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Murphy

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(54) **BOLA LAUNCHER**

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(58) **Field of Search** 42/76.01, 77, 90

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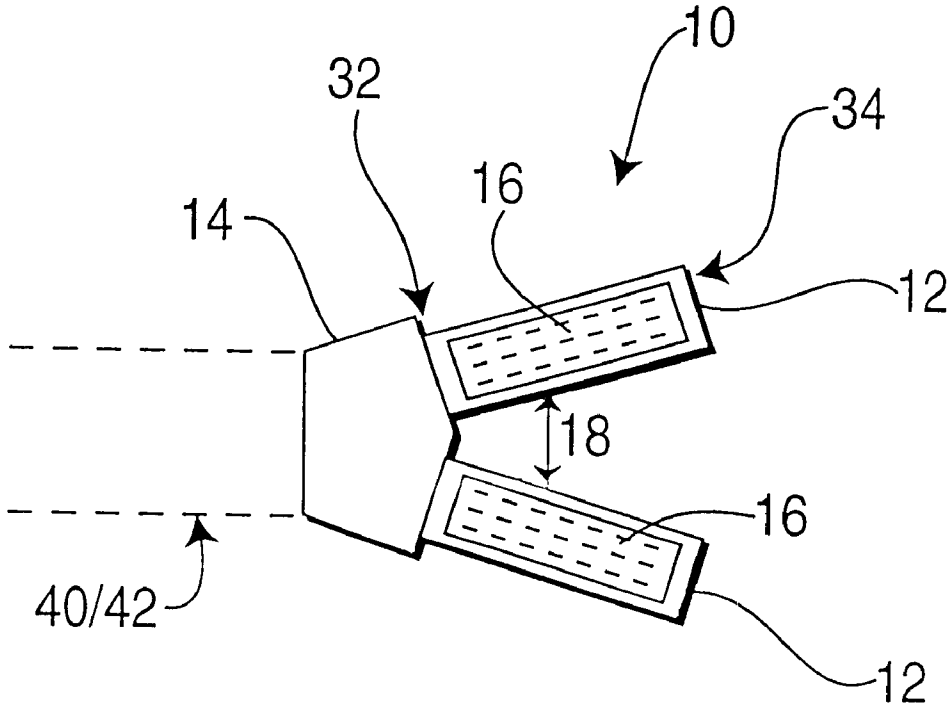
(57) **ABSTRACT**

A bola deployment device for launching a bola from a firearm has a housing member, a plurality of tubular segments with pockets for inserting a bola weight and a stowage area for placing the bola cord. The bola deployment device is attached to the end of a firearm and when fired, the weighted ends of the bola effectively separate from each other as the bola departs from the bola deployment device.

19 Claims, 1 Drawing Sheet



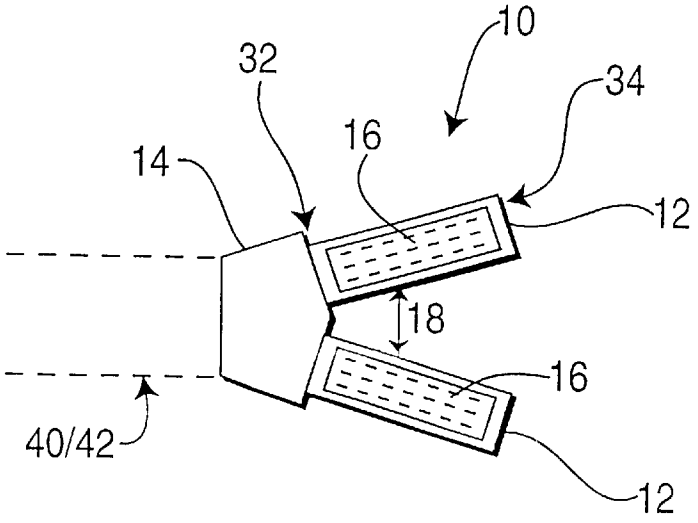


FIG. 1

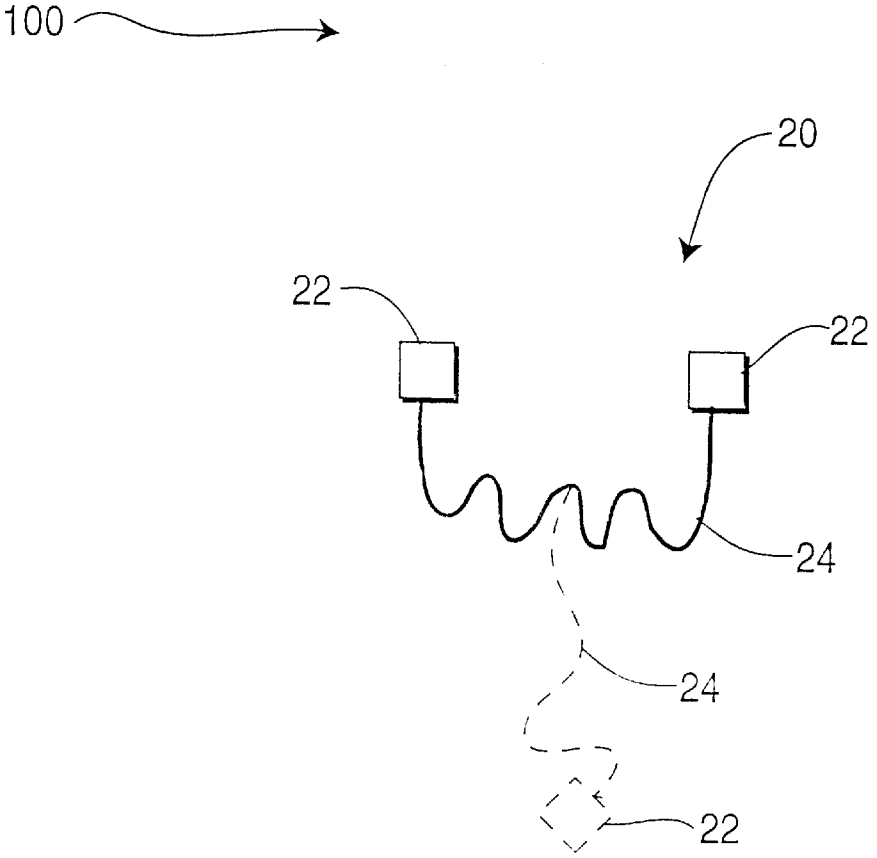


FIG. 2

BOLA LAUNCHER

The invention described herein 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.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to non-lethal ensnarement devices. More particularly, the non-lethal ensnarement devices of the present invention include a bola mechanism for capturing fleeing persons. Most particularly, the bola mechanism of the present invention may be used in standard firearms used by military and police forces.

2. Brief Description of the Related Art

Bolo shotgun rounds are commercially available. One type of bolo shotgun round contains 3 rubber balls connected by cord. These rounds are fired from a standard 12 gauge shotgun. Problematic with this type of round is that the 3 rubber balls have a tendency to fly together until they impact the object, thereby minimizing the bolo effect, i.e., wrapping around the target. One attempt to overcome this problem is found in U.S. Pat. No. 4,559,737 to Washington. The Washington patent discloses a specialized firearm snare device having a Y-shaped member for receiving a pair of projectiles connected by a flexible line. The firearm provides divergent barrels to separate the bola device on firing. As such, Washington requires the specialized firearm configurations for proper functioning of the bola device for dispersing two parts of a bola away from each other.

In view of the foregoing, there is a need for an improved bola launcher that provides reliable bola deployment when fired from standard firearms. The present invention addresses this and other needs.

SUMMARY OF THE INVENTION

The present invention includes a bola deployment device for launching a bola from a firearm comprising a housing member forming a chamber therein, a plurality of tubular segments forming hollow cylinders therethough between a first and second end, the tubular segments attached to the housing member at the first end forming an open conduit between the hollow cylinders and housing member chamber, the second end forming an open conduit with the outside of the tubular segment, wherein the housing member provides an angular separation of the tubular segments and means for stowing connecting cords.

The present invention also includes a method for launching a bola device from a firearm comprising the steps of providing a bola deployment device for launching a bola from a firearm comprising a housing member forming a chamber therein, a plurality of tubular segments forming hollow cylinders therethough between a first and second end, the tubular segments attached to the housing member at the first end forming an open conduit between the hollow cylinders and housing member chamber, the second end forming an open conduit with the outside of the tubular segment, wherein the housing member provides an angular separation of the tubular segments and means for stowing connecting cords, attaching the housing member onto the end of the firearm, combining a bola having a plurality of weighted ends connected by cord to the bola deployment device, wherein each weighted end is inserted into the second end of one of the tubular segments and the cord is stowed by the means for stowing connecting cords and firing a blank charge from the firearm, wherein the force of the blank charge transits through the housing member and forces the bola out of the tubular segments, causing the weighted ends of the bola to effectively separate from one another prior to target contact.

Additionally, the present invention includes a deployed bola product produced by the process comprising the steps of providing a bola deployment device for launching a bola from a firearm comprising a housing member forming a chamber therein, a plurality of tubular segments forming hollow cylinders therethough between a first and second end, the tubular segments attached to the housing member at the first end forming an open conduit between the hollow cylinders and housing member chamber, the second end forming an open conduit with the outside of the tubular segment, wherein the housing member provides an angular separation of the tubular segments and means for stowing connecting cords, attaching the housing member onto the end of the firearm, combining a bola having a plurality of weighted ends connected by cord to the bola deployment device, wherein each weighted end is inserted into the second end of one of the tubular segments and the cord is stowed by the means for stowing connecting cords and firing a blank charge from the firearm, wherein the force of the blank charge transits through the housing member and forces the bola out of the tubular segments, causing the weighed ends of the bola to effectively separate from one another prior to target contact, wherein contact with the target results in an entangled object with the bola.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** illustrates the bola launcher of the present invention; and,

FIG. **2** illustrates a typical bola useful as a component of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention provides a bola launcher useful in separating a bola fired from a standard firearm. The bola launcher is attached to the end of a barrel of a firearm, such as a shotgun, and loaded with a bola prior to firing. The bola launcher provides law enforcement and military personnel the ability to quickly capture a fleeting suspect using non-lethal force. Rather than chasing down a fleeing suspect, the bola is fired by the police or military member to trip and/or knock down the suspect. The present invention is particularly useful in urban police operations or military peace-keeping missions.

As seen in FIG. **1**, a bola deployment device **100** of the present invention includes a bola launcher **10** comprising a singular housing member **14** and multiple tubes or tubular segments **12** connected to the housing member **14**. The bola deployment device **10** is appropriately dimensioned for insertion onto a firearm **40**, with the dimensions for a given firearm determinable by those skilled in the art in light of the disclosure herein. The housing member **14** is connected to the barrel **42** of a Remington Model 870 shotgun (having a 26 inch Rem-Choke barrel, with a Hastings REM 12640 Choke Tube installed onto the end of the barrel), by means of mating threads machined on the outside diameter of the choke tube and the inside of the housing member **14**. Typically the firearm **40** comprises a shotgun or other similar device, such as a 12 gauge, 20 gauge or the like, shotgun.

The housing member **14** is configured to fix to the end of the firearm **40**, allowing the force of the firing to impart

equal force to each tubular segment **12**. The housing member **14** comprises a resilient composition for withstanding the force of expulsion from the firearm **40**, such as reinforced hardened plastic, metal and other like compositions suitable for the purposes described herein, with the proper selection of housing member **14** determinable by those skilled in the art. Preferably the housing member **14** comprises a steel composition. The diameter of the housing member **14** substantially encloses the end of the barrel **42** of the firing firearm **40** to ensure proper ejection of a bola from inside of the bola launcher **10** on firing.

The plurality of tubular segments **12** form an open conduit between the housing member **14** and the outside. Preferably, each tubular segment **12** forms a single hollow cylindrical chamber for insertion of a single weighted end of a bola. The tubular segments **12** have a second end **34** that forms an open communication between the hollow cylinder herein and the outside of the tubular segment **12**, and a first end **32** that is connected to the housing member **14**, forming an open conduit therebetween. The hollow cylinder within the tubular segment **12** has sufficient size and diameter to contain a weighted end of a given bola, while permitting the contained weighted end to exit from the hollow cylinder with the firing of the bola launcher **10**. The first open end **32** and second end **34** are attached to the housing member **14** in a manner that provides an angular separation **18** of the tubular segments **12**. Preferably , this angular separation **18** comprises an angle of from about 35° or less, more preferably from about 30° to about 15°, and most preferably from about 25° to about 20°. This angular separation **18** permits proper bola deployment from the bola launcher **10** and separation of the weighted ends of the bola after firing and prior to target contact.

The plurality of tubular segments **12** comprise a resilient composition for withstanding the force of expulsion of the bola from a firearm, such as reinforced hardened plastic, metal and other like compositions suitable for the purposes described herein, with the proper selection of tubular segments **12** determinable by those skilled in the art. Preferably the tubular segments **12** comprise a steel composition. The plurality of tubular segments **12** comprises any functional number of segments, preferably from about 3 segments or less, and more preferably 2 segments, with the number of segments **12** generally dictated by the number of weighted ends of the bola concurrently used. The length of each tubular segment **12** comprises a length appropriate for a given firearm **40**, preferably from about six inches to about twelve inches in length.

The means for stowing connecting cords **16** comprises an appropriate chamber or adhesive area for holding the bola cord prior to firing. This simplifies the loading and safety of the device with the bola cord positioned adjacent to the bola launcher **10**. Preferably the means for stowing connecting cords **16** comprises storage chambers fixed to the sides of the tubular segments **12**, such a rope stowage packs formed along the sides of the tubular segments **12**. Preferably, the rope stowage packs **16** include two rectangular pieces of nylon fabric that are sewn together with parallel lines of stitching, thereby forming tunnels between the two layers of fabric. Placement of the rope stowage packs **16**, attached to the outside of the tubular segments **12**, is shown in FIG. **1**. The rope packs **16** may be fixed with an appropriate glue or adhesive. Preferably the storage chambers extend along the length of the tubular segments **12** which permits "payout" of the bola cord in an axial direction with the movement of the weighted ends of the bola. Preferably, the storage packs **16** comprise a flexible composition such as textile, fabric, plastic and combinations thereof, with a composition of nylon fabric being most preferred.

As seen in FIG. **2**, the bola deployment device **100** further includes a bola **20** having multiple weighted ends **22** connected by a cord **24**. The weighted ends **22** preferably are covered with an elastic composition to minimize injury, such as a material of rubber, plastic, fabric or other like soft composition, with the proper material selection determinable by those skilled in the art. Examples of weighted ends **22** include, without limitation, fabric bags with sand, rubber balls, plastic balls, and the like.

The connecting cord **24** of the bola **20** preferably comprises a filament, wire, rope, fabric or other like connecting material. The length of the cord **24** may include any appropriate length for a given purpose, with the proper length determinable by those skilled in the art. Preferred lengths of the cords **24** range from about six feet to about twelve feet between weighted ends **22**.

In operation, the above described bola launcher **10** is attached or connected onto the end of a firearm with the housing member **14** connected to the end of the barrel **42** of the firearm **40**. The tubular segments **12** are horizontally level with the ground, or in the case of greater than two tubular segments **12**, the third tubular segment **12** may comprise some degree of vertical displacement. The bola **20** is loaded into the tubular segments **12** by placing each weighted end **22** of the bola **20** into the second end **34** of the tubular segments **12**, i.e., one weighted end **22** per tubular segment **12**. The cord **24** is placed inside of the rope packs **16**, preferably in equal amounts. A blank charge is loaded into the firearm, and the firearm is then fired. Upon firing the shotgun, the pressure generated by firing the blank shotgun shell propels each of the weighted ends **22** from the tubular segments **12**. After the weighted ends **22** exit the tubular segments **12**, the cord **24** pays out of the rope storage packs **16**. Due the included angle **18** between the tubular segments **12**, the bola **20** stretches out to its full cord length as it approaches the target. Upon impact, the bola **20** wraps around the target. Additionally, the bola **20** expands in the horizontal plane, parallel to the ground, providing an effective tripping/knocking down motion of the bola **20** to a suspect. The angular separation **18** of the bola launcher **10** separates the weighted ends **22** of the bola **20** until the bola **20** contacts a target. The bola **20** may be loaded into the bola launcher **10** after the bola launcher **10** has been placed on the firearm, or pre-loaded into the bola launcher **10** prior to placement on the firearm. This firing mechanism of the bola **20** does not rely on random aerodynamic forces to expand the bola, which affect vertical expansion as well as horizontal expansion.

The blank charge contains sufficient force to propel the bola **20** from the bola launcher **10** an effective distance to entangle a fleeing suspect. An effective distance includes engagement distances known to police or military personnel, generally within the range of 100 feet or less, with distances of 50 feet or less. 25 feet or less, etc., useful for the implementation of the present invention. The implementation of the bola deployment device **100** produces an entangled object, usually a fleeing person. The object may include other desirable targets, such as a wild animal marauding in a residential area and the like.

EXAMPLE

A blank shotgun shell, having 23 grams of Bullseye powder, Federal No. 209 primer, and six ¼ inch felt wads crimped into a Winchester AA 2.75 inch shotshell was

loaded into a Remington Model 870, 12 gauge shotgun. The housing was approximately 2 inches long with two tubular segments, each 12 inches long. A hole having a diameter of approximately 1.4 inches extended through the tubular segments. Along the sides of the two tubular segments, rope stowage packs were fixed with velcro. Adhesive backed hook velcro was attached to the two tubular segments and loop velcro was sewn to the rope stowage packs. The rope stowage packs were made of two rectangular pieces of nylon fabric that are sewn together with parallel lines of stitching and extended the length of the tubular segments. A bola having weighted ends of sand filled bags made from Kevlar cloth, each weighing 95 grams, with a cord made of Kevlar that extended approximately 10 feet, was used. The weighted ends were inserted into the ends of the tubular segments and the cord was placed in equal amounts (about 5 feet each) into each of the rope stowage packs. The firearm was aimed at a target of two 2×4 wooden framing studs planted in the ground approximately 2 feet apart. The firearm was fired at a range of approximately 25 feet. The muzzle exit velocity of the bola was approximately 170 ft/sec. Four bolas were tested, with each test resulting in the bola entangling both the wooden framing studs.

The foregoing summary, description, example and drawings of the invention are not intended to be limiting, but are only exemplary of the inventive features which are defined in the claims.

What is claimed is:

1. A bola deployment device for launching a bola from a firearm, comprising:

a housing member forming a chamber therein;

a plurality of tubular segments forming hollow cylinders therethrough between a first and second end, the tubular segments attached to the housing member at the first end forming an open conduit between the hollow cylinders and housing member chamber, the second end forming an open conduit with the outside of the tubular segment wherein the housing member provides an angular separation of the tubular segments; and,

means for stowing connecting cords comprising storage chambers fixed to the sides of the tubular segments.

2. The bola deployment device of claim **1**, wherein the housing member comprises a resilient composition.

3. The bola deployment device of claim **1**, wherein the housing member comprises a steel composition.

4. The bola deployment device of claim **1**, wherein the plurality of tubular segments comprise a resilient composition.

5. The bola deployment device of claim **1**, wherein the plurality of tubular segments comprise a steel composition.

6. The bola deployment device of claim **1**, wherein the plurality of tubular segments comprises from about 3 or less segments.

7. The bola deployment device of claim **6**, wherein the plurality of tubular segments comprises approximately 2 segments.

8. The bola deployment device of claim **1**, wherein each tubular segment comprises a length of from about six inches to about twelve inches.

9. The bola deployment device of claim **7**, wherein the storage chambers extend along the length of the tubular segments.

10. The bola deployment device of claim **1**, further comprising a bola comprising weighted ends having a covering selected from the group consisting of rubber, plastic and fabric.

11. The bola deployment device of claim **10**, wherein the weighted ends comprise rubber balls.

12. The bola deployment device of claim **1**, further comprising a bola having connecting cords selected from the group consisting of filaments, wire, rope, and fabric.

13. The bola deployment device of claim **1**, further comprising a bola having connecting cords with a length of from about six feet to about twelve feet between weighted ends.

14. A shotgun comprising the bola deployment device of claim **1**.

15. A method for launching a bola device from a firearm, comprising the steps of:

providing a bola deployment device for launching a bola from a firearm comprising a housing member forming a chamber therein, a plurality of tubular segments forming hollow cylinders therethough between a first and second end, the tubular segments attached to the housing member at the first end forming an open conduit between the hollow cylinders and housing member chamber, the second end forming an open conduit with the outside of the tubular segment, wherein the housing member provides an angular separation of the tubular segments and means for stowing connecting cords comprising storage chambers fixed to the sides of the tubular segments;

attaching the housing member onto the end of the firearm;

combining a bola having a plurality of weighted ends connected by cord to the bola deployment device, wherein each weighted end is inserted into the second end of one of the tubular segments and the cord is stowed by the means for stowing connecting cords; and,

firing a blank charge from the firearm, wherein the force of the blank charge transits through the housing member and forces the bola out of the tubular segments, causing the weighted ends of the bola to effectively separate from one another prior to target contact.

16. The method of claim **15**, wherein the length of cords is stored proportionately among the plurality of tubular segments within the means for stowing connecting cords.

17. A deployed bola product produced by the process comprising the steps of:

providing a bola deployment device for launching a bola from a firearm comprising a housing member forming a chamber therein, a plurality of tubular segments forming hollow cylinders therethough between a first and second end, the tubular segments attached to the housing member at the first end forming an open conduit between the hollow cylinders and housing member chamber, the second end forming an open conduit with the outside of the tubular segment, wherein the housing member provides an angular separation of the tubular segments and means for stowing connecting cords comprising storage chambers fixed to the sides of the tubular segments;

attaching the housing member onto the end of the firearm;

combining a bola having a plurality of weighted ends connected by cord to the bola deployment device, wherein each weighted end is inserted into the second end of one of the tubular segments and the cord is stowed by the means for stowing connecting cords; and,

firing a blank charge from the firearm, wherein the force of the blank charge transits through the housing member and forces the bola out of the tubular segments, causing the weighted ends of the bola to effectively separate from one another prior to target contact,

wherein contact with the target results in an entangled object with the bola.

18. The deployed bola product of claim **17**, wherein the bola comprises two weighted ends.

19. The deployed bola product of claim **17**, wherein the bola comprises three weighted ends.

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