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(54) **Apparatus for collecting empty cartridge and cannon having the same**

Vorrichtung zum Sammeln von leeren Patronen und Geschütz damit

Appareil de collecte de cartouche vide et canon en disposant

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to an apparatus for collecting an empty cartridge extracted from a cartridge chamber after firing, and a cannon having the same.

2. Background of the Invention

[0002] Once a cannon fires ammunition, empty cartridges are discharged through an empty cartridge outlet. Here, the empty cartridges are rapidly discharged to any direction within a predetermined range.

[0003] If the empty cartridges are discharged from a cannon having no empty cartridge collector, the discharged empty cartridges may directly do harm to a user near the empty cartridge outlet. Furthermore, it takes additional time and efforts to collect the discharged empty cartridges. This may cause the loss of fighting strength.

[0004] Accordingly, may be considered an apparatus for collecting an empty cartridge capable of collecting an empty cartridge at a desired position through a simple structure, and capable of automatically operating without a user's manipulations or an additional driving source, and a cannon having the same.

[0005] US patent publication US 3,238,844 discloses a device for guiding empty shell casings ejected by the recoil action of an automatic gun, in particular of a mobile gun, the barrel of which is pivotal in a vertical plane by means of an elevational system.

SUMMARY OF THE INVENTION

[0006] Therefore, an aspect of the detailed description is to provide an apparatus for collecting an empty cartridge capable of automatically collecting an empty cartridge extracted from a cartridge chamber after firing, at a specific position, and a cannon having the same.

[0007] To achieve these and other advantages and in accordance with the purpose of this specification, as embodied and broadly described herein, there is provided an apparatus for collecting an empty cartridge, according to claim 1.

[0008] The operation pin may slide on one surface of the bracket as the cannon barrel moves backward and forward.

[0009] According to another embodiment of the present invention, a first locking protrusion may be protruding from the upper link, and a second locking protrusion locked by the first locking protrusion may be formed at the lower link such that the lower link rotates together with the upper link by being engaged with the upper link at a specific angle.

[0010] According to another embodiment of the

present invention, the upper link may include a guide unit to which the operation pin sliding-contacts when the cannon barrel moves backward and forward.

[0011] According to another embodiment of the present invention, the guide unit may include a first guide surface to which the operation pin sliding-contacts when the cannon barrel moves backward, and a second guide surface adjacent to the first guide surface and to which the operation pin sliding-contacts when the cannon barrel forward moves.

[0012] According to another embodiment of the present invention, the apparatus for collecting an empty cartridge may further comprise an upper link return spring configured to provide an elastic force such that the upper link returns to a specific position after the operation pin has completely passed the first or second guide surface.

[0013] According to another embodiment of the present invention, the apparatus for collecting an empty cartridge may further comprise a lower link return spring configured to provide an elastic force such that the lower link returns to a specific position after the operation pin has completely passed the second guide surface.

[0014] According to another embodiment of the present invention, the second guide surface may have a sliding section of a predetermined length such that the operation pin is slidable until an empty cartridge is completely collected.

[0015] According to another embodiment of the present invention, a stopper configured to restrict separation of the operation pin may be protruding from one surface of the lower link adjacent to the upper link.

[0016] According to another embodiment of the present invention, another end of the collecting unit may be connected to the bracket, or a link connected to the bracket.

[0017] To achieve these and other advantages and in accordance with the purpose of this specification, as embodied and broadly described herein, there is also provided a cannon comprising: a cannon barrel configured to fire ammunition; a breech block configured to open and close a cartridge chamber of the cannon barrel for loading of the ammunition; a breech ring configured to accommodate the breech block therein; a cannon holder configured to mount the cannon barrel thereat, and inclined with respect to the ground such that the breech barrel is toward a specific firing direction; and an apparatus for collecting an empty cartridge disposed to be spacing from one surface of the breech ring, and having a structure in which when the cannon barrel forward moves, a lower link rotates by being engaged with an upper link as an operation pin slides on the upper link, and an extracted empty cartridge is collected by colliding with a collecting unit.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] The accompanying drawings, which are included to provide a further understanding of the invention and

are incorporated in and constitute a part of this specification, illustrate exemplary embodiments and together with the description serve to explain the principles of the invention.

[0019] In the drawings:

FIG. 1 is a perspective view illustrating a cannon according to one embodiment of the present invention;

FIG. 2 is a perspective view illustrating an apparatus for collecting an empty cartridge according to one embodiment of the present invention;

FIG. 3 is a perspective view illustrating an unfolded state of a collecting unit of the apparatus for collecting an empty cartridge of FIG. 2;

FIG. 4 is a disassembled view of the apparatus for collecting an empty cartridge of FIG. 2; and

FIGS. 5 to 8 are views illustrating operation states of the apparatus for collecting an empty cartridge of FIG. 2.

DETAILED DESCRIPTION OF THE INVENTION

[0020] Description will now be given in detail of the exemplary embodiments, with reference to the accompanying drawings. For the sake of brief description with reference to the drawings, the same or equivalent components will be provided with the same reference numbers, and description thereof will not be repeated.

[0021] Hereinafter, an apparatus for collecting an empty cartridge and a cannon having the same according to the present invention will be explained in more detail with reference to the attached drawings. A singular expression of this specification includes a plural concept unless there is a contextually distinctive difference therebetween.

[0022] FIG. 1 is a perspective view illustrating a cannon 10 according to one embodiment of the present invention.

[0023] Referring to FIG. 1, the cannon 10 comprises a cannon barrel 20, a breech device, a cannon holder 50, and an apparatus for collecting an empty cartridge 100. The cannon 10 may be implemented as a tank gun or a machine gun.

[0024] The cannon barrel 20 is formed in a shape extending to one direction such that ammunition is fired along a specific direction. The cannon barrel 20 is provided with rifle therein.

[0025] The breech device consists of a breech block 30 and a breech ring 40 for accommodating the breech block 30 therein. The breech block 30 is configured to open and close a rear side of a cartridge chamber of the cannon barrel 20 for loading of ammunition. The breech ring 40 is configured to accommodate therein a rear end of the cannon barrel 20 and the breech block 30, and to backward and forward move in a restricted state with respect to the cannon barrel 20.

[0026] The cannon barrel 20 for firing ammunition is mounted to the cannon holder 50. The cannon holder 50

may be inclined with respect to the ground such that the mounted cannon barrel 20 is toward a preset firing direction.

[0027] The apparatus for collecting an empty cartridge 100 is disposed near the breech ring 40, and is configured such that extracted ammunition is collected at a desired position, the ammunition extracted through a mechanism by an operation pin 120, an upper link 130 and a lower link 140 as the cannon barrel 20 moves forward and backward.

[0028] Hereinafter, will be explained in more details a structure of the apparatus for collecting an empty cartridge 100, and a mechanism for collecting an empty cartridge after firing by the apparatus 100.

[0029] FIG. 2 is a perspective view illustrating an apparatus for collecting an empty cartridge according to one embodiment of the present invention, and FIG. 3 is a perspective view illustrating an unfolded state of a collecting unit of the apparatus for collecting an empty cartridge of FIG. 2.

[0030] Referring to FIGS. 2 and 3, the apparatus for collecting an empty cartridge 100 comprises a bracket 110, an operation pin 120, an upper link 130, a lower link 140 and a collecting unit 150.

[0031] The bracket 110 is configured to support the apparatus for collecting an empty cartridge 100, and each component such as the upper link 130 and the lower link 140 is coupled to the bracket 110. The bracket 110 may be disposed to be adjacent to both side surfaces of the breech ring 40. One end of the bracket 110 may be fixed to the cannon holder 50, and may be configured such that the breech ring 40 performs a relative motion with respect to the apparatus 100 including the bracket 110 when the cannon barrel 20 moves backward and forward according to a firing state.

[0032] The operation pin 120 may be formed to extend to one direction, and may be mounted to both side surfaces of the breech ring 40. The operation pin 120 fixed to the breech ring 40 may slide on one surface of the bracket 110 as the cannon barrel 20 moves backward and forward. At the bracket 110, may be formed a through hole extending to one direction in correspondence to a sliding path of the operation pin 120. The operation pin 120 may slide by penetrating the through hole.

[0033] The upper link 130 is rotatably mounted to one surface of the bracket 110. For instance, the upper link 130 may be mounted to one surface or another surface of the bracket 110 facing the breech ring 40. The operation pin 120 slides with contacting the upper link 130. The upper link 130 includes a guide unit (first and second guide surfaces 131 and 132) to which the operation pin 120 sliding-contacts when the cannon barrel 20 moves backward and forward (refer to FIG. 4).

[0034] The lower link 140 is concentric with the upper link 130, and is rotatably mounted to one surface of the bracket 110 facing the breech ring 40. At the lower link 140, may be formed a second locking protrusion 143 locked by a first locking protrusion 133 of the upper link

130 such that the lower link 140 rotates together with the upper link 130 by being engaged with the upper link 130 at a specific angle (refer to FIG. 4).

[0035] The lower link 140 is formed to extend to one direction, and the two lower links 140 are connected to each other by a connecting plate 151. One end of a collecting cover 152 may be connected to the connecting plate 151.

[0036] The collecting unit 150 is configured to be unfolded such that an empty cartridge extracted through the breech block 30 is collected at a specific point after a bump. The collecting unit 150 includes the collecting cover 152 which is in a folded state before firing but an unfolded state after firing. One end of the collecting cover 152 may be connected to the connecting plate 151, and another end thereof may be respectively connected to two brackets 110, or may be connected to a link 153 connected to the bracket 110.

[0037] FIG. 4 is a disassembled view of the apparatus for collecting an empty cartridge 100 of FIG. 2.

[0038] Referring to FIG. 4, the operation pin 120 is coupled to the breech ring 40 (not shown). To the bracket 110, sequentially coupled may be a shaft 160, a lower link 140, a first gap maintaining plate 165, an upper link return spring 166, a second gap maintaining plate 167, a lower link return spring 168, a third gap maintaining plate 169 and a coupling pin 161.

[0039] The two lower links 140 may be connected to each other by the connecting plate 151, and one end of the collecting cover 152 may be connected to the connecting plate 151.

[0040] The shaft 160 connects the upper link 130, the lower link 140, etc. to one another by penetrating through the bracket 110, and is finally coupled to the coupling pin 161. The upper link 130 and the lower link 140 rotate centering around the shaft 160.

[0041] The upper link 130 includes a guide unit. The guide unit consists of a first guide surface 131 to which the operation pin 120 sliding-contacts when the cannon barrel 20 moves backward, and a second guide surface 132 adjacent to the first guide surface 131 and to which the operation pin 120 sliding-contacts when the cannon barrel 20 forward moves.

[0042] The upper link 130 may be provided with a first locking protrusion 133. For instance, the first locking protrusion 133 may be protruding from the upper link 130 toward the lower link 140. The first locking protrusion 133 is formed to be locked by a second locking protrusion 143 of the lower link 140 at a specific angle.

[0043] A stopper 141 configured to restrict separation of the operation pin 120 may be protruding from one surface of the lower link 140. The stopper 141 is configured to prevent separation of the operation pin 120 in a case that a rotation speed of the lower link 140 is faster than a sliding speed of the operation pin 120 when the cannon barrel 20 moves forward.

[0044] The upper link return spring 166 provides an elastic force such that the upper link 130 returns to the

initial position before firing once the operation pin 120 has completely passed the first or second guide surface 132. The upper link return spring 166 may be connected to the upper link 130 and the lower link 140, respectively.

[0045] The lower link return spring 168 provides an elastic force such that the lower link 140 returns to the initial position before firing once the operation pin 120 has completely passed the second guide surface 132. The lower link return spring 168 may be connected to the lower link 140 and the bracket 110, respectively.

[0046] FIGS. 5 to 8 are views illustrating operation states of the apparatus for collecting an empty cartridge 100 of FIG. 2. FIG. 5 illustrates that the cannon barrel 20 is in a stationary state. FIG. 6 illustrates a state that ammunition is fired by a firing command, and the cannon barrel 20 moves backward. FIG. 7 illustrates a state that the cannon barrel 20 forward moves after backward moving. And, FIG. 8 illustrates that an unfolded state of the collecting unit 150 is maintained until an empty cartridge is completely collected.

[0047] Referring to FIG. 5, the collecting unit 150 of the apparatus for collecting an empty cartridge 100 is in a folded state (released state) before firing. Since the breech block 30 is open, ammunition can be loaded through the breech block 30.

[0048] The operation pin 120 may be disposed so as to be spacing from the upper link 130 and the lower link 140. The guide unit (first and second guide surfaces 131 and 132) of the upper link 130 may be formed so as to be inclined along a sliding direction of the operation pin 120 when the cannon barrel 20 backward moves. The lower link 140 may be disposed toward the ground so as to prevent blocking of the breech block 30 occurring when the collecting unit 150 connected to the lower link 140 is unfolded.

[0049] Referring to FIG. 6, the breech block 30 is closed after ammunition is loaded in the cannon, and the cannon barrel 20 backward moves as the ammunition is consecutively fired. As the breech ring 40 backward moved, the operation pin 120 slides toward the upper link 130 along the first guide surface 131 of the upper link 130, thereby rotating the upper link 130. Once the operation pin 120 has completely passed through the upper link 130, the upper link 130 returns to the initial position corresponding to the released state by the upper link return spring 166.

[0050] Referring to FIG. 7, as the cannon barrel 20 forward moves, the operation pin 120 slides along the second guide surface 132 of the upper link 130, thereby rotating the upper link 130. During this process, the second locking protrusion 143 is locked by the first locking protrusion 133. Accordingly, the lower link 140 rotates together with the upper link 130. As the lower link 140 rotates, the connecting plate 151 connected to the lower link 140 upwardly moves, and the collecting unit 150 is in an unfolded state, an empty cartridge collecting state. In this state, the breech block 30 is open, and an extracted empty cartridge is collected at a specific position after

colliding with the collecting unit 150.

[0051] Referring to FIG. 8, the collecting unit 150 has to maintain an unfolded state until an empty cartridge is completely collected. The second guide surface 132 may have a sliding section (A) of a predetermined length such that the operation pin 120 is slidable until an empty cartridge is completely collected. While the operation pin 120 passes through the sliding section (A), an empty cartridge collecting state may be maintained.

[0052] Just before completion of the forward moving of the cannon barrel 20, the operation pin 120 is separated from the guide unit (first and second guide surfaces 131 and 132) of the upper link 130, and the upper and lower links 130 and 140 return to the initial position corresponding to the released state by the upper and lower link return springs 166 and 168. Since the collecting unit 150 downward moves toward the ground, the breech block 30 is exposed to the outside, and the cannon is in a loadable state.

[0053] In the present invention, as the operation pin slides on the upper link when the cannon barrel forward moves, the lower link rotates together with the upper link by being engaged with the upper link. And, the collecting unit is unfolded such that an empty cartridge is collected after colliding with the collecting unit. This may allow an empty cartridge to be automatically collected at a specific position.

[0054] Furthermore, in the present invention, an empty cartridge may be automatically collected without a user's manipulations or an additional driving source since backward and forward movements of the cannon barrel are implemented.

Claims

1. An apparatus (100) for collecting an empty cartridge, the apparatus **characterised in that** it comprises:

a bracket (110) disposed to be spaced from one or more surfaces of a breech ring (40) for accommodating a cannon barrel (20) therein;
 an operation pin (120) mounted to the breech ring (40) adjacent to the bracket (110);
 an upper link (130) rotatably mounted to one surface of the bracket (110), and configured to sliding-contact the operation pin (120);
 a lower link (140) concentric with the upper link (130), rotatably mounted to one surface of the bracket (110), and rotating together with the upper link (130) by being engaged with the upper link (130) at a specific angle; and
 a collecting unit (150) having one end connected to the lower link (140) and another end connected to the bracket (110) or a link (153) connected to the bracket (110), and configured to be unfolded such that an empty cartridge extracted from the cannon barrel (20) is collected after col-

liding with the collecting unit (150), wherein when the cannon barrel (20) moves forward, the lower link (140) rotates by being engaged with the upper link (130) as the operation pin (120) slides on the upper link (130), and the collecting unit is unfolded such that the empty cartridge is collected after colliding with the collecting unit (150).

2. The apparatus (100) of claim 1, wherein the operation pin (120) slides on one surface of the bracket (110) as the cannon barrel (20) moves backward and forward.
3. The apparatus (100) of any one of claims 1 and 2, wherein a first locking protrusion (133) is protruding from the upper link (130), and a second locking protrusion (143) locked by the first locking protrusion (133) is formed at the lower link (140) such that the lower link (140) rotates together with the upper link (130) by being engaged with the upper link (130) at a specific angle.
4. The apparatus (100) of any one of claims 1 to 3, wherein the upper link (130) comprises a guide unit (131, 132) to which the operation pin (120) sliding-contacts when the cannon barrel (20) moves backward and forward.
5. The apparatus (100) of claim 4, wherein the guide unit (131, 132) comprises:
 a first guide surface (131) to which the operation pin (120) sliding-contacts when the cannon barrel (20) moves backward; and
 a second guide surface (132) adjacent to the first guide surface (131) and to which the operation pin sliding-contacts when the cannon barrel (20) forward moves.
6. The apparatus (100) of claim 5, further comprising an upper link return spring (166) configured to provide an elastic force such that the upper link (130) returns to a specific position after the operation pin (120) has completely passed the first (131) or second guide surface (132).
7. The apparatus (100) of claim 5, further comprising a lower link return spring (168) configured to provide an elastic force such that the lower link (140) returns to a specific position after the operation pin (120) has completely passed the second guide surface (132).
8. The apparatus (100) of claim 5, wherein the second guide surface (132) has a sliding section (A) of a predetermined length such that the operation pin (120) is slidable until an empty cartridge is complete-

ly collected.

9. The apparatus (100) of any one of claims 1 to 8, wherein a stopper (141) configured to restrict separation of the operation pin (120) is protruding from one surface of the lower link (140) adjacent to the upper link (130).

10. A cannon (10), comprising:

a cannon barrel (20) configured to fire ammunition;
a breech block (30) configured to open and close a cartridge chamber of the cannon barrel (20) for loading of the ammunition;
a breech ring (40) configured to accommodate the breech block therein;
a cannon holder (50) configured to mount the cannon barrel (20) thereat, and inclined with respect to a ground surface such that the breech barrel is toward a specific firing direction; and
an apparatus (100) for collecting an empty cartridge of any one of claims 1 to 9.

Patentansprüche

1. Vorrichtung (100) zum Auffangen einer leeren Patrone, die Vorrichtung **dadurch gekennzeichnet, dass** sie umfasst:

einen Bügel (110), der angeordnet ist, von einer oder mehr Flächen eines Verschlussrings (40) zur Aufnahme eines Geschützrohrs (20) beabstandet zu sein;
einen Betriebsstift (120), der an dem Verschlussring (40) benachbart zu dem Bügel (110) angebracht ist;
ein oberes Verbindungsstück (130), das drehbar an einer Fläche des Bügels (110) angebracht ist und eingerichtet ist, gleitend mit dem Betriebsstift (120) in Kontakt zu sein;
ein unteres Verbindungsstück (140), das mit dem oberen Verbindungsstück (130) konzentrisch ist, drehbar an einer Fläche des Bügels (110) angebracht ist, und sich zusammen mit dem oberen Verbindungsstück (130) dreht, indem es bei einem bestimmten Winkel mit dem oberen Verbindungsstück (130) in Eingriff steht; und
eine Auffangeinheit (150) mit einem Ende, das mit dem unteren Verbindungsstück (140) verbunden ist, und einem anderen Ende, das mit dem Bügel (110) oder einem mit dem Bügel (110) verbundenen Verbindungsstück (153) verbunden ist, und das eingerichtet ist, derart ausgeklappt zu werden, dass eine leere Patrone, die aus dem Geschützrohr (20) extrahiert

wurde, nach einem Aufprall auf die Auffangeinheit (150) aufgefangen wird, wobei, wenn sich das Geschützrohr (20) nach vorne bewegt, sich das untere Verbindungsstück (140) dreht, indem es mit dem oberen Verbindungsstück (130) in Eingriff steht, während der Betriebsstift (120) an dem oberen Verbindungsstück (130) gleitet, und die Auffangeinheit derart ausgeklappt wird, dass die leere Patrone nach dem Aufprall auf die Auffangeinheit (150) aufgefangen wird.

2. Vorrichtung (100) nach Anspruch 1, wobei der Betriebsstift (120) an einer Fläche des Bügels (110) gleitet, während sich das Geschützrohr (20) vor und zurück bewegt.

3. Vorrichtung (100) nach einem der Ansprüche 1 und 2, wobei ein erster Arretiervorsprung (133) von dem oberen Verbindungsstück (130) vorspringt, und ein zweiter Arretiervorsprung (143), der durch den ersten Arretiervorsprung (133) gesperrt wird, derart an dem unteren Verbindungsstück (140) gebildet ist, dass sich das untere Verbindungsstück (140) zusammen mit dem oberen Verbindungsstück (130) dreht, indem es bei einem bestimmten Winkel mit dem oberen Verbindungsstück (130) in Eingriff steht.

4. Vorrichtung (100) nach einem der Ansprüche 1 bis 3, wobei das obere Verbindungsstück (130) eine Führungseinheit (131, 132) umfasst, mit der der Betriebsstift (120) gleitend in Kontakt ist, wenn sich das Geschützrohr (20) vor und zurück bewegt.

5. Vorrichtung (100) nach Anspruch 4, wobei die Führungseinheit (131, 132) umfasst:

eine erste Führungsfläche (131), mit der der Betriebsstift (120) gleitend in Kontakt ist, wenn sich das Geschützrohr (20) nach hinten bewegt; und
eine zweite Führungsfläche (132) benachbart zu der ersten Führungsfläche (131), mit der der Betriebsstift gleitend in Kontakt ist, wenn sich das Geschützrohr (20) nach vorne bewegt.

6. Vorrichtung (100) nach Anspruch 5, ferner umfassend eine oberes Verbindungsstück-Rückholfeder (166), die eingerichtet ist, eine elastische Kraft derart bereitzustellen, dass das obere Verbindungsstück (130) in eine bestimmte Position zurückkehrt, nachdem der Betriebsstift (120) die erste (131) oder die zweite Führungsfläche (132) vollständig passiert hat.

7. Vorrichtung (100) nach Anspruch 5, ferner umfassend eine unteres Verbindungsstück-Rückholfeder (168), die eingerichtet ist, eine elastische Kraft derart bereitzustellen, dass das untere Verbindungsstück

(140) in eine bestimmte Position zurückkehrt, nachdem der Betriebsstift (120) die zweite Führungsfläche (132) vollständig passiert hat.

8. Vorrichtung (100) nach Anspruch 5, wobei die zweite Führungsfläche (132) einen Gleitabschnitt (A) mit einer derart vorherbestimmten Länge aufweist, dass der Betriebsstift (120) verschiebbar ist, bis eine leere Patrone vollständig aufgefangen ist. 5
9. Vorrichtung (100) nach einem der Ansprüche 1 bis 8, wobei ein Anschlag (141), der eingerichtet ist, ein Ablösen des Betriebsstifts (120) zu verhindern, von einer Fläche des unteren Verbindungsstücks (140) benachbart zu dem oberen Verbindungsstück (130) vorspringt. 10
10. Geschütz (10), umfassend: 15

ein Geschützrohr (20), das eingerichtet ist, Munition abzuschießen; 20
einen Verschlussblock (30), der eingerichtet ist, eine Patronenkammer des Geschützrohrs (20) zum Laden mit der Munition zu öffnen und zu schließen; 25
einen Verschlussring (40), der eingerichtet ist, den Verschlussblock aufzunehmen; 30
einen Geschützhalter (50), der eingerichtet ist, um das Geschützrohr (20) daran anzubringen, und in Bezug auf eine Bodenfläche so geneigt ist, dass das Verschlussrohr in eine bestimmte Abschussrichtung gerichtet ist; und
eine Vorrichtung (100) zum Auffangen einer leeren Patrone nach einem der Ansprüche 1 bis 9. 35

Revendications

1. Appareil (100) destiné à collecter une cartouche vide, l'appareil étant **caractérisé en ce qu'il** comprend : 40
un support (110) disposé pour être espacé d'une ou de plusieurs surfaces d'un anneau (40) de culasse pour y accueillir un tube (20) de canon ; 45
une tige d'actionnement (120) montée sur l'anneau (40) de culasse de manière adjacente au support (110) ;
une pièce de liaison supérieure (130) montée rotative sur une première surface du support (110), et configurée pour entrer en contact coulissant avec la tige d'actionnement (120) ; 50
une pièce de liaison inférieure (140) concentrique avec la pièce de liaison supérieure (130), montée rotative sur une première surface du support (110), et tournant avec la pièce de liaison supérieure (130) en étant en prise avec la pièce de liaison supérieure (130) selon un an- 55

gle spécifique ; et

une unité de collecte (150) dont une première extrémité est reliée à la pièce de liaison inférieure (140) et dont une autre extrémité est reliée au support (110) ou à une pièce de liaison (153) reliée au support (110) et configurée pour se déployer de sorte qu'une cartouche vide extraite du tube (20) de canon soit collectée après avoir heurté l'unité de collecte (150), dans lequel, lorsque le tube (20) de canon avance, la pièce de liaison inférieure (140) tourne en étant en prise avec la pièce de liaison supérieure (130) quand la tige d'actionnement (120) coulisse sur la pièce de liaison supérieure (130), et l'unité de collecte est déployée de sorte que la cartouche vide soit collectée après avoir heurté l'unité de collecte (150).

2. Appareil (100) selon la revendication 1, dans lequel la tige d'actionnement (120) coulisse sur une première surface du support (110) quand le tube (20) de canon recule et avance.
3. Appareil (100) selon l'une quelconque des revendications 1 et 2, dans lequel une première saillie de blocage (133) fait saillie depuis la pièce de liaison supérieure (130), et une seconde saillie de blocage (143) bloquée par la première saillie de blocage (133) est formée au niveau de la pièce de liaison inférieure (140) de sorte que la pièce de liaison inférieure (140) tourne avec la pièce de liaison supérieure (130) en étant en prise avec la pièce de liaison supérieure (130) selon un angle spécifique.
4. Appareil (100) selon l'une quelconque des revendications 1 à 3, dans lequel la pièce de liaison supérieure (130) comprend une unité de guidage (131, 132) avec laquelle la tige d'actionnement (120) entre en contact coulissant lorsque le tube (20) de canon recule et avance. 35
5. Appareil (100) selon la revendication 4, dans lequel l'unité de guidage (131, 132) comprend :
une première surface de guidage (131) avec laquelle la tige d'actionnement (120) est en contact coulissant lorsque le tube (20) de canon recule ; et
une seconde surface de guidage (132) adjacente à la première surface de guidage (131) et avec laquelle la tige d'actionnement est en contact coulissant lorsque le tube (20) de canon avance.
6. Appareil (100) selon la revendication 5, comprenant en outre un ressort de rappel (166) de pièce de liaison supérieure configuré pour procurer une force élastique de sorte que la pièce de liaison supérieure (130) revienne dans une position spécifique une fois

que la tige d'actionnement (120) a complètement passé la première (131) ou la seconde (132) surface de guidage.

7. Appareil (100) selon la revendication 5, comprenant en outre un ressort de rappel (168) de pièce de liaison inférieure configuré pour procurer une force élastique de sorte que la pièce de liaison inférieure (140) revienne dans une position spécifique une fois que la tige d'actionnement (120) a complètement passé la seconde surface de guidage (132). 5
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8. Appareil (100) selon la revendication 5, dans lequel la seconde surface de guidage (132) possède une section de coulissement (A) d'une longueur prédéfinie de sorte que la tige d'actionnement (120) puisse coulisser jusqu'à ce qu'une cartouche vide soit complètement collectée. 15

9. Appareil (100) selon l'une quelconque des revendications 1 à 8, dans lequel une butée (141) configurée pour limiter la séparation de la tige d'actionnement (120) fait saillie depuis une première surface de la pièce de liaison inférieure (140) de manière adjacente à la pièce de liaison supérieure (130). 20
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10. Canon (10), comprenant :

un tube (20) de canon configuré pour tirer une munition ; 30

un bloc de culasse (30) configuré pour ouvrir et fermer une chambre à cartouche du tube (20) de canon pour charger la munition ;

un anneau (40) de culasse configuré pour y accueillir le bloc de culasse ; 35

un porte-canon (50) configuré pour monter le tube (20) de canon au niveau de celui-ci, et incliné par rapport à une surface de sol de sorte que le tube de culasse soit orienté vers une direction de tir spécifique ; et 40

un appareil (100) destiné à collecter une cartouche vide selon l'une quelconque des revendications 1 à 9. 45

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FIG. 1

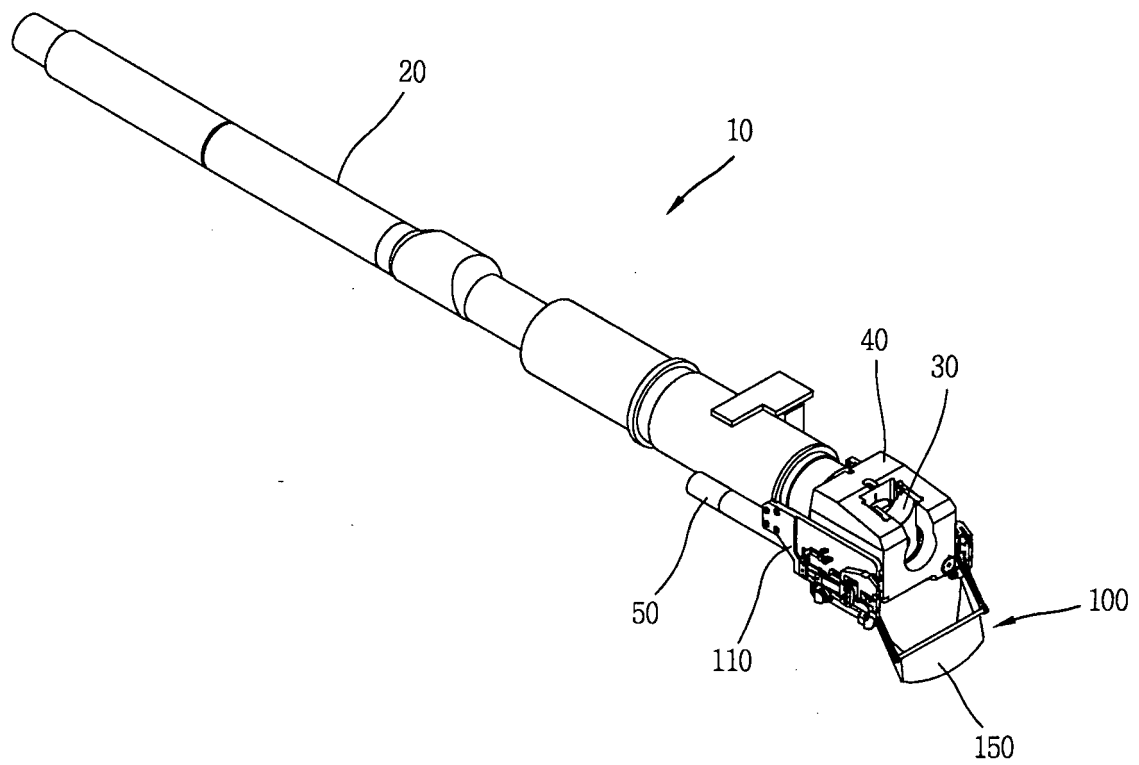


FIG. 2

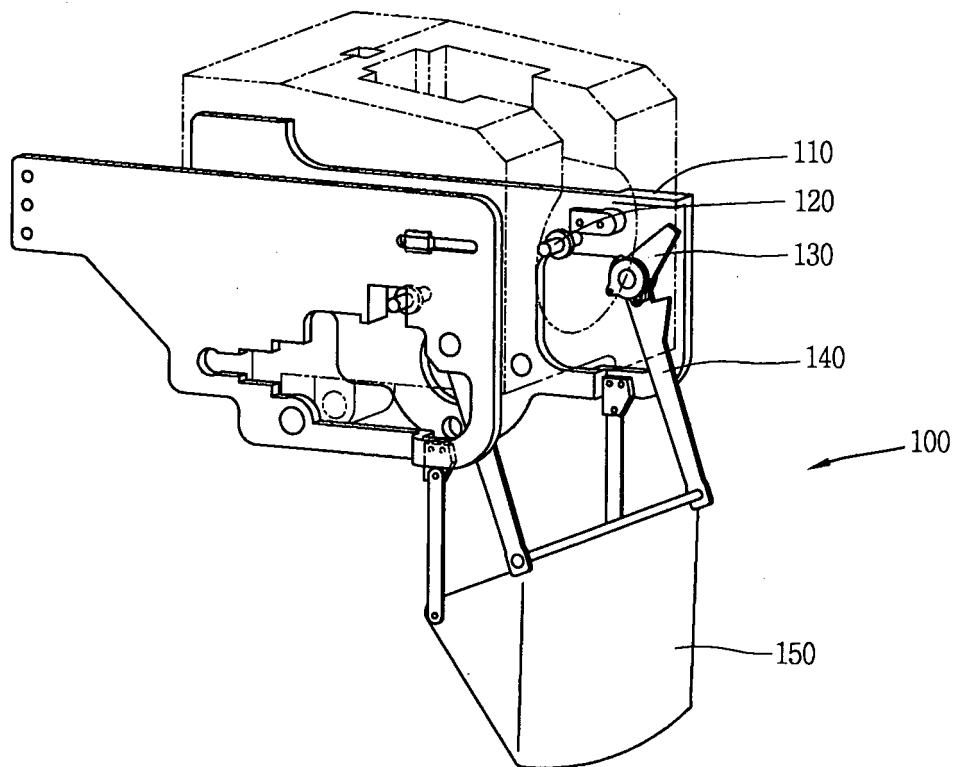


FIG. 3

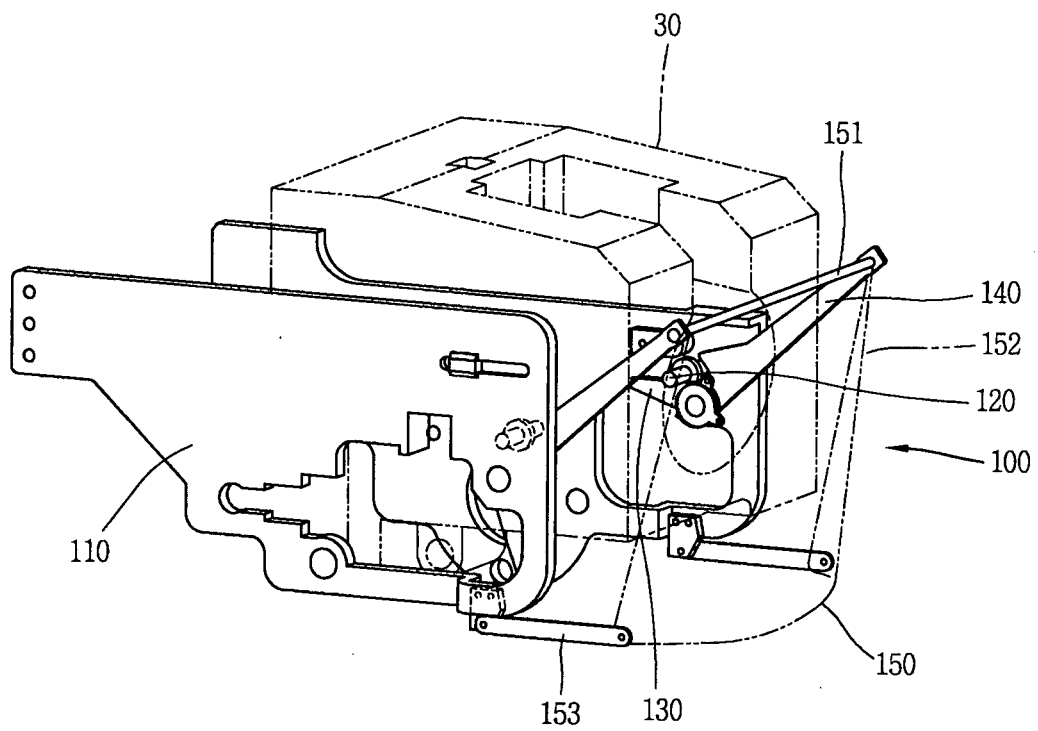


FIG. 4

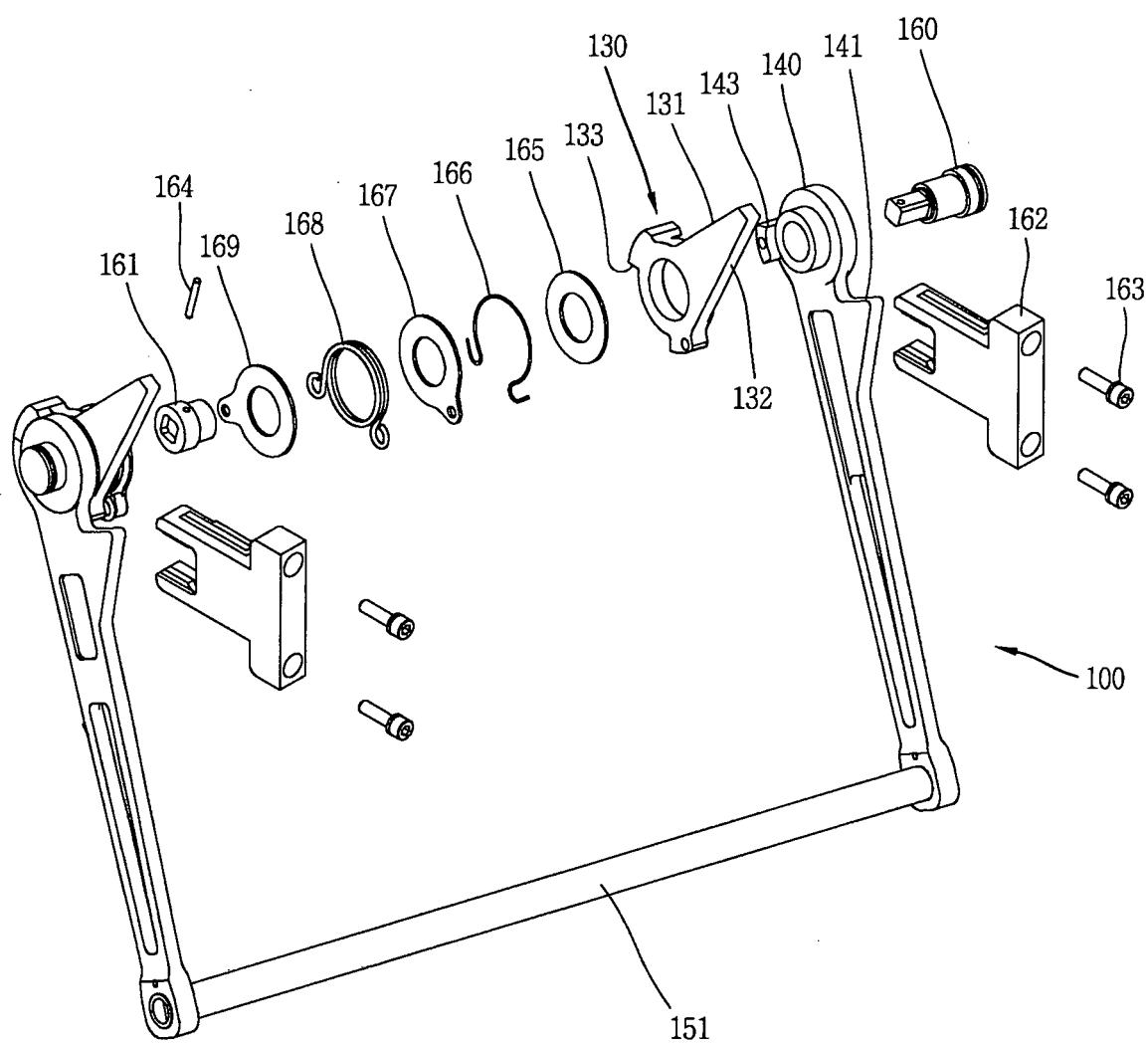


FIG. 5

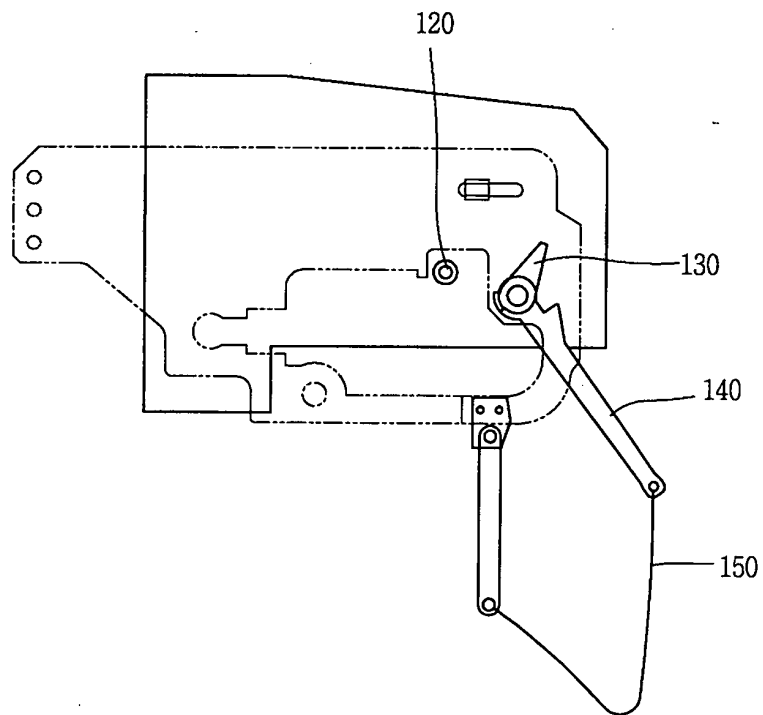


FIG. 6

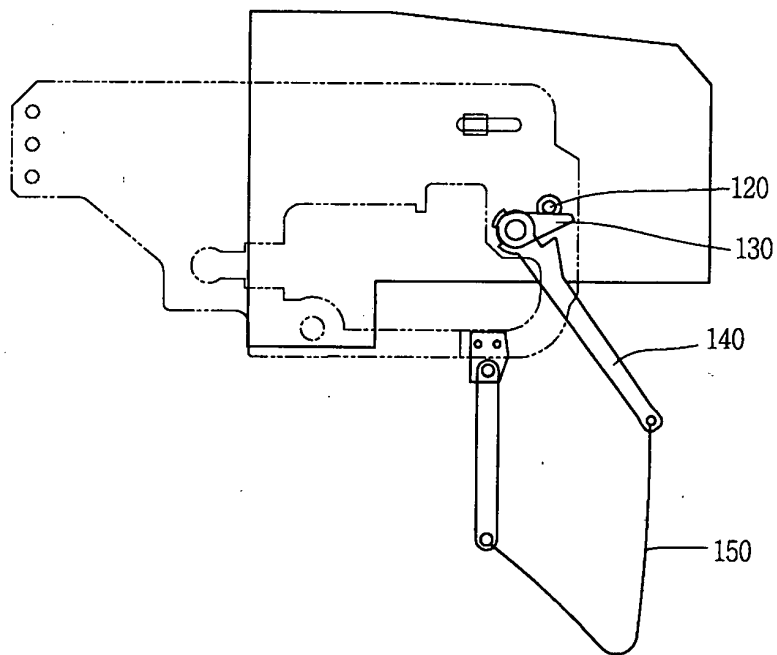


FIG. 7

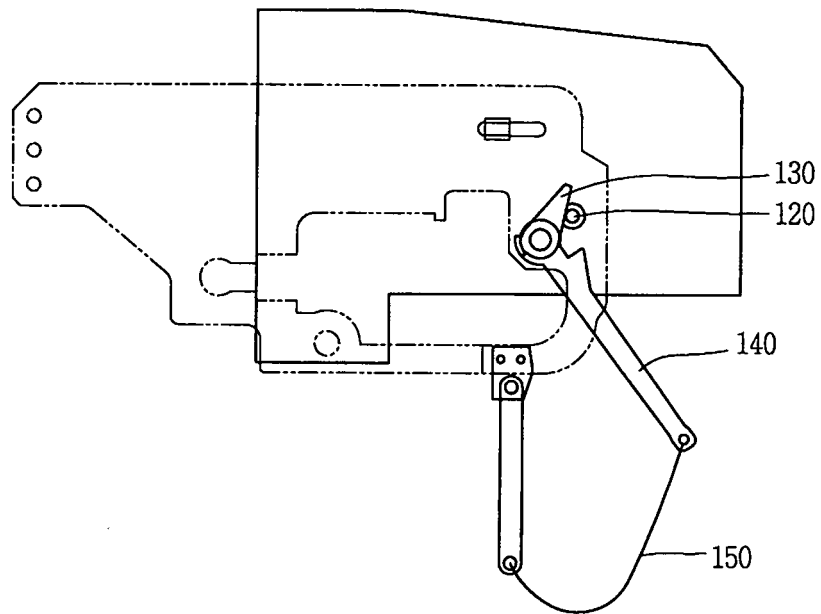
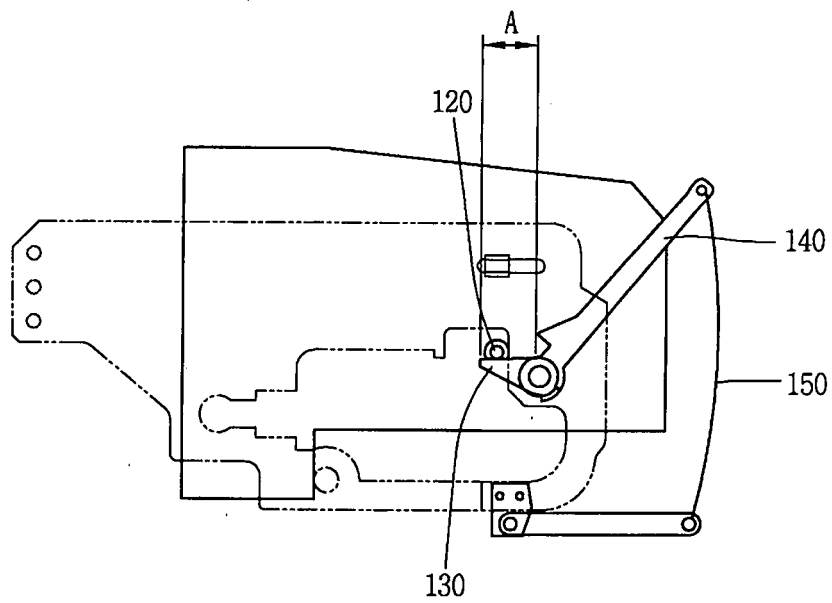


FIG. 8



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Patent documents cited in the description

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