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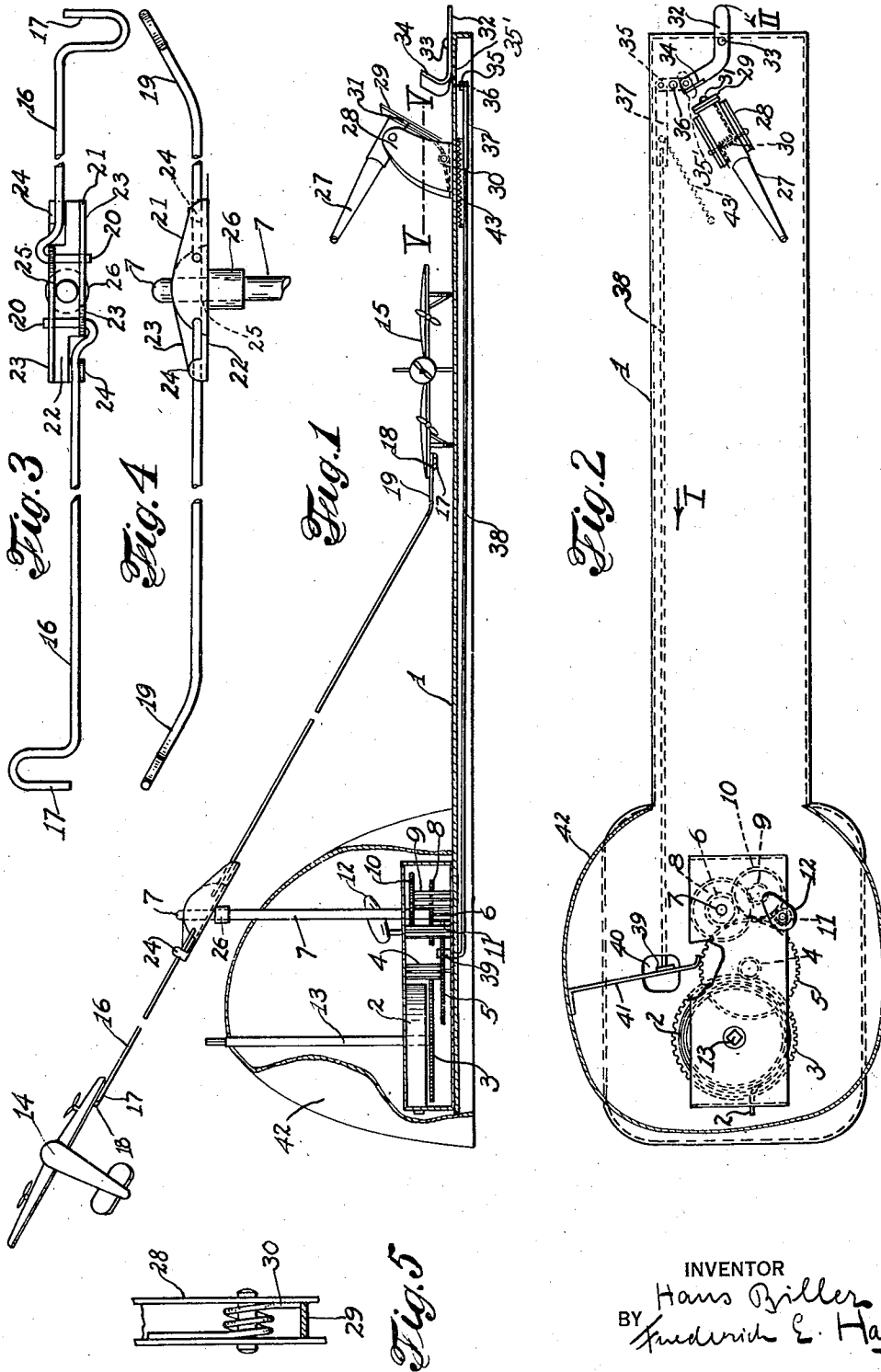
H. BILLER

2,222,648

MOVING TOY

Filed July 22, 1939

2 Sheets-Sheet 1



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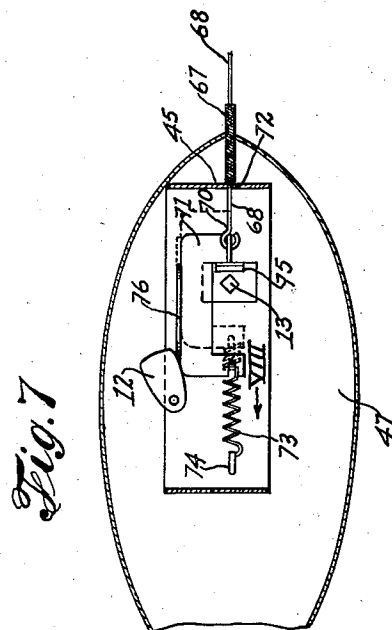
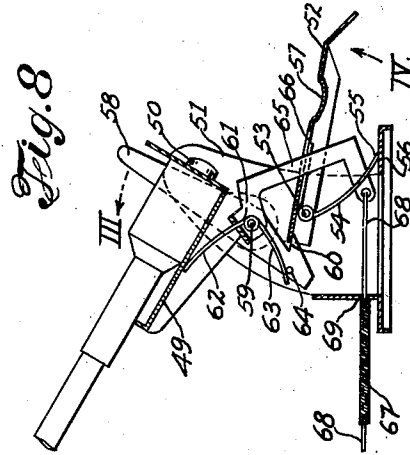
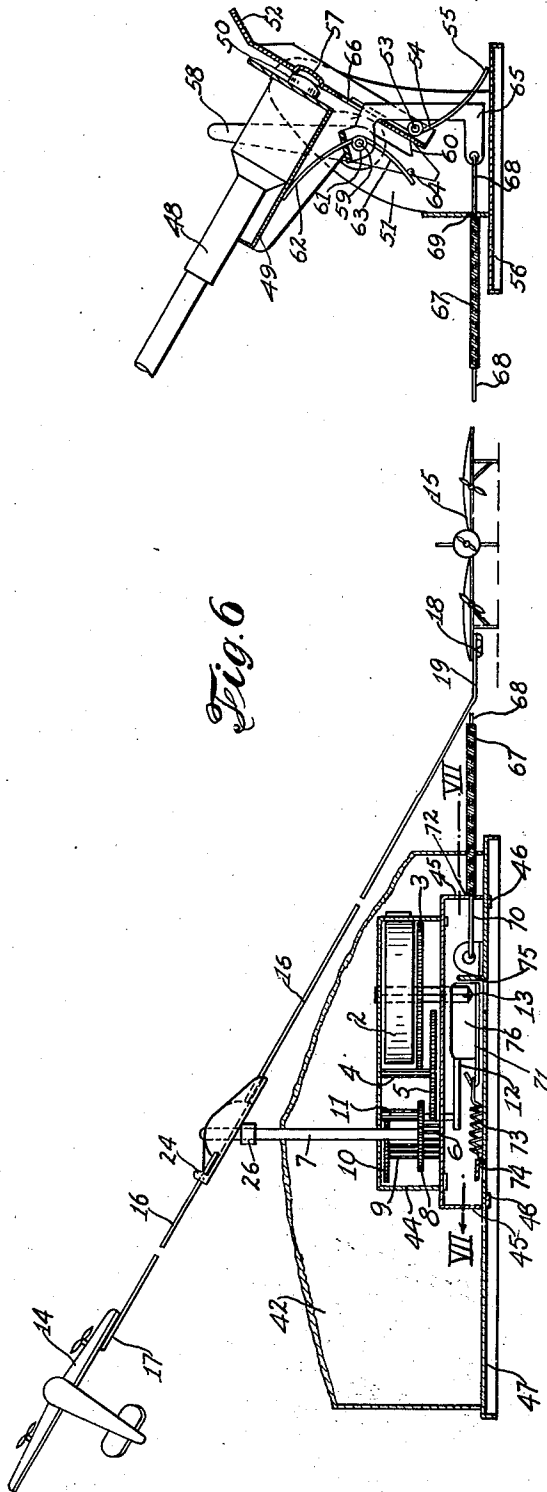
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,222,648

MOVING TOY

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In Germany August 10, 1938

13 Claims. (Cl. 272—31)

My invention relates to improvements in moving toys; particularly in toys where the movements of the toy can be controlled from a remote point.

One object of my invention is to provide a toy in which a moving part of the toy is arrested when a fire weapon is fired off.

Another object of my invention is to provide a toy in which one or more objects such as aircraft, birds, figures of animals or persons, are set in motion when a fire weapon is cocked, and arrested when the weapon is fired off.

Another object of my invention is to provide a toy comprising one or more aircraft, for instance airplanes which can be propelled around a standard, and a fire weapon, for example an anti-aircraft gun. I further provide means which are connected with the weapon and the driving mechanism for the aircraft in such a manner that the cocking movement of the weapon operates the control means for the craft thus starting them and that the movement of the hammer when the weapon is fired off arrests the driving mechanism thus stopping the aircraft. By this arrangement I create the impression that the effect of firing the fire weapon actually terminates the flight of the aircraft while actually the movement of the hammer operates locking means provided on the driving mechanism. I have found that the impression thus obtained is very surprising and amusing and gives a toy according to my invention a new and substantial play value.

Other objects of my invention are means to give the simulated shooting down of an aircraft or other target a still more natural appearance, for instance I may connect the aircraft with the driving mechanism in such a manner that the aircraft may continue its rotation for a while after the driving power is cut off and land smoothly. Further, I may provide means so that a certain aircraft is always grounded, for instance by making one craft heavier. This adds another surprise element thus increasing the play value. I further may provide a flexible connection between the fire weapon and the driving mechanism which may be covered. Then no connection between the two elements is visible and the obtained result is very puzzling to anyone not familiar with the game. I may also provide means which produce a humming sound as long as the aircraft are propelled thus simulating the sound of aircraft engines.

Other and further objects and advantages of my invention will be hereinafter set forth and

the novel features thereof defined by the appended claims.

In the accompanying drawings several embodiments of my invention are shown.

Fig. 1 is a side view and a partial longitudinal section of a toy according to my invention in which several rotating airplanes can be controlled from a remote point by operating an anti-aircraft gun.

Fig. 2 shows a plan view of Fig. 1 but without the rotating planes, the parts being partly broken away.

Fig. 3 is a plan view of the elements for carrying the rotating planes on an enlarged scale.

Fig. 4 shows a side view of Fig. 3.

Fig. 5 is a longitudinal section of part of Fig. 1 along the line V—V and shows a detail of the anti-aircraft gun on an enlarged scale.

Fig. 6 is a side view and a partial longitudinal section of a second embodiment of a toy according to my invention in which several rotating airplanes are controlled from a remote point by operating an anti-aircraft gun; the gun is shown in its fired position.

Fig. 7 shows a longitudinal section along line VII—VII of Fig. 6, and

Fig. 8 shows a side view of the anti-aircraft gun in its cocked position.

On a base plate 1 a driving mechanism is provided which comprises a spring 2 which drives a gear wheel 3 which in turn drives a pinion 4 which is arranged on one axle with a gear wheel 5. This gear wheel drives a pinion 6 which propels a shaft 7. On the same shaft a gear wheel 8 is arranged which in turn drives pinion 9 to which a gear wheel 10 is secured. This drives governor 12 over pinion 11. Numeral 13 designates a wind-up for the driving mechanism.

My invention is not limited to the illustrated driving mechanism but any other suitable driving mechanism by which a shaft 7 is propelled can be used. Instead of a driving mechanism driven by a spring a driving mechanism in which another source of energy, for instance a rubber string or electricity, is utilized also can be employed. Wind-up 13 can be so arranged that the driving mechanism can be wound up from the bottom.

Shaft 7 carries two planes 14 and 15 which are to be operated according to my invention. In the drawings two planes are shown but the number of planes can be reduced or increased. Each plane is carried by a rod 16 which ends on one side in a loop 17. This loop 17 can be slipped into a corresponding eyelet or slot 18 in the wings of

the planes. Preferably, the end 19 of rod 16 is bent off as shown in Fig. 4 in order to give a landed plane a more natural position. Of course, any other suitable connection between the rods and the wings or the fuselage can be provided. It is also possible to connect a plane pivotally with its rod.

The other end of each rod 16 is bent off to form an axle 20 by means of which the rods are connected with a carrier 21. This carrier comprises a base plate 22 and two walls 23 which serve as bearings for axles 20. Rods 16 rest on base plate 22 so that they are held in a stretched position but can be swung upwards pivoting around their axles 20. Lips 24 prevent a lateral movement of rods 16. Base plate 22 is provided with a hole 25 by means of which the carrier can be slid on shaft 7. It is held in a certain position on this shaft by means of a sleeve 26 slipped over shaft 7. This sleeve 26 may consist of rubber or any other material comparatively highly frictional. I hereby obtain that rods 16 and with them airplanes 14 and 15 are taken along if shaft 7 is propelled but do not come to an abrupt standstill if shaft 7 is arrested but continue rotation for a certain time.

However, my invention is not limited to the construction of the carrier illustrated and described but any other suitable pivotal connection between the rods carrying the planes and the propelled shaft 7 can be used. It is also possible to arrange the carrier rigidly on shaft 7. Then it will be started and arrested simultaneously with the shaft. This can be easily accomplished by providing a square hole 25 and a corresponding square end of shaft 7.

The two planes are so arranged that they are out of equilibrium. This can be accomplished easily either by making one of the planes heavier or one of rods 16 longer. Then the heavier plane or the plane connected with the longer rod will always be grounded when not propelled. In the embodiment shown it is plane 15.

Base plate 1 which may have any desired shape and size also carries the fire weapon; in the embodiment shown the weapon is a dummy anti-aircraft gun. This gun comprises a barrel 27, a gun-carriage 28, a hammer 29, and a hammer spring 30 which tends to snap the trigger out of its cocked position against the rear end of barrel 27. Hammer 29 may have a circular groove for the reception of a cap 31 which is detonated if knocked by hammer 29 against the barrel end. The trigger is locked in its cocked position by a knee lever 32 which is pivotally arranged on base plate 1 by means of a pivot 33 or other suitable means. Knee lever 32 is provided with a lip 34 under which hammer 29 can be slipped if it is to be locked in its cocked position. Pivotally connected with lever 32 is a second lever 35 which is pivotal around pivot 36. This second lever 35 in turn is pivotally connected with a lever 37 which is continued by a rod 38. Levers 35 and 37 and rod 38 are arranged on the underside of base plate 1. The pivot connecting levers 32 and 35 is passed through an aperture or slot 35' in base plate 1. This aperture must be wide enough to permit a swinging movement of levers 32 and 35. At the free end of rod 38 a lip or disc 39 is provided which projects through a slot 40 in base plate 1. This disc abuts against a resilient arm 41 which is secured by soldering, riveting, a lip or other suitable means to base plate 1 or to an ornamental cover 42. This cover may have the shape of a mountain or any other landscape and

serves to hide the driving mechanism, so that the toy appears more realistic. Arm 41 is so arranged that it rests gently against gear wheel 5. Thereby I accomplish that a humming sound is produced when the driving mechanism and with it gear wheel 5 are running thus simulating the sound of airplane engines. A spring 43 tends to slide rod 38 in a direction indicated by arrow I and so to press the rod against resilient arm 41. As obvious, increased pressure against arm 41 will increase the pressure exercised by this arm against gear wheel 5 whereby the driving mechanism and with it shaft 7 are arrested. The connection between knee lever 32 and resilient arm 41 can be arranged in any other suitable manner. Several additional levers can be included if necessary but it is also possible to provide a more direct connection. Furthermore, it is possible to omit the sound producing device and to control the driving mechanism directly by rod 38.

If the toy is to be used, the planes and their carrier are brought into a position similar to that shown in Fig. 1. Then the driving mechanism is wound up by means of a suitable key and wind-up 13. However, the driving mechanism will not start to propel shaft 7 since spring 43 presses rod 38 against arm 41 whereby the driving mechanism is locked. If the planes are to be started the anti-aircraft gun is brought into its cocked position by pressing hammer 29 downward against the strength of hammer spring 30 and pivoting knee lever 32 in a direction indicated by arrow II so that the hammer end can be slipped under lip 34. By the wedge effect hammer and knee lever 32 lock and hold each other in their positions. A cap 31 may or may not be placed upon hammer 29. By pivoting knee lever 32 rod 38 is withdrawn from resilient arm 41 against the resistance of spring 43. The driving mechanism starts to run. The arm 41 sliding on gear wheel 5 produces a humming sound and at the same time shaft 7 begins to rotate planes 14 and 15 and plane 15 will take off by centrifugal force. Both planes will then rotate around shaft 7.

If the playing person wants to shoot down one of the planes—of course, actually only plane 15 can be downed—the anti-aircraft gun is fired off by releasing hammer 29. Hammer spring 30 will snap the hammer against the barrel thus detonating cap 31. At the same time lever 32 is released. Consequently, spring 43 will press rod 38 against resilient arm 41 which in turn is pressed against gear wheel 5. The engine sound ends and the driving mechanism is arrested. Since the carrier for the planes is not rigidly connected with shaft 7 the planes will continue their rotation by force of inertia but will slow down. Finally, plane 15 will land.

By this arrangement it appears as if firing of the anti-aircraft gun was actually the cause of the landing of the plane 15.

The second embodiment according to my invention as illustrated in Figs. 6, 7, and 8 is distinguished from the first one thereby that the anti-aircraft gun is not arranged on a common base plate with the driving mechanism but is connected with these elements only by a so-called "Bowden-wire." This arrangement allows the changing of the position of the gun within certain limits thus giving the toy a still more natural appearance. Furthermore, the control and locking means are partly changed as will be illustrated in detail hereinafter.

The arrangement of planes 14 and 15 and their driving mechanism are similar to the arrange-

ment and mechanism described in connection with Figs. 1 and 2. Spring 2 which can be wound up by wind-up 13 drives gear wheel 3 which drives pinion 4 which drives gear wheel 5 which drives pinion 6 which drives shaft 7 and gear wheel 8 which latter drives pinion 9 which drives gear wheel 10 which drives pinion 11 which drives governor 12. Wind-up 13 extends downwardly but of course it can also be arranged to extend upwardly as shown in Fig. 1. A frame 44 for the driving mechanism is arranged on the upper side of a second frame 45 for the means for locking or arresting the driving mechanism. This second frame is secured by any suitable means, for instance by lips 46, to base plate 47. The anti-aircraft gun comprises barrel 48, the rear end of which rests on a carrier plate 48 having a projection 50. This carrier plate in turn is carried by the gun carriage 51. The numeral 52 designates the hammer which is pivotally connected to carriage 51 by means of an axle 53. This axle also carries a coil shaped hammer spring 54 which has an arm 55 abutting against a base plate 56 for the gun. This spring tends to snap the hammer against projection 50. The hammer is provided with a circular groove 57 in which a cap may or may not be inserted. Hammer 52 is locked in its cocked position shown in Fig. 8. By means of a control lever 58 which is pivotally secured to carriage 51 by means of an axle 59. This lever has a catch or nose 60 which may slip under the edge of hammer 52 thus locking it in its cocked position. Lever 58 is controlled by a coil spring 61 which is slipped over axle 59 and has two arms, one, 62, abutting against carrier plate 49, and the other, 63, abutting against a projection 64 of lever 58. This spring tends to pivot lever 58 in a direction indicated by arrow III. On axle 59 a second substantially U-shaped lever 65 is carried with one leg pivotally arranged. Lever 65 is passed through a slot 66 provided in hammer 52. Slot 66 is so arranged that it forces lever 65 to swing around its axle 59 in a direction indicated by arrow IV if hammer 52 is cocked. The other leg of lever 65 is connected to a so-called "Bowden-wire." Such a wire consists of an external sleeve 67 of flexible material, preferably a sleeve formed by a resilient spiral and a wire 68 arranged within sleeve 67. Wire 68 is passed through an opening 69 in the wall of carriage 51 against the edge of which sleeve 67 abuts, so that by pulling lever 65 wire 68 will be moved or slid relative to sleeve 67. The Bowden-wire may have any desired length. Wire 68 is by means of a hook 70 connected at its other end to a substantially U-shaped element 71. Sleeve 67 abuts with its other end against the side wall of frame 45 while wire 68 is passed through a hole 72 in that side wall. Element 71 can slide on base plate 47. It is held as mentioned on one side by a hook 70 and on the other side by a spring 73 which is secured for instance by a lip 74 to base plate 47. This spring tends to pull element 71 in a direction indicated by arrow VIII. The element is secured by a flange 75 against lateral movement. It is provided with a vertical flange 76 which abuts against governor 12 if element 71 is in its position shown in full lines thus preventing a rotation of governor 12 and with it of the driving mechanism.

If the toy is to be used the driving mechanism is first wound up, the planes with their rods are set upon their driving shaft 7 and then the anti-aircraft gun is brought into any position desired

by the playing person. The Bowden wire connecting gun and driving mechanism may be covered by any suitable material thus concealing the connection between the two elements. Assuming that the gun is in the position shown in Fig. 6, the driving mechanism is arrested and plane 15 is grounded. When a playing person wants to start the planes he only has to cock the gun. By the hammer movement lever 65 is swung in the direction indicated by arrow IV, and wire 68 pulls element 71 against the resistance of spring 73 into its position indicated by dotted lines. In this position governor 12 is released and the driving mechanism will start to run and plane 15 will take off. Both planes will rotate around shaft 7 at about the same level. Hammer 52 and with it lever 65 are held in their position by catch 60 of control lever 58. If the playing person wants to shoot down plane 15 he aims at plane 15—or more correctly, acts as if he aims at plane 15—and pulls control lever 58 opposite the direction indicated by arrow III. Consequently, hammer 52 is released and snaps against projection 50. Lever 65 is no longer held by the slot 66 of hammer 52 and spring 73 pulls element 71 back into its original position in which it locks governor 12. The driving mechanism and with it shaft 7 are consequently arrested but the planes continue their movement by inertia and finally plane 15 lands. In order to start the planes it is necessary only to cock the anti-aircraft gun again.

The various parts of the toy may consist of sheet metal or any other suitable material.

My invention is not limited to the embodiments shown but various alterations and changes may be made without departing from the spirit and scope of the invention. Instead of airplanes any other aircraft, for instance, dirigibles, can be used; furthermore, birds, kites, etc., may be used. The illustrated anti-aircraft gun can be replaced by any other weapon, for instance, a rifle or machine gun.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A toy comprising at least one dummy aircraft, a support for suspending said aircraft, a driving mechanism for propelling said aircraft around said support, means for arresting and releasing said driving mechanism, means for controlling said means for arresting and releasing, a dummy fire weapon adapted to simulate the firing of a shot, means for actuating said weapon and means for coupling said actuating means with said control means for effecting an actuation of said control means when said actuating means for said weapon are operated.

2. A toy comprising at least one dummy aircraft, a support for suspending said aircraft, a driving mechanism for propelling said aircraft around said support, means adapted for controlling said driving mechanism, said means adapted to assume one of two positions, one being an arresting position and the other being a releasing position, a dummy fire weapon adapted to simulate the firing of a shot, a hammer for said fire weapon, means for coupling said hammer with said control means, said coupling means arranged to shift said control means from their arresting position into their releasing position when said hammer is brought from its uncocked position into its cocked position.

3. A toy comprising at least two dummy aircraft, means for connecting said dummy air-

craft, a support for suspending said aircraft, means for mounting said aircraft pivotally but out of equilibrium on said support, a driving mechanism for propelling said aircraft around said support, means for controlling said driving mechanism, said means adapted to assume one of two positions, one being an arresting position and the other being a releasing position, a dummy fire weapon adapted to simulate the firing of a shot, means for actuating said weapon, and means for coupling said actuating means and said control means for effecting a shifting of said control means from their arresting position into their releasing position when said actuating means for said weapon are brought from their initial position into their position ready for firing a shot.

4. A toy comprising at least two dummy aircraft, a rod for connecting said aircraft, a support for suspending said aircraft, means for mounting an intermediate point of said rod pivotally on said support, one section of said rod being longer than the other, a driving mechanism for propelling said aircraft around said support, means for controlling said driving mechanism, said means adapted to assume one of two positions, one being an arresting position and the other being a releasing position, a dummy fire weapon adapted to simulate the firing of a shot, means for actuating said weapon and means for coupling said actuating means and said control means for effecting a shifting of said control means from their arresting position into their releasing position when said actuating means for said weapon are brought from their initial position into their position ready for firing a shot.

5. A toy comprising at least one element adapted to be moved, a driving mechanism for said element, means for arresting and releasing said driving mechanism, means for controlling said means for arresting and releasing, a dummy fire weapon adapted to simulate the firing of a shot and arranged at a point remote from said driving mechanism, means for actuating said weapon and rods coupling said actuating means with said control means for effecting an actuation of said control means when said actuating means for said weapon are operated.

6. A toy comprising at least one element adapted to be moved, a driving mechanism for said element, means for arresting and releasing said driving mechanism, means for controlling said means for arresting and releasing, a dummy fire weapon adapted to simulate the firing of a shot and arranged at a point remote from said driving mechanism, means for actuating said weapon and flexible means coupling said actuating means with said control means for effecting an actuation of said control means when said actuating means for said weapon are operated.

7. A toy comprising at least one element adapted to be moved, a driving mechanism for said element, means for arresting and releasing said driving mechanism, means for controlling said means for arresting and releasing, a dummy fire weapon adapted to simulate the firing of a shot and arranged at a point remote from said driving mechanism, means for actuating said weapon and a Bowden-wire for coupling said actuating means with said control means for effecting an actuation of said control means when said actuating means for said weapon are operated.

8. A toy comprising at least one element adapt-

ed to be moved, a driving mechanism for said element, a moveable member adapted in a certain position to arrest said driving mechanism, means tending to urge said moveable member from a releasing position into its arresting position, a dummy fire weapon adapted to simulate the firing of a shot, a hammer for said fire weapon, means for coupling said hammer with said moveable member, said coupling means being arranged to hold said moveable member in a releasing position when said hammer is cocked but to permit it to be urged into its arresting position if said hammer is brought into its uncocked position.

9. A toy comprising at least one element adapted to be moved, a driving mechanism for said element, a slideable member adapted in a certain position to arrest said driving mechanism, a spring tending to urge said slideable member from a releasing position into its arresting position, a dummy fire weapon adapted to simulate the firing of a shot, a hammer for said weapon, means for locking said hammer in its cocked position, means for coupling said slideable member with said hammer, said coupling means arranged to hold said slideable member in its releasing position if said hammer is in its cocked position, a control lever for releasing said hammer and said slideable member if operated whereby the spring restores said slideable member into its arresting position.

10. A toy comprising at least one element adapted to be moved, a driving mechanism for said element, a slideable member adapted in a certain position to arrest said driving mechanism, a spring tending to urge said slideable member from a releasing position into its arresting position, a dummy fire weapon adapted to simulate the firing of a shot, a hammer for said weapon, means for locking said hammer in its cocked position, rods for coupling said slideable member with said hammer, said rods arranged to hold said slideable member in its releasing position if said hammer is in its cocked position, a control lever for releasing said hammer and said slideable member if operated whereby said spring restores said slideable member into its arresting position.

11. A toy comprising at least one element adapted to be moved, a driving mechanism for said element, a member arranged to rest gently against a moving element of said driving mechanism thus producing a sound when said driving mechanism is running and capable of being pressed against said moving element thus arresting said driving mechanism, means for pressing said member against said moving element of said driving mechanism, a dummy fire weapon adapted to simulate the firing of a shot, means for actuating said weapon, means for coupling said actuating means with said pressing means for effecting a pressing of said means against said member thus arresting said driving mechanism when said actuating means for said weapon are operated.

12. A toy comprising at least one dummy aircraft, a support for suspending said aircraft, a driving mechanism for propelling said aircraft around said support, a slideable member adapted in a certain position to arrest said driving mechanism, a spring tending to urge said slideable member from a releasing position into its arresting position, a dummy fire weapon, adapted to simulate the firing of a shot, a hammer for actuating said fire weapon, a control lever provided with a catch for locking said hammer in its cocked

position, means for connecting said hammer with said slideable member, said means being arranged to hold said slideable member against the resistance of said spring in its arresting position when said hammer is in its cocked position.

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13. A toy comprising at least two dummy aircraft, a rod for connecting said aircraft, a support for suspending said aircraft, means for mounting an intermediate point of said rod pivotally on said support, one section of said rod being longer than the other, a driving mechanism for propelling said aircraft around said support, a slideable member adapted to arrest in a certain position said driving mechanism, a spring tend-

ing to urge said slideable member from a releasing position into its arresting position, a dummy anti-aircraft gun arranged at a point remote from said driving mechanism, a hammer for actuating said anti-aircraft gun, a control lever provided with a catch for locking said hammer in its cocked position, a flexible connection between said hammer and said slideable member adapted to create a unity of movement between said hammer and said slideable member and arranged to hold said slideable member against the resistance of said spring in its arresting position when said hammer is in its cocked position.

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