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UNITED STATES PATENT OFFICE.

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MEANS FOR LAUNCHING FLYING-MACHINES.

1,027,242.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GLENN H. CURTISS, a citizen of the United States, residing at Hammondsport, in the county of Steuben and State of New York, have invented certain new and useful Improvements in Means for Launching Flying-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to launching apparatus for flying machines, and has for its object to produce a device which will be simple in construction, certain in action, and comparatively inexpensive to install.

To these ends the invention consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate the same parts in all the views:—Figure 1 is a side elevational view of one form of an apparatus built in accordance with my invention; and, Fig. 2 is a top plan view of the same.

1 indicates any suitable support on which is mounted the movable platform 2 provided with the lugs 3 and 4, to which are respectively pivoted as at 7 and 8 the propelling arms or levers 5 and 6, as shown. The arm 5 may telescope or fit inside the arm 6, as indicated, and the spring 9 is secured at one end to the lug 10 carried by the arm 5, and at its other end to the lug 11 carried by the arm 6. In order that the said spring may be centrally located with respect to said arms, the lug 11 may project through an elongated slot 12 in the arm 5, and this slot also permits said spring to pass through the same when said arms are in their upright positions, as shown in dotted lines, Fig. 1. The arms may further be connected, if desired, by the pivoted links 13 and 14 in order to render their operation steady and more certain, and their curved outer ends provided with the braces 15 and 16. Any suitable shape may be given said outer ends to accommodate the particular type of flying machine that is to be launched. For the type illustrated, I preferably provide the arm 5 with the curved flaring notched extensions 17 and 18, which

accommodate suitable supports or rugs 19 on the machine 20, while the extreme end of the arm 6 may be notched as at 21 and 22 to accommodate the pin 23, on which the machine 20 may rest.

Any suitable means such as 24 may be employed to bring the parts in position, while a cord 25 and trigger mechanism 26 may be used to release said parts.

In operation, since the tension of the spring 9 will be exerted in the direction of the pivots 7 and 8, the turning moment will be small at first, and therefore, the machine is not subjected to jars or shocks, but rises slowly and smoothly. The velocity, however, is greatly accelerated as the arms become elevated both on account of the greater turning moment, and also on account of the pivots taking more and more the weight of the machine, as said arms approach perpendicular positions. It results from this that the machine is safely brought to its dotted line position after it has attained a maximum velocity, and the further downward movement of the arms permits the momentum of the machine to carry it out clear of the apparatus.

It is obvious that those skilled in the art may vary the details of construction and the arrangement of parts without departing from the spirit of my invention. In fact, apparatus very different from that herein disclosed merely as an illustration of my invention, could be provided, such for example, as a device employing compressed air as the motive power, and therefore, I do not wish to be limited to the disclosure, except as may be required by the claims.

What I claim is:—

1. In an aeroplane launching apparatus, the combination of a suitable mount; an aeroplane supporting device pivotally mounted on said mount; and means for imparting, at a variable speed, an angular throw to said supporting device, substantially as described.

2. In an aeroplane launching apparatus, the combination of a suitable mount; aeroplane supporting arms pivotally mounted on said mount and operable to swing in parallel relation thereon; and means for swinging said arms at a variable speed to launch the aeroplane, substantially as described.

3. In an apparatus for launching flying machines, the combination of a suitable

mount; and means comprising a plurality of independently pivoted spring controlled arms for supporting and imparting to the machine a rapidly increasing swinging movement, substantially as described.

4. In an apparatus for launching flying machines, the combination of a plurality of arms upon which said machine is supported; independent pivots for said arms; spring means for moving said arms; means for putting said spring under tension; and means for releasing said arms, substantially as described.

5. In an apparatus for launching a flying machine, the combination of a plurality of arms adapted to support said machine; separated pivots upon which said arms may turn; a spring means connecting said arms; and a link connecting said arms, substantially as described.

6. In an apparatus for launching a flying machine, the combination of a pair of arms adapted to fit the one within the other; separated pivots on which said arms may turn;

a spring connecting said arms; and means associated with said arms adapted to support a flying machine, substantially as described.

7. In an apparatus for launching a flying machine, the combination of a movable platform, a plurality of movable arms mounted on said platform adapted to support the machine, and means for actuating said arms, substantially as described.

8. In an apparatus for launching a flying machine, the combination of a support, a platform rotatably mounted on said support, a plurality of movable arms mounted on said platform adapted to support the machine, and means for actuating said arms, substantially as described.

In testimony whereof, I affix my signature, in presence of two witnesses.

GLENN H. CURTISS.

Witnesses:

LENA P. CURTISS,
G. R. HALL.