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1 Navy Case No. 77961

2  
3 RETRACTABLE UNDERWATER TURRET

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5 STATEMENT OF GOVERNMENT INTEREST

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

10  
11 BACKGROUND OF THE INVENTION

12 (1) Field of the Invention

13 The present invention relates to a retractable underwater  
14 turret system for use on surface or underwater vessels and more  
15 specifically to an underwater gun turret and method of operation.

16 2) Description of the Prior Art

17 A search of the prior art disclosed the following U.S.  
18 Patents:

19 U.S. Patent No. 696,108 issued to H. Maxim on March 11, 1902  
20 discloses a surface vessel having a retractable deck gun turret  
21 that in addition to a hydraulic lifting mechanism to raise and  
22 lower the turret also employs a column of sea water to assist in  
23 raising the gun turret and supporting it in its firing position.

24 U.S. Patent No. 1,270,164 issued to J.E. Johannessen et al.  
25 on June 18, 1918 discloses a submarine vessel having a  
26 retractable deck gun. The deck gun is raised into firing

1 position and retracted by mechanical means and includes a  
2 positionable hatch plate which covers the gun chamber when in the  
3 retracted position.

4 U.S. Patent No. 1,399,395 issued to J.A. Moran on December  
5 6, 1921 discloses a surface vessel having a retractable deck gun  
6 that when not in use retracts into a storage chamber immediately  
7 below the deck.

8 U.S. Patent No. 453,545 issued to J.B. Canet on June 2, 1891  
9 and U.S. Patent No. 1,296,688 issued to R.S. Noah on March 11,  
10 1919 disclose land based gun installations having retractable  
11 turrets.

12 In all of the above referenced prior art patents the turrets  
13 are raised and retracted with the gun barrel in a horizontal  
14 position thereby requiring a relatively large opening through  
15 which the gun is raised and/or retracted. Further, all of the  
16 retractable turret systems disclosed and taught in the above  
17 discovered prior art are above the vessel's deck or the earth's  
18 surface. None of the prior art discloses or teaches a  
19 retractable turret system that is operable underwater.

20  
21 SUMMARY OF THE INVENTION

22 The present invention generally relates to a retractable,  
23 ship board turret system which is particularly suited for  
24 underwater deployment and operation.



1           FIG. 4 presents an elevational view, similar to FIGS. 2 and  
2 3, illustrating the turret immediately after exiting the bay and  
3 with the outer doors in the closed and operational position.

4           FIG. 5 presents a schematic view, similar to FIG. 1, showing  
5 the turret fully deployed and operational.

6           FIG. 6 presents a schematic bottom view of the turret in the  
7 fully deployed position as taken along line 6-6 in FIG. 5.

8  
9                           DESCRIPTION OF THE PREFERRED EMBODIMENT

10           Referring now to FIGS. 1, and 2. A retractable, underwater  
11 turret 10 is shown in its stored and retracted state within an  
12 enclosed, watertight, bay 11. Bay 11 would typically be located  
13 within a vessel's hull 25 and below the water line. In the  
14 embodiment of FIGS. 1 through 6, turret 10 is shown with  
15 underwater gun 14 mounted onto turret 10. Turret 10 is  
16 preferably mounted upon gimbal assembly 12 whereby turret 10 may  
17 be rotated about pivot 15 and axis 16.

18           Gimbal assembly 12 is attached to a suitable hydraulic  
19 piston assembly 18 which is securely anchored to the vessel's  
20 structure by a suitable support structure 22. Water tight, outer  
21 doors 28 and 29, are typically closed when turret 10 is in its  
22 retracted and stored position as shown in FIGS. 1 and 2. Affixed  
23 to one side of turret 10 is plug 32 which acts to plug or  
24 otherwise seal circular opening 34 formed by and between doors 28  
25 and 29 when the doors are closed. During storage of turret 10

1 within bay 11, the bay has no water therein as will be discussed  
2 further below.

3 When it is desired to deploy and operate turret 10, bay 11  
4 is first filled with seawater by opening vent 42 via multiport  
5 valve 36 and seawater is pumped into bay 11 by means of  
6 reversible pump 45 and seawater valve 38. The outer doors 28 and  
7 29 are then opened, thereby releasing plug 32 from circular  
8 opening 34. Turret 10 is then retracted to its uppermost  
9 position, by hydraulic piston assembly 18, and rotated such that  
10 gun 14 is in its vertical deployment position as illustrated in  
11 FIG. 3. When doors 28 and 29 are open, an opening 35 is provided  
12 whereby turret 10 and gun 14, only in the vertically aligned  
13 deployment configuration as illustrated in FIG. 3, may pass  
14 therethrough.

15 Upon reaching the vertically extended operational position,  
16 as illustrated in FIG. 4, outer doors 28 and 29 are closed with  
17 circular opening 34, formed between doors 28 and 29, gripping  
18 piston extension 33 about bearing seat 31. Turret 10 and gun 14  
19 are now rotated into the desired position, as illustrated in  
20 FIGS. 5 and 6 and gun 14 may be fired by remote control means not  
21 shown. When doors 28 and 29 are closed about bearing seat 31, as  
22 shown in FIGS. 4 and 5, they also act to structurally support  
23 turret 10 thereby assisting in resisting the recoiling effect of  
24 gun 14 when the gun 14 is fired.

1           Recovery of turret 10 within bay 11 is the reverse of the  
2 deployment procedure. Turret 10 and gun 14 are moved to the  
3 vertically aligned configuration as illustrated in FIG. 4, outer  
4 doors 28 and 29 are opened, and turret 10 is retracted, by piston  
5 assembly 18, to its upper most position as illustrated in FIG. 3.  
6 Once turret 10 and gun 14 are within bay 11, turret 10 is again  
7 rotated to its horizontal position and lowered to the bottom of  
8 bay 11, as illustrated in FIG. 1, and outer doors 28 and 29 are  
9 closed whereby circular opening 34, formed by doors 28 and 29  
10 sealingly closed around plug 32.

11           Seawater is then pumped out of bay 11 and through valve 38,  
12 by reversible pump 45, and fresh rinse water is pumped into bay  
13 11 from fresh water valve 39 whereby turret 10, gun 14 and the  
14 inside of bay 11 are rinsed of accumulated salt residue. After  
15 the fresh water rinse, the rinse water is pumped out of bay 11 by  
16 reversible pump 45 and through valve 38. Dry, heated air is then  
17 passed through bay 11, from hot air blower 40 and out through  
18 vent valve 44, thereby drying turret 10, gun 14 and bay 11.

19           The underwater turret 10 as disclosed herein above, may be  
20 used on surface or underwater vessels alike.

21           Although the preferred embodiment as disclosed hereinabove  
22 is generally directed to apparatus and method for deploying an  
23 underwater weapon system such as an underwater gun the apparatus  
24 and method may also be used for the underwater deployment of  
25 other devices such as communications equipment, sonar devices,

1 photographic equipment, intelligence gathering devices, or any  
2 other desirable attached equipment container, and the like.

3 Although the preferred embodiment as disclosed above is for  
4 an underwater turret, the concept may also be adapted for  
5 retractable above deck turret installations as well, particularly  
6 the method of streamlining the turret, during deployment and  
7 retrieval, as illustrated in FIG. 3, whereby the opening through  
8 which the turret must pass may be minimized.

9 It is evident that many alternatives, modifications, and  
10 variations of the present invention will be apparent to those  
11 skilled in the art in light of the foregoing teachings.  
12 Accordingly, the invention is intended to embrace all such  
13 alternatives, modifications and variations,

14

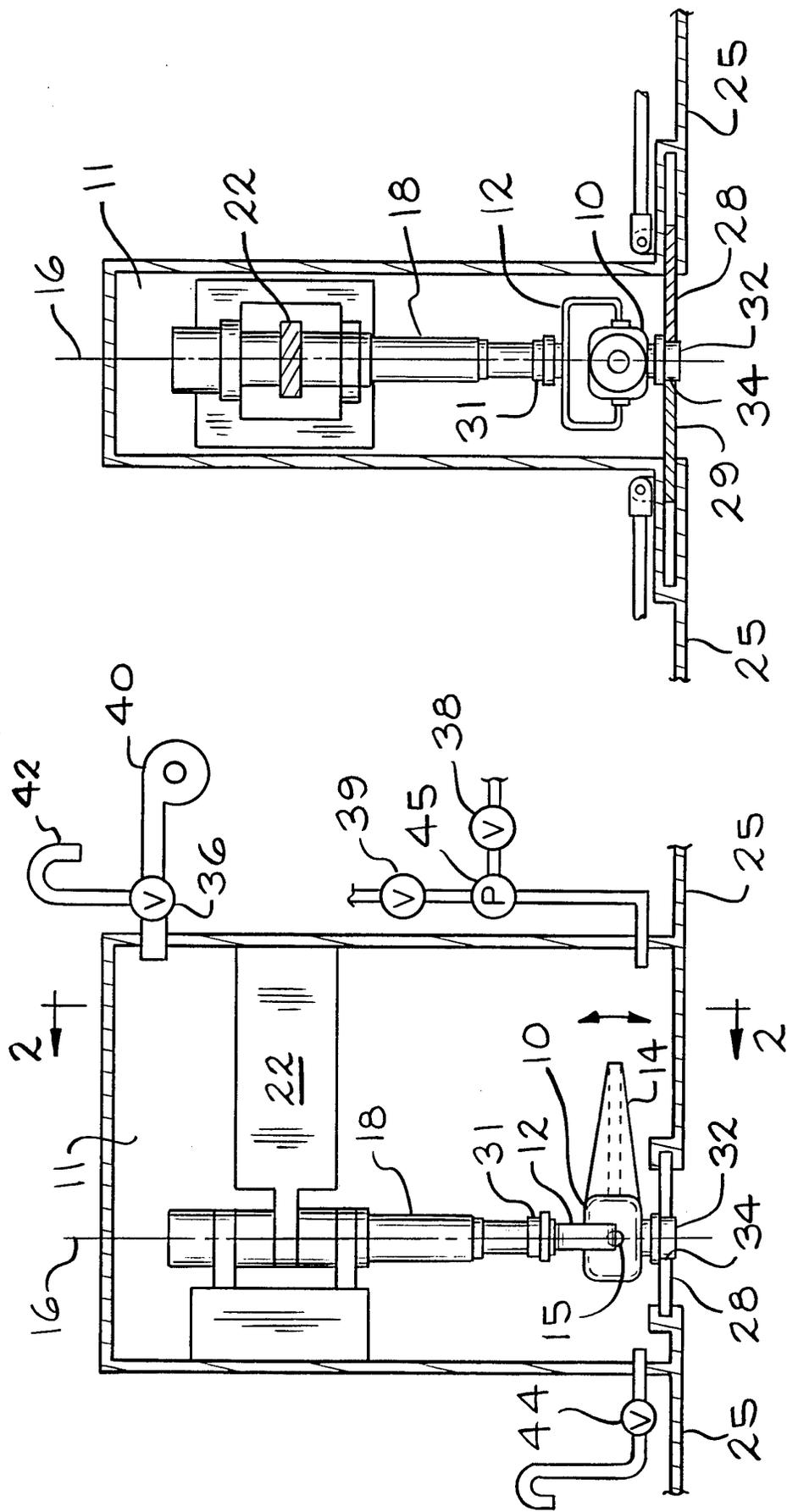
1 Navy Case No. 77961

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3 RETRACTABLE UNDERWATER TURRET

4  
5 ABSTRACT OF THE DISCLOSURE

6 The present invention, as disclosed and taught herein,  
7 comprises apparatus and method for an underwater turret system  
8 suitable for use on surface or underwater vessels. The turret  
9 system is housed in an underwater bay from which the turret may  
10 be deployed and operated. After operational use the turret  
11 system is retracted into the bay whereupon the bay and the system  
12 are flushed with rinse water, evacuated and dried by passing  
13 drying air through the bay. In a preferred embodiment the turret  
14 is fitted with an underwater weapon and operated to attack  
15 underwater targets.

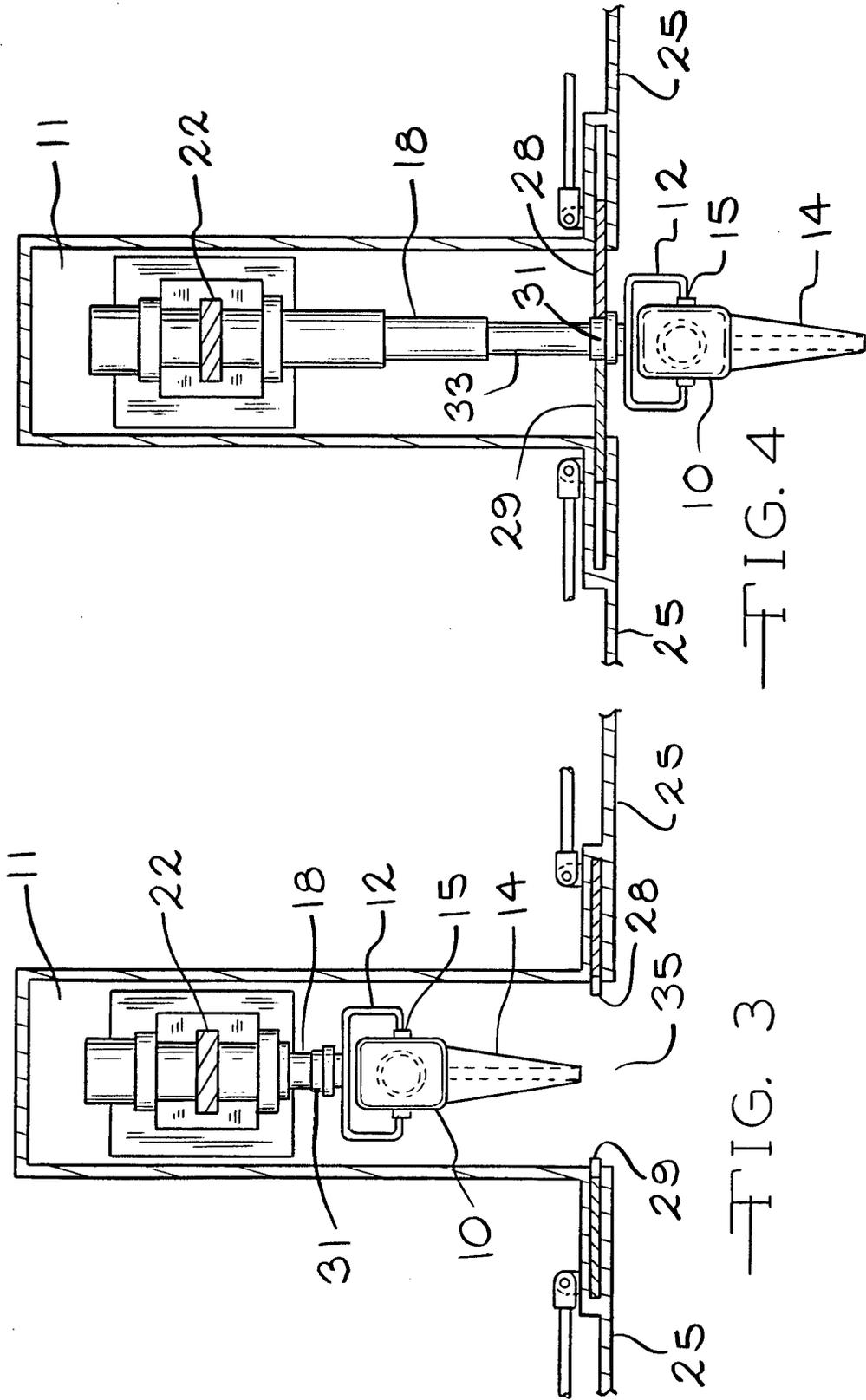
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—FIG. 2

—FIG. 1

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—FIG. 4

—FIG. 3

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FIG 5

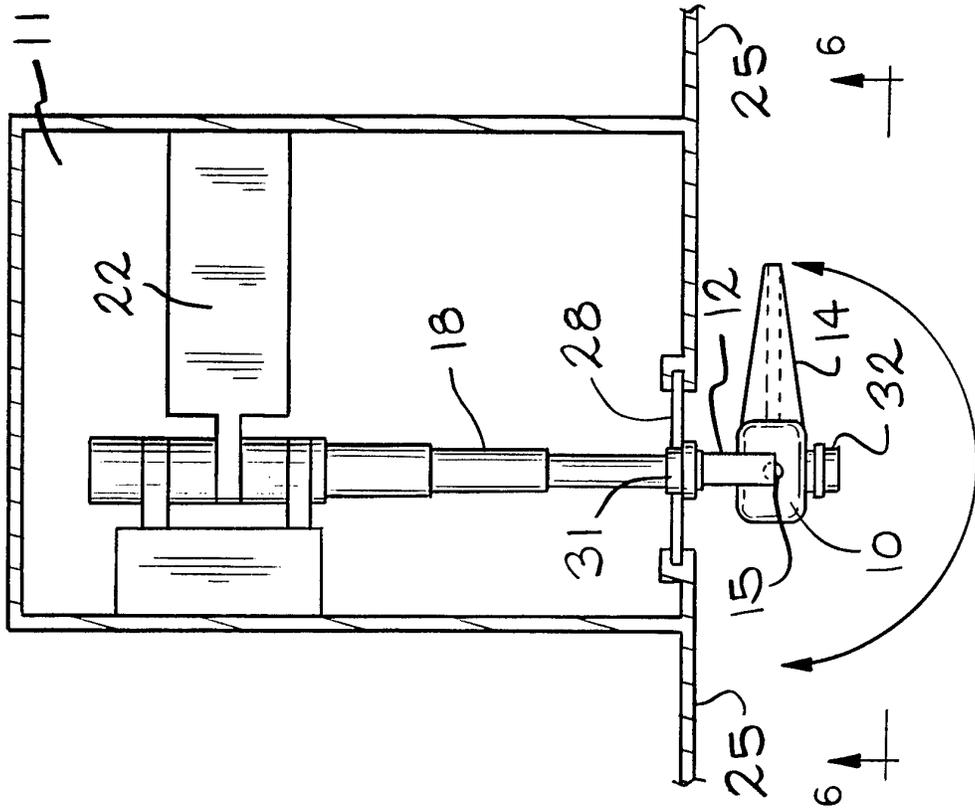
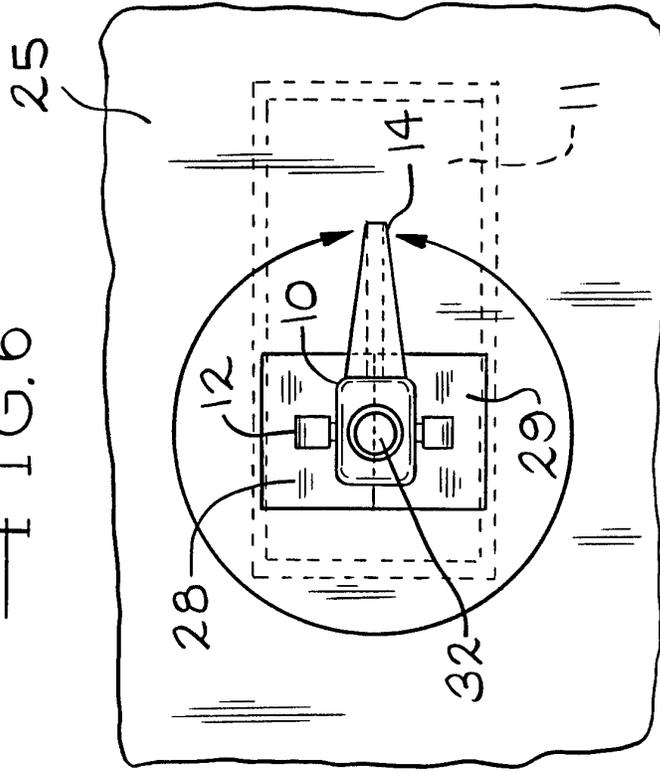


FIG. 6



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