

Description

This invention relates to a ground anchoring system of the type in which an object is anchored to the ground by a ground anchor secured at one end of a flexible anchor line, the other end of the line being secured to the object, and the anchor being forcibly driven into the ground by a driving tool. The system can be used underwater, for example when anchoring mats of synthetic fronds to a river or sea bed.

It is important in such a system that the anchor should resist extraction once it has been driven into the ground. For example, where the anchor is in the form of a flat plate which cuts a channel while driving into the ground, some means for skewing the plate across the channel is generally required or the plate will be simply pulled back up the channel when the anchor line is tensioned.

Invariably, however, this has required the addition of fixed or moving parts, such as flaps, barbs or flukes, which project from the plate and engage the sides of the channel. Such projections necessarily complicate the structure of the anchor and offer undesirable resistance to the passage of the anchor when driving it into the ground.

The plate also requires some form of socket or locating pin for receiving the driving tool, and this further increases the number of external projections. Correct operation of such plates is often hampered by soil collecting in the hinges associated with the moving parts.

It would therefore be an advantage to provide a ground anchor without any external projections or moving parts, but which is still capable of resisting extraction once it has been driven into the ground.

In US-A-1,844,273 there is described an anchor which is driven into the ground to provide an anchor point for a guy line. The anchor has an opposed pair of spring biased flukes which are releasably held against a rigid central shaft when driving the anchor into the ground. The flukes are then released and spring apart to resist subsequent extraction. The flukes are hinged behind a wedge-shaped blade forming the leading edge of the anchor and screwed to the bottom of the central shaft.

DE-B-1,054,691 discloses an anchor consisting of two plates arranged in mutually perpendicular planes. As a first of the plates is driven down into the ground, the other plate progressively folds inwards about a transverse fold line to form a pair of opposed flukes resisting subsequent extraction.

According to one aspect of the present invention there is provided a ground anchor comprising a pair of opposed flukes extending upwardly behind a leading edge and retained in a U or V-shape configuration against a resilient bias by retaining

means while driving the leading edge downwardly into the ground, and means for releasing the retaining means so that the flukes spring apart to resist subsequent extraction, characterised in that the flukes are formed by folding a single plate into the U or V-shape configuration about a central transverse fold line, the fold line also forming the leading edge of the anchor when driving it into the ground.

According to a second aspect of the invention there is provided a method of anchoring an object to a river or sea bed in which the object is secured by a flexible line to an anchor driven into the ground, the method comprising retaining a pair of opposed anchor flukes in a U or V-shaped configuration against a resilient bias while driving the anchor into the ground, and then releasing the flukes to resist subsequent extraction, characterised in that the flukes are formed by folding a single plate about a central transverse fold line into the said U or V-shaped configuration, and a driving tool is inserted between the opposed inside faces of the folded plate such that the transverse fold line forms the leading edge of the anchor when driving the anchor into the ground.

Each of the opposed inside faces of the folded anchor plate is preferably secured independently to one end of the flexible anchoring line. In one embodiment, the line incorporates a ground-engaging stop member spaced from the folded anchor plate such that, when the anchor plate reaches a depth which brings the stop member into engagement with the ground, further downward movement of the anchor plate extends the anchor line and trips the release mechanism.

In one alternative embodiment, the release mechanism is actuated by an independent release line which extends upwardly from the folded anchor plate alongside the anchor line.

The folded plate anchor has a clean, smooth external profile with no projections, hinges or other devices impeding the downward movement of the anchor into the ground. The use of a folded plate also doubles the effective area of the anchor when the plate is sprung open.

The driving tool preferably comprises an elongate shaft extending upwardly alongside the flexible line and attached, for example, to a pneumatic hammer. The bottom of the shaft then terminates in a device having a plurality of driving surfaces for engaging respective portions of the folded anchor plate.

The resilient biasing force is preferably provided by a flat plate spring, and in one embodiment the folded anchor plate itself forms the spring. Alternatively, an independent flat plate spring is secured to the anchor plate and symmetrically disposed about the fold line. Other forms of

spring, such as a leaf spring, can also be used.

In the accompanying drawings, by way of example only:

Fig. 1 is a diagrammatic front view of an anchoring system embodying the invention;

Fig. 2 is a view similar to Fig. 1 showing operation of the release mechanism;

Fig. 3 is a diagrammatic side view showing the anchor in its sprung open, splayed state;

Fig. 4 is a side view of the anchor prior to folding the anchor into its U-shaped configuration;

Fig. 5 shows the anchor of Fig. 4 folded into its U-shaped configuration and also shows the anchor line attachments and retaining mechanism;

Fig. 6 shows the anchor of Fig. 5 sprung open;

Fig. 7 shows the anchor of Fig. 4 with a driving tool inserted;

Fig. 8 is a diagrammatic front view similar to Fig. 2 but with an alternative release mechanism;

Fig. 9 is a side view of the release mechanism of Fig. 8, and

Fig. 10 is a detail showing three alternative configurations for the leading edge of the anchor plate

Referring to these drawings, a ground anchor system is illustrated in which an anchor plate 10 is secured to one end of a flexible anchor line 11. The line 11 comprises a web or tape consisting of a woven linear composite.

The rectangular plate 10 is initially flat as shown in Fig. 4 but is then tempered and folded into a U-shaped configuration about a central transverse fold line 12. The plate includes web attachment points 13, 14, one on each of the opposing inside faces of the U-shaped configuration. To assist folding, some metal is preferably removed along the fold line to form a gulley 25 in the underside of the plate.

The plate 10 is folded into a U-shaped configuration against a resilient bias. Figs. 5 and 6 illustrate two alternative forms of spring which may be used to provide this bias. Fig. 5 shows a bent leaf spring 15, and Fig. 6 shows a flat plate spring 16. A further alternative would be to form the anchor plate itself as a flat metal spring, and in this case no auxiliary spring mechanism would be required. However, the thickness of the plate would be reduced to provide the necessary resilience, and the plate might be formed, for example, entirely of carbon steel. The leading edge of such a plate is preferably protected by an outer coating of high abrasion resistant synthetic material or by a preformed light metal plate or shield 33 bonded or otherwise secured to the main anchor plate, as shown in the three alternative configurations of Fig. 10.

The plate is retained in its U-shaped configuration against the resilient bias by a shear pin 17 which passes through both sides of the plate and through the web attachment straps 11a, 11b secured respectively to the attachment points 13 and 14.

A bifurcated end section 19 of a driving tool spigot 18 is inserted into the folded anchor plate 10 and straddles the shear pin 17 as shown in Fig. 1.

The web 11 incorporates an outwardly projecting web stop 20 in the form of a circular disc which prevents the web being driven any further into the ground. Accordingly, when the anchor plate reaches the position shown in Fig. 1, further downward movement of the driving tool 18 to the position shown in Fig. 2 forcibly extends the web 11. As the web stretches, it exerts a force on the shear pin 17 sufficient to shear the pin so that the anchor plate springs into its splayed open position shown in Figs. 3 and 6 and in dashed outline in fig. 5. This shearing of the pin 17 preferably occurs against the bridging portion 21 of the bifurcated end section 19 of the driving tool. Accordingly, this bridging portion 21 might be curved oppositely to that shown in Figs. 1 and 2 so that it curves down below the upper edge of the anchor plate. As the web 11 is stretched between the attachment points 13, 14 and the pin 17, it forces the pin 17 upwardly against this bridging portion 21 of the driving tool to assist the severing action.

In cases where the anchor line is substantially non-extendible, an alternative form of release mechanism can be used. For example, as shown in Figs. 8 and 9, in place of the rivet pin 17, the inside opposing faces of the plate 10 may each be provided with a respective horizontal retaining eye 30a, 30b, the two eyes overlapping one another and the plate being held in its folded U-shaped configuration by a vertical split pin 31 passing through the two eyes. This locking pin may then be connected to a release line 32 which extends upwardly alongside the web 11. When the anchor plate has been driven to the required depth, the release line 32 is pulled to remove the vertical locking pin.

If the release line 32 is secured to the inside face of the web 11, this form of release can also be used with extendible webs, the stretching of the web described in the embodiment of Fig. 2 then tensioning the release line and removing the pin 31.

As best shown in Fig 7, each prong 22 of the bifurcated end section 19 of the driving tool carries a pair of opposed shoulders 23, 24 which bear against respective upper edges of the U-shaped plate 10. The prongs 22 help to maintain alignment of the plate while the drive load is spread over the four shoulders 23, 24 and the base of the prongs

which also engage the anchor plate along the fold line.

The above described anchor system is particularly suited for use underwater where the anchor plate 10 is driven into a river or sea bed and the driving tool is carried by a diver. The other end of the anchor line might then be secured to a mat of synthetic fronds for creating a permanent consolidated sand bank to prevent scouring of the sea or river bed around support structures.

Claims

1. A ground anchor comprising a pair of opposed flukes extending upwardly behind a leading edge and retained by retaining means (17, 31) in a U or V-shape configuration against a resilient bias (15, 16), while driving the leading edge downwardly into the ground, and means (11, 20) for releasing the retaining means (17, 31) so that the flukes spring apart to resist subsequent extraction, characterised in that the flukes are formed by folding a single plate (10) into the said U or V-shape configuration about a central transverse fold line (25), the fold line (25) also forming the said leading edge of the anchor when driving it into the ground. 15
2. A ground anchor according to claim 1 in which the fold line (25) is preformed by reducing the thickness of the plate (10) along the fold line. 30
3. A ground anchor according to claim 1 or claim 2 in which each inside face of the folded anchor plate (10) on opposite sides of the fold, line (25) is independently connected to one end of a flexible anchor line (11), the other end of the line (11) being connected to the object being anchored. 35
4. A ground anchor according to claim 3 wherein the release means (11, 20) is tripped in response to a predetermined length of the flexible anchor line (11) being driven into the ground. 40
5. A ground anchor according to claim 4 in which the anchor line (11) is extendible and carries a ground-engaging stop member (20) located such that, when the anchor reaches a depth which brings the stop member into engagement with the ground, further downward movement of the anchor extends the anchor line and trips the release mechanism. 45
6. A ground anchor according to claim 4 or claim 5 in which the retaining means comprises a shear pin (17) passing through the anchor line. 50
7. A ground anchor according to claim 3 in which the release means (11, 20, 32) is actuated by an independent release line which extends upwardly from the folded plate (10) alongside the anchor line (11). 55
8. A ground anchor according to claim 7 in which the retaining means comprises a locking pin (31) secured at one end of the release line and passing through a linkage (30a, 30b) between the opposing inside faces of the folded anchor plate (10).
9. A ground anchor according to any one of the preceding claims in which the resilient bias is provided by an auxiliary spring (15, 16) secured to the inside face of the folded plate (10).
10. A ground anchor according to any one of the claims 1-8 in which the resilient bias is provided by the resilience of the plate (10).
11. A method of anchoring an object to a river or sea bed wherein the object is secured by a flexible line (11) to an anchor driven into the ground, the method comprising retaining a pair of opposed anchor flukes (10) in a U or V-shaped configuration against a resilient bias (15, 16) while driving the anchor into the ground, and then releasing the flukes to resist subsequent extraction, characterised in that the flukes are formed by folding a single plate (10) about a central transverse fold line (25) into the said U or V-shaped configuration, and a driving tool (18, 19) is inserted between the opposing inside faces of the folded plate (10) such that the fold line (25) forms the leading edge of the anchor when driving the anchor into the ground.
12. A method according to claim 11 further comprising independently securing each of the opposing inside faces of the folded plate (10) to the other end of the flexible line (11).
13. A method according to claim 11 or claim 12 further comprising engaging a projecting portion (23, 24) of the driving tool (18, 19) with the uppermost edges of the U or V-shaped plate (10) when driving the plate downwardly into the ground.
14. A method according to claim 11 or claim 12 further comprising engaging an end portion (22) of the driving tool (18, 19) with the anchor plate (10) along the fold line (25) when driving the plate downwardly into the ground.



which also engage the anchor plate along the fold line.

The above described anchor system is particularly suited for use underwater where the anchor plate 10 is driven into a river or sea bed and the driving tool is carried by a diver. The other end of the anchor line might then be secured to a mat of synthetic fronds for creating a permanent consolidated sand bank to prevent scouring of the sea or river bed around support structures.

Claims

1. A ground anchor comprising a pair of opposed flukes extending upwardly behind a leading edge and retained by retaining means (17, 31) in a U or V-shape configuration against a resilient bias (15, 16), while driving the leading edge downwardly into the ground, and means (11, 20) for releasing the retaining means (17, 31) so that the flukes spring apart to resist subsequent extraction, characterised in that the flukes are formed by folding a single plate (10) into the said U or V-shape configuration about a central transverse fold line (25), the fold line (25) also forming the said leading edge of the anchor when driving it into the ground. 15
2. A ground anchor according to claim 1 in which the fold line (25) is preformed by reducing the thickness of the plate (10) along the fold line. 30
3. A ground anchor according to claim 1 or claim 2 in which each inside face of the folded anchor plate (10) on opposite sides of the fold, line (25) is independently connected to one end of a flexible anchor line (11), the other end of the line (11) being connected to the object being anchored. 35
4. A ground anchor according to claim 3 wherein the release means (11, 20) is tripped in response to a predetermined length of the flexible anchor line (11) being driven into the ground. 40
5. A ground anchor according to claim 4 in which the anchor line (11) is extendible and carries a ground-engaging stop member (20) located such that, when the anchor reaches a depth which brings the stop member into engagement with the ground, further downward movement of the anchor extends the anchor line and trips the release mechanism. 50
6. A ground anchor according to claim 4 or claim 5 in which the retaining means comprises a shear pin (17) passing through the anchor line. 55
7. A ground anchor according to claim 3 in which the release means (11, 20, 32) is actuated by an independent release line which extends upwardly from the folded plate (10) alongside the anchor line (11).
8. A ground anchor according to claim 7 in which the retaining means comprises a locking pin (31) secured at one end of the release line and passing through a linkage (30a, 30b) between the opposing inside faces of the folded anchor plate (10).
9. A ground anchor according to any one of the preceding claims in which the resilient bias is provided by an auxiliary spring (15, 16) secured to the inside face of the folded plate (10).
10. A ground anchor according to any one of the claims 1-8 in which the resilient bias is provided by the resilience of the plate (10).
11. A method of anchoring an object to a river or sea bed wherein the object is secured by a flexible line (11) to an anchor driven into the ground, the method comprising retaining a pair of opposed anchor flukes (10) in a U or V-shaped configuration against a resilient bias (15, 16) while driving the anchor into the ground, and then releasing the flukes to resist subsequent extraction, characterised in that the flukes are formed by folding a single plate (10) about a central transverse fold line (25) into the said U or V-shaped configuration, and a driving tool (18, 19) is inserted between the opposing inside faces of the folded plate (10) such that the fold line (25) forms the leading edge of the anchor when driving the anchor into the ground.
12. A method according to claim 11 further comprising independently securing each of the opposing inside faces of the folded plate (10) to the other end of the flexible line (11).
13. A method according to claim 11 or claim 12 further comprising engaging a projecting portion (23, 24) of the driving tool (18, 19) with the uppermost edges of the U or V-shaped plate (10) when driving the plate downwardly into the ground.
14. A method according to claim 11 or claim 12 further comprising engaging an end portion (22) of the driving tool (18, 19) with the anchor plate (10) along the fold line (25) when driving the plate downwardly into the ground.

Patentansprüche

1. Erdanker, der ein Paar gegenüberliegender Flunken umfaßt, die sich hinter einer Vorderkante nach oben erstrecken und durch Haltemittel (17, 31) entgegen einer elastischen Vorspannung (15, 16) in einer U- oder V-förmigen Konfiguration gehalten werden, während die Vorderkante nach unten in die Erde getrieben wird, sowie Mittel (11, 20) zum Freigeben der Haltemittel (17, 31), so daß die Flunken auseinanderpringen und so einem nachfolgenden Herausziehen entgegenwirken, dadurch gekennzeichnet, daß die Flunken durch Falten einer einzelnen Platte (10) um eine mittlere, quer verlaufende Faltlinie (25) in die U- oder V-förmige Konfiguration geformt werden, wobei die Faltlinie (25) beim Eintreiben des Ankers in die Erde auch die Vorderkante des Ankers bildet. 5
2. Erdanker nach Anspruch 1, bei dem die Faltlinie (25) durch Verringern der Dicke der Platte (10) entlang der Faltlinie vorgeformt wird. 10
3. Erdanker nach Anspruch 1 oder 2, bei dem jede Innenseite der gefalteten Ankerplatte (10) an gegenüberliegenden Seiten der Faltlinie (25) unabhängig mit einem Ende einer flexiblen Ankerleine (11) verbunden ist, wobei das andere Ende der Leine (11) mit dem zu verankernden Objekt verbunden ist. 15
4. Erdanker nach Anspruch 3, bei dem das Freigabemittel (11, 20) als Reaktion auf das Eintreiben einer vorbestimmten Länge der flexiblen Ankerleine (11) in die Erde ausgelöst wird. 20
5. Erdanker nach Anspruch 4, bei dem die Ankerleine (11) dehnbar ist und ein mit der Erde in Eingriff kommendes Anschlagglied (20) trägt, das so angeordnet ist, daß eine weitere Bewegung des Ankers nach unten die Ankerleine dehnt und den Freigabemechanismus auslöst, wenn der Anker eine Tiefe erreicht, bei der das Anschlagglied mit der Erde in Eingriff kommt. 25
6. Erdanker nach Anspruch 4 oder 5, bei dem das Haltemittel einen durch die Ankerleine hindurchgehenden Abscherbolzen (17) umfaßt. 30
7. Erdanker nach Anspruch 3, bei dem das Freigabemittel (11, 20, 32) durch eine unabhängige Freigabeleine betätigt wird, die von der gefalteten Platte (10) entlang der Ankerleine (11) nach oben verläuft. 35
8. Erdanker nach Anspruch 7, bei dem das Haltemittel einen an einem Ende der Freigabeleine befestigten Sperrstift (31) umfaßt, der durch eine Verbindungsvorrichtung (30a, 30b) zwischen den gegenüberliegenden Innenseiten der gefalteten Ankerplatte (10) hindurchgeht. 40
9. Erdanker nach einem der vorhergehenden Ansprüche, bei dem die elastische Vorspannung durch eine an der Innenseite der gefalteten Platte (10) befestigte zusätzliche Feder (15, 16) geliefert wird. 45
10. Erdanker nach einem der Ansprüche 1-8, bei dem die elastische Vorspannung von der Federkraft der Platte (10) geliefert wird. 50
11. Verfahren zur Verankerung eines Objekts mit einem Flußbett oder Meeresboden, bei dem das Objekt mit einer flexiblen Leine (11) an einem in die Erde getriebenen Anker befestigt wird, wobei das Verfahren das Halten eines Paares gegenüberliegender Ankerflunken (10) in einer U- oder V-förmigen Konfiguration entgegen einer elastischen Vorspannung (15, 16) beim Eintreiben des Ankers in die Erde und dann das Freigeben der Flunken, um einem nachfolgenden Herausziehen entgegenzuwirken, umfaßt, dadurch gekennzeichnet, daß die Flunken durch Falten einer einzelnen Platte (10) um eine mittlere, quer verlaufende Faltlinie (25) in die U- oder V-förmige Konfiguration geformt werden und ein Eintreibwerkzeug (18, 19) zwischen die gegenüberliegenden Innenseiten der gefalteten Platte (10) derart eingesetzt wird, daß die Faltlinie (25) beim Eintreiben des Ankers in die Erde die Vorderkante des Ankers bildet. 55
12. Verfahren nach Anspruch 11, das weiterhin unabhängiges Befestigen jeder der gegenüberliegenden Innenseiten der gefalteten Platte (10) an dem anderen Ende der flexiblen Leine (11) umfaßt.
13. Verfahren nach Anspruch 11 oder 12, das weiterhin Eingreifen eines vorstehenden Teils (23, 24) des Eintreibwerkzeugs (18, 19) in die obersten Kanten der U- oder V-förmigen Platte (10) beim Eintreiben der Platte nach unten in die Erde umfaßt.
14. Verfahren nach Anspruch 11 oder 12, das weiterhin Eingreifen eines Endteils (22) des Eintreibwerkzeugs (18, 19) in die Ankerplatte (10) entlang der Faltlinie (25) beim Eintreiben der Platte nach unten in die Erde umfaßt.

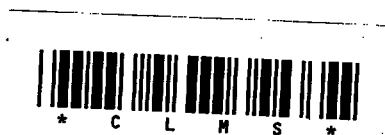


Revendications

1. Tirant d'ancrage comprenant une paire de pat-
tes d'ancre opposées s'étendant vers le haut
derrière un bord d'attaque et retenues par un
moyen de rétention (17, 31) dans une configu-
ration en forme de U ou de V à l'encontre
d'une distortion élastique (15, 16) lorsque le
bord d'attaque est enfoncé vers le bas dans le
sol, et un moyen (11, 20) pour libérer le
moyen de rétention (17, 31) de sorte que les
pattes d'ancre s'écartent l'une de l'autre par
une détente élastique pour s'opposer à toute
extraction ultérieure, caractérisé en ce que les
pattes d'ancre sont formées en pliant une pla-
que unique (10) selon ladite configuration en
forme de U ou de V le long d'une ligne de
pliage transversale centrale (25), la ligne de
pliage (25) formant également ledit bord d'atta-
que de l'ancre lorsqu'elle est enfoncée dans le
sol. 5 10 15 20
2. Tirant d'ancrage selon la revendication 1, dans
lequel la ligne de pliage (25) est préformée en
réduisant l'épaisseur de la plaque (10) le long
de la ligne de pliage. 25
3. Tirant d'ancrage selon la revendication 1 ou la
revendication 2, dans lequel chaque face interne
de la plaque d'ancrage pliée (10) de part et
d'autre de la ligne de pliage (25) est reliée de
manière indépendante à une extrémité d'un
câble d'ancrage flexible (11), l'autre extrémité
du câble (11) étant reliée à l'objet ancré. 30 35
4. Tirant d'ancrage selon la revendication 3, dans
lequel le moyen de libération (11, 20) est ac-
tionné en réponse à l'enfoncement dans le sol
d'une longueur prédéterminée du câble d'an-
crage flexible (11). 40
5. Tirant d'ancrage selon la revendication 4, dans
lequel le câble d'ancrage (11) est extensible et
porte un organe de butée (20) s'engageant avec
le sol, situé de manière telle que lorsque
l'ancre atteint une profondeur qui implique
l'engagement de l'organe de butée avec le sol,
tout mouvement supplémentaire de l'ancre
vers le bas tend le câble d'ancrage et actionne
le mécanisme de libération. 45 50
6. Tirant d'ancrage selon la revendication 4 ou la
revendication 5, dans lequel le moyen de ré-
tention comprend un goujon de cisaillement
(17) traversant le câble d'ancrage. 55
7. Tirant d'ancrage selon la revendication 3, dans
lequel le moyen de libération (11, 20, 32) est
actionné par un câble de libération indépen-
dant qui s'étend vers le haut depuis la plaque
pliée (10) le long du câble d'ancrage (11).
8. Tirant d'ancrage selon la revendication 7, dans
lequel le moyen de rétention comprend un
goujon de blocage (31) fixé à une extrémité du
câble de libération et traversant un système de
liaison (30a, 30b) entre les faces internes op-
posées de la plaque d'ancrage pliée (10).
9. Tirant d'ancrage selon l'une quelconque des
revendications précédentes, dans lequel la dis-
tortion élastique est assurée par un ressort
auxiliaire (15, 16) fixé à la face interne de la
plaque pliée (10).
10. Tirant d'ancrage selon l'une quelconque des
revendications 1 à 8, dans lequel la distortion
élastique est assurée par l'élasticité de la pla-
que (10).
11. Procédé d'ancrage d'un objet dans le lit d'une
rivière ou au fond de la mer, dans lequel
l'objet est fixé par un câble flexible (11) à une
ancre enfoncée dans le sol, le procédé com-
prenant la rétention d'une paire de pattes d'an-
cre opposées (10) dans une configuration en
forme de U ou de V à l'encontre d'une distor-
tion élastique (15, 16) lorsque l'ancre est en-
foncée dans le sol, puis la libération des pattes
d'ancre pour s'opposer à toute extraction ulté-
rieure, caractérisé en ce que les pattes d'ancre
sont formées en pliant une plaque unique (10)
le long d'une ligne de pliage transversale cen-
trale (25) selon ladite configuration en forme
de U ou de V, et un outil d'enfoncement (18,
19) est inséré entre les faces internes oppo-
sées de la plaque pliée (10), de telle manière
que la ligne de pliage (25) forme le bord
d'attaque de l'ancre lorsque l'ancre est enfon-
cée dans le sol.
12. Procédé selon la revendication 11, comprenant
en outre la fixation indépendante de chacune
des faces internes opposées de la plaque pliée
(10) à l'autre extrémité du câble flexible (11).
13. Procédé selon la revendication 11 ou la reven-
dication 12, comprenant en outre l'engagement
d'une portion saillante (23, 24) de l'outil d'en-
foncement (18, 19) avec les bords supérieurs
de la plaque (10) en forme de U ou de V
lorsque la plaque est enfoncée vers le bas
dans le sol.
14. Procédé selon la revendication 11 ou la reven-
dication 12, comprenant en outre l'engagement



d'une portion d'extrémité (22) de l'outil d'enfoncement (18, 19) avec la plaque d'ancrage (10) le long de la ligne de pliage (25) lorsque la plaque est enfoncée vers le bas dans le sol.



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