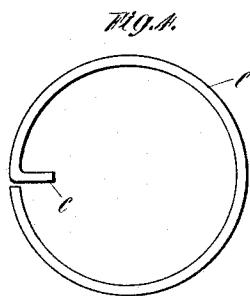
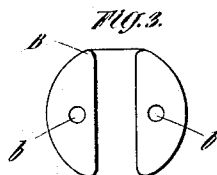
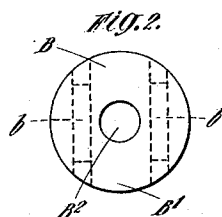
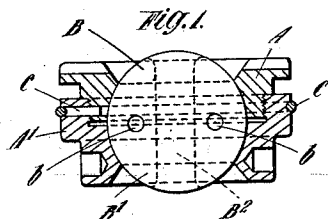


G. E. ELIA.  
SUBMARINE MINE.  
APPLICATION FILED APR. 19, 1916.

1,286,964.

Patented Dec. 10, 1918.



Inventor:  
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# UNITED STATES PATENT OFFICE.

GIOVANNI EMANUELE ELIA, OF WESTMINSTER, LONDON, ENGLAND, ASSIGNOR TO  
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## SUBMARINE MINE.

1,286,964.

Specification of Letters Patent.

Patented Dec. 10, 1918.

Application filed April 19, 1916. Serial No. 92,269.

*To all whom it may concern:*

Be it known that I, GIOVANNI EMANUELE ELIA, a subject of the King of Italy, residing at Vickers House, Broadway, Westminster, in the county of London, England, have invented certain new and useful Improvements in or Relating to Submarine Mines, of which the following is a specification.

10 This invention relates to fairleads for the anchor cables of submarine mines.

When submarine mines are anchored in shallow water, in flowing streams, or exposed to tidal currents, they are constantly swinging about and changing direction under the action of the waves or varying currents. The anchor cable is therefore exposed to chafing action where it passes through the fairlead, which is generally made of bronze. Under the influence of the pull and swinging of the mine, the cable sooner or later rubs and wears away, thus setting the mine adrift. To minimize this defect and thus prolong the life of the cable, the fairlead comprises according to this invention a ball and socket device of which the socket may consist of two parts which are adapted to be screwed together and loosely hold between them the ball, which may be of soft metal with a central hole for the anchor cable to pass through. This ball may be made in two parts or halves connected together by suitable means. The said ball owing to its freedom of movement in its socket, prevents the cable from becoming chafed or worn.

In order that the said invention may be clearly understood, and readily carried into effect, I will describe the same more fully with reference to the accompanying drawings, in which:—

Figure 1 is a section showing a constructional form of the improved fairlead, the soft metal ball through which the anchor cable passes being shown in elevation.

Fig. 2 is a plan of the soft metal ball constructed in two parts or halves.

Fig. 3 is a side elevation of one of the halves of the soft metal ball, and

50 Fig. 4 is a view of a detail hereinafter referred to.

A, A' represent the two parts of the fairlead socket, these parts being secured together by screw threads and formed with 55 cavities suitably shaped to receive and

loosely hold the ball in place in the socket. The said ball is constructed in two parts or halves B, B' formed with recesses which when the said halves are brought together face to face, as shown by Fig. 2, form the central hole B<sup>2</sup> to receive the anchor cable. The said halves are held in their correct relative position by two pins *b, b* carried by one of the halves and entering corresponding holes in the other half. These ball halves are preferably made of Babbit metal. The two parts of the fairlead socket are prevented from unscrewing by a locking wire C (Figs. 1 and 4) arranged in a groove on the socket half A' and provided with a projecting portion *c* engaging with holes in the said two parts. The openings of the two socket parts are flared to enable the anchor cable to assume positions at a considerable angle to the vertical. Each socket part is formed with suitable holes or recesses for the reception of tools for screwing the parts together and unscrewing them.

What I claim and desire to secure by Letters Patent of the United States is:—

1. A fairlead for the anchor cable of a submarine mine, comprising a ball having a substantially diametrical hole for the passage therethrough of the cable and a support for the ball consisting of two members secured together and forming a bearing within which the ball may turn, each of said members having an opening therethrough through which the cable may pass.

2. A fairlead for the anchor cable of a submarine mine, comprising a ball having an opening therethrough for the passage of the cable and two annular members having coacting threads for securing them together partially inclosing the ball and forming a bearing within which the ball may turn.

3. A fairlead for the anchor cable of a submarine mine, comprising a ball having an opening therethrough for the cable and a socket loosely supporting the ball for universal movement therein, consisting of two annular members secured together by coacting threads thereon each having a flared opening surrounding the opening in the ball whereby the anchor cable and the ball through which it passes may move relatively through a considerable angular range.

4. A fairlead for the anchor cable of a submarine mine, comprising a ball formed with a central hole for the anchor cable, a

two part socket for supporting said ball, said parts being screwed together and means for preventing said parts from becoming accidentally unscrewed.

- 5 5. A fairlead for the anchor cable of a submarine mine, comprising a ball formed with a central hole for the anchor cable, a screw threaded two part socket for supporting said ball, and a locking wire for preventing said parts from becoming acciden-  
10 tally unscrewed.

6. A fairlead for the anchor cable of a submarine mine, comprising a ball formed with a central hole for the anchor cable, a two  
15 part socket for supporting said ball, and a locking wire in the form of a ring carried by one socket part and having a projecting

portion passing through holes in the two socket parts.

7. A fairlead for the anchor cable of a submarine mine, comprising a two part ball, wherein each part has a recess registering with a similar recess in the other part to form a substantially diametrical opening for the passage therethrough of the cable, and  
25 a socket for supporting the ball.

8. A fairlead for the anchor cable of a submarine mine, comprising a two part ball formed with a central hole for the anchor cable, pins for connecting said parts to-  
30 gether and a socket for supporting said ball.

In witness whereof, I hereto affix my signature.

GIOVANNI EMANUELE ELIA.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."