Oct. 4, 1927. 1,644,103

F. N. BIERCE

GUY ANCHOR

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Fig. 1.

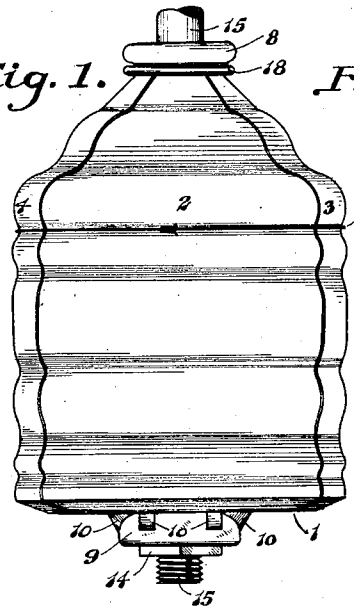


Fig. 2.

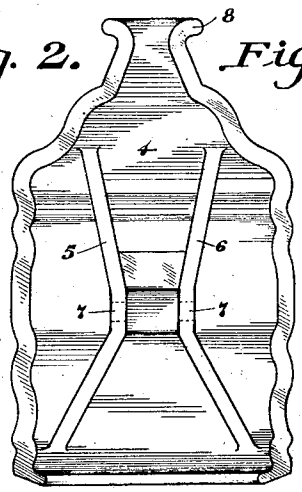


Fig. 3

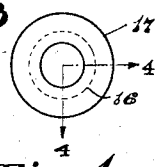


Fig. 4.

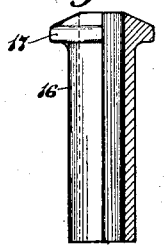


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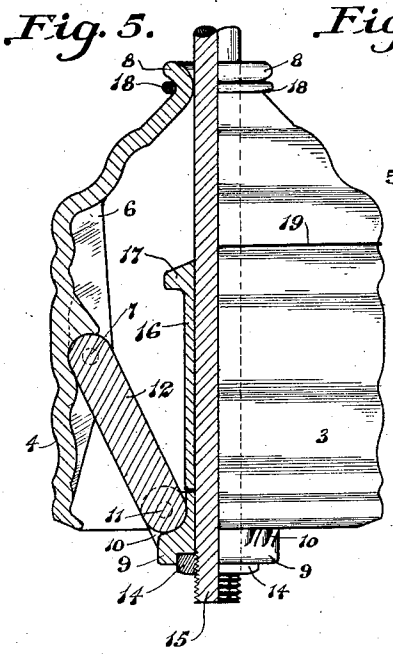


Fig. 6.

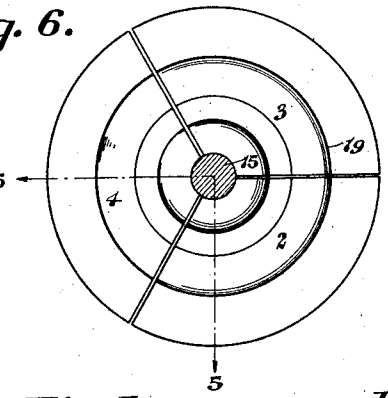


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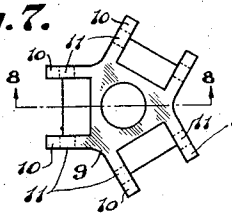
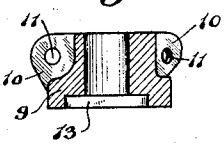


Fig. 8.



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Fig. 9.

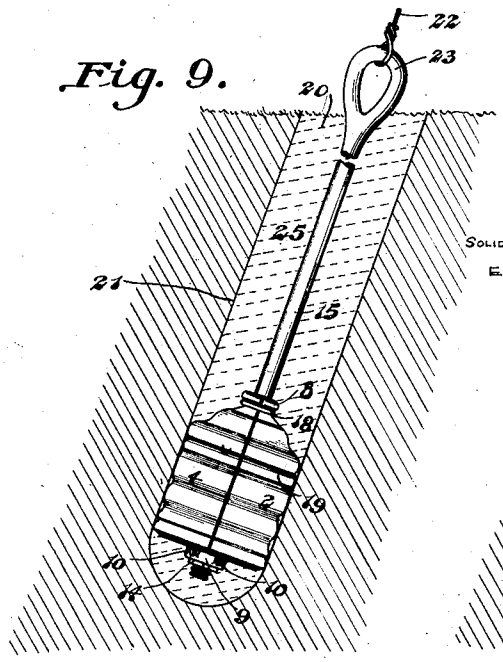


Fig.10.

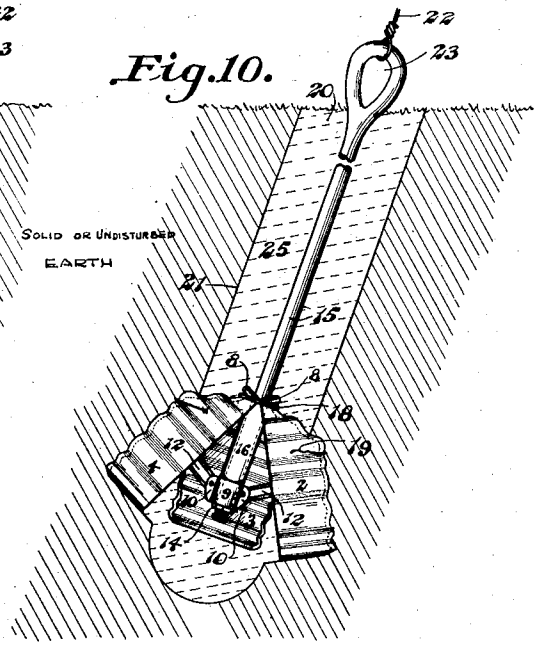


Fig.11.

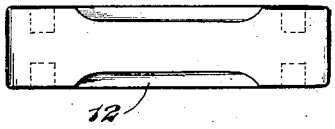


Fig.12.

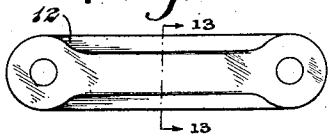


Fig.13.

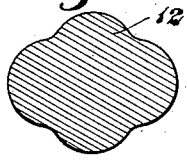


Fig.14.

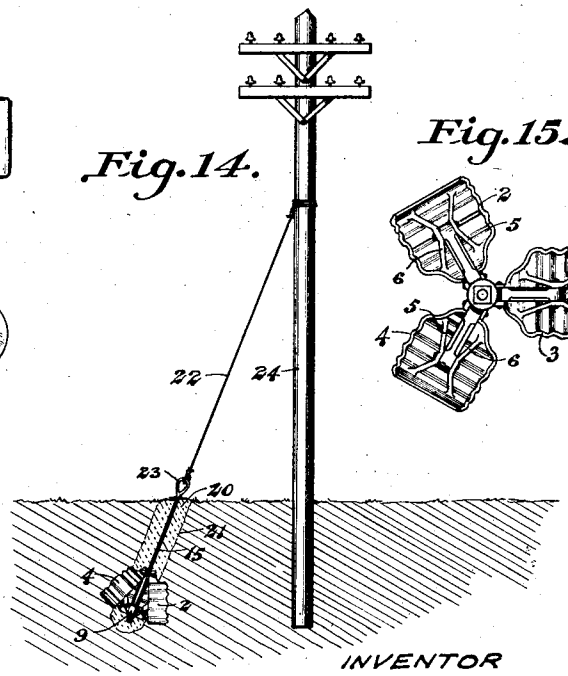


Fig.15.

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Patented Oct. 4, 1927. 1,644,103

UNITED STATES PATENT OFFICE.

FRED N. BIERCE, OF CINCINNATI, OHIO.

GUY ANCHOR.

Application filed March 22, 1923. Serial No. 626,754.

My invention relates to expansible sectional anchors connected to guy wires for anchoring poles, smoke stacks, derricks or other objects.

The objects of my invention are to provide highly efficient fastening means for guy wires; to provide an anchor which will withstand a very high strain and at the same time one that can be installed in a comparatively small opening in the earth; to provide an anchor of economical construction and of comparatively small size which maintains its anchoring position without the use of stones or other similar objects placed thereon; and to provide an anchor which will not creep upwardly through the soft earth due to the effects of water coming from heavy rains percolating down through the earth above the anchor by providing a large draining well underneath the anchor and apertures in the anchor through which this water can enter this drainage well; to provide an anchor of sectional construction adapted to enter the hole in compact form and permit the sections to spread and embed themselves in the solid walls of the hole when subjected to upward pressure from the guy wires, the entire pull of the anchor being brought to bear against the sides of the hole which are solid undisturbed earth.

My invention consists in the construction, combination and arrangement of parts as herein set forth and claimed.

In the drawings:

Fig. 1 is a side elevation of the anchor showing the upper end of the anchor rod broken away;

Fig. 2 is an interior elevation of one of the anchor sections;

Fig. 3 is a top view of spacing sleeve;

Fig. 4 is a view partly in side elevation and partly in section of the spacing sleeve on the line 4—4 of Fig. 3;

Fig. 5 is a view of the anchor partly in side elevation and partly in vertical section taken on the line 5—5 of Fig. 6;

Fig. 6 is a plan view of the anchor and a transverse section of the anchor rod;

Fig. 7 is a plan view of the coupling;

Fig. 8 is a vertical section of the coupling on the line 8—8 of Fig. 7;

Fig. 9 is a side elevation of the anchor and connecting parts in the hole with the filled and tamped earth thereon before the sections have been spread to holding position, the tamped earth and surrounding wall of the hole being shown in section;

Fig. 10 is a similar view showing the sections of the anchor spread to holding position;

Fig. 11 is a plan view of one of the links;

Fig. 12 is a side view of one of the links;

Fig. 13 is a transverse section on the line 13—13 of Fig. 12;

Fig. 14 is a view partly in perspective and partly in vertical section showing the anchor in holding position connected to a pole; and

Fig. 15 is a bottom view of the anchor in spread or holding position.

In the embodiment of my invention as illustrated and which shows a preferred construction I provide an anchor 1 comprising a shell formed of a plurality of expansible holding sections 2, 3 and 4, each section preferably having vertical side walls which taper inwardly at their upper ends and each section being preferably transversely corrugated on its surface to form alternate holding ridges and furrows. Each holding section is provided on its inner side with spaced apart strengthening and holding ribs 5 and 6 having bearings 7. The upper end of each holding section is flared outwardly to form a holding flange 8. A hollow coupling 9 having ears 10 provided with bearings 11 is pivotally connected to the expansible sections by links 12. Said coupling is preferably provided with an angular recess 13 on its lower side to partly receive and hold from turning therein nut 14 on anchor rod 15 for the purpose of salvaging said anchor rod when it is desired to discontinue the use of anchor 1. Spacing sleeve 16 is preferably mounted on anchor rod 15 between coupling 9 and the upper end of anchor 1 and is provided on its upper end with a projecting flange 17, its upper end forming a truncated cone. Said spacing sleeve serves to limit the upward movement of the coupling and inner ends of the links when the anchor has reached its limit of expansion, thereby preventing the anchor from collapsing.

The anchor is assembled ready for shipment by pivotally connecting links 12 to sections 2, 3 and 4, then spreading the lower ends of said sections and bringing the flanged ends thereof together and placing closed or solid ring 18 over flanges 8, then

pivotally connecting links 12 to coupling 9. The anchor is then brought to the contracted position shown in Figs. 1 and 5 and breakable wire 19 is secured around the sections preferable in the groove or furrow shown. The spacing sleeve 16 may then be suitably wired within the parts thus assembled when it is ready for shipment. To install in anchoring position bore a hole 25 such as illustrated in Fig. 9, insert anchor rod 15 through the top of anchor 1, through spacing sleeve 16, through hollow coupling 9 and nut 14 seated in recess 13, place the anchor in hole 25 to the position shown in Fig. 9, then tamp the earth 20 in above anchor 1, then apply upward tension on the rod whereupon the holding sections 2, 3 and 4 will spread outwardly against the side wall 21 of hole 25, thereby securely wedging itself into holding position as shown in Figs. 10 and 14. The guy wire 22 is connected to eye 23 of anchor rod 15 and is suitably connected to pole 24 or other object which it is desired to anchor.

By the expansion feature I secure the advantage of a large anchor although it can be installed in a comparatively small hole. The expansion of the anchor is in direct proportion to the amount of strain placed on the guy wire and will continue to expand until this strain is equalized by the outside pressure of the earth. The anchor will hold its position securely without the use of stones or other equivalent material placed over or around it and further will hold its position even though the hole is refilled carelessly without tamping. Under certain soil conditions it is practically impossible to dig a hole with an ordinary post hole digger and keep the hole to proper size, as for instance, when boring a hole in gravel by the time the hole is six or seven feet deep it will probably be eighteen to twenty-four inches in diameter on account of the sand and gravel caving in. By placing this anchor in a hole much larger in diameter than the anchor itself this difficulty can be overcome by thoroughly tamping the earth around the anchor and still have the full surface of the anchor and as the holding area of the anchor increases by the upward pull it will be held in place on account of the large mass of earth directly above it. In this anchor all the strain which is applied to the guy wire is transmitted through the mechanism of the anchor directly against the sides of the hole, thereby wedging any filled or loose earth between the anchor and the walls of the hole.

It will be understood that my invention is capable of considerable modification without departure from the scope or spirit thereof as defined in the claims, as for instance, the sectional shell may have a plain smooth surface or it may be tapered from bottom to top, as desired.

What I claim as new and desire to secure by Letters Patent is:

1. An anchor comprising a plurality of sections forming a shell, a ring adapted to hold said sections in pivotal relation to each other at the top, a link pivoted to each section, a hollow coupling pivoted to each link, a spacing sleeve, an anchor rod extending through said sections, spacing sleeve and coupling and a nut on said anchor rod.

2. An anchor comprising a plurality of tapered sections each having an outwardly turned flange on its upper end, a ring mounted adjacent said flange and adapted to hold the upper ends of said sections together, a hollow coupling, means for pivotally connecting said coupling to each section, an anchor rod extending through said anchor and means for holding said rod to said anchor.

3. An anchor comprising a sectional shell, each section having a converging upper end, a hollow coupling, means for pivotally connecting each section of said shell to said coupling, means for holding the converging ends of said sections substantially together and an anchor rod extending through and secured to said anchor.

4. An anchor comprising a shell formed of sections each tapering upwardly at its upper end and having an outwardly extending flange thereon, a hollow coupling, a link connecting each section to said coupling, a spacing sleeve mounted on said coupling and having its opening registering with the opening in said coupling, an anchor rod extending through said anchor, sleeve and coupling and a nut securing said anchor rod in position.

5. An anchor comprising a sectional shell having the upper portion tapered and the lower portion vertical, a hollow coupling, a link pivotally connecting each section to said coupling, a spacing sleeve mounted above said coupling, means for holding said couplings substantially together at the top, an anchor rod extending through said sectional shell, spacing sleeve and hollow coupling and means for securing said anchor rod in position relative to said anchor.

6. An anchor having a sectional shell, a coupling, means for pivotally connecting each section to said coupling, a spacing sleeve having its upper end flanged and tapered and an anchor rod extending through said sections, sleeve and coupling, and means for securing said rod in position relative to said anchor.

7. An anchor comprising a sectional shell, a hollow coupling, a link connecting each section to said coupling, a spacing sleeve having a tapered upper end, an anchor rod extending through said sections, sleeve and coupling, and means for securing said anchor rod in position relative to said anchor.

8. An anchor comprising a sectional shell, a hollow coupling, a link pivotally connecting each section to said coupling, a spacing sleeve having a flanged upper end, an anchor rod extending through said sectional shell, spacing sleeve and coupling and means for securing said anchor rod in position relative to said anchor.

9. An anchor comprising a plurality of sections, a coupling, a link pivotally connecting each section to said coupling, an anchor rod in holding engagement with said coupling and means to hold the upper ends of the sections in pivotal and slidable relation with said anchor rod.

10. An anchor adapted to be inserted into a hole and comprising a sectional shell having side walls the lower portions of which are vertical and the upper portions of which are converging and pivotally mounted, and means for spreading said sections whereby said upper and lower portions will form an inverted wedge against the walls of the hole and prevent withdrawal therefrom by an outward pull exerted on said anchor.

11. An anchor adapted to be inserted into a hole and comprising a sectional shell provided with a series of corrugations, pivotal means for holding said sections substantially together at the top, and means for spreading said sections below the top by an outward pull exerted on said anchor whereby substantially the entire outer surface wedges against the wall of the hole and prevents withdrawal therefrom.

12. An anchor comprising a sectional shell having its surface circumferentially corrugated and pivotal means for spreading the sections of said shell whereby said corrugated surface will wedge and bear against the walls of the hole in which the anchor is inserted by an outward pull exerted on said anchor.

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