June 20, 1939. J. C. ZIEGLER 2,163,114

STUDENT'S CONTROL STICK FOR AIRPLANES

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Fig. 1.

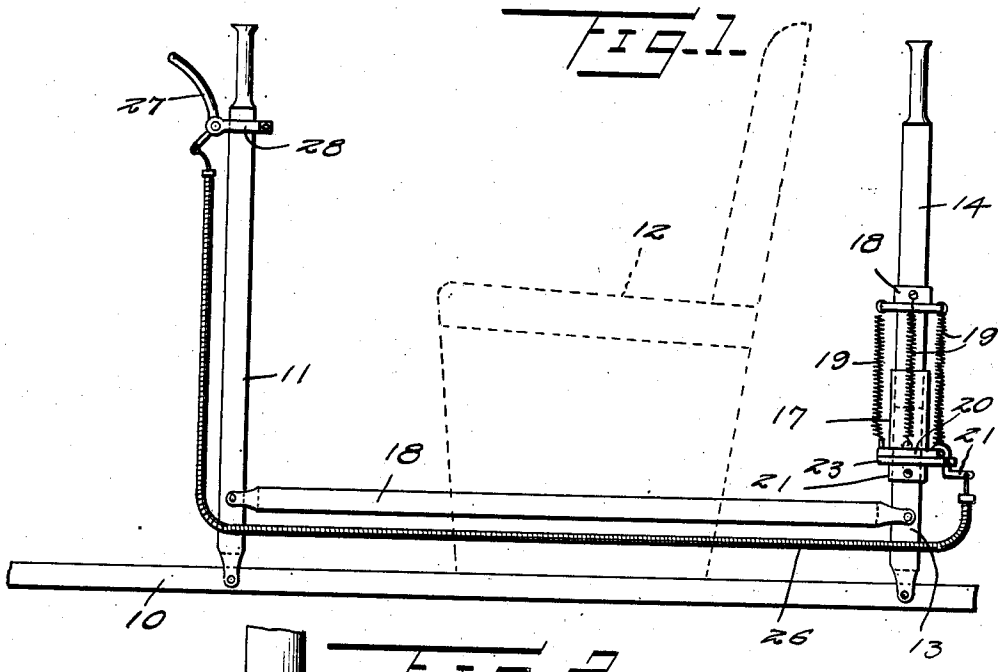


Fig. 2.

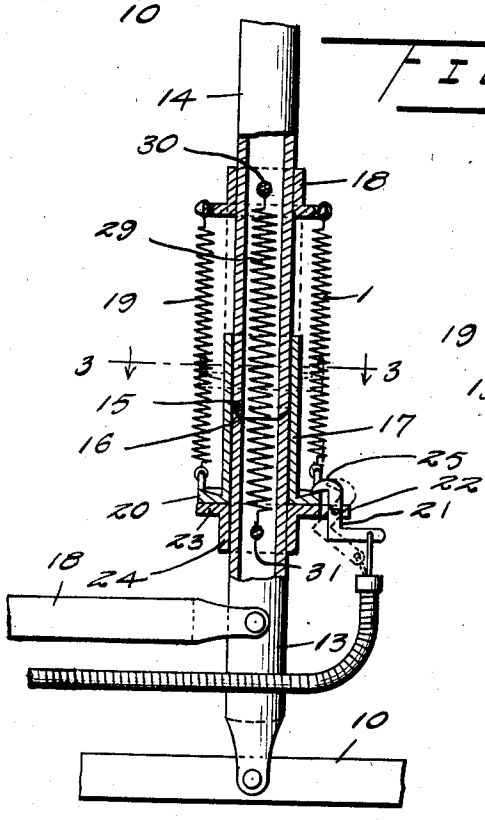
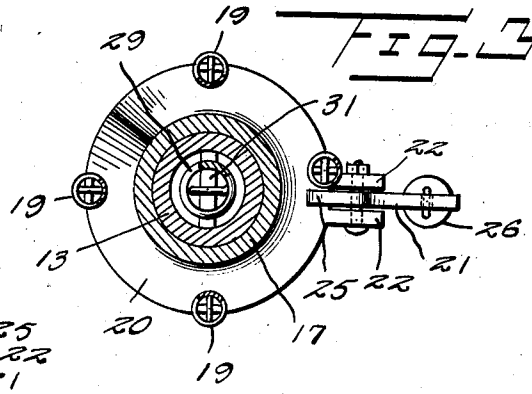


Fig. 3.



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STUDENT'S CONTROL STICK FOR AIRPLANES

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2 Claims. (Cl. 244—84)

This invention relates to student's control stick for airplanes.

An object of the invention is to provide a control stick which will be so constructed as to permit the instructor to take control of the airplane at any time, in case the student becomes excited and "freezes" or fouls the stick.

A further object is to provide a student's control stick which will be so constructed that should the student regain his nerves and the instructor consider him capable of again taking over the airplane, the student can, with the instructor's permission, reconnect his stick and take control of the airplane.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawing forming part of this specification,

Figure 1 is a side elevation of a portion of an airplane fuselage showing the instructor's seat, the instructor's stick, and a student control stick constructed in accordance with the invention.

Figure 2 is a side elevation of the lower portion of the student's control stick showing the jointed and spring controlled construction thereof.

Figure 3 is a cross sectional view of the control stick taken on the line 3—3 of Figure 2 and drawn to large scale.

Referring now to the drawing in which like characters of reference designate similar parts in the various views, 10 designates a portion of the fuselage, 11 the instructor's control stick, and 12 the instructor's seat, these parts being conventional airplane construction.

In carrying out the invention a student's control stick is provided the same comprising a lower tubular section 13, an upper tubular section 14 which is provided with a beveled lower end 15 which fits in a correspondingly shaped upper end 16 of the lower section. A coupling sleeve 17 extends over both sections of the stick to normally hold the sections assembled as a unit so that the stick may be used in the usual manner to control the airplane from the student's cockpit through the instrumentality of a link 18 which connects the student's stick with the instructor's stick so that both move in unison to manipulate the controls in the usual manner when the student is in control of the airplane.

The sleeve 17 is slidably mounted on the upper and lower sections of the student's stick and may be slid bodily upward upon the upper section to clear the lower section so that the upper section or grip section of the stick becomes disconnected from the lower section. To releasably secure the sleeve in place a flanged collar 18 is secured to the upper section 14 of the stick in any preferred manner. A plurality of equally spaced helical springs 19 extend downwardly from the flange of the collar and are connected at the lower ends to a flange 20 on the bottom of the sleeve 17. These springs tend constantly to pull the sleeve to released position.

To hold the sleeve in coupling position a bell crank like latch 21 is pivoted between hinge ears 22 which project from the flange 23 of a sleeve 24 which is rigidly secured to the lower section 13 of the stick. The latch is provided at the upper end with a hook 25 which hooks over the flange 20 of the sliding sleeve and holds the sleeve at its coupling position, resting upon the flange 23 of the stationary collar 24, to hold the sections of the stick assembled in alignment.

A flexible shaft 26 is connected to the free end of the latch and is trained forwardly to the instructor's stick 11 and thence upwardly on the stick where it is connected at the upper end to a lever 27 which is pivotally connected to a collar 28 secured to the upper end of the instructor's stick. At any time should the student become incapable of operating the ship the instructor need only to press the lever 27 thereby pulling the latch 21 from the sliding sleeve and permit the springs 19 to contract and move the sleeve to uncouple the sections of the student's stick.

Should at any time after the emergency has passed and the student has recovered from his attacked nerves, with the instructor's permission the student may again take over the control stick and for this purpose the instructor need only release the lever 27 to permit the student sliding the sleeve 17 downwardly until the flange thereof rests upon the stationary flange 23 in which position of the parts the hook of the bell crank latch will hook over the flange 20 of the sliding sleeve 17 and hold it in operative position to again couple together the upper section 14 and the lower section 13 of the student's stick.

Referring now to Figure 2 it will be seen that a helical spring 29 is housed in the bores of the tubular upper section 14 and tubular lower section 13 of the student's stick and is connected at

the upper end with the upper stick through the instrumentality of a pin 30 and is connected at the lower end to the lower section of the stick through the instrumentality of a pin 31. The purpose of this spring is to yieldably hold both sections of the stick in normal aligned position when the spring is not of sufficient strength to overbalance the spring 19 and thus will nearly be relieved slightly of tension when the springs 19 contract to lift the sleeve 17 to uncoupling position, and still retain sufficient tension to permit the upper section 14 and the lower section 13 of the stick to be easily and quickly realigned when it is desired to move the sleeve 17 to coupling position after each actuation.

From the above description it is thought that the construction and operation of the invention will be fully understood without further explanation.

What is claimed is:

1. A student's control stick for airplanes comprising upper and lower aligned sections, a sleeve coupling the sections together at their meeting ends, springs connected to the upper section and to the sleeve tending constantly to slide the sleeve upwardly onto the upper section to clear the lower section and disconnect the upper section from the lower section, a latch engaging said sleeve and pivotally mounted on the lower section for holding said sleeve releasably in operative position, means for moving said latch to release the sleeve, and a single spring connected to both sections of the stick and tending constantly to hold both sections assembled.

2. A student's control stick for airplanes comprising upper and lower hollow sections, a spring in the bores of both sections and connected to both sections for normally holding the sections in alignment, a sleeve slidably fitted on both sections and normally coupling the sections together at their meeting ends, collars on both sections, a collar on the sleeve, springs connected at the ends to the collar on the sleeve and to the collar on the upper section and tending constantly to pull the sleeve upwardly to uncoupling position on the upper section, a latch pivoted on the collar on the lower section and normally hooked over the collar on the sleeve to hold the collar on the sleeve in contact with the collar on the lower section in coupling position, and means for moving the latch to release the coupling sleeve for movement by its controlling springs to uncoupling position.

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