F. W. HAMPTON.

MARINE MINE.

APPLICATION FILED MAR. 5, 1918.

1,343,969.

Patented June 22, 1920.

2 SHEETS—SHEET 1.

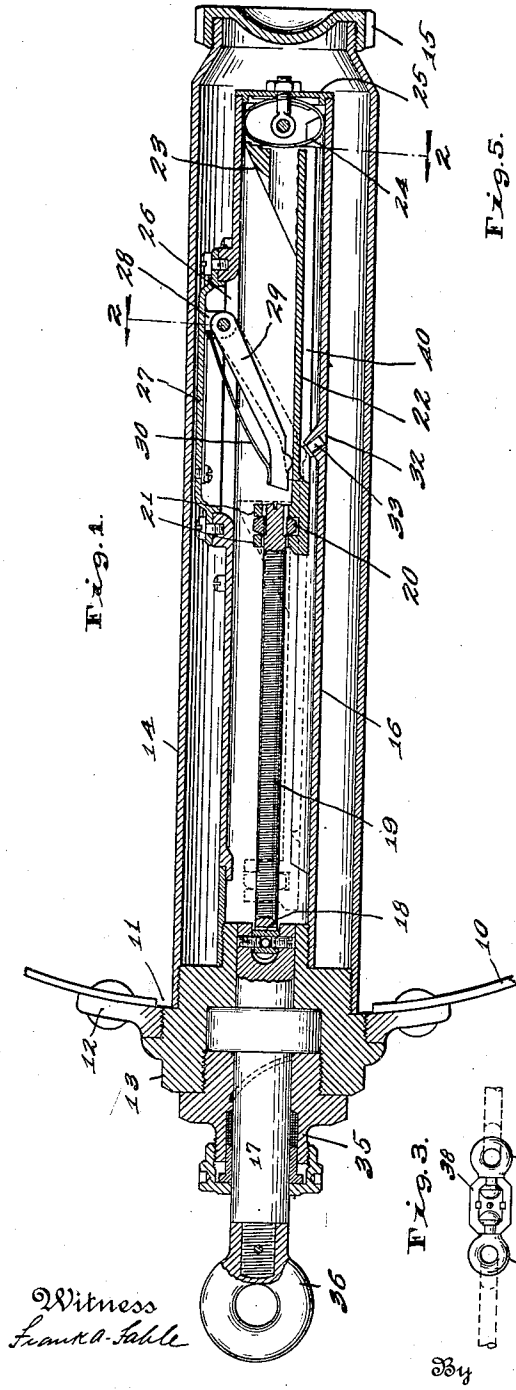


Fig. 1.

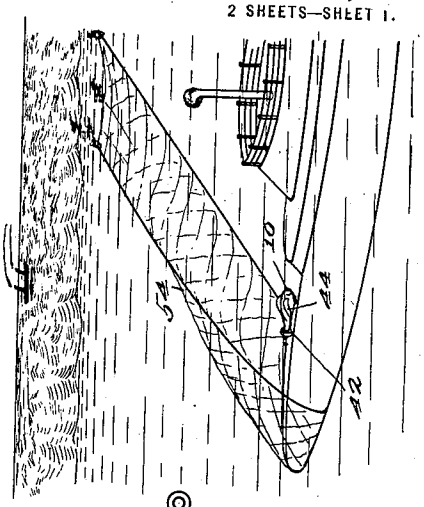


Fig. 5.

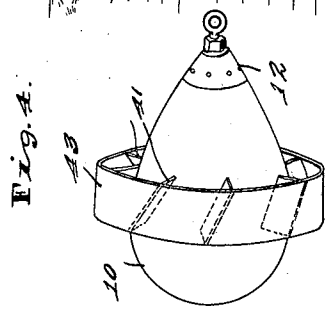


Fig. 4.

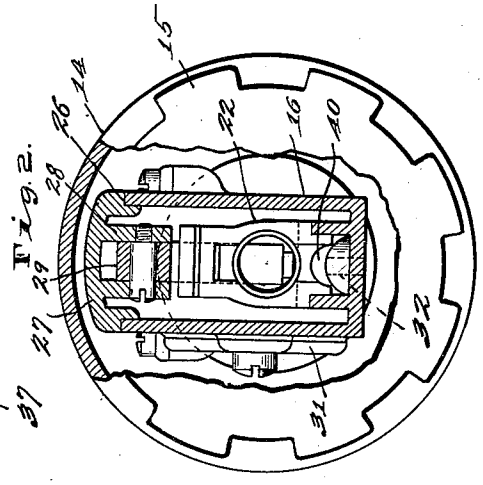


Fig. 2.

Fig. 3.

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2 SHEETS—SHEET 2.

Fig. 6.

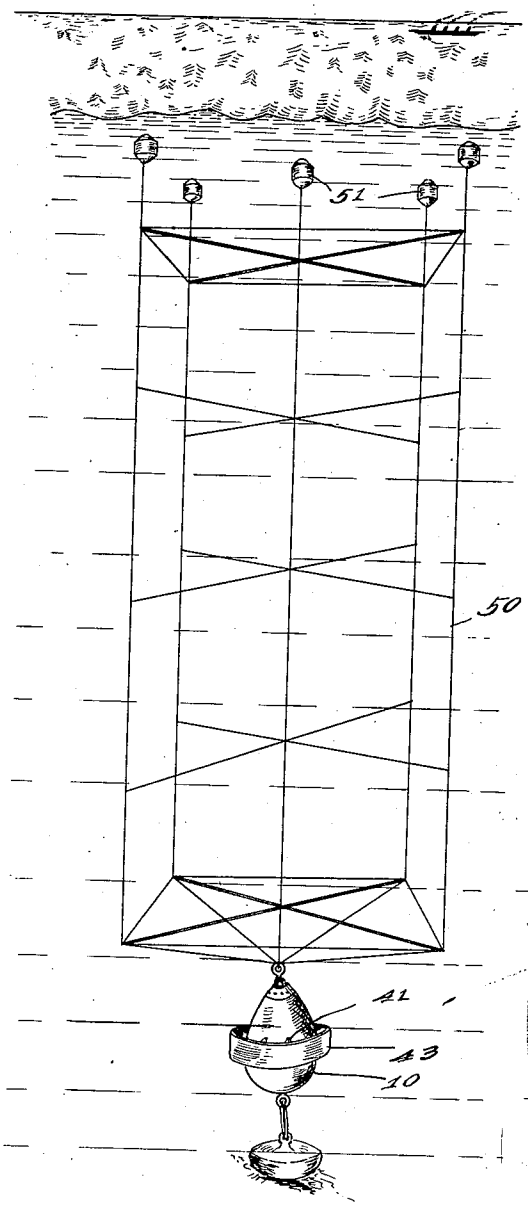
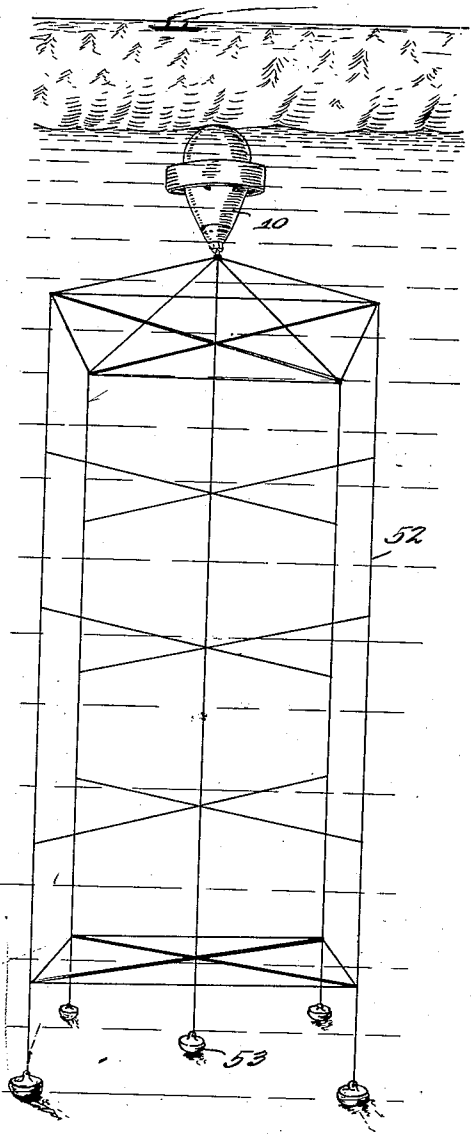


Fig. 7.



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UNITED STATES PATENT OFFICE.

FREDERIC W. HAMPTON, OF INDIANAPOLIS, INDIANA.

MARINE MINE.

1,343,969. Specification of Letters Patent. Patented June 22, 1920.

Application filed March 5, 1918. Serial No. 220,441.

To all whom it may concern:

Be it known that I, FREDERIC W. HAMPTON, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Marine Mine, of which the following is a specification.

The object of my invention is to produce a mine structure, or an exploding means for marine mines, of such structure that explosion of the mine will result only from a material transportation of the mine from its normal position, so that ordinary surface traffic may be carried on through the mined area without danger, but so that sub-surface traffic will become entangled with the mine in such manner that continued movement will result in transportation of the mine and an explosion thereof in close proximity to the entangled vessel.

The accompanying drawings illustrate my invention. Figure 1 is an axial section of the timing and detonating element of my invention; Fig. 2 a section on line 2—2 of Fig. 1, on a larger scale; Fig. 3 a sectional detail of a convenient form of water-tight lubricated universal joint; Fig. 4 a perspective view of a mine embodying my invention; Fig. 5 a view showing one manner of operation of my invention; Fig. 6 another view showing a manner of placing my improved mine near the bottom of a channel; and Fig. 7 a similar view showing the manner of placing the mine near the surface.

In the drawings, 10 indicates the main body of the mine containing an explosive of any desired character. The precise shape of this mine is immaterial and it may be buoyant or non-buoyant, depending upon the use to which it is to be put and the position in which it is to be placed.

The main body 10 is provided with an opening 11 surrounded by a threaded fitting 12, into which may be screwed a threaded head 13 of my improved detonator. This head 13 carries a tubular shell 14 adapted to contain an explosive which may be loaded into the shell through the inner end which is closed by the screw cap 15. Arranged within the shell 14 is a tube or casing, within which the operating mechanism is mounted.

Journaled within head 13 is a shaft 17 to which is connected, by a universal joint 18, a threaded rod 19 which projects into casing 16 for about half its length. Mounted upon the rod 19 is a nut 20 which is carried between fingers 21 which are formed at one end of a traveler 22 which lies within casing 16 and is provided at its free end with a cam 23. The traveler 22 is urged lightly inwardly by a spring 24 carried by cap 25 which closes the free end of casing 16. Casing 16 has an opening 26 covered by a cap 27 which carries, on its inner face, a pair of ears 28, between which is pivoted a detonator 29, the free end of which normally rests upon the intermediate portion of the traveler 22, being yieldingly urged downwardly thereon by means of the spring 30 which is also carried by cap 27. An examination opening is provided on the side of casing 16 and this is closed by a removable cover 31.

In the line of travel of detonator 29 is an opening 32 which forms communication between the interior of casing 16 and the interior of shell 14, and this opening is adapted to receive a percussion cap 33, or other suitable means, which may be operated upon by the detonator 29 to cause an explosion of the charge within shell 14.

Shaft 17 is extended out through a suitable gland 35 and provided with an eye 36 to which a suitable fastening member may be attached, either directly or by means of a joint or coupling such as is shown in Fig. 3.

This joint or coupling shown in Fig. 3 comprises a pair of eyes 37, 37, each of which is journaled in a two-part casing 38 which forms a connection between the eyes and may be filled with a hard grease, thus excluding water and insuring lubrication of the journaled connection between the eyes and the casing. In order to prevent rotation of the carrier 22, it has a groove 40 formed in its under face to straddle the lug in which opening 32 is formed.

In order to obtain relative rotation between shaft 17 and the main body 10 of the mine, as a result of transportation of the mine through the water, I either provide the main body 10 of the mine with propeller blades 41, or provide the shaft 17 with similar propeller blades 42 (Fig. 5) and in order that these blades may be protected against injury, I deem it advisable to connect their outer ends by a cylindrical protective band 43. Where the propellers 42 are carried by the shaft 17, it is desirable to provide the main body of the mine with guide blades 44, the purpose of which will appear.

In use, the mine may be anchored near the bottom, as shown in Fig. 6, and in this case

a network 50 of fine wire of comparatively large mesh will be supported above the mine for any desired distance to each side by buoys 51 which may be drawn beneath the surface. Instead of this arrangement, the arrangement shown in Fig. 7 may be adopted, where the mine is buoyant and carries depending from it a network 52 which may be anchored by anchors 53.

Another method of use will be to provide a comparatively extended net 54 to which the mine is attached, as shown in Fig. 5. In this form, if the presence of a submarine is suspected, the patrol vessel or dirigible balloon may drop the netting 54 and the associated mine overboard and stretch it across the suspected path of movement of the submarine.

In any of these arrangements, ordinary contact with the mine will not result in an explosion, but whenever a vessel becomes entangled in the associated network and continues its forward movement, the mine will be dragged through the water and this movement will cause relative rotation between the mine body and the shaft 17, which, when continued sufficiently, will draw cam 23 beneath and from under the detonator 29 so that the detonator will be finally caused to strike the exploding member 33, whereupon an initial explosion of the charge within casing 14 will take place and this will cause explosion of the mine.

In the form shown in Fig. 5, the mine will be connected fairly close to the lower end of the netting 54 and, because of ribs 44, will be drawn down against the body of the submarine as the submarine moves forwardly, so that by the time nut 20 is moved along the length of rod 19 and cam 23 is drawn from under the detonator 29, the mine will have been drawn down against the body of the submarine, so that the explosion of the mine will be as effective as possible.

It will be readily understood that the precise details of construction, by means of which relative rotation between the mine body and the shaft will result in ultimate explosion of the mine, may be modified to a considerable degree without departing from my invention; the fundamental feature of the invention residing in a provision of detonating mechanism which will become effective upon the charge of the mine only as a result of somewhat extended transportation of the mine through the water.

I claim as my invention:

1. A marine mine comprising a main member, detonating mechanism embodying a rotary member for controlling the same, and a propeller blade carried by one of said members for causing relative rotation between said members by transportation of the main body member through the water, to cause explosion of the mine.

2. A marine mine comprising a main body, a detonator associated with the main body, a propeller blade carried by the main body for causing rotation of the main body, connections between the main body and detonator for causing operation of the detonator upon sufficient rotation of the main body, and a guard associated with the mine and adapted to be engaged by a vessel to cause transportation of the mine.

3. A marine mine comprising a main body carrying propeller blades, a shaft journaled in said mine and provided with means by which the mine may be towed through the water, and detonating mechanism controlled by the rotation of said shaft, whereby transportation of the mine through the water will cause rotation of the main body relative to the shaft to ultimately operate the detonating mechanism.

4. A marine mine comprising a main body, a shaft journaled in the main body and having a threaded portion, a hammer member adapted to strike a detonator, means for holding a detonator in the path of movement of said hammer, a slide engaging said hammer and capable of tripping the same, a threaded connection between the shaft and slide, and means for causing relative rotation between the shaft and slide by transportation of the mine through the water.

In witness whereof, I have hereunto set my hand at Indianapolis, Indiana, this 28th day of February, A. D. one thousand nine hundred and eighteen.

FREDERIC W. HAMPTON.