Attorney Docket No. 82719

DISTRIBUTION STATEMENT A
Approved for Public Release
Distribution Unlimited

1 Oct 2001

MARINE COUNTERMEASURES LAUNCH ASSEMBLY

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN THAT NEIL J. DUBOIS, citizen of the United States of America, employee of the United States Government, and resident of Cranston, County of Providence, State of Rhode Island, has invented certain new and useful improvements entitled as set forth above, of which the following is a specification.

JAMES M. KASISCHKE, ESQ.
Reg. No. 36562
Naval Undersea Warfare Center
Division, Newport
Newport, RI 02841-1708
TEL: 401-832-4736
FAX: 401-832-1231

20020322 172

23523
PATENT TRADEMARK OFFICE

DEPARTMENT OF THE NAVY
OFFICE OF COUNSEL
NAVAL UNDERSEA WARFARE CENTER DIVISION
1176 HOWELL STREET
NEWPORT RI 02841-1708

IN REPLY REFER TO:

Attorney Docket No. 82719
Date: 18 March 2002

The below identified patent application is available for licensing. Requests for information should be addressed to:

PATENT COUNSEL
NAVAL UNDERSEA WARFARE CENTER
1176 HOWELL ST.
CODE 00OC, BLDG. 112T
NEWPORT, RI 02841

Serial Number 09/968,387

Filing Date 1 October 2001

Inventor Neil J. Dubois

If you have any questions please contact Michael J. McGowan, Patent Counsel, at 401-832-4736.

Attorney Docket No. 82719

MARINE COUNTERMEASURES LAUNCH ASSEMBLY

STATEMENT OF GOVERNMENT INTEREST

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

CROSS REFERENCE TO OTHER PATENT APPLICATIONS

Not applicable.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to the development of electronic countermeasures and is directed more particularly to an assembly for launching undersea warfare countermeasures which serve as decoys and to jam and confuse sonar systems of submarines and torpedoes.

2. Description of the Prior Art

Acoustic countermeasure devices have become an integral part of undersea warfare. Such devices are used to confuse hostile sonar systems and thereby protect own force assets. Typical countermeasures are launched from a submarine and transmit

acoustic signals. The signals are transmitted at a selected depth in the ocean and the devices are maintained at the selected depth by an active compensation system which maintains buoyancy. In practice, the devices typically are slightly negatively buoyant, requiring means for providing upward force to maintain depth.

Referring to FIG. 1, it will be seen that a known prior art countermeasure assembly 10 includes a cylindrical tube 12 in which are disposed a buoyancy maintenance system and countermeasures electronics (not shown). Fixed to the tube 12 is a transducer 14 which transmits signals from the countermeasure assembly 10. A protective sabot 16 fits over the transducer 14 and is of a configuration which continues the cylindrical configuration of the tube 12.

Submarines are provided with launch tubes 20 having therein a ram plate 22, and a muzzle cap 26 disposed in a discharge end 28 of the tube 20 and held therein by shear pins 30. The launch tubes 20 typically are mounted outside the pressure hull of the submarine. The launch tube 20, ram plate 22, and muzzle cap 26 define a compartment 32 complementary in shape and size to the countermeasure assembly 10 and sabot 16.

Mounted in the tube 20 adjacent the ram plate 22 is a gas generator 34. From within the submarine the gas generator 34 is activated to release gas under pressure. The gas forces the ram plate forwardly, to the right as viewed in FIG. 1. The ram plate

22 and countermeasure 10, including the transducer 14 and sabot 16, move forwardly in the tube 12, shearing the muzzle cap shear pins 30 and blowing away the muzzle cap 26. The counter measure 10, transducer 14, and sabot 16 exit the tube 12, with the transducer 14 protected during transit by the sabot 16.

In due course, the sabot 16 drops away and the countermeasure 10, including the transducer 14, seeks a pre-selected depth from which to operate.

Recent advances in the buoyancy maintenance and transducer structure areas have resulted in reduced space requirements for countermeasures. It is now feasible from a size standpoint to launch two or more countermeasures from the prior art launch tube shown in FIG. 1.

SUMMARY OF THE INVENTION

Accordingly, an object of the invention is to provide a marine countermeasures launch assembly which facilitates the launch of a plurality of countermeasures from a single prior art launch tube.

With the above and other objects in view, as will hereinafter appear, a feature of the present invention is the provision of a marine countermeasures launch assembly comprising a cylindrical body comprising first and second members having, respectively, first and second surfaces engageable with each other to form the body. The first surface is provided with first

and second recesses therein and the second surface is provided with first and second recesses opposed to the recesses of the first member when the members are engaged, to form a first chamber for retaining a first countermeasure and a second chamber for retaining a second countermeasure. The first and second surfaces have opposed bores therein. A spring is disposed in each pair of the opposed bores and urges the members to separate from each other to release the countermeasures after the assembly is launched.

The above and other features of the invention, including various novel details of construction and combinations of parts, will now be more particularly described with reference to the accompanying drawings and pointed out in the claims. It will be understood that the particular assembly embodying the invention is shown by way of illustration only and not as a limitation of the invention. The principles and features of this invention may be employed in various and numerous embodiments without departing from the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Reference is made to the accompanying drawings in which is shown an illustrative embodiment of the invention, from which its novel features and advantages will be apparent, wherein corresponding reference characters indicate corresponding parts throughout the several views of the drawings and wherein:

FIG. 1 is a diagrammatic, in part sectional view of a prior art countermeasures launch assembly disposed in a launch tube;

FIG. 2 is a diagrammatic, in part sectional view of one form of countermeasures launch assembly illustrative of an embodiment of the invention;

FIG. 3 is an exploded perspective view of the assembly of FIG. 2; and

FIG. 4 is a diagrammatic in part sectional view of the assembly of FIGS. 2 and 3 disposed in the assembly of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. 2 - 4, it will be seen that a preferred embodiment of the invention includes a cylindrical body 40 comprising a first member 42 having a first surface 44. First and second recesses 46, 48 are disposed in the surface 44. The cylindrical body 40 further comprises a second member 50 having a second surface 52 having first and second recesses 54, 56 therein. The recesses 46, 48 are opposed to the recesses 54, 56 when the members 42, 50 are engaged, as shown in FIG. 2, to form a first chamber 60 for retaining a first countermeasure 62, and a second chamber 64 for retaining a second countermeasure 66. The countermeasures 62, 66 each include transducers 58 in the body of the countermeasure.

The surfaces 44, 52 are complementary to each other so as to fully engage one another and, for ease of manufacture and

interchangeability, preferably are planar. The surfaces 44, 52 are provided with opposed bores 68. A spring 70 is disposed in each pair of opposed bores 68. The springs 70 urge separation of the members 42, 50 to release the countermeasures 62, 66.

In operation, the cylindrical body 40 is housed in the launch compartment 32 of the launch tube 20 (FIG. 4). The body 40 houses the countermeasures 62, 66. The body 40 is launched in the same manner as the countermeasure assembly 10, as described above with reference to FIG. 1. When the body 40 clears the launch tube 20, the springs 70 (FIG. 3) urge the members 42, 50 apart, releasing the countermeasures 62, 66. Each countermeasure is provided with its own pressure sensor 72 and depth regulator 74, and individually seeks its preselected depth and transmits signals, as previously programmed, by way of the transducers 58.

There is thus provided a marine countermeasures launch assembly which facilitates launch of a plurality of countermeasures from a single launch tube.

It will be understood that many additional changes in the details, materials, steps and arrangement of parts, which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principles and scope of the invention as expressed in the appended claims. For example, it will be apparent that the maximum number of chambers defined by the cylindrical body depends upon the size of the counter-measures to be contained.

While two chambers are shown for illustrative purposes, the invention contemplates additional chambers.

Attorney Docket No. 82719

MARINE COUNTERMEASURES LAUNCH ASSEMBLY

ABSTRACT OF THE DISCLOSURE

A marine countermeasures launch assembly includes a cylindrical body including first and second members having, respectively, first and second surfaces engageable with each other to form the body, the first surface having first and second recesses therein, the second surface having first and second recesses therein opposed to the recesses of the first member when the members are engaged, to form a first chamber for retaining a first countermeasure and a second chamber for retaining a second countermeasure. The first and second surfaces have opposed bores therein. A spring is disposed in each pair of the opposed bores and urges the members to separate from each other to release the countermeasures after the assembly is launched.

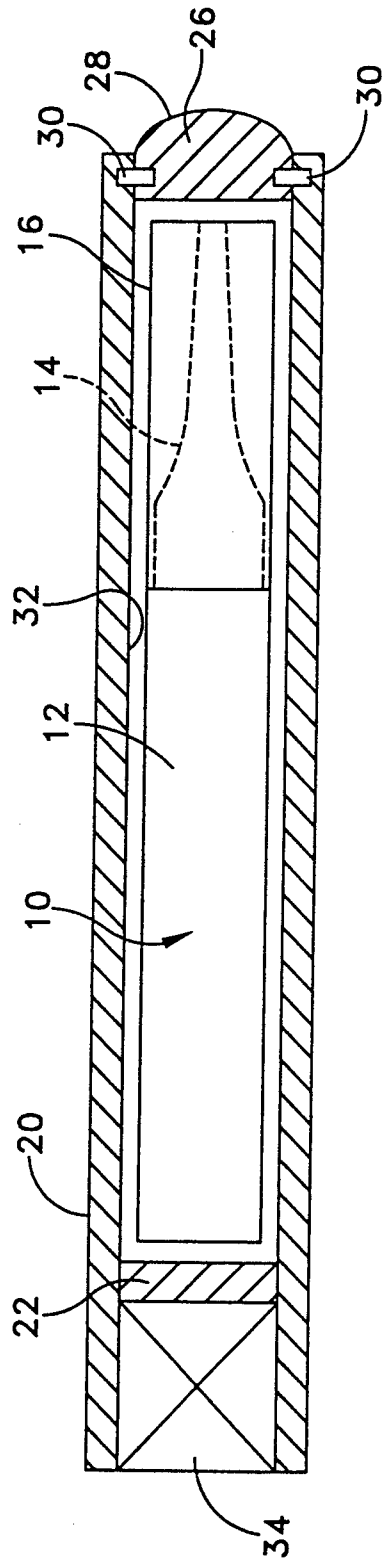

FIG. 1
(PRIOR ART)

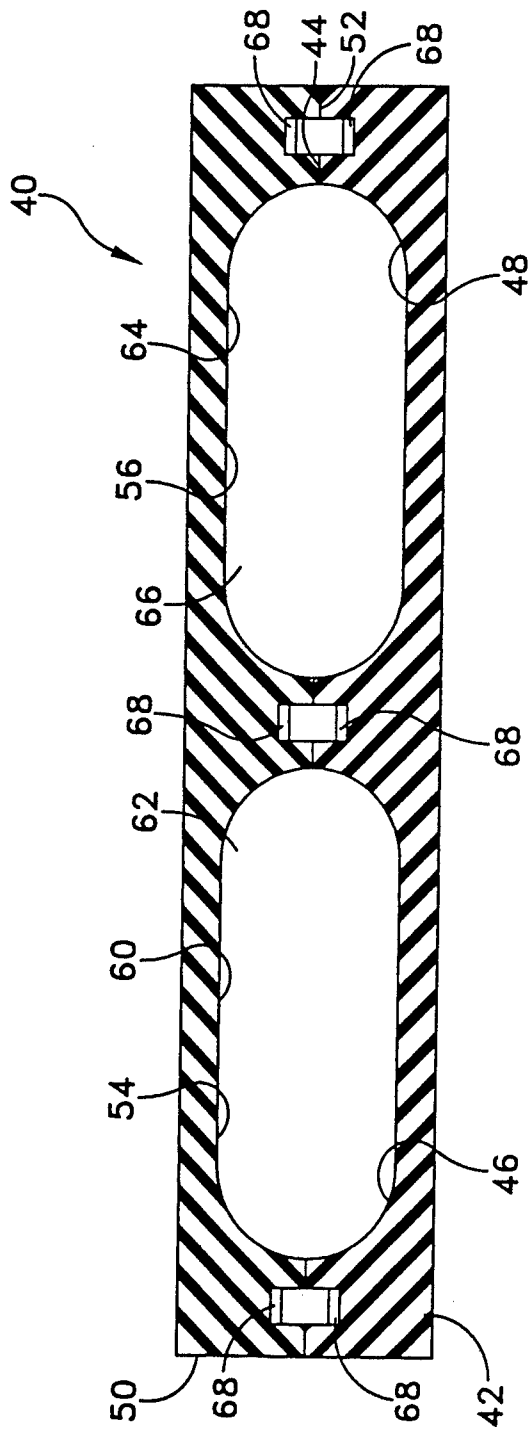

FIG. 2

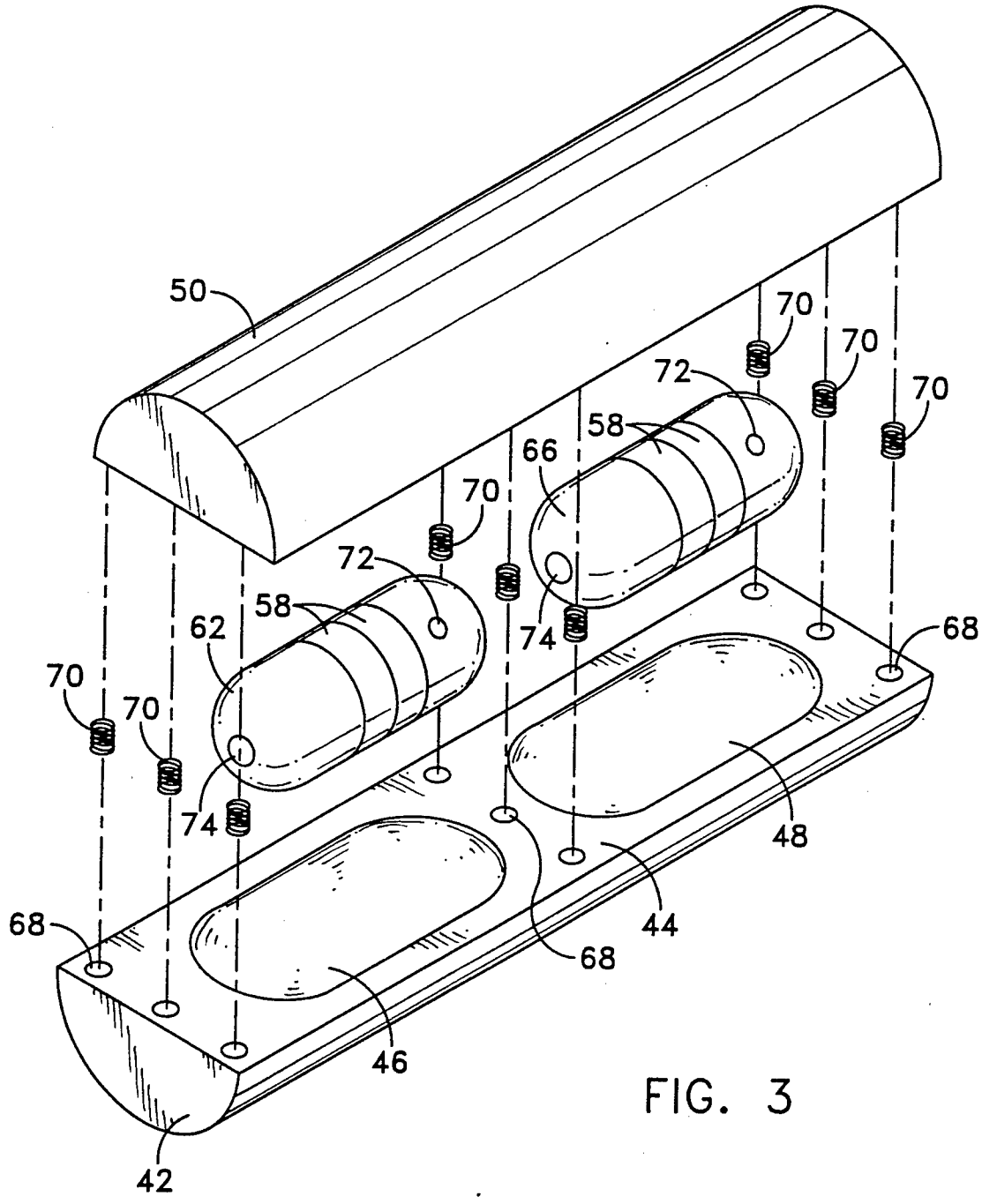

FIG. 3

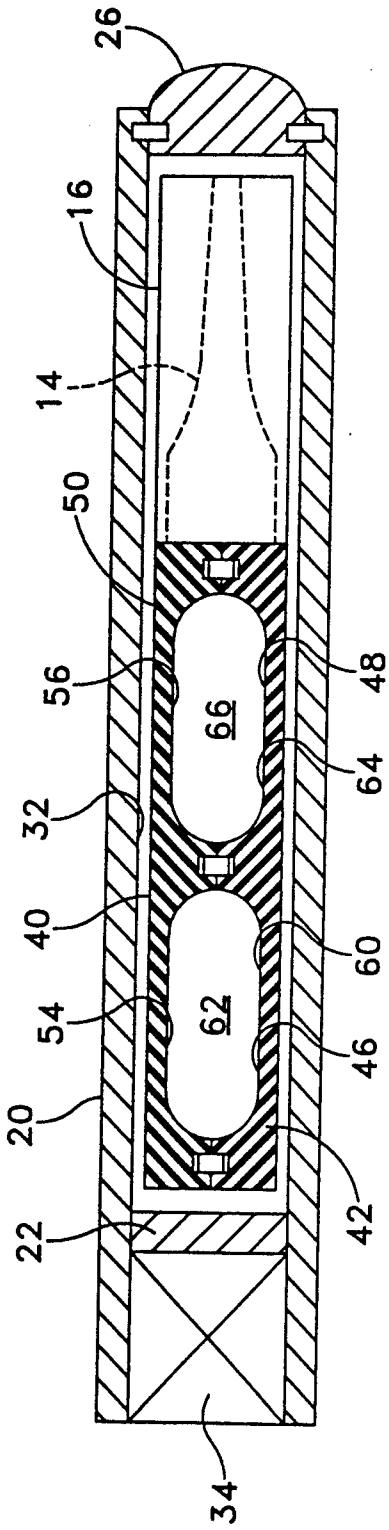

FIG. 4