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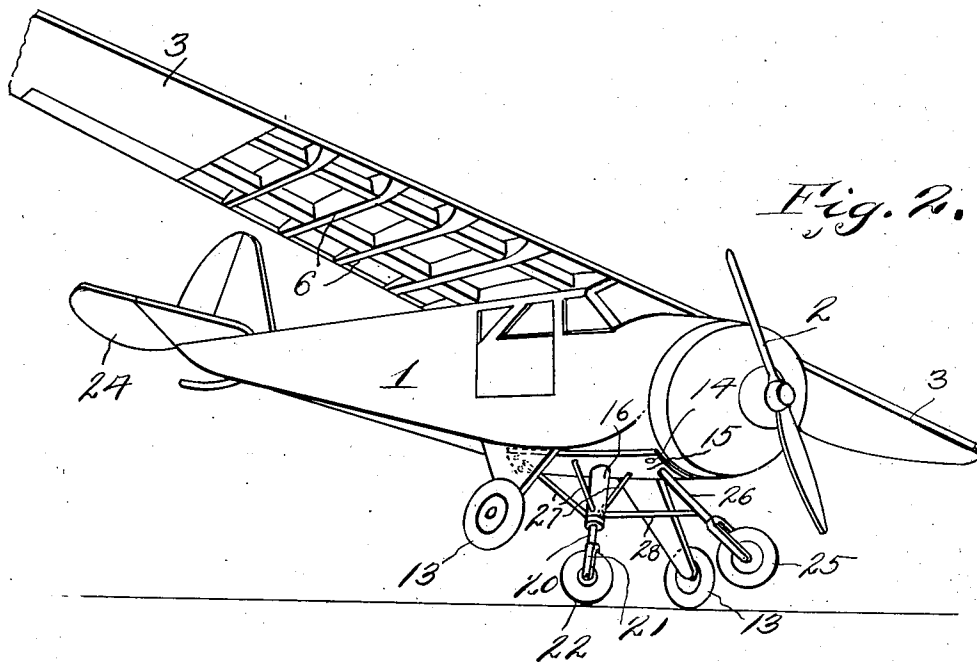
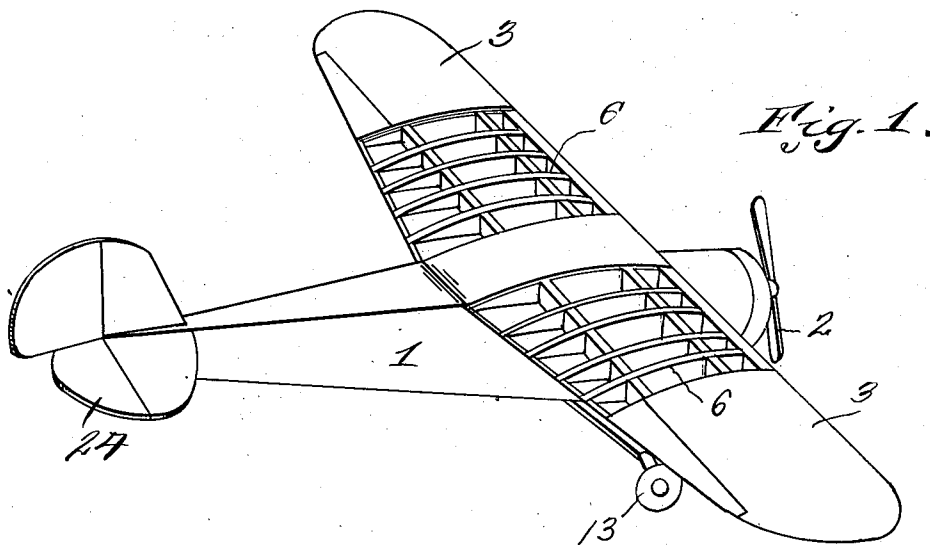
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2,212,931

TRAINER FOR AIRPLANE PILOTS

Filed April 5, 1938

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

Fig. 6.

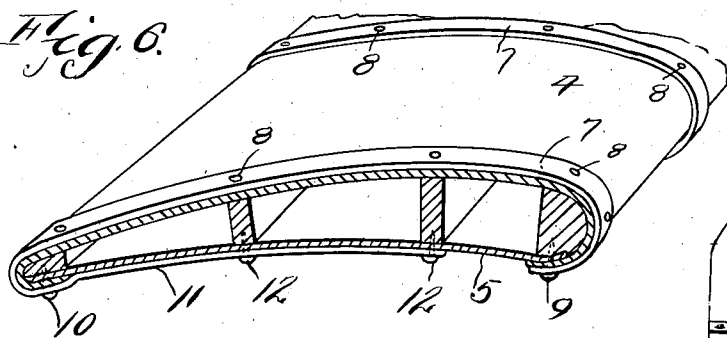


Fig. 5.

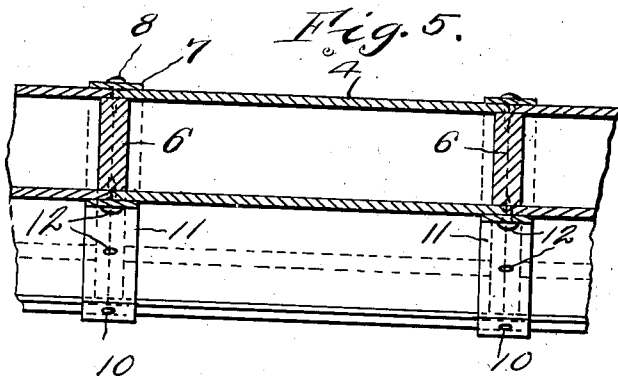


Fig. 3.

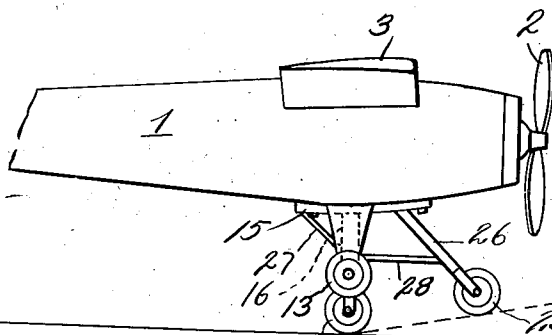
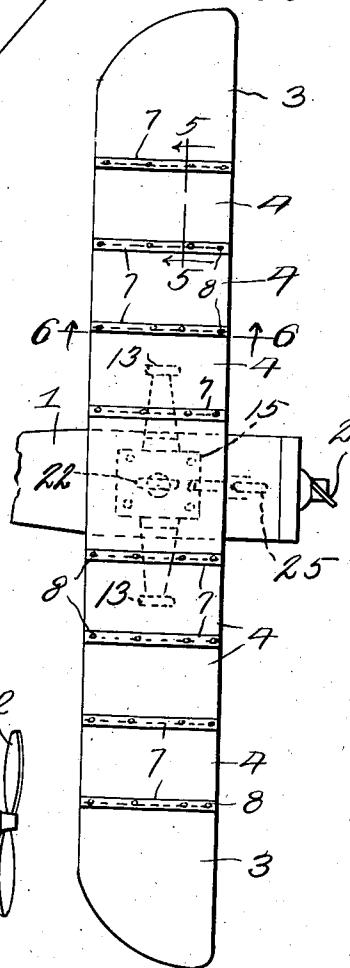


Fig. 4.

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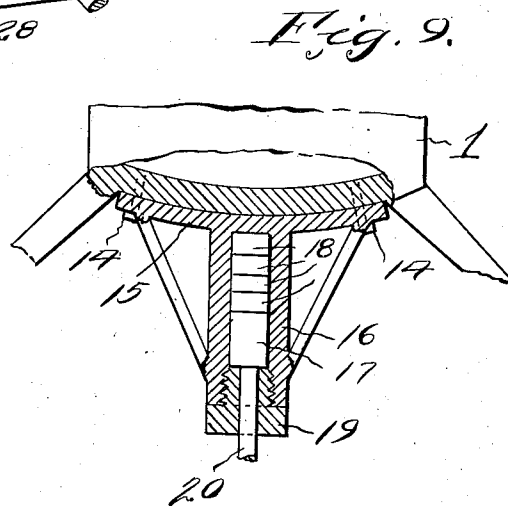
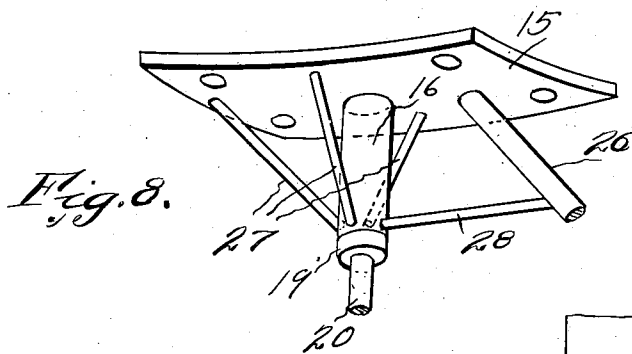
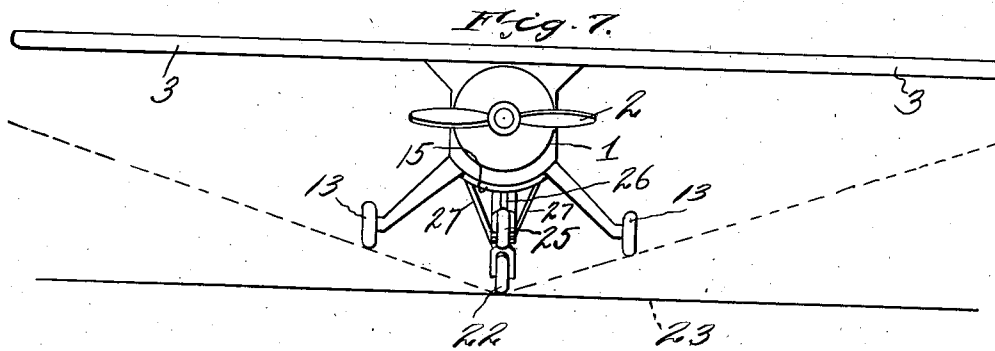
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TRAINER FOR AIRPLANE PILOTS

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UNITED STATES PATENT OFFICE

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TRAINER FOR AIRPLANE PILOTS

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Application April 5, 1938, Serial No. 200,253

2 Claims. (Cl. 35-12)

The invention relates to airplanes, and has for its object to provide a device of this character, particularly adapted for training purposes, and constructed in a manner whereby the effective wing area is reduced to a point where the plane can not rise from the ground, but may assume a horizontal position.

A further object is to provide the wings with panel receiving means for increasing the area thereof so the machine may be used for flying purposes following the training operation.

A further object is to provide a ground engaging balance wheel between the landing wheels and extending below the landing wheels, and on which the operator, while training, balances the machine as it moves forwardly, endeavoring to maintain the plane horizontal.

A further object is to position the practice wheel in relation to the landing wheels, whereby the ends of the wings of the machine will not hit the ground when it tilts to either side, or when banking.

A further object is to provide a second practice wheel forwardly of the balance practice wheel, and positioned in relation to the other wheels whereby, upon a nosing over movement, the wheel will engage the ground and prevent the propeller from being damaged.

A further object is to mount both practice wheels on a removable carrier member carried by the under side of the fuselage so the practice wheels can be easily removed when it is desired to apply the removable panels to the wings for flight purposes.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawings, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings:

Figure 1 is a perspective view of the airplane, showing the wing structure with panels removed.

Figure 2 is a bottom perspective showing the airplane tipped to one side.

Figure 3 is a top plan view of the forward portion of the airplane, showing the removable panels in position.

Figure 4 is a side elevation of the forward portion of the airplane, showing the same balanced on the practice wheel.

Figure 5 is a detail sectional view taken on line 5-5 of Figure 3.

Figure 6 is a transverse sectional view through one of the wings taken on line 6-6 of Figure 3. Figure 7 is a front elevation of the airplane showing the same horizontally balanced.

Figure 8 is a bottom perspective view of the practice wheel carrying plate.

Figure 9 is a vertical transverse sectional view through the practice wheel plate and the yieldable means against which the rear practice wheel operates.

Referring to the drawings, the numeral 1 designates a fuselage of a conventional form of airplane, and 2 the propeller carried by the forward end thereof. It is to be understood the machine is to have the conventional form of controls and engine, and the operator, for training purposes, is to operate these controls and engine to advance the machine over the ground in as near a horizontal plane as possible. It is also to be understood the airplane is to be provided with wings 3 having a reduced effective wing area, so the machine will not rise from the ground, but sufficient so the machine can assume a horizontal position. To accomplish this result the portion of the wing framing, adjacent the opposite sides of the fuselage, is uncovered, hence only the outer ends of the wings will have any lifting power and then only enough to allow the machine to assume a horizontal position.

After the operator becomes proficient in the operation of his machine, the framing, which is open as shown in Figures 1 and 2, is covered by upper and lower panels 4 and 5, so the machine can be used for flying purposes.

The panels 4 abut each other above the ribs 6 of the wings as clearly shown in Figure 5, and are secured to the ribs by bands 7 overlapping the adjacent panels and having screws 8 extending therethrough and into the ribs. It will be noted that the lead edges of the panels 4 curved downwardly and rearwardly beneath the lead edge and overlap the forward edges of the panels 5, and are secured thereto by means of screws 9. The rear edges of the panels 4 extend downwardly and forwardly and overlap the rear edges of the panels 5 and are secured in place by means of the screws 10, which pass through the overlapped portions and the portions 11 of the bands 7 beneath the wings. The band portions 11 are secured to the framing by means of screws 12. It will be seen that after the training period terminates, the wing area may be increased to capacity for general flying.

During training the operator is trained to control the machine in as near a horizontal posi-

tion as possible, as it moves over the ground, and to accomplish this result a special landing mechanism is provided between the permanent landing wheels 13. Secured to the under side of the fuselage by means of bolts 14 is a removable plate 15, which plate is provided with a downwardly extending cylinder 16 having a piston 17 slidable therein against the yieldable cushioning members 18 for taking up the shock. Piston 17 is held within the cylinder 16 by means of a removable bushing 19 and slidably mounted in the bushing is a downwardly extending shaft 20, the lower end of which shaft terminates in a fork 21 having a practice wheel 22 mounted therein. Referring to Figure 7, it will be noted that the lower side of the practice wheel is below the plane of the fixed landing wheels 13, and when the machine is in a horizontal position the landing wheels are above the ground level 23.

During practice the operator endeavors to maintain the machine in the position shown in Figures 4 and 7, however it will be noted that wheels 12 and 13 are positioned whereby, upon a side tilting, the tip ends of the wings will be prevented from hitting the ground by the engagement of one or the other of the fixed landing wheels 13, therefore it will be seen that the wings will not be damaged.

During the operation of the machine the operator controls the elevating and depressing mechanism in the usual manner and moves the elevating rudders 24, therefore it is necessary to provide means for preventing nosing over of the machine and damage to the propeller 2. To accomplish this result a second practice wheel 25 is provided, which wheel is located forwardly of the practice wheel 22, and in the same plane as the wheel 22. Practice wheel 25 is carried by a downwardly and forwardly extending arm 26 carried by the plate 15 and extends beyond a line drawn between the periphery of the practice wheel 22 and the periphery of the propeller 2, as shown in Figure 4, therefore it will be seen that upon a nosing over the machine, the second practice wheel 25 will engage the ground and will prevent the propeller from coming into engagement with the ground.

Cylinder 12 is preferably provided with braces 27, which connect it to the plate 13 and with

a forwardly extending brace 28, which braces the arm 26, therefore it will be seen that all of the parts are rigidly held.

After the termination of the training period the practice wheels and their carrying mechanism are removed from the machine by removing the bolts 14 and detaching the plate 15 from the fuselage. When this is done the plane rests on its permanent landing wheels 13.

From the above it will be seen that a practice machine is provided in which the operator can be easily trained so he will know how to control the machine, and to maintain an equilibrium. It will also be seen that the wings and propeller are protected as the machine moves over the ground so when banking, and after the training period the machine may be easily converted for actual flying, by simply removing the practice wheel structure and placing the panels on the exposed framing portions of the wings.

The invention having been set forth what is claimed as new and useful is:

1. The combination with the under side of an airplane fuselage having wings of an area only sufficient to raise the airplane to a horizontal position in relation to the ground, said fuselage having transversely spaced landing wheels, of a practice unit detachably connected as a unit to the fuselage between the landing wheels, said unit comprising a removable member secured to the fuselage, a practice wheel carried by the removable member between the landing wheels and extending below the landing wheels and on which the airplane is adapted to be balanced in a horizontal position in relation to the ground with the landing wheels out of engagement with the ground, said practice wheel and said landing wheels forming means whereby the wing ends will not engage the ground when the airplane is at rest on the practice wheel and either of the landing wheels in engagement with the ground.

2. A device as set forth in claim 1 including a second practice wheel carried by the removable member forwardly of the first mentioned practice wheel and extending beyond a line drawn between the periphery of the first mentioned practice wheel and the propeller of the airplane.

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