

J. HUBER AND M. C. INDAHL.
 AUTOMATIC CONTROL FOR CABLE DRUMS OF MINE ANCHORS.
 APPLICATION FILED OCT. 23, 1917.

1,314,660.

Patented Sept. 2, 1919.
 2 SHEETS—SHEET 1.

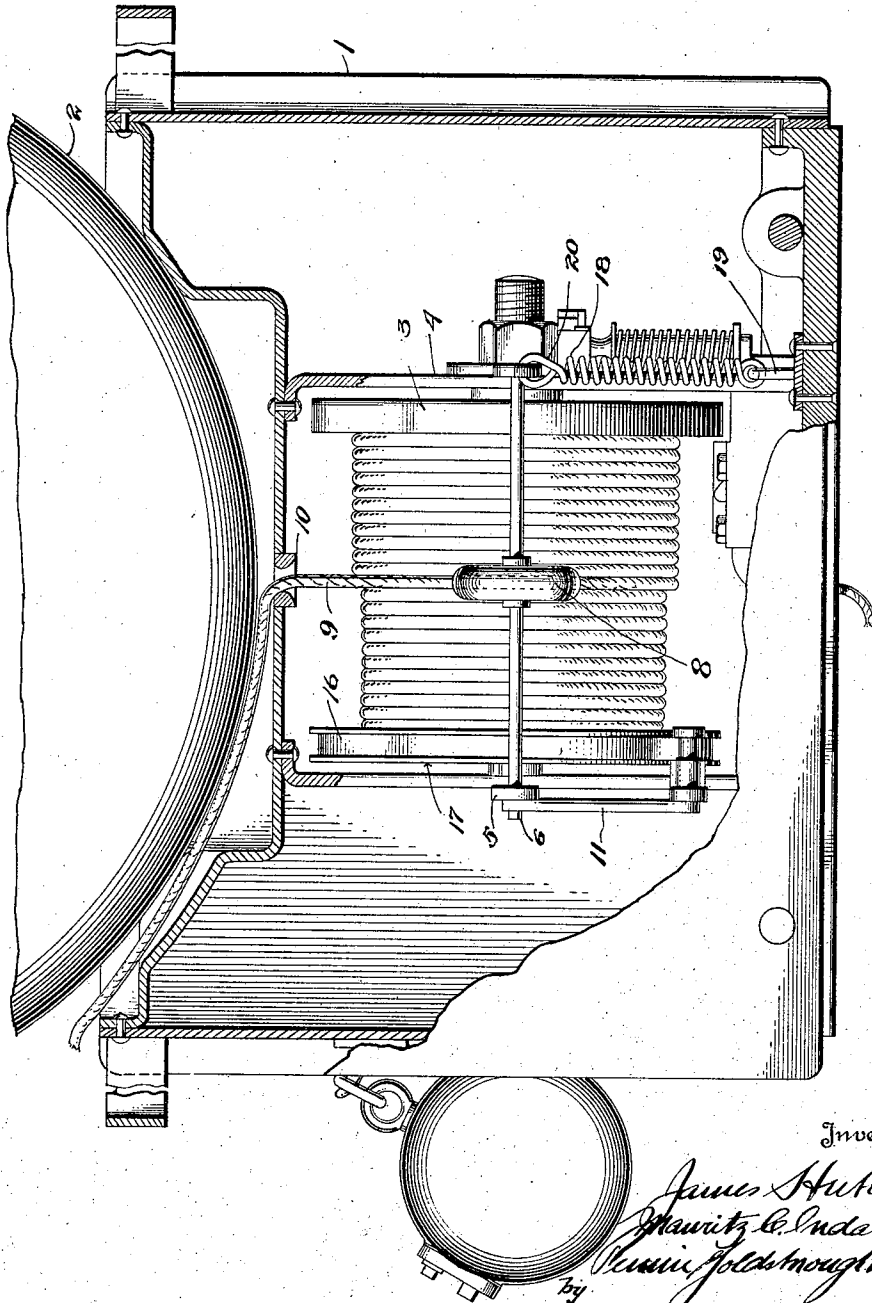


Fig. 1.

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Fig. 2.

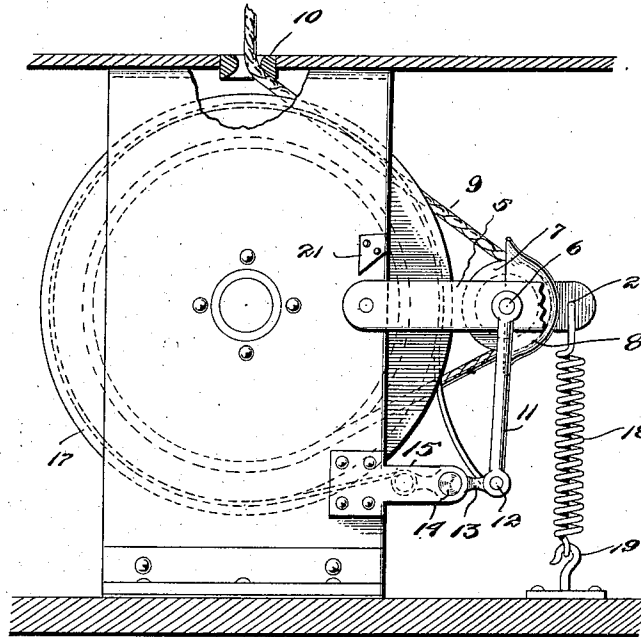


Fig. 3.

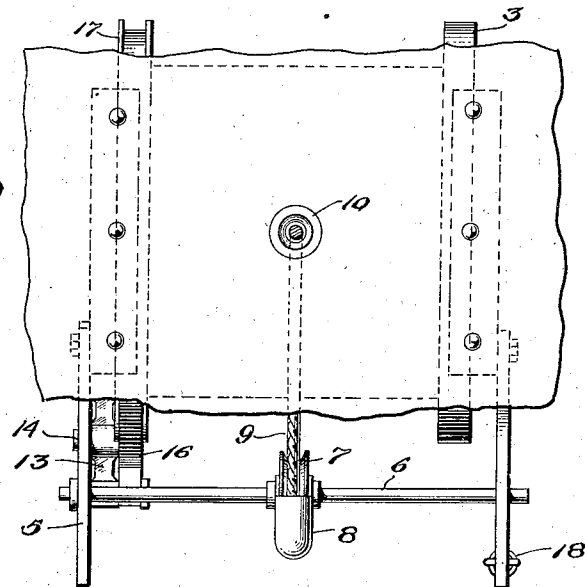
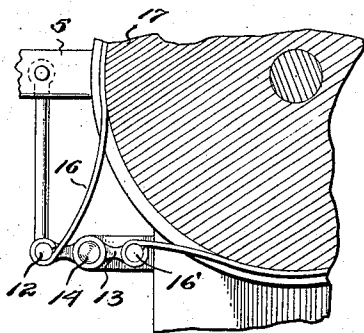


Fig. 4.

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UNITED STATES PATENT OFFICE.

JAMES HUBER AND MAURITZ C. INDAHL, OF PHILADELPHIA, PENNSYLVANIA; SAID HUBER ASSIGNOR OF HIS RIGHT TO VICKERS LIMITED, OF WESTMINSTER, LONDON, ENGLAND.

AUTOMATIC CONTROL FOR CABLE-DRUMS OF MINE-ANCHORS.

1,314,660.

Specification of Letters Patent.

Patented Sept. 2, 1919.

Application filed October 22, 1917. Serial No. 198,163.

To all whom it may concern:

Be it known that we, JAMES HUBER, a citizen of Switzerland, and MAURITZ C. INDAHL, a citizen of the United States, both residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Controls for Cable-Drums of Mine-Anchors; and we 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.

This invention relates to a device for automatically controlling the rotation of the cable drum of a mine anchor.

The primary object of the invention resides in the provision of a device by means of which the mooring cable will be permitted to pay out evenly from the cable drum during all conditions of launching and during the subsequent descent of the anchor in the water.

A further object of the invention resides in so constructing the device that the sudden strains to which the mooring cable is subjected will not be permitted to break the cable while on the other hand the device will operate in such a manner that the cable will be relieved of the strains without causing the mine to be dragged down by the anchor during the descent of the latter.

With these and other objects in view, such as will appear as the description progresses, the invention comprises the combination and arrangement of parts as set forth in and following within the scope of the appended claims.

In the drawing:

Figure 1 is a fragmental sectional view of a mine anchor showing a portion of a mine in place thereon and showing the manner in which the invention is associated with the mine anchor;

Fig. 2 is a fragmental view looking at right-angles of Fig. 1;

Fig. 3 is a detail of the brake operating mechanism; and

Fig. 4 is a fragmental plan view with parts thereof broken away.

In the drawing which illustrates one form of the invention a mine anchor 1 on which is supported the usual mine 2 is illustrated. This anchor includes the usual cable drum

3 mounted on supports 4. Pivoted on the supports 4 and extending outwardly therefrom is a pair of levers 5 between which a shaft 6 extends. The pulley 7 is mounted on this shaft 6 and is free to rotate and move longitudinally thereon. A guard 8 surrounds a portion of this pulley 7 and moves therewith longitudinally of the shaft. This guard 8 is for the purpose of preventing the mooring cable 9, which passes around the pulley, from riding off of the latter as the pulley moves to and fro on the shaft 6. This mooring cable 9 extends upwardly through a stationary fair lead 10 which is mounted in the upper portion of the mine anchor. It will be obvious with the use of the stationary fair lead that the pulley 7 must necessarily move longitudinally on the shaft 6 as the mooring cable unwinds from the drum. The value of having the fair lead stationary and the guide pulley movable, lies in the fact that the air is permitted to escape from the anchor more slowly than where the fair lead is movable in a slot to adjust itself to the unwinding of the cable. Thus the anchor will be permitted to descend more gradually with the stationary fair lead.

Pivoted on the extended end of the shaft 6 is a rod 11 which is, at 12, pivoted to a brake lever 13. This brake lever 13 is fulcrumed at 14 on a bracket 15, the latter being carried by one of the supports 4. A band brake 16 is connected to the ends of the lever 13 at 12 and 16' and passes around a brake drum 17 formed on one flange of the cable drum 3. The arrangement of the levers 5, the rod 11 and the brake is such that when the levers and rod move downwardly the brake is applied and conversely the brake is relieved when the levers 5 move upwardly.

In order that the brake may be applied with a predetermined force, normally, a spring 18 is secured at 19 to the bottom of the mine anchor and, at 20, to one of the levers 5. The upward movement of the levers against the tension of the spring 18 is limited by a pair of stops 21 which are carried by the supports 4.

It will thus be seen that inasmuch as the spring 18 will exert a predetermined breaking force on the cable drum the cable will pay out from the drum against this braking force and will thus be caused to unwind

evenly either during the launching of the mine or during its subsequent descent in the water. Furthermore should the cable be suddenly subjected to a greater strain this
5 will be prevented from causing the snapping or breaking of the cable because of the fact that the spring 18 will permit the pulley 7 to move upwardly and thus release the brake in proportion to the increase of the strain.
10 This action serves to prevent the breaking of the cable but permits the continuous paying out of the same so that the mine is not for an instant held stationary with relation to the anchor. The result is that the mine
15 will not be dragged down by the anchor in the descent of the latter. The arrangement of the brake for the drum in the manner set forth in this specification also insures the automatic adjustment of the brake as the
20 distance between the axis of the drum and the point where the cable leaves the drum decreases, or in other words as the leverage decreases.

There has been described but one embodiment of the present invention but it is of
25 course to be understood that various modifications may be made without departing from the invention as it is not essential whether the brake be of the band type or of the shoe type, or whether the spring be an
30 expansion type or of the compression type.

What is claimed is:

1. The combination with a mine and its anchor which latter includes a cable drum,
35 of means tending to resist the separation of the same with a predetermined force, said means being operated, automatically, to decrease said force when undue strains are applied to the mooring cable.

40 2. The combination with a mine and its anchor, which latter includes a cable drum, of means for braking the latter, the effectiveness of said means being decreased, automatically, by the mooring cable when the
45 strains on the latter increase.

3. The combination with a mine and its anchor, which latter includes a cable drum, of a brake for the latter and resilient means for applying the brake, said means being
50 controlled by the mooring cable.

4. The combination with a mine and its anchor, which latter includes a mooring
55 cable drum, of a lever extending beyond the periphery of the drum, a pulley carried thereby, the mooring cable passing over said pulley, a brake for the drum operated by the
60 cable and resilient means tending to move the lever in such a direction as to apply the brake, the force on the cable tending to move the lever in the opposite direction to release
65 the brake.

5. The combination with a mine and its anchor, which latter includes a cable drum, a pulley mounted on a movable support over
65 which pulley the mooring cable passes to form a loop, a brake for the drum operated by the movement of the pulley support, and resilient means for moving the support in
70 one direction to apply the brake, the straightening of the loop in the cable tending to move the support in the opposite direction to release the brake.

6. The combination with a mine and its anchor, which latter includes a mooring
75 cable drum, of a brake therefor, and means for applying the brake, the force tending to separate the mine and anchor being operative to release the brake.

7. The combination with a mine and its anchor, which latter includes a mooring
80 cable drum, of a brake therefor, and resilient means for applying the brake, the force tending to separate the anchor from the mine being operative to release the brake as
85 it overcomes the force of the aforementioned resilient means.

In testimony whereof we affix our signatures.

JAMES HUBER.
MAURITZ C. INDAHL.