

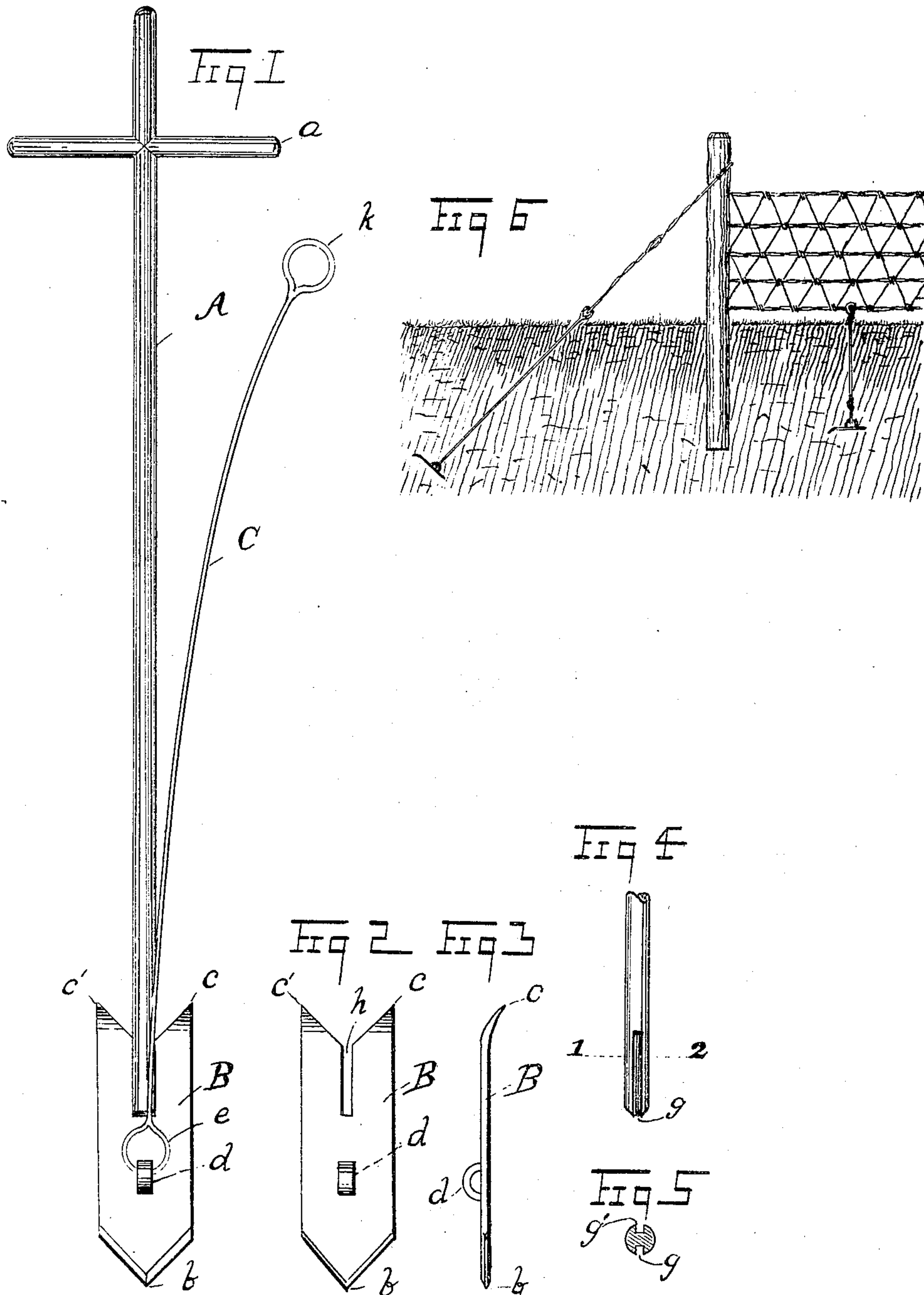
No. 768,705.

PATENTED AUG. 30, 1904.

W. W. SWAN.  
GROUND ANCHOR.

APPLICATION FILED DEC. 28, 1903.

NO MODEL.



WITNESSES

*J. P. Drayner*  
*Harry Mettler*

INVENTOR

*W. W. Swan*

# UNITED STATES PATENT OFFICE.

WILLIAM W. SWAN, OF FRANKFORT, SOUTH DAKOTA.

## GROUND-ANCHOR.

SPECIFICATION forming part of Letters Patent No. 768,705, dated August 30, 1904.

Application filed December 28, 1903. Serial No. 186,874. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM W. SWAN, a citizen of the United States, residing at Frankfort, in the county of Spink and State of South Dakota, have invented a new and useful Ground-Anchor, of which the following is a specification.

My invention relates to improvements in ground or soil anchors in which a rod or stay is attached to a plate or disk embedded in the ground, the rod or stay extending to the surface of the earth in order that some object may be connected and secured thereto; and the objects of my invention are, first, to provide an anchor-plate and stay that can be sunk in the ground quickly and easily by striking with a hammer or maul; second, to provide an anchor and stay of simple and inexpensive construction that will embody the least amount of material to withstand the required strain; third, to provide an anchor-plate that presents its pointed end and least cross-section to the resistance of the earth in driving and that resists withdrawal by presenting its greatest surface perpendicular to the line of pull or tension; and, fourth, to provide a suitable detachable driving-bar that can be used repeatedly and by means of which the anchors can be driven by the impact of blows. I attain these objects by means of the contrivances explained hereinafter, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical view of the entire device, showing driving-bar, anchor-plate, and stay connected ready for driving; Fig. 2, a top view of the anchor-plate; Fig. 3, an edge view of the anchor-plate; Fig. 4, a view of a portion of the lower end of the driving-bar, showing one of the opposite longitudinal grooves; Fig. 5, a cross-section of the driving-bar on the line 1 2, Fig. 4. Fig. 6 is a view showing two applications of my anchors—one in bracing a post, the other in securing the fence-wire. The earth is shown in vertical section.

Similar letters refer to similar parts throughout the several views.

My invention consists of the three interde-

pendent parts shown in Fig. 1—viz., the driving-bar A, the anchor-plate B, and the stay rod, wire, or cord C.

The anchor-plate B may be a thin flat plate of metal or other suitable material. It may be of any desirable shape and size, the object being with a given amount of material to present the least cross-sectional resistance to driving and the greatest surface consistent with the necessary stiffness and strength to resist being withdrawn. I therefore prefer the form shown, in which the length is greater than the breadth. The lower end of the anchor-plate B is provided with a center beveled point *b*, (see Figs. 1, 2, and 3,) so that the anchor-plate will more readily penetrate the ground and drive easier.

The upper end of the plate has two points *c c'*, formed by equal right and left bevels from the longitudinal axis of the plate upwardly and outwardly to the side edges of the plate. (See Figs. 1, 2, and 3.) The two upper points *c c'* are each equally bent or curved in the same direction and toward the bottom or lower face of the anchor-plate, as shown in the edge longitudinal view Fig. 3. These offset points *c c'* are for the purpose of digging into the soil and causing the upper surface of the anchor-plate to become perpendicular to the line of pull when a strain is applied to the outer or surface end *k* of the stay C. The offset in the points *c c'* also acts to counterbalance the resistance to driving of the rigid projecting connection *d*, (shown in Figs. 1, 2, and 3,) thus preventing the anchor-plate from driving crooked or out of line. In the upper end of the plate B is a longitudinal slot *h*, (see Fig. 2,) extending downwardly in the center of the plate a suitable distance and adapted to have its edges slide and fit into the grooves *g g'* in the lower end of the driving-bar A. (See Fig. 1.) In the lower end of the driving-bar A are two opposite longitudinal grooves *g g'*, extending upwardly from the bottom end of the driving-bar a suitable distance and adapted to slide and fit into the slot *h*, holding the driving-bar and anchor-plate rigidly in line with each other, but not



preventing the withdrawal of the driving-bar from the slot in a direction away from the point *b* and in line with the axis of the driving-bar. The slot *g* is shown in longitudinal elevation, Fig. 4.

Both slots *g g'* are shown in cross-section (see Fig. 5) on the line 1 2, Fig. 4. The anchor-plate B has also a rigid eye or staple-shaped connecting projection *d* extending outwardly from its upper surface and adapted to engage with an eye in the end of the stay C, forming a hinged or flexible joint at a slight distance from the upper surface of the anchor-plate. The eye or staple *d* (see Figs. 1, 2, 3, and 6) is located midway between the longitudinal edges of the plate B and somewhat nearer the point *b* than the points *cc'*. The outward projection of the eye or staple *d*, its nearer proximity to the point *b* than to the upper points *cc'*, and its flexible or hinged joint with the stay C all act in conjunction and cause the surface of the anchor-plate B to become perpendicular to the line of pull when a strain is applied to the outer end *k* of the stay C after the anchor has been driven and the driving-bar detached and withdrawn. The appearance of the anchor as applied to brace a post and stay the fencing is shown in Fig. 6, the earth or soil being shown in vertical section. Of course it will be understood the same driving-bar is used repeatedly in driving one anchor after another. At a short distance from its upper end the driving-bar A is fitted with a cross-head *a*. The cross-head is for the purpose of forming a handhold for convenience in detaching and withdrawing the driving-bar. When the driving-bar and anchor are connected, as shown in Fig. 1, the end of the driving-bar engages or butts against the bottom of the slot *h*.

The mode of operation of my invention is as follows: the operator attaches his driving-bar to the plate, as shown in Fig. 1. Holding the bar vertical or at any desired angle he strikes upon the upper end with a hammer, thus quickly and easily sinking the anchor to the depth desired, the stay following the hole made by the bar. Now grasping the cross-head handles of the bar by slightly twisting and pulling the latter is easily detached and withdrawn. A pull on the stay will now cause the anchor-plate to take its proper position, when it is ready for connection to the object to be secured. The operation may be indefinitely repeated with the same driving-bar, sinking as many anchors as required. These anchors may be applied to any purpose whatever where it is desired to secure an object to the ground.

Changes in the material and in the form, size, proportion, and the minor details of the construction of my invention may be resorted to without departing from the principles involved or sacrificing any of its advantages.

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In ground-anchors adapted to be driven by means of detachable driving-bars; the combination of a thin, flat, and oblong anchor-plate, adapted to present its center converging, lower end edges to the resistance of the soil in driving, and to resist being withdrawn, by partially revolving, and thereby presenting its entire upper surface to the resistance of the soil, vertical to the line of pull; and a surface-reaching stay wire or rod, connected to the said plate by means of a flexible hinge-joint all as set forth and for the purpose specified.

2. In a ground-anchor used and driven by means of a detachable driving-bar; an anchor-plate, adapted to drive into the ground edgewise, and to withstand a strain, by partially revolving on an axis parallel to its upper and lower surfaces; thereby opposing the entire area of its upper surface to the resistance of the earth perpendicular to the line of pull; all substantially as shown and described.

3. In a ground-anchor used and driven by means of a detachable driving-bar; the combination of an anchor-plate adapted to drive edgewise, and to withstand a retractile strain by partially revolving and opposing its entire upper surface to the resistance of the earth perpendicular to the line of pull; and, a detachable driving-bar having opposite longitudinal grooves in its lower end, which are adapted to slide into freely, and interlock in a retractile and detachable manner, with a corresponding slot extending into the anchor-plate from its edge; said slot being proportioned so that the end of the bar abuts with the anchor-plate; all substantially as described and for the purpose specified.

4. In a ground-anchor, an oblong anchor-plate having its lower end beveled from its longitudinal edges downward to its axis forming a center point, its upper end beveled upwardly and outwardly from its longitudinal axis to its edges forming two points, each point being bent or curved toward the bottom or lower face of the anchor-plate; the anchor-plate having a center slot extending downwardly from the juncture of the upper points and parallel to the axis, a suitable distance, and the said anchor-plate also having a rigid eye or staple projecting from its upper surface all as shown and for the purposes specified.

5. In ground-anchors adapted to be driven by means of detachable driving-bars; the combination of the driving-bar having the cross-head near its upper end, and the opposite longitudinal grooves in its lower end, with the thin, flat, and oblong anchor-plate, having the two similar offset upper points, the central longitudinal slot between the said two points,

the rigid, projecting, staple-shaped stay connection, and the central point converging lower edges; and in connection with the said anchor-plate by means of a flexible hinge-  
5 joint a surface-reaching stay rod or wire, adapted to be connected with the object to be anchored, at its outer end, all substantially as described and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM W. SWAN.

Witnesses:

W. J. JONES,

GEO. McALLISTER.