No. 326,908. PATENTED JULY 24, 1906.

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ANCHOR FOR AIR SHIPS.

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Fig. 1.

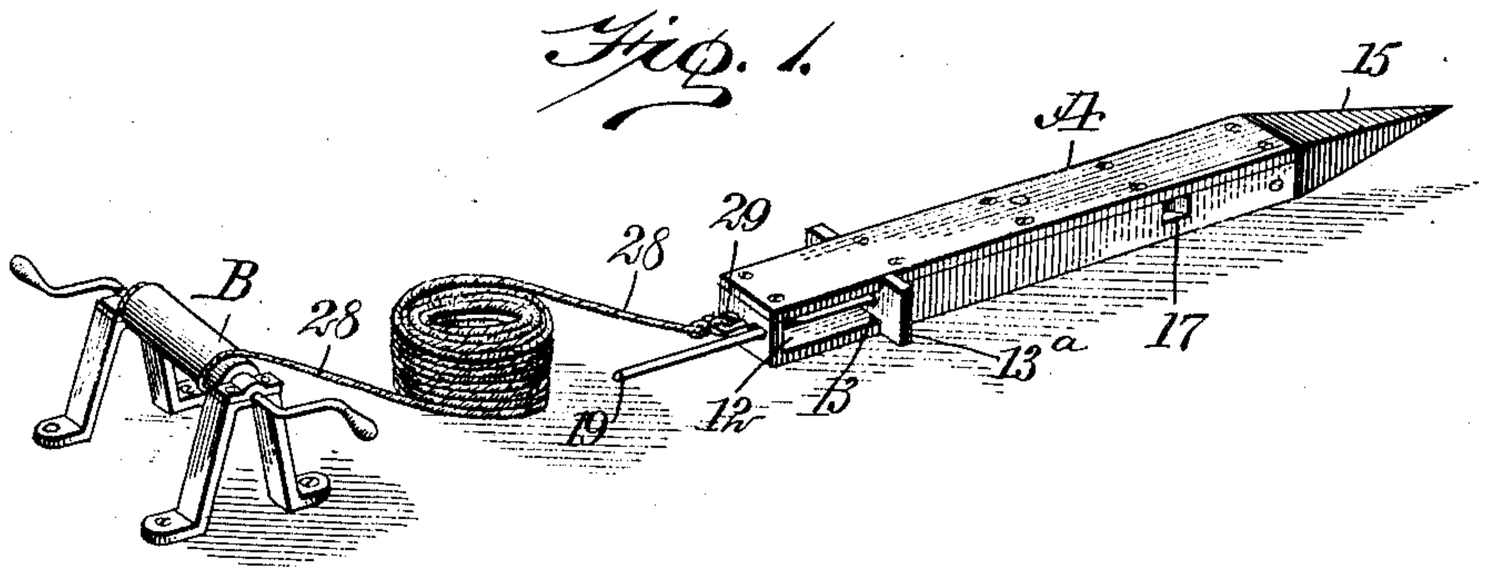


Fig. 3.

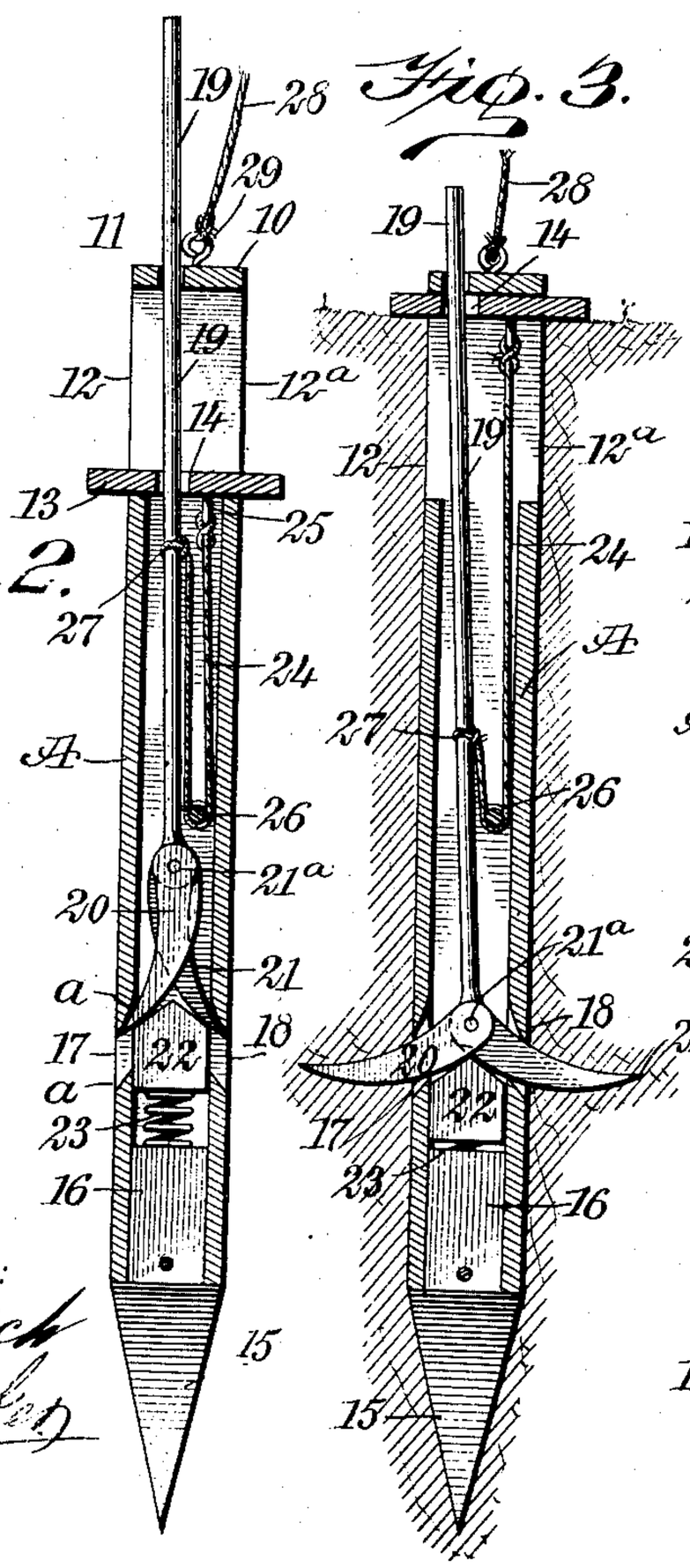
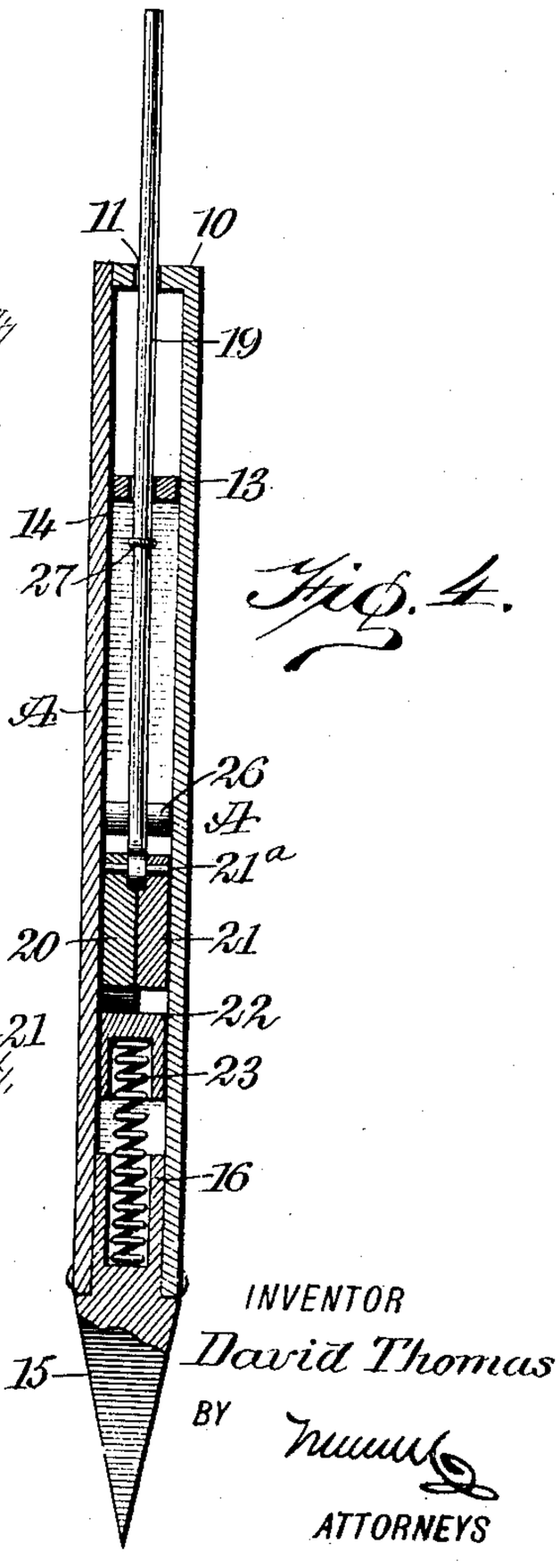


Fig. 2.

Fig. 4.



WITNESSES:

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DAVID THOMAS, OF SAN FRANCISCO, CALIFORNIA.

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Application filed June 1, 1905. Serial No. 263,299.

To all whom it may concern:

Be it known that I, DAVID THOMAS, a citizen of the United States, and a resident of the city of San Francisco, in the county of San Francisco and State of California, have invented a new and Improved Anchor for Air-Ships, of which the following is a full, clear, and exact description.

The purpose of my invention is to provide an automatic harpoon-anchor especially adapted for use in connection with buoyant vessels to effect a landing at a given point safely, quickly, and accurately and to so construct the harpoon-anchor that when it has entered the ground a predetermined depth claws will be forced out from opposite sides of the anchor into the ground, preventing the anchor being withdrawn or dislodged until the said claws have been purposely drawn in.

Another purpose of the invention is to provide means for preventing the claws taking their outer locking position until the proper time and to provide an anchor-rope attached to the anchor and to the windlass of the vessel, so that after the anchor has been driven into the ground and secured by operating the windlass the vessel can be drawn down to the anchor.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the anchor, the rope, and the windlass. Fig. 2 is a longitudinal section through the anchor, drawn on an enlarged scale, showing the parts in their normal position or the position they occupy when the anchor is thrown and before it is fully driven home. Fig. 3 is a view similar to that shown in Fig. 2, but illustrates the position of the parts when the anchor has fully entered the ground and when the retaining-claws are in action; and Fig. 4 is a longitudinal section taken at right angles to the sections shown in Figs. 2 and 3, the parts of the anchor being in their normal position.

The body A of the anchor is of box-like construction, being hollow, and is rectangular in cross-section and may be of any desired length. The said body is closed at its upper portion by a cap-piece 10, in which an aperture 11 is produced, and just below the said cap-piece 10 in opposing sides of the body longitudinal openings 12 and 12^a are made. In the openings 12 and 12^a a cross-bar 13 is loosely mounted, being adapted to slide in the said openings, and the said cross-bar is provided with guide extensions 13^a at its extremities, as is shown in Fig. 1, which prevents the cross-bar from leaving its proper position relative to the body A, and, further, an aperture 14 is made in the said sliding cross-bar 13 practically in longitudinal alinement with the aperture 11 in the cap-piece 10. A pyramidal point 15 is provided for the said body A at its lower end, and this point has a socket extension 16, which is carried by and fits into the bottom portion of the body A, as is best shown in Fig. 4. In the same sides of the body A in which the upper openings 12 and 12^a are made ports 17 and 18 are produced near the lower or pointed end of the body, as is shown in Figs. 2 and 3. These ports 17 and 18 are in transverse alinement; but the port on one side is horizontally in advance of the port on the opposite side. The upper walls *a* of these ports 17 and 18 are curved from the inside downwardly and outwardly, and the lower walls *a'* of the said ports are given a downward bevel in the same direction, as is shown also in Figs. 2 and 3. A rod 19 is loosely passed into the said body through the cap-opening 11 and the cross-bar opening 14, and at the lower end of the said rod 19 two prongs or spurs 20 and 21 are pivotally connected by a suitable pin 21^a. The said spurs rest one upon the other, are tapering, and are curved at their outer longitudinal edges, being concaved and their inner longitudinal edges convexed. Normally the said prongs or spurs 20 and 21 are contained wholly within the body A, as is shown in Fig. 2, and their lower concaved edges have bearing against the curved walls *a* of the said ports 17 and 18, as is illustrated in Fig. 2. These prongs or spurs 20 and 21 are held in the above-mentioned position by means of a combined check and guide block 22, whose upper faces, which are in engagement with the lower portions of the spurs or prongs 20 and 21, are beveled downwardly in opposite directions from a

central point, so that when the rod or bar 19 is forced downward the inclined upper faces of the block 22 direct the prongs or spurs 20 and 21 out through the ports 17 and 18, causing them to assume the outer substantially horizontal position shown in Fig. 3, which is their working position. The combined check and guide block 22 is held up to its work by means of a spring 23 of suitable tension, which is made to enter a chamber in the bottom portion of the guide-block, as is shown in Fig. 4, and to enter also the socket extension from the point 15.

It may be here remarked that the body A of the anchor is preferably made of iron, while its point 15, the spurs or prongs 20 and 21, and the rod 19 are preferably made of hardened steel.

A rope 24 is secured, by means of an eyebolt 25 or its equivalent, to the under face of the sliding cross-bar 13, and this rope 24 is carried around a friction-pulley or roller 26, located within the body A at a point just above the prongs 20 and 21 when in their normal position, and the said rope 24 is also attached to the rod 19 at a point about centrally of the length of the bar, as is shown at 27 in the drawings. An anchor-rope 28 is secured at one end by means of an eyebolt 25 or the like to the upper end of the body A, and the other end of this anchor-rope is attached to a windlass B of any approved construction, which windlass is located in the vessel supplied with the improved anchor.

In operation when the vessel is, say, from three to five hundred feet of the ground, the anchor is thrown overboard and directed toward the surface of the ground, sufficient slack being provided for the rope 28. The anchor upon striking the ground will enter it, and the block 22 will hold the prongs or spurs 20 and 21 in their inner normal position (shown in Fig. 2) until the anchor shall have penetrated into the ground sufficiently to cause the sliding cross-bar 13 to engage with the surface of the ground and be carried up to a contact with the cap-piece 10 of the body, as shown in Fig. 3, whereupon the sliding cross-bar will draw upward on the rope 24 and thus carry the rod or bar 19 downward, causing the prongs or spurs 20 and 21 to pass out through the ports 17 and 18 and enter the ground at each side of the body, as is shown in Figs. 3 thus securing the anchor firmly in position. After the anchor has thus been secured the vessel may be drawn down to the anchorage by winding the slack of the rope 28 upon the windlass B. When it is desired to raise the anchor, it is simply necessary to remove enough earth to allow the cross-bar 13 to slide down to its normal position, whereupon by means of a cord attached to the rod 19, which should have an eye in the top for this purpose, the occupant of the vessel may draw the rod upward, thus bringing the prongs or spurs 20 and 21 within the body A, and as the vessel ascends it will draw the body of the anchor out from the ground, and it can then be readily taken inboard or otherwise properly housed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. An anchor comprising a tubular body pointed at one end, a cross-bar having sliding movement in the body, said cross-bar being located adjacent to the upper portion of the body, pivotally-connected prongs mounted for sliding movement in the body, the said body being provided with ports for the outward movement of the prongs, and means for controlling the outward movement of the prongs by the action of the sliding cross-bar.

2. An anchor, consisting of a tubular body provided with a point at one end, a cross-bar having sliding movement in the upper portion of the said body, the body being provided with opposing ports adjacent to its point, a rod having sliding movement in the body, oppositely-curved prongs pivotally connected with the rod, the said prongs being located at the said ports and adapted in the lower position of the rod to pass out through the ports, and a connection between the cross-bar and the said rod, whereby to force the prongs outward when the said cross-bar is raised.

3. An anchor, consisting of a tubular body provided with a point at one end, a cross-bar having sliding movement in the upper portion of the said body, the body being provided with opposing ports adjacent to its point, a rod having sliding movement in the body, oppositely-curved prongs pivotally connected with the rod, the said prongs being located at the said ports and adapted in the lower position of the rod to pass out through the ports, a connection between the cross-bar and the said rod, whereby to force the prongs outward when the said cross-bar is raised, a tension-controlled combined check and guide block in engagement with the lower portions of the said prongs, which combined check and guide block serves to normally hold the prongs within the body and to direct their movement toward the said ports.

4. An anchor, comprising a tubular body, a cross-bar mounted to slide at the upper portion of the body, a rod having sliding movement in the said body, which body is provided with opposing ports in transverse alinement, but one horizontally in advance of the other, prongs longitudinally tapering and having an outward curvature, which prongs lie one on the other and are pivoted to the lower end of the said bar, a connection between the said rod and the cross-bar, whereby the rod is lowered as the cross-bar is raised, and a spring-controlled combined check and guide block located within the said body at said ports,

the said block having its upper face which engages with the prongs beveled from its center outwardly in opposite directions.

5. An anchor provided with opposing ports at its sides, a cross-bar having sliding movement at the upper portion of the anchor, prongs adapted to be normally located in the body, and means for forcing the said prongs out through said ports by the upward movement of the cross-bar, a windlass adapted to be located within the vessel to which the anchor is applied, and an anchor-rope attached to the windlass and to the said body.

6. In aerial vessels, a windlass located within the vessel, an anchor provided with ports and interiorly-located spurs, and means for forcing the said spurs out through the said ports when the anchor is embedded in the ground, and a flexible connection between the windlass and the anchor, whereby when the anchor is secured in the ground the vessel may be drawn down to the anchorage by operating the said windlass.

7. A device of the class described, comprising a stock for driving into the ground, anchor members for protrusion laterally from said stock, and means applied longitudinally of said stock and away from the same for causing protrusion of said anchor members.

8. A device of class described, comprising a stock for driving into the ground, and provided with transverse apertures, anchor members mounted for lateral protrusion through said apertures, and means operating longitudinally of said stock and away from same for causing the action of said anchor members.

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

DAVID THOMAS.

Witnesses:
GUSTAVE SONNENBURG,
ANGUST WEIMANN