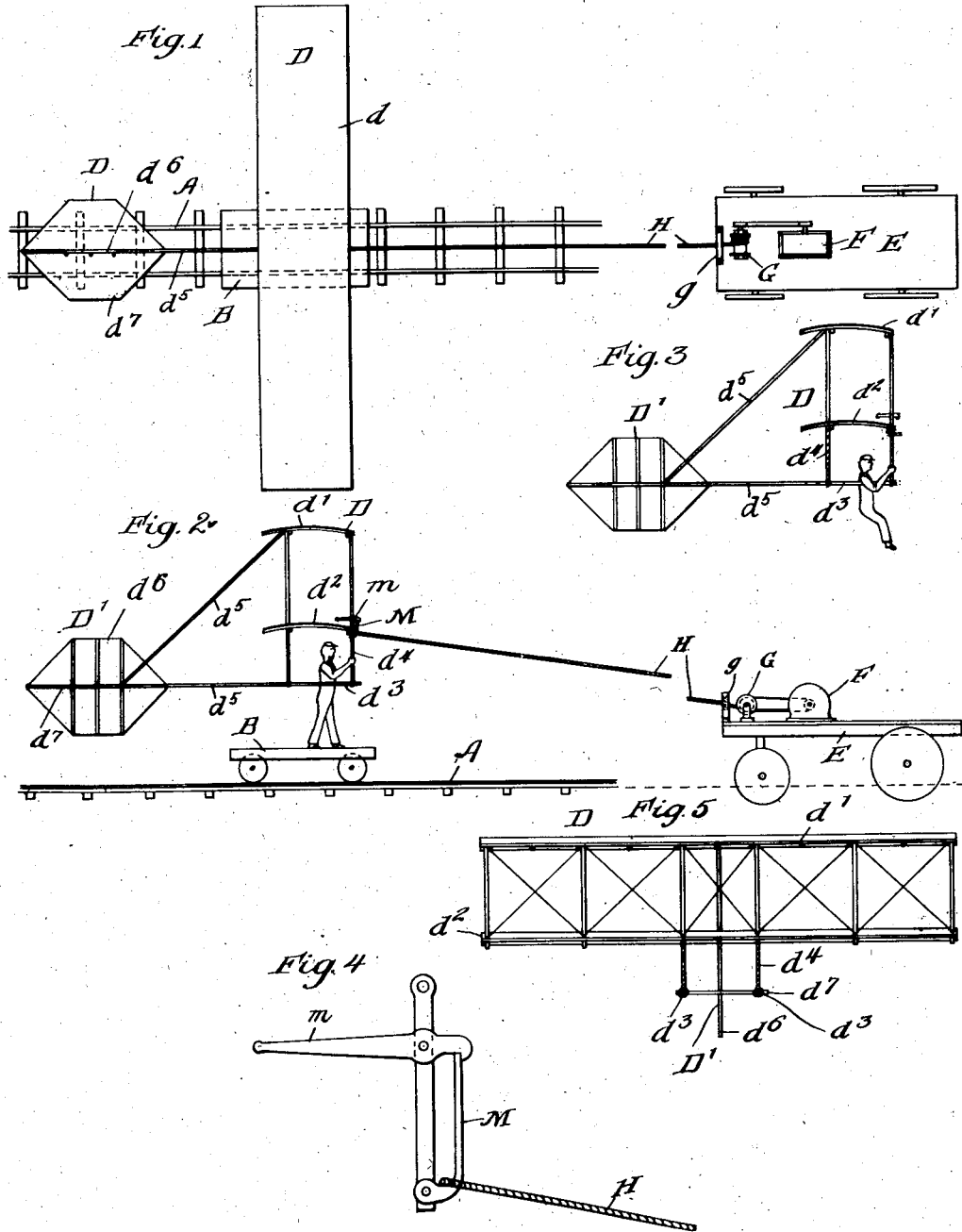


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PATENTED OCT. 30, 1906.

O. CHANUTE.  
MEANS FOR AERIAL FLIGHT.  
APPLICATION FILED SEPT. 16, 1904.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## MEANS FOR AERIAL FLIGHT.

No. 834,658.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed September 16, 1904. Serial No. 224,696.

*To all whom it may concern:*

Be it known that I, OCTAVE CHANUTE, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Means for Aerial Flight, of which the following is a specification.

My invention relates to an apparatus or combination of devices for facilitating the practical operation and use of flying or gliding machines for exhibition or other purposes.

My invention consists, essentially, in the combination of a flying or gliding machine of any suitable kind or construction and with or without a motor or self-propelling device, of a light movable platform or car upon which the flying or gliding machine and its operator rest, a track for the car, a winding-drum, a motor for actuating the winding-drum, a line extending from the winding-drum to the flying or gliding machine, and a trip hook or device for disconnecting the line from the flying or gliding machine after it ascends to the required height under the action of the winding-drum and line. The winding-drum and its motor are preferably mounted upon a truck or wheeled vehicle.

My invention also consists in the novel construction of parts and devices and in the novel combinations of parts and devices herein shown or described.

In practicing my invention the track, which is preferably of a portable kind, is generally laid in the direction of the existing wind and the car, which is preferably a light platform-car, is placed on the track. The truck carrying the winding-drum and its motor is placed to windward a suitable distance—say from two hundred to one thousand feet—and is firmly blocked or anchored in line with the portable track, which is preferably eighty or one hundred feet in length. The flying or gliding machine to be launched with its operator is placed on the platform-car at the leeward end of the portable track. The line, which is preferably a flexible combination wire-and-cord cable, is stretched between the winding-drum on the track and detachably secured to the flying or gliding machine, preferably by means of a trip-hook, or else held in the hand of the operator, so that the operator may readily detach the same from the flying-machine when the desired height is attained. Then upon a signal given by the flying or gliding machine operator the engineer at

the motor puts it into operation, gradually increasing the speed until the line is wound upon the drum at a maximum speed of, say, thirty miles an hour. The operator of the flying-machine, whether he stands upright and carries it on his shoulders or whether he sits or lies down prone upon it, adjusts the aeroplane or carrying surfaces so that the wind shall strike them on the top and press downward instead of upward until the platform-car under action of the winding-drum and line attains the required speed. When the operator judges that his speed is sufficient, and this depends upon the velocity of the wind as well as that of the car moving against the wind, he quickly causes the front of the flying-machine to tip upward, so that the relative wind striking on the under side of the planes or carrying surfaces shall lift the flying-machine into the air. It then ascends like a kite to such height as may be desired by the operator, who then trips the hook and releases the line from the machine. The operator being now free in the air has a certain initial velocity imparted by the winding-drum and line and also a potential energy corresponding to his height above the ground. If the flying or gliding machine is provided with a motor, he can utilize that in his further flight, and if it is a simple gliding machine without motor he can make a descending flight through the air to such distance as corresponds to the velocity acquired and the height gained, steering meanwhile by the devices provided for that purpose. The simplest operation or maneuver is to continue the flight straight ahead against the wind; but it is possible to vary this course to the right or left or even to return in downward flight with the wind to the vicinity of the starting-point. Upon nearing the ground the operator tips upward his carrying-surfaces and stops his headway upon the cushion of increased air resistance so caused. The operator is in no way permanently fastened to his machine, and the machine and the operator simply rest upon the light platform-car, so that the operator is free to rise with the machine from the car whenever the required initial velocity is attained.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of an apparatus embodying my invention. Fig. 2 is a side elevation. Fig. 3 shows the flying or gliding machine in the air after being launched. Fig. 4 is a detail view of

the trip-hook, and Fig. 5 is a front elevation of the flying or gliding machine.

In the drawings, A represents the portable track; B, a light platform-carresting thereon; D, a flying or gliding machine of any suitable kind or construction. The flying or gliding machine, which for convenience I have illustrated in the drawings, is a simple aeroplane or gliding machine without motor or self-propeller. It comprises a light rectangular frame  $d$ , furnished with two horizontal but slightly-curved pressure surfaces or planes  $d'$   $d''$ , one above the other, and depending supporting-bars  $d^3$ , upon which the operator may rest with his arms, leaving his hands and forearms free to tilt or direct the machine by grasping the cord-uprights  $d^4$ . The gliding-machine D is also furnished with a tail  $D'$ , connected thereto by light bars  $d^5$  and having upright and horizontal planes  $d^6$   $d^7$ . E represents a truck or wagon upon which the motor F and winding-drum G are carried. The motor may be of any suitable kind or construction, but is preferably an electric or gasolene motor. The winding-drum G is preferably furnished with any suitable or customary reversing-guide  $g$  to cause the line H to wind smoothly and evenly upon the drum. The line is preferably a cable composed of flexible wire and having a cotton or other cord core to increase its flexibility. The line extends from the drum to the flying or gliding machine. Its free end may, if desired, be grasped and held by the operator until the flying-machine ascends to the desired height, when by simply letting go of the line the operator may continue his flight free. The line, however, is preferably connected to the flying or gliding machine directly by a trip-hook M, having a handle or trip lever  $m$  within reach of the operator, so that when he ascends to the required height he may readily detach the line from the flying or gliding machine.

I disclaim the mechanism shown and described in the British patent to Robert Krauss, No. 18,663, dated August 12, 1897, wherein the line is permanently attached at one end to the machine and the line is not designed or adapted to be cast loose or disconnected from the machine while the machine is in the air.

In my invention one end of the line is connected to the stationary winding-drum and the other end of the line is detachably connected to the flying-machine through the trip-hook device (or through the hand of the operator thereon if it is, as before stated, held in the hand) and is adapted to be cast loose when the operator and the machine have been caused to ascend to the desired height by the operation of the drum and the connecting-line, thus enabling the flying or gliding machine to be launched free into the air, so that the machine and operator after making the desired flight may descend and alight

upon the ground in safety and so that at the time of alighting the machine may be dirigible and under the control of the operator thereon and so that the machine and the operator may be at the time of alighting entirely free from such dangerous and destructive forward movement or propulsion as is or would be due to the operation of the drum and a line leading therefrom and permanently connected to the machine or to the operator thereon and which would obviously render safe alighting impossible or cause it to be attended with great danger to the machine and to the operator thereon. My invention is designed to provide a practical and successful means for launching free into the air flying or gliding machines, a step which is not only necessary for the subsequent free flight of the machine in the air, but also necessary for the safe alighting of the machine and its operator on the ground.

I claim—

1. The combination with a flying or gliding machine, of a car, a track for the car, a stationary winding-drum, a motor for actuating the drum, and a line wound at one end thereof around the drum and extending therefrom to the flying or gliding machine and adapted to be cast loose by the operator thereon when said machine has been caused to ascend to the desired height by operation of the drum; whereby the flying or gliding machine and the operator thereon may be caused to ascend from the level of the ground and be then launched free into the air at the desired height and enabled subsequently to safely alight, substantially as specified.
2. The combination with a flying or gliding machine, of a car, a track for the car, a stationary winding-drum, a motor for actuating the drum, a line extending from the drum to the flying or gliding machine, and a trip hook or device for disconnecting the line from the flying or gliding machine whereby the flying or gliding machine is caused to ascend from the level of the ground and be then launched free into the air at the desired height, substantially as specified.
3. The combination with a stationary winding-drum, of a track, a car on the track, a flying-machine on the car, a line extending from the drum to the flying-machine, and a trip device for disconnecting the line from the flying-machine whereby the flying or gliding machine is caused to ascend from the level of the ground and be then launched free into the air at the desired height, substantially as specified.
4. The combination with a winding-drum, of a movable platform, a flying-machine on the platform, a line extending from the drum to the flying-machine, and a trip device for disconnecting the line from the flying-machine whereby the flying or gliding machine is caused to ascend from the level of the ground

and be then launched free into the air at the desired height, substantially as specified.

5 5. The means for launching flying or gliding machines from the level of the ground into the air at the required height, consisting in the combination with a winding-drum, of a flying or gliding machine having devices for supporting a man thereon, a line extending from the drum to the flying or gliding ma-

chine, and a trip device for disconnecting the line from the flying or gliding machine when it ascends to the required height and thus launching it free in the air, substantially as specified.

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Witnesses:

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