

(No Model.)

4 Sheets—Sheet 1.

R. MACDONALD.  
MOVABLE SUBMARINE BATTERY.

No. 458,473.

Patented Aug. 25, 1891.

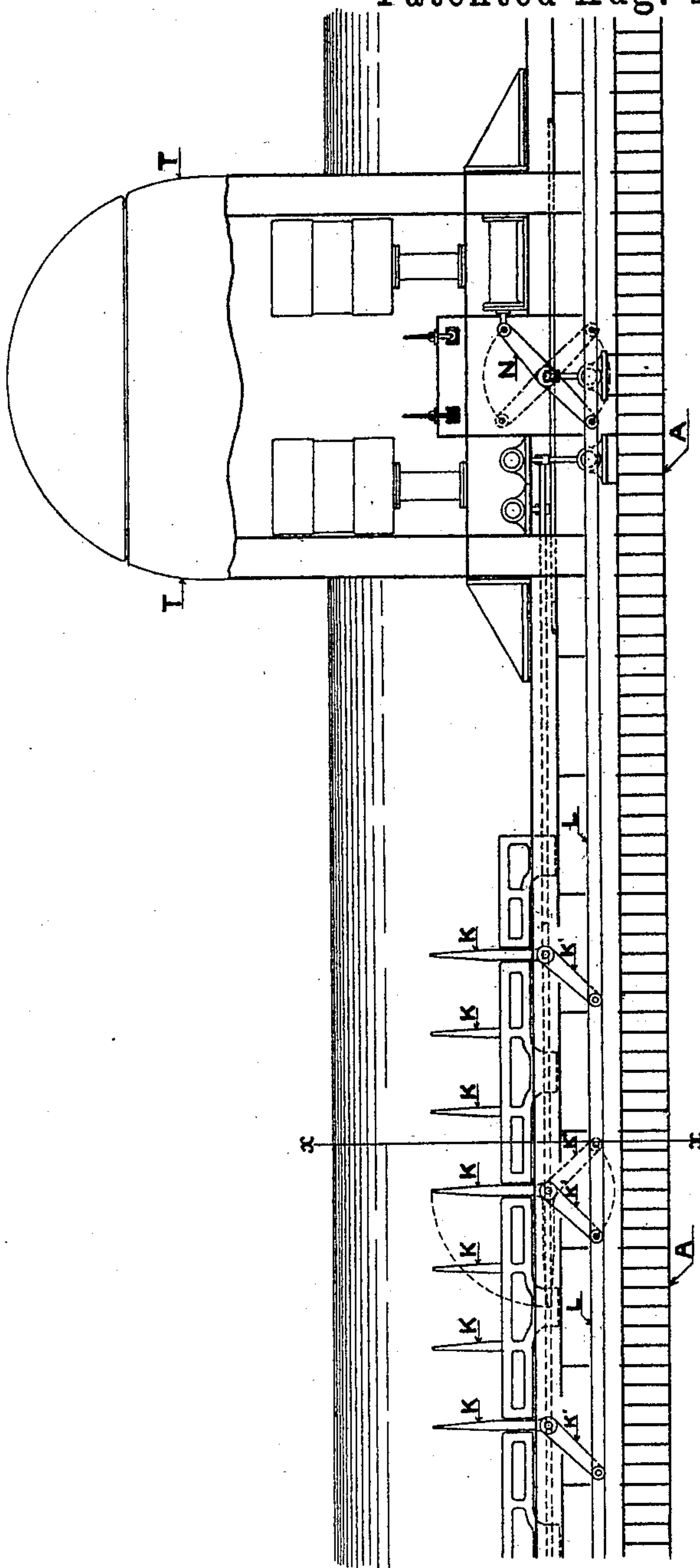


Fig. 1.

WITNESSES:

*William Verhas*  
*Charles Taylor*

INVENTOR

*Ronald Macdonald*

BY

*James M. Whitney*

ATTORNEY

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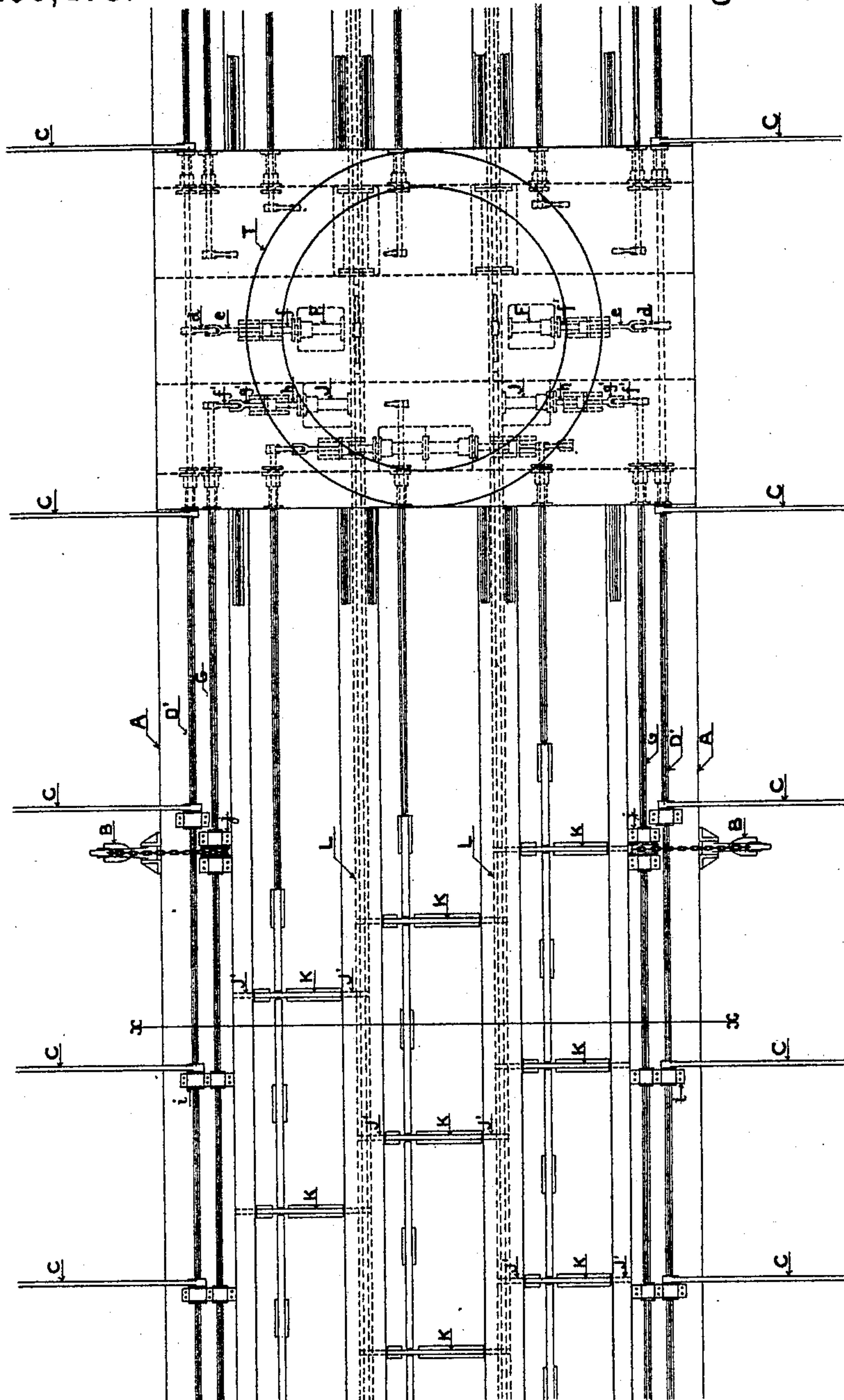


FIG. 2.

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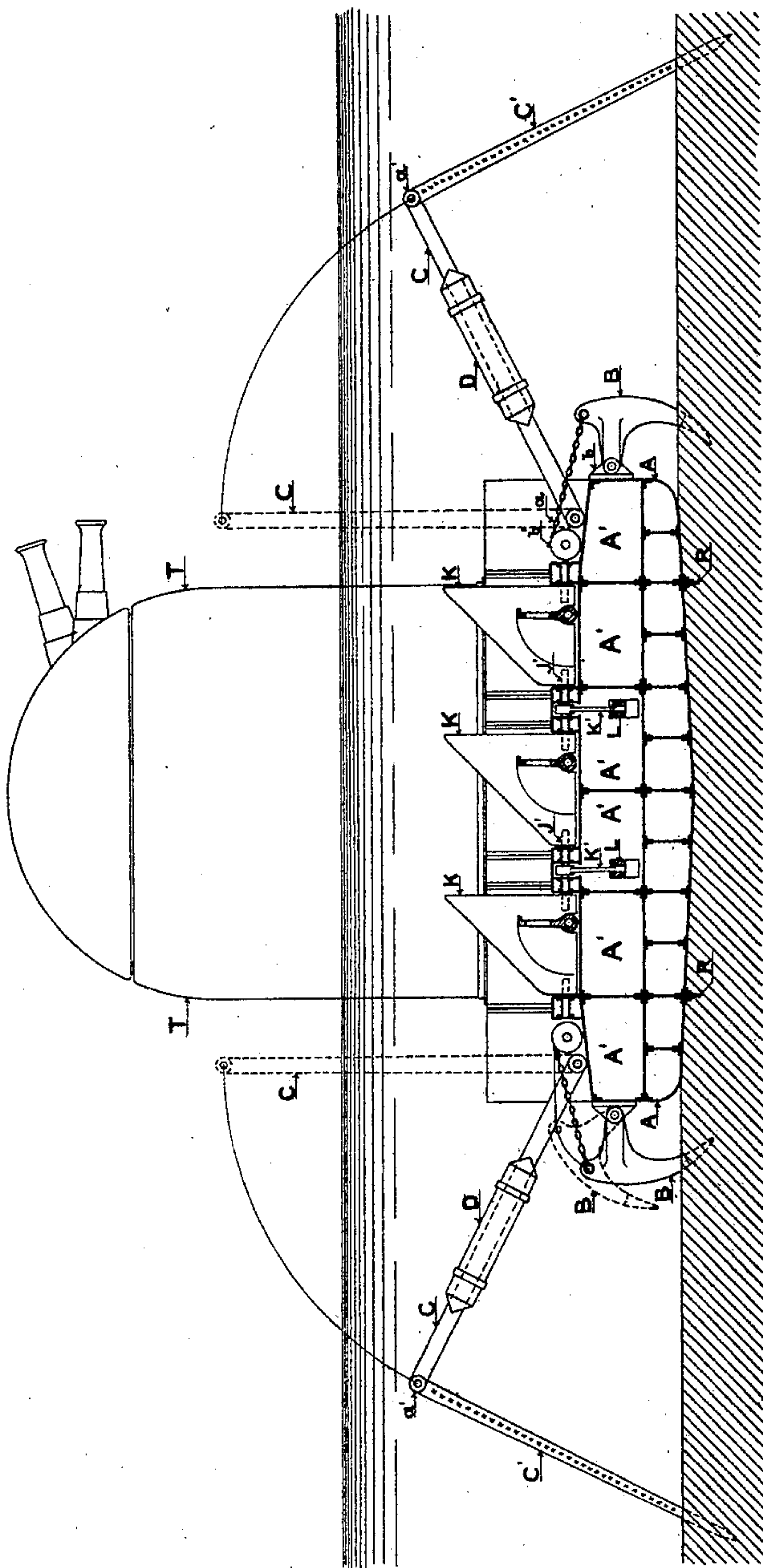


FIG. 3.

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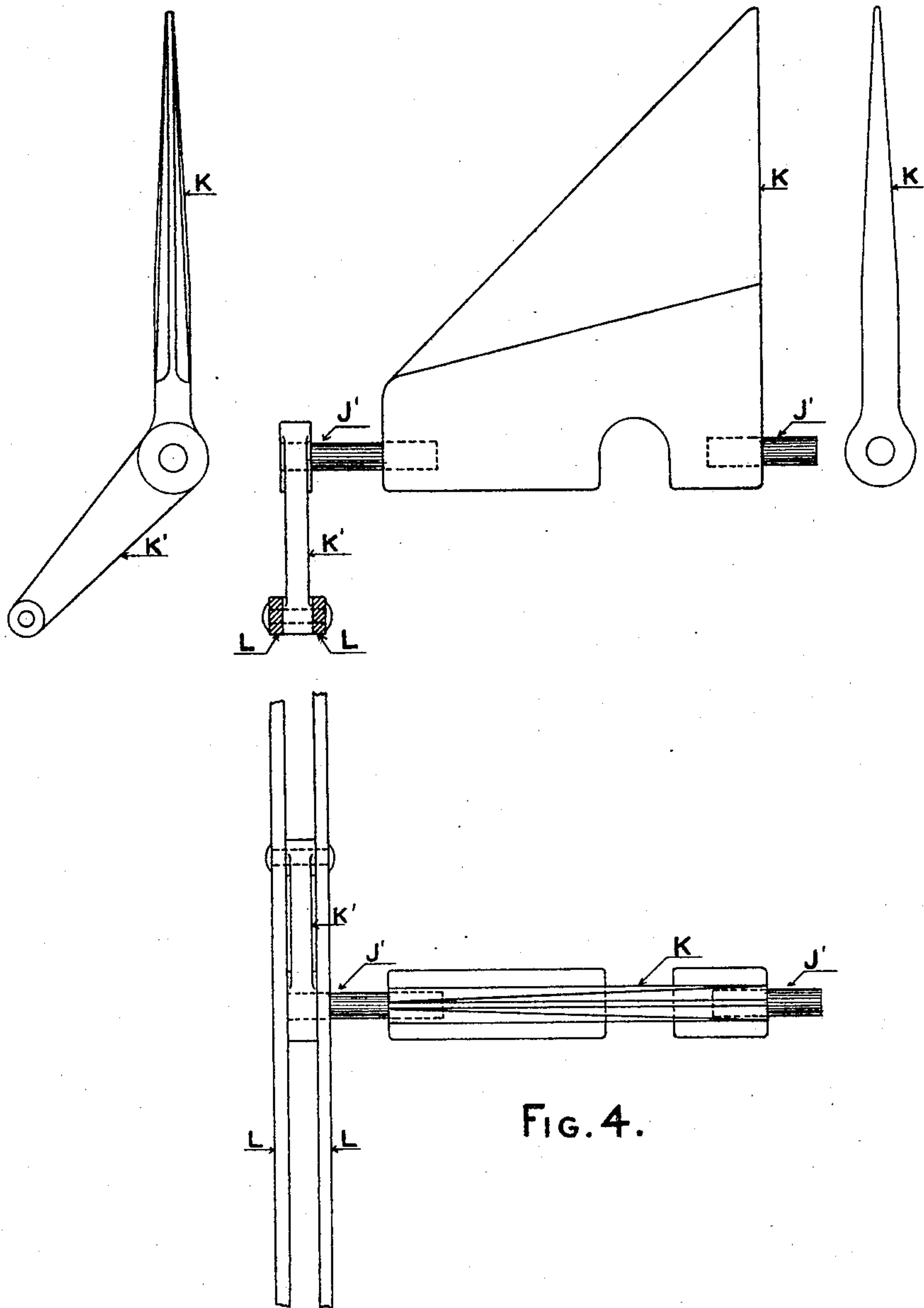


FIG. 4.

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*William Verhas*  
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# UNITED STATES PATENT OFFICE.

RANALD MACDONALD, OF BROOKLYN, NEW YORK.

## MOVABLE SUBMARINE BATTERY.

SPECIFICATION forming part of Letters Patent No. 458,473, dated August 25, 1891.

Application filed October 29, 1890. Serial No. 369,676. (No model.)

*To all whom it may concern:*

Be it known that I, RANALD MACDONALD, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Movable Submarine Batteries; and I do hereby declare that the following is a full, clear, and exact description of the same.

The object of this invention is to provide a battery which may be floated from place to place and in any desired locality and be for the most part submerged and anchored fast, thereby providing an efficient means for harbor and coast defense and for other defensive uses.

Figure 1 is a vertical longitudinal sectional view, and Fig. 2 a plan view and horizontal sectional view, representing my invention. Fig. 3 is a transverse sectional view on a larger scale, taken in the line  $xx$  of Figs. 1 and 2. Fig. 4 comprises views on a still larger scale of certain details of construction. In this figure the lower diagram is an enlarged plan view of one of the guard-blades, hereinafter described, and the upper three diagrams from left to right are respectively front, side, and rear views of the same.

The hull or float A, which carries the elements of the invention, is made preferably of metal and with horizontal compartments A'. By admitting water into these internal compartments A' of the hull the latter may be sunk until it reaches the bottom of the harbor or other water locality. In order to retain this hull in the required position, anchors B are provided at the sides thereof, being pivoted to the hull, as shown at  $b$ , and having chains  $a$  extended over pulleys or wheels  $b'$ , which latter, being worked by winches or any other suitable means, enable the anchors to be lowered into the position represented in Fig. 3 and thrust into the bottom to hold the hull or float in place, or, on occasion, to be raised up clear from the bottom into the position shown in dotted outline in Fig. 3 when the battery is to be removed. There are also provided to the sides of the hull laterally-extending spars C, pivoted to the sides of the hull and having attached to them at their outer ends  $a'$  stakes C'. To the spars C are attached floats D, which may be made adjustable along the spars by any suitable means.

When the battery is anchored in place, the spars are thrown downward and outward, thrusting the points of the stakes into the bottom of the harbor in which the float is anchored, the floats assisting to properly balance or sustain the spars. These latter may most properly be made of metal—iron or steel—and serve as supports for the usual or any suitable net to keep off torpedo-boats, &c. When the battery is to be moved from one place to another, the spars, with their stakes, are swung upward into the vertical position represented in Fig. 3.

Upon the hull or float A is provided a turret T, armored in any suitable way and preferably hemispherical at the top. When the battery is submerged to the requisite degree and resting upon the bottom of the harbor or other water locality, it is this top or upper part of the turret T that projects above the surface of the water, as indicated in Figs. 1 and 3.

It is of course to be understood that the object of submerging the hull is to protect the same by the surrounding or superincumbent water, leaving only a comparatively small area presented by those portions of the turret above the water exposed to the enemy's fire. It is also to be understood that any desired number of turrets may be placed upon the float or hull A. That portion of the turret which is exposed above the surface of the water when the battery is submerged should be made of cast-steel or any other suitable material, or armored in any appropriate way. It is provided with port-holes, through which the guns may be projected for firing and adjusted to proper loading position, as indicated in Fig. 3. The guns may be worked in any suitable or appropriate way by means of hydraulic accumulators or other mechanism of any suitable kind. The spars C have their pivotal connection with the hull provided by the attachment of their inner ends to shafts D', arranged around the longitudinal side of the hull or float A, as more clearly represented in Fig. 2, so that by giving an axial movement by any suitable means or by due connection with any suitable motive power to said shafts D' the spars may be drawn upward or brought downward, as required. As represented in the drawings, the shafts



D' are provided with crank-arms  $d$ , which are connected by suitable pitmen  $e$  with the plungers  $f$  of the hydraulic engines F. In like manner the anchors B are attached to  
 5 similar longitudinal shafts G, which are provided with crank-arms  $f'$ , connected with the pitmen  $g'$  of the plungers  $h$  of the hydraulic engines J, so that the requisite axial movement may be given to said shafts in order to  
 10 move upward or downward the anchors B, as occasion may require. It is of course to be understood that the shafts D' G work in suitable bearings or journals  $i$  and  $j$ , situated at the proper places along the sides of the float  
 15 or hull.

In order to provide a defense against the approach of hostile vessels, submarine torpedoes, and the like above the hull when submerged, the latter is provided with a system  
 20 of blades K, capable of being laid flat upon those portions of the deck or upper surface of the float or hull not occupied by the turret. These blades K are provided upon shafts J', the ends of which work in suitable journals or bearings provided to the deck of the  
 25 hull or float. These blades have a substantially angular form, as represented in the central diagram of Fig. 4, the sloping edge being made sharp, as indicated in the left-hand diagram of said figure, while the back is made broad, as represented in the right-hand diagram of said Fig. 4, for the purpose  
 30 of strengthening the blades. Each shaft J' is provided with an arm K'.

It will be noticed that the blades are placed in parallel longitudinal series. The crank-arms of each series are attached to a long shaft L, which shaft is connected at its end  
 35 adjacent to the turret to a lever N, actuated by a suitable hydraulic motor, and which at its longitudinal movement outward raises the blades to a vertical position, as represented in Fig. 1, while its reverse or inward movement brings the same down flat upon the  
 40 deck of the hull, as indicated in the plan view, Fig. 2.

Upon the under side of the hull or float are longitudinal keels R, which operate as vertical flanges when the battery is submerged,  
 50 and which sink into the silt or bottom of the harbor to assist the stability of the hull when submerged.

What I claim as my invention is—

1. The combination, with a submergeable  
 55 hull or float A, having one or more turrets T,

constructed for the working and firing of guns, of anchors B, having pivotal connection with said hull or float for holding the same in position when submerged, substantially as and for the purpose herein set forth. 60

2. The combination, with a submergeable hull or float A, having one or more turrets T, constructed for the working and firing of guns, of spars C, having pivotal connection with said hull or float, and stakes C', attached  
 65 to said spars, substantially as and for the purpose herein set forth.

3. The combination, with a submergeable hull or float A, having one or more turrets T, constructed for the working and firing of  
 70 guns, of anchors B and spars C, having stakes C', said anchors and spars having pivotal connection with said hull or float, substantially as and for the purpose herein set forth.

4. The combination, with a submergeable  
 75 hull or float A, having one or more turrets T, constructed for the working and firing of guns, of a series of guard-blades K, arranged upon the deck of the hull or float, substantially as and for the purpose herein set forth. 80

5. The combination, with a submergeable hull or float A, having one or more turrets T, constructed for the working and firing of guns, of one or more series of guard-blades K,  
 85 mounted on horizontal pivots on the deck of the float and provided with crank-arms K', and a rod or rods arranged to simultaneously actuate the several blades of the series, substantially as and for the purpose herein set forth. 90

6. The combination, with a submergeable hull or float A, having one or more turrets T, constructed for the working and firing of guns, of anchors B, secured to a longitudinal rod or rods, by the axial movement of which the  
 95 anchors may be raised or lowered, substantially as and for the purpose herein set forth.

7. The combination, with a submergeable hull or float A, having one or more turrets T, constructed for the working and firing of  
 100 guns, of spars C, having stakes C' and secured to a rod or rods, by the axial movement of which the spars and their adjuncts may be raised or lowered, substantially as and for the purpose herein set forth.

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Witnesses:

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 THOMAS C. MOORE.