Aug. 18, 1925. 1,550,276

K. J. E. NILSON

ANCHORING APPLIANCE

Filed Oct. 29, 1924 3 Sheets-Sheet 1

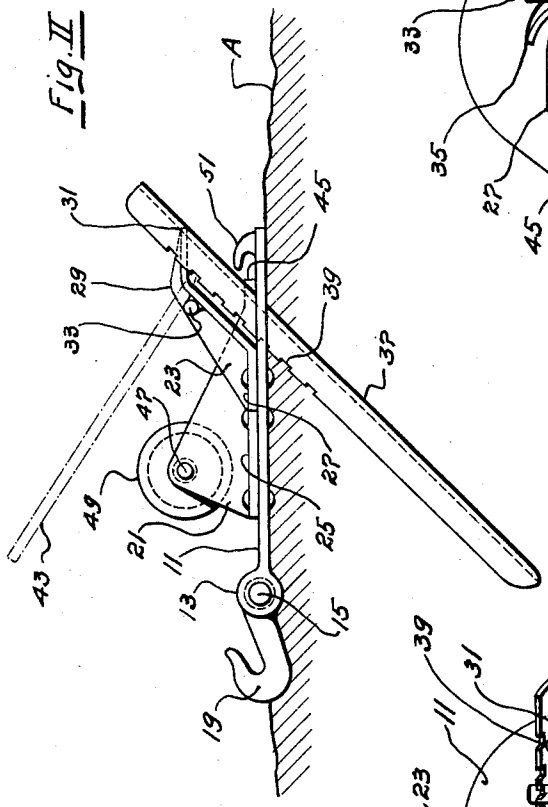


Fig. II

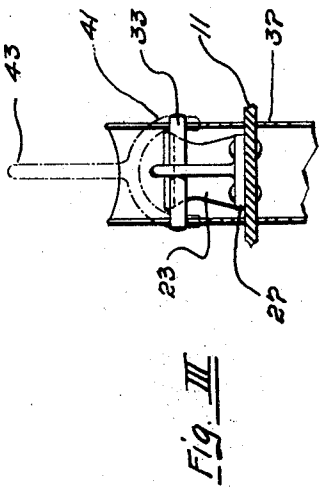


Fig. III

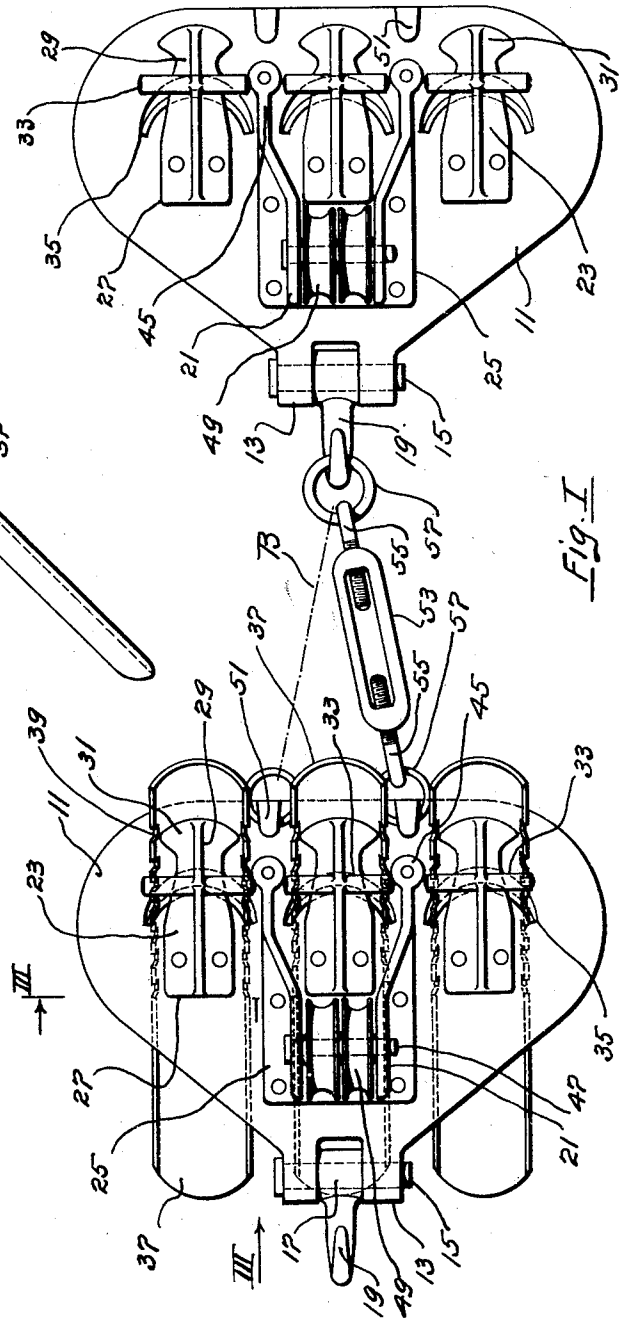


Fig. I

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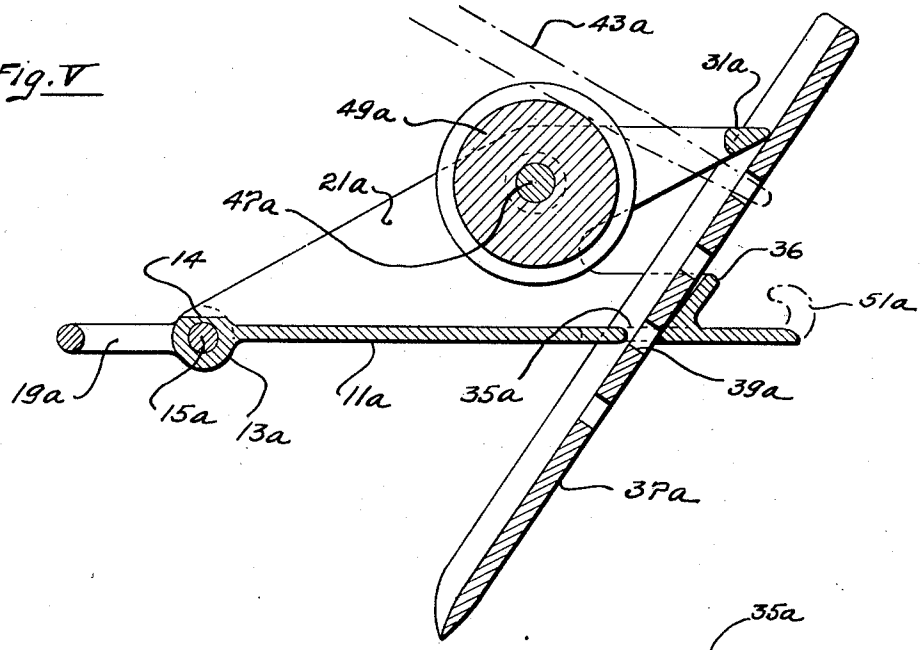
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ANCHORING APPLIANCE

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Fig. V



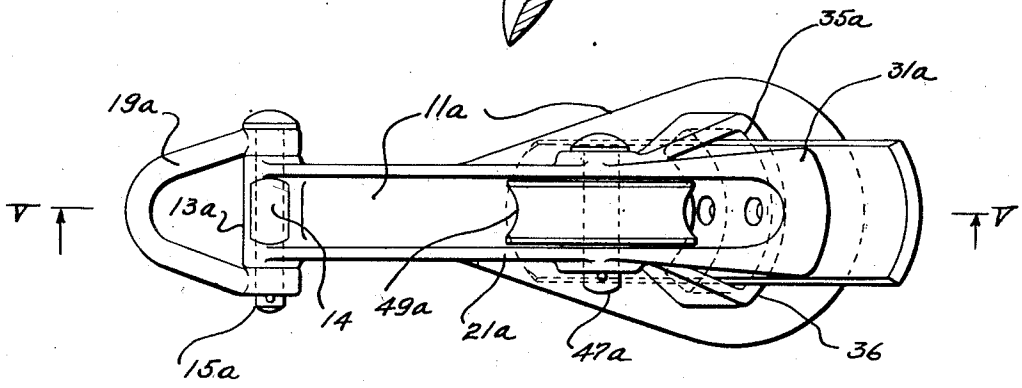


Fig. IV

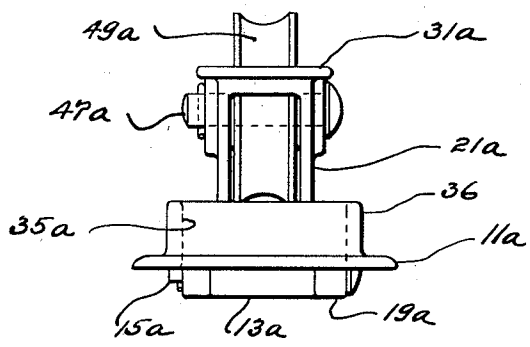


Fig. VI

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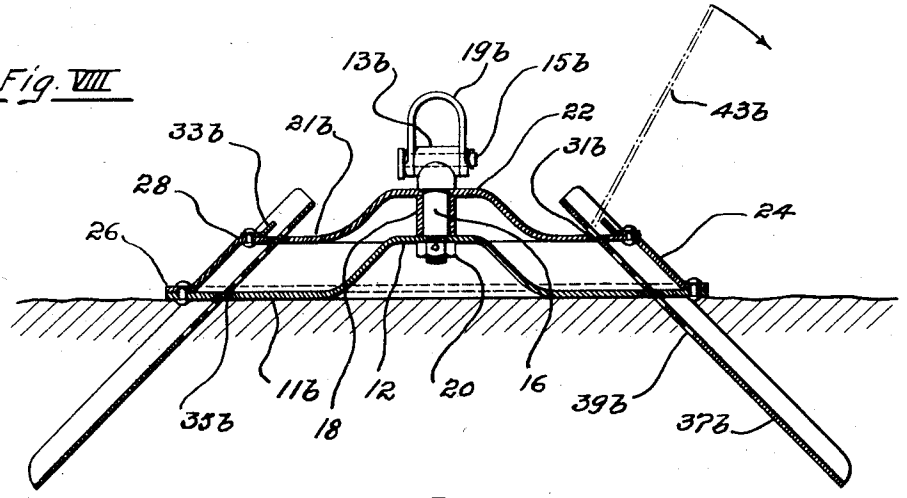
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ANCHORING APPLIANCE

Filed Oct. 29, 1924 3 Sheets-Sheet 3

Fig. VIII



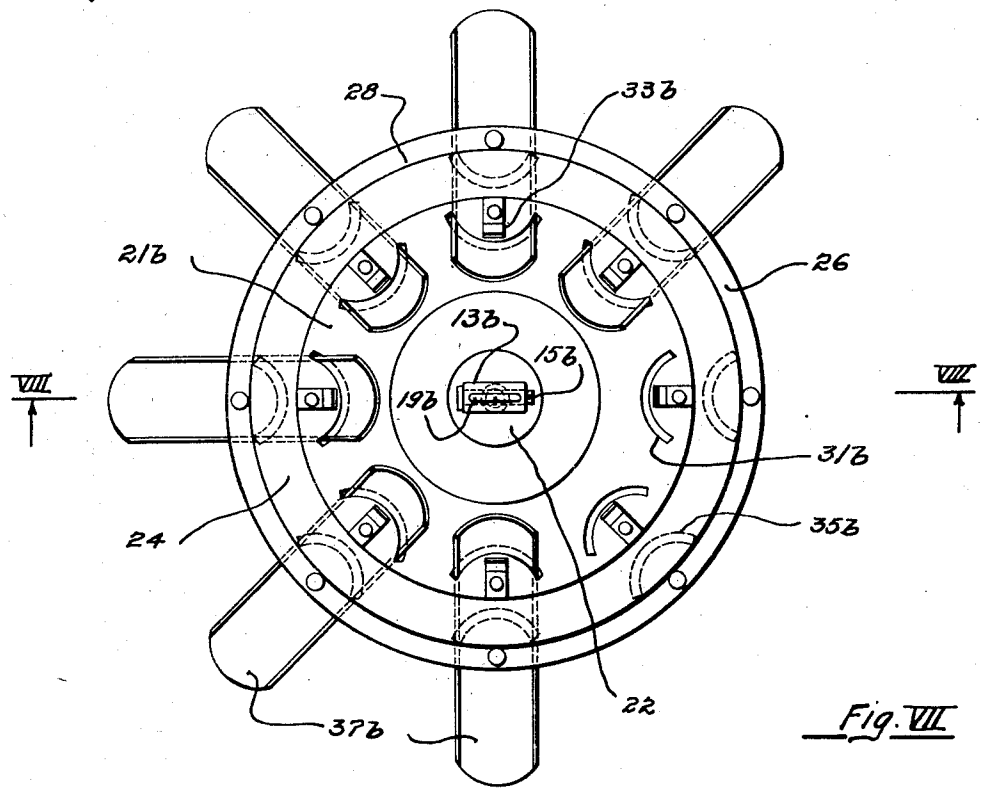


Fig. VII

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Patented Aug. 18, 1925. 1,550,276

UNITED STATES PATENT OFFICE.

KARL JOHAN ENGELBERT NILSON, OF SCHENECTADY, NEW YORK.

ANCHORING APPLIANCE.

Application filed October 29, 1924. Serial No. 746,687.

To all whom it may concern:

Be it known that I, KARL JOHAN ENGELBERT NILSON, a citizen of Sweden, and a resident of the city and county of Schenectady, in the State of New York, have invented certain new and useful Improvements in Anchoring Appliances, of which the following is a specification.

The present invention has reference to anchorage devices and pertains particularly to the portable species of the same.

One object of the invention is to provide an improved appliance of the character described, consisting of a self-contained entity including a member set upon the surface of the ground and embodying means disposed at an incline against an imposed load-stress, being adapted to guide at an angle into the ground a trough-shaped element so constructed as to present its inner face towards the direction of the stress.

Another object is to produce an appliance of the kind referred to, wherein the guiding means for said element is branched so as to have engagement with the latter at points located in diagonally offset relation one to the other.

A further object is the provision in an appliance of the nature set forth, of a rotatable instrumentality for passing thereabout a flexible medium transferring to the said member and element the imposed load.

Still another object consists in producing an appliance of the type specified, the anchorage power whereof can be increased by the employment of a plurality of spaced-apart driven elements arranged either laterally or angularly with relation to each other.

A still further object resides in providing an appliance of the species mentioned with means enabling several members to be connected up serially in order to assist one another in resisting the load-stress.

A general object is the production of an appliance of the class alluded to, composed of few, simple, strong and durable parts; not liable to get out of working order; amenable to economical manufacture; easily put together or taken apart; and which will effectively resist an imposed load-stress, besides being readily removable after use.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention consists of the novel combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims, and illustrated on the annexed drawings, wherein like parts are designated by the same reference characters throughout the several views.

Generally described, the invention under consideration includes in its organization a base-member designed to be laid flatwise upon the ground, being of spread-out construction so as not to sink down thereinto. Rising from this member is a support forming therewith inclined guiding means for one or more elements capable of being driven into the ground at an angle against the direction of an imposed load-stress. A sheave is rotatably sustained by the support in a manner to enable a load transmitting rope to be passed therearound. Each of the aforesaid elements is provided with a suitable engagement means with which is adapted to coact the free end of a pry-bar having its fulcrum upon the support. Means are also supplied with the member which may be utilized either for applying thereto other load carrying mediums, or for the purpose of coupling up two or several of the anchoring appliances serially one to the other in order to resist stresses too heavy to be withstood by one of them singly.

The advantages of the invention as here outlined are best realized when all of its features and instrumentalities are combined in the one and same structure, but, useful devices may be produced embodying less than the whole.

It will be obvious to those skilled in the art to which the invention appertains, upon becoming conversant with the details thereof, that the same may be incorporated in the several different constructions. The accompanying drawings, therefore, are submitted merely as showing the preferred exemplifications of the invention.

In the said drawings:—

Figure I is a top plan view representing one species of the anchoring appliances

relating to the subject-matter of this invention, two of which are shown connected up in tandem arrangement;

Fig. II is a side view of one of the appliances illustrated by the preceding figure;

Fig. III is a partial section taken on the line III—III of Fig. I, looking in the direction pointed out by the arrows;

Fig. IV is a top plan view illustrating a simplified construction of this appliance;

Fig. V is a section taken on the line V—V of Fig. IV looking upwardly in the direction of the thereto appertaining arrows;

Fig. VI is a side view, looking from the right towards the left of Fig. V;

Fig. VII is a top plan view of another modified form of the invention; and

Fig. VIII is a section taken on the line VIII—VIII of Fig. VII looking in the direction of the arrows.

Referring now to the annexed drawings for a detailed description of the type of the invention illustrated by Figs. I–III inclusive, the numeral "11" denotes a base-member, spread out plate-like in a horizontal plane, so as to lie superimposed upon the surface A of the ground, without sinking too deeply thereinto. In this embodiment of anchoring device, said member 11 is shown as being substantially heart-shaped, and the same is provided at its smaller or narrower end with a pair of ears 13. Between these ears is hingedly secured as by a pintle 15, the eye 17 of a hook 19 to which can be attached a flexible medium, such as a chain or cable (not shown) capable of transmitting an imposed load or stress to the base-member 11.

Rising from about the middle of the said member, are supporting means, consisting in the present exemplification of the invention of plural parts 21, 23, of which the former extend in a forward direction, while the latter reach rearwardly. Both species of supports can be affixed, as by riveting, to the member 11 through their basal portions 25, 27, respectively. Each of the rear supports comprises an upwardly projecting leg 29 with which is conjoined a broadened toe 31, the outer edge whereof, as shown, is curved segmentally. In proximity to the juncture of said leg with its toe 31, extend sidewise from the support 23, arms 33, the purpose whereof will be later on referred to.

Directly beneath the before-named supports, there are formed with the member 11 arcuate openings 35, the inner sides whereof conform to the outer contours of the toes, but are in offset relation thereto. Received in the last mentioned openings and bearing with their inside faces against the said toes, are elements 37, adapted to be driven into the ground by blows applied to their upper extremities. From the foregoing it will be understood that the openings 35 and the toes 31 thereabove, constitute a means which by virtue of the diagonal arrangement thereof, guides said elements in a straight downward inclination relatively to the plate 11 or the ground thereunder. The angle included between the front side of the elements 37 and the under face of the plate-member is acute in a direction against a pulling force exerted upon the hook 19. It will be perceived that transversely the said elements are trough or channel shaped in section, affording an effective resistance against the soil in front thereof, which has a tendency to pack solidly in advance of them. At 39 it is indicated that the opposite side edges of these elements are provided with notches constituting means engageable by the lower forked ends 41 of a pry-bar or lever 43, shown by dot and dash lines in Figs. II and III. This bar is made to fulcrum upon the arms 33 projecting from the sides of the supports 23, when it is desired to extract the elements from out of the ground. The advantage of having a plurality of such elements, is that it not only affords a proportionately greater area of resistance, but also in the event that one of the elements encounters an immovable or unyielding obstruction in or below the ground's surface, the remaining elements may still be driven thereinto, without necessitating a change in the location of the entire base member.

The forward supports which include upstanding flanges (21) have the latter merging into the basal-portions 25 at a lower level, in rear of the member 11, as represented at 45. Rotatably mounted upon a headed stud 47, supported in the aforementioned flanges, is a revoluble instrumentality, which in the present embodiment of the invention consists of a pair of sheaves or grooved pulleys 49, that may also be considered as anchorages for a load-stress transmitted to the base member. A pliable medium, such as the ropes pertaining to a block and tackle (not shown), can be passed around these sheaves in order to move a desired object.

A pair of hooks 51 are shown as extending upwardly inward of the base member 11, from its rear edge intermediate of the guides for the elements 37 thereof. For the purpose of increasing the resistance against particularly heavy stresses, two or more of these anchoring appliances can conveniently be coupled up in tandem fashion, as depicted by Fig. I. To this end, shackles composed each of a turbuckle 53 and eyebolts 55 having rings 57 at their free extremities, are placed so that one of these rings takes over one of the rear hooks 51, while the other ring engages with the main or front hook 19. For the sake of simplicity, only one shackle has been shown in Fig. I, a second one being merely indicated

by a dot and dash line B. But in practice, it is advisable to use a pair of such shackles in conveying relation from the spaced-apart rear hooks on one member, to the single front hook on the other or following member. An arrangement of this kind may advantageously be employed for house-moving or when it is required to pull up heavy boat hulls on land.

In the modified constructions of anchoring appliances illustrated by Figs. IV to VIII inclusive, all parts substantially the equivalent of those already described, are designated by the same reference characters to which letter exponents have been suffixed.

Referring first to Figs. IV, V and VI, it will be observed that from the base 11^a extends up a housing 21^a which combines both the front and rear supports of the structure hereinabove described. The upper broadened guide part corresponding to the toe 31 of the previous type of device, is here formed by a bridge 31^a reaching between the walls of the housing 21^a, at the rear thereof. An arcuate opening 35^a in the base-member 11^a, constituting the lower guide, is in this instance represented as surrounded by a reenforcing rib 36. The latter and the bridge 31^a conform with their curvatures to the inner and outer faces respectively, of a single driven element 37^a, and serve analogously to the species of the device first explained, to cause said element to follow a straight but inclined path into the underlying soil or ground. This element is similarly designed to resist a pull upon a bail 19^a hingedly connected to the member 11^a by a pintle 15^a passing through a boss 13^a formed with the front end of the said member.

It will be noticed that the top side of the boss 13^a is cut away or flattened as at 14. This is done in order to afford clearance for the lower bight of a rope (not shown) led around a grooved sheave 49^a, of which one unit is shown. The latter is revolvable upon a pin 47^a carried at its ends in the walls of the housing or support 21^a. The upper part of the said sheave 49^a is in this exemplification of the invention, utilized as the fulcrum for a pry-bar 43^a the shorter leverage end whereof is made to engage, one at the time, in apertures 39^a provided through the middle of the element 37^a, when operated to extract the latter out of the earth or ground.

In conformity with the earlier described type of the invention, this simplified species thereof, may also be supplied with a rear-hook, as denoted by dot and dash lines at 51^a (Fig. IV) so as to enable the coupling up of one or more of these devices in series, as well. A structure of the nature last referred to, is particularly desirable as an addition to the tool-equipment of an automobile or a self-propelled truck, for extricating a vehicle of this kind when stuck in a mud-ditch or rut in the road. Moreover, it is plain to be seen that this simple and light appliance is also convenient to carry aboard a small motorboat or canoe for use at such times as it is required to pull the same up, or anchoring it to the shore.

From the modification of the invention depicted by Figs. VII and VIII, it will be observed that the base member consists of a circularly-shaped plate 11^b having its central part raised as at 12. The housing 21^b which in a like manner is composed of a discoidal plate, is similarly offset in an upward direction in the middle thereof, as denoted at 22. The rim portion of the said housing or upper plate 21^b, is flaring outwardly downward as indicated at 24, and the margin 26 of this rim which constitutes a flange, is secured to the edge of the base or lower plate, by means of rivets, as shown. Adjacent to the inner periphery of the flange 26, the member 11^b is provided with a plurality of circumferentially spaced arcuate openings 35^b, which are disposed in sidewise staggered relation to other similar openings 31^b formed in the upper plate 21^b, in proximity to a shoulder 28 intervening between the body thereof and its flaring side 24. Driven elements 37^b inserted through both sets of the beforementioned openings, have their side-edges in guiding engagement with the inner face of the flaring portion 24. From the foregoing it will be realized, when all, or most of these elements are driven into the ground, that due to the sidewise spread of the latter below the former in every direction, a resistance of considerable magnitude is presented against stresses acting from either side, or lifting upwardly thereon.

At 33^b are indicated obtusely angular clips fastened to the housing member 21^b intermediate its shoulder 28 and the adjoining edges of the upper guide openings 31^b. Each of these clips affords a fulcrum for a pry-bar 43^b the lower free end of which is capable of engaging either one of the apertures 39^b in the elements 37^b, when drawing the same out of the ground. The means to which it is intended to make fast the stress transferring mediums, cables, chains or rods, consist in this as well as in the previously described structure, of a bail or equivalent contrivance 19^b jointed to a clevis-like hub 13^b by a pintle or similar fixture 15^b. In this case, the hub 13^b may be formed with a shank 16 passing through both of the raised portions 12 and 22 of the members 11^b and 21^b, respectively. A ferrule 18 interposed between the aforementioned portions ties the same rigidly to-

gether when a nut 20 taking over the lower threaded end of the shank 16 is tightened. It is also contemplated to make the said shank circling in the ferrule 18 so as to enable the bail 19[b] to adjust itself to the direction of the stress or load applied thereto.

An anchoring device constructed in accordance with the principle disclosed by Figs. VI and VIII is especially adapted for the mooring of air-ships and balloons; for life-saving stations in rescuing people or transferring cargo from a vessel which is either stranded or unable on account of shallow water to approach the shore. Furthermore, it is conceivable that the appliance represented by the last named figures may also be employed for holding down the guy or stay ropes pertaining to hoisting cranes and derricks.

While certain preferred embodiments of this device have been shown and described, it will be understood that changes in the form, arrangements, proportions, sizes and details thereof may be made without departing from the scope of the invention as defined by the appended claims.

Having described my invention, what I desire to secure by Letters Patent and claim, is:—

1. An appliance of the class described, including a plate-like member serving as an anchorage for a stress-transmitting medium and adapted for superimposition flatwise upon the surface of the ground, said member being provided with an opening therethru, means associated with the member spaced therefrom in offset relation to said opening, the latter and said means affording a guide inclined relatively to the direction of the transmitted stress, and a broad faced element designed for driving into the ground guided by the said means and the said opening.

2. An appliance of the class described, including a member having a flat base adapted to be laid upon the ground, being provided with an opening therethrough, said member constituting an anchorage for a load-stress transmitted thereto, a support rising from the member having a part affording in conjunction with said opening guiding means forming an acute angle relatively to the direction of the stress applied, and a trough shaped element in guiding engagement with said means capable of being driven into the ground to hold the said member in its assigned position.

3. An appliance of the class described, including a spread-out member designed to be superimposed upon the ground's surface, inclined guiding means associated with said member, a rotatable instrumentality carried by the latter affording an anchorage for a load-stress transmitted thereto, and an element guided by said means adapted to be driven into the ground.

4. An appliance of the class described, including a laterally and longitudinally spread-out member adapted to be laid upon the ground's surface, a support embodying inclined guiding means carried by said member, an element guided by said means designed to be driven into the ground at an angle relatively to the direction of an imposed load-stress, and other means with said support affording a fulcrum to a lever engageable with said element for extracting the same from the ground.

5. An appliance of the class described, including a member having a plate-like base adapted to be set flat upon the ground, an inclined guide rising from the rear of said member, a sheave rotatably carried thereabove in advance of said guide, and an element designed to follow the latter capable of being driven into the ground at an angle relatively to the direction of a load-stress applied to either the member, said sheave or both.

6. An appliance of the class described, including a plate-like member adapted for placing flatwise upon the ground and having an opening therein, guiding means rising from said member terminating in a portion offset diagonally from said opening, an element guided by said means and the opening designed to be driven at an angle into the ground, and attachment means in front and rear of the said guiding means disposed below the latter substantially in the plane of the member, said attachment means being capable of receiving and transmitting a load-stress applied to the said member.

7. An appliance of the class described, including a member designed for placing flatwise upon the ground, an element adapted to be driven into the latter so as to resist a load-stress transmitted to said member, and means having parts diagonally offset with relation one to the other engaging opposite sides of said element, being capable of guiding the same into the ground at an acute angle with respect to the direction of the applied load-stress.

8. An appliance of the class described, including a plate-like member adapted to be laid flatwise upon the ground and provided with a plurality of openings, elements designed to be driven into the ground through said openings, the latter being disposed in sidewise spaced-apart arrangement, means located in offset relation to the openings guiding said elements individually at an inclination into the ground, and an attachment on said member for a medium transmitting a load-stress thereto.

9. An appliance of the class described, including a plate-like member adapted to be

set flatwise upon the ground and having formed therein a substantially crescent-shaped opening, a support extending up from said member provided with a curved portion offset rearwardly of said opening, the latter and said portion constituting an inclined guide, a trough-like element engaging said guide capable of being driven into the ground, the inner face of said element bearing against the said portion while the adjacent lower part of the element is received in the said opening, and an attachment located forwardly of said guide capable of receiving a load-stress transmitted to the said member.

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