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ROCKET LAUNCHED NOISEMAKER

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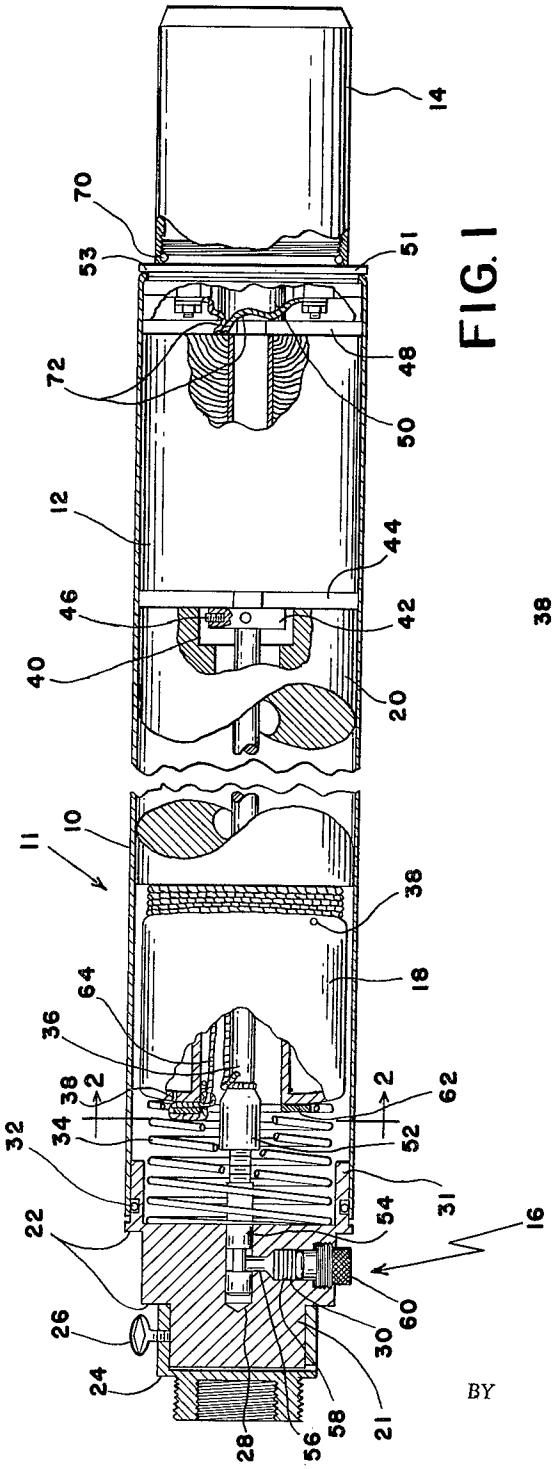

FIG. 1

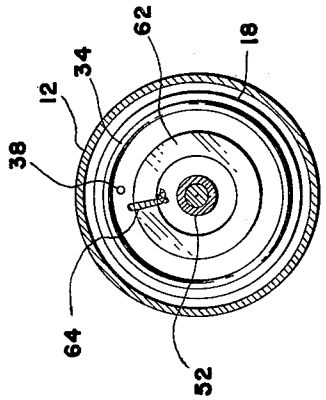

FIG. 2

INVENTOR
RALPH P. CRIST

BY George Sifkin
B. L. Zanquill

ATTORNEYS

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ROCKET LAUNCHED NOISEMAKER

Ralph P. Crist, 1925 N. Calvert St., Apt. 203, Arlington, Va.

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The invention herein described may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

The present invention relates to a rocket launched noisemaker and more particularly to a flotation system used as an integral part of the apparatus. Prior art devices of this character are not always reliable when submerged in water since the design of the flotation system is such that the device will not assume a buoyant position under all conditions of operation. A further problem is present when chemicals are employed for the generation of gas used in the flotation system, since such chemicals are usually subject to deterioration when exposed to the atmosphere prior to use. In the event of such exposure, the chemical substances will not effervesce and it is not possible to liberate the gas necessary for buoyant purposes. In addition to this, if the apparatus containing chemicals is stored for long periods of time, the life of the chemicals is diminished to such an extent that proper operation of the device is also not possible.

This invention is directed to an improved flotation system wherein all of the operating parts are strictly mechanical in nature and dependence of operation is not placed on chemically acting substances. All of such parts are positive acting, thereby precluding the possibility of the noisemaker becoming inoperative when launched from a vessel. A further feature of the invention involves control of the time element with respect to the destruction of the device after it has been in operation for a predetermined period of time. The apparatus is therefore safer to handle, no storage or shipping precautions are necessary, one unit is adaptable for use when firing same at various ranges from the vessel, and it is less expensive to manufacture.

An object of the present invention is to provide an improved flotation system for buoyant bodies.

Another object of the invention is to provide a single or plurality of buoyant elements for assuring positive flotation of the device.

A further object is the provision of an adapter which accommodates rockets of various sizes for firing the device at various ranges from the launching vessel.

A final object of the present invention is the provision of means for separating the elements within the body of the device in order to insure proper flotation of the apparatus in water.

With these and other objects in view as will hereinafter more fully appear, and which will be more particularly pointed out in the appended claims, reference is now made to the following description taken in connection with the accompanying drawings in which:

FIG. 1 is a plan view of the device with sections broken away showing the various elements and their location with respect to one another; and

FIG. 2 is a view taken on lines 2—2 of FIG. 1.

Referring now to the drawings wherein like reference characters designate like or corresponding parts throughout the several views, there is shown in FIG. 1 a tube weldment or shell **10** which houses the various elements comprising the flotation system **11** and a sea battery **12** for supplying power to a motor-operated noisemaking device **14**. The specific construction and details of the

sea battery and noisemaking device are not pertinent to this invention and further description thereof will not be included herein. However, a type such as that disclosed by Vivian L. Chrisler et al. in copending application Serial No. 339,498, filed February 27, 1953, may be used with the instant invention.

The flotation system enclosed by shell **10**, comprises three main elements, namely, a head sub-assembly **16**, a control float **18** and main float **20**. The main elements are assembled in tandem and are assembled within a shell **10** for storage, handling, and launching. The units are releasably secured together by means of a central rod secured to the noisemaker and extending through the several units to a releasable engagement in the head sub-assembly **16** as hereinafter described.

The head sub-assembly **16** consists of a cylindrical body **21** having steps thereon at **22** for receiving a rocket adapter **24**. This rocket adapter has a protruding head which is both internally and externally threaded so that the noisemaker may be secured to various sizes of rockets used for launching the noisemaker from a vessel into the sea. The adapter is secured to the cylindrical body **21** by means of a thumb screw **26**. Central and lateral bores **28** and **30** are drilled into the cylindrical body **21** for a purpose hereinafter described. The cylindrical body has a protruding outer flange or base **31** which is adapted to fit within shell **10** and is held in water-tight engagement therewith by means of O-ring **32**. The spring **34** is fitted within shell **10** and is biased against cylindrical body **21** at one end and against the upper surface of control float **18** at its other end. When the noisemaker is assembled, this spring is in a compressed condition thereby exerting a force on each of these two members.

The control float **18** is cylindrical in shape and is provided with a central opening extending longitudinally therethrough, thereby providing a passageway for rod **36** which extends through the opening and terminates near the upper end of the float. The control float **18** is preferably made in two sections which are fitted together to form a water-tight fit and has metering orifices **38** in the bottom and top portions so as to allow water to enter through the orifice at the bottom, the orifice at the top being utilized as a vent for venting air which is displaced by the water in the float.

The main float **20** is made of a material such as balsa wood, cellulose, foam rubber, or expanded "Royalite" made by U.S. Rubber Company, which has a small specific gravity so as to have excellent buoyant characteristics. It is positioned below the control float **18** in shell **10** and is provided with a countersunk opening **40** in the bottom thereof for receiving a collar **42**. A spider **44** is adapted to fit within shell **10** and is centrally bored to provide access for rod **36**. This spider has one side thereof held in engagement with sea battery **12** by means of the collar **42** which is held in position against the other side of the spider by means of a set screw **46** adapted to engage rod **36**. The sea battery likewise has a central longitudinal opening for receiving the lower end of rod **36** which is threadably secured to plate **51** fitted in the bottom end of shell **10**. A second spider **48** bears against the bottom side of sea battery **12** and is held thereagainst by means of spacer **50**. The upper portion of the motor-operated noisemaker **14** is connected to the plate **51** which is in turn connected to the bottom end of shell **10**, as shown at **53**. The upper portion of the motor operated noisemaker **14** is made water-tight to the plate **51** by means of O-ring **70**. Appropriate conductors **72** extend from the sea battery to the motor for operation thereof.

As afore-mentioned, rod **36** terminates at a point adjacent the upper surface of control float **18**. A coupling

52 is secured at one end to rod 36, the other end of the coupling being attached to a short section of stainless steel rod 54. The steel rod 54 has a portion of reduced diameter for receiving locking pin 56. This locking pin 56 rests in lateral bore 30 and has a shoulder milled thereon for receiving a spring 58 which acts to move the locking pin out of engagement with rod 54. Threaded screw 60 holds the locking pin and spring in engagement with rod 54 under all conditions until the unit is prepared for use. A thin washer 62 is adapted to rest on the top of control float 18 and cord 64 is secured at one end to the washer and extends beneath float 18 where it is laid in the shell in a side to side manner, the other end of the cord being secured to rod 36 at the point where coupling 52 is secured to the rod.

The operation of the device is as follows:

A rocket is attached to rocket adapter 24, nut 60 is backed off to provide movement of locking pin 56 and the noisemaker is subsequently fired from the ship. The force transmited from the rocket to the unit urges cylindrical body 21 in a forward direction, or to the right as shown in FIG. 1, thereby allowing spring 58 to move locking pin 56 out of engagement with the reduced section of rod 54. When this occurs, compressed spring 34 acts to eject the cylindrical body 21 and the appurtenances secured thereto into the sea. The shell 10 will continue in a smooth path of travel and strike the water at varying distances from the ship, determined by the type of rocket used for launching the noisemaker. As the noisemaker strikes the water and becomes immersed therein, control float 18 will leave shell 10 and ascend to the surface, thus carrying with it, washer 62 and cord 64 which is securely attached thereto. The cord 64 will pay out as the control float 18 rises to the surface, and main float 20, because of its buoyant characteristics, will also rise to the surface and assume a position underneath control float 18, and it will remain in this position since cord 64 extends down through the center of float 20, thus making lateral displacement impossible. It is not necessary that main float 20 leave the shell 10 since it will buoy the unit in any event. At the time operation of the device commences, control float 18 is void of water but immediately starts to fill through the orifice in the bottom, the air being vented through orifice 38 at the top. These orifices are of such size that the rate of flooding of water will take a predetermined time to fill the float due to the size of such orifices. When the float completely fills with water the complete unit then assumes negative buoyancy and sinks to the bottom of the ocean.

It will be readily apparent to those skilled in the art

that only a preferred modification has been described herein, and that many changes therein are possible without departing from the spirit of the present invention. It should be understood, of course, that it is intended to cover all changes and modifications of the example of the invention herein chosen for the purposes of the disclosure, which do not constitute departures from the spirit and scope as set forth in the appended claims.

What is claimed is:

1. A flotation system for use with a submerged body, comprising a hollow cylindrical shell closed at one end and open at the other, a float having a central opening positioned in said shell, a rod secured at one end to the closed portion of said shell and arranged to extend through the central opening of said float, float releasing means secured in the open end of said shell, a longitudinal bore in said releasing means for receiving the other end of said rod, a portion of reduced diameter adjacent said other end of said rod, a lateral bore in said float releasing means, a locking pin in said lateral bore for engaging the reduced portion of said rod, and resilient means in said shell acting on said float releasing means for biasing said locking pin in frictional engagement with said reduced portion of said rod, said locking pin being movable and provided with means adapting it for disengagement of the reduced portion upon compression of the resilient means, whereby the float releasing means will be ejected from said shell.

2. The combination according to claim 1 wherein spring means biases said locking pin in a direction away from rod engagement.

3. The combination according to claim 1 wherein an adapter is secured to the outer end of said float releasing means, and rocket attaching means affixed to said adapter for accommodating various sizes of rockets.

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