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(54) **BULLET RETENTION DEVICE**

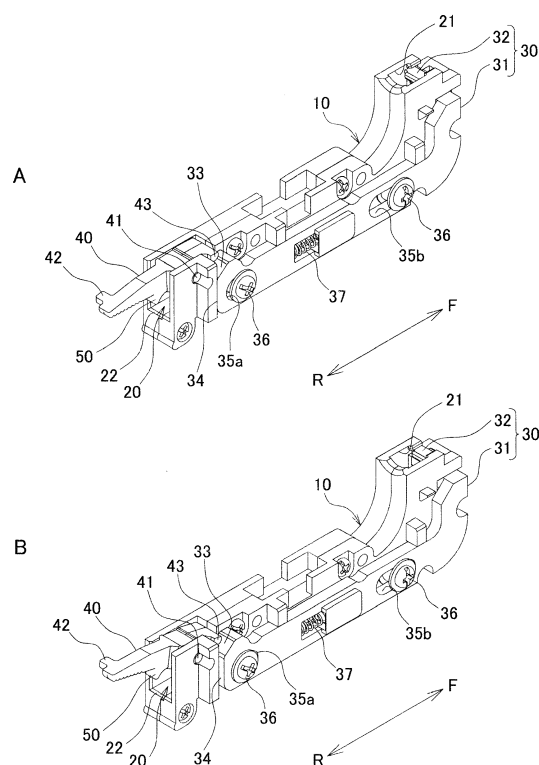
(57) Problem

An object for the problems of the present invention is to provide a bullet loss prevention apparatus preventing an escape of a bullet remaining inside a passage through which the bullet is supplied from a magazine to a simulation gun.

Solution

There is provided a bullet escape prevention apparatus including a passage portion through which a bullet is supplied from a magazine to a simulation gun, a first engagement portion which is disposed at one end of the passage portion and prevents the bullet from escaping, and detection receiving portion which drives the first engagement portion by releasing engagement with a detection portion detecting that the magazine is separated from the passage portion or the bullet runs out inside the magazine, in response to a movement of the detection portion. Accordingly, when the detection receiving portion releases the engagement with the detection portion, the first engagement portion protrudes inside the passage portion in response to a movement of the detection receiving portion, and the bullet remaining inside the passage portion is able to be prevented from escaping through the one end.

[Fig. 2]



Description

Technical Field

[0001] The present invention relates to an apparatus for preventing an escape of a bullet remaining inside a passage portion leading to the inside of a simulation gun from a magazine and holding the bullet inside the passage portion.

Background Art

[0002] Complying with the legal regulations, in order to be able to shoot a so-called bullet, as an example, an airsoft pellet, a simulation gun employs a configuration totally different from a real gun. Therefore, depending on the type of the simulation gun, a position for disposing a magazine and a position for loading the bullet in the simulation gun are separated from each other. Therefore, there is a need to provide a passage for supply the bullet to the simulation gun by causing the positions to communicate with each other.

[0003] That is, since the magazine for supplying the airsoft pellet to the simulation gun and a fitting port in a gun main body of the simulation gun for disposing an airsoft pellet in order to shoot the airsoft pellet are separated from each other, the magazine and the fitting port are connected to each other, and the passage for supply the bullet is disposed. The passage for supply the bullet varies depending on the type of a gun. However, for example, the passage requires a distance corresponding to approximately 16 airsoft pellets, and these become so-called dead bullets.

[0004] Here, in a case where the magazine loaded with the bullets of a rated quantity is set to the gun main body, the bullets of a certain quantity enter the inside of the simulation gun. Thereafter, the entered bullets are shot in sequence one at a time, and when the bullets inside the magazine run out, there remain bullets inside the above-described passage for supply. The remaining bullets are referred to as the dead bullets. That is, even if the bullets remain inside the passage for supply, the bullets cannot be supplied to the simulation gun in such a state, and the bullets cannot be shot.

[0005] In such a case, when the empty magazine is detached and another magazine loaded with the bullets of the rated quantity is set to the gun main body of the simulation gun, the bullets remaining inside the passage for supplying the bullets to the inside of the simulation gun are shot in sequence. In other words, unless a new magazine loaded with the bullets is not set to the gun main body, the bullets remaining inside the passage for supplying the above-described bullets are not shot and remain inside the simulation gun with not change.

[0006] However, there are cases where the above-described bullets remaining inside the passage for supply escape out of the passage. Therefore, there is a demand of preventing the bullet from escaping out of the passage

as much as possible.

[0007] As a solution for thereof, the related art has been researched. However, nothing has been found for solving the above-describe problem. JP-A-2004-347221 has been found as a related art related to the simulation gun.

Citation List

Patent Literature

[0008] [PTL 1] JP-A-2004-347221

Summary of Invention

15 Technical Problem

[0009] The present invention has been made in consideration of the foregoing points, and an object thereof is to provide a bullet loss prevention apparatus preventing a bullet remaining inside a passage through which the bullet is supplied from a magazine to a simulation gun, from escaping out of the passage from the inside of the passage.

25 Solution to Problem

[0010] In order to attain the above-described object, according to a first aspect, there is provided a bullet escape prevention apparatus including a passage portion through which a bullet is supplied from a magazine to the inside of a simulation gun, a first engagement portion which is disposed at one end of the passage portion and prevents the bullet from escaping inside the simulation gun by being in contact with the bullet, and a detection receiving portion which drives the first engagement portion by releasing engagement with a detection portion detecting that the magazine is separated from the passage portion or the bullet runs out inside the magazine, in response to a movement of the detection portion. When the detection receiving portion releases the engagement with the detection portion detecting that the magazine is separated from the passage portion or the bullet runs out inside the magazine, the first engagement portion protrudes inside the passage portion at the one end of the passage portion in response to a movement of the detection receiving portion, and the bullet remaining inside the passage portion is able to be prevented from escaping through the one end.

[0011] In order to attain the above-described object, according to the bullet escape prevention apparatus of a second aspect, in the bullet escape prevention apparatus according to the first aspect, a second engagement portion protruding inside the passage portion through which the bullet is supplied to the inside of the simulation gun at the other end of the passage portion is disposed in the detection receiving portion, and the engagement with the detection portion detecting that the magazine portion is separated from the passage portion or the bullet

runs out inside the magazine is released in response to a movement of the detection portion such that the second engagement portion is further driven and protrudes inside the passage portion at the other end of the passage portion so as to be able to prevent the bullet remaining inside the passage portion from escaping through the other end.

[0012] In order to attain the above-described object, according to the bullet escape prevention apparatus of a third aspect, in the bullet escape prevention apparatus according to the first aspect or the second aspect, the first engagement portion has a long hole which engages with a latching tool disposed in the passage portion and moves along the long hole.

[0013] In order to attain the above-described object, according to the bullet escape prevention apparatus of a fourth aspect, in the bullet escape prevention apparatus of the first aspect to the third aspect, the first engagement portion has an elastic member which is biased in a direction along the long hole.

[0014] In order to attain the above-described object, according to a fifth aspect, there is provided a simulation gun including the bullet escape prevention apparatus according to the first aspect to the fourth aspect.

[0015] In order to attain the above-described object, according to a sixth aspect, there is provided a simulation gun including the bullet escape prevention apparatus according to the first aspect to the fourth aspect, which has a magazine for supplying a bullet to the inside of the simulation gun. The magazine has a detection portion detecting that the bullet runs out.

Advantageous Effects of Invention

[0016] The present invention has a configuration and acts as described above. Therefore, the first engagement portion blocks the one end of the passage portion, that is, the one end for entering the inside of the simulation gun main body, and thus, a bullet can be prevented from escaping out of the bullet loss prevention apparatus.

Brief Description of Drawings

[0017]

Fig. 1 is a sectional view illustrating a simulation gun in its entirety.

Fig. 2A is a perspective view of a state where a detection receiving portion is not bounced up in a bullet loss prevention apparatus. Fig. 2B is a perspective view of a state where the detection receiving portion is bounced up in the bullet loss prevention apparatus. Fig. 3A is an exploded perspective view of a state where a bullet is disposed in a magazine. Fig. 3B is an exploded perspective view of an empty state of the magazine.

Fig. 4A is a perspective view of a state where the bullet loss prevention apparatus and the magazine in which the bullet is disposed are combined together.

Fig. 4B is an exploded perspective view viewed from the rear surface of Fig. 4A.

Fig. 5A is a perspective view of a state where the bullet loss prevention apparatus and the magazine in a state of running out of the bullet are combined together. Fig. 5B is an exploded perspective view viewed from the rear surface of Fig. 5A.

Fig. 6 is a sectional view in which the magazine is ready to be attached to the simulation gun.

Fig. 7 is a sectional view of a state where the magazine is attached to the simulation gun.

Fig. 8 is a sectional view of the simulation gun in a state where a piston cylinder mechanism is pulled.

Fig. 9 is a sectional view of the simulation gun in a state where cocking is completed.

Fig. 10 is a sectional view of the simulation gun in a state where a trigger is pulled.

Fig. 11 is a sectional view of the simulation gun in a state where all of the bullets inside the magazine are shot.

Fig. 12 is a sectional view of a state where the magazine is detached from the simulation gun.

Description of Embodiment

[0018] A bullet loss prevention apparatus 10 according to a preferable example will be described. The bullet loss prevention apparatus 10 has a passage portion 20 through which a bullet B is supplied from a magazine 100 to a gun main body of a simulation gun 200, a first engagement portion 30 which is disposed at one end 21 of the passage portion 20 and prevents the bullet B from escaping, and a detection receiving portion 40 disposed at the other end 22 of the passage portion 20.

[0019] The passage portion 20 serves as a passage through which the bullet B is supplied from the magazine 100 (will be described later) to the gun main body of the simulation gun 200. That is, this bullet B moves in an arrow F direction in an approximately horizontal manner from the magazine 100 through the other end 22, is curved upward from thereof, passes through the one end 21, and reaches the inside of the simulation gun 200. In this manner, in order to cause the bullet B to pass through, the passage portion 20 has a space sufficient for the bullet B to pass through. Here, the arrow F direction denotes a direction of a gun point 201 in the simulation gun 200, and an arrow R direction denotes a direction of a stock 202 in the same.

[0020] In addition, in the present example, the passage portion 20 has a capacity capable of holding 16 bullets B. The capacity varies depending on the type of a simulation gun in which the bullet loss prevention apparatus 10 is mounted, and the capacity is not limited to the number.

[0021] The first engagement portion 30 exhibits an approximately L-shape of the alphabet in its entirety. In addition, the first engagement portion 30 has a first engagement portion main body 31 exhibiting a thin plate shape,

and a bullet engagement portion 32 being integrally configured together with the first engagement portion main body 31. The bullet engagement portion 32 is disposed at the one end 21 of the passage portion 20. In addition, the other end 22 has a detection receiving engagement portion 33 for engaging with the detection receiving portion 40 (will be described later). The detection receiving engagement portion 33 is tilted with respect to the other end portion 34. The bullet engagement portion 32 literally engages with the bullet B, thereby preventing the bullet B from escaping out of the passage portion 20, and this will be described later.

[0022] In addition, the first engagement portion 30 has a first long hole 35a and a second long hole 35b. These long holes have meaning of being respectively lengthened in the arrow F direction and the arrow R direction. In addition, the first long hole 35a and the second long hole 35b are disposed so as to be respectively movable in the arrow F direction and the arrow R direction with respect to the passage portion 20 described above by latching tools 36 and 36. In this case, a spring 37 biases the first engagement portion 30 in the arrow R direction with respect to the passage portion 20. Therefore, the first engagement portion 30 is biased in the arrow R direction by the spring 37 and is disposed so as to be movable in the arrow F direction and the arrow R direction in accordance with the stroke amount depending on the lengths of the first long hole 35a and the second long hole 35b. In addition, the latching tools 36 and 36 are fixed to the passage portion 20. In the latching tools 36 and 36, when the first engagement portion 30 moves in the arrow F direction or the arrow R direction, the first long hole 35a and the second long hole 35b engage with the latching tools 36 and 36 and slide. In the present example, compared to the first long hole 35a, the second long hole 35b is configured to be longer. The reason is that the stroke amounts in the arrow F direction and the arrow R direction are exclusively carried out by the short first long hole 35a and the second long hole 35b is configured to be longer than the first long hole 35a in the arrow F direction and the arrow R direction in consideration of easiness of assembling in manufacturing. The latching tools 36 and 36 are preferable to be screws having flanges in head portions. In addition, in a case where the screws are disposed, hollow tube-shaped members can be provided so as to protrude from the passage portion 20, and the screws can be disposed in the hollow parts. Then, the hollow tube-shaped members provided in the passage portion 20 can be disposed so as to slide with respect to the first long hole 35a and the second long hole 35b, and the first engagement portion 30 can be disposed so as to be able to slide in the arrow F direction or the arrow R direction.

[0023] In addition, the detection receiving portion 40 is provided in order to drive the first engagement portion 30 described above by releasing engagement with a detection portion 150 detecting that the magazine 100 (will be described later) is separated from the passage portion

20 or the bullet B runs out inside the magazine 100, in response to a movement of the detection portion 150. In addition, a second engagement portion 50 is disposed in a part of the detection receiving portion 40 in order to prevent the bullet B from escaping through the other end 22 of the passage portion 20. This will be described later.

[0024] The detection receiving portion 40 is disposed so as to oscillate as a seesaw by a shaft portion 41. However, the shaft portion 41 is not disposed at the center of gravity of the detection receiving portion 40. Therefore, in a contact portion 42 and a pressing portion 43 (will be described later), the shaft portion 41 is disposed so as to be tilted toward the contact portion 42 due to the dead weight. Therefore, as described below, in a case where the magazine 100 is not set in the gun main body of the simulation gun 200, the contact portion 42 is lowered, and the second engagement portion 50 disposed in the detection receiving portion 40 is lowered at the same time. As the second engagement portion 50 comes into contact with the bullet B, the bullet B is prevented from escaping through the other end 22 of the passage portion 20.

[0025] In addition, the contact portion 42 is provided in order to engage with the detection portion 150 of the magazine 100 (will be described later), in other words, a detection engagement portion 153 in the detection portion 150. In addition, when the contact portion 42 rises due to the detection engagement portion 153 in the detection portion 150, the pressing portion 43 is lowered due to the shaft portion 41. Accordingly, the pressing portion 43 comes into contact with the detection receiving engagement portion 33 of the first engagement portion 30 described above. Accordingly, against the spring 37 biased in the arrow R direction, the detection receiving portion 40 can move, that is, can drive the first engagement portion 30 in the arrow F direction (refer to Figs. 2A and 2B). As described above, since the detection receiving engagement portion 33 is tilted with respect to the other end portion 34, when the pressing portion 43 presses the detection receiving engagement portion 33, the first engagement portion 30 is moved in the arrow F direction due to a horizontal component of the pressing force.

[0026] The magazine 100 will be described. In Figs. 3A and 3B, in order to described the magazine 100, description will be given while having the arrow F direction as the leftward direction in the diagram. The magazine 100 is provided in order to supply a plurality of the bullets B to the inside of the simulation gun 200. In addition, inside a magazine main body 101 which is a case of the magazine 100, there is provided a bullet trajectory 110 exhibiting a spiral shape for holding the plurality of bullets B, and a stopper portion 120 is fixed and disposed in one end portion 111 of inside the bullet trajectory 110. A coil spring 130 is attached to the stopper portion 120, and the coil spring 130 is disposed inside the bullet trajectory 110. The coil spring 130 biases a bullet pressing portion 140 from the one end portion 111 in a direction of an opening portion 112.

[0027] In the magazine 100 having such a configuration, the plurality of bullets B are disposed from the opening portion 112, against a repulsive force occurring when the bullet B and the coil spring 130 described above are compressed. In regard to the plurality of bullets B, since a bullet latching portion 114 biased so as to be risen by a latching spring 113 is in a risen state, as the bullet B disposed inside the magazine 100 comes into contact with the bullet latching portion 114, the bullet B is configured not to escape out of the magazine 100 against the pressing force of the coil spring 130.

[0028] In a state where the plurality of bullets B are disposed inside the magazine 100, and in a state where a user (not illustrated) has shot all of the bullets B and no bullet B is present inside the magazine 100, the compressed coil spring 130 becomes close to the natural length, and the bullet pressing portion 140 approaches a place in the vicinity of the opening portion 112. When the bullet pressing portion 140 approaches a place in the vicinity of the opening portion 112, a pressing member 141 in the bullet pressing portion 140 comes into contact with a detection latching portion 151 in the detection portion 150. When the bullet B is disposed inside the magazine 100, the detection portion 150 is biased in the arrow R direction by a detection spring 152, thereby being rotated by a detection fulcrum 154 and being pressed in the arrow R direction in the same manner. In this manner, when the detection portion 150 is disposed in the arrow R direction, it is possible to detect that the bullet B is disposed inside the magazine 100.

[0029] However, in the above case, that is, in a case where the pressing member 141 in the bullet pressing portion 140 comes into contact with the detection latching portion 151 in the detection portion 150, a pressing force in the coil spring 130 is configured to have a spring constant greater than that of the detection spring 152. Therefore, in a case where the bullet B runs out from the inside of the magazine 100, the detection portion 150 is pressed by the bullet pressing portion 140 and moves in the arrow F direction. In this manner, when the detection portion 150 is disposed in the arrow F direction, it is possible to detect that the bullet B inside the magazine 100 runs out.

[0030] Description will be given regarding Figs. 4A and 4B in which the bullet loss prevention apparatus 10 having the configuration described above and the magazine 100 are disposed in a state of being assembled in the simulation gun 200 and only the bullet loss prevention apparatus 10 and the magazine 100 are extracted and illustrated. In order to make the state of being disposed in the simulation gun 200 easy to understand, the bullet loss prevention apparatus 10 and the magazine 100 are combined together and are extracted from the simulation gun 200 as described above, for the description.

[0031] As described above, in a case where one or more bullets B are disposed inside the magazine 100, as described above, since the detection portion 150 is biased in the arrow R direction by the detection spring 152, the detection spring 152 is positioned in the arrow

R direction. In this state, since the bullet loss prevention apparatus 10 is combined with the magazine 100, the detection engagement portion 153 in the detection portion 150 engages with the contact portion 42 in the detection receiving portion 40. Therefore, since the detection receiving portion 40 is disposed so as to oscillate as a seesaw by the shaft portion 41, the contact portion 42 in the detection receiving portion 40 is bounced upward.

[0032] When the contact portion 42 is bounced upward, since the detection receiving portion 40 is pivotally supported by the shaft portion 41 so as to be able to oscillate, the pressing portion 43 positioned on the opposite side is lowered. When the pressing portion 43 is lowered, the pressing portion 43 comes into contact with the detection receiving engagement portion 33. Accordingly, against the spring 37 biased in the arrow R direction, the detection receiving portion 40 can move the first engagement portion 30 in the arrow F direction. As a result, a bullet B1 closest to the simulation gun 200 in the first engagement portion 30 is disengaged from the bullet engagement portion 32, that is, engagement is released. Accordingly, the bullet B1 enters the inside of the simulation gun 200 (refer to Figs. 4A and 4B).

[0033] Meanwhile, in a case where all of the bullets B disposed inside the magazine 100 run out, that is, in a case of a state where all of the bullets B inside the magazine 100 are shot and the plurality of bullets B are just disposed inside the passage portion 20, the bullet pressing portion 140 is pressed by the coil spring 130 and approaches a place in the vicinity of the opening portion 112. Therefore, when the bullet pressing portion 140 approaches a place in the vicinity of the opening portion 112, the pressing member 141 in the bullet pressing portion 140 comes into contact with the detection latching portion 151 in the detection portion 150. The detection portion 150 is biased in the arrow R direction by the detection spring 152. However, in order to be able to oppose this force, the coil spring 130 is configured to have a pressing force stronger than that of the detection spring 152, that is, the spring constant of the coil spring 130 is configured to be greater than the spring constant of the detection spring 152, the detection portion 150 moves in the arrow F direction by the bullet pressing portion 140.

[0034] Due to a movement of the bullet pressing portion 140 in the arrow F direction, the engagement between the detection engagement portion 153 in the detection portion 150 and the contact portion 42 in the detection receiving portion 40 is released. Accordingly, due to the biasing force of the spring 37 in the first engagement portion 30, the first engagement portion 30 moves in the arrow R direction with respect to the passage portion 20, and the bullet engagement portion 32 which is integrated with the first engagement portion 30 moves in the arrow R direction. Due to the movement, at the one end 21, the bullet engagement portion 32 protrudes inside the passage portion 20 and engages with a bullet B2, and thus, the bullet B2 can be prevented from escaping out of the passage portion 20 from the passage

portion 20 (refer to Figs. 5A and 5B).

[0035] In addition, at the same time, the second engagement portion 50 disposed in the detection receiving portion 40 is lowered to the passage portion 20 and protrudes at the other end 22, and thus, the bullet B is prevented from escaping through the other end 22 of the passage portion 20. In this manner, when the second engagement portion 50 is disposed in the detection receiving portion 40, a bullet B3 can be prevented from escaping not only through the one end 21 of the passage portion 20 but also through the other end 22 (refer to Figs. 5A and 5B).

[0036] Here, description will be given regarding a series of operations of shooting the bullet B in a state where the magazine 100 loaded with the plurality of bullets B is set to the simulation gun 200 disposed in the bullet loss prevention apparatus 10. When the magazine 100 is intended to be set to the gun main body of the simulation gun 200 (refer to Fig. 6), since the detection portion 150 in the magazine 100 is positioned in the arrow R direction, it is detected that the bullet B is disposed inside the magazine 100. That is, as described above, the detection receiving portion 40 and the detection portion 150 engage with each other and the detection receiving portion 40 is bounced up. That is, as the detection receiving portion 40 rises, the second engagement portion 50 disposed therein rises. Accordingly, the state where the second engagement portion 50 protrudes inside the passage portion 20 is released, and the plurality of bullets B enters the inside of the passage portion 20 from the magazine 100 (refer to Fig. 7).

[0037] In this case, since the engagement of the first engagement portion 30 is also released, that is, the state where the first engagement portion 30 protrudes inside the passage portion 20 is released, the bullet B reaches the one end 21. However, a nozzle 210 blocks the invasion thereof, and the bullet B stays at the one end 21 in the passage portion 20 (refer to Fig. 7).

[0038] Thereafter, when the user pulls a piston cylinder mechanism 220 in the arrow R direction, while a piston spring 230 is compressed, a piston 221 and a second shear 283 engage with each other. At the same time, the nozzle 210 blocks the invasion thereof, and the bullet B staying at the one end 21 invades the inside of a chamber mechanism 250 (refer to Fig. 8).

[0039] Thereafter, when the piston cylinder mechanism 220 returns to the original position, the bullet B is pushed out into a fitting port 260, and the bullet B is set inside the fitting port 260. The operations are operations so called cocking (refer to Fig. 9).

[0040] Thereafter, when a trigger 270 is pulled, an actuator 280 is pushed out in the arrow F direction, and the actuator 280 and a first shear 281 are disconnected from each other. Then, the actuator 280 moves to a groove portion 281a of the first shear 281, and the first shear 281 rotates counterclockwise around a shaft portion 282. Therefore, the second shear 283 disposed in the first shear 281 slightly subsides downward, and the engage-

ment between the second shear 283 and a piston engagement portion 221a in the piston 221 is released.

[0041] Due to the release, the compressed piston spring 230 is freed, the piston 221 rapidly moves in the arrow F direction, and the bullet B disposed at the movement destination is shot (refer to Fig. 10). In this manner, when the series of operations are repetitively performed and the plurality of bullets B are continuously shot, all of the bullets B disposed inside the magazine 100 enter the inside of the passage portion 20, and there remains no bullet B inside the magazine 100 (refer to Fig. 11).

[0042] In this case, as described above, the detection portion 150 in the magazine 100 moves in the arrow F direction, and the engagement with respect to the detection receiving portion 40 is released. In this case, this is a state where there remains no bullet B disposed inside the magazine 100. That is, the bullets B inside the magazine 100 are shot. Thereafter, a state having so-called dead bullets, in which the bullets B are just disposed inside the passage portion 20 is resulted.

[0043] As described above, due to the biasing force of the spring 37 in the first engagement portion 30, the first engagement portion 30 moves in the arrow R direction with respect to the passage portion 20, and the bullet engagement portion 32 which is integrated with the first engagement portion 30 moves in the arrow R direction. Therefore, the bullet B2 can be prevented from escaping through the one end 21 inside the passage 20.

[0044] In addition, at the same time, the second engagement portion 50 disposed in the detection receiving portion 40 is lowered. Therefore, the bullet B3 can be prevented from escaping through the other end 22 of the passage portion 20. In this manner, when the second engagement portion 50 is disposed in the detection receiving portion 40, the bullet B can be prevented from escaping not only through the one end 21 of the passage portion 20 but also through the other end 22. The second engagement portion 50 can also be arbitrarily provided. Therefore, in a case where the second engagement portion 50 is not provided in the detection receiving portion 40, the bullet B can be prevented from escaping through only the one end 21 inside the passage 20.

[0045] In addition, when the magazine 100 is detached from the gun main body of the simulation gun 200, that is, when the magazine 100 is separated from the passage portion 20, the detection portion 150 in the magazine 100 and the detection receiving portion 40 are disengaged from each other (refer to Fig. 12). Therefore, similar to a case where there remains no bullet B inside the magazine 100, due to the biasing force of the spring 37 in the first engagement portion 30, the first engagement portion 30 moves in the arrow R direction with respect to the passage portion 20, and the bullet engagement portion 32 which is integrated with the first engagement portion 30 moves in the arrow R direction. Accordingly, the bullet B2 can be prevented from escaping through the one end 21 inside the passage 20. In addition, at the same time, the second engagement portion 50 disposed in the de-

tection receiving portion 40 is lowered. Therefore, the bullet B3 can be prevented from escaping through the other end 22 of the passage portion 20.

[0046] In addition, even if there remains the bullet B inside the magazine 100, in regard to the magazine 100, in a case where the magazine 100 is detached from the gun main body of the simulation gun 200, similar to the above-described case, the bullet B2 can be prevented from escaping through the one end 21 inside the passage portion 20. In addition, at the same time, the second engagement portion 50 disposed in the detection receiving portion 40 is lowered. Therefore, the bullet B3 can be prevented from escaping through the other end 22 of the passage portion 20.

Reference Signs List

[0047]

10	BULLET LOSS PREVENTION APPARATUS	20
20	PASSAGE PORTION	
21	ONE END	
22	THE OTHER END	
30	FIRST ENGAGEMENT PORTION	
31	FIRST ENGAGEMENT PORTION MAIN BODY	25
32	BULLET ENGAGEMENT PORTION	
33	DETECTION RECEIVING ENGAGEMENT PORTION	
35a	FIRST LONG HOLE	
35b	SECOND LONG HOLE	30
36	LATCHING TOOL	
40	DETECTION RECEIVING PORTION	
41	SHAFT PORTION	
42	CONTACT PORTION	
43	PRESSING PORTION	35
50	SECOND ENGAGEMENT PORTION	
100	MAGAZINE	
150	DETECTION PORTION	
200	SIMULATION GUN	40

Claims

1. A bullet escape prevention apparatus comprising:

a passage portion through which a bullet is supplied from a magazine to the inside of a simulation gun;

a first engagement portion which is disposed at one end of the passage portion and prevents the bullet from escaping inside the simulation gun by being in contact with the bullet; and
a detection receiving portion which drives the first engagement portion by releasing engagement with a detection portion detecting that the magazine is separated from the passage portion or the bullet runs out inside the magazine, in response to a movement of the detection por-

tion,

wherein when the detection receiving portion releases the engagement with the detection portion detecting that the magazine is separated from the passage portion or the bullet runs out inside the magazine, the first engagement portion protrudes inside the passage portion at the one end of the passage portion in response to a movement of the detection receiving portion, and the bullet remaining inside the passage portion is able to be prevented from escaping through the one end.

2. The bullet escape prevention apparatus according to Claim 1,

wherein a second engagement portion protruding inside the passage portion through which the bullet is supplied to the inside of the simulation gun at the other end of the passage portion is disposed in the detection receiving portion, and the engagement with the detection portion detecting that the magazine portion is separated from the passage portion or the bullet runs out inside the magazine is released in response to a movement of the detection portion such that the second engagement portion is further driven and protrudes inside the passage portion at the other end of the passage portion so as to be able to prevent the bullet remaining inside the passage portion from escaping through the other end.

3. The bullet escape prevention apparatus according to Claim 1 or 2,

wherein the first engagement portion has a long hole which engages with a latching tool disposed in the passage portion and moves along the long hole.

4. The bullet escape prevention apparatus according to Claim 3,

wherein the first engagement portion has an elastic member which is biased in a direction along the long hole.

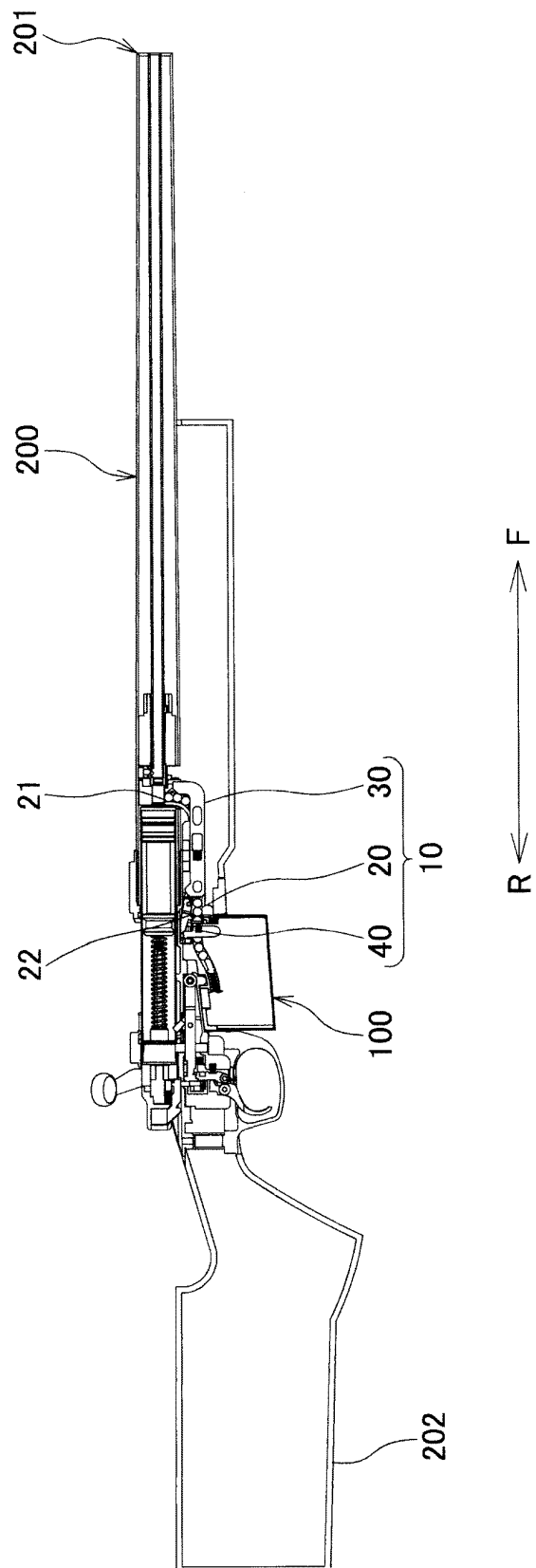
5. A simulation gun comprising:

the bullet escape prevention apparatus according to any one of Claims 1 to 4.

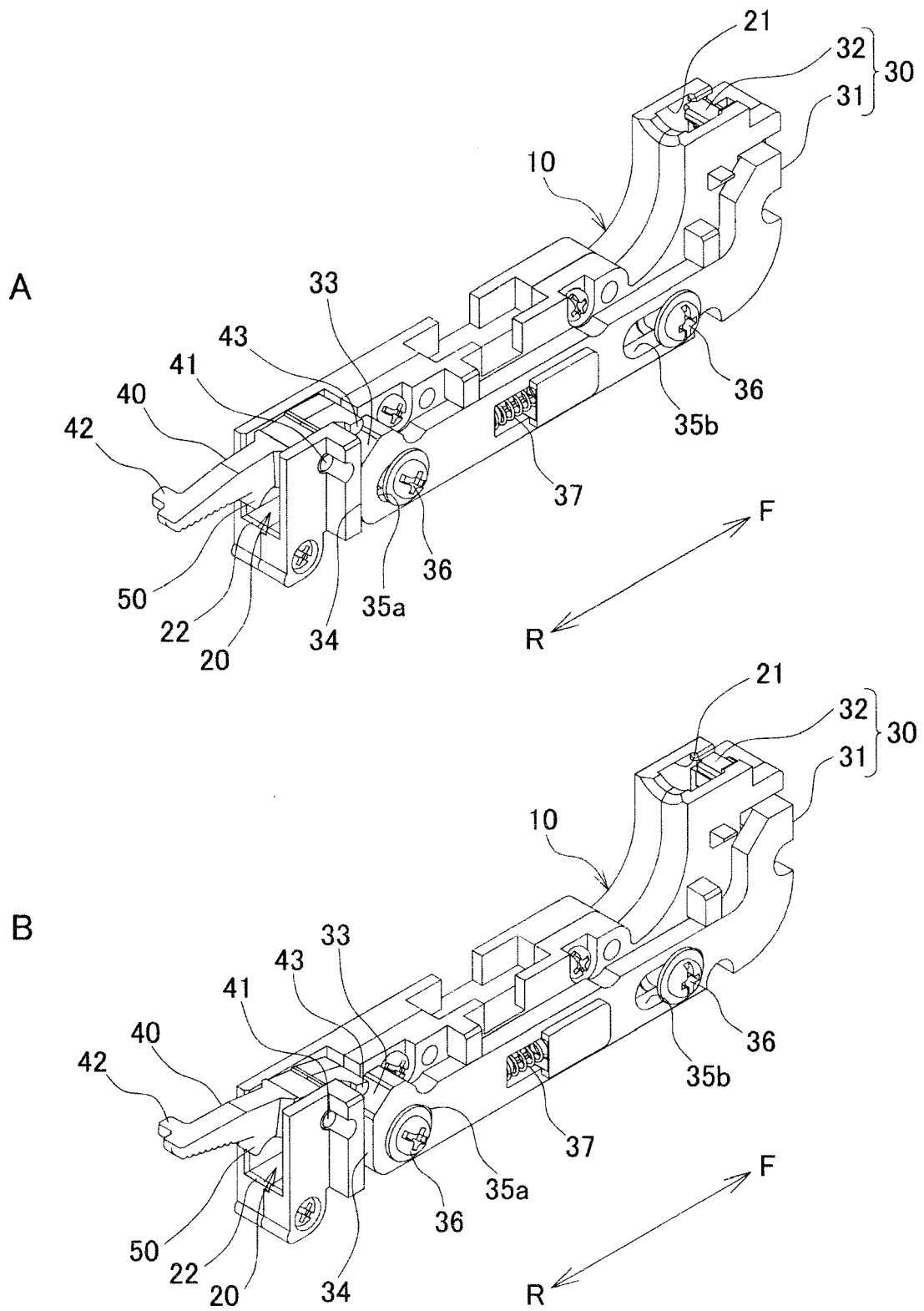
6. A simulation gun comprising:

a magazine for supplying a bullet to the inside of the simulation gun; and
the bullet escape prevention apparatus according to any one of Claims 1 to 4,
wherein the magazine has a detection portion detecting that the bullet runs out.

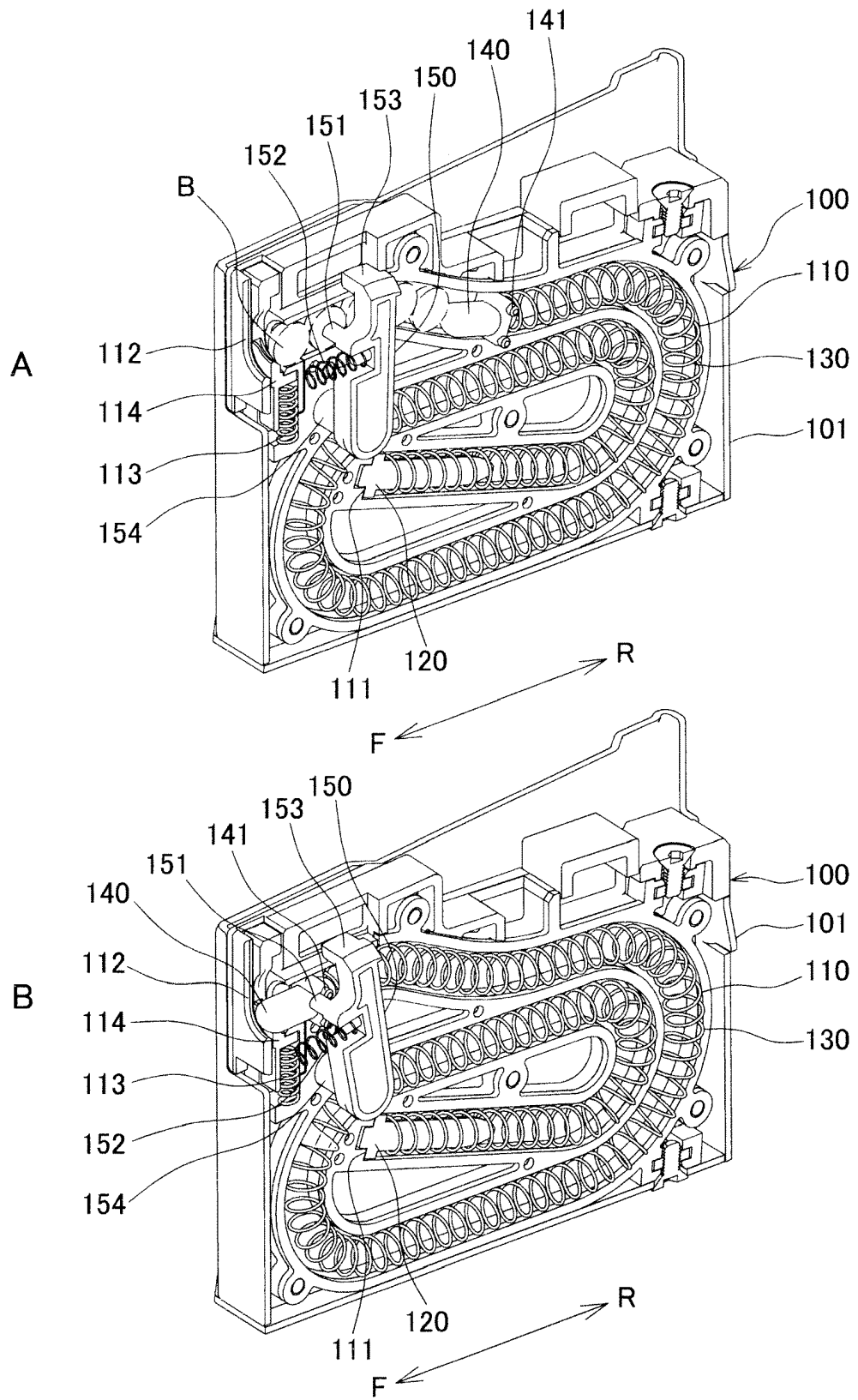
【 Fig. 1 】



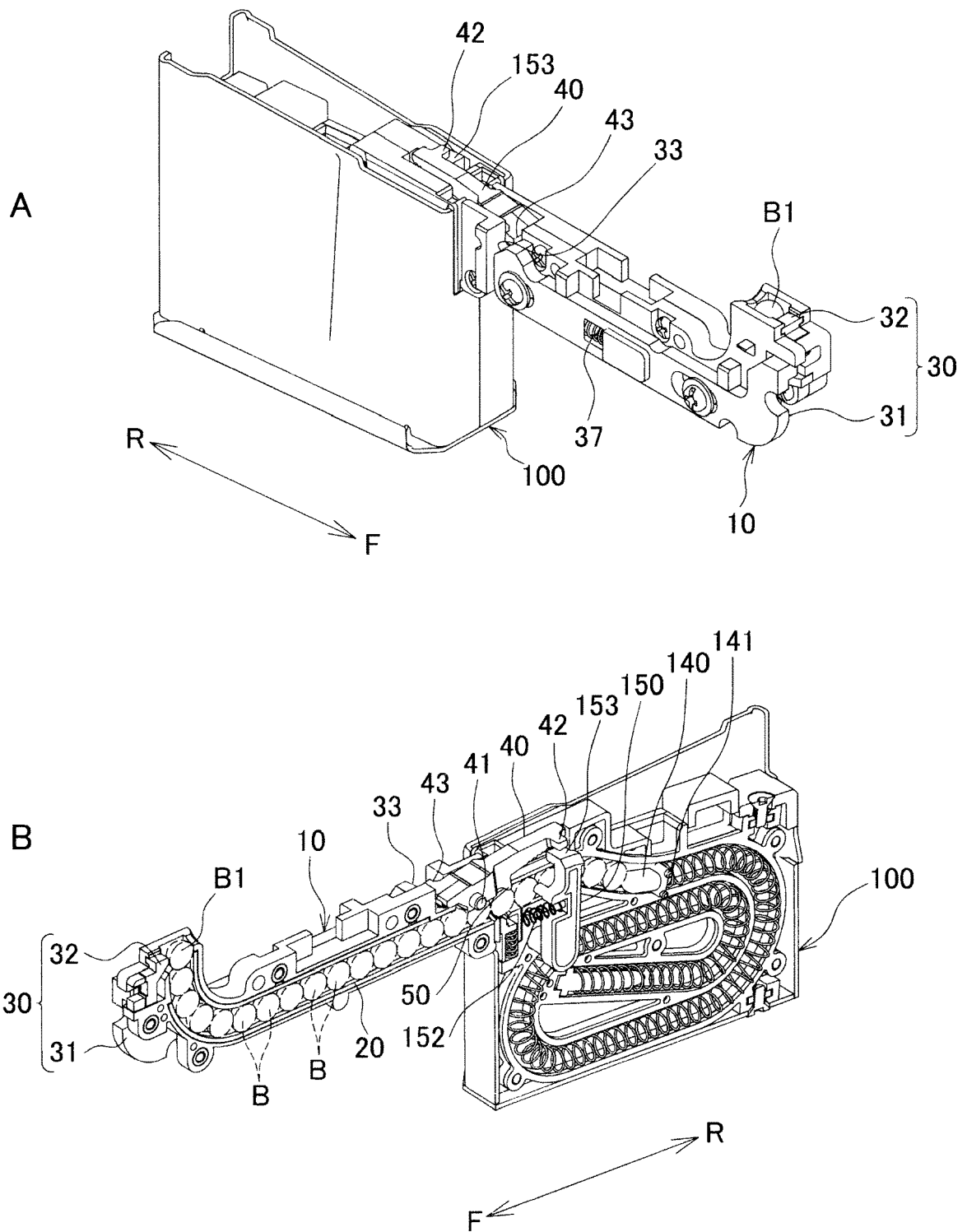
【 Fig. 2 】



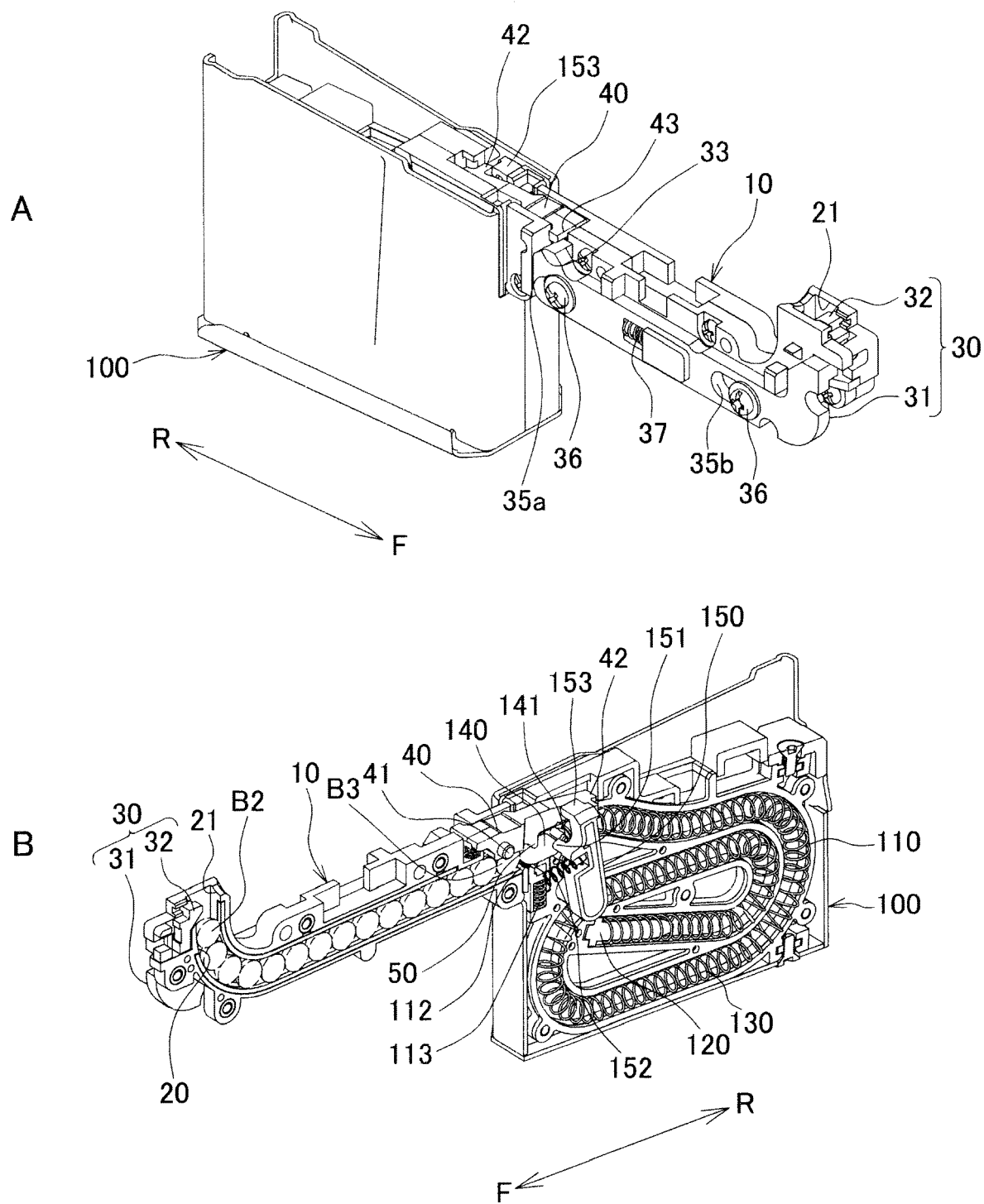
【Fig. 3】



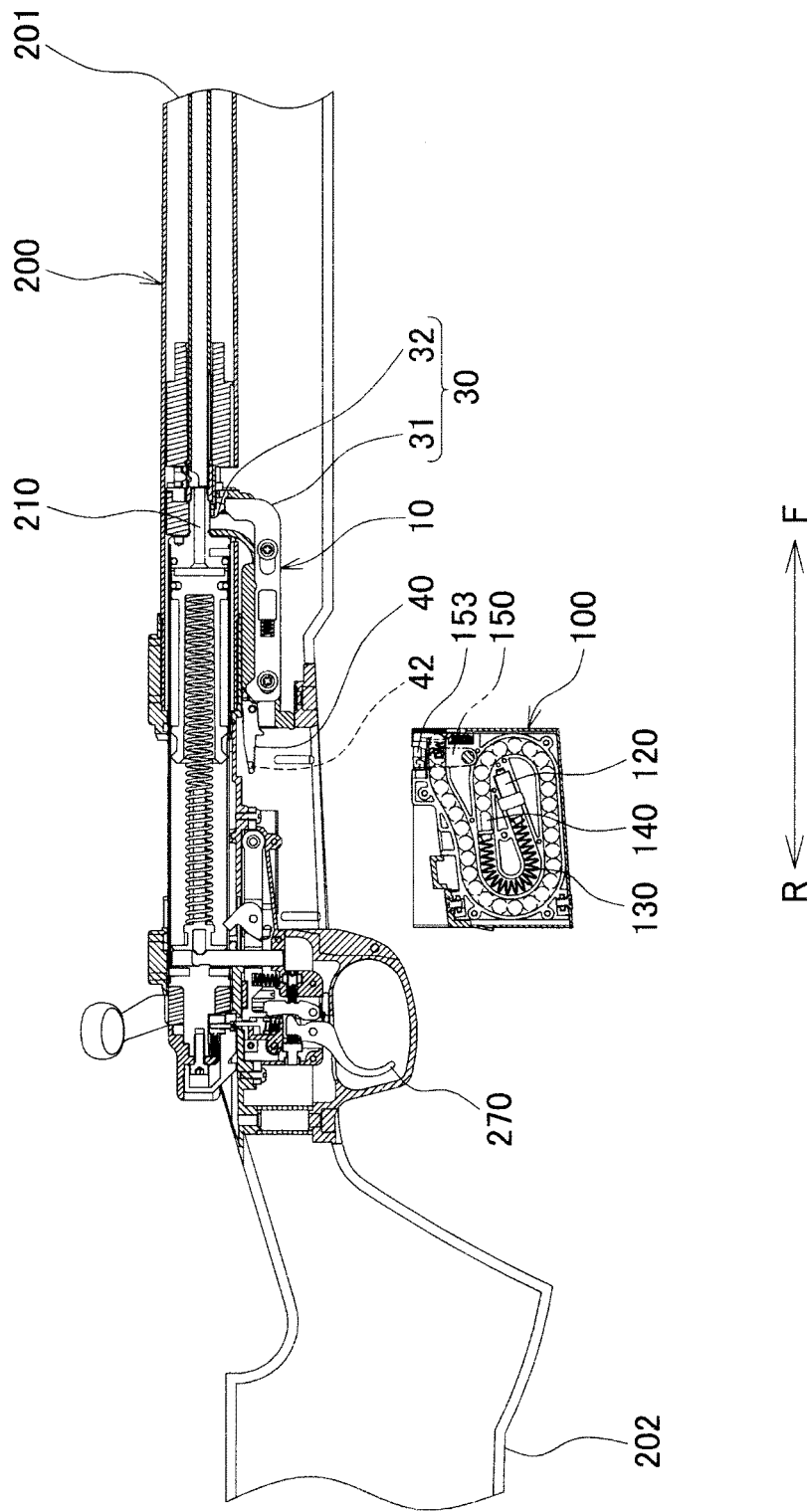
【 Fig. 4 】



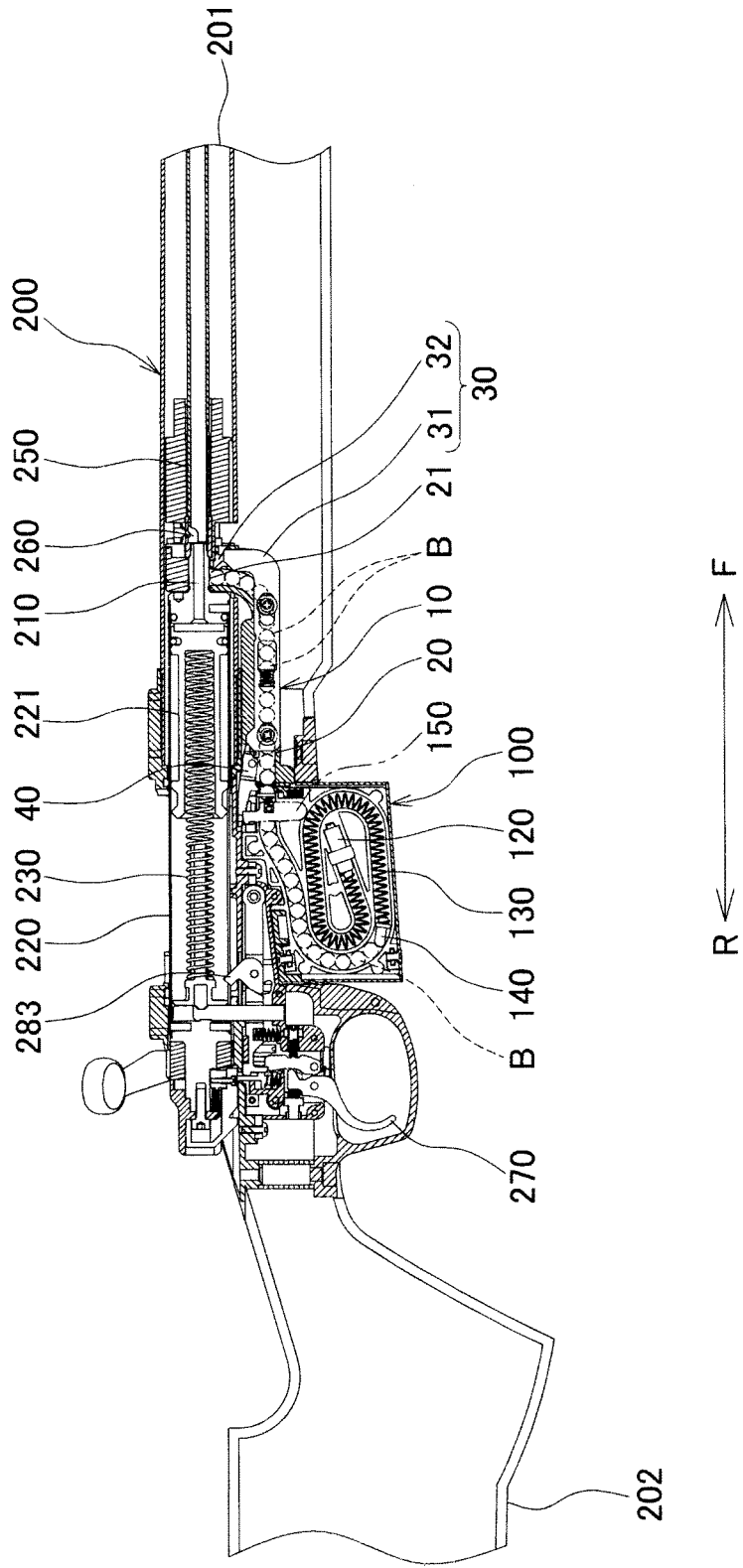
【Fig. 5】



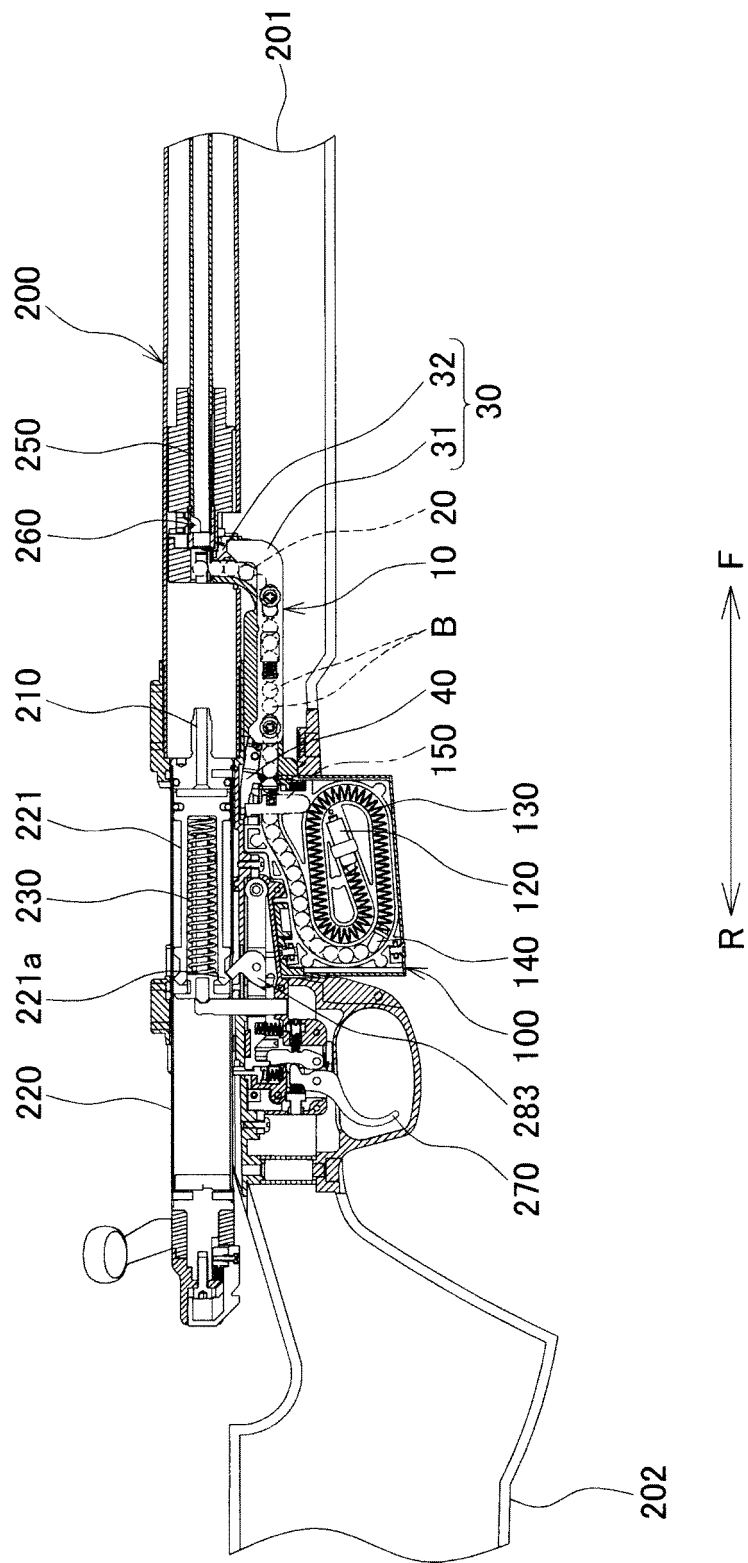
【 Fig. 6 】



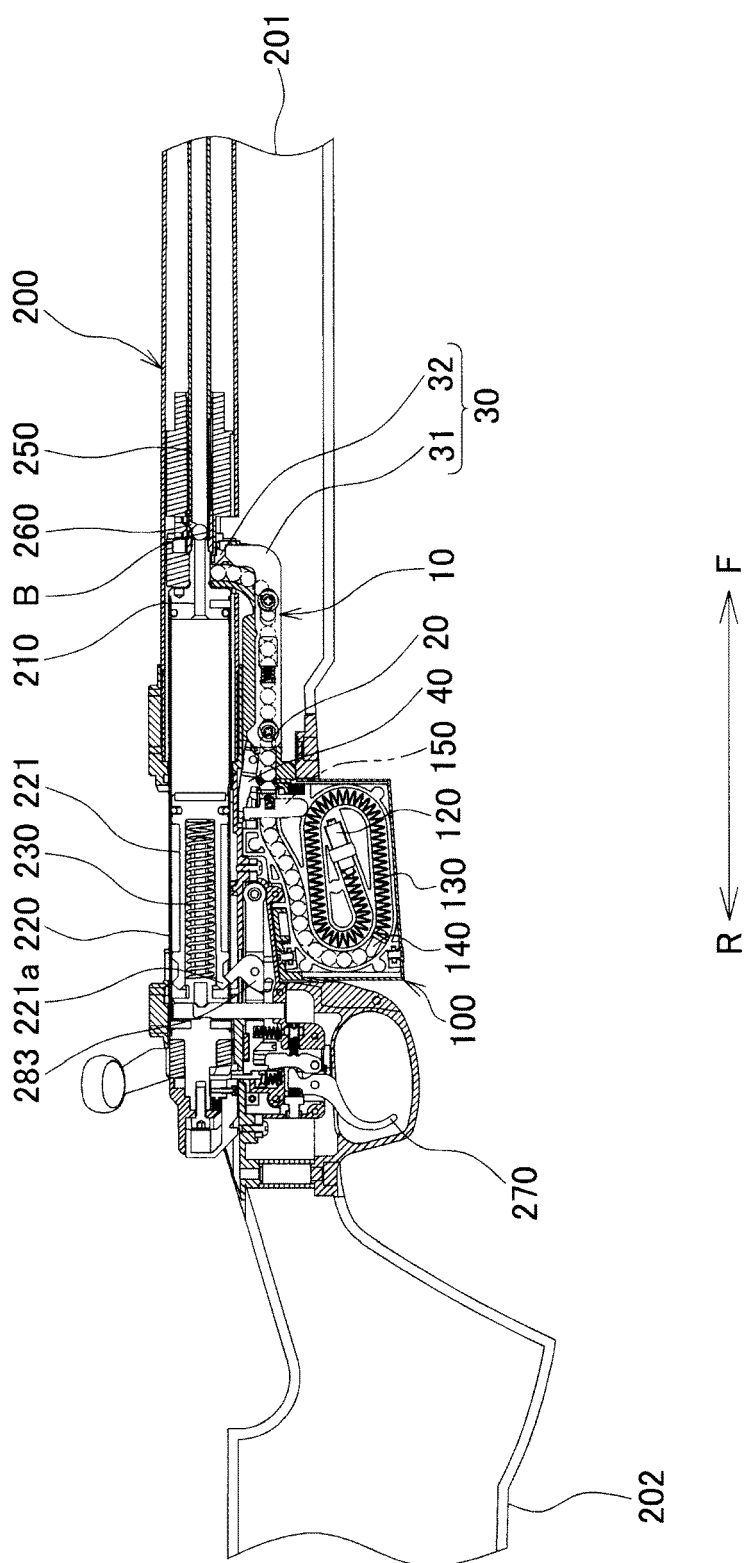
【 Fig. 7 】



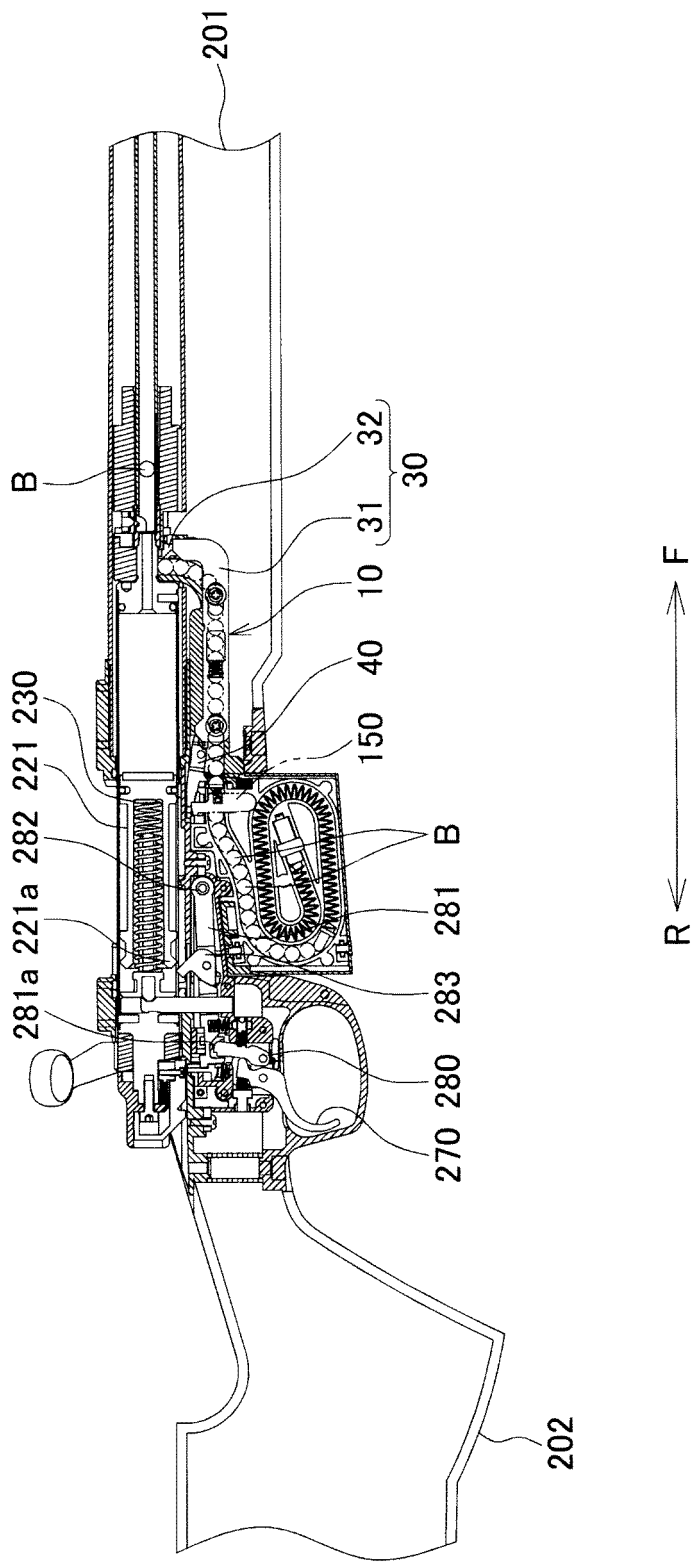
【 Fig. 8 】



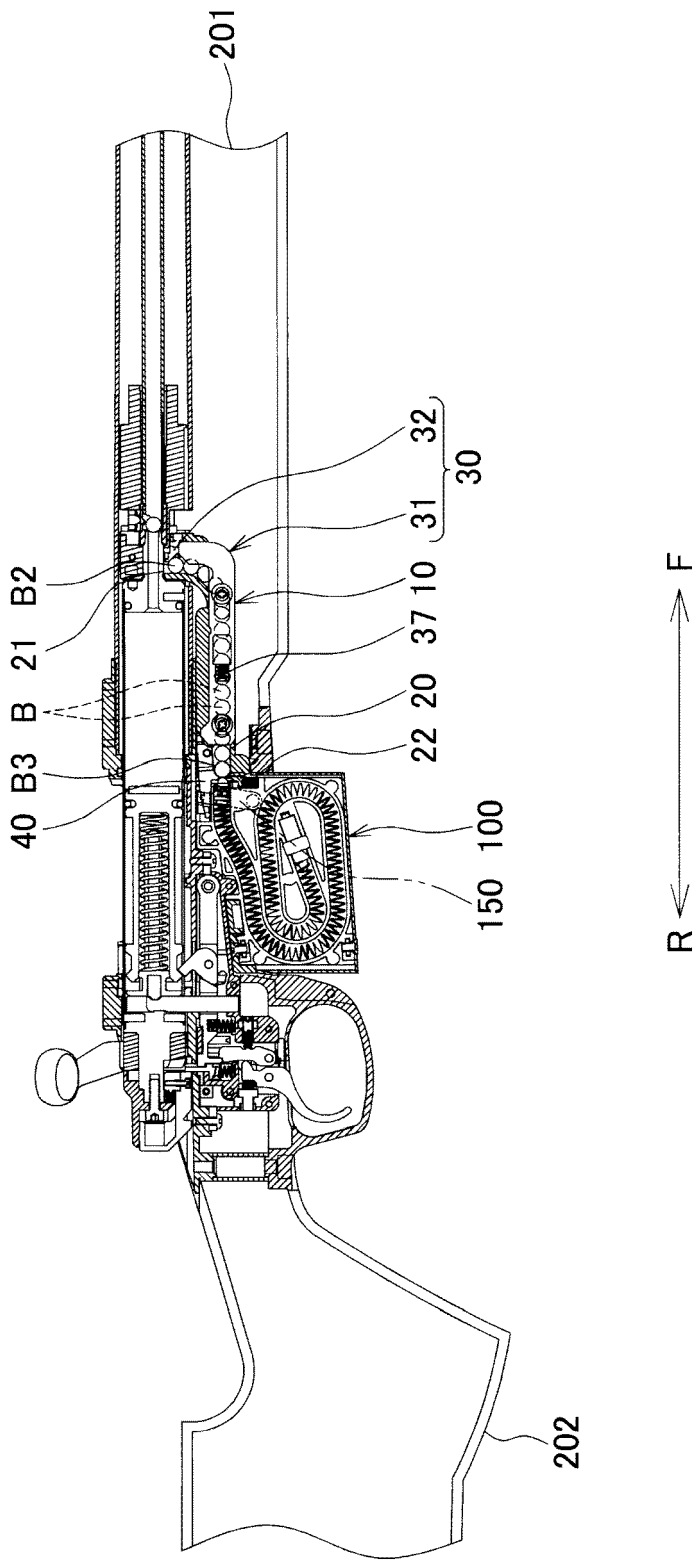
【 Fig. 9 】



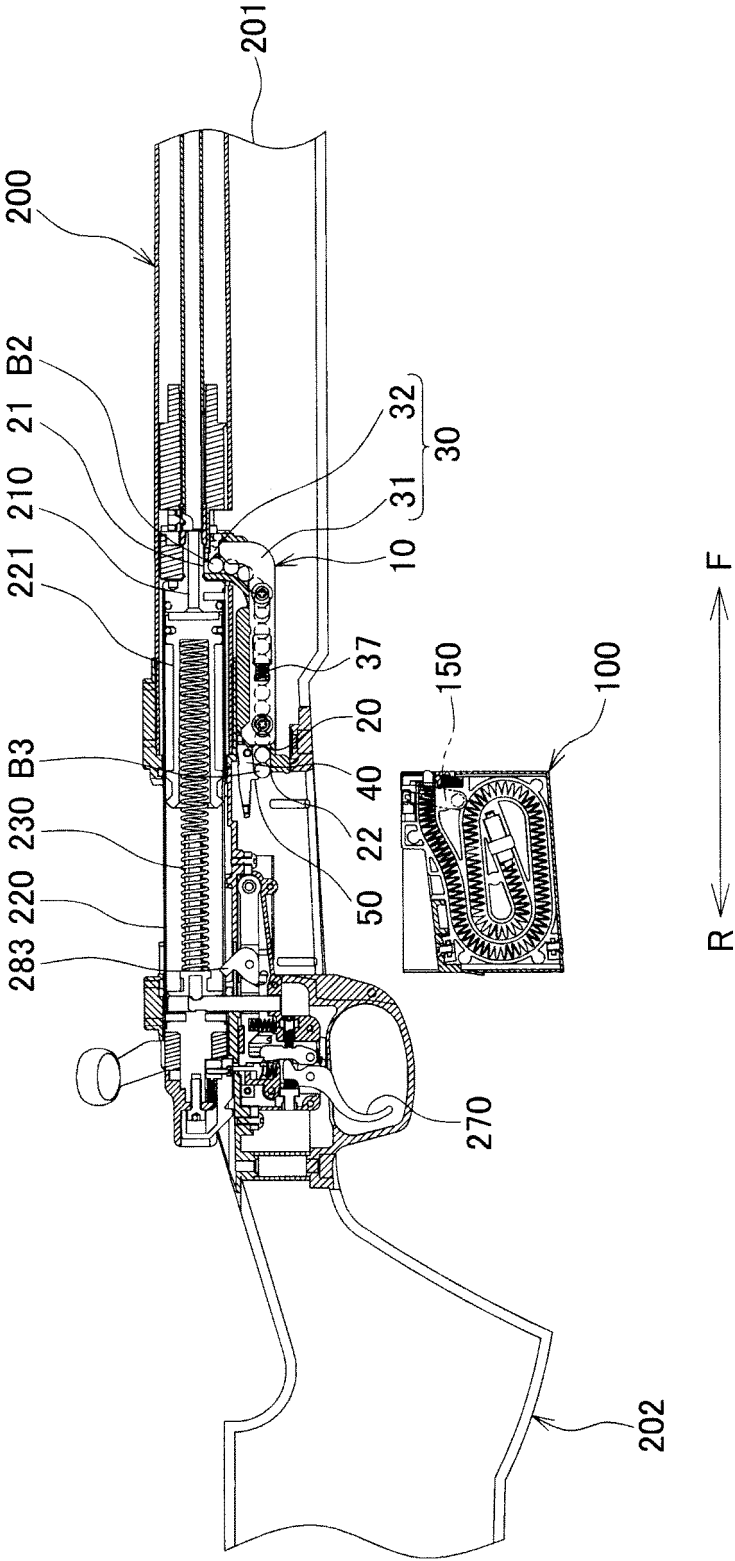
【Fig. 1 0】



【 Fig. 1 1 】



【 Fig. 1 2 】



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2016/063910

A. CLASSIFICATION OF SUBJECT MATTER

F41B11/55(2013.01)i, F41B11/50(2013.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F41B11/55, F41B11/50

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2016
Kokai Jitsuyo Shinan Koho	1971-2016	Toroku Jitsuyo Shinan Koho	1994-2016

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 10-148495 A (Marushin Kogyo Kabushiki Kaisha), 02 June 1998 (02.06.1998), (Family: none)	1-6
A	WO 2008/114463 A1 (Tokyo Marui Co., Ltd.), 25 September 2008 (25.09.2008), & TW 200839170 A	1-6
A	JP 2015-108479 A (Tanaka Works Co., Ltd.), 11 June 2015 (11.06.2015), (Family: none)	1-6
A	JP 3195391 U (Guay Guay Trading Co., Ltd.), 15 January 2015 (15.01.2015), (Family: none)	1-6

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

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Date of the actual completion of the international search
08 July 2016 (08.07.16)Date of mailing of the international search report
19 July 2016 (19.07.16)Name and mailing address of the ISA/
Japan Patent Office
3-4-3, Kasumigaseki, Chiyoda-ku,
Tokyo 100-8915, Japan

Authorized officer

Telephone No.

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Patent documents cited in the description

- JP 2004347221 A [0007] [0008]