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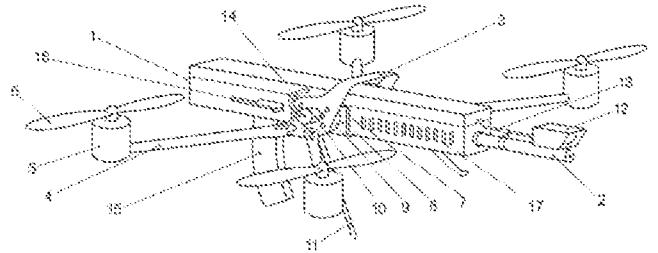
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(54) Title **Remote control flying rifle**  
(57) Abstract

The body of the rifle consists of a frame on which engines are installed that provide lifting and movement of the rifle in the air, and the combat module, hinged to the frame, and in which the barrel, trigger mechanisms, a set of cartridges, a battery, an electronic control unit and a video camera are located. The combat module can rotate up and down, parallel to its length. The video camera is installed statically on front of the barrel and performs the functions of a sight. Moving through the air and shooting from a rifle is carried out under the remote control of the shooter-operator. The rifle can be equipped with a night vision camera, a silencer and perform tasks at any time of the day. In addition to shooting, the rifle can conduct surveillance, adjust artillery fire, and carry dropped bombs or rockets on its body.



## **Remote control flying rifle**

The present invention relates to small arms, and, more specifically, to remotely controlled small arms. The essence of the invention lies in the fact that the rifle is equipped with such technical means, that give it the ability under remote control to move in the airspace, and, being in the airspace, to shoot accurately at ground, surface or air targets.

The invention solves the problem of the safety of a person, using small arms, and also solves the problem of increasing the efficiency of defeating enemy manpower and equipment when using small arms in combat operations.

This problem is solved due to the fact, that the flying rifle consists of a body, consisting of a frame(3) on which engines(5) are installed that provide lifting and movement of the rifle in the air, and the combat module(1), hinged to the frame, and in which the barrel, firing mechanisms, a set of cartridges, a battery, an electronic control unit and a video camera are located.

The flying rifle has a rotary mechanism (9) that providing the rotation of the combat module (1) in the direction up and down, parallel to the length of the body of the combat module and perpendicular to the axis of connection of the main module with the frame.

The video camera (12) of the flying rifle is mounted statically on the front part of the barrel (2).

The video camera (12) performs the functions of a sight of a flying rifle.

The flying rifle is controlled remotely, using a remote control panel (48).

A shot from the flying rifle is remotely triggered by a signal from the remote control panel (48) of the rifle.

The flying rifle has an electric trigger (42).

The flying rifle has a recoil dampening mechanism when fired.

A set of cartridges for the flying rifle is located in the magazine (15), which is detachably attached to the combat module (1) of a flying rifle, from the outside of the main module body.

The technical result of this invention will be the ability of a remote-controlled rifle to move in airspace and fire from airspace at ground, surface or air targets.

## BACKGROUND FOR THE INVENTION

From the field of technology known remotely controlled small arms, which is installed on ground carriers, such as tracked or wheeled military vehicles. At the same time, such vehicles itself can be remotely controlled. The disadvantage of such a technical solution lies in the fact, that such weapons are capable of hitting targets only within direct, horizontal or vertical visibility, while targets hidden behind vertical obstacles or depressions in the ground are inaccessible to such weapons. Another disadvantage of such weapons is that ground vehicles are limited in their ability to move by natural and artificial ground obstacles, such as: trenches, ditches, hills, water barriers, trees, residential or industrial buildings and other obstacles.

The advantage of a flying rifle compared to ground carriers is that a flying rifle can move freely in airspace at high altitude and over long distances, can detect and hit targets in all open space, and at the same time, no ground obstacles or terrain will interfere with a flying rifle.

Other remotely controlled small arms, known from the field of technology, are weapons that are mounted on manned air or surface carriers, such as airplanes, helicopters, or warships. The disadvantage of such a technical solution lies in the fact that on board such carriers, there must be a person who controls both remotely controlled weapons and the carrier of such weapons. Such a decision carries great risks for the life and health of the pilot of such carriers, since he can be hit by enemy return fire along with the carrier of remotely controlled weapons and the weapons itself. At the same time, aircraft, helicopters and surface ships are expensive carriers, and, the pilots of such carriers themselves are valuable professionals who spend a lot of time and money on training, and the loss of such carriers and pilots causes serious material and moral damage. In addition, the disadvantage of such manned carriers is that they are large, noisy, visible and vulnerable targets for the enemy.

The advantage of a remote-controlled flying rifle compared to manned air and sea carriers of remotely controlled small arms is that the flying rifle allows the person operating it to be safe, out of the kill zone, while the flying rifle itself operates at a great distance from the person operating it and remains as invisible to the enemy as possible. Another advantage of a flying rifle is its relatively inexpensive cost. The loss of a flying rifle, as a result of enemy actions, or as a result of its technical malfunction, will not cause serious material or moral damage.

## BRIEF SUMMARY

A flying rifle, characterized in that it consists of a body, consisting of a frame on which engines are installed that provide lifting and movement of the rifle in the air, and the combat module, hinged to the frame, and in which the barrel, firing mechanisms, a set of cartridges, a battery, an electronic control unit and a video camera are located.

## BRIEF DESCRIPTION OF DRAWINGS

**FIG.1** - General view of the flying rifle.

**FIG.2** - General view of a flying rifle, where the dotted lines show the possible position of the combat module of the rifle when the barrel is rotated down.

**FIG.3** - Front view of a flying rifle.

**FIG.4** - An enlarged front view of a flying rifle.

**FIG.5: a-** The inner panel (7) of the lower, supporting part of the frame, with parts (21) of the recoil damping mechanism, statically installed on its outer side.

**b-** the outer panel (8) of the lower, supporting part of the frame, with parts (19-22) of the recoil damping mechanism installed on its inner side.

**FIG.6: a-** Two panels (7-8) of the lower, supporting part of the frame, movably connected to each other by the parts of the recoil damping mechanism, which are in their original position.

**b-** the action of the recoil damping mechanism, in which the inner panel (7) of the lower, supporting part of the frame, as a result of the shot, moves back, compressing the spring (22).

**FIG.7** - The device of the rotary mechanism in the context.

**FIG.8** - Components of the combat module of a flying rifle and their internal arrangement

**FIG.9** - General view of a flying rifle with additional combat equipment installed on the combat module and the rifle barrel.

**FIG.10** - Remote control panel of a flying rifle.

**FIG.11: a-** The way of folding of parts of a flying rifle.

**b** - flying rifle in a folded position in a portable case.

**FIG.12** - Shooter-operator armed with a case-carried flying rifle.

#### DETAILED DESCRIPTION OF THE INVENTION

**FIG.1:** **1** - the combat module of the rifle, **2**- barrel, **3**- upper, supporting part of the frame, **4**- beam of the frame, **5**- rifle engine, **6**- propellers, **7**- inner panel of the lower, supporting part of the frame, in which the combat module(**1**) is statically installed, **8** - outer panel of the lower, supporting part of the frame, statically connected to the rotary mechanism (**9**) and which has a movable connection with the inner panel (**7**) , **9** - rotary mechanism, **10** - rotary mechanism engine, **11** - rifle support rack, **12** - video camera statically mounted on the front part of the barrel (**2**), **13** - power and control wire for video camera , **14** - power and control wires for rifle and rotary mechanism engines, **15** - magazine, **16** - bolt lever, **17** - holes in the body of the combat module for ventilation, as well as to lighten the weight of the main module.

**FIG.2:** **1** - combat module, **2** - barrel, **3** - upper, supporting part of the frame, **4** - beam of the frame, **5** – rifle engine, **9** - rotary mechanism, **12** - video camera, **18** - possible position of the combat module when rotating downwards, shown in dotted lines .

**FIG.3:** **1** - the combat module of the rifle, **2** - barrel, **3** - upper, supporting part of the frame, **4** - beam of the frame, **5** – rifle engine, **6** - propellers, **7** - inner panel of the lower, supporting part of the frame, in which the combat module(**1**) is statically installed, **8** - outer panel of the lower, supporting part of the frame, statically connected to the rotary mechanism (**9**) and which has a movable connection with the inner panel (**7**), **9** - rotary mechanism, **10** - rotary mechanism engine, **11** - rifle support rack, **12** - a video camera, **14** - power and control wires for rifle and rotary mechanism engines , **15** – magazine.

**FIG.4:** **1** - combat module, **2** - barrel, **3** - upper, supporting part of the frame, **4** - frame beam, **7** - inner panel of the lower, supporting part of the frame, **8** - outer panel of the lower, supporting part of the frame, **19** - guide gutters, statically installed on the inner side of the outer panel (**8**) of the lower, supporting part of the frame, and which are part of the recoil damping mechanism, **9** - rotary mechanism, **10** - rotary mechanism engine, **11** - rifle support rack, **20**- rifle support rack mount, mounted on the upper, supporting part of the frame (**3**), **12** - video camera, **14** - power and control wires for rifle and rotary mechanism engines.

**FIG.5: a** - **7** - inner panel of the lower, supporting part of the frame, **21** - guide

rails, statically installed on the outer side of the inner panel(7) and which are inserting into the guide gutters (19) statically installed on the inner side of the outer panel (8).

**b - 8** - outer panel of the lower, supporting part of the frame, on the inside of which guide gutters (19) are installed statically, into which guide rails (21) of the inner panel (7) are inserted, **19** – guide gutters, **21** - rail, **22** – springs, installed inside the guide gutters (19), supporting and holding the guide rails (21) in their original position.

**FIG.6: a-** **7** - inner panel of the lower, supporting part of the frame, **8** - outer panel of the lower, supporting part of the frame, **19** – guide gutter, installed statically on the inside of the outer panel(8), **21** - guide rail, statically installed on the outer side of the inner panel (7) and which inserted into the guide gutter (19), **22** – spring, inserted into the guide gutter (19) and which holds the guide rail (21) in its initial position.

**b - 7** - the inner panel of the lower, supporting part of the frame, moved back as a result of recoil when the rifle was fired, **8** - the outer panel of the lower, supporting part of the frame, **19** - a guide gutter, installed statically on the inner side of the outer panel (8), **21** - a guide rail, installed statically on the outer side of the inner panel (7), which is inserted into the guide gutter (19) of the outer panel and which, as a result of recoil when fired, pushes and compresses the spring back together with the inner panel (7) and with combat module installed in it, **22** - spring compressed as a result of recoil, which, after compression, unclenched, will set the guide rail (21) together with the inner panel(7) and the combat module of the rifle, statically installed in it to its initial position.

**FIG.7:** **1**- combat module, **3**- upper, supporting part of the frame, **7**- inner panel of the lower, supporting part of the frame, **8**- outer panel of the lower, supporting part of the frame, **19**- guide gutter , **4**- frame beam, **11**- rifle support rack , **20** - rifle support rack mount, **10**- rotary mechanism engine, **23** - one part of the body of the rotary mechanism, which is statically installed on the inner side of the upper, supporting part of the frame (3), **24** - the outer ring of the bearing, installed statically inside part (23) of the body of the rotary mechanism, **25** - the second part of the body of the rotary mechanism , installed statically on the outer side of the outer panel (8) of the lower, supporting part of the frame and which has an inner ring (26) that is statically installed in the inner ring (27) of the bearing, **26** - inner ring of the second part (25) of the body of the rotary mechanism, **27** - inner ring of the bearing, **28** – teeth, located on the inner surface of the inner ring (26) of the part (25) of the body of the rotary mechanism, **29** - one bearing roller, **30** - another bearing roller , **31**- rotary mechanism engine shaft, **32** – teeth, located on the outer surface of the shaft (31) of the rotary mechanism engine, pushing teeth (28) during rotation, located on the inner surface of the inner ring (26) of the part

(25) of the rotary mechanism body and thus driving and rotating second part (25) of the body of the rotary mechanism and together with it the lower, supporting part of the frame and the combat module of the rifle, **33** - power and control wire of the rotary mechanism engine, **34** - power and control wire of the rifle engine.

**FIG.8:** **35** - one section of the combat module of the rifle, in which the firing mechanisms and the barrel of the rifle are located, **36** - the second section of the combat module of the rifle, in which the battery (44) and the electronic control unit (43) of the rifle are located, **37** - cover of the second section (36) of the combat module, **38** - shown in dotted lines, the part of the rifle barrel located inside the section (35) of the combat module of rifle, **39** - tube for removing powder gases, **40** - bolt mechanism, **41** - return mechanism, **42** - electric trigger, **2** - barrel, **12** - video camera, **15** - magazine, **16** - lever of the bolt mechanism, **45** - power and control wire for electric trigger (42).

**FIG.9:** **1** - combat module, **2** - the barrel, **12** - a video camera, **46**- a silencer, **47** - a guided rocket.

**FIG.10:** **48** - the body of the remote control panel, **49** - the screen of the remote control panel, **50** - the left joystick of the remote control panel, with a flexible loop at the end, for the convenience of controlling the joystick, **51** - the right joystick of the remote control panel, with a flexible loop at the end, **52** - the finger of the shooter-operator, **53** - shot button, **54** - rotary control dial to zoom in and out on the screen (49) of the remote control panel, **55** - one antenna, **56** - second antenna, **57** - crosshairs of the sight, **58** - target shown in dotted lines, **59** - indicator of the distance to the target, **60** - an indicator of the height at which the rifle is located, **61** - an indicator of wind speed, **62** - an indicator of wind direction, **63** - an indicator of the number of spent cartridges, **64** - an indicator of the time the rifle was in flight, **65** - an indicator battery charge level, **66**- button on and off the remote control panel.

**FIG.11:** **a-** **1** - combat module, **2** - barrel, **3** - upper, supporting part of the frame, **5** - rifle engine, **12** - video camera, **9** - rotary mechanism, **10** - rotary mechanism engine, **67** - the initial position of the frame beam shown by the dotted line, **68** - frame beam in the folded position, **69** - the initial position of the rifle support rack, shown in dotted lines, **70** - rifle support rack in the folded position, **71** - propellers in the folded position.

**b** - **72** - rifle case, **73** - case cover, **74** - folded flying rifle in a case, **48** - remote control panel, **75** - spare battery, **15** - magazine, **46** - silencer, **47** - guided rocket.

**FIG.12:** **76** - shooter-operator, **72** - case, **77** - shown in dotted lines, a flying rifle in a folded position, located inside a closed case.

## DETAILED EXAMPLES

A remote-controlled, flying rifle is an automatic small arms weapon. Before starting the rifle, the shooter-operator twitches the bolt lever (16), driving the cartridge into the barrel chamber and launches the rifle into flight. Further, when the rifle is in the air, after each shot, the rifle is automatically reloaded. In the process of moving a flying rifle in airspace, the shooter-operator monitors the surface of the earth or water using a video camera (12), which transmits the image to the screen (49) of the remote control panel. The video camera performs the functions of a rifle sight, is statically installed in the front part of the rifle barrel and always looks in the same direction as the barrel, both in the initial position of the barrel and when the barrel moves down or up. If a target is detected, the shooter-operator aims at the target the crosshairs of the sight (57), located in the center of the screen (49) of the control panel, and presses the shot button (53), also located on the rifle remote control panel. The flying rifle has a rotary mechanism (9), thanks to which the combat module (1) of the rifle can rotate up and down, parallel to the length of its body and perpendicular to the axis of its connection with the frame (FIG.2), which allows to optimize the visibility and hitting rifle targets. At the same time, the axis of connection of the combat module of the rifle with the frame and the rotary mechanism should be located at the points of the centers of gravity of the combat module and the frame, which will facilitate the load on the rotary mechanism (9) during the rotation of the combat module of the rifle. The downward angle of the rifle barrel during rotation can be up to 90 degrees or more. The rifle has a recoil damping mechanism when fired (FIG.5-6), which will reduce the vibrations and displacement of the rifle when fired and increase the efficiency of hitting rifle targets.

The remote control panel (48) of the rifle displays the necessary and useful data for the shooter-operator, such as: distance to the target (59), height (60) at which the rifle is located, wind speed (61), wind direction (62), the number of spent cartridges (63), the time the rifle has been in flight (64) and the battery charge level(65). All this data will allow the shooter-operator to more objectively assess the situation and more effectively work on detecting and hitting targets.

The flying rifle can be equipped with a silent firing device (46) and a night vision video camera, which will allow the rifle to observe and fire at any time of the day, remaining as invisible to the enemy as possible. Also, a flying rifle can have a camouflage color to be more inconspicuous against the sky.

The rifle may have additional weapons, in the form of dropped bombs or a guided rocket (47), with which the shooter-operator can hit the accumulation of enemy manpower, enemy equipment or other military objects of the enemy. In addition to hitting targets, the flying rifle can also monitor and correct the fire of artillery systems on the enemy.

A set of cartridges for a flying rifle is located in a magazine(15), attached to the combat module from the outside. The number of cartridges in the magazine may be limited only by the design parameters of the magazine and the rifle. In versions of the rifle, a set of cartridges can also be located inside the combat module body.

In case of loss of communication with the flying rifle, the flying rifle may have an "auto-return" system. Such a system may be an autopilot that records the entire route of the rifle from the point of departure, and which, in the event of loss of communication with the rifle, is automatically activated and returns the flying rifle back to the point of origin, along the same route. Such a system will avoid the loss of a flying rifle as a result of the actions of enemy electronic warfare.

The flying rifle can be produced in light and heavy versions. A light rifle, may have a smaller caliber of bullets and be designed to defeat enemy manpower. A heavy rifle can have a larger caliber of bullets, armor-piercing or incendiary, capable of hitting lightly armored enemy vehicles, ammunition depots, fuel and other enemy equipment, thereby causing damage to the enemy's material and technical base and logistics.

A flying rifle should be made from the most durable and at the same time as light materials as possible. For example, the frame of a rifle, its upper (3) and lower (7-8) supporting parts, as well as the rotary mechanism (9) can be made from such a light and durable material as titanium. The body of the combat module and other parts can be made of hard plastic and other suitable materials.

The flying rifle may have a folding frame design (FIG.11). This solution will increase the convenience of use of the rifle. The flying rifle can be stowed in a special case (72), which the shooter-operator can store and transport (FIG.12) between combat use of the rifle. In addition to the flying rifle itself, the portable case can also contain spare parts and accessories necessary for the operation and maintenance of the rifle, which will be especially convenient for the shooter-operator in combat conditions.

It is advisable to create separate, mobile combat groups armed with flying rifles, acting in coordinated manner, having communication and common command among themselves. Such groups, moving at a distance from the line of hostilities and at any time of the day, will be able to destroy enemy manpower and equipment in the combat area and behind enemy lines, not giving the enemy peace and respite even at night, thereby helping and facilitating the work of their ground forces.

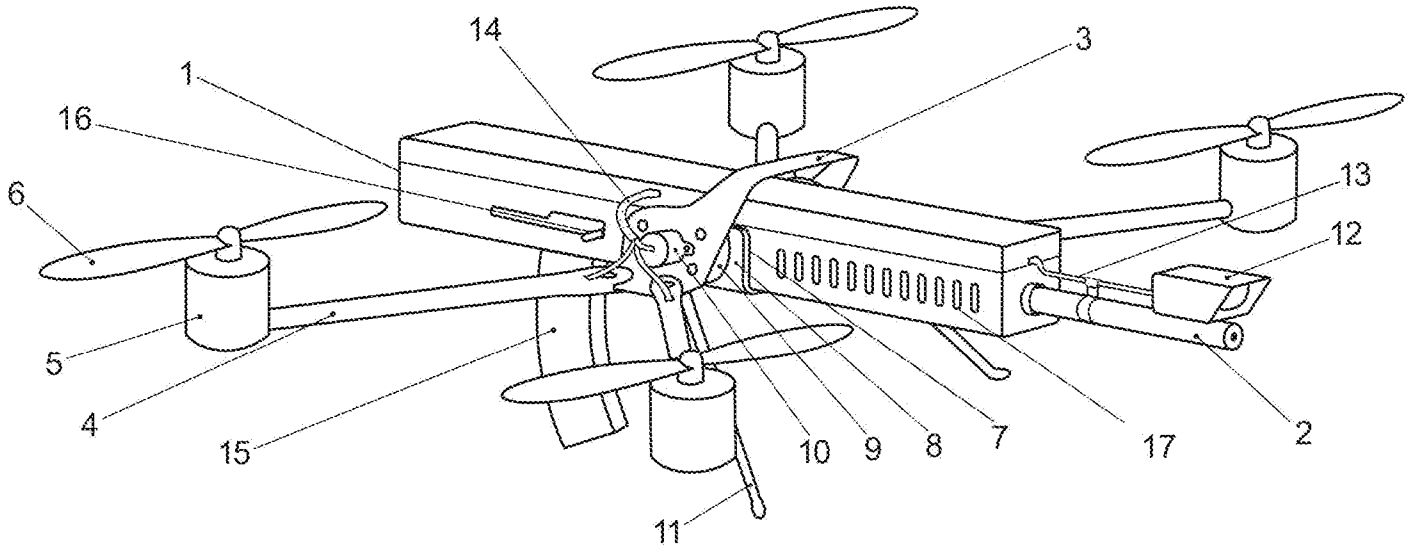
In addition to military operations, the flying rifle can also be used in local police and special operations, while guarding strategically important objects, military installations, and for other security purposes.

## **Patent Claims**

- 1.** A flying rifle, characterized in that it consists of a body, consisting of a frame on which engines are installed that provide lifting and movement of the rifle in the air, and the combat module, hinged to the frame, and in which the barrel, firing mechanisms, a set of cartridges, a battery, an electronic control unit and a video camera are located.
- 2.** A flying rifle, as described in claim 1, characterized in that it has a rotary mechanism that providing the rotation of the combat module in the direction up and down, parallel to the length of the body of the combat module and perpendicular to the axis of connection of the combat module with the frame.
- 3.** A flying rifle, as described in claim 1, characterized in that the video camera is mounted statically on the front part of the barrel.
- 4.** A flying rifle, as described in claim 1, characterized in that the video camera performs the functions of a sight of a flying rifle.
- 5.** A flying rifle, as described in claim 1, characterized in that the rifle is controlled remotely, using a remote control panel.
- 6.** A flying rifle, as described in claim 1, characterized in that the shot from the rifle is remotely triggered by a signal from the remote control panel of the rifle.
- 7.** A flying rifle, as described in claim 1, characterized in that it has an electric trigger.
- 8.** A flying rifle, as described in claim 1, characterized in that it has a recoil dampening mechanism when fired.
- 9.** A flying rifle, as described in claim 1, characterized in that the set of cartridges for the flying rifle is located in the magazine, which is detachably attached to the combat module of a flying rifle, from the outside of the combat module body.
- 10.** A flying rifle, as described in claim 1, characterized in that it may have a folding frame structure.

# Drawing

## FIG.1



## FIG.2

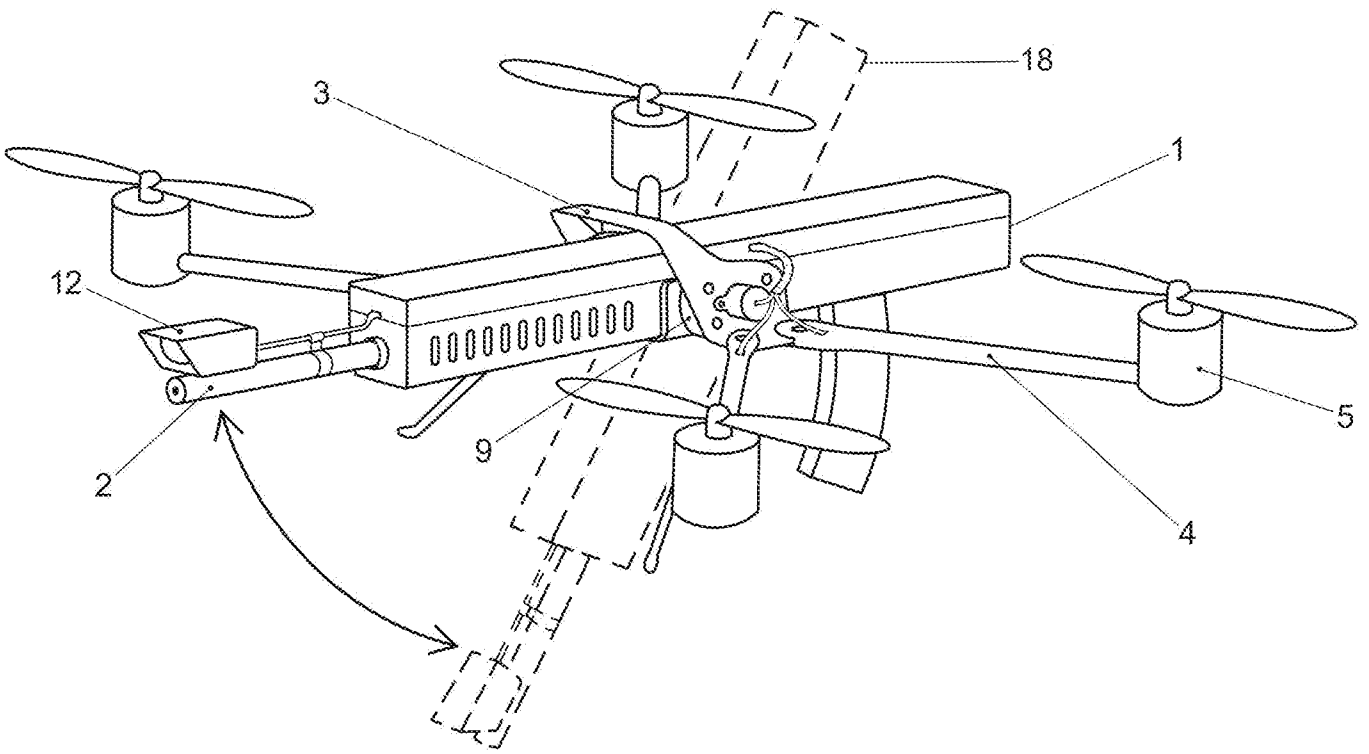


FIG.3

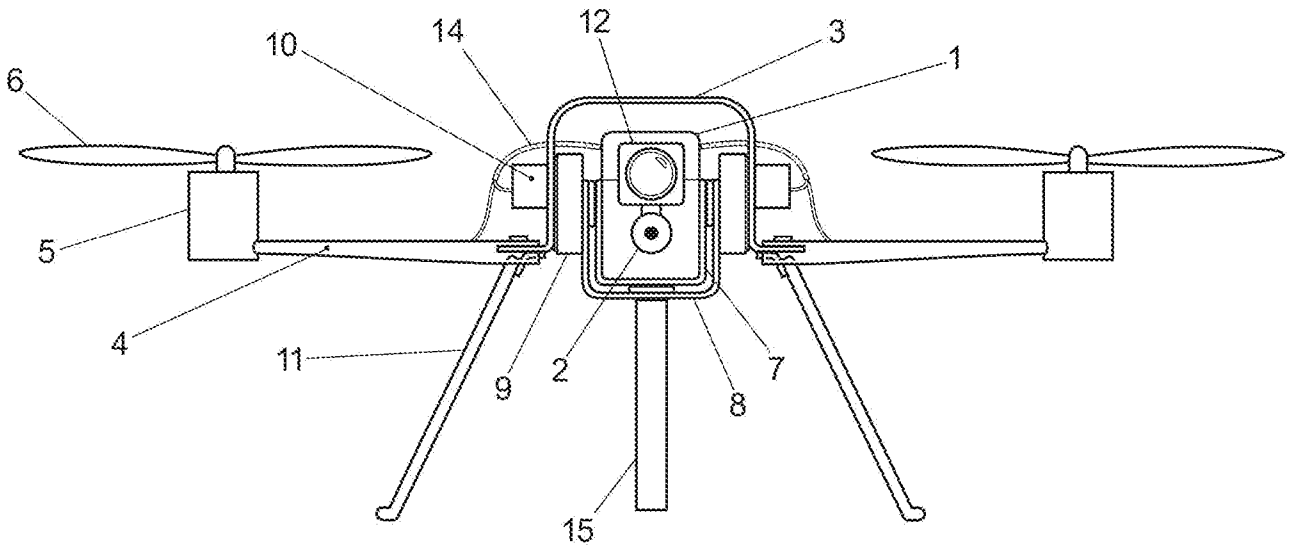


FIG.4

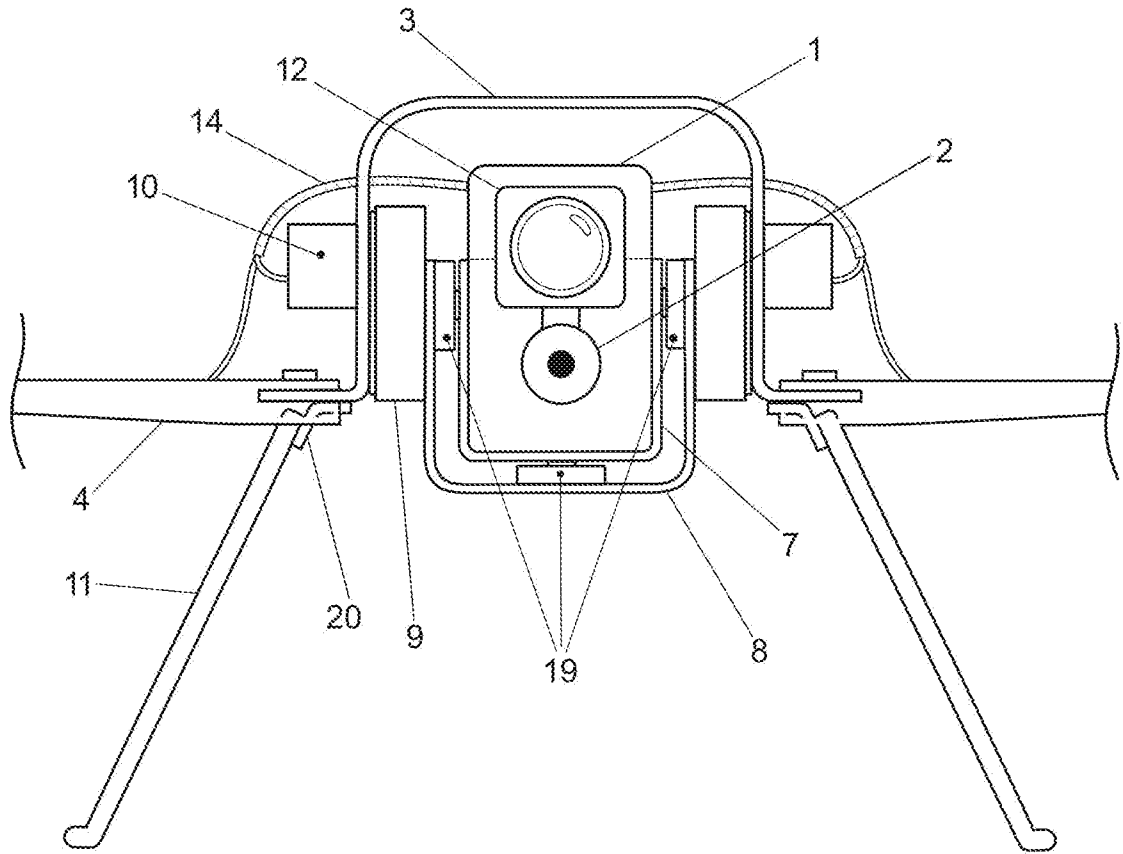
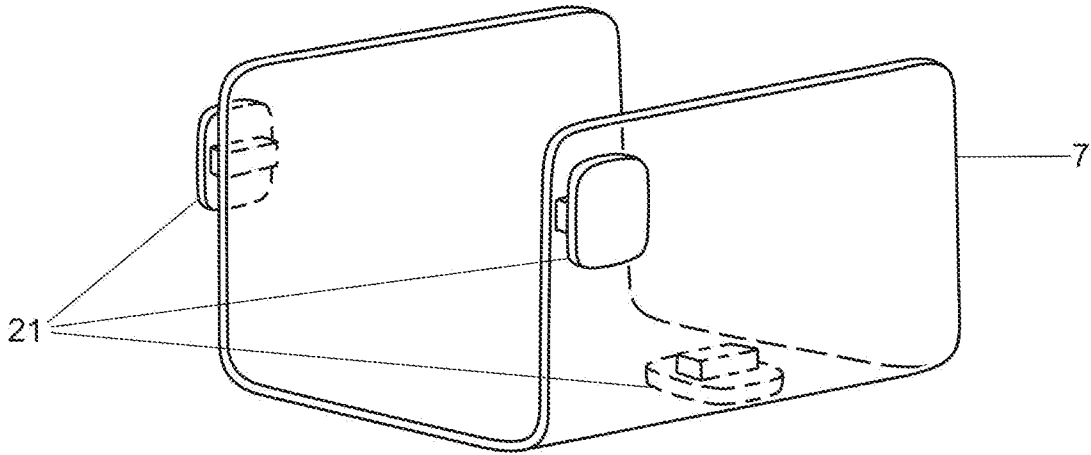


FIG.5

*a*



*b*

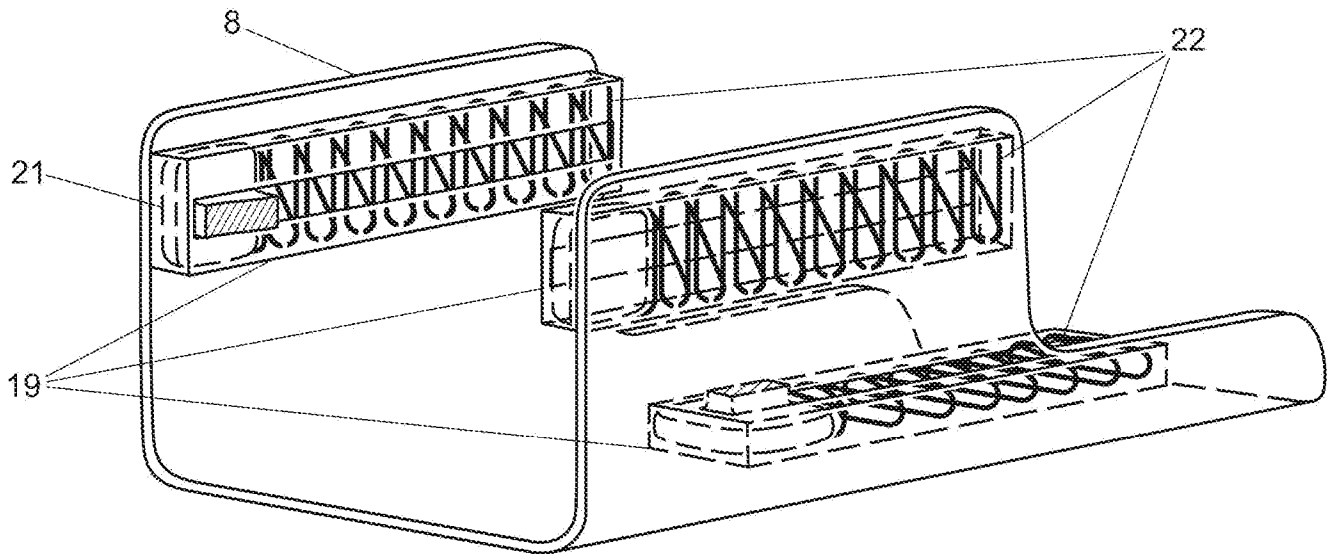
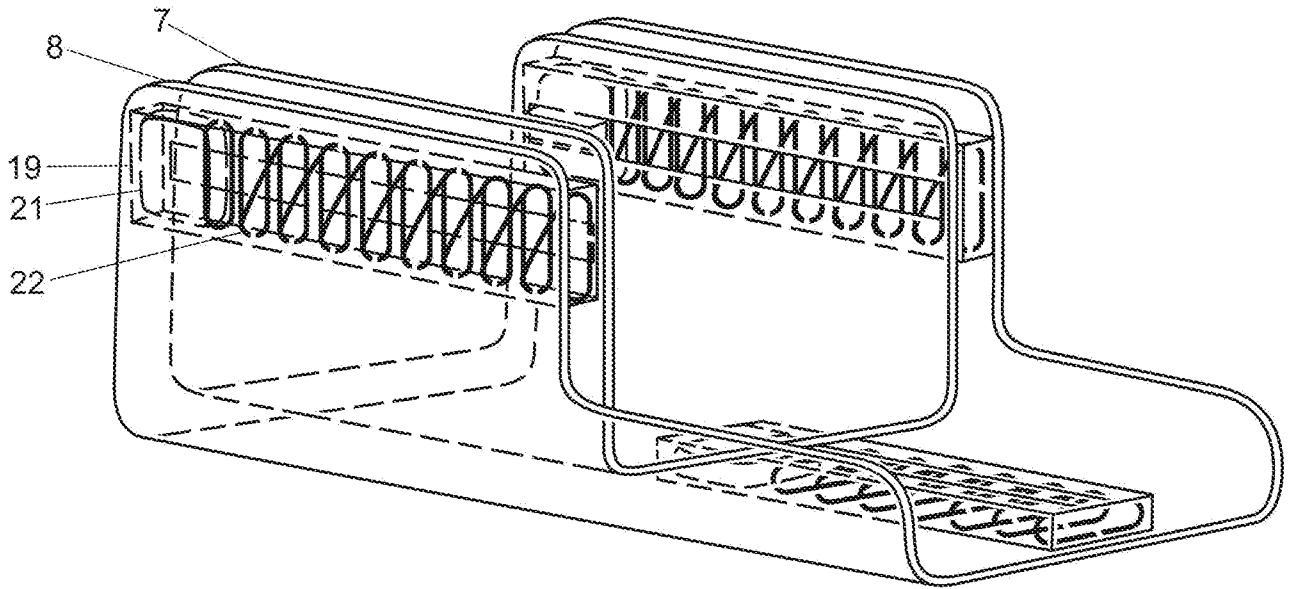


FIG.6

*a*



*b*

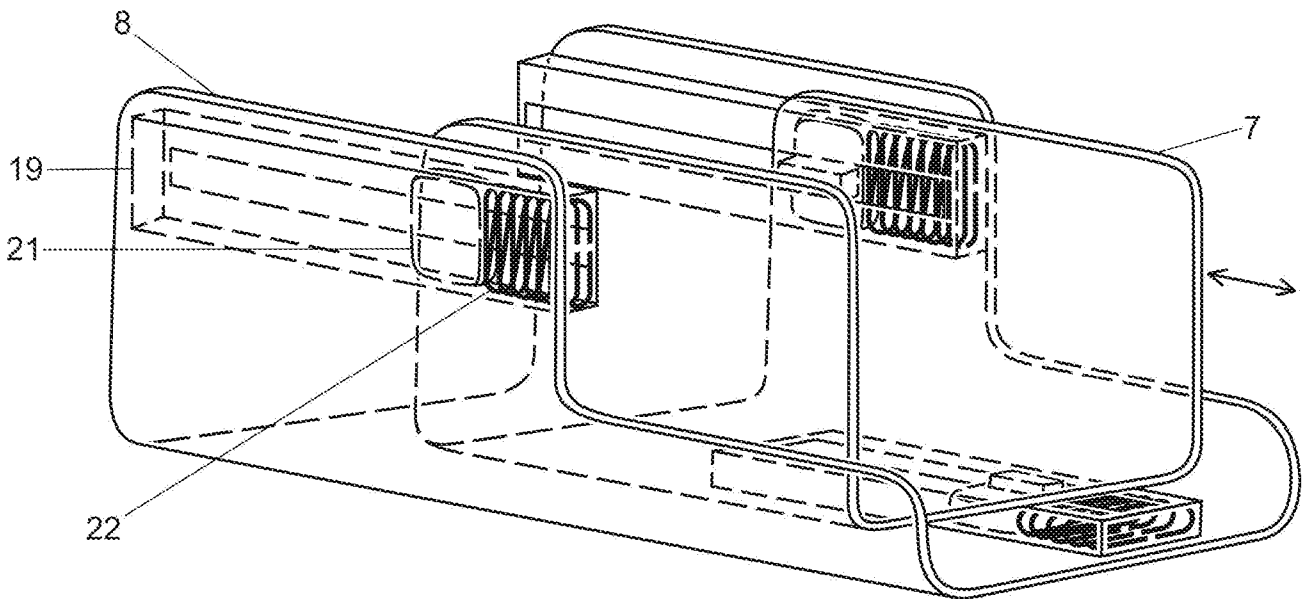


FIG.7

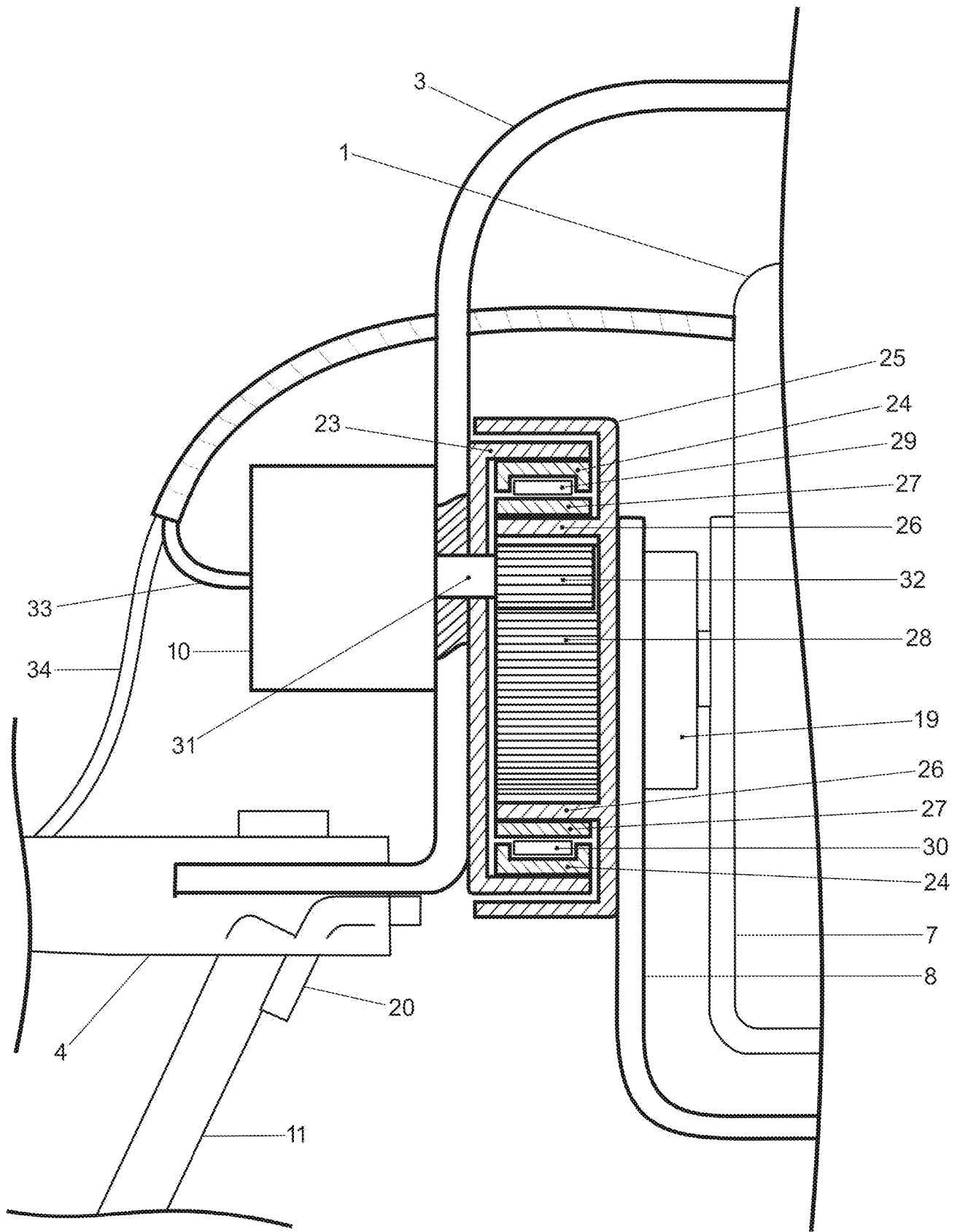


FIG.8

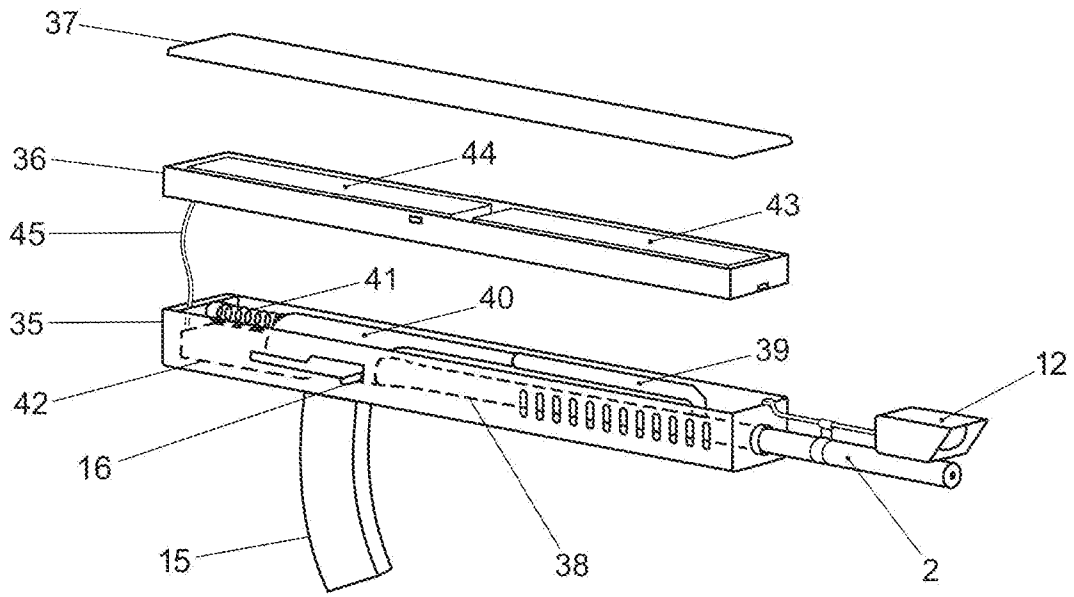


FIG.9

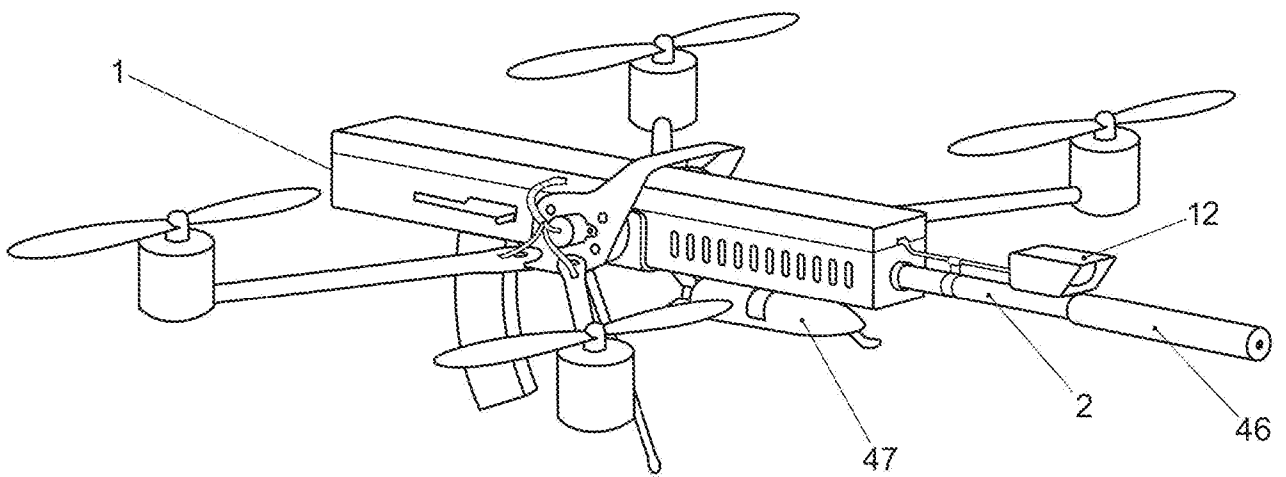


FIG.10

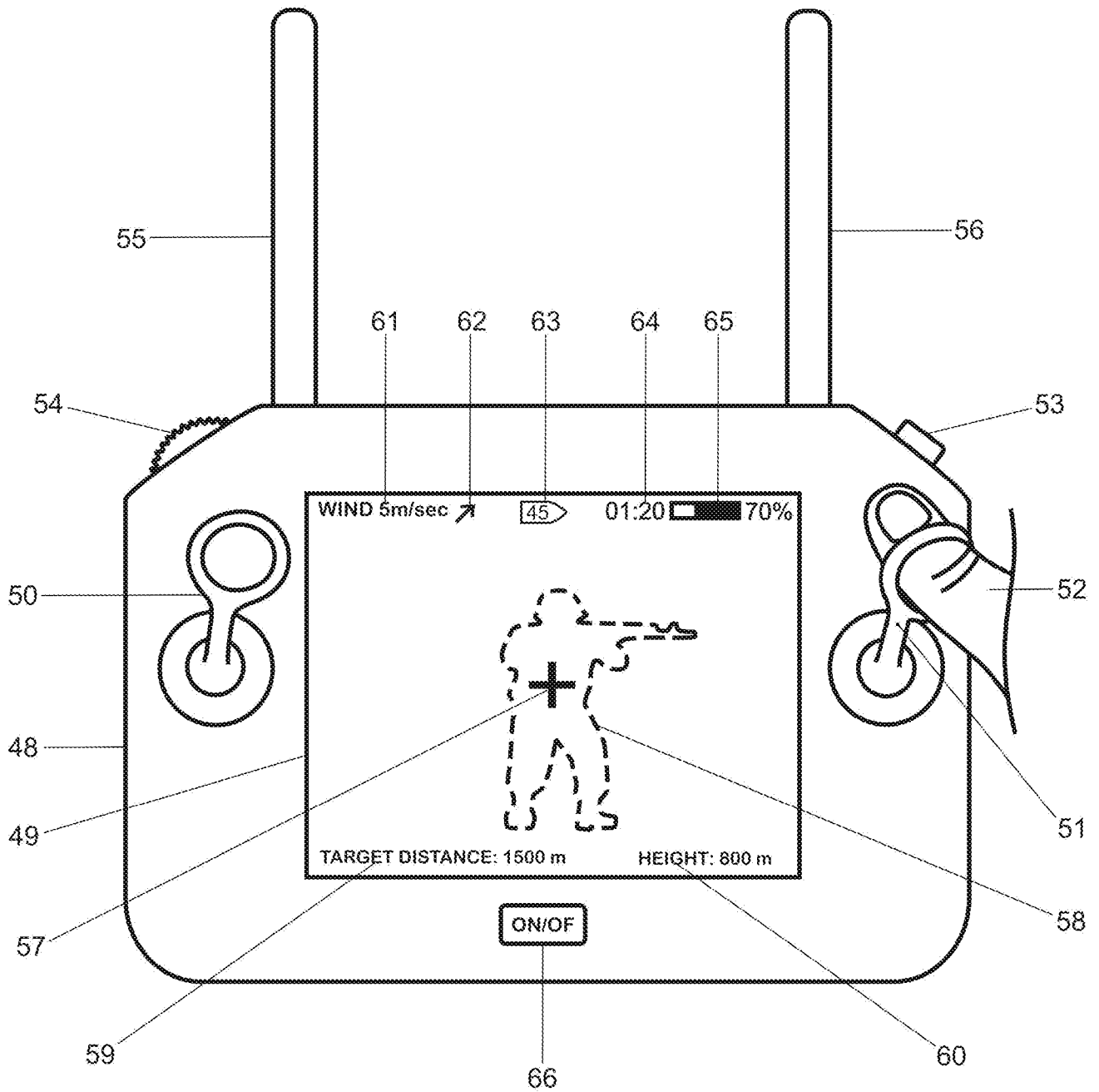
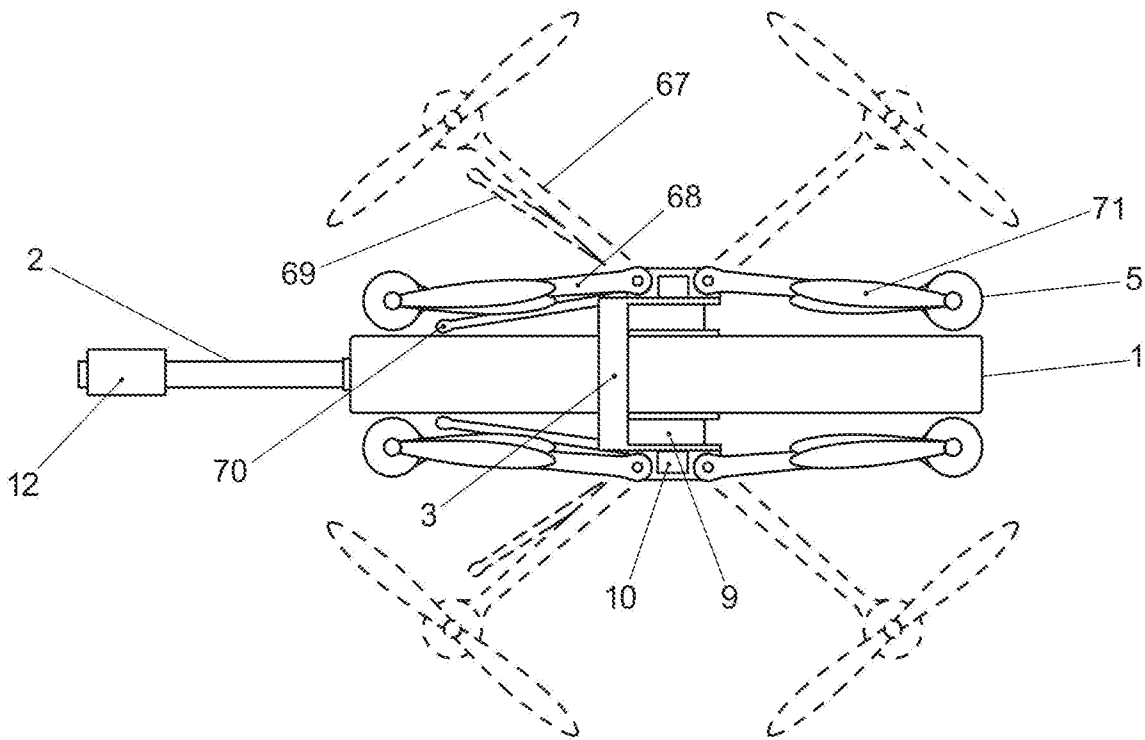


FIG.11

**a**



**b**

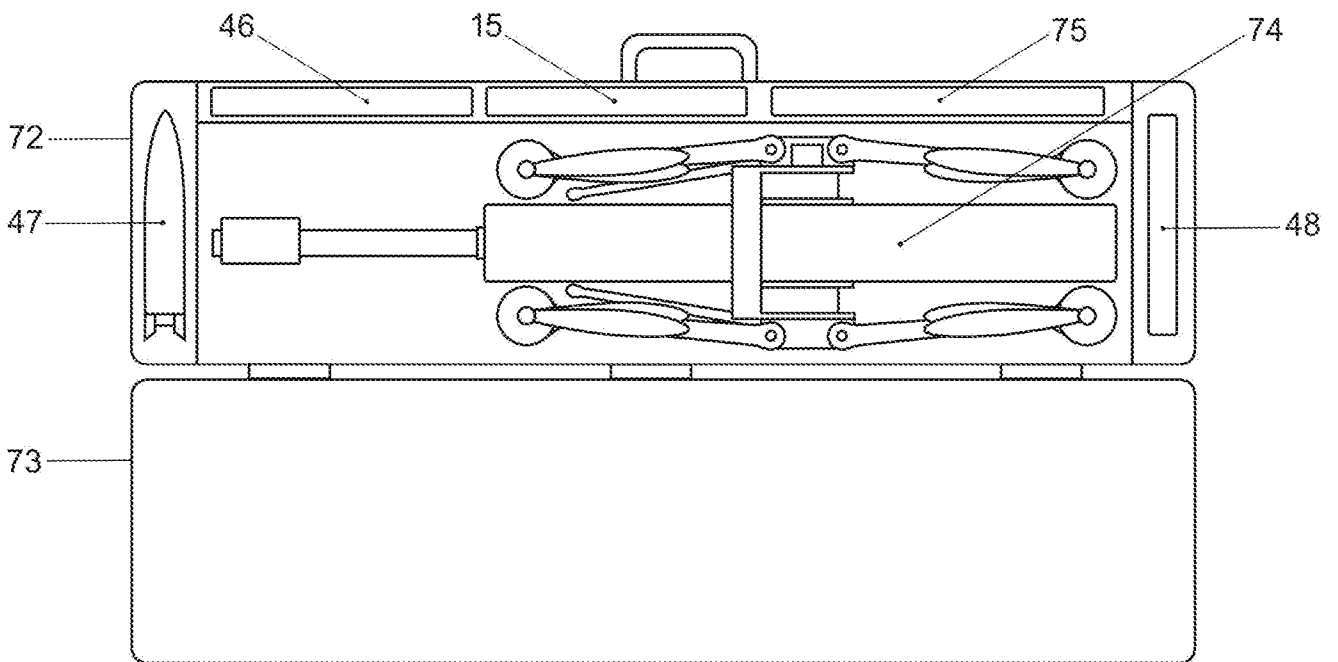


FIG.12

