Dec. 18, 1928. 1,695,523

W. E. BILHORN

CONCRETE ANCHOR

Filed Aug. 28, 1925

Fig. 1.

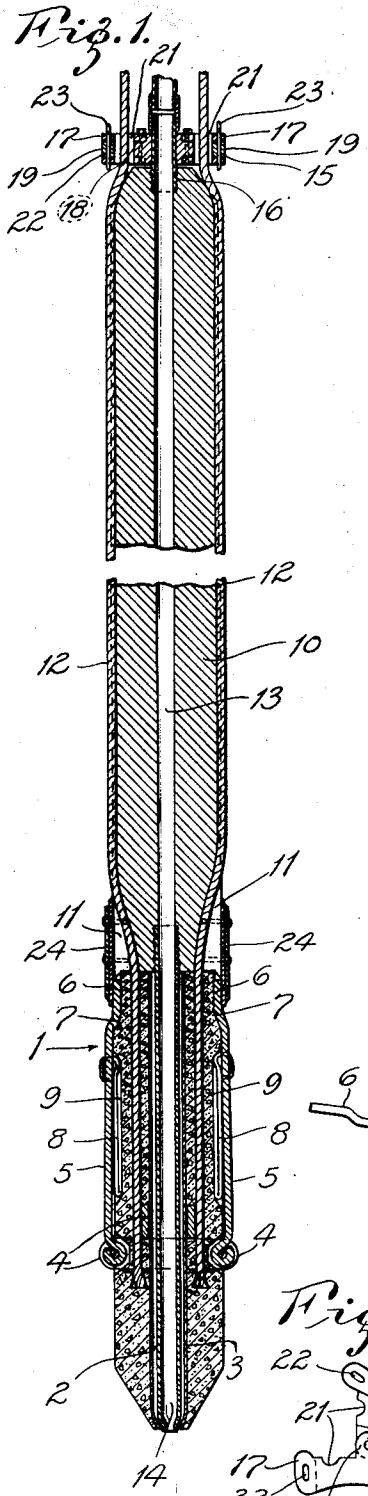


Fig. 2.

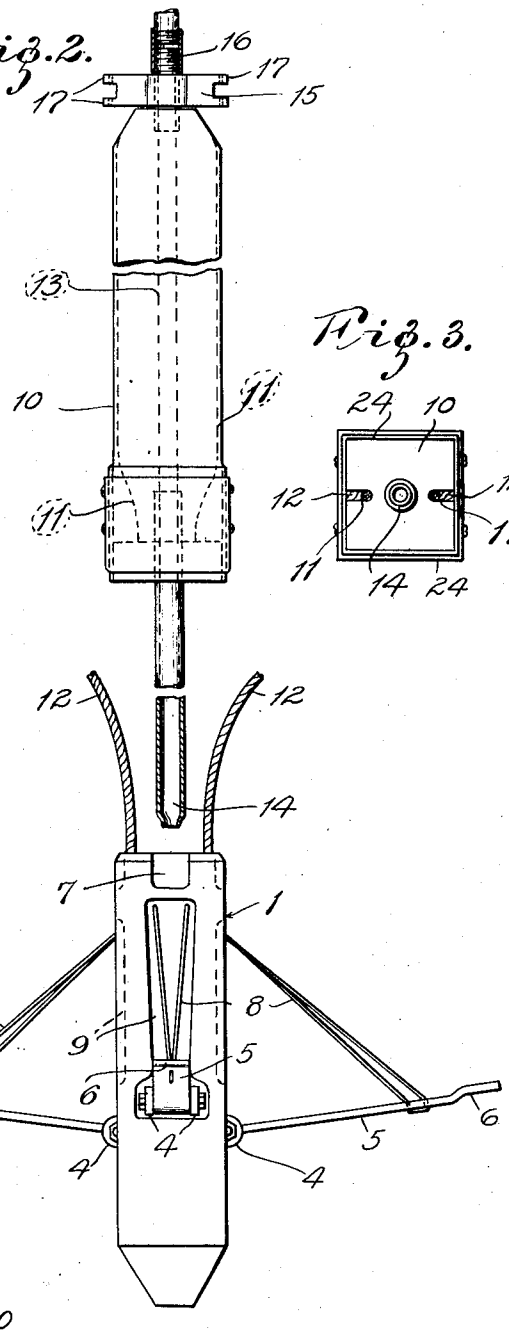
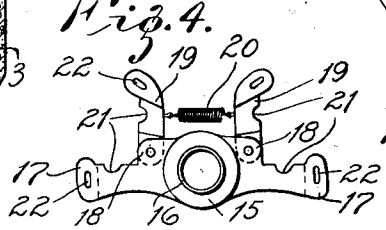


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

WALTER E. BILHORN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO BILHORN CONSTRUCTION COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

CONCRETE ANCHOR.

Application filed August 28, 1925. Serial No. 52,977.

My invention relates to concrete anchors or piles and has for its principal object an anchor that is easily positioned, that is capable of penetrating hard materials and sinking to a great depth in the earth and that is economical to manufacture. The anchor is particularly adapted to be embedded in the beds of rivers and to have channel-obstructing devices and the like secured thereto. The invention consists in the anchor and method of sinking same and in the parts and combinations of parts hereinafter described and claimed.

In the accompanying drawing, which forms part of this specification,

Fig. 1 is a longitudinal sectional view of an anchor embodying my invention;

Fig. 2 is an elevation;

Fig. 3 is a bottom view of the anchor cap; and

Fig. 4 is a detail view of the clamp used to secure the anchor cap to cables projecting from said anchor.

So called self-driving piles or anchors are frequently used in river protection work, such anchors having a longitudinal central bore through which a stream of water may be forced to wash away the earth ahead of the anchor and permit it to sink into position. In the drawing is illustrated such an anchor 1, preferably of reinforced concrete, having a central bore 2, which bore may be provided with any suitable lining 3. Pivotally secured to bosses 4 projecting from said anchor are flukes 5 that have inwardly bent upper end portions 6 that rest in recesses 7 provided therefor in the upper end of the anchor. Secured to said flukes 5 and to the anchor 1 as by being embedded therein are ropes or cables 8 which when the anchor is in position to be driven, rest in recesses 9 in the sides thereof. After the anchor 1 has been driven, the flukes 5 are adapted to swing outwardly and downwardly to the extent permitted by said ropes 8, thus preventing the withdrawal of the anchor.

To assist in driving the anchor 1 into position, a heavy cap 10 or follower is provided therefor. Said cap 10 has longitudinal slots 11 in which rest cables 12 that project from the top of the anchor. Said cap 10 is provided with a central bore 13 in the lower end of which is secured a nozzle 14 that projects through the central bore 2 of the anchor 1, the lower end of the cap resting on the top of the anchor. A clamp 15 is provided at the top of said cap for engaging the cables, thus holding the cap and anchor together.

Said clamp 15 comprises a tubular member mounted on a pipe 16 projecting form the upper end of said cap. Rigidly secured to said tubular member 15 are projecting arms 17. Pivotally secured to bosses 18 on said tubular member are arms 19. Secured at its ends to said pivotal arms 19 is a spring 20 that tends to pull said arms apart. The swinging arms 19 and the fixed arms 17 are provided with notches 21 adapted to receive the cable 12. The ends of said arms 17 and 19 are provided with holes 22 through which locking pins 23 may be passed when each swinging arm 19 has been forced against its fixed arm 17, to lock the arms together with the cable 12 held therebetween.

The lower end of the cap 10 has plates 24 secured thereto, said plates extending over the head of the anchor and engaging the ends of the flukes. The ends of said plates are spaced apart over the slots 11, to permit the cables 12 to pass into and out of the slots.

The method of sinking the anchor in a river bed is as follows: The cap 10 is mounted on the anchor 1 with its nozzle 14 extending through the anchor and with the plates 24 covering the ends of the flukes 5 of the anchor. The anchor cables 12 fit in the slots 11 of the cap 10 and at the top of the cap the cables are received between the arms of the clamps 15 and the locking pins 23 for said clamp arms are inserted in the holes thereof. The anchor is then lowered until it rests on the river bed and water under pressure is forced through the cap and anchor, washing away the earth at the bottom of the anchor. Thus the anchor gradually sinks into the earth. It may be advisable to raise the anchor slightly at times and permit it to drop into position. After the anchor has been driven far enough into the earth (which will ordinarily be below the maximum depth of scour of the river) the locking pins 23 of the clamp arms are withdrawn, thus freeing the cap 10 from the cables 12 of the anchor 1 and permitting the cap to be raised. The anchor cables are then secured to whatever device is desired to be held in the river, as a mattress for the river bed, or a current retarding device to be suspended in the river. The hole above the anchor is filled in.

The above described anchor is easily positioned and by reason of the heavy cap is able to penetrate hard materials. The flukes insure that it will remain in the earth and cannot be withdrawn. The method of sinking the anchor by means of the cap obviates the necessity for hammering on the anchor and it avoids the waste of materials that would follow from using larger anchors. Obviously, numerous changes may be made without departing from the invention and I do not wish to be limited to the precise construction shown.

What I claim is:

1. In combination, an anchor having flukes pivotally secured thereto and a removable cap, said cap having members overlapping the ends of said flukes.

2. In combination, an anchor having cables extending therefrom, a cap, said cap being provided with slots for receiving said cables, and means at the top of said cap for engaging said cables to hold said cap and anchor together, said means being disengageable from said cables when the anchor is in position.

3. In combination, an anchor having cables extending therefrom, a cap, said cap being provided with slots for receiving said cables, a clamp at the top of said cap for engaging said cables to hold said cap and anchor together, and said clamp being disengageable to permit the cap to be removed.

4. In combination a concrete anchor having flukes pivotally secured thereto, cables secured to said flukes and to said anchor, said anchor being recessed to accommodate said cables, the upper end of said anchor being provided with recesses for the ends of said flukes, cables extending upward from said anchor, a cap provided with slots for receiving said cables, plates secured to the lower end of said cap and fitting over the end of said anchor and the ends of said flukes and a clamp at the top of said cap for holding said cables, said clamp being disengageable from said cables when the anchor is in position.

5. In combination a concrete anchor having flukes pivotally secured thereto, cables secured to said flukes and to said anchor, said anchor being recessed to accommodate said cables, the upper end of said anchor being provided with recesses for the ends of said flukes, cables extending upward from said anchor, a cap provided with slots for receiving said cables, plates secured to the lower end of said cap and fitting over the end of said anchor and the ends of said flukes and a clamp at the top of said cap for holding said cables, said clamp having spring pressed clamping jaws and removable pins for holding said jaws closed.

6. In combination, a concrete anchor having flukes pivotally secured thereto, cables secured to said flukes and to said anchor, said anchor having recesses to accommodate said cables, the upper ends of said flukes being inwardly bent and said anchor being provided with recesses to accommodate said fluke ends, cables extending upward from said anchor, a concrete cap for said anchor, said cap being provided with slots to receive said cables, plates secured to the lower end portion of said cap and fitting over the end of said anchor and the ends of said flukes, said anchor and said cap being provided with longitudinal bores, the bore of said anchor being provided with a lining, a nozzle threaded into the lower end of said cap and extending into the bore of said anchor, terminating at the lower end of said anchor, a water supply pipe threaded into the upper end of said cap, and a clamp member mounted on said pipe, said clamp member having jaws releasably engaging said anchor cables.

Signed at St. Louis, Missouri, this 25th day of August, 1925.

WALTER E. BILHORN.