock in such a manner as to secure the shanks together, and the member 12ª is further provided with a boss 19. This boss acts as a stop for the rectangular pipe or tube 20, which acts as part of the wrench for screwing the anchor into position. The lower ends of the members, which form the helix, are provided with inclined surfaces 21 and 22 with which the hooked ends 8 are adapted to engage thereby preventing the point 15 from pulling through the members when the guy-wire is tightened. The upper end of the rod 14 is screw threaded as at 23 and to which is secured the eye 24. This eye is provided with a flange 25 which rests on the tubular member 20 and is for the purpuse of holding the tubular member 20 around the shanks 12 and 12ª during the driving of the anchor. 26 represents a wrench by means of which the entire device can be rotated.

The manner of operating my device is as follows: The rod 14 is first secured in the point 15 as before described, either by means of screw threading the same therein or by means of pins or any other manner well

known to mechanics. The helical member, together with the shanks 12 and 12a, are placed around the rod 14 with the ends 18 interlocking so that the device when assembled will be in the position indicated in Fig. 1. In this way the lugs 10 will extend into the grooves or cutaway portions 11 formed in the members 12 and 12a. The rectangular tubular member 20 is then placed over the shank or shank members 12 and 12a, which when assembled, are rectangular as illustrated in Fig. 4 thus securely holding the helical portions 16 and 17 against expansion. The eye 24 is secured in position on the upper end of the rod 14 thus firmly binding the tubular member in position after which the wrench 26 is slipped over the tubular member and the device operated or rotated in the proper direction.

The point 15, as will be noted from Fig. 5, has one edge 7 terminating at or adjacent the cutting edge 27 of the helical member 17 so that the dirt loosened during the rotation will immediately be delivered to the helix and eliminate friction, the lugs 10 entering the grooves or cutaway portions 11 prevent the point 15 from turning independently of the helix. The turning is continued until the anchor has been screwed into the earth, the proper distance, this screwing action being similar to the action of a cork screw passing into a cork. After the proper depth has been reached, the eye 24 is removed by unscrewing it from the rod 14 and the tubular member 20 removed and the eye replaced. A guy-wire 28, which has been previously attached to a telegraph pole or similar article, which is to be stayed, is secured through the eye 24 and the usual turn buckle or block and tackle used to tighten guy-wires brought into operation. This will have a tendency to pull the rod 14 upward from the surface of the earth and in so doing cause the inclined faces 9 of the point 15 to pass between the shanks 12 and 12a forcing them apart as illustrated in Fig. 2 until such time as the points or hooks 8 engage with the inclined surfaces 21 and 22, which stops all further upward movement of the rod 14 and simultaneously with the upward movement, the spreading of the members or shanks and consequently the expansion of the helical members 16 and 17, driving the last mentioned members outward and into soil, which has not been disturbed in any way by the driving downward of the anchor.

It will, therefore, be seen that the expansion of the anchor, after it has been driven into the soil, is entirely automatic in that it is accomplished only by setting up of tension on the guy-wire and, in addition to being automatic, is absolutely positive, because the expansion will continue until the hooks 8 of the point contact with the inclined surfaces, which prevent any further expansion, and therefore there can be no guess work because there will always be slack in the guy-wire, to a certain extent, during the tightening until the anchor has been fully expanded, after which the necessary staying tension can be set up.

Having fully described my invention, what I claim is:—

1. An earth anchor comprising a sectional shank, an outwardly extending helically arranged member integral with each section, a rod extending through said shank, a point carried by said rod and located below said shank, and means integral with said point for spreading the sections at their lower ends when said point is pulled upward whereby said helical members are forced into the surrounding earth.

2. An earth anchor comprising a shank divided longitudinally, an outwardly extending helically arranged member integral with each portion of the shank, a rod extending centrally and longitudinally through said shank, a point carried by said rod and located below said shank, means carried by said point and projecting into said shank whereby independent rotation of the point is prevented, and means integral with said point and adapted to pass between the sections of the shank for spreading the same at their lower ends when said point is pulled upward whereby said helical members are forced into the surrounding earth.

3. An earth anchor comprising a sectional shank, an outwardly extending helically arranged member integral with each section, a rod extending through said shank, a point carried by said rod and located below said shank, means integral with said point for spreading the sections of the shank at their lower ends when said point is pulled upward whereby said helical members are forced into the surrounding earth, and means carried by said point and adapted to engage with the underface of said shank for preventing the point from being pulled through the shank.

4. An earth anchor comprising a sectional shank, means carried by the upper ends of said sections whereby said shank can be interlocked, an outwardly extending helically arranged member integral with each section and intermediate the ends thereof, a rod extending through said shank, a point carried by the lower end of said rod and located below said shank, and means integral with said point and adapted to pass between the sections when the point is pulled upward thereby spreading said sections at their lower ends and forcing the helical members into the surrounding earth.

5. An earth anchor comprising a sectional shank, means carried by the upper ends of said sections whereby said shank can be interlocked, an outwardly extending helically

arranged member integral with each section and intermediate the ends thereof, a rod extending through said shank, a point carried by the lower end of said rod and located below said shank, means integral with said point and adapted to pass between the sections when the point is pulled upward thereby spreading said sections at their lower ends and forcing the helical members into the surrounding earth, and means carried by said point and adapted to engage with the lower end of said shank for limiting the upward movement of the point.

6. An earth anchor comprising a rod, an angular tapered point carried by the lower end of said rod, a sectional shank surrounding said rod when assembled, a helically arranged member carried by each section of the shank adjacent their lower ends, one edge of each helical member arranged to overlap an adjacent edge of the other helical member, the upper portions of each shank section being provided with hooked extensions adapted to engage with and partially surround the rod to prevent the accidental disengagement of the shank section therefrom, and means carried by the lower end of said rod and above the point for expanding the shank sections and the helically arranged members carried thereby.

7. An earth anchor comprising a rod, an angular tapered point carried by the lower end of said rod, a sectional shank carried by said rod, a helically arranged member carried by each section of the shanks, one edge of each helical member arranged to extend beyond the edge of the adjacent helical member so that said members will form a continuous helix, the upper portions of each shank section being provided with extensions adapted to engage with and partially surround the rod to prevent the accidental disengagement therefrom, means carried by the lower end of said rod and integral with the upper end of the point for expanding the shank sections and the helically arranged members carried thereby, and means carried by the point and engaging with said shanks for limiting the upward movement of said point.

In testimony whereof I have affixed my signature.

JASPER BLACKBURN.