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(54) **PROMPT DROP DEVICE FOR REMOTE CONTROL MODEL AIRPLANE AND REMOTE CONTROL MODEL AIRPLANE**

(57) A prompt drop device for a remote control model airplane comprises an airplane body (1) and a horizontal tail (3). A support (2) disposed on the airplane body (1) is used for supporting the front end of the horizontal tail (3). The front end (8) of the horizontal tail (3) is rotated under the binding of the support (2). A driving device is connected with the horizontal tail (3) and is used for lifting

the rear end of the horizontal tail (3). A remote control model airplane comprising the prompt drop device is provided with the movable horizontal tail (3) and controls the angle of the horizontal tail (3) during landing, so that vertical descending is realized, and damage during landing is avoided.

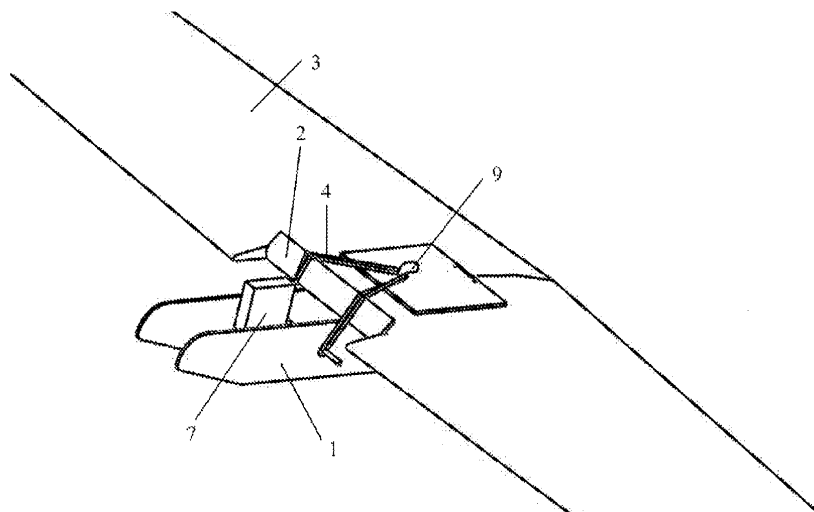


Figure 1

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Description

TECHNICAL FIELD

[0001] The present utility model relates to the field of remote control airplane models, in particular to a prompt drop device for a remote control model airplane and the remote control model airplane.

BACKGROUND ART

[0002] Remote control models (including aircraft models, car models and ship models) are being loved by more and more users at present, however, there has a certain difficulty in terms of remote control of the airplane models, and if the user has no enough experience to control the model to move in accordance with a reasonable manner, it will likely lead to damage of the models.

[0003] As to a model airplane, it is greatly difficult to operate the model to land. Because the flight height of the model is lower and lower during landing, an operator needs to correct in time according to the velocity, the height as well as wind speed and direction, or else it will likely lead that the model crashes to obstacles, flies out of a site or collides with the ground roughly. It is very easy for the model to have an accident during landing for newbies, and even for an operator having certain experiences, there has great difficulty in landing of the model as well in case of narrow regional space where the airplane model needs to land, and more obstacles.

[0004] An effective solution has not been proposed yet at present for the problems that the model is greatly difficult to be controlled remotely and easily damaged in related technologies.

SUMMARY OF THE INVENTION

[0005] The present utility model proposes a prompt drop device for a remote control model airplane and the remote control model airplane regarding the problems that the model is greatly difficult to be controlled remotely and easily damaged in related technologies, and the remote control model airplane can be landed to the ground in a nearly vertical descending trajectory in need of landing, so that the landing difficulty is reduced, the success rate of landing is improved, and damage of the airplane model owing to landing is avoided.

[0006] The technical solution of the present utility model is embodied by the follow technical solution:

According to the present utility model, a prompt drop device for a remote control model airplane is provided, comprising an airplane body and a horizontal tail. Wherein a support and a driving device are disposed on the airplane body, wherein the support is used for supporting the front end of the horizontal tail, the front end of the horizontal tail is rotated under the binding of the support, and in addition, the driving

device is connected to the horizontal tail and used for lifting the rear end of the horizontal tail.

[0007] On the one hand, the device can further comprise an operating mechanism and a locking pin both of which are disposed on the airplane body, wherein the locking pin stretches out or retracts back under the control of the operating mechanism, and the locking pin is inserted to a fixing portion of the horizontal tail under the condition that the locking pin is at a stretching state to lock the horizontal tail at a basically horizontal state, and the driving device is used for lifting the rear end of the horizontal tail under the condition that the fixing pin retracts back.

[0008] Additionally, the driving device comprises a tensile elastic component which is used for connecting a fulcrum disposed on the horizontal tail and the airplane body. Optionally, the tensile elastic component is a rubber band, and in addition, the tensile elastic component may be a spring.

[0009] On the one hand, the driving device may be a servo mechanism which is connected to the horizontal tail 3 and drives the front end of the horizontal tail 3 to rotate under the binding of the support.

[0010] In addition, the device can further comprise an elevator and a steering engine for manipulating the elevator, wherein the elevator is connected with the horizontal tail, and the steering engine is mounted on the horizontal tail and rotates together with the horizontal tail.

[0011] According to the present utility model, a remote control model airplane is also provided, and the remote control model airplane comprises the prompt drop device for the remote control model airplane.

[0012] According to the present utility model, the movable horizontal tail is configured, so that the angle of the horizontal tail can be controlled in need of landing and the model can be landed in a nearly vertical descending trajectory, so that the falling difficulty is reduced, the success rate of landing is improved, and damage of the airplane model owing to landing is avoided.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] Accompanying drawings that need to be used in description of the embodiments will be briefly introduced below in order to illustrate the embodiments of the present utility model and the technical solution of the existing technology clearly, and it is apparent for those common skilled in the art that the accompany drawings described as below are just some embodiments of the present utility model and other accompany drawings can be acquired on the basis of those accompany drawings on the premise of not paying creative work.

FIG. 1 and FIG. 2 are structural schematic diagrams of the tail portion of the flight model airplane according to the first embodiment of the present utility model;

FIG. 3 is a schematic diagram when the rear end of the horizontal tail of the flight model airplane according to the first embodiment of the present utility model is lifted;

FIG. 4 is a structural diagram when the tail portion of the flight model airplane according to the first embodiment of the present utility model is not equipped with the horizontal tail;

FIG. 5 is a structural schematic diagram of the horizontal tail according to the first embodiment of the present utility model;

FIG. 6 is a structural schematic diagram of the tail portion of the flight model airplane according to the second embodiment of the present utility model;

FIG. 7 is a schematic diagram when the horizontal tail of the flight model airplane according to the second embodiment of the present utility model is lifted;

FIG. 8 and FIG. 9 are structural schematic diagrams of the tail portion of the flight model airplane according to the third embodiment of the present utility model;

FIG. 10 is a structural schematic diagram when the horizontal tail on the tail portion of the flight model airplane according to the third embodiment of the present utility model is separated from the support;

FIG. 11 is a structural schematic diagram of the horizontal tail according to the third embodiment of the present utility model;

FIG. 12 is a structural schematic diagram of the support according to the third embodiment of the present utility model.

FIG. 13 is a structural schematic diagram after the horizontal tail on the tail portion of the flight model airplane according to the third embodiment of the present utility model is lifted.

DETAILED DESCRIPTIONS OF THE PREFERRED EMBODIMENTS

[0014] The technical solution in the embodiments of the present utility model will be described clearly and completely below in conjunction with the attached drawings in the embodiments of the present utility model. Obviously, the described embodiments are just a part of embodiments of the present utility model, rather than all of the embodiments. On the basis of the embodiments in the present utility model, all the other embodiments, made by common technical skilled in the art, fall into the protection scope of the present utility model.

[0015] According to the present utility model, a prompt drop device for a remote control model airplane is provided. In the following description, components less associated with the present utility model are omitted, and just are related components, such as the horizontal tail of the prompt drop device of the remote control model airplane emphatically described.

[0016] As shown in FIG. 1, the prompt drop device for the remote control model airplane according to the

present utility model comprises an airplane body 1 and a horizontal tail 3, wherein the front end 8 of the horizontal tail 3 is fixed on the airplane body 1, for example, is fixed through a support 2 which plays a role of supporting the horizontal tail 3, and in addition, the front end 8 (the shape of the front end 8 of the horizontal tail in the first embodiment is as shown in FIG. 5) of the horizontal tail 3 is rotated under the binding of the support 2.

[0017] By reference to FIG. 1 to FIG. 5, the prompt drop for the remote control model airplane according to the first embodiment of the present utility model further comprises an operating mechanism 7, a locking pin 5 (the locking pin 5 is as shown in FIG. 2 and may be a locking needle), a fixing portion 6 and a driving device, wherein the operating mechanism 7 and the locking pin 5 are disposed on the airplane body 1, the locking pin 5 stretches out or retracts back under the control of the operating mechanism 7, and the locking pin 5 is inserted into the fixing portion 6 of the horizontal tail 3 (the condition when the locking pin 5 is inserted into the fixing portion 6 is as shown in FIG. 2) under the condition that the locking pin 5 is at a stretching state to fix the horizontal tail 3 to be at an approximately horizontal state.

[0018] The driving device is used for lifting the rear end of the horizontal tail 3 under the condition that the fixing pin 5 retracts back, wherein by reference to FIG. 1, the driving device is disposed on the airplane body 1 and may be a tensile elastic component 4 which is used for connecting a fulcrum 9 (the fulcrum 9 which can be of other shapes such as a ring, except for a hook is as shown in FIG. 1 and FIG. 5) disposed on the horizontal tail 3 with the airplane body 1, one end of the tensile elastic component 4 is fixed on one side of the airplane body 1, and the other end of the tensile elastic component 4 penetrates through the fulcrum 9 and is fixed on the other side of the airplane body 1. Optionally, the tensile elastic component 4 is a rubber band, and can also be a tensile spring.

[0019] As shown in FIG. 3, the tensile elastic component 4 can apply a tensile force towards the airplane body 1 to the fulcrum 9, and therefore the rear end of the horizontal tail 3 will upwarp under the action of the tensile force. When the remote control model airplane with the prompt drop device flies, the upwarping horizontal tail can effectively reduce the advancing velocity of the remote control model airplane and ensure that the model can be landed in a nearly vertical trajectory, thus being conducive to realizing safe landing and preventing the model from being crashed.

[0020] As shown in FIG. 5, an arc-shaped surface 8 is provided on a position where the front end of the horizontal tail 3 is in contact with the support 2, and in addition, in order to limit a horizontal position of the horizontal tail 3, the horizontal tail 3 can be provided with a groove for fixing with the support 2. In addition, as shown in FIG. 5, the fixing portion 6 is a lock catch (shaped as a lantern ring) which droops towards the lower side of the horizontal tail 3 and is used for accumulating the locking pin 5.

[0021] Therefore, when the remote control model airplane, equipped with the prompt drop device, provided by the present utility model flies normally, the horizontal tail 3 is horizontal basically (the angle difference between the horizontal tail and the horizontal surface is relatively small (for example, the angle difference with the horizontal surface is 2 degrees), and a proper mounting angle difference (the angle difference is not too large generally, and for example, may be about 2 degrees) exists between the horizontal tail 3 and each wing), so that the lift force, the stability and the maneuverability of the model airplane can be ensured. If the mounting angle difference is allowed to be far beyond this range, for example, the horizontal tail becomes -30 degrees on the original position, so the mounting angle difference between the wing and the horizontal tail is far beyond the normal range, and thus the aerodynamic state of the whole model is completely changed, the wings fail to generate a lift force, and the model vertically descends from the original flying forwards. Therefore the purpose of prompt drop is achieved.

[0022] Therefore, the horizontal tail (together with an elevator) has two working states, namely a normal flying state under which the mounting angle of the horizontal tail is 0 degree basically, the mounting angle of the wing is about 2 degrees generally, and the difference between the horizontal tail and the wing is about 2 degrees; and a prompt state under which the mounting angle of the horizontal tail 3 suddenly becomes dozens of degrees minus (for example, may be about -35 degrees, -40 degrees), the mounting angle difference between the horizontal tail and the wing is very large, and the whole airplane enters a prompt drop state. In order to realize said requirements, a support 2 is provided on the airplane 1 and used for supporting the horizontal tail 3 and is allowed to be rotated to change the mounting angle. After the horizontal tail 3 is mounted on the support, the airplane body 1 is tensioned by means of an elastic wire 4, and the horizontal tail 3 undergoes an upward force under the action of the elastic wire 4 and upwarps if case of no binding to present a large minus mounting angle. A locking needle 5 extends out from the airplane body 1 during normal flight and is used for locking the fixing portion (a lock catch) 6 of the horizontal tail, so that the horizontal tail 3 is kept at a horizontal state; and once the locking needle 5 retracts back to the airplane body 1, the fixing portion (the lock catch) 6 of the horizontal tail 3 loses binding, and the horizontal tail 3 upwarps fast under the action of the elastic wire to enter a prompt drop state.

[0023] Therefore, when the remote control model airplane equipped with the prompt drop device flies normally, the locking pin (the locking needle) 5 is at a stretching state and is inserted into the fixing portion (the lock catch) 6 to fix the horizontal tail at a horizontal state. When the prompt drop device for the remote control model airplane receives a prompt drop instruction, the operating mechanism 7 will retract the locking pin back in response to this instruction, and because the front end of the horizon-

tal tail 3 is limited in the support 2 and can be rotated, the fixing portion (the lock catch) 6 loses the binding of the locking pin 5 under the tensile force action of the tensile elastic component 4, the rear end of the horizontal tail 3 will be lift, and the remote control model airplane equipped with the prompt drop device enters a prompt drop state.

[0024] It should be noticed that the contents described above are just the specific embodiment of the present utility model, and the prompt drop device of the remote control model airplane of the present utility model is not limited to the structure as shown in FIGS. For example, the arc-shaped surface 8 on the front end of the horizontal tail 3 can be realized by a circular rod or a circular pipe, and can also be a ridge having a very small circular arc radius. The fixing portion (the lock catch) 6 can also be of other shapes, except for a lantern ring as long as it can be locked and released. In an embodiment (not shown), the driving device may be a compression spring, wherein one end of the compression ring is fixed to the airplane body 1 and the other end of the compression spring is fixed to the rear end of the horizontal tail 3; and the compression spring can apply an elastic force to jack the rear end of the horizontal tail 3 up under the condition that the locking pin 5 retracts back. Furthermore, the tensile elastic component 4 can be fixed with the airplane body 1 and the horizontal tail 3 in other ways, and thus playing a role of pulling the horizontal tail to lift the rear end.

[0025] It should be noticed that the elevator and a steering engine which are connected with the horizontal tail are not shown in the first embodiment, and actually, in the first embodiment, the horizontal tail should be connected with the elevator as well, and the steering engine should be also mounted on the remote control model airplane. The connection condition of the elevator, the steering engine and the horizontal tail is as shown in the second embodiment and the third embodiment to be described.

[0026] According to the second embodiment of the present utility model, a driving device 14 as a servo mechanism can apply a moment to the front end of the horizontal tail 3 (as shown in FIG. 6 and FIG. 7), the moment is applied to a protruding portion 10 below the front end 8 of the horizontal tail 3 (as shown in FIG. 7) and can be integrally formed with the front end of the horizontal tail 3, and therefore the rear end of the protruding portion can be lifted by rotating the horizontal tail 3. Therefore, under the driving of the driving device 14, the horizontal tail 3 can remain multiple mounting angles, and thus two, even more manipulation modes and prompt drop modes can be realized. In this embodiment, the locking pin 5, the lock catch 6, the fulcrum 9 and the like can be omitted. In this embodiment, the mounting angle of the horizontal tail under a horizontal state can meet said requirements as well.

[0027] In the third embodiment according to the present utility model, a horizontal tail 3, a locking pin 5,

a fixing portion 6, an operating mechanism 7 and the airplane body 1 are similar to the corresponding structures in the first embodiment. As shown in FIG. 8 and FIG. 9, differing from the first embodiment and the second embodiment, a tensile spring 4 is adopted to provide the tensile force in this embodiment, wherein one end of the spring 4 is fixed on the airplane body 1, and the other end of the spring 4 is fixed to a fulcrum 9 of the horizontal tail. In addition, an elevator 12 and a steering engine 11 are further shown in this embodiment. By reference to FIG. 8 and FIG. 9, the elevator 12 is connected to the rear end of the horizontal tail 3 and can form multiple angles with the horizontal tail 3 under the control of the steering engine 11, and in addition, the steering engine 11 for manipulating the elevator is mounted on the horizontal tail 3 and moves along with the horizontal tail 3. Additionally, the fixing portion 6 is positioned on the rear end of the horizontal tail 3 and is present as a drooping porous plate.

[0028] By reference to FIG. 10 and FIG. 11, a portion where the horizontal tail 3 and the support 2 in the prompt drop device for the remote control model airplane according to the third embodiment of the present utility model contact is a circular pipe, so as to facilitate the horizontal tail 3 to rotate under the binding of the support 2.

[0029] By reference to FIG. 12, a part of the airplane body 1 is shown, wherein the airplane body 1 near the support 2 is emphatically shown in FIG. 12. The cross section of the support 2 takes the shape of a circular arc an opening of which is used for accommodating the front end (the circular pipe 8) of the horizontal tail 3 (as shown in FIG. 12), and in addition, the airplane body 1 is equipped with an annular bulge 13 for fixing a spring 4.

[0030] FIG. 13 is the schematic diagram when the rear end of the horizontal tail 3 of the prompt drop device of the remote control model airplane according to the third embodiment of the present utility model is lifted. As shown in FIG. 13, the locking pin 5 retracts back, the fixing (pin) portion (the lock catch) 6 is unlocked, and the elevator 12 and the steering engine 11 are lifted as well under the condition that the rear end of the horizontal tail 3 is lifted under the tensile force action of the tensile spring 4 on the rear end of the horizontal tail 3.

[0031] It should be noticed that the contents described above are just specific embodiments of the present utility model, the prompt drop device for the remote control model airplane according to the present utility model also has the capability of locking the horizontal tail to a horizontal state and then unlocking in other ways, and in addition, the rear end of the horizontal tail can be lifted in other ways. There is no need to enumerate here.

[0032] From the above, According to the prompt drop device for the remote control model airplane of the present utility model, a very large minus mounting angle of the horizontal tail is generated in need of prompt drop by utilizing the angle change of the horizontal tail, so that the aerodynamic performance of the whole model changes obviously, namely both wings for generating the lift

force and the tail for keeping balanced originally generate resistance to enable the model to descend in a nearly vertical manner at a steady state, so that complex and accurate judgments, needing to be made by an operator, when the remote control model airplane is landed, are avoided and no broad landing site is needed, and therefore the landing difficulty is reduced and the efficiency in the landing process is also improved.

[0033] The embodiments as stated above are just preferred embodiments of the present utility model but do not limit the present utility model. All amendments, equivalent substitutions, improvements and the like, without departing from the spirit and the principle of the present utility model, should fall into the protection scope of the present utility model.

Claims

1. A prompt drop device for a remote control model airplane, comprising an airplane body (1) and a horizontal tail (3), wherein a support (2) and a driving device are disposed on the airplane body (1), the support (2) is used for supporting the front end (8) of the horizontal tail (3), the front end (8) of the horizontal tail (3) is rotated under the binding of the support (2), and the driving device is connected with the horizontal tail (3) and is used for lifting the rear end of the horizontal tail (3).
2. The prompt drop device for the remote control model airplane according to Claim 1, further comprising an operating mechanism (7) and a locking pin (5) both of which are disposed on the airplane body (1), wherein the locking pin (5) stretches out or retracts back under the control of the operating mechanism (7), and the locking pin (5) is inserted to a fixing portion (6) of the horizontal tail (3) under the condition that the locking pin (5) is at a stretching state to lock the horizontal tail (3) at a basically horizontal state, and the driving device is used for lifting the rear end of the horizontal tail (3) under the condition that the fixing pin (5) retracts back.
3. The prompt drop device for the remote control model airplane according to Claim 1, wherein the driving device comprises a tensile elastic component (4) which is used for connecting a fulcrum (9) disposed on the horizontal tail (3) with the airplane body (1).
4. The prompt drop device for the remote control model airplane according to Claim 3, wherein the tensile elastic component (4) is a rubber band.
5. The prompt drop device for the remote control model airplane according to Claim 3, wherein the tensile elastic component (4) is a spring.

6. The prompt drop device for the remote control model airplane according to Claim 1, wherein the driving device is a servo mechanism which is connected to the horizontal tail 3 and drives the horizontal tail 3 to rotate. 5
7. The prompt drop device for the remote control model airplane according to Claim 1, further comprising an elevator (12) and a steering engine (11) for manipulating the elevator (12), the elevator (12) is connected with the horizontal tail (3), and the steering engine (11) is mounted on the horizontal tail (3) and rotates along with the horizontal tail. 10
8. A remote control model airplane, comprising the prompt drop device for the remote control model airplane according to any one of Claims 1 to 7. 15

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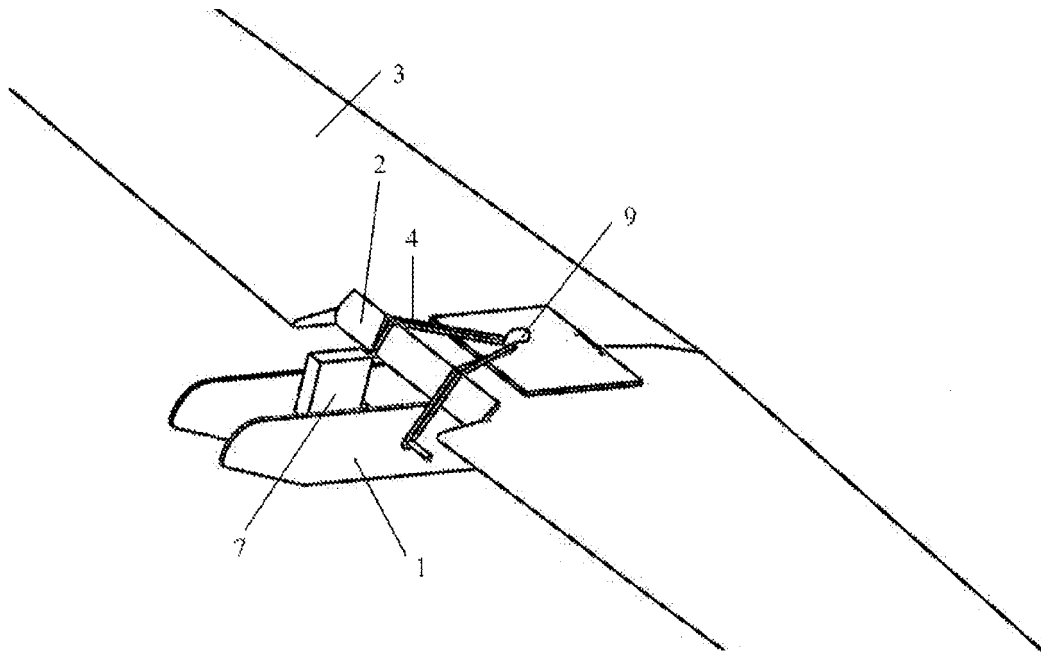


Figure 1

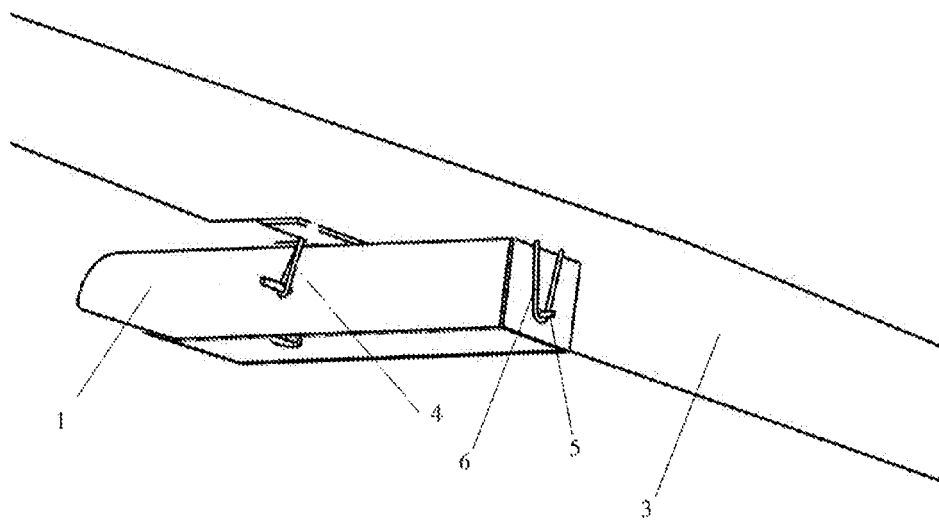


Figure 2

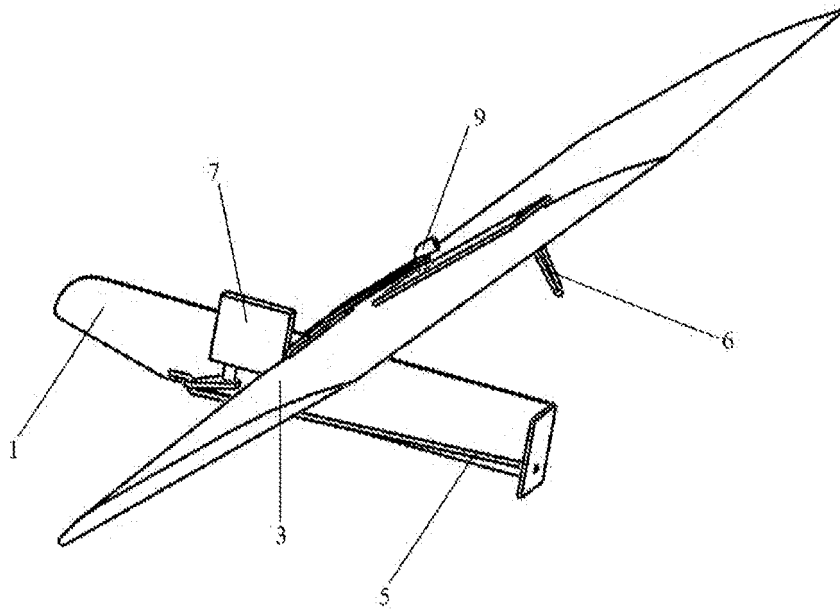


Figure 3

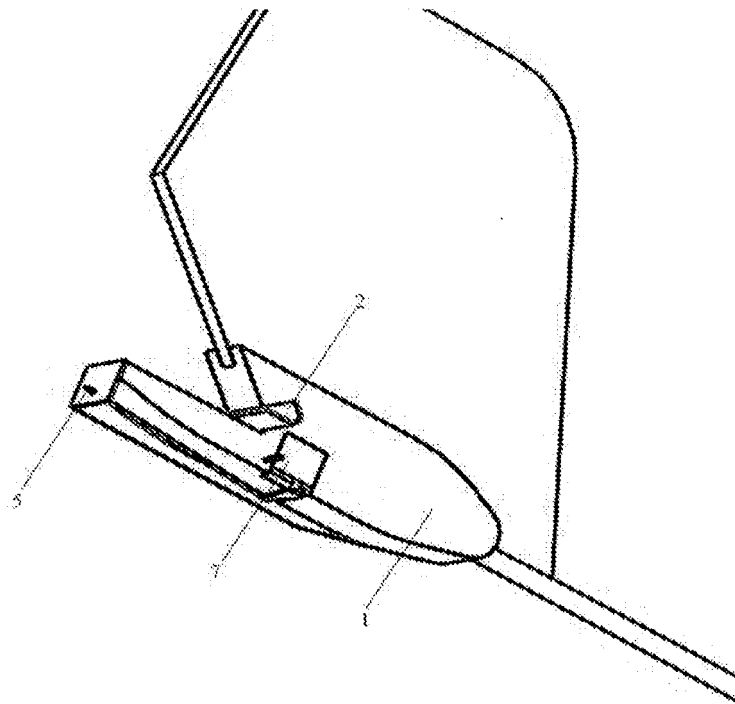


Figure 4

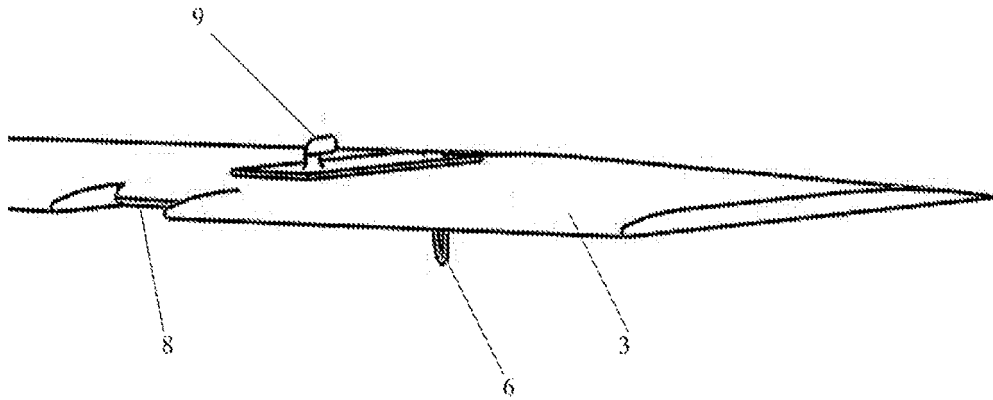


Figure 5

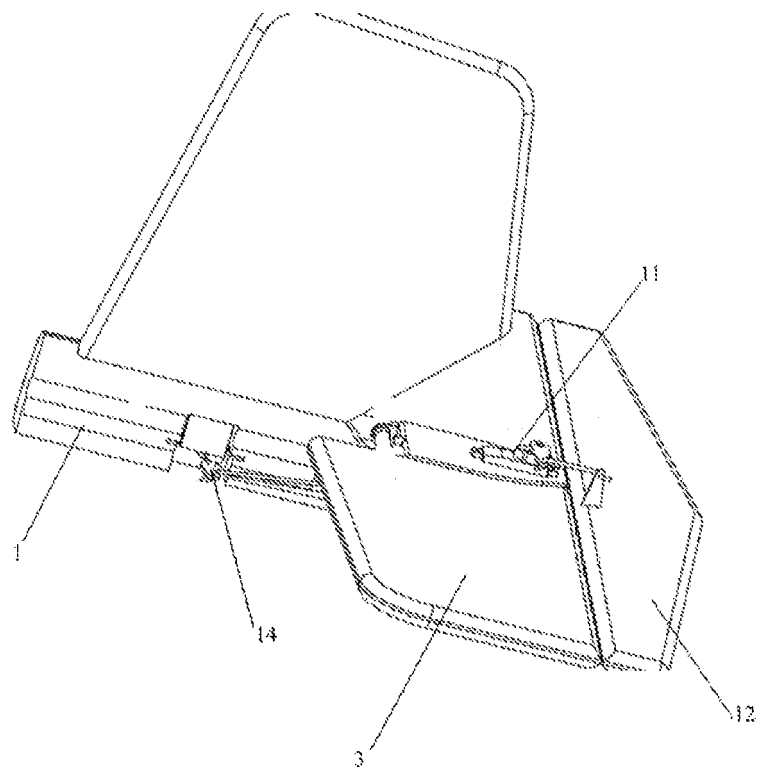


Figure 6

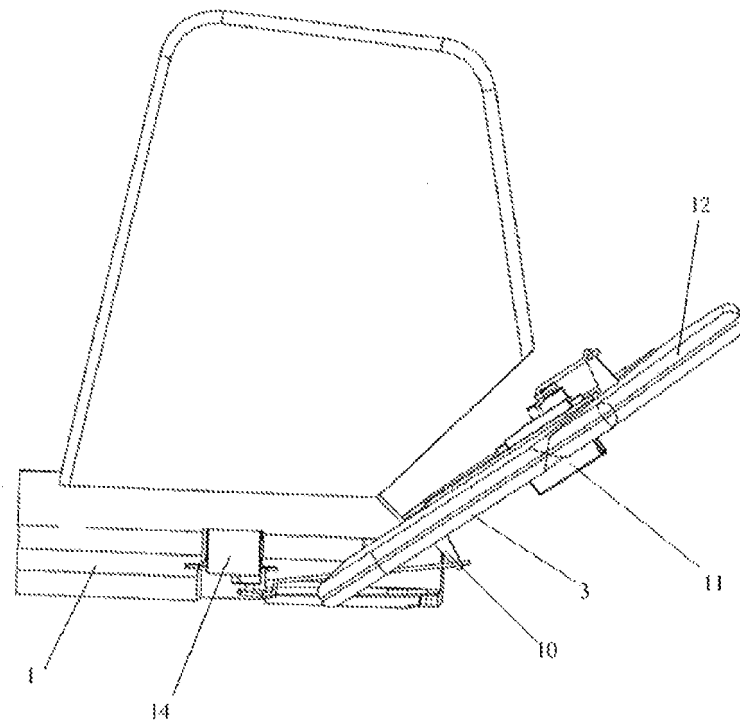


Figure 7

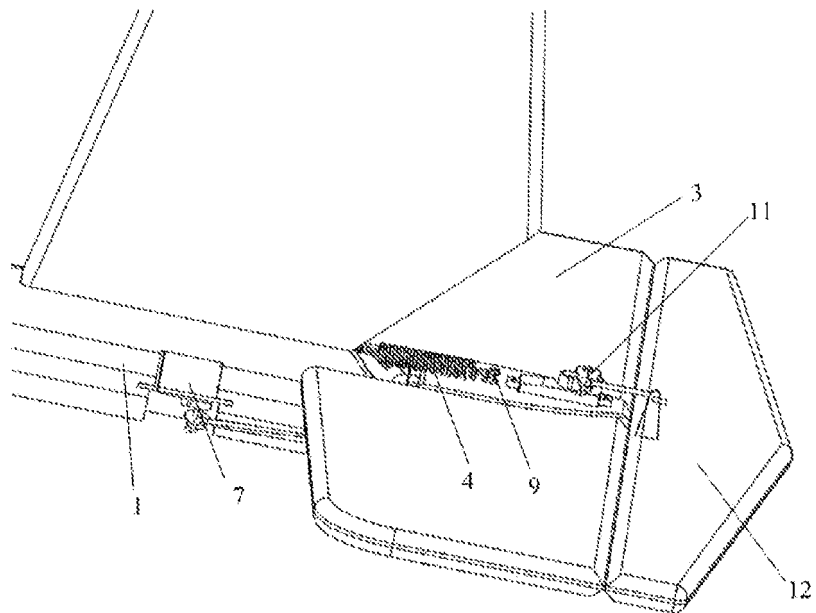


Figure 8

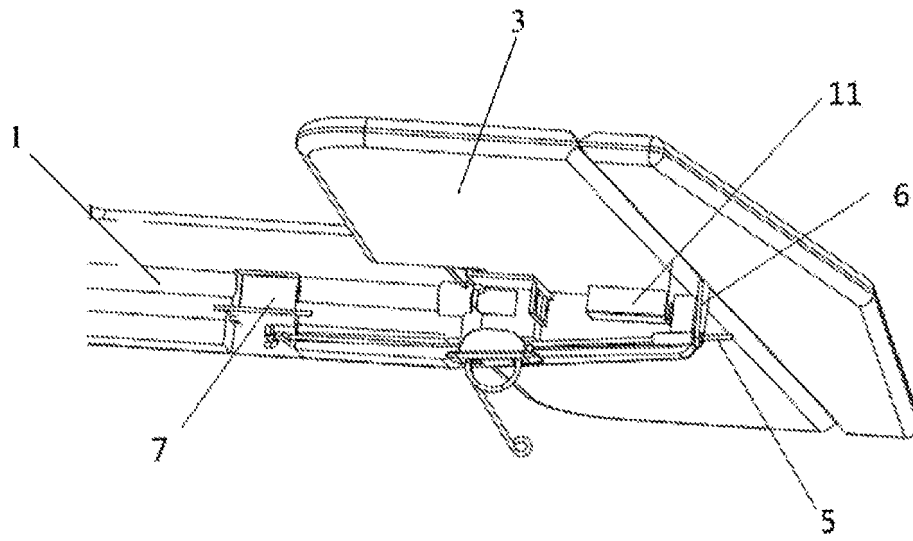


Figure 9

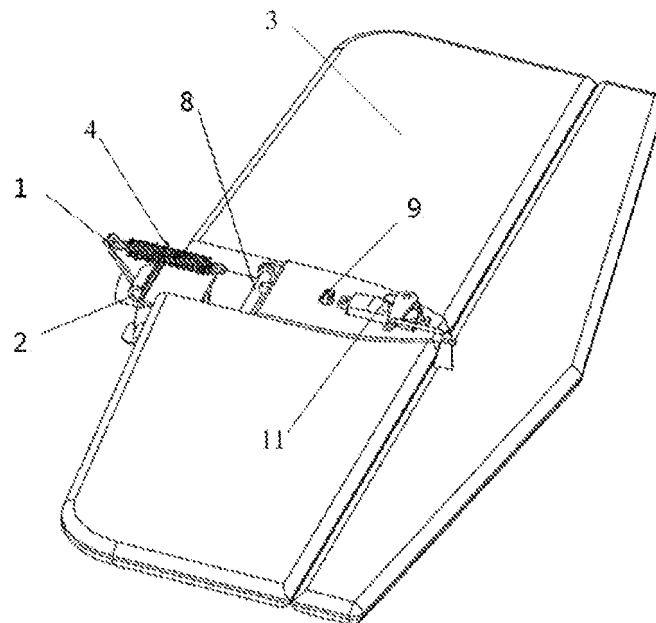


Figure 10

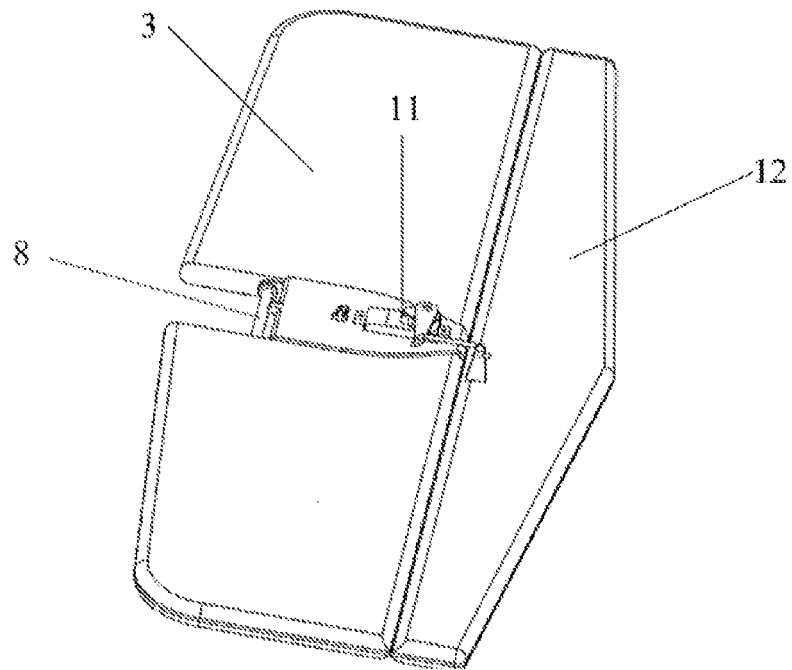


Figure 11

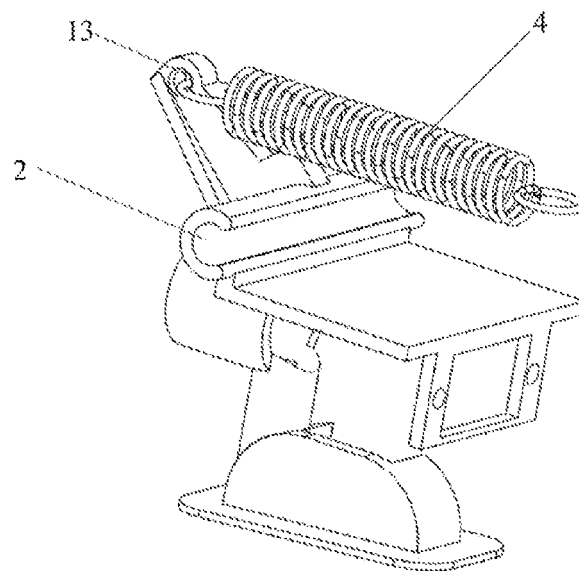


Figure 12

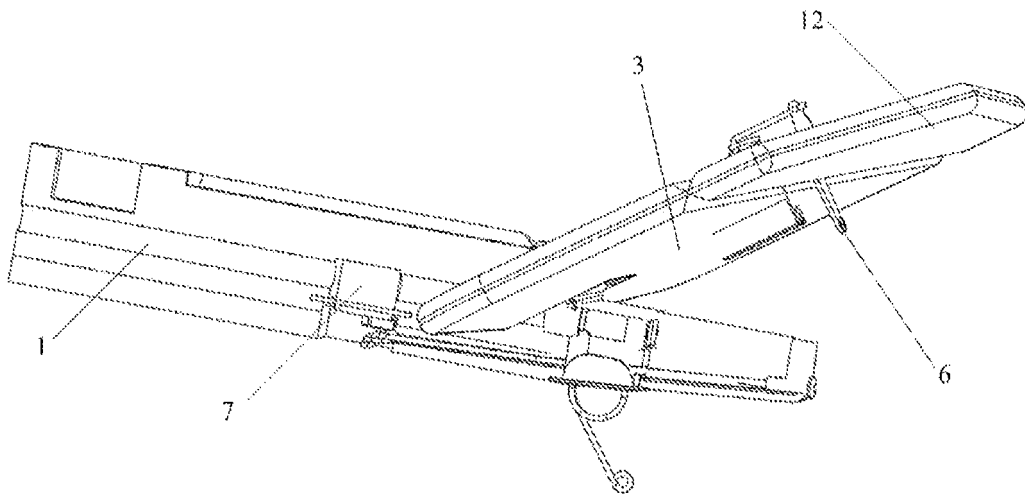


Figure 13

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2014/075678

A. CLASSIFICATION OF SUBJECT MATTER

A63H 27/22 (2006.01) 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)

A63H 27

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

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

CNTXT, CNKI, EPODOC, WPI: rotate, turn, invert, landing, tail, rear, surface, fin, prompt drop, landing

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 203329362 U (SHANGHAI NINE EAGLES ELECTRONIC TECHNOLOGY CO LTD) 11 December 2013 (11.12.2013) claims 1-8	1-8
X	CN 2754693 Y (CAI, Dongqing) 01 February 2006 (01.02.2006) description, page 1, line 6 to page 4, line 7 and figures 1-3	1, 8
Y	CN 2754693 Y (CAI, Dongqing) 01 February 2006 (01.02.2006) description, page 1, line 6 to page 4, line 7 and figures 1-3	2-7
Y	CN 1750860 A (NEUROS CO LTD) 22 March 2006 (22.03.2006) description, page 4, lines 4-6	2-7

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

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 20 June 2014	Date of mailing of the international search report 18 July 2014
Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451	Authorized officer YANG, Fei Telephone No. (86-10) 62084199

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2014/075678

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 201235225 Y (HUANG, Yewen) 13 May 2009 (13.05.2009) the whole document	1-8
A	CN 2431026 Y (HELANG ELECTRONIC CO LTD SHANG) 23 May 2001 (23.05.2001) the whole document	1-8

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2014/075678

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 203329362 U	11 December 2013	None	
CN 2754693 Y	01 February 2006	None	
CN 1750860 A	22 March 2006	US 2006049306 A1	09 March 2006
		KR 100493760 B1	03 June 2005
		KR 20040075490 A	30 August 2004
		JP 2006518246 A	10 August 2006
		WO 2004073821 A1	02 September 2004
CN 201235225 Y	13 May 2009	None	
CN 2431026 Y	23 May 2001	AU 1981501 A	05 February 2002
		JP 3103102 U	29 July 2004
		US 6520823 B2	18 February 2003
		DE 20080334 U1	17 April 2003
		US 2002061698 A1	23 May 2002
		GB 2380690 A	16 April 2003
		GB 2380690 B	21 July 2004
		WO 0207844 A1	31 January 2002