

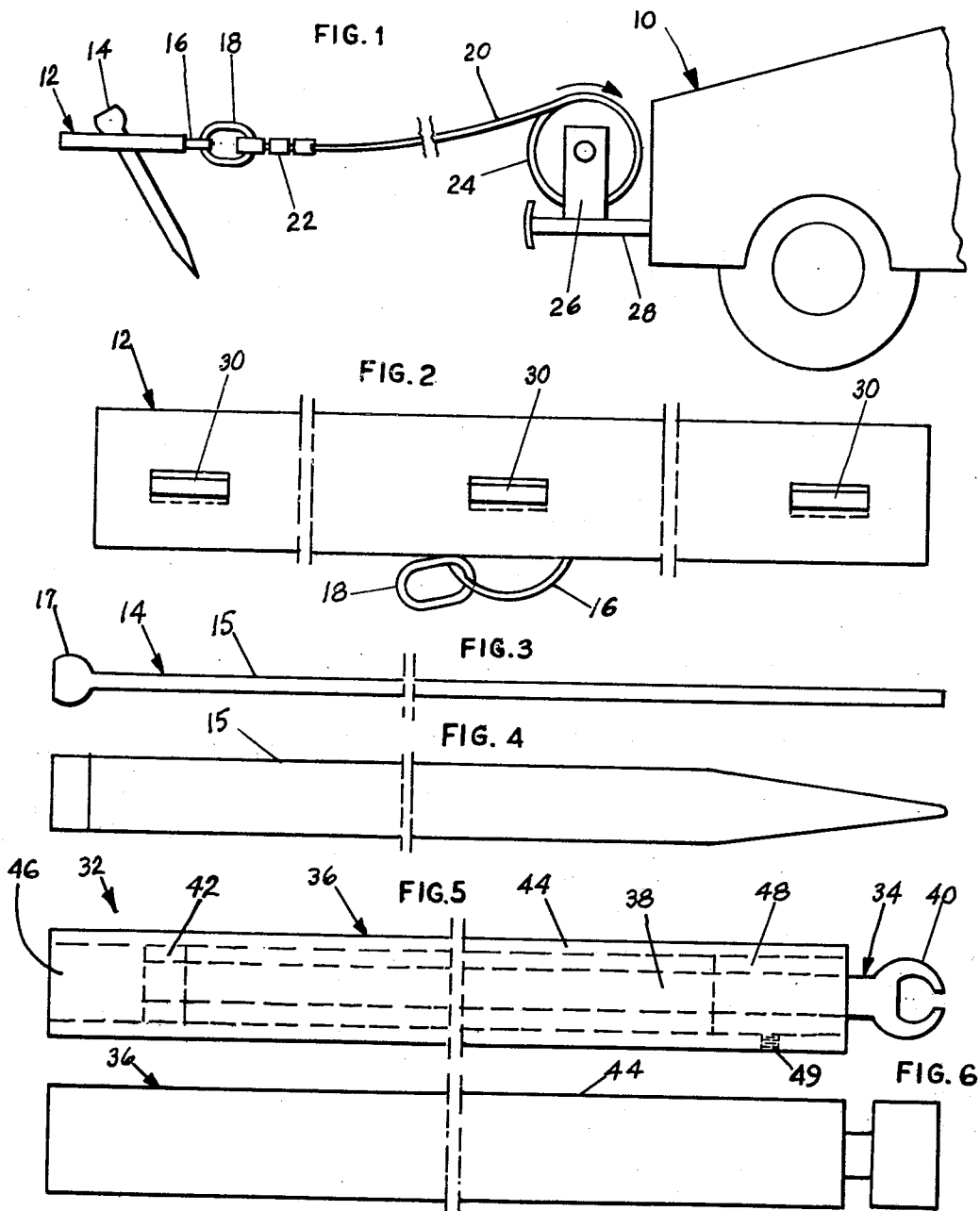
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W. S. ETTINGER

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ANCHORING SET

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ANCHORING SET

William S. Ettinger, Brookings, Oreg.
(Rte. 1, Lenore, Idaho 83841)

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3 Claims

ABSTRACT OF THE DISCLOSURE

An anchoring set is provided consisting of an anchor plate, spikes and a slide hammer, specifically constructed for use with one another, and adapted, among other uses, for pulling automotive vehicles out of stalled conditions.

The slide hammer is constructed to be slid into and out of snugly embracing relation to a spike head so it can be used for driving the spikes into the ground and for later withdrawing the spikes from the ground. The anchor plate is formed with apertures through which the spike shanks pass comfortably but snugly.

While the anchorage is intended primarily to assist in pulling stalled vehicles out of mud or snow and for similar service, it may be used for permanently anchoring stay wires or cables. In the latter case replacements would have to be provided for the spikes and the anchor plates put into service, but the slide hammer would continue in use indefinitely.

This invention relates to anchoring sets adapted to be carried on a vehicle for use in pulling the vehicle out of stalled conditions in mud or snow, and to be reclaimed and packed away for future use after the vehicle has been extricated.

The invention is highly useful in mountainous country, where the snow problem on the highways is spotty, becoming progressively more severe with increase of altitude, and being especially troublesome on upgrades.

The invention is particularly useful for back-road and off-road operations, such as logging operations, in which mud holes, snow drifts and steep grades, with low traction, are all encountered again and again.

It is common practice to provide vehicles used under any of the above-mentioned conditions with a cable and a winding drum, together with suitable drum driving means, such as a geared-down electric motor, or drive connections from the vehicle motor, or a removable crank in combination with reducing gearing and a pawl and ratchet drive.

Quite frequently a tree may be available for anchorage, but since the availability of a suitable tree cannot be depended upon, a compact and effective anchoring set, capable of using the ground for temporary anchorage, is extremely useful.

It is accordingly a primary object of the invention to provide an anchoring set which comprises (a) an anchor plate having spike receiving apertures through its body, (b) a plurality of spikes whose shanks are specifically formed to pass freely but snugly through any selected aperture of the anchor plate, and which have enlarged, horizontally extending heads of uniform vertical cross-section, together with (c) a slide hammer having (1) a driving member specifically formed at its lower end to embrace and fit upon a spike head, so that it can be slid onto and off of a spike head at will and an anvil member at its upper end, together with (2) a pounding member having upper and lower hammer heads, the first for percussively striking downward against the anvil member for driving a spike into the ground, and the other for percussively striking upward against the anvil member for withdrawing a spike from the ground.

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The elements of the set are not necessarily limited to the uses outlined above. Where a brace wire anchorage for a power line post or tower is required, for example, the anchor plate and spikes may be left permanently in place by a power line crew and replacement plates and spikes may advantageously be carried on the vehicle for future use. There are many other fields of use, including anchorages for home antennas, clotheslines, bridges, pontoons, etc.

Neither is it essential, when using the set for anchorage in moving a stalled vehicle, that a winding drum be provided. A suitable pulley and cable arrangement can serve between the anchor or, as it is sometimes called, "the dead man," and the bumper of a car, to provide the required mechanical advantage for enabling the car driver, by his own exertion, to move a heavy vehicle.

Most desirably, the anchor plate, the spikes and the hammer in retracted condition, are all of closely comparable length, so they can be packed and kept together conveniently and compactly in a container of appropriate size and shape.

Other objects and advantages will hereinafter appear.

In the drawing forming part of this specification:

FIGURE 1 shows in side elevation a fastened down anchor plate appropriately connected to a winding drum on a motor vehicle;

FIGURE 2 is a plan view of the anchor plate, this figure and FIGURES 3 to 7, inclusive, being on a substantially larger scale than FIGURE 1;

FIGURE 3 is a side view of one of several spikes constituting elements of the set, and each suitable for use with the anchor plate and slide hammer;

FIGURE 4 is a plan view of the spike of FIGURE 3;

FIGURE 5 is a side view of a slide hammer suitable for use with the anchor plate and spikes shown; and

FIGURE 6 is a plan view of the slide hammer.

In FIGURE 1 the anchoring elements of the set are shown as having been anchored to the ground and made ready for use in pulling a motor vehicle 10 out of a stalled condition. These elements include an anchor plate 12 and three spikes 14 (one shown). The plate 12 has integral with it, in the plane of its body and midway of the front face, a fixed ring member 16, and interlocked with the ring member 16, with freedom for relative movement but not for separation, a link 18.

A cable 20, which forms no part of the invention, is provided at one end with a snap fastener or hook 22. The snap fastener 22 may be conveniently connected to, and disconnected from, the link 18, even though the ring member 16 is pressed down hard against, or even into, the ground. The opposite end of the cable may be attached in any suitable manner to a winding drum 24. The drum 24 is mounted for rotation about a horizontal axis in a frame 26, the frame being fixedly or detachably supported on bumper brackets 28 (one shown) at the front of the vehicle. The drum 24 may be operated through reduction gearing from the vehicle motor or from an electric motor. Alternatively, the drum may be operated step by step from a removable crank, through pawl and ratchet mechanism and reduction gearing. Details of the drum drive are not shown because they form no part of the invention, and there is a wide choice of well understood, conventional driving means. The drum may, in fact, be omitted and expedients such as block and tackle, a chain hoist, a "come along" or a jack designed for pulling may be utilized for connecting the anchor plate to the front bumper of the vehicle or to any other heavy object which requires to be moved.

The anchor plate 12 is a substantially flat, rigid, metallic plate which, for convenience and clarity, will be described as having its front edge nearer the vehicle and

its rear edge relatively remote therefrom, as shown in FIGURE 1. The anchor plate is intended to lie flat upon the ground, whether the ground be level or sloping, and, in the absence of a better tool, it may, itself, be used as a scraper or digger for evening the ground, and/or removing snow before the plate is laid on the selected area.

The plate should be composed of hard, tough, resilient steel, and should be of sufficient thickness to be rigid, and to sustain the pull which is to be applied to it without permanent distortion and without substantial temporary deformation, but it should not be any heavier than necessary for meeting these requirements.

The purpose of the plate is to combine the anchoring resistance of a plurality of spikes 14. Several well spaced spikes of relatively small dimensions can be driven into the ground and later extracted with much less effort and with less likelihood of encountering an impenetrable obstruction, than a single, longer and thicker spike of equal holding power. The spikes should be of the same kind of steel as the anchor plate.

For the purpose of receiving and advantageously spacing the spikes 14, the plate 12 is formed with a plurality of apertures 30, three such apertures being shown, so that the illustrative plate is adapted to receive three of the spikes 14. The plate has sufficient transverse extent to permit the apertures to be spaced substantially from one another, so that the spikes act essentially upon distinct bodies of earth.

The apertures correspond in shape and size with the cross-sectional dimensions of the spikes, so that each spike is guided by the walls of the associated aperture when it is being driven into the ground, and each aperture so restricts movement of the spike which it receives, relative to the plate, that the plate cannot be dislodged substantially without dislodging all the spikes. Closer tolerances are required in the fore and aft direction than in the transverse direction.

The apertures may be formed to guide the spikes vertically downward or at any chosen inclination. The apertures are preferably inclined downward and forward, however, so that tension exerted on the plate by the cable 20 tends to depress the plate, rather than to pull it upward, even when the tension is sufficient to tilt the spikes to a limited extent. As shown, the apertures are inclined downward and forward at an inclination of sixty degrees, but there is nothing critical about the angle of inclination.

The shank of the spike 14 may be of any convenient shape in cross-section, but it is advantageous to make the transverse dimension greater than the fore and aft dimension. The fore and aft dimension should be sufficient to give the spike substantial rigidity, but an increased transverse dimension is important for increasing the resistance of the earth to displacement or to slicing through by the spike in response to tension applied to the plate. As shown, the spike shank is made rectangular in cross-section.

Each spike 14 is formed with a head 17 of greater fore and aft thickness than the shank 15. The head includes downwardly facing shoulders adjacent to the upper ends of the front and rear faces of the shank. The head 17 desirably extends the full width of the shank 15 and is of uniform cross-sectional shape, being desirably cylindrical as shown in FIGURE 3.

For passenger cars, jeeps and small pickups the following dimensions have been found advantageous. The anchor plate may be one-half inch thick, three inches wide and sixteen inches long. The spike shank may be three-eighths inch thick and two and one-half inches wide and sixteen inches long. The spike head is generally cylindrical, having a diameter of one inch, but is flattened along the top. Each plate aperture has a width just sufficient to accommodate comfortably the thickness of a spike and a width of two and three-quarters inches. For heavier duty sets all the dimensions may be proportionately increased, and, if desired, the number of spikes and apertures may be increased.

The set further includes a slide hammer 32 which is specifically made for cooperation with the heads of the spikes of the set for driving the spikes into the ground and for extracting the spikes from the ground. The illustrative slide hammer consists of two relatively slidable parts, namely, a driving part 34 and a pounding part 36.

The driving part 34 includes a cylindrical body portion 38 which terminates at its lower end in an enlarged jaw portion 40 of fixed shape, and which includes at its upper end an anvil member 42, in the form of a short sleeve or nipple. The anvil member 42 is desirably welded to the body portion 38. The jaw portion is formed as shown in FIGURES 5 and 6 to fit slidably upon the head 17 of a spike 14. In collapsed condition, the slide hammer of the set being described may be twenty-two inches long.

The pounding portion 36 includes a sleeve 44 which has an upper hammer head 46 welded in its upper end and a lower hammer head 48 welded in its lower end. For driving a spike into the ground, the pounding member may be operated to cause the upper hammer head to strike a series of downwardly directed percussive blows against the upper side of the anvil member 42. For extracting a spike from the ground, the pounding member may be operated to cause the lower hammer head to strike a series of upwardly directed, percussive blows against the lower side of the anvil member 42.

A word concerning the assembly of the slide hammer may be in order. The hammer head 46, which is solid, may first be secured, by welding, in the upper end of sleeve 44. The hammer head 48 is then placed upon the body member 38 of the driver and left free to slide while the anvil member is being welded to body part 38. The members 42 and 48 are then inserted in the sleeve 44, the member 48 being held in the mouth of the sleeve 44 while 48 is welded to 44. For holding the hammer head in place during welding, a set screw 49 may be utilized. After welding, the set screw may be left in place or reclaimed, as desired.

For carrying and storing convenience, the anchor plate 12, the spikes 14 and the collapsed slide hammer (as shown in FIGURES 5 and 6), which are desirably made of closely comparable lengths, are designed to be compactly and conveniently kept together in a common container.

Details of the container are unimportant so long as the container is adapted to hold the set parts compactly and preferably without rattling.

I claim:

1. An anchoring set adapted to be carried on a vehicle for use in pulling the vehicle manually or through power operation out of a stalled condition as often as required, and for other anchoring service, comprising, in combination:

(a) a substantially flat anchor plate having a plurality of spaced apertures of a common size and shape extending through it, and having a connector for pulling purposes disposed between the ends of its forward face, the apertures being all inclined downward and forward in the same direction to cause spikes driven through them into the ground to be set at a downward and forward inclination, so that the anchor plate, when pulled in a forward direction, will tend to be cammed downward by the spikes;

(b) a plurality of anchoring spikes corresponding in number to the number of apertures in said anchor plate, long enough to be driven through the anchor plate and deeply into the ground, having shanks adapted to be received in, and guided by, said apertures, and having enlarged heads of greater thickness than the shanks, which heads include downwardly facing, overhanging shoulders adjacent the upper edges of the front and rear faces of the respective shanks, and are of substantially identical, uniform cross-sectional shape in all vertical planes which extend at right angles to said front and rear faces; and

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(c) a spike driving and pulling slide hammer which comprises;

(c)(1) a combined spike driving and spike pulling member having an anvil at its upper end and spike head embracing jaws of fixed shape and spacing at its lower end specifically formed for cooperation with the heads of the spikes including the upper and lower faces thereof, and

(c)(2) a striking member slidably mounted on the driving and pulling member, which striking member includes an upper striker head for administering repeated percussive blows to the anvil in a downward direction when driving a spike into the ground, and a lower striker head for administering repeated percussive blows to the anvil in an upward direction when pulling a spike from the ground;

the construction and arrangement being such that the jaws may be slid at will into spike head embracing relation and may be withdrawn at will from the spike head embracing relation at any time.

2. An anchoring set as set forth in claim 1 in which the anchor plate, the spikes and the slide hammer in its retracted condition, are all of substantially the same length, so they can be conveniently and compactly carried in a common container.

3. An anchoring set as set forth in claim 1 in which the spikes and the spike apertures of the anchoring plate are of substantially greater width than thickness.

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HENRY C. SUTHERLAND, Primary Examiner

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