

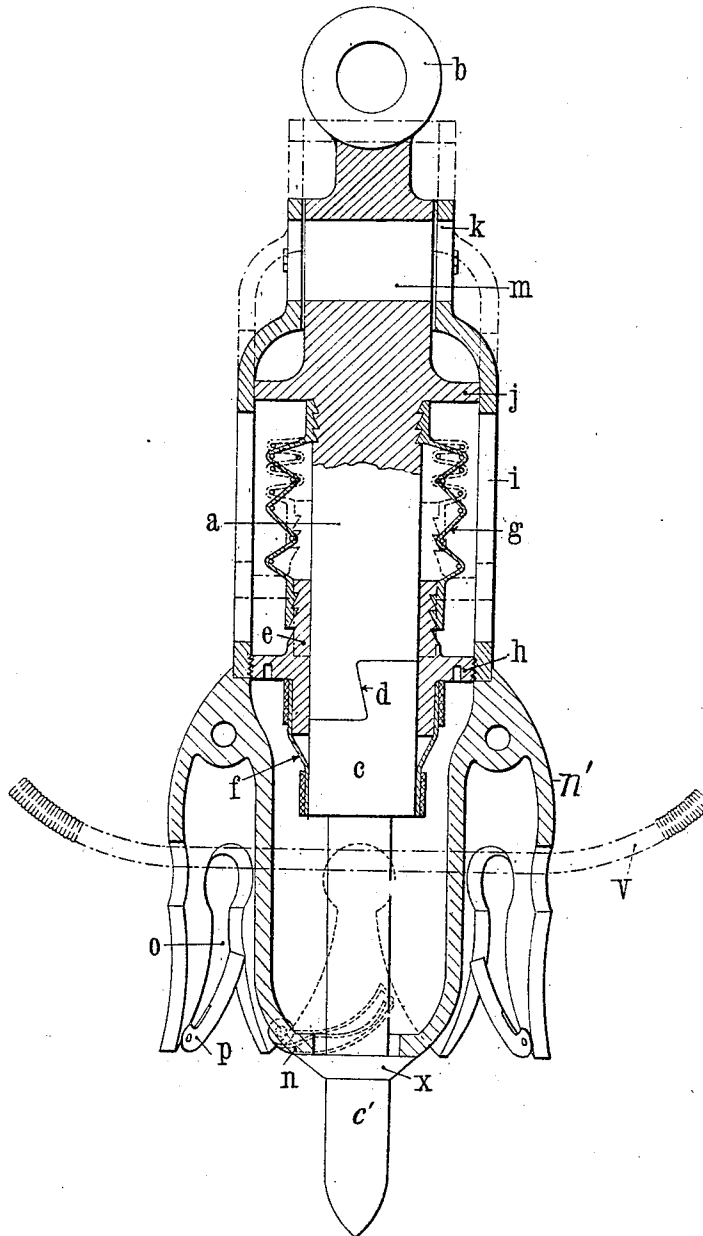
G. E. ELIA.
 MOORING DEVICE FOR SUBMARINE MINES.
 APPLICATION FILED JAN. 31, 1913.

1,059,851.

Patented Apr. 22, 1913.

3 SHEETS—SHEET 1.

Fig.1



WITNESSES

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INVENTOR

Giovanni Emanuele Elia

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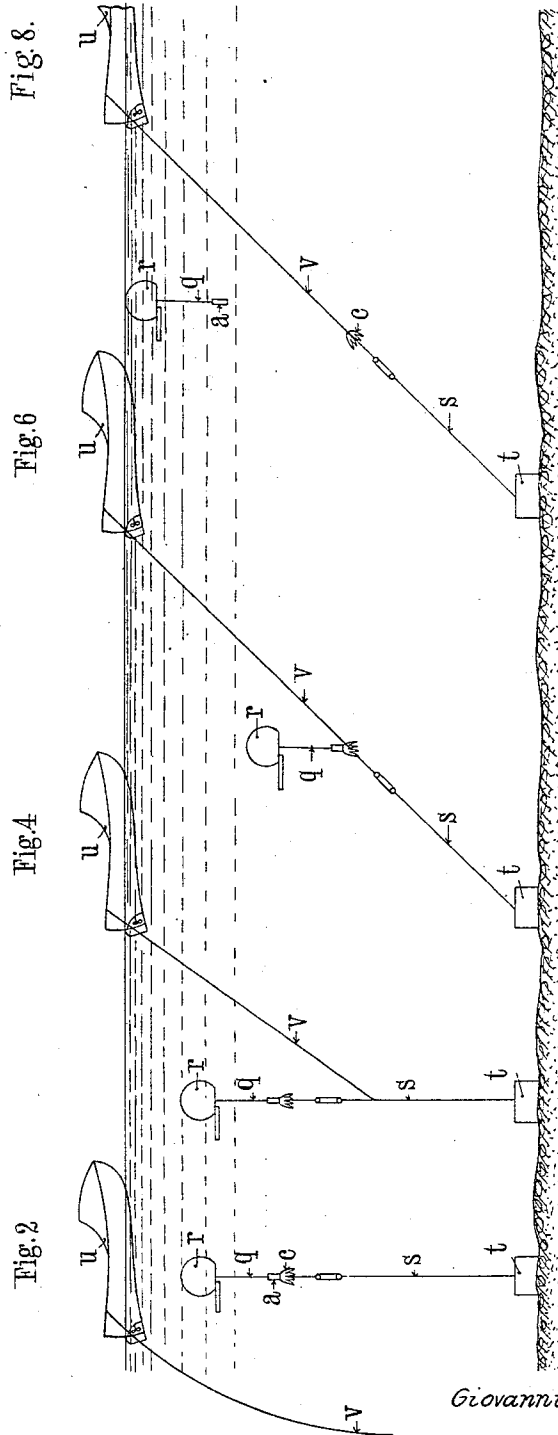
ATTORNEYS

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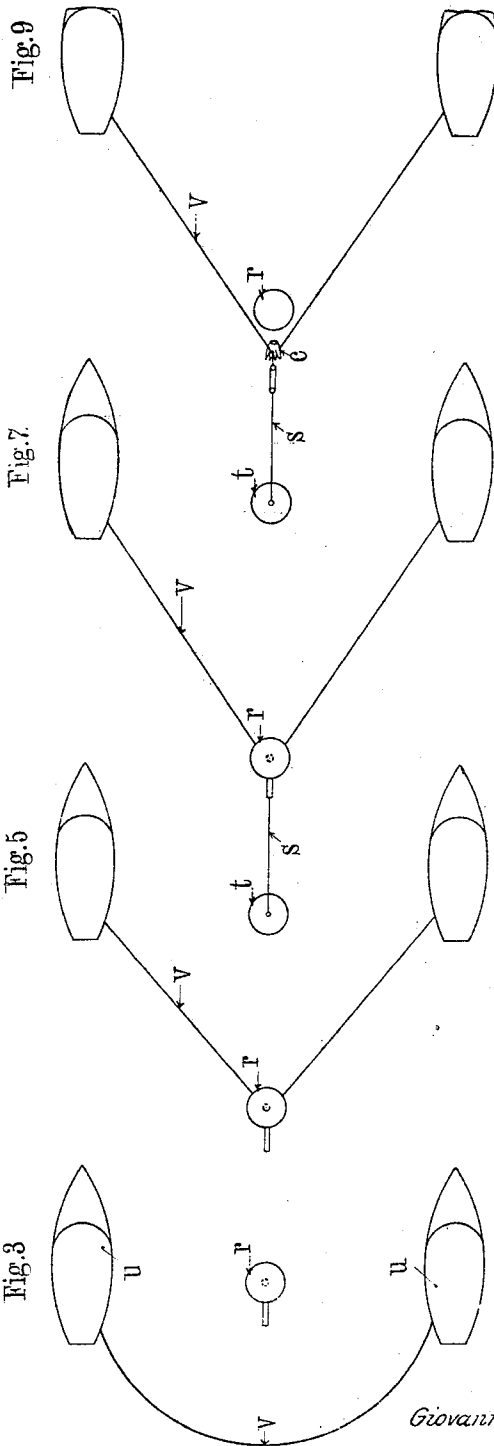
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UNITED STATES PATENT OFFICE.

GIOVANNI EMANUELE ELIA, OF PARIS, FRANCE, ASSIGNOR TO VICKERS LIMITED, OF LONDON, ENGLAND.

MOORING DEVICE FOR SUBMARINE MINES.

1,059,851.

Specification of Letters Patent.

Patented Apr. 22, 1913.

Application filed January 31, 1913. Serial No. 745,406.

To all whom it may concern:

Be it known that I, GIOVANNI EMANUELE ELIA, citizen of Italy, and residing at Hotel de Crillon, Place de la Concorde, Paris, France, have invented certain new and useful Improvements in and Relating to Mooring Devices for Submarine Mines, of which the following is a complete specification.

This invention has for its object a mooring device for submarine mines enabling them to be raised independently of their mooring anchor and the device is intended more particularly for rendering the connection between the mine and its anchor detachable in such a manner that these two members can be recovered individually so as to avoid the possibility of accident.

An embodiment of the invention is illustrated by way of example in the accompanying drawing, in which:—

Figure 1 is a vertical axial section of the mooring device. Figs. 2 to 9 illustrate diagrammatically the various phases of the raising of a submarine mine moored by means of the device shown in Fig. 1.

Two rod elements *a* and *c* connected by an assemblage *d* forming a kind of scarf joint are held in the assembled position represented in Fig. 1 by a sleeve *e* capable of sliding on the rod formed by their connection. The upper element *a* ends at its upper part in a shackle or ring *b* intended for the reception of the mooring cable of the mine, while the extension *c'* of the element *c* receives at its lower end the cable coming from the anchor. The extension *c'* of the element *c* may be provided with an opening to receive the cable or the cable may be attached thereto in any suitable manner.

The sleeve *e* is connected at its lower part by means of a watertight break joint, *f* with the element *c* and at its upper part it is united by a sliding joint *g* of india rubber, for example, with the element *a*. This sleeve *e* comprises a collar *h* upon which there is screwed a sleeve *i* guided by a collar *j* on the element *a* its upper part (the diameter of which is suitably restricted) bears upon this element *a*. The sleeve *i* and the element *a* can be locked by means of a dissolvable key passing through corresponding perforations *k*, *m* in these members. A sliding hub *n* having a bell-shaped

member *n'* surrounds the element *c* and a portion of the extension *c'*, and said hub is held in position by its engagement with the sleeve *i* and the collar *x* on the extension *c'*, the upper end of the hub being recessed to receive the said sleeve *i*. The bell-shaped member *n'* of the hub is provided with notches *o* in which spring retaining tappets *p* are housed.

In order to moor a submarine mine, the cables *q* of the mine *r* and *s* of its anchor *t* are respectively connected with the elements *a* and *c* (Fig. 2) whereupon the sleeve *i* is locked in position by pouring into the perforations *k* and *m* for example, sal ammoniac which locks the whole together in the position represented in Fig. 1. After the mine has been launched and at the end of a certain period of immersion, the melting of the sal ammoniac enables the mine and its anchor to be raised without any danger. When it is desired to raise a mine moored in this manner a lifting cable *v* is arranged in the known manner upon two tugs or other vessels *u* (Figs. 2 to 9) which is dragged at an appropriate depth as shown in Figs. 2 and 3. The tugs being got under way, the cable *v* encounters the cable *s* of the anchor *t* and sliding along this cable until it is stopped by the notches *o* in the bell shaped member *n'* of the hub *n*. The towing power is then if necessary, increased when the increase in the resistance indicates that the cable *v* is in engagement with a mine mooring; this cable, in acting upon the bell-shaped member *n'*, breaks the joint *f* and causes the assemblage constituted by the hub *n*, bell-shaped member *n'* and the sleeve *i* to slide upon the elements *a* and *c* displacing the sleeve *e* which assumes the position represented in broken lines in Fig. 1. The elements *a* and *c* then automatically separate and the mine *r* rises owing to its own floatability carrying with it its cable *q* and the element *a*, while the anchor remains integral with the cable *v* which is unable to leave the notches *o* because it is retained therein by the tappets *p*. When the mine has reached the surface it can readily be recovered without any danger while the anchor can be raised by acting upon the cable *v*.

The advantages are as follows:—This arrangement permits of raising submarine

mines in utilizing their own floatability without touching either the mine itself or any of its parts, in such a manner that this operation can be effected without any danger. This arrangement is particularly advantageous in the case of submarine mines in which the floatability of the mine acts in combination with its mooring cable for firing it under the influence of the shock of a ship because these mines no longer present any danger of explosion when their connection with the mooring anchor is disestablished. Furthermore, as the mine and the anchor can be raised separately, the operation is facilitated and the risk of releasing the striker of the mine is diminished.

The device described can be constructed in any desired manner but it should preferably be inattackable by sea water and the joint between the sliding parts can be formed in any desired manner. The sleeve *i* might form part of the hub *n* and its bell-shaped member *n'* and the notches of the bell-shaped member *n'* may present any desired form.

The invention is applicable to the mooring of submarine mines of all kinds upon their mooring cable in such a manner as to permit of readily raising them without any danger and it is also applicable in a general manner to all cases in which it is desired to connect elements of cables or other parts in such a manner that they cannot

be separated except in predetermined conditions.

What I claim is:

1. A mooring device for submarine mines, comprising members to which the mine and anchor cables are secured, a sleeve slidable on the said members, a breakable joint connecting the sleeve with one of the said members, and a member for engagement with a cable to break the joint when force is exerted thereon by the cable.

2. A mooring device for submarine mines, comprising two members having a scarf joint, one of the said members having an extension provided with a collar, a sliding sleeve on the members at the joint, water tight joints between the sleeve and the members, one of the joints being breakable, a second sliding sleeve secured to the first sleeve, and a hub having a bell-shaped member and engaging the second sleeve and the collar of the said extension, the hub being provided with a bell-shaped member having notches and spring pressed tappets in said notches.

In testimony whereof I have hereunto set my hand, at Rome, Italy, this 18th day of January, 1913.

GIOVANNI EMANUELE ELIA.

In the presence of two witnesses:

GIOVANNI VALATELLI,
FORELLO FOUFANI.