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S. MAIER

1,770,528

SAFETY LANDING DEVICE

Filed May 14, 1928

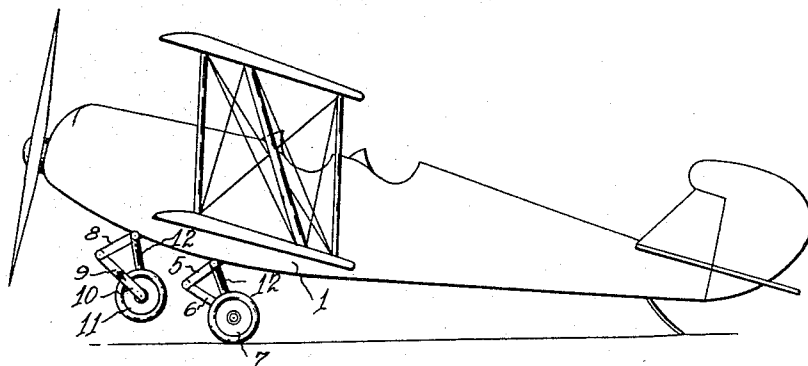


Fig. 1.

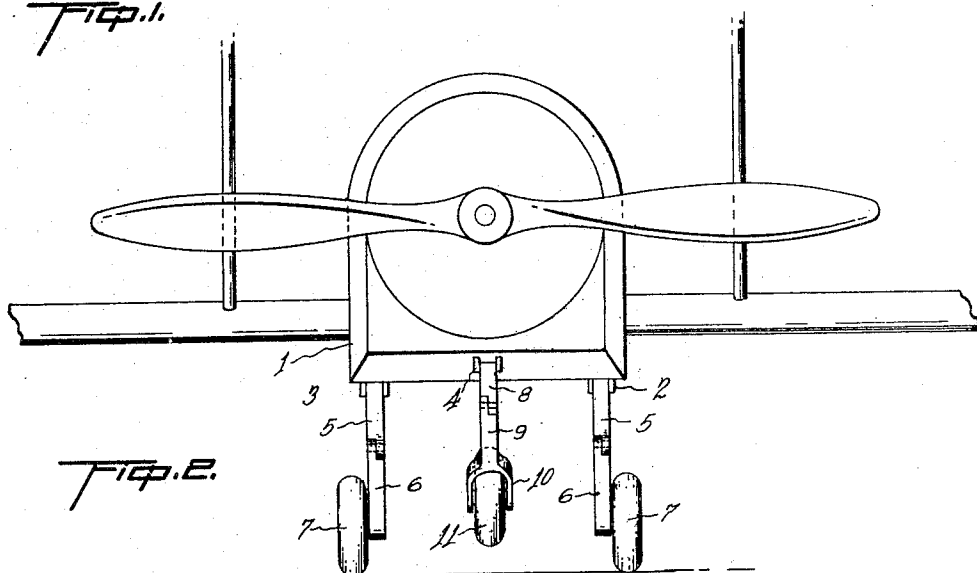


Fig. 2.

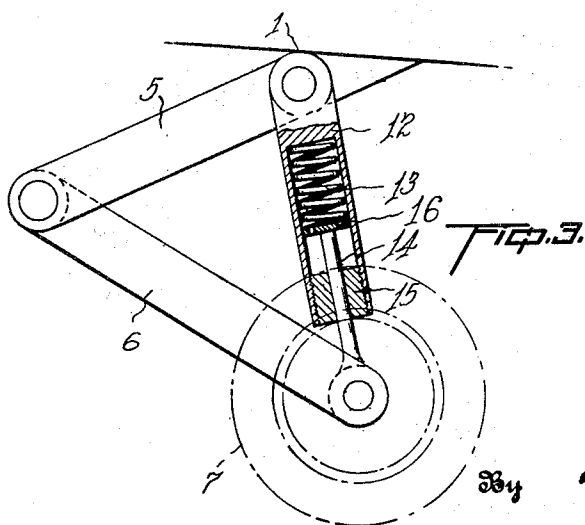


Fig. 3.

Inventor
Stanley Maier

Stanley Maier

Attorney

UNITED STATES PATENT OFFICE

STANLEY MAIER, OF DETROIT, MICHIGAN

SAFETY LANDING DEVICE

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The present invention pertains to a novel safety landing device for aircraft of the type requiring a run at the time of take off or in landing. The landing device is designed to increase the smoothness of performance in landing and to lessen the hazard.

The object of the device is to prevent the nose of the craft from suddenly diving towards the ground while the wheels are in contact with the ground. The device is constructed with a pilot wheel positioned at a point nearer to the nose of the craft than the usual landing gear and which prevents the plane from nose diving when the wheels suddenly impact with the ground in landing.

A further object of this pilot wheel which does not ordinarily come in contact with the ground is to prevent the nose of the craft from diving when the ground wheels meet with an irregularity in the ground at the take off.

A still further object is to construct a safety landing device which will lessen the hazard in landing and take off and which is constructed in a resilient manner. The resiliency of the device absorbs the shock of impact with the ground when landing and the shock of the wheels meeting with some irregularity upon the ground while taxiing.

The manner in which I attain these objects is fully disclosed by way of example in the following description with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of an airplane having the safety landing device attached thereto;

Fig. 2 is a partial front elevation; and

Fig. 3 is an enlarged detail, partly in section of the safety landing device.

The numeral 1 indicates the fuselage of an airplane having brackets 2, 3 and 4 attached to the bottom in the position as indicated by the drawings wherein the brackets 2 and 3 are opposite each other at the outward edges of the bottom. The bracket 4 is positioned at a point central of these edges and at a point nearer the front of the plane. The upward curve of the fuselage towards the nose places the bracket 4 at a more remote distance from the ground than the brackets 2 and 3, the ob-

ject of which will become apparent as the description proceeds. The brackets 2 and 3 each support a fixed arm 5 to which is pivoted a supplemental arm 6 which is provided with a stud for supporting the ground wheel 7. The bracket 4 supports a similar arm 8 having a supplemental arm 9 which is forked at 10 to receive the ground wheel 11.

Pivotaly attached to each of the arms 5 and 8 and extending towards the wheels 7 and 11 is a tube 12 which retains a spring 13 in engagement with a plunger 14, received in a bearing 15 in the tube 12 and having the lower end of the plunger attached to the wheel supports on the arms 6 and 9. The plunger has ports 16 to prevent accumulation of air pressure on either side thereof. The relation of the brackets 2, 3 and 4 in their normal position towards the ground is such that the wheels 7 are adapted to support the plane while the wheel 11 is merely employed as a pilot.

The plane in landing is at such an angle that the pilot wheel 11 contacts with the ground prior to the contact of the wheels 7. This manner of contact raises the nose of the plane immediately there is contact with the ground and prevents the nose of the plane from diving.

The plunger 14 acting against the spring 13 allows the wheels to rebound and thereby cushions the shock of the contact with the ground. It will be apparent that this construction increases the smoothness of performance in taking off and in landing and materially decreases the hazard of such an undertaking.

It will be noted that, due to the triangular structure of the landing wheels and shock absorber, the device is capable of absorbing shocks that may be imparted to it in a line at an angle to the rod 14. This is to be distinguished from the type of spring plunger consisting merely of a telescopic device supporting the wheel and rigid in all directions except a line parallel to the axis of the spring plunger. Such a device will absorb shocks in a substantially vertical direction, but is ineffective and inoperative if the wheel should strike an obstruction such as a log or

a rut on the ground or even some object in the air while flying.

Although a specific embodiment of my invention has been disclosed it will be understood that such variations in the details of construction may be made as fall within the scope of the appended claims.

What I claim is:—

1. A safety landing device for airplanes comprising wheels triangularly disposed in relation to each other, fixed arms attached to the airplane, supplemental arms pivoted to said fixed arms and supporting said wheels, a tube connected to each of said fixed arms, a plunger slidable in each tube and attached to said pivoted arms in close proximity to said wheels, and a spring in each tube for resisting movement of said plunger and allowing resilient rebound of the wheels.

2. A safety landing device for airplanes comprising wheels, one of said wheels being disposed in a central position in front of the other wheels, fixed arms attached to the airplane, supplemental arms pivoted to said fixed arms and supporting said wheels, a tube connected to each of said fixed arms, a plunger slidable in each tube and attached to said pivoted arms in close proximity to said wheels, and a spring in each tube for resisting movement of said plunger and allowing resilient rebound of the wheels.

3. A safety landing device comprising a plurality of angularly extending arms fixed to the bottom of an airplane fuselage, supplemental arms pivoted to said fixed arms and extending toward the rear of the airplane, tubes having one end connected to said fixed arms, a perforated plunger mounted in each of said tubes, a rod connecting said plunger to the free end of the supplemental arm, means preventing the removal of said plunger from said tube, a spring mounted above said plunger to resiliently resist movement of said pivoted supplemental arm, and wheels mounted upon the free ends of said supplemental arms.

In testimony whereof I affix my signature.

STANLEY MAIER.

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