Feb. 13, 1923. 1,445,222

C. LINHARDT, JR

MARINE TORCH

Filed Feb. 24, 1922

Fig. 1.

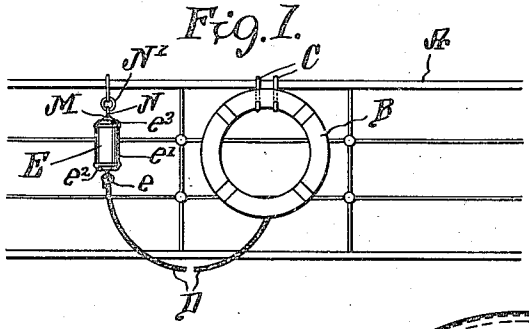


Fig. 2.

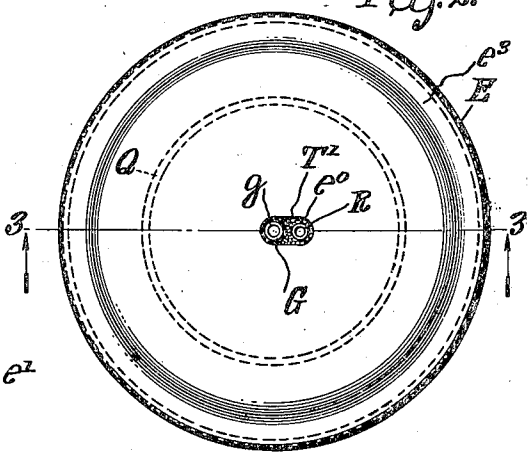


Fig. 3.

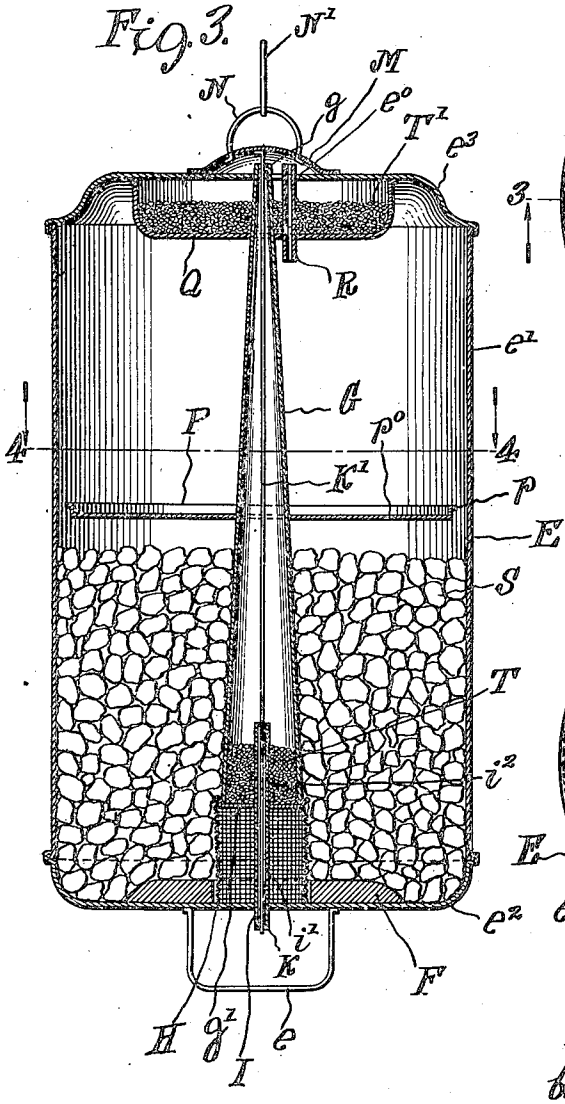
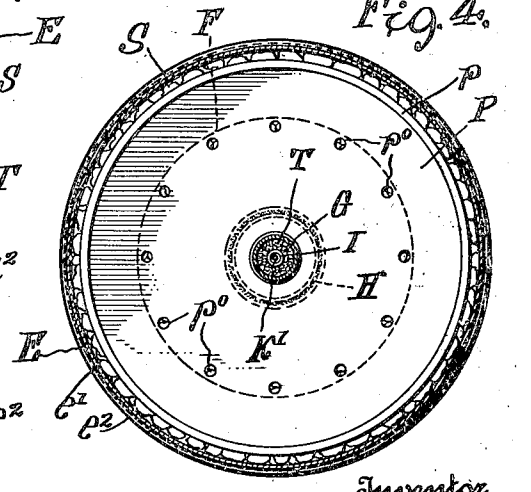


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES LINHARDT, JR., OF BALTIMORE, MARYLAND.

MARINE TORCH.

Application filed February 24, 1922. Serial No. 538,963.

To all whom it may concern:

Be it known that I, CHARLES LINHARDT, Jr., a citizen of the United States, residing in the city of Baltimore, State of Maryland, have invented certain new and useful Improvements in Marine Torches; and I 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.

My invention relates to improvements in marine torches, and it is intended to provide a safe and efficient torch which may be conveniently and safely stored without material deterioration, and the parts of which may be quickly put in the operative position; and in which the light will burn for a considerable length of time and will be automatically re-ignited after the flame has been put out by being submerged beneath the waves.

My invention will be more fully understood after reference to the accompanying drawings, in which like parts are indicated by similar reference symbols throughout the several views, and in which:—

Figure 1 shows the complete apparatus comprising the torch and the life buoy with the connecting line, all supported from the rail of a ship.

Figure 2 is a plan view of the torch after the protecting cap has been removed.

Figure 3 shows a section along the line 3—3 of Fig. 2, and looking in the direction of the arrows, but shows the protecting cap and the bottom seal in place; and

Figure 4 shows a section along the line 4—4 of Figure 3, and looking in the direction of the arrows.

Referring first to Figure 1, A represents the rail of a ship to which the life buoy B is attached in any convenient way, as by means of the hooks C.

D represents the line connecting the life buoy to the loop e of the casing E of the torch. This casing is preferably composed of a cylindrical shell e', a bottom portion e^2 and a top portion e^3, all soldered or welded together to form a water-tight receptacle shown in Fig. 3. In order to keep the buoy in the proper upright position an annular weight F is provided in the bottom thereof.

Mounted in the center of the casing E is the conical tube G, the top g of which projects through a slot e^0 in the top e^3 of the casing, and the lower part of this cone is provided with a closed bottom g' beneath which is the wire screen H. Projecting from the axis of this tubular wire screen H, and passing through the bottom e^2 of the casing, and also through the bottom g' of the cone G, is the water inlet tube I. This tube I is provided with one or more perforations i' above the bottom e^2 of the casing E, and with one or more perforations i^2 above the bottom g' of the cone G. The opening through this tube I is normally closed by a valve K carried by the rod K', which rod passes up through the tube I and through the cone G, and has its upper end fast to the cap M, which cap is normally air and water tight on the head e^3 of the casing, but may be readily torn therefrom by means of the loop N and hook N' attached to said cap M.

Surrounding the cone near its central portion is an annular disk P which may be stiffened by means of the peripheral flange p and may be perforated as at p^0 to permit the passage of the generated acetylene gas therethrough. This acetylene gas also passes around the periphery of the disk P, as will be hereinafter described.

The upper portion of the casing E is provided with an auxiliary chamber Q beneath the cap e^3 through which the cone G projects, and through which also projects a tube R to permit the escape of the generated acetylene gas. This tube R also passes through the slot e^0 in the cap e^3, and there is a clearance in said slot exterior to said tube and exterior to the cone G to permit the leakage of water into the chamber Q, when the top of the casing is covered with water, as in a rough sea.

Carbide S, (see Fig. 3) preferably in the usual granular form, is placed in the lower part of the casing E and is held in said lower part by means of the disk P which is fast to the cone G.

Calcium phosphide T is supplied to the lower portion of the cone G, as shown in Fig. 3, and also a charge of calcium phosphide T' is supplied to the upper or re-lighting chamber Q.

The operation of the device is as follows:

The life buoy and torch being normally suspended at the rear of the ship, preferably at the taffrail, and the torch being hermetically sealed, as shown in Fig. 3, suppose there is a cry of "man overboard," the look-

out tears the cap M from the upper end of the torch, which may be done by pulling in opposite directions on the torch and on the hook N'. This will cause the rod K' to break the soft metal seal K and will permit the rod K' to be withdrawn longitudinally through the tube I and through the cone G until the said rod is pulled entirely clear of the torch.

When this is done the life buoy B is removed from the hooks C, and the buoy and the torch are thrown together overboard. If the man in the water can be seen these are preferably thrown in his direction.

After the torch strikes the water, it will speedily assume the upright position, impossible to set otherwise because of the weight in the bottom. Water will quickly enter into tube I, passing to carbide chamber through i, causing acetylene gas to be formed. This gas rises to top of cylinder E, making an exit through tube R to top of cylinder E. Water also comes up tube I, feeds water to phosphide in cone G, through openings i^2, generating a flame which makes an exit to top of cone G.

This flaming gas will set fire to the generated acetylene gas which will escape through the tube R, and the torch will burn automatically as long as normal conditions prevail and the supply of combustible gas is continued.

The charge of phosphide in the cone G will serve to ignite the acetylene gas generated in the receptacle E, and this gas will continue burning as long as the carbide lasts, unless extinguished by submersion beneath the water.

If, however, a wave washes over the top of the torch, it will put out the original flame, but some of the water of the wave will leak through the opening e^0 in the top e^3 of the casing E and will generate a flame in the upper chamber Q, and when the wave has passed and the cap e^3 is once more above the surface of the water, the torch will be automatically re-lighted by the gas generated in the re-lighting chamber Q. This automatic re-lighting will occur after each wave has passed over the top of the torch.

The length of the burning of the torch may be regulated by varying the charge of carbide and by controlling the rate of influx of the water into the torch. This latter may be accomplished by making the size of the holes i' and i^2 to the proper dimensions.

The screen H is provided to protect the openings i' from becoming choked up by the mushy detritus of the spent carbide.

In practice it is found desirable to provide a torch which will burn for substantially one hour after being launched.

The hook N' should be preferably attached to the rail A in such a way that the lookout cannot conveniently detach the same from the rail without first tearing off the cap M. The tearing off of this cap would be normally effected by simply throwing out the life buoy, whose weight would jerk the cap M loose and prime the parts or put the same in the operative position.

It will be noted that in times of excitement the human mind is not always amenable to reason, and apparatus of this kind should, as far as possible, be made foolproof. It will thus be seen that I provide an apparatus which may be quickly thrown from the ship, and when thrown will provide a life buoy with a torch to guide the man overboard to the same; and which torch will provide a flame by night and a flame and smoke by day which can be readily noted by a man in the water, and which will also serve as a guide to the rescuing party.

It is well known that ships under way cannot be suddenly stopped, and it is frequently as difficult for the life-saving party to find the man as it is for the man to find the life buoy; and the herein described apparatus provides a signal visible by day or night which serves both as a guide to the rescued and to the rescuers.

While I have described one embodiment of the invention in its preferred form, it will be obvious that various changes might be made in the construction, combination and arrangement of parts which could be used without departing from the spirit of my invention; and I do not mean to limit the invention to such details except as particularly pointed out in the claims.

Having thus described my invention what I claim and desire to secure by Letters Patent of the United States is:—

1. A marine torch comprising a cylindrical casing provided with a weight in the bottom thereof and with a perforate diaphragm separating said casing into an upper and lower chamber, the lower chamber being adapted to contain carbide, a hollow truncated cone, adapted to contain phosphide, extending axially down through said casing and through said diaphragm, a laterally perforated lower tube projecting from the bottom of said casing and up into said cone, a re-ignition chamber adapted to contain phosphide provided in the upper portion of said casing, an upper tube extending down through said re-ignition chamber and through the cap in said casing, the said cap being provided with a slot therethrough, means for normallly sealing the lower end of said lower tube, and means for normally sealing the upper end of said hollow truncated cone and the upper end of said upper tube, and also for sealing said slot in said cap, with means for breaking all of said seals, substantially as described.

2. A marine torch comprising a cylindrical casing provided with an annular weight

in the bottom thereof and with a perforate diaphragm separating said casing into an upper and lower chamber, the lower chamber being adapted to contain carbide, a hollow truncated cone, adapted to contain phosphide, extending axially down through said casing and through said diaphragm, a tubular screen projecting down through said annular weight and mounted below said cone and contained in said casing, a laterally perforated lower tube projecting from the bottom of said casing through said tubular screen and up into said cone, a re-ignition chamber adapted to contain phosphide provided in the upper portion of said casing, an upper tube extending down through said re-ignition chamber and through the cap in said casing, the said cap being provided with a slot therethrough, means for normally sealing the lower end of said lower tube, and means for normally sealing the upper end of said hollow truncated cone and the upper end of said upper tube, and also for sealing said slot in said cap, with means for breaking all of said seals, substantially as described.

3. A marine torch comprising a cylindrical casing provided with a weight in the bottom thereof and with a perforate diaphragm separating said casing into an upper and lower chamber, the lower chamber being adapted to contain carbide, a hollow truncated cone, adapted to contain phosphide, extending axially down through said casing and through said diaphragm, a tubular screen mounted below said cone and contained in said casing, a laterally perforated lower tube projecting from the bottom of said casing through said tubular screen and up into said cone, a re-ignition chamber adapted to contain phosphide provided in the upper portion of said casing, an upper tube extending down through said re-ignition chamber and through the cap in said casing, the said cap being provided with a slot therethrough, a soft metal cap normally sealing the lower end of said lower tube, a rod connected to said soft metal cap, and extending upwardly through said lower tube and through said casing, a removable cap normally sealing the upper end of said hollow truncated cone and the upper end of said upper tube, and also for sealing said slot in said cap, the upper end of said rod being connected to said cap, with means for removing said cap and thereby breaking all of said seals, substantially as described.

CHARLES LINHARDT, JR.