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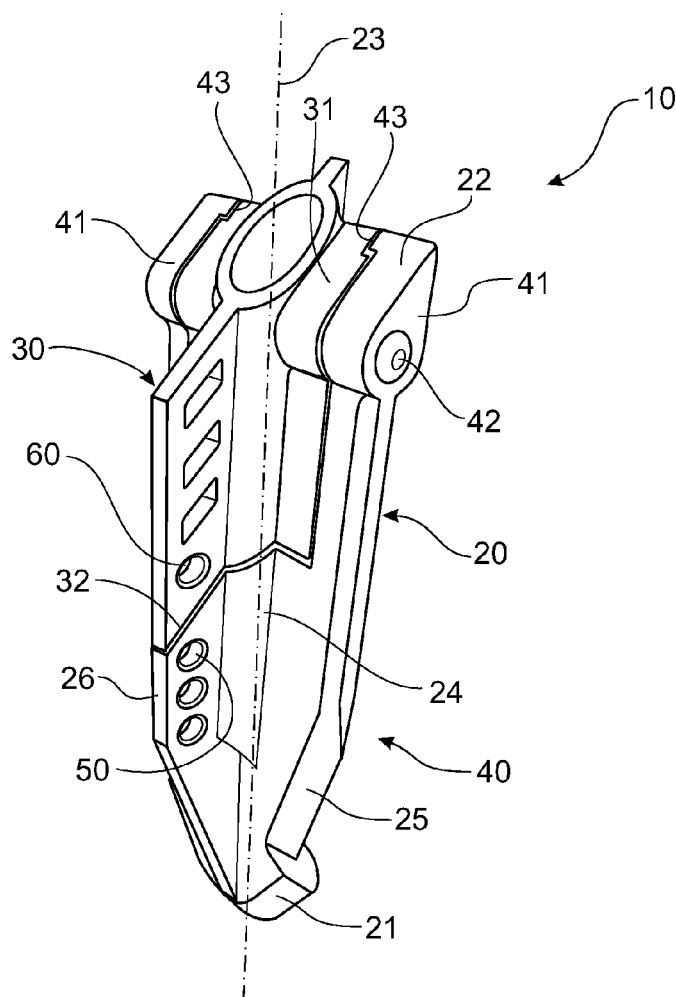
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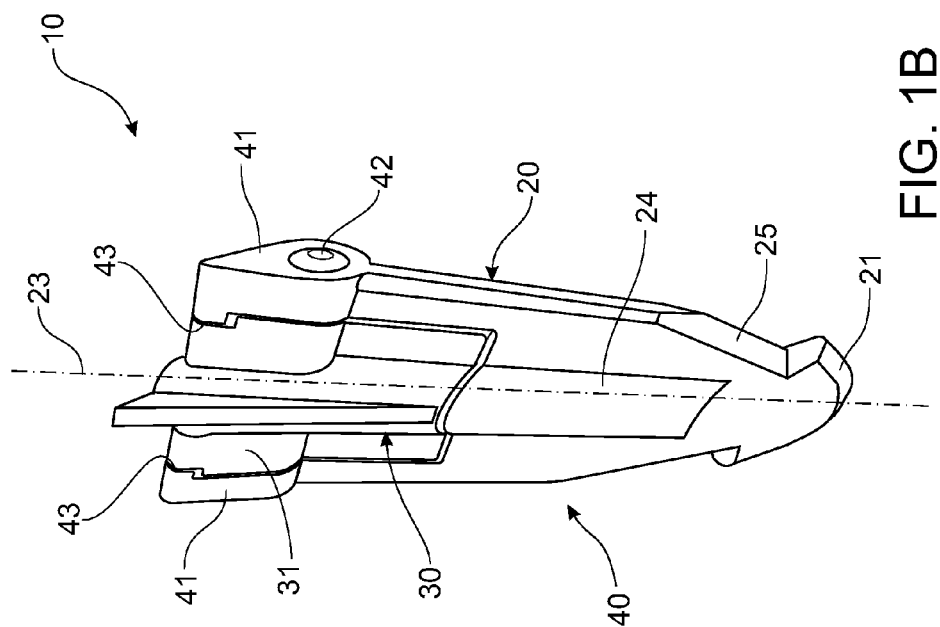
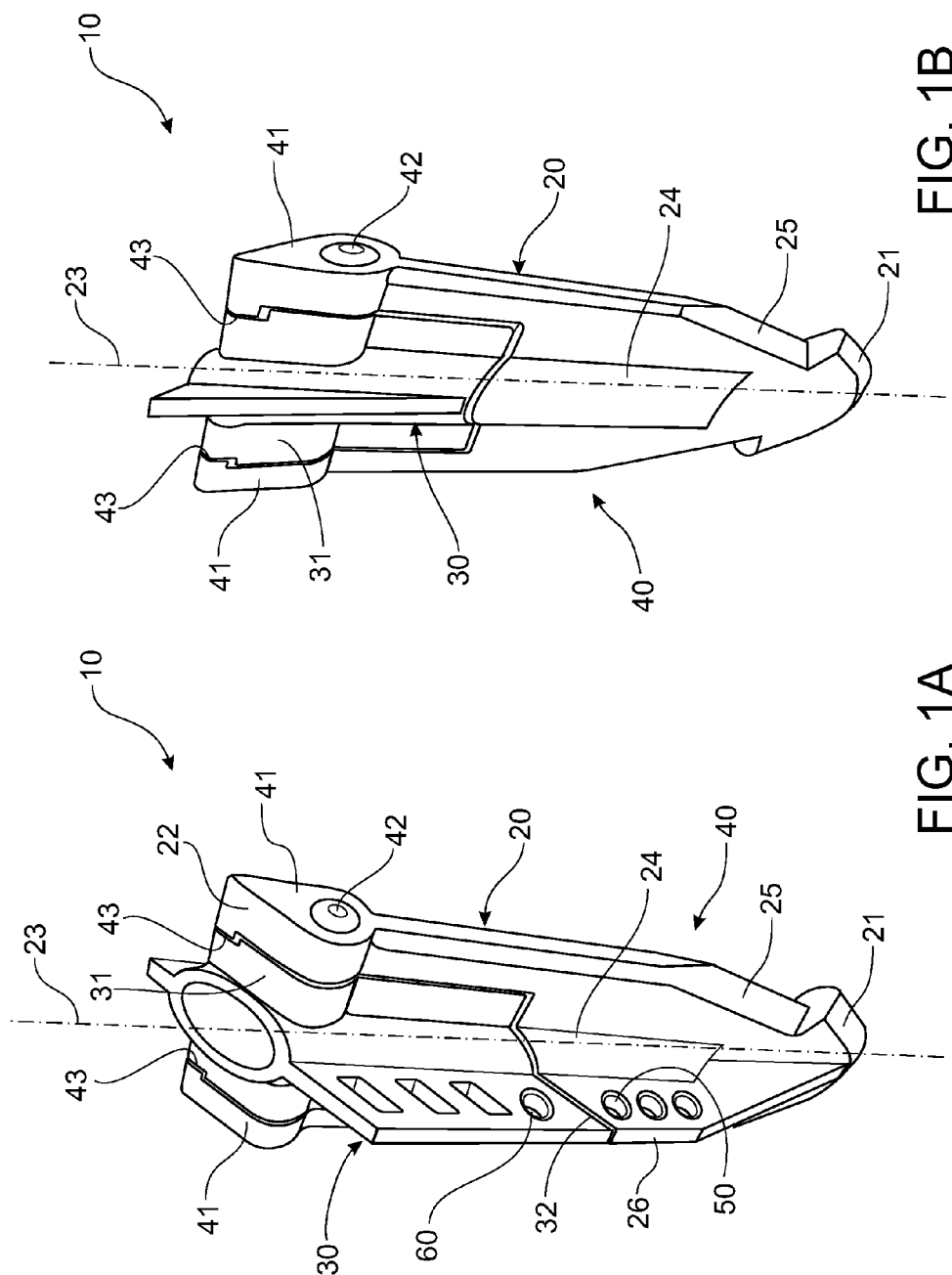
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(2013.01); **E04H 12/2215** (2013.01)

(57)

**ABSTRACT**

An earth anchor comprising a main body having an end that is inclined with respect to a longitudinal axis of the main body; a tool engagement portion located on the main body; at least one anchor hole located substantially centrally on the main body; and at least one removal hole located on the main body adjacent an end of the main body.





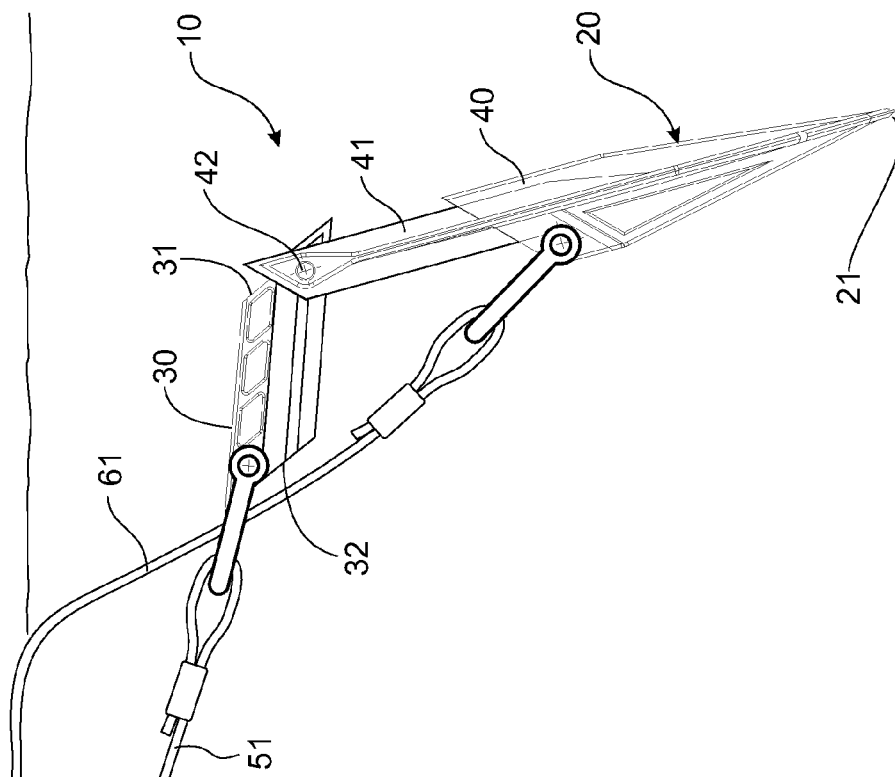


FIG. 3

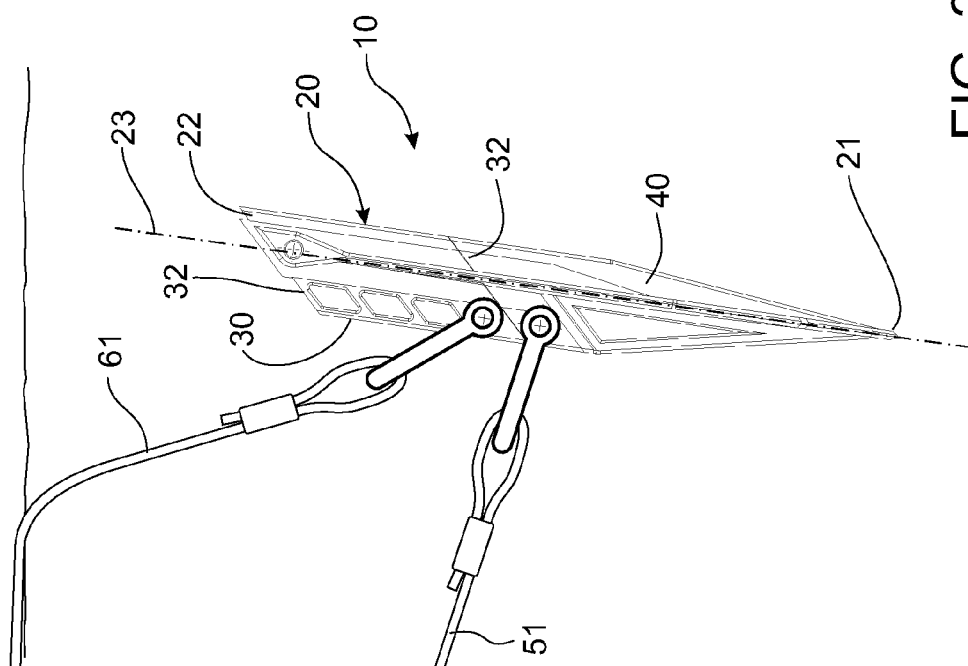


FIG. 2

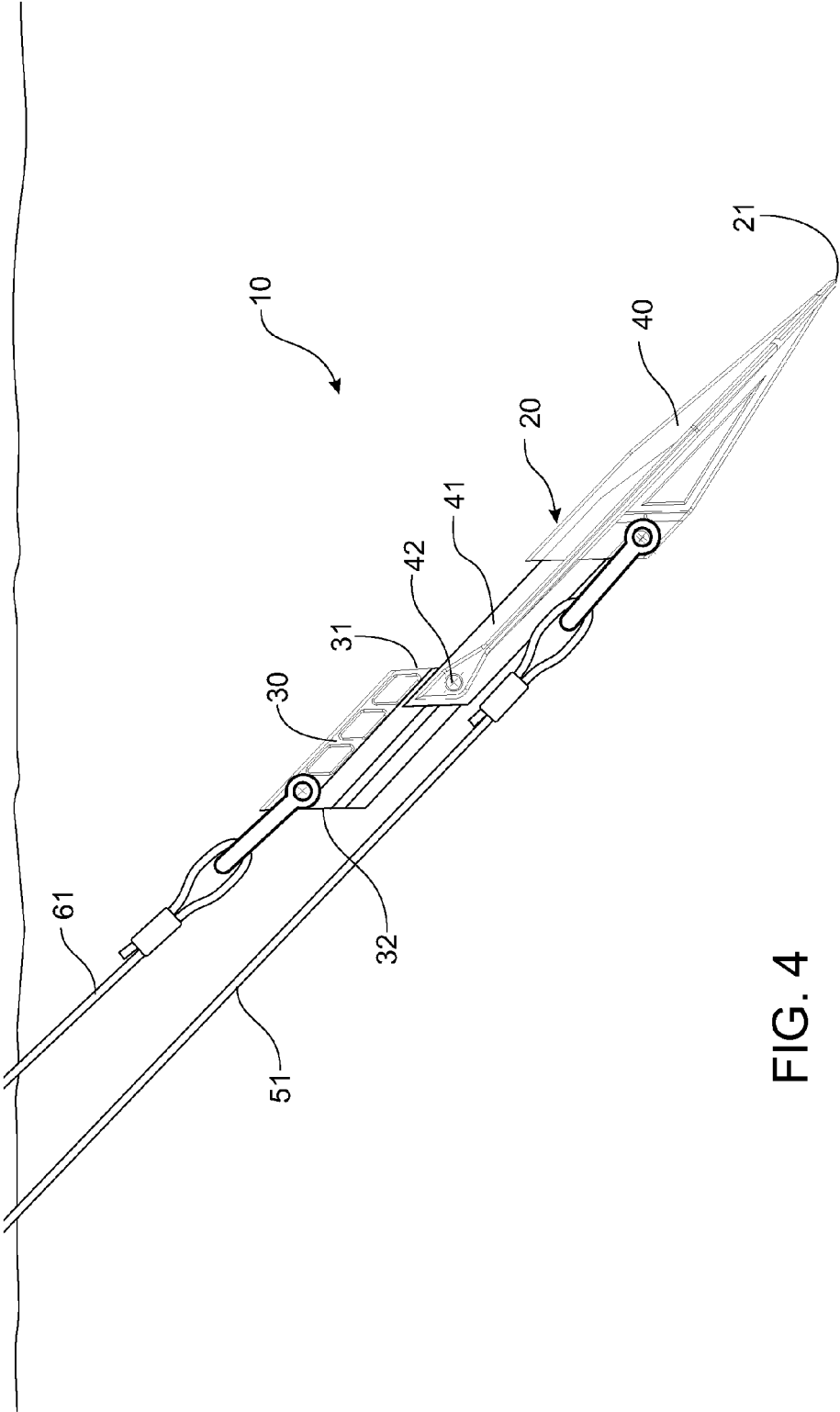


FIG. 4

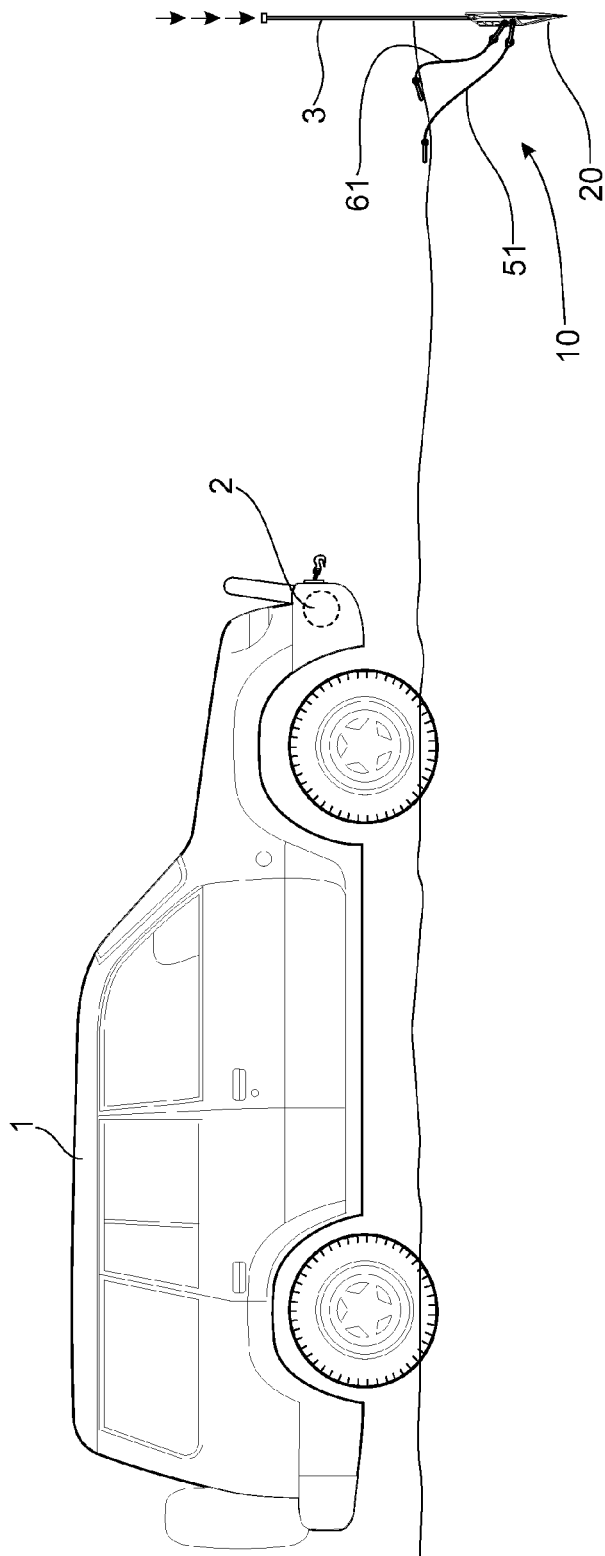


FIG. 5

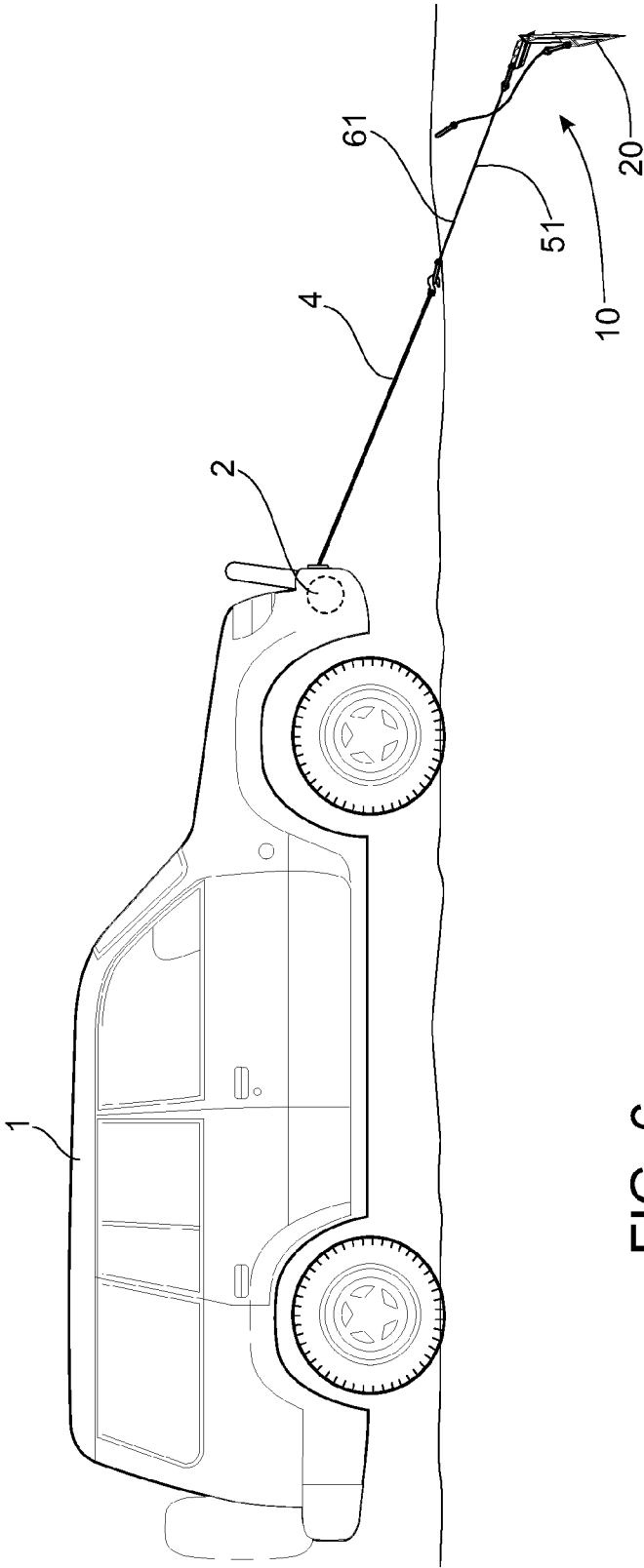


FIG. 6

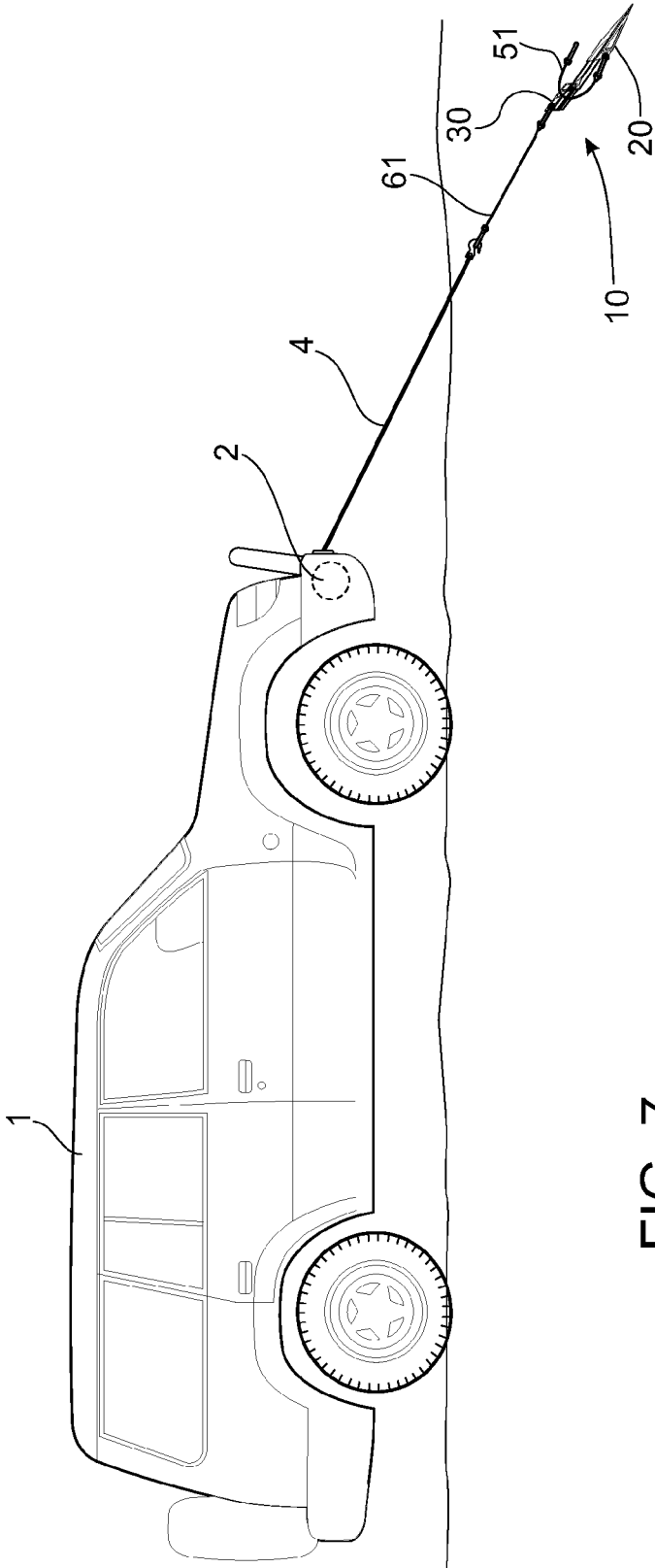


FIG. 7

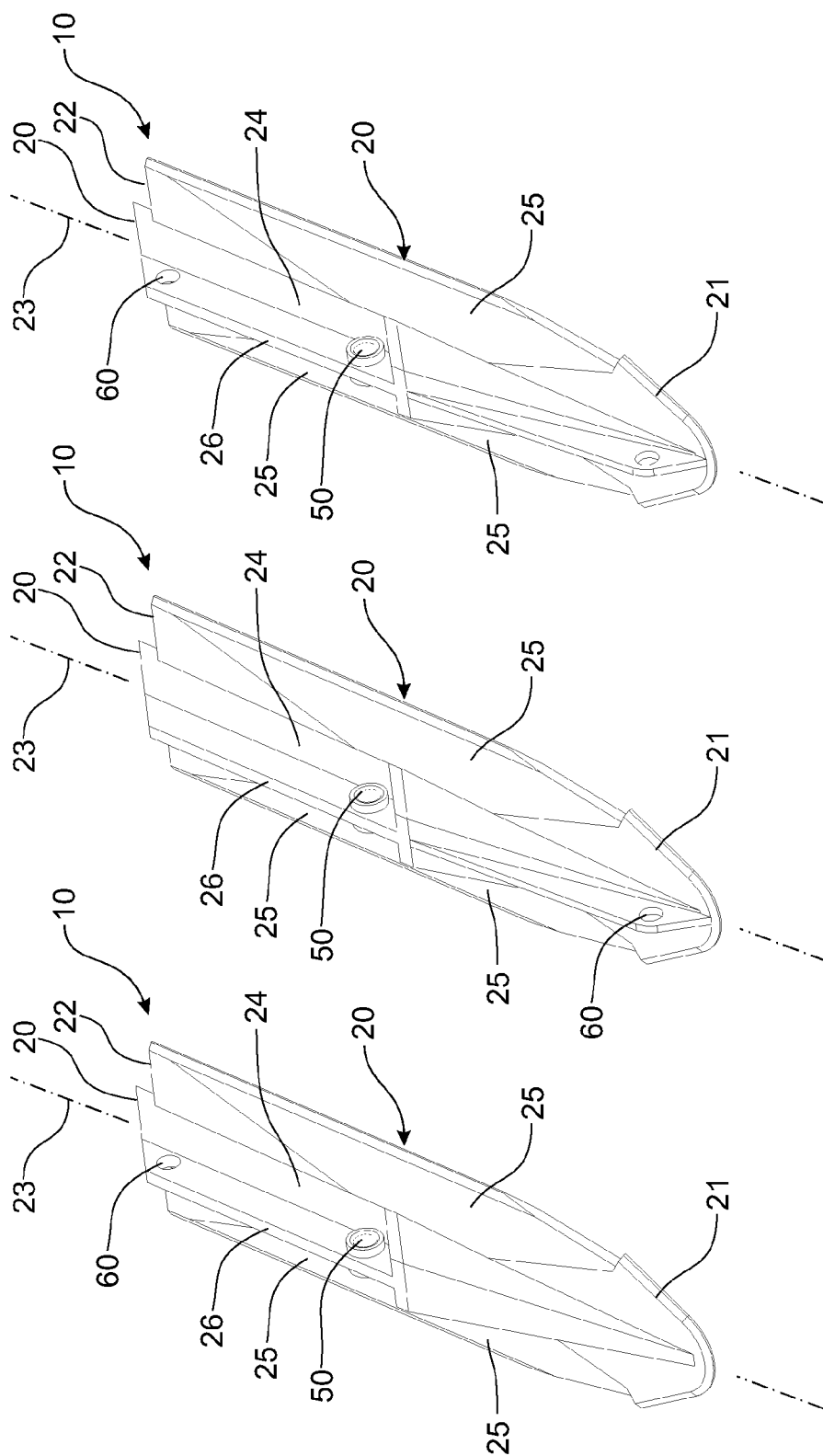


Fig. 8

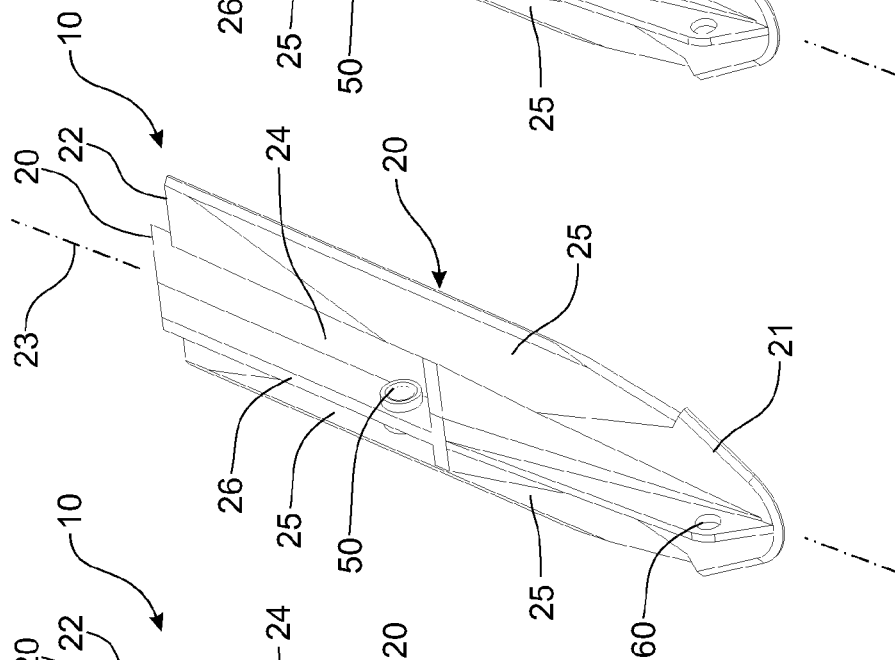
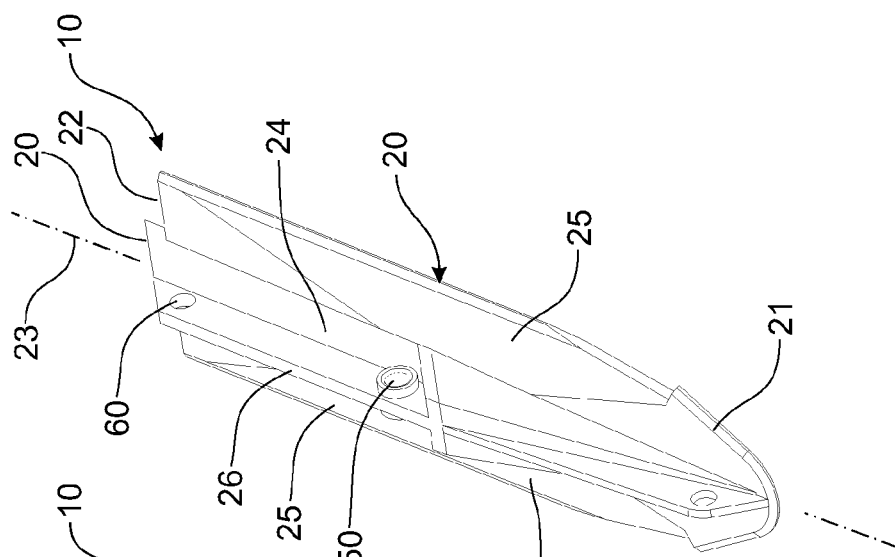


FIG. 9



**FIG. 10**



## EARTH ANCHOR

### FIELD OF THE INVENTION

[0001] This invention relates to an earth anchor. In particular the invention relates to an earth anchor that can be used as a vehicle recovery point for vehicles with a winch and accordingly will be described in this context. However it should be appreciated that the earth anchor may be used for a variety of different applications in which guy wires are required such as tents, utility poles, outdoor stages, trees and portable buildings.

### BACKGROUND OF THE INVENTION

[0002] The use of off road vehicles for recreational purposes is enjoyed by people throughout the world. One of the challenges which people find exhilarating when using off road vehicles is attempting to pass through difficult terrain. Unfortunately this leads to many vehicles becoming trapped.

[0003] Accordingly, many vehicles have a variety of recovery equipment that can be used to remove a vehicle from their immobile state. One popular accessory that many vehicles are fitted with is a winch. Winches work exceptionally well to recover vehicles. However, one necessary requirement for utilising a winch is the need for an anchor point such as a tree, rock or another vehicle. Unfortunately, many landscapes, such as beaches or deserts, do not have readily available anchor points. Accordingly, the use of a winch in these environments becomes futile.

[0004] In recent years, land anchors have been developed which are used to provide a mobile anchor point. Most land anchors resemble a boat sand anchor and operate on the similar anchoring principles. That is, the anchor has a number of prongs that are pivotally attached to an attachment member. The prongs are dug into the ground at an angle and the attachment member is attached to the winch. When the winch is engaged, the prongs engage with the ground to resist movement of the land anchor thereby providing an anchor point.

[0005] One disadvantage with land anchors is their large size. Land anchors require considerable storage space within an off road vehicle which is often in short supply in an off road vehicle. Land anchors are also heavy and cumbersome to carry. Further, land anchors are often required to be positioned a considerable distance from a trapped off road vehicle to operate effectively. On occasions this leads to the inability to use land anchors.

[0006] The reference to any prior art in this specification is not, and should not be taken as an acknowledgement or any form of suggestion that the prior art forms part of the common general knowledge.

### OBJECTION OF THE INVENTION

[0007] It is an objection of the invention to overcome and or alleviate one or more of the above disadvantages and or provide the consumer with a useful or commercial choice.

### SUMMARY OF THE INVENTION

[0008] In one form, although not necessary the only or broadest form, the invention resides in an earth anchor comprising a main body that has at least one removal hole that causes the main body to act as an anchor and at least one removal hole that allows the main body to be removed from the earth.

[0009] In another form, although not necessary the only or broadest form, the invention resides in an earth anchor comprising:

[0010] a main body having an end that is inclined with respect to a longitudinal axis of the main body;

[0011] a tool engagement portion located on the main body

[0012] at least one anchor hole located substantially centrally on the main body; and

[0013] at least one removal hole located on the main body adjacent an end of the main body.

[0014] The end that is inclined is normally a trailing end of the main body. The main body typically includes a leading end. The leading end is normally pointed.

[0015] The main body typically includes a spine. Wings may extend from each side of the spine. The spine typically extends longitudinally along the main body. A raised rib may extend along a length of the spine. The wings normally extend transversally with respect to the rib. The wings are normally substantially perpendicular to the rib.

[0016] The tool engagement portion typically extends from adjacent the trailing end of the main body to adjacent a centre of the main body. The tool engagement portion is typically in the form of an impact hole. The impact hole typically extends longitudinally along the main body. The impact hole is typically located within the spine of the main body.

[0017] The anchor hole is typically located within the rib of the main body.

[0018] The main body may include a pivotal section. The pivotal section may be movable between a driven position and a removal position. Normally when the pivotal section is in the removal position, the at least one removal hole is located adjacent the end of the main body.

[0019] The pivotal section may be located adjacent the trailing end of the main body. The pivotal section may pivot adjacent the trailing end of the main body.

[0020] The earth anchor may further include an anchor tether that is attached to the anchor hole.

[0021] The earth anchor may further include a removal tether that is attached to the removal hole.

[0022] In another form, the invention resides in a method of vehicle recovery, the method including the steps of:

[0023] driving an earth anchor into the earth;

[0024] attaching a winch tether to a anchor tether which forms part of the earth anchor; and

[0025] winching the vehicle toward the earth anchor.

[0026] The method may further include one or more of the steps of:

[0027] detaching the winch tether from the anchor tether;

[0028] attaching the winch tether to a removal tether which forms part of the earth anchor; and/or

[0029] pulling the earth anchor from the earth.

[0030] Further forms and features of the present invention will become apparent from the following detailed description.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0031] Embodiments of the invention will now be described with reference to the accompanied figures in which,

[0032] FIG. 1A is a front perspective view of an earth anchor according to a first embodiment of the invention;

[0033] FIG. 1B is a rear perspective view of an earth anchor according to a first embodiment of the invention;

[0034] FIG. 2 is a side view of the earth anchor with the pivotal section in a driven position;

[0035] FIG. 3 is a side view of the earth anchor with the pivotal section in between a removal position and a drive position;

[0036] FIG. 4 is a side view of the earth anchor with the pivotal section in a removal position;

[0037] FIG. 5 is a schematic view of the earth anchor of FIG. 1 being driven into the ground to assist in vehicle recovery;

[0038] FIG. 6 is a schematic view of the earth anchor of FIG. 1 at the first stage of removal using a winch after vehicle recovery;

[0039] FIG. 7 is a schematic view of the earth anchor of FIG. 1 at the final stage of being removed using a winch after vehicle recovery;

[0040] FIG. 8 is a perspective view of an earth anchor according to a second embodiment of the invention;

[0041] FIG. 9 is a perspective view of an earth anchor according to a third embodiment of the invention; and

[0042] FIG. 10 is a perspective view of an earth anchor according to a fourth embodiment of the invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0043] FIGS. 1A and 1B show an earth anchor 10 that can be used for vehicle recovery when a vehicle becomes bogged. The earth anchor 10 is made entirely from metal. However, it should be appreciated that the earth anchor 10 may be made from other suitable materials such as injection molded plastics.

[0044] The earth anchor 10 is formed a main body 20. The main body 20 has a leading edge 21 and a trailing edge 22. The leading edge 21 is formed into a point similar to an arrow head. The trailing edge 22 is angled with respect to a longitudinal axis 23 of the main body 20 at an angle of approximately 45 degrees. However, it should be appreciated that the angle of the trailing edge 22 can be varied in accordance with design parameters. For example, a trailing edge 22 inclination of between 15 and 75 degrees is envisaged.

[0045] The main body 20 includes a central spine 24 and two depending wings 25. The central spine 24 extends along a longitudinal axis 23 of the main body and is arcuate in shape. The wings 25 are substantially planar in shape with the wings 25 tapered toward their edge. A central rib 26 extends the length of the spine 24 on one side of the spine. The rib 26 is tapered adjacent the leading edge 21. The wings 25 extend transversely with respect to the rib 26 and are substantially perpendicular with respect to the rib 26.

[0046] A pivotal section 30 and fixed section 40 form part of the main body 20. The pivotal section 30 extends from adjacent the trailing edge 22 of the main body to adjacent the middle of the main body. Two arms 41 form part of the fixed section body and are located on respective sides of the pivotal section 30. The two arms 30 are used to pivotally mount the pivotal section 30 via a pivot pin 42. A stop 43 is located on each end of each pivotal arms. The ends of the two arms form part of the trailing edge and accordingly are inclined.

[0047] The pivotal section 30 is able to move between a driven position and removal position which are approxi-

mately 180 degrees apart as shown in FIGS. 2 to 4. Both ends of the pivotal section 30 are inclined. When the pivotal section 30 is in the driven position, a trailing end 31 of the pivotal section 30 forms part of the trailing edge 22 of the main body and the leading end 32 of pivotal section is flush with the fixed section 40. When the pivotal section 30 is in the removal position, the trailing end 31 is located between the two arms 41 adjacent the middle of the main body 20 and the leading end 32 is spaced away from the ends of the two arms 41. In the removal position, the stops engage sides 43 of the pivotal section 30.

[0048] An anchor hole 50 is located through the rib 26 on the fixed section 40. The anchor hole 50 is located towards the middle of the main body 20. A removal hole 60 is located through the rib 26 on the pivotal section 30. The removal hole is located adjacent the middle of the main body 20 when the pivotal section 30 is in the driven position and at the end of the main body 20 when the pivotal section 30 is in the removal position.

[0049] An impact hole 70 extends through the spine 24 in which an impact tool is able to be located. The impact hole 70 extends entirely through the pivotal section 30 and partially through the fixed section 40 of the main body 20.

[0050] An anchor tether 51, in the form of a cable and D-shackle, is connected to the anchor hole 50. Similarly, a removal tether 61, in the form of a cable and D-shackle, is connected to the removal hole 60.

[0051] In order to recover a vehicle 1 having a winch 2, an impact tool 3 is located within the impact hole 70 of the earth anchor 10 when the pivotal section 30 is in the driven position. The impact tool 3 typically has a bore which is just smaller than the size of the impact hole. A top of the impact tool 3 is shaped so that hammer or the like device can be used to easily hit the top of the impact tool as shown in FIG. 5.

[0052] The earth anchor 10 is then placed onto the ground with the leading edge 21 of the impact tool touching the ground 1. The impact tool 3 is then hit to drive the earth anchor substantially vertically into the ground. Once main body 20 of the earth anchor is located between 2 ft and 4 ft into the ground (the depth may be varied according to ground composition), the anchor tether 51 is attached to a winch tether 4. The winch 2 is operated to reel in the winch tether 4 until any slack is taken up between the winch 2 and the main body 20. When force is applied to the main body 20 through the anchor tether 5, the trailing edge 22 causes the main body 20 to pivot about the trailing edge 22 until sufficient force is applied to the wings 25 by the ground so that the main body 20 is held fast. At this point in time, the winch 2 continues to winch in the winch tether 4 thereby pulling the vehicle from its trapped state.

[0053] Once the vehicle 1 has been recovered, the anchor tether 51 is removed from the winch tether 4. The winch tether 4 is then attached to the removal tether 61. The winch 2 is again operated to take up any slack between the winch 1 and the main body 20. When force is applied to the removal tether 61, this causes the pivotal section 30 to rotate with respect to the fixed section 40 causing the pivotal section 30 to move from the driven position to the removal position as shown in FIG. 6. In the removal position, the leading end 32 of the pivotal section 30 is facing toward the winch 2. As the leading end 32 is tapered, the leading end 32 provides a cutting face to cut through the ground much the same as the leading edge 21 of the main body 20 provides

when main body 20 is being driven into the ground. The winch 2 continues to pull the earth anchor 10 until the main body 20 is removed from the ground as shown in FIG. 7. The winch tether 4 is then removed from the removal tether 61. The earth anchor 10 can then be re-used as is required.

[0054] FIGS. 8 to 10 show a number of further embodiments of the invention. Like numerals have been used to describe like components. In each of these embodiments there is no pivotal section that forms part of the main body 20. That is, the main body 20 is integrally formed.

[0055] FIG. 8 shows an earth anchor 10 that has a removal hole 60 located at adjacent an end of the main body 20 on the rib 26 near the trailing edge 22. It should be appreciated that there could be more than one removal hole 60 and these removal holes 60 could be located on respective wings. A removal tether (not shown) can be attached to the removal hole 60. In use, the earth anchor 10 is used in the manner described above to provide an anchor. In order to remove the main body 20, a force is applied to the removal tether to pull the main body 20 from the ground.

[0056] FIG. 9 shows an earth anchor 10 that has a removal hole located at adjacent an end of the main body 20 on the rib 26 near the leading edge 21. A removal tether (not shown) may be attached to the removal hole 50. In use, the earth anchor 10 is used in the manner described above to provide an anchor. In order to remove the main body 20, a force is applied to the removal tether to pull the main body 20 from the ground. It is envisaged that more force may be required to remove the earth anchor 10 when the removal hole is positioned adjacent the leading edge 21. However, there may be some applications when this is desirable when the force can only be applied some distance away.

[0057] FIG. 10 shows an earth anchor 10 that has a removal hole 60 located at adjacent an end of the main body 20 on the rib 26 near the leading edge 21 and near the trailing edge 22. A removal tether can be selected to be attached to either of the removal holes 60 depending on the application. Alternatively, both removal holes 60 may have their own removal tether. In use, the earth anchor 10 is used in the manner described above to provide an anchor. In order to remove the main body 20, a force is applied to one of the removal tethers to pull the main body from the ground.

[0058] The earth anchor 10 provides a number of advantages. The first is that the earth anchor 10 can be reused regardless of application due the earth anchor 10 having an anchor tether and a removal tether. The removal hole 60 being located adjacent an end of the main body 20 allows a force to be applied substantially along the longitudinal access of the main body 20 allowing removal whilst the anchor hole 50 being located substantially at the center of the main body 20 enables the main body 20 to be anchored within the ground when a force is applied.

[0059] When the earth anchor 10 is used for vehicle recovery, it can be stored easily within the vehicle without occupying a large amount of space. An earth anchor 10 that is slightly larger than the palm of a person is normally sufficient to enable to large 4WD vehicle to be recovered.

[0060] When the earth anchor is used as a tent peg, it provides the advantage that a person will not stub one's toes on tent peg as it is buried within the ground. Further, the earth anchor generally provides a higher level of pull-out resistance than traditional tent pegs.

[0061] In this specification, the terms "comprise", "comprises", "comprising" or similar terms are intended to mean

a non-exclusive inclusion, such that a system, method or apparatus that comprises a list of elements does not include those elements solely, but may well include other elements not listed.

[0062] It should be appreciated that various other changes and modifications may be made to the embodiment described without departing from the spirit or scope of the invention.

1. An earth anchor comprising:

a main body having an end that is inclined with respect to a longitudinal axis of the main body;  
a tool engagement portion located on the main body;  
at least one anchor hole located substantially centrally on the main body; and  
at least one removal hole located on the main body adjacent an end of the main body.

2. The earth anchor of claim 1 wherein the main body has a leading end and a trailing end, the trailing end being inclined.

3. The earth anchor of claim 1 or claim 2 wherein the main body includes a spine.

4. The earth anchor of claim 3 wherein wings extend from each side of the spine.

5. The earth anchor of claim 3 or claim 4 wherein the spine extends longitudinally along the main body.

6. The earth anchor of any one of claims 3 to 5 wherein a raised rib extends along a length of the spine.

7. The earth anchor of claim 6 wherein the wings extend transversally with respect to the rib.

8. The earth anchor of claim 6 or claim 7 wherein the wings are substantially perpendicular to the rib.

9. The earth anchor of any one of claims 2 to 8 wherein the tool engagement portion extends from adjacent the trailing end of the main body to adjacent a centre of the main body.

10. The earth anchor of any one of claims 2 to 9 wherein the tool engagement portion is in the form of an impact hole.

11. The earth anchor of claim 10 wherein the impact hole extends longitudinally along the main body.

12. The earth anchor of claim 10 or claim 11 wherein impact hole is located within the spine of the main body.

13. The earth anchor of any one of claims 6 to 12 wherein the anchor hole is located within the rib of the main body.

14. The earth anchor of any one of claims 1 to 13 wherein the main body may include a pivotal section.

15. The earth anchor of claim 14 wherein the pivotal section is movable between a driven position and a removal position.

16. The earth anchor of claim 15 wherein when the pivotal section is in the removal position, the at least one removal hole is located adjacent the end of the main body.

17. The earth anchor of any one of claims 14 to 16 wherein the pivotal section may be located adjacent the trailing end of the main body.

18. The earth anchor of any one of claims 14 to 16 wherein the pivotal section pivots adjacent the trailing end of the main body.

19. The earth anchor of any one of claims 1 to 18 further including an anchor tether that is attached to the anchor hole.

20. The earth anchor of any one of claims 1 to 19 further including a removal tether that is attached to the removal hole.

21. A method of vehicle recovery, the method including the steps of:

driving an earth anchor into the earth;  
attaching a winch tether to a anchor tether which forms  
part of the earth anchor; and  
winching the vehicle toward the earth anchor.

**22.** The method of claim **21** further including the step of  
detaching the winch tether from the anchor tether.

**23.** The method of claim **21** or claim **22** further including  
the step of attaching the winch tether to a removal tether  
which forms part of the earth anchor and pulling the earth  
anchor from the earth.

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