April 15, 1930. H. P. FINLEY 1,755,058

SUSTAINING AND STABILIZING ATTACHMENT FOR AIRPLANES

Filed May 8, 1929 3 Sheets-Sheet 1

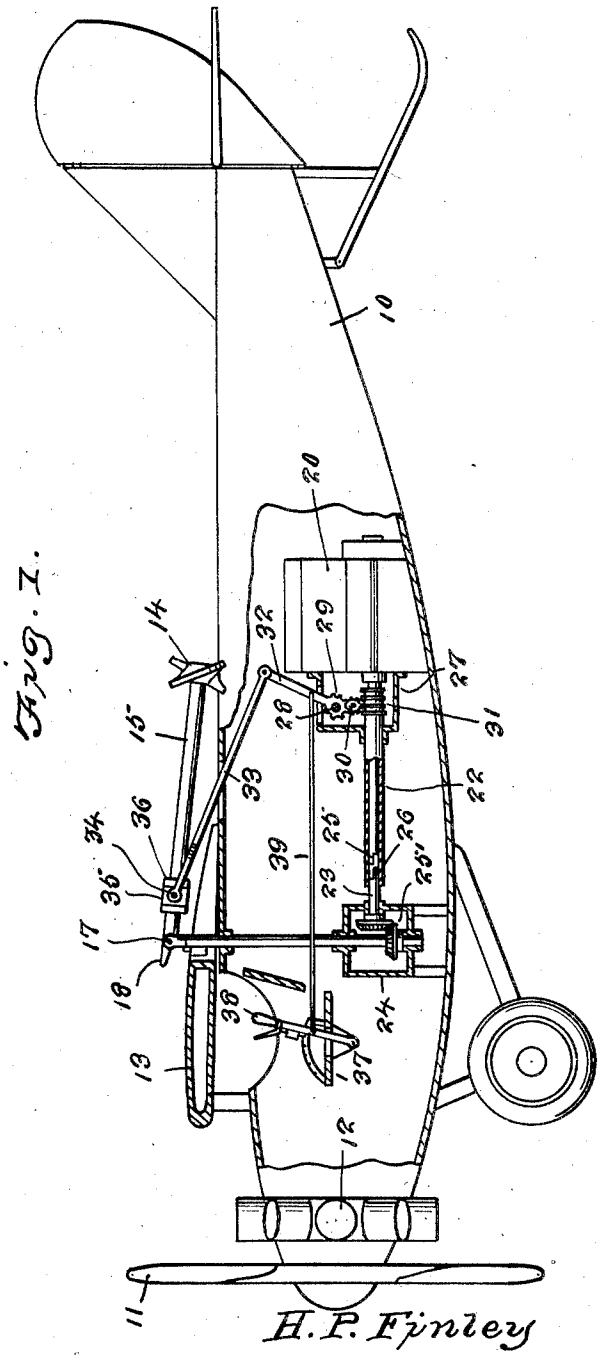


Fig. 1.

H. P. Finley INVENTOR

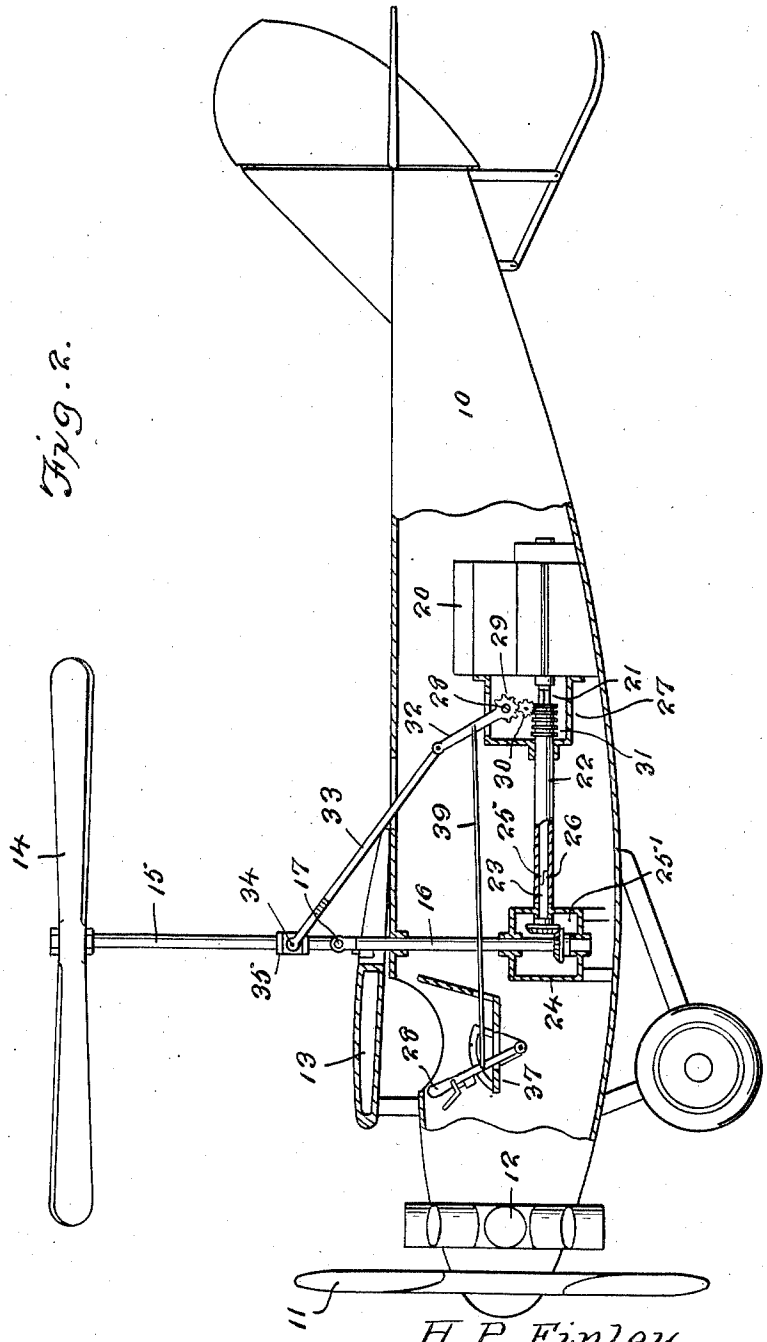
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SUSTAINING AND STABILIZING ATTACHMENT FOR AIRPLANES

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SUSTAINING AND STABILIZING ATTACHMENT FOR AIRPLANES

Filed May 8, 1929 3 Sheets-Sheet 3

Fig. 4.

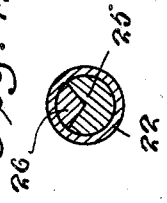
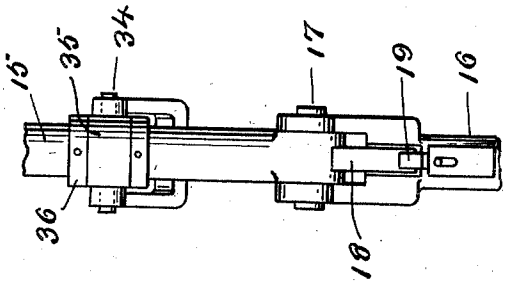


Fig. 6.



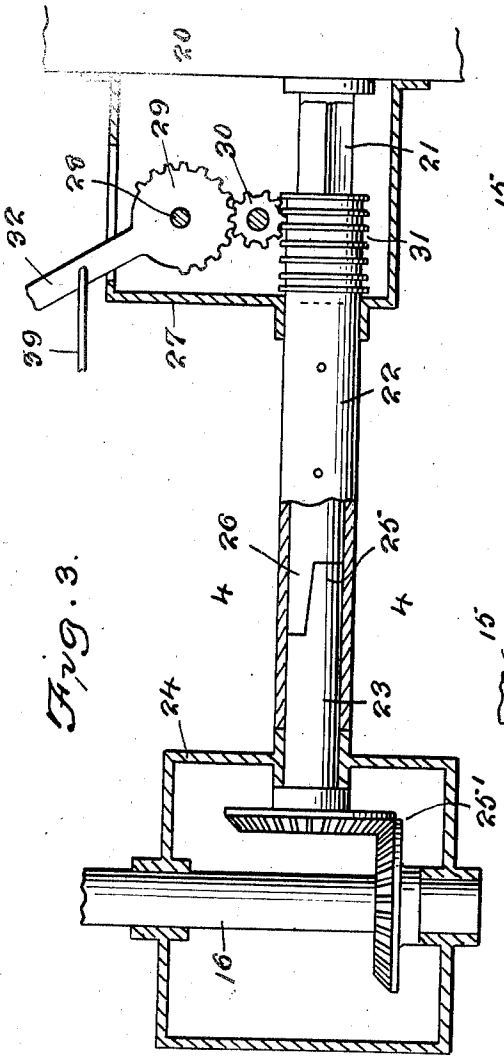


Fig. 3.

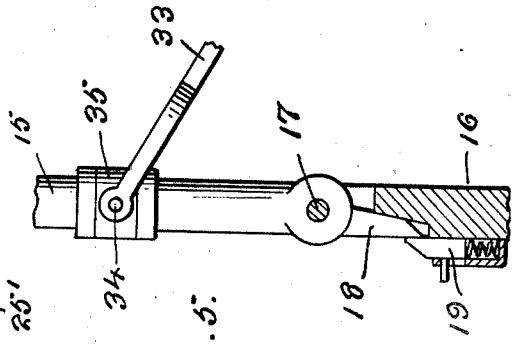


Fig. 5.

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Patented Apr. 15, 1930 1,755,058

UNITED STATES PATENT OFFICE

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SUSTAINING AND STABILIZING ATTACHMENT FOR AIRPLANES

Application filed May 8, 1929. Serial No. 361,436.

This invention relates to improvements in airplanes and has especial relation to stabilizing or safety devices therefor.

An object of the present invention is to provide means for checking the descent of an airplane in the event of interference with the operation of the traction propeller or its engine, so that the plane may safely descend.

Another object of the invention is the provision of an auxiliary propeller which is normally inactive and which may be rendered active to provide for a safe landing, or may be utilized as a lifting propeller to provide for a more direct ascent, means being provided for controlling the operation of the auxiliary propeller so that it may be conveniently moved into and out of position for use.

With the above and other objects in view, the invention further includes the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings:—

Figure 1 is an elevation partly in section illustrating an airplane with the invention applied, the auxiliary propeller being shown in an inactive position.

Figure 2 is a similar view with the auxiliary propeller arranged in position for use.

Figure 3 is an enlarged fragmentary sectional view showing the propeller driving and controlling means.

Figure 4 is a section on the line 4—4 of Figure 3.

Figure 5 is a fragmentary elevation partly in section illustrating the means for holding the auxiliary propeller shaft in an upright position.

Figure 6 is an elevation taken at right angles to Figure 5.

Referring to the drawings in detail wherein like characters of reference denote corresponding parts, the reference character 10 indicates the fuselage of the machine, 11 the traction propeller and 12 the engine for driving said propeller while the wing of the plane is indicated at 13.

The present invention resides in the provision of an auxiliary propeller 14 which is mounted upon one section 15 of a vertical shaft whose other section 16 is mounted in suitable bearings and extends upward through the wing 13. The sections 15 and 16 are pivotally connected as shown at 17 and the section 15 carries a finger 18 which is adapted to be engaged by a spring influenced latch 19 carried by the section 16. By this means, the upper section 15 of the shaft of the propeller 14 may be vertically arranged as shown in Figure 2, but horizontally arranged as shown in Figure 1 of the drawings.

The propeller 14 is driven from an independent source of power which may be in the form of an engine 20. Slidably mounted upon the shaft 21 of the engine and rotatable therewith is a sleeve 22 and this sleeve has its outer end arranged to slide over one end of a shaft 23 which is mounted in a bearing provided in a gear housing 24. The shaft 23 is longitudinally grooved as shown at 25 so as to receive a rib 26 rigid with the sleeve 22 whereby rotation of the sleeve will rotate the shaft 23.

The opposite end of the shaft 23 is geared as shown at 25′ to the lower end of the section 16 of the shaft of the propeller 14. This shaft section 16 extends into the gear housing 24 and rotates in suitable bearings provided for this purpose. As will be seen from Figure 3 of the drawings, the shaft 21 of the engine 20 is rectangular in cross section so that the sleeve 22 may slide thereon but will rotate therewith.

The shaft 21 and the inner end of the sleeve 22 are located within a housing 27 and mounted within this housing is a shaft 28 upon which is mounted a segmental gear 29. The gear 29 engages an idler 30 also mounted upon a shaft within the housing 27 and this idler engages circumferential teeth or ribs 31 which extend around the inner end of the sleeve 22.

Extending from the segmental gear 29 is an arm 32 and pivotally secured to this arm is one end of a rod 33. The opposite end of this rod is forked and is pivotally secured as shown at 34 to a sleeve 35 within which the upper section 15 of the shaft of the propeller 14 rotates. This sleeve is swiveled upon the

said section 15 through the medium of collars 36.

Arranged adjacent the seat 37 within the cock pit of the plane is an operating lever 38 and this lever is connected by means of a rod 39 with the arm 32.

Normally, the propeller 14 may be arranged as shown in Figure 1 of the drawings and the airplane will travel under the power of the traction propeller 11. In the event of interference with the operation of the engine 12, the engine 20 may be brought into use. The lever 38 is then operated to move the arm 32 forward to the position shown in Figure 2, whereupon the section 15 of the shaft of the propeller 14 will be vertically positioned and as the finger 18 will ride over the end of the latch 19, the latch will thereafter engage this finger and hold the shaft section 15 upright. During this forward movement of the arm 32, the sleeve 22 will be moved axially forward due to the rotation of the segmental gear 29 and the idler 30, so that the clutch provided between the sleeve and the shaft 23 will be engaged and the shaft of the propeller 14 will be rotated.

The propeller 14 may be used as an emergency propeller or as an auxiliary propeller to aid in making a more direct ascent or descent.

The invention is susceptible of various changes in its form, proportions and minor details of construction and the right is herein reserved to make such changes as properly fall within the scope of the appended claims.

Having described the invention what is claimed is:—

1. In combination with an airplane, a traction propeller, a lifting propeller, a separate source of power for the lifting propeller, means including a sectional shaft to operatively connect the lifting propeller with its source of power, said shaft comprising a fixed section and an axially movable section, coupling means for said sections, means to move the lifting propeller to an active position, and means operated by the lifting propeller moving means to move the movable section of said shaft axially and couple the same to the fixed section.

2. In combination with an airplane, a vertically disposed sectional shaft including an inner fixed section and an outer section hingedly secured thereto, a propeller carried by the outer section, a finger extending from the inner end of the hinged section, a spring influenced latch carried by the fixed section in the path of the finger and engagable therewith to hold the hinged section in upright position, means to raise the hinged section of the shaft, and means to rotate the shaft.

In testimony whereof I affix my signature.

H. P. FINLEY.