M. C. A. H. PAPE.

CUTTING DEVICE.

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1,419,302. Patented June 13, 1922.

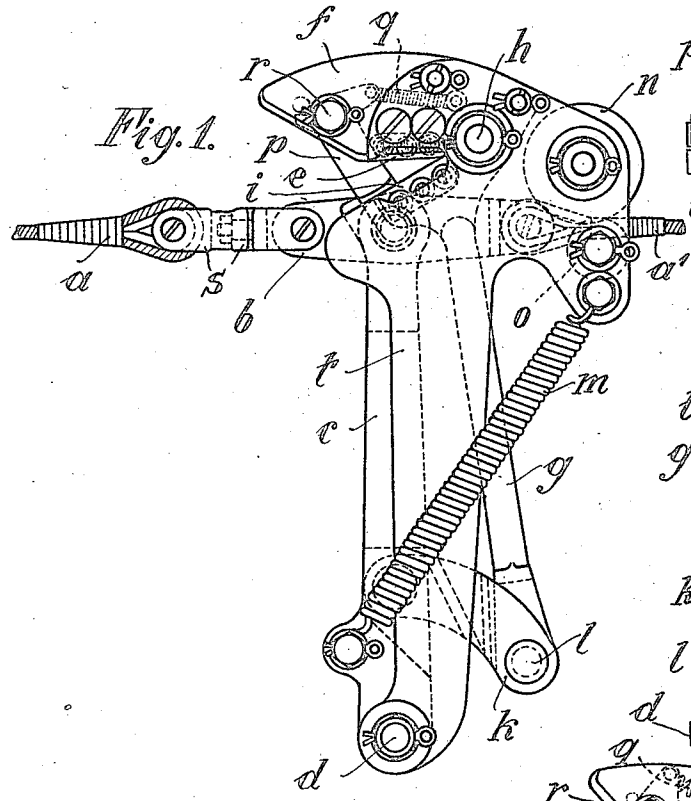


Fig. 1.

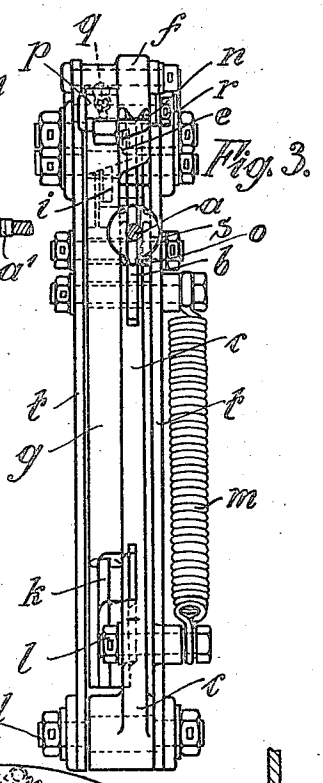


Fig. 3.

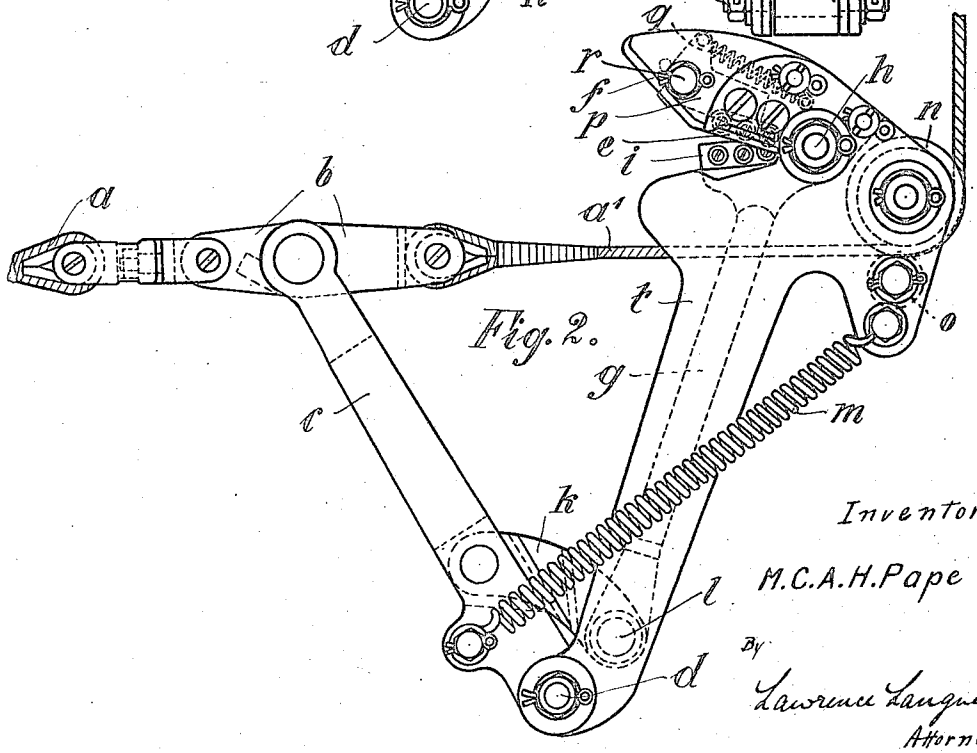


Fig. 2.

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CUTTING DEVICE.

1,419,302. Specification of Letters Patent. Patented June 13, 1922.

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(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, MAX CARL AUGUST HERMANN PAPE, a German citizen, residing at Kiel, Germany, have invented certain new and useful Improvements in Cutting Devices (for which I have filed applications in Germany Sept. 4, 1919, Patent No. 324,789; in Spain Dec. 13, 1919, Patent No. 71,709; in Finland Dec. 19, 1919, Patent No. 8133, and in Sweden Dec. 8, 1919), of which the following is a specification.

The romoving of submarine mines is generally performed by means of a search-line extended between and dragged through the water by two vessels running about parallel courses, one abeam the other, in order to fish or catch, the anchor-cable, preferably a wire-rope, of the mine. The said search-line is mounted, at some distances apart, with a series of suitable cutting devices which will cut any anchor-rope striking against or sliding into such a cutting device, in order that the mine may rise or buoy up and may then be destroyed.

The present invention relates to improvements in such cutting devices adapted to be inserted into or connected with a search-line of the kind in question. The object of the improvements being to produce a cutting device which is simple in construction and efficient in use. And with this end in view my invention consists in certain novel features of construction and combinations of parts as will be hereinafter fully described, and pointed out in the claims, with reference to the drawing in which:

Figure 1 is a plan of the cutting device in opened position,

Figure 2 is likewise a plan showing the device nearly in closed position, and

Figure 3 is a lateral elevation of the device at right angles to Fig. 1.

Similar letters refer to similar parts throughout the several views.

The two parts a and a^1 of the search-line are attached to the ends of a link b pivotally connected to the end of a draw-lever c which is journalled on a bolt d between the two brackets t of the cutter-head carrying the stationary cutting-blade e with the horn-shaped catcher f. Near the corner of the mouth in the cutter-head is situated a bolt h to which is pivoted the cutting-lever g carrying the second or movable cutting-blade i. A link k connects the bolt l of the cutting-lever g with the draw-lever c. A suitable tension spring m fastened on the one hand to the cutter-head and on the other hand to the draw-lever c tends to hold the parts in the position shown in Figure 1. In the cutter-head are mounted between the brackets t two guide rollers n and o for the part a^1 of the search-line. The entrance of the cutter-mouth is barred by a lever arm p pivoted at r to the horn f and kept by a suitable spring q in the position shown in Figure 1 in which the end of the arm p is resting against the cutting lever g. Between the link b and the part a of the search line a swivel s may be inserted, as shown.

The cutting device is operating in the following manner: When the device is dragged through the water and the part a of the search-line strikes against the anchor-rope of a submarine mine, the said part a owing to the yielding connection of the part a^1 with its towing vessel, is drawn along and around the said anchor-rope until the latter is caught by the catcher or horn f and strikes against the lever p the purpose of which being to keep the cutting-blades of the device apart until the anchor-rope has actually entered the entrance or front part of the mouth. By the pressure of the anchor-rope against the lever p this latter is rocked back so far as to release or set free the draw-lever and the cutting-lever. The anchor-rope is now firmly clamped between the two cutting-blades. By the further dragging of the part a by its towing vessel the link b and the draw-lever c are pulled away from the cutter-head held back by the anchor-rope. This rocking motion of the draw-lever is transmitted by the link k to the cutting-lever g in such a manner that the blade i is moved towards the blade e whereby the anchor-rope is cut through.

As obvious from Figure 2 the arrangement and co-operation of the levers c and g are such that only a slight pull applied to the search line a will suffice to effect the cutting of the anchor-rope. The cutting operation is moreover facilitated by the fact that only the lever connection c, g is to be moved relatively to the cutter-head by the pulling motion of the part a of the search line. Owing to the free movable arrangement of the search line the cutting device

can be easily and reliably directed and applied to the anchor-rope of the mine.

After the anchor-rope has been cut, the cutter-head is advanced to the draw-lever e by the spring m, the parts returning thereby from about the position shown in Figure 2 to the position shown in Figure 1. The lever p is at the same time returning under the action of its spring q into the locking position. The cutting device is now ready again for a new cut.

I claim:

1. A device for cutting anchor-ropes of submarine mines, comprising a search line adapted to be drawn through the water, a cutter head slidably arranged on the search-line and provided with a fixed cutting blade and a movable cutting blade, and a lever pivotally connected with the search line and in operative connection with the movable cutting blade, so as to move the latter against the fixed cutting blade when the cutter head is held back by the anchor rope of a mine.

2. A device for cutting anchor-ropes for submarine mines, comprising a search line adapted to be drawn through the water, a cutter head slidably arranged on the search-line and provided with a fixed cutting blade and a movable cutting blade, and a link arranged in the search-line, a lever pivotally connected with the link and in operative connection with the movable cutting blade so as to move the latter against the fixed cutting blade when the cutter head is held back by the anchor-rope of a mine.

3. A device for cutting anchor-ropes for submarine mines, comprising a search line adapted to be drawn through the water, a cutter head slidably arranged on the search line and provided with a fixed cutting-blade and a movable cutting blade, a link arranged in the search-line, a lever pivotally connected with the link, and a second lever pivoted to the cutter head and carrying the movable cutting blade, both levers being connected in such manner that on exerting a pull on the search-line the movable cutting blade is drawn against the fixed cutting blade when the cutter head is held back by the anchor-rope of a mine.

4. A device for cutting anchor-ropes for submarine mines, comprising a search-line adapted to be drawn through the water, a cutter head slidably arranged on the search-line and provided with a fixed cutting blade and a movable cutting blade, a link arranged in the search-line, a lever pivotally connected with the link, a second lever pivoted to the cutter head and carrying the movable cutting blade, an arm on the cutter head to the end of which the first-named lever is pivotally attached, and a link between the two levers for connecting the levers in such manner that on exerting a pull on the search-line the movable cutting blade is drawn against the fixed cutting blade when the cutter-head is held back by the anchor-rope of a mine.

5. A device for cutting anchor ropes for submarine mines, comprising a search line adapted to be drawn through the water, a cutter head slidably arranged on the search-line and provided with a fixed cutting blade and a movable cutting blade, a link arranged in the search line, a lever pivotally connected with the link, a second lever pivoted to the cutter head and carrying the movable cutting blade, an arm on the cutter head to the end of which the first-named lever is pivotally attached, a link between the two levers for connecting the levers in such manner that on exerting a pull on the search-line the movable cutting blade is drawn against the fixed cutting blade when the cutter-head is held back by the anchor-rope of a mine, a pawl pivotally attached to the cutter head and adapted to lock the movable cutting blade in its open position and a spring attached at one end to the pawl and at the other end to the cutter head and adapted to hold the pawl in locking position.

6. A device for cutting anchor-ropes for submarine mines, comprising a search line adapted to be drawn through the water, a cutter head slidably arranged on the search-line and provided with a fixed cutting blade and a movable cutting blade, a link arranged in the search-line, a lever pivotally connected with the link, a second lever pivoted to the cutter head and carrying the movable cutting blade, an arm on the cutter head to the end of which the first-named lever is pivotally attached, a link between the two levers for connecting the levers in such manner that on exerting a pull on the search line the movable cutting blade is drawn against the fixed cutting blade when the cutter-head is held back by the anchor rope of a mine, and a spring attached at one end to the first-named lever and at the other end to the cutter head adapted to draw the two parts together to reset the device after an anchor-rope has been cut.

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Witnesses:

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MAX HANS FRIEDRICH FRABNERS.