Aug. 28, 1956 B. R. BRAYER 2,761,069

LUMINOUS MARKER

Filed March 9, 1953

Fig. 1.

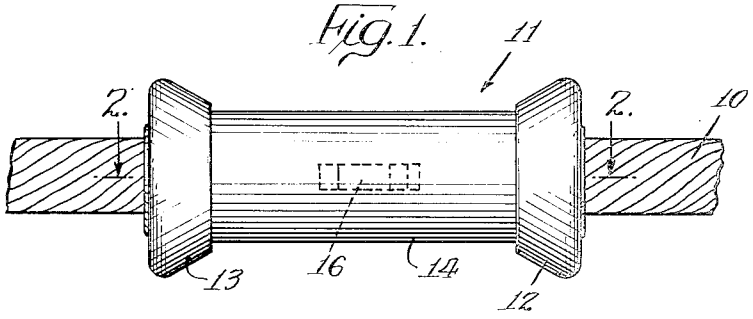


Fig. 2.

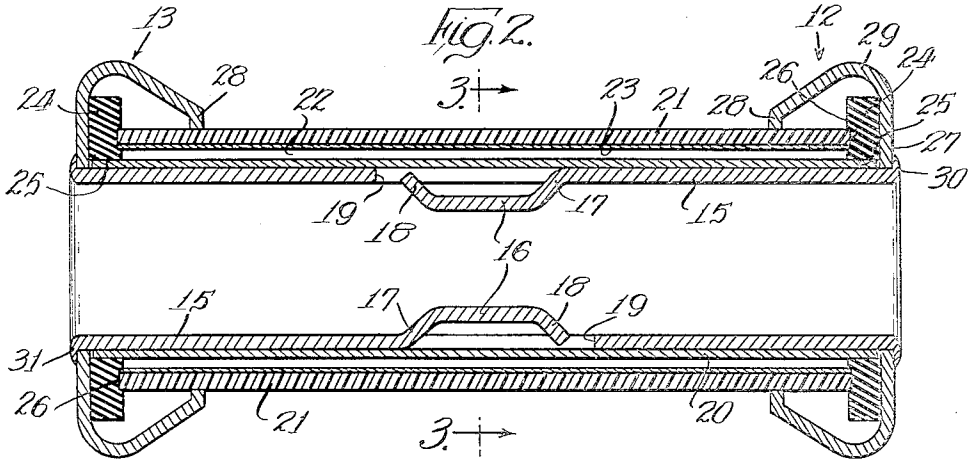
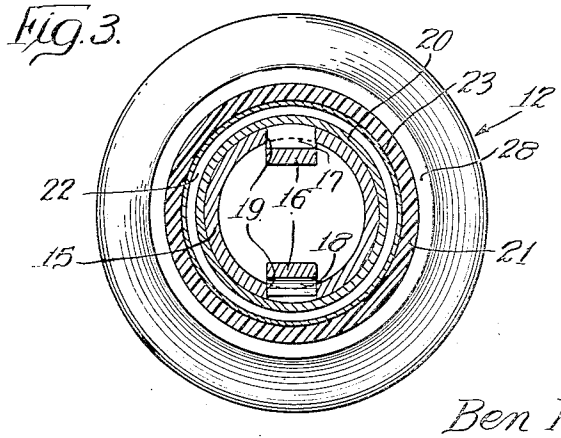


Fig. 3.



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LUMINOUS MARKER

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3 Claims. (Cl. 250—71)

This invention relates to a luminous marker and particularly to markers adapted for use on ropes, cables, wires, guys and other rope-like members to indicate their presence and location during blackouts or otherwise in the dark.

Aircraft carriers are provided with a great number of cables which are mounted on reels in the deck of the carrier for the purpose of tying down planes on the top deck. A number of planes may be stored on the deck during emergency periods so that they may be readied for take-off in very short order. The cables are attached to the planes to keep them from moving about on the deck and from going overboard.

In an emergency situation, a call for all hands on deck, may require that all personnel run to their stations without turning on any lights about the carrier. In the past, a number of seamen have been critically injured by colliding with the cables which hold the carrier planes on the deck. Limbs have been broken and other serious injuries have occurred.

It is therefore the principal object of this invention to provide a new and improved luminous marker to indicate the presence and location of a rope-like member to which it may be attached.

Another object of the invention is to provide a luminous marker which may be frictionally secured to a rope-like member in a manner permitting movement of the marker along the member.

A further object is to provide a marker which is simple in construction requiring a minimum amount of assembly work and which by reason of its construction, seals the luminous material against outside elements.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

Figure 1 is a plan view of a luminous marker of this invention mounted on a short length of cable;

Figure 2 is an enlarged section taken longitudinally through the center of the marker substantially along lines 2—2 in Figure 1; and

Figure 3 is a sectional view taken transversely through the marker substantially along line 3—3 in Figure 2.

While I have illustrated and hereinafter described a particular embodiment of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims.

The marker of this invention, in the form illustrated, is intended for use on the tie down cables used with aircraft carriers as described above. Such cables are generally not over one quarter inch in diameter and while the particular embodiment is intended for such use, it will be understood that the size of the marker is not controlling. In Figure 1 a cable 10 is shown as extending through the marker generally indicated 11. When the luminous marker is assembled on a cable, it appears to have a pair of end caps 12 and 13 and a center tubular

portion 14 which emits visible light rays. These markers have luminescence in the dark much as the hands and dial members on a watch which has its parts treated with luminous material. The marker is generally tubular in shape and may be moved along the cable to any position desired.

The construction of the marker may best be seen from Figures 2 and 3. An inner liner 15 is formed from a tubular blank of corrosion resistant material, preferably stainless steel. The blank has a pair of spring fingers 16 struck inwardly from the blank so as to oppose each other. These fingers are integral with the blank having one end 17 secured integrally with the blank and the opposite end 18 severed from the blank. These fingers thus have a spring action and extend inwardly of the tubular inner liner 15 to decrease the size of the opening through the liner 15. When a cable is threaded through the inner liner, these fingers spring outwardly to accommodate the cable and yet provide a sufficient frictional force against the cable to hold the marker in any position to which it may be moved.

Since the fingers 16 are struck from the tubular liner 15, a space or opening 19 is left in the inner liner. This space is sealed by a metal sleeve 20 which fits tightly about the inner liner 15. Preferably the sleeve is made of brass in order to be corrosion resistant and to avoid electrolysis between the inner liner 15 and sleeve 20.

The outer covering for the marker is provided by a transparent tubing 21 which is formed of one of the well-known plastics. In this particular instance, the transparent tubing 21 is made of cellulose acetate. The tubing 21 is telescoped loosely about the assembled inner liner and sleeve 20 to provide a space 22 between the sleeve and tubing. This space is occupied by the luminous material so that the rays therefrom may be visible through the plastic tubing. The luminous material may be mounted or carried in a variety of ways and is herein shown as a film deposited on or carried by a sheet of paper 23 which is treated with a material carrying minute quantities of radium or other luminous material such as artificial radio isotopes which have the advantage of being relatively free of harmful radiation. This sheet is flat before treated and during assembly, is simply rolled into a tubular form and inserted between the sleeve 20 and tubing 21.

Each end of the luminous marker is sealed to prevent the outside elements coming in contact with the luminous material. In order to accomplish this sealing, the plastic tubing 21 is slightly shorter in length than the inner liner 15 and sleeve 20. A neoprene washer or gasket 24 is placed around each end of the marker so that its inner periphery 25 tightly engages the outer periphery of the brass sleeve 20. At the same time, the washer abuts the ends 26 of the plastic tubing 21. This neoprene gasket thus seals the space 22, which contains the luminous material, from the outside elements.

In order to retain the neoprene gasket in position and to permanently secure the separate parts of the marker in operative relation, the brass caps 12 and 13 are mounted on the respective ends of the device. Each cap is ring-like and has one flange 27 contacting the inner liner 15 and another flange 28 closely surrounding the plastic tubing 21 to hold these parts in concentric relation. The intermediate portion 29 of each cap covers the neoprene gasket 24 and aids in keeping outside elements away from the gasket. The fit of the flanges against the respective tubular parts is not sufficiently tight to keep out all moisture, however, the neoprene washer effectively prevents any moisture or outside air from entering the space 22. The caps 12 and 13 are retained in position by the outturned flanges 30 and 31 respectively on each end of the inner liner. When these flanges are turned over, the caps are forced toward each other and compress the neo-

prene gaskets 24 longitudinally against the ends of the plastic tubing 21 and also radially inwardly against the brass sleeve 20.

The assembly of the luminous marker requires but a simple mechanical closure. The inner liner, brass sleeve and plastic tube are telescoped together and the luminous paper inserted between the sleeve and plastic tubing. The neoprene washers are placed within the caps 12 and 13 and then, these assembled parts are placed on each end of the assembled tubular members. The whole assembly unit is then placed in a jig which turns over the flanges 30 and 31 under pressure, thus permanently securing together the separate parts of the structure. In this assembly, the space 22 is permanently sealed from the outside elements so that the marker may be used in places where it is subject to the most severe moisture conditions such as on the ropes of life rafts or on other lines that might pass under water. Since the luminous material is maintained in a dry state, the marker may be seen under water as well as in the air.

It is generally contemplated that a number of markers will be used on a single cable or rope so that the presence and location of the rope will be fully visible in the dark. On the aircraft carrier cables referred to, the markers may be moved along the cable and positioned at spaced intervals. When the cable is returned to its coiled storage position, the markers may all be moved to the end of the cable where they will not interfere with the coiling. The markers may have a total length of about one and one half inches for use on quarter inch cable and may be correspondingly longer for use on larger cables and ropes. The length of the marker may be chosen to give a luminous surface of the desired size depending on the distance from which the cable should be seen.

I claim:

1. A luminous marker for attachment to a cable so as to visibly indicate the presence and general position of the cable in the dark, comprising: a corrosion resistant tubular metal inner liner adapted threadably to receive a cable, a spring finger struck inwardly from the face of the inner liner and perforating said liner, said finger decreasing the size of the opening through the inner liner and thus providing a yieldable friction grip on the cable; a corrosion resistant metal sleeve closely fitted about the inner liner sealing the perforated portion in said inner liner vacated by said struck finger, said sleeve having a length generally equal to the length of said inner liner;

a transparent tubing telescoped about the assembled inner liner and sleeve to leave a substantially concentric space between the tubing and sleeve; a film of luminous material positioned in said space to emit light rays visible through said transparent tubing; a ringlike sealing cap securely fastened to each end of the marker, said inner liner having an outturned flange at each end respectively holding the caps on the marker; and a sealing gasket tightly fitting about said sleeve and compressed between each end of said transparent tubing and the inside of the adjacent cap to force the cap tightly against said outturned flange and to seal said space between said tubing and sleeve occupied by the luminous material.

2. A luminous marker as specified in claim 1 in which each of the sealing caps has a flanged portion engaging the inner liner, another flanged portion engaging the transparent tubing and an intermediate portion covering said gasket, the outturned flange of said inner liner abutting said one flange to retain the cap on the marker.

3. A luminous marker for sliding attachment to a cable, comprising: a tubular metal inner liner adapted threadably to receive the cable; a spring finger struck inwardly from said inner liner to frictionally grip the cable threaded therethrough, said inwardly struck finger providing an opening in said inner liner; means sealing the opening in said inner liner vacated by said struck finger against passage of moisture through said opening; a transparent tubing telescoped over said inner liner in spaced relation thereto to form a space therebetween; a luminous material in said space to emit light rays through said transparent tubing; means sealing the ends of said space including a pair of resilient gaskets about the inner liner and engaging the ends of said transparent tubing; and a sealing cap secured to each end of the inner liner compressing said gaskets against the ends of said tubing to maintain said space containing the luminous material sealed against the outside atmosphere.

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