



AN ELECTRONIC DETONATING SYSTEM FOR A SUBMUNITION AND A METHOD FOR ARMING THE SYSTEM

Field of the Invention

[0001] The present invention relates to detonating systems. In particular, this invention relates to an electronic detonating system for a submunition and a method for arming the electronic detonating system.

Background of the Invention

[0002] Electronic detonating systems are known. For example, US Patent 4,852,496 Campagnuolo et al. describes a submunition charging and detonation system having an alternator with a charging circuit. Ram air acts on a ribbon that causes release of a rotor shaft from a safe position and concurrently rotate the rotor shaft to charge the charging circuit.

[0003] Generally, detonation systems have safety and arming features to prevent accidental detonation of explosives. In the detonation system described in US Patent 4,852,496 Campagnuolo et al., the rotor shaft is threaded to prevent accidental disengagement from the safe position. However, threading the rotor shaft has a disadvantage in that more friction is encountered in rotating the rotor shaft along screw threads compared with non-threaded rotor shafts. Furthermore, a threaded rotor shaft requires a complex ribbon design to spin the rotor shaft effectively and thereby charge the charging circuit.

[0004] Therefore, a need clearly exists for an electronic detonating system for a submunition with a more reliable detonating mechanism that does not compromise safety during transport.



Summary of the Invention

[0005] The present invention seeks to provide an electronic detonating system, a submunition having the electronic detonating system and a method for arming the electronic detonating system.

[0006] Accordingly, in one aspect, the present invention provides an electronic detonating system for a submunition comprising:

- a system housing mountable to a submunition housing of the submunition;
- and

- a rotor switch assembly mounted to the system housing, the rotor switch assembly comprising:

- a rotor housing;

- a rotor mounted to the rotor housing and comprising a spring mount;

- electronic switch circuitry couplable to an electric detonator and mounted to the rotor;

- a rotor retaining pin coupled to a catch formed by the electronic switch circuitry to thereby retain the rotor in a safe mode prior to arming the electronic detonating system after launching the submunition;

- and

- a torsion spring mounted to the spring mount to bias the rotor towards an arming position of the electronic detonating system upon disengagement of the rotor retaining pin from the catch.

[0007] In another aspect, the present invention provides a submunition comprising:

- a submunition housing;

- a plurality of explosive charges placed within the submunition housing;

- and

- an electronic detonating system comprising:

- a system housing mountable to the submunition housing;

- and

a rotor switch assembly mounted to the system housing, the rotor switch assembly comprising:

a rotor housing;

a rotor mounted to the rotor housing and comprising a spring mount;

electronic switch circuitry couplable to an electric detonator and mounted to the rotor;

a rotor retaining pin coupled to a catch formed by the electronic switch circuitry to thereby retain the rotor in a safe mode prior to arming the electronic detonating system after launching the submunition;

and

a torsion spring mounted to the spring mount to bias the rotor towards an arming position of the electronic detonating system upon disengagement of the rotor retaining pin from the catch.

[0008] In a further aspect, the present invention provides a method for arming an electronic detonating system, the method comprising:

disengaging a rotor retaining pin from a catch formed by electronic switch circuitry, the electronic switch circuitry being mounted to a rotor of the electronic detonating system;

enabling rotation of the rotor to an arming position of the electronic detonating system;

connecting, at the arming position, an electrical power supply to the electronic switch circuitry;

and

generating, after a predetermined period of time, a detonating signal to ignite an electric detonator, the electric detonator being coupled to a plurality of explosive charges of a submunition to thereby provide an initiating charge to detonate the explosive charges.

Brief Description of the Drawings

[0009] A preferred embodiment of the present invention is more fully described, by way of example, with reference to the drawings of which:

[0010] FIG. 1 is a perspective view of an electronic detonating system in accordance with the preferred embodiment of the present invention;

[0011] FIG. 2 is an exploded perspective view of the electronic detonating system of FIG. 1 without a system housing;

[0012] FIG. 3 is a perspective view of a rotor housing of the electronic detonating system of FIG. 1 with a cut-off section showing a setback assembly;

[0013] FIG. 4 is another perspective view of a rotor of the electronic detonating system of FIG. 2 with electronic switch circuitry removed;

[0014] FIG. 5 is another perspective view of a rotor housing of the electronic detonating system of FIG. 2;

[0015] FIG. 6A and FIG. 6B illustrate positioning of a rotor retaining pin of the electronic detonating system of FIG. 1 during, respectively, a safe mode and an armed mode of the electronic detonating system;

[0016] FIG. 7 is side view of the rotor of FIG. 4 showing a groove;

[0017] FIG. 8A, FIG. 8B and FIG. 8C are side views of a rotor switch assembly looking in the direction of a plate of the electronic detonating system of FIG. 1; and

[0018] FIG. 9 is a flowchart of a method for arming the electronic detonating system FIG. 1 when applied in a submunition.

Detailed Description of the Drawings

[0019] An electronic detonating system, a submunition comprising the electronic detonating system and a method for arming the electronic detonating system in accordance with a preferred embodiment of the invention are described. In the following description, details are provided to describe the preferred embodiment. It shall be apparent to one skilled in the art, however, that the invention may be practiced without such details. Also, some of these details may not be described at length so as not to obscure the invention.

[0020] There are many advantages of the invention. One advantage of the invention is that the electronic detonating system applies a safer and more reliable two-stage mechanical arming procedure for submunitions. Hence, such submunitions can be handled more safely when in a safe mode and are set to an arming position for detonation only after expulsion from a submunition carrier and descending towards a target.

[0021] Another advantage of the invention is that a rotor retaining pin is disengaged from electronic switch circuitry using a sloping slot to thereby enable arming of the electronic detonating system without relying on a threaded mechanism. Thus, arming the electronic detonating system is more direct and reliable because less friction is encountered with the sloping slot compared with the threaded mechanism of existing electronic detonating systems.

[0022] Still another advantage of the invention is that a rotor with a groove enhances arming of the electronic detonating system. A connecting pin of an electrical power supply engages an initial portion of the groove to thereby provide a preliminary position prior to rotation of the rotor to the arming position. The preliminary position prevents the rotor from rotating back to the safe mode.

[0023] Yet another advantage of the invention is that the electronic detonating system provides a ribbon stabilizer with a simpler design compared with existing ribbon stabilizers. The simpler design is possible because the ribbon stabilizer is not required to generate a spinning action to disengage the rotor retaining pin from the electronic switch circuitry.

[0024] A further advantage of the invention is that electrical power supply is provided to the electronic detonating system only when power input nodes of the electronic detonating system are aligned with respective contact apertures and openings to thereby receive connecting pins of a power source at the arming position. Furthermore, the contact apertures and openings are sized differently to prevent incorrect connections between the connecting pins and the power input nodes to thereby alleviate faulty electrical arming.

[0025] Referring now to FIG.1, a perspective view of an electronic detonating system 10 in accordance with the preferred embodiment of the present invention is shown. The electronic detonating system 10 is applied in, for example, a submunition to detonate an electronic detonator that provides an initiating charge to an explosive train having a plurality of explosive charges. Typically, the explosive train is placed within a submunition housing (not shown) of the submunition. The electronic detonating system 10 comprises a system housing 12 and a rotor switch assembly 14 that is mounted to the system housing 12. The system housing 12 is mountable to the submunition housing.

[0026] FIG. 2 is an exploded perspective view of the electronic detonating system 10 without the system housing 12. The rotor switch assembly 14 comprises a rotor housing 16, a rotor 18 mounted to the rotor housing 16, electronic switch circuitry 20 couplable to an electric detonator (not shown) and mounted to the rotor 18, a rotor retaining pin 22 that is coupled in a releasable manner to a catch 24 (not shown in FIG. 2) formed by the electronic switch circuitry 20, a torsion spring 26, a plate 28 mounted to the rotor housing 16 and the rotor 18, a cam pin 30, and a

ribbon stabilizer 32 mounted to the rotor retaining pin 22. The ribbon stabilizer 32 is unfurled for illustrative purposes and not drawn to scale in FIG. 2.

[0027] It is to be noted that the system housing 12 is not shown in FIG. 2 to allow viewing of the rotor retaining pin 22, the cam pin 30 and the ribbon stabilizer 32. When assembled as shown in FIG. 1, the cam pin 30 is mounted within the system housing 12. Thus assembled, the cam pin 30 engages the rotor retaining pin 22 inside the system housing 12 and is therefore not viewable in the perspective view of the electronic detonating system 10 shown in FIG. 1.

[0028] The rotor 18 comprises a spring mount 34 formed with a cylindrical protrusion that extends from a surface 36 of the rotor 18. The cylindrical protrusion has a diametric slot 38 across an open end 40 and extends through a plate aperture 42 formed by the plate 28. The torsion spring 26 is mounted to the spring mount 34 by inserting the cylindrical protrusion through coils of the torsion spring 26 such that a diametric coil section 44 engages the diametric slot 38. The plate 28 has a spring bias member 46 that provides torsion support for the torsion spring 26. In the preferred embodiment of the present invention, the spring bias member 46 is a protrusion extending from the plate 28.

[0029] When assembled and mounted to the system housing 12, the electronic detonating system 10 has two modes: a safe mode and an armed mode. In the safe mode, a setback assembly, associated with the rotor housing 16, provides a first safety control to lock the rotor switch assembly 14 in the safe mode prior to launching the submunition. In addition, the safe mode has a second safety control that is provided by the rotor retaining pin 22, which retains the rotor 18 at the catch 24 to prevent rotation of the rotor 18 in an arming direction 48.

[0030] Referring now to FIG. 3, a perspective view of the rotor housing 16 with a cut-off section showing a setback assembly 50 is illustrated. Providing the first safety control in the safe mode, the setback assembly 50 comprises a setback

chamber 52, a setback member 54 and a setback spring 56. A portion 58 of the rotor housing 16 forms the setback chamber 52. The portion 58 has a wall 60 that is adjacent to a rotor chamber 62 for housing the rotor 18. The wall 60 forms a slot 64 that connects the setback chamber 52 and the rotor chamber 62. In addition, the setback assembly 50 has a setback lock 66 that is disposed along the slot 64. The setback lock 66 abuts the rotor 18 to thereby lock the rotor switch assembly 14 in the safe mode prior to launching of the submunition. The wall 60 also forms a pivot mount 68 for rotary movement of the rotor 18.

[0031] Referring now to FIG. 4, another perspective view of the rotor 18 is shown with the electronic switch circuitry 20 removed. The rotor 18 comprises a recess 70 for abutting the setback lock 66. The recess is formed into a side 72 of the rotor. In the preferred embodiment of the invention, the setback lock 66 comprises a ball that is engaged with the recess 70 in a locking position associated with the safe mode. In this locking position, the setback spring 56 biases the setback member 54 towards one end of the setback chamber 52 near the slot 64. Consequently, the setback member 54 blocks entry of the ball into the setback chamber 52. The rotor 18 also has a pivot 74 that extends from the side 72 to engage the pivot mount 68 on the wall 60 of the rotor housing 16.

[0032] Providing the second safety control in the safe mode, the rotor retaining pin 22 is activated subsequent to the first safety control provided by the setback assembly 50. This second safety control is disabled only when the ribbon stabilizer 32 is unfolded during expulsion of the submunition from a submunition carrier.

[0033] Referring now to FIG. 5, another perspective view of the rotor housing 16 is shown. In this perspective view, a rotor stopper 80 is shown at an internal corner of the rotor chamber 62. The rotor stopper 80 stops rotary motion of the rotor 18 at the arming position after rotating in the arming direction 48. FIG. 5 also shows two mounting pins 82a,82b respectively disposed at ends 84a,84b of two housing arms 86a,86b of the rotor housing 16.

[0034] FIG. 6A and FIG. 6B illustrate positioning of the rotor retaining pin 22 during, respectively, the safe mode and the armed mode. The rotor retaining pin 22 has a catch engagement portion 90 and a ribbon mount portion 92. Upon the expulsion of the submunition from a submunition carrier and unfolding of the ribbon stabilizer 32, force from air acting on the ribbon stabilizer 32 causes the rotor retaining pin 22 to slide along a sloping slot 94 that engages one end of the cam pin 30. Consequently, when the rotor retaining pin 22 disengages from the catch 24, the rotor 18 is then rotatable to the arming position.

[0035] The sloping slot 94 has a base portion 96 that extends along a flange 98 of the rotor retaining pin 22. The end of the cam pin 30 is locked at this base portion 96 to thereby prevent the rotor retaining pin 22 from sliding back along the sloping slot 94. In the preferred embodiment, the sloping slot 94 spirals around the rotor retaining pin 22 to provide about 180 degrees of rotation. However, the rotation is not limited to this angle of 180 degrees. This is because any angle that enables the rotor retaining pin 22 to move vertically away from the catch 24 and thereby enable rotation of the rotor 18 to the arming position is sufficient.

[0036] The torsion spring 26 and the spring bias member 46 both bias and enable rotation of the rotor 18 towards the arming position of the electronic detonating system 10 upon disengagement of the rotor retaining pin 22 from the catch 24. In the arming position, the electronic detonating system 10 is mechanically armed and positioned for electrical arming to take place.

[0037] Referring now to FIG. 7, a side view of the rotor 18 shows a groove 100 along one side of the surface 36. The groove 100 has two openings 102, 104 formed thereat. The opening 102 is smaller than the opening 104. Two electrical contact pads (not shown in FIG. 7) of the electronic switch circuitry 20 are exposed through these two openings 102, 104. The two electrical contact pads serve as

power input nodes of the electronic switch circuitry 20. The groove 100 curves along an edge 106 between two sides 108a,108b of the surface 36.

[0038] FIG. 8A and FIG. 8B are side views of the rotor switch assembly 14 looking in the direction of the plate 28. These side views illustrate relative positioning and relative sizes of two contact apertures 110,112 of the plate 28 and the two openings 102,104 at, respectively, the safe mode and the armed mode. The contact aperture 110 is smaller than the contact aperture 112. Seen through the contact aperture 112 is an electrical contact pad 114. Another electrical contact pad 116 is shown in dashed outline in FIG. 8A.

[0039] Also shown in FIG. 8A and FIG. 8B are two mounting pin apertures 118,120, two screw mounting apertures 122,124, a plate orientation slot 126, and a radial portion 128 of the torsion spring 26 abutting the spring bias member 46. The rotor 18 with the groove 100 and the two openings 102,104 are shown in dashed outline where appropriate.

[0040] In the safe mode as shown in FIG. 8A, the contact aperture 112 exposes the electrical contact pad 114. Connecting pins (not shown) that connect the two electrical contact pads and a power supply (not shown) are sized differently to fit, respectively, through the two openings 102,104 and the two contact apertures 110,112. Hence, a connecting pin to couple to the electrical contact pad 114 through the contact aperture 110 and the opening 102 is smaller in cross-sectional area than the other connecting pin. This other connecting pin has to couple to the other electrical contact pad 116 via the contact aperture 112 and the opening 104. The connecting pins are biased towards the two electrical contact pads 114,116.

[0041] As a result of the different sizes of the connecting pins, the contact apertures 110,112, and the two openings 102,104, the safe mode is enhanced because the larger connecting pin cannot couple through the smaller opening 102 to connect to the electrical contact pad 114. Therefore, electrical arming of the

electronic detonating system 10 is only possible when the rotor 18 and the electronic switch circuitry 20 rotate to the arming position of the armed mode as shown in FIG. 8B.

[0042] Although different sizes of the connecting pins, the contact apertures 110,112, and the two openings 102,104 in terms of cross-sectional area enhance the safe mode, it is to be noted that different shapes for these elements may also enhance the safe mode even though such different shapes are not illustrated. For example, a connecting pin may have a square cross-section while the other connecting pin may be circular in cross-section. Such different cross-section for the connecting pins would therefore entail corresponding cross-sections for the contact apertures 110,112, and the two openings 102,104.

[0043] In operation, when the submunition is initially launched, a setback force pushes the setback member 54 against the setback spring 56. Consequently, the ball of the setback lock 66 enters into space, within the setback chamber 52, that is voided by the setback member 54. Thereafter, the rotor 18 rotates a little to a preliminary position as illustrated in FIG. 8C. This preliminary position is not the arming position of the armed mode because the rotor switch assembly 14 is still retained in the safe mode by the rotor retaining pin 22.

[0044] A connecting pin 130 is indicated in FIG. 8C. The connecting pin 130 is the smaller of the two connecting pins and shaded in FIG. 8C to distinguish against the contact aperture 110. At the preliminary position, the connecting pin 130 is biased towards the groove 100 via the contact aperture 110 to engage an initial portion 132 of the groove 100 near to the side 108a. Consequently, the rotor 18 is prevented from rotating back towards the safe mode because of engagement of the connecting pin 130 with the initial portion 132 at the preliminary position.

[0045] Upon alignment of the two contact apertures 110,112 of the plate 28 with the two openings 102,104 of the rotor 18, the connecting pins are then respectively

connected to the two electrical contact pads 114,116. Thereafter, the electronic switch circuitry 20 receives electrical power to initiate sufficient charge to detonate the electronic detonator.

[0046] Operation of the electronic detonating system 10 is described using the flowchart, shown in FIG. 9, of a method 200 for arming the electronic detonating system 10 when applied in a submunition. The method 200 starts with releasing 202 the setback lock 66 of electronic detonating system 10 when the setback force is sensed to thereby set the rotor 18 to a rotatable position. The setback force is sensed upon launching of the submunition carrier that carries at least one of the submunition. In the releasing 202, the rotor 18 is rotated towards the preliminary position shown in FIG. 8C by the torsion spring 26 and this causes the connecting pin 130 to engage the groove 100.

[0047] At the rotatable position and when the submunition is, for example, closer to a target or at a predetermined height above ground, the submunition is then expelled from the submunition carrier. Expulsion of the submunition from the submunition carrier unfolds the ribbon stabilizer 32. Consequently, wind or air pushes against the ribbon stabilizer 32 upwards and this causes pulling of the rotor retaining pin 22 in an upward direction similar to the ribbon stabilizer 32. The cam pin 30 guides movement of the rotor retaining pin 22 along the sloping slot 94 towards the base portion 96. As a result of the sloping slot, the upward direction is a spiral upward direction.

[0048] The movement of the rotor retaining pin 22 towards the base portion 96 leads to disengaging 204 of the rotor retaining pin 22 from the catch 24. The rotor 18 is then unlocked from the safe mode by the disengaging 204, thereby enabling 206 rotation of the rotor 18 to the arming position of the armed mode.

[0049] In the enabling 206 of the method 200, the rotor 18 is then biased towards the arming position by the torsion spring 26. At the arming position, the electronic

switch circuitry 20 is then supplied with electrical power from an electrical power supply. The electrical power is supplied by connecting 208, respectively, the connecting pins of the electrical power supply to the electrical contact pads 114,116 of the electronic switch circuitry 20 through the openings 102,104 and the contact apertures 110,112.

[0050] Upon the connecting 208, the method 200 then continues to generating 210, after a predetermined period of time, a detonating signal to ignite an electric detonator of the submunition. The electric detonator is coupled to an explosive train having a plurality of explosive charges. Such an electric detonator is placed within a submunition housing of the submunition to thereby provide an initiating charge to detonate the plurality of explosive charges.

[0051] The present invention therefore provides the electronic detonating system 10, a submunition comprising the electronic detonating system 10 and the method 200 for arming the electronic detonating system 10 to overcome, or at least alleviate, the problems of the prior art.

[0052] While the present invention has been described in detail for the preferred embodiment with reference to FIGs. 1 to 9, it should be understood that FIGs. 1 to 9 are illustrative of the preferred embodiment without limiting the invention.

[0053] Accordingly, persons skilled in the art can make various modifications and improvements without departing from the spirit and the scope of the present invention.

Claims

1. An electronic detonating system for a submunition comprising:
 - a system housing mountable to a submunition housing of said submunition;
 - and
 - a rotor switch assembly mounted to said system housing, said rotor switch assembly comprising:
 - a rotor housing;
 - a rotor mounted to said rotor housing and comprising a spring mount;
 - electronic switch circuitry couplable to an electric detonator and mounted to said rotor;
 - a rotor retaining pin coupled to a catch formed by said electronic switch circuitry to thereby retain said rotor in a safe mode prior to arming said electronic detonating system after launching said submunition;
 - and
 - a torsion spring mounted to said spring mount to bias said rotor towards an arming position of said electronic detonating system upon disengagement of said rotor retaining pin from said catch.
2. The electronic detonating system of Claim 1, wherein said rotor switch assembly further comprises a setback assembly, said setback assembly having:
 - a setback chamber formed by a portion of said rotor housing, said portion having a wall adjacent to said rotor, said wall having a slot formed thereat;
 - a setback lock disposed along said slot and abutting said rotor to thereby lock said rotor switch assembly in said safe mode prior to launching of said submunition;
 - and
 - a setback member to block entry of said setback lock into said setback chamber in said safe mode.
3. The electronic detonating system of Claim 2, wherein said rotor comprises a recess for abutting by said setback lock.

4. The electronic detonating system of Claim 3, wherein said setback lock comprises a ball, said ball being engaged with said recess in a locking position associated with said safe mode.
5. The electronic detonating system of Claim 4, wherein said setback assembly further comprises a setback spring, said setback member being biased by said setback spring towards one end of said setback chamber at said locking position.
6. The electronic detonating system of Claim 2, wherein said setback chamber comprises a rotor stopper, said rotor stopper being to stop rotary motion of said rotor at said arming position after rotating in an arming direction.
7. The electronic detonating system of Claim 1, and further comprising a ribbon stabilizer coupled to said rotor retaining pin.
8. The electronic detonating system of Claim 7, and further comprising a cam pin mounted to said system housing, said cam pin having one end engaging a sloping slot of said rotor retaining pin.
9. The electronic detonating system of Claim 1, and further comprising a plate mounted to said rotor housing and coupled to said spring mount, said plate comprising a spring bias member to increase torsion of said torsion spring towards said arming position.
10. The electronic detonating system of Claim 9, wherein said plate further comprises two contact apertures, one of said contact apertures being smaller than the other.
11. The electronic detonating system of Claim 10, wherein said electronic switch circuitry comprises two electrical contact pads.

12. The electronic detonating system of Claim 11, wherein said rotor comprises a section having a groove formed thereat, said groove having two openings, one of said openings being smaller than the other.
13. The electronic detonating system of Claim 12, and further comprising a power supply having two connecting pins to connect to said contact pads when said openings and said contact apertures are aligned at said arming position, one of said connecting pins being smaller than the other.
14. A submunition comprising:
 - a submunition housing;
 - a plurality of explosive charges placed within said submunition housing;
 - and
 - an electronic detonating system comprising:
 - a system housing mountable to said submunition housing;
 - and
 - a rotor switch assembly mounted to said system housing, said rotor switch assembly comprising:
 - a rotor housing;
 - a rotor mounted to said rotor housing and comprising a spring mount;
 - electronic switch circuitry couplable to an electric detonator and mounted to said rotor;
 - a rotor retaining pin coupled to a catch formed by said electronic switch circuitry to thereby retain said rotor in a safe mode prior to arming said electronic detonating system after launching said submunition;
 - and
 - a torsion spring mounted to said spring mount to bias said rotor towards an arming position of said electronic detonating system upon disengagement of said rotor retaining pin from said catch.

15. The submunition of Claim 14, wherein said rotor switch assembly further comprises a setback assembly, said setback assembly having:
 - a setback chamber formed by a portion of said rotor housing, said portion having a wall adjacent to said rotor, said wall having a slot formed thereat;
 - a setback lock disposed along said slot and abutting said rotor to thereby lock said rotor switch assembly in said safe mode prior to launching of said submunition;
 - and
 - a setback member to block entry of said setback lock into said setback chamber in said safe mode.
16. The submunition of Claim 15, wherein said rotor comprises a recess for abutting by said setback lock.
17. The submunition of Claim 16, wherein said setback lock comprises a ball, said ball being engaged with said recess in a locking position associated with said safe mode.
18. The submunition of Claim 17, wherein said setback assembly further comprises a setback spring, said setback member being biased by said setback spring towards one end of said setback chamber at said locking position.
19. The submunition of Claim 15, wherein said setback chamber comprises a rotor stopper, said rotor stopper being to stop rotary motion of said rotor at said arming position after rotating in an arming direction.
20. The submunition of Claim 14, and further comprising a ribbon stabilizer coupled to said rotor retaining pin.

21. The submunion of Claim 20, and further comprising a cam pin mounted to said system housing, said cam pin having one end engaging a sloping slot of said rotor retaining pin.
22. The submunion of Claim 14, and further comprising a plate mounted to said rotor housing and coupled to said spring mount, said plate comprising a spring bias member to increase torsion of said torsion spring towards said arming position.
23. The submunion of Claim 22, wherein said plate further comprises two contact apertures, one of said contact apertures being smaller than the other.
24. The submunion of Claim 23, wherein said electronic switch circuitry comprises two electrical contact pads.
25. The submunion of Claim 24, wherein said rotor comprises a section having a groove formed thereat, said groove having two openings, one of said openings being smaller than the other.
26. The submunion of Claim 25, and further comprising a power supply having two connecting pins to connect to said contact pads when said openings and said contact apertures are aligned at said arming position, one of said connecting pins being smaller than the other.

27. A method for arming an electronic detonating system, said method comprising:
- disengaging a rotor retaining pin from a catch formed by electronic switch circuitry, said electronic switch circuitry being mounted to a rotor of said electronic detonating system;
 - enabling rotation of said rotor to an arming position of said electronic detonating system;
 - connecting, at said arming position, an electrical power supply to said electronic switch circuitry;
 - and
 - generating a detonating signal to ignite an electric detonator, said electric detonator being coupled to a plurality of explosive charges of a submunition to thereby provide an initiating charge to detonate the explosive charges.
28. The method of Claim 27, and further comprising releasing, prior to said disengaging, a setback lock of said electronic detonating system when a setback force is sensed to thereby set said rotor to a rotatable position.
29. The method of Claim 27, wherein said disengaging comprises unfolding a ribbon stabilizer coupled to said rotor retaining pin.
30. The method of Claim 29, wherein said disengaging further comprises pulling of said rotor retaining pin in an upward direction.
31. The method of Claim 27, wherein said enabling comprises biasing said rotor towards said arming position with a torsion spring mounted to a spring mount of said rotor.
32. The method of Claim 27, wherein said connecting comprises aligning, at said arming position, two openings of said rotor with two contact apertures of a plate, said plate being mounted to said rotor housing.

33. The method of Claim 32, wherein said connecting further comprises respectively connecting two connecting pins of said electrical power supply to two electrical contact pads of said electronic switch circuitry through said openings and said contact apertures.
34. The method of Claim 27, wherein said generating comprises generating after a predetermined period of time.