

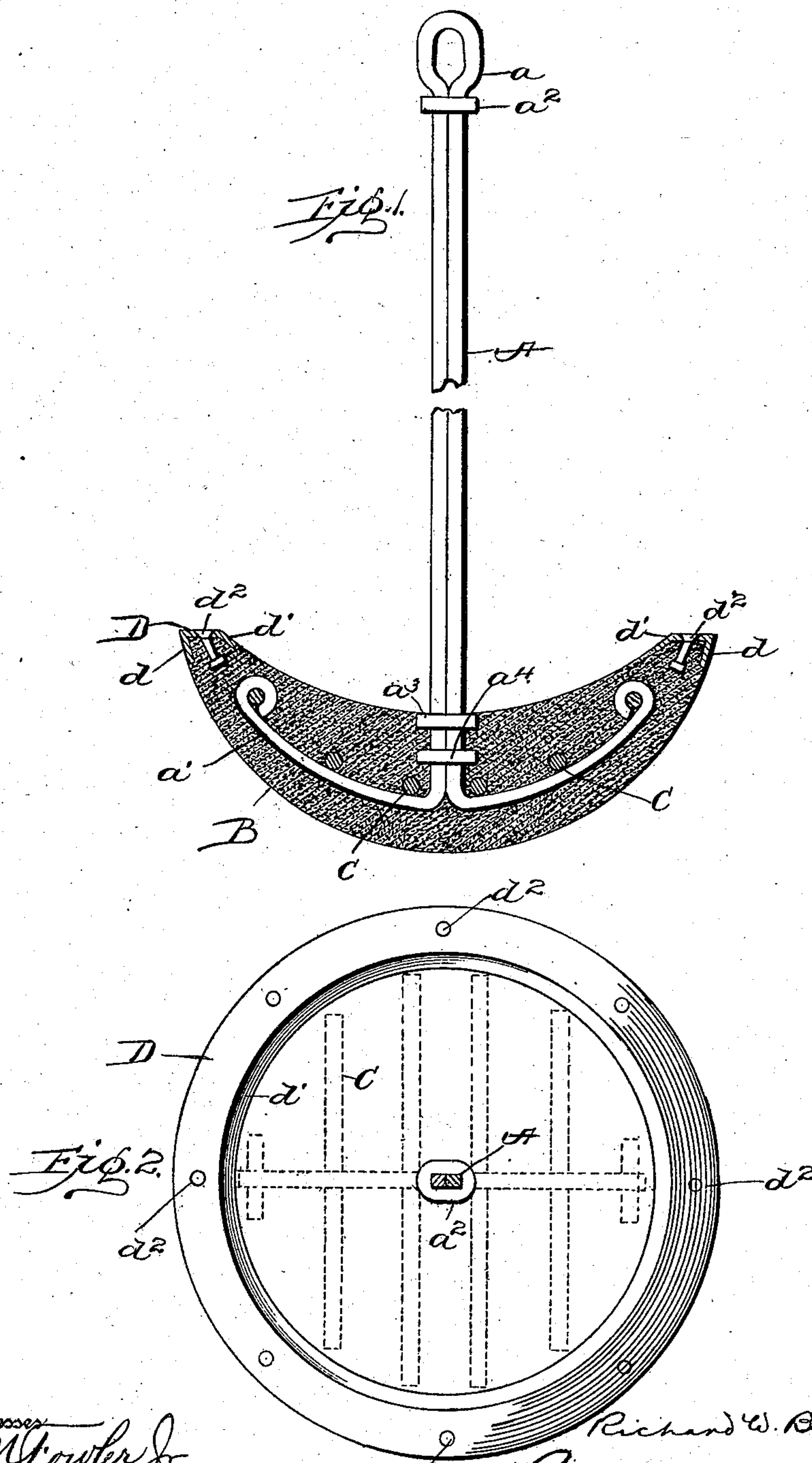
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R. W. BUCKLEY, JR.

ANCHOR.

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No. 881,541.

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To all whom it may concern:

Be it known that I, RICHARD W. BUCKLEY, Jr., citizen of the United States, residing at New York city, New York, have invented certain new and useful Improvements in Anchors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in anchors, and in particular to land anchors.

The object of my invention is to provide an anchor which may be quickly and economically constructed in various sizes to suit the conditions under which it is to be used, and which can be given any desired weight without becoming prohibitive in cost, while at the same time being durable and efficient.

With these general objects in view, my invention, broadly considered, comprises an anchor having a reinforced concrete crown and fluke portion or holding member, and a shank comprising a metallic tension member, by means of which the load is transmitted from the structure or element to be anchored to the reinforced concrete crown and fluke portion.

The preferred embodiment of my invention will now be described in connection with the accompanying drawings, and then particularly pointed out in the claims.

In the drawings Figure 1 is a central sectional view partly in elevation, of an anchor embodying my invention. Fig. 2 a plan of the crown and fluke portion, the shank being shown in section.

Referring to the drawings, A is a shank of metal, such, for example, as iron or steel, in the present instance, constructed of a continuous bar of metal doubled upon itself, a loop or eye *a* being formed at the head for the attachment of the anchor to the cable, rod or other member it is desired to anchor. The lower ends of the rod are spread outward radially to form arms *a'*.

Transversely to these arms are arranged suitable reinforcing devices, such as the bars C which in the present embodiment of the invention rest upon the arms *a'*, the bars being symmetrically arranged and decreasing in length from the center toward the outside of the crown and fluke portion, preferably so that the extremities of these bars lie substantially in a circle. The outer transverse bars

are preferably encircled by the ends of the arms *a'*.

At the head of the shank, just below the loop or eye *a* the shank is reinforced by a collar or band *a²*, and near the crown end of the shank, the said shank is reinforced by suitable means, as for example, two collars or bands *a³*, *a⁴* the former being arranged to come flush with the inside surface of the concrete.

Around the arms *a'* and bars C is cast the concrete or similar plastic material which forms the crown and fluke portion, this being preferably convex on its outer surface and concave on its inner surface, and having a circular form in plan, as shown in Fig. 2. This circular concrete crown and fluke portion B is somewhat larger in diameter than the diameter of the circle in which lie the extremities of the bars C and the margin of the concrete is protected by an annular curb-plate indicated at D, this curb-plate having an exterior flange *d* and an inner flange *d'*. This curb-plate is held to the concrete in any suitable way, but preferably by pins *d²* secured to the underside of the plate D and bedded in the concrete while the same is plastic. It is to be noted that these pins extend into the concrete at an angle to the face of the curb-plate, so that the latter cannot be removed without breaking the concrete.

It will be observed that by a construction such as above described, the load to be held is transmitted by the shank A to the reinforcing means, such as the arms *a'* and bars C, and is then distributed by them through the concrete mass, thus rendering it possible to keep the strain per unit area on the concrete within the usual limits allowed in practice. Furthermore, since the cost of concrete is low and only a comparatively small amount of metal is required for reinforcing it, it is possible with my invention to employ a land anchor of dimensions much larger than would be commercially practicable if metal only were used, since the cost of such large masses of metal would be prohibitive. As a result of this possibility of largely increasing the size of the anchor, the area of distribution may be largely increased, so that it becomes possible to obtain the desired anchorage at a less depth and in softer ground than would be commercially possible with anchors made wholly of metal. Furthermore, the increase of size brings with it the advantage of

a material increase in weight, which assists in producing the required anchoring effect. Furthermore, by the mushroom shape of the anchor I attain the important advantage
 5 that the earth above the anchor tends to crowd toward the shank instead of being forced outward, thus materially adding to the security of the anchorage and, at the same time, this mushroom shape becomes possible
 10 with concrete largely because of the support given to the outer margin of the concrete by the means for supporting said outer margin, such as the metallic curb-plate D, which acts as a hoop or band to prevent the concrete
 15 margin from deflecting backward under its load with the danger of breaking.

It is to be borne in mind that the holding area of the anchor increases as the square of the diameter, so that the margin protected
 20 by the curb-plate D becomes a very important factor in the amount of anchorage surface which it furnishes.

An important feature of my invention which contributes largely to the successful
 25 use of concrete is the use of a shank made wholly of metal, since this can be made of wrought iron or steel of high tensile strength without disadvantageous increase in the total cost of the anchor, and hence can be
 30 sufficiently elastic so as to avoid the transmission of sudden shocks or jars to the solid concrete which might otherwise be injured thereby.

Owing to the small diameter of the shank
 35 and the concavo-convex form of the concrete mass, any slight change in the direction of the pull upon the eye of the shank will not injure the anchorage, since the anchor can shift to a slight extent, rolling on its crown, thereby
 40 insuring that the load is transmitted always in an axial direction.

Another important advantage of a land

anchor of my invention is that the metal portion is light enough to be readily transported, while the holding portion, being of concrete,
 45 can be readily molded at the anchorage even in an earthen form or mold, thus avoiding the transportation of an integral heavy mass.

Having thus fully described my invention, what I claim as new and desire to secure by
 50 Letters-Patent, is:—

1. An anchor having a holding member of reinforced concrete provided with a concave upper surface and means for reinforcing the margin of said concrete. 55

2. In a land anchor, the combination, with a metallic shank, arms connected to said shank, and bars arranged transversely to said arms, of a mass of concrete inclosing said arms and bars. 60

3. In a land anchor, the combination, with a metallic shank, arms extending radially from said shank, and bars bearing against said arms, of a mass of concrete inclosing said arms and bars. 65

4. In a land anchor, the combination, with a metallic shank, arms extending radially from and formed integral with said shank, and bars arranged transversely to said arms and decreasing in length from the shank to-
 70 ward the outer ends of the arms, of a circular mass of concrete inclosing said arms and bars.

5. In a land anchor, the combination, with a metallic shank, of a holding member formed of reinforced concrete connected to said
 75 shank, and means independent of the reinforcing means and arranged to support the outer margin of the concrete.

In testimony whereof I hereunto affix my
 80 signature in the presence of two witnesses.

RICHARD W. BUCKLEY, Jr.

Witnesses:

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