

June 3, 1924.

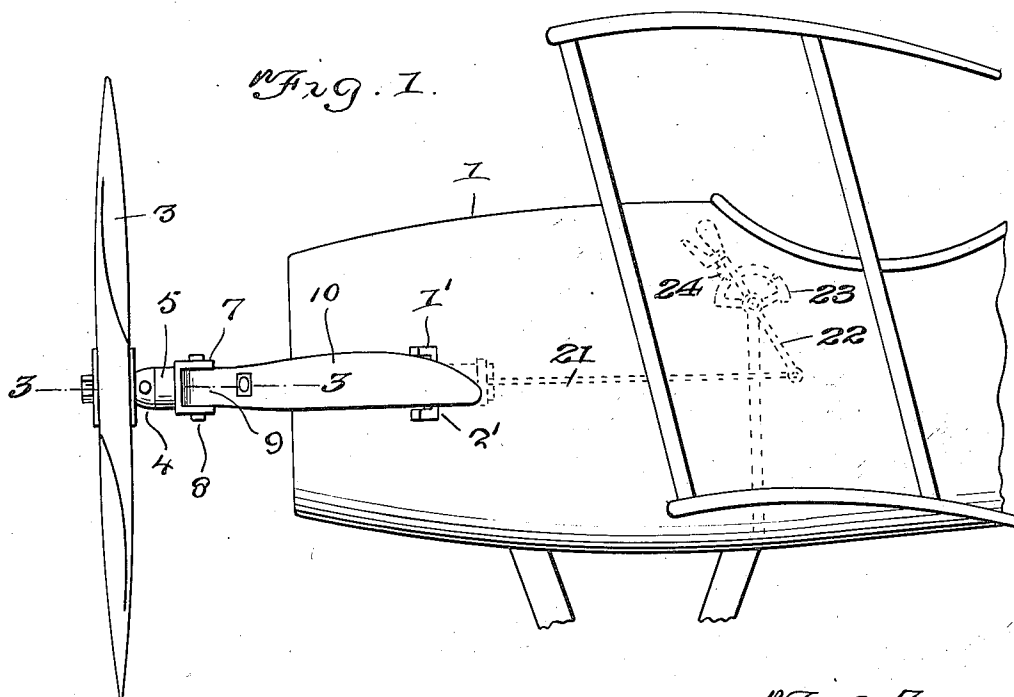
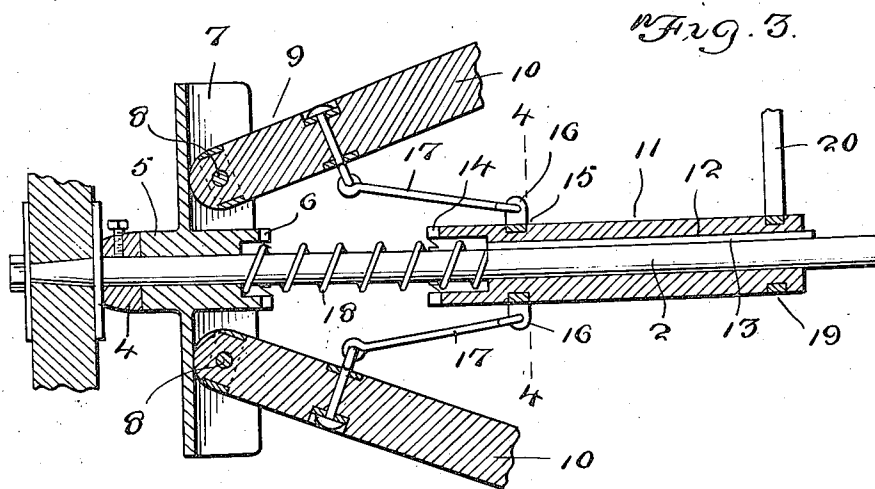
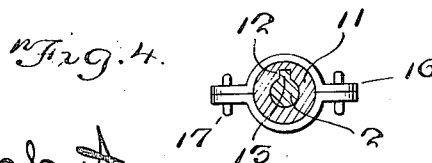
A. MILLER

1,496,723

EMERGENCY PROPELLER

Filed Jan. 10, 1923

2 Sheets-Sheet 1



E. R. Ruppert.

Albert Miller
INVENTOR

BY Victor J. Evans
ATTORNEY

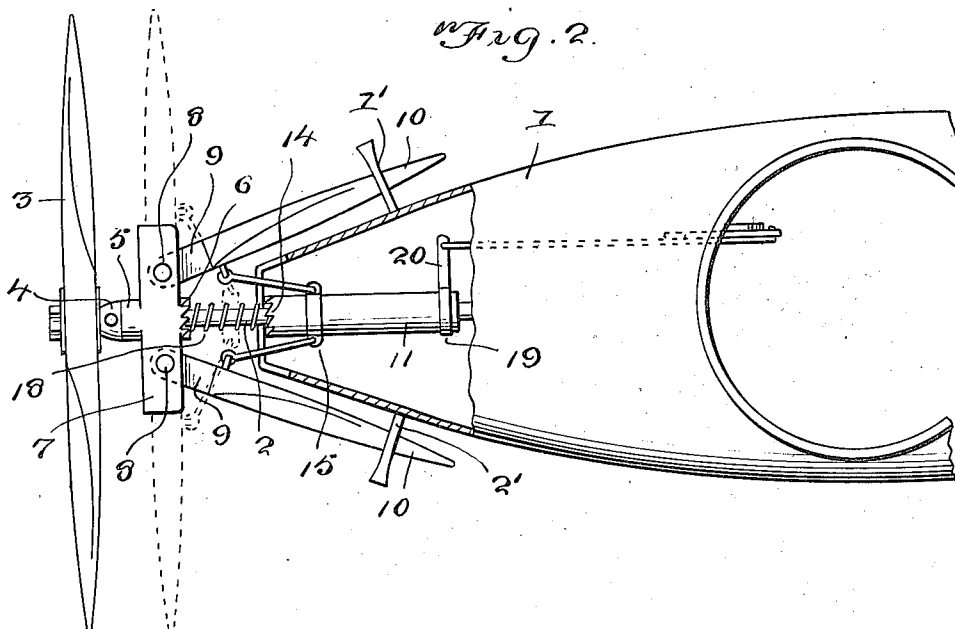
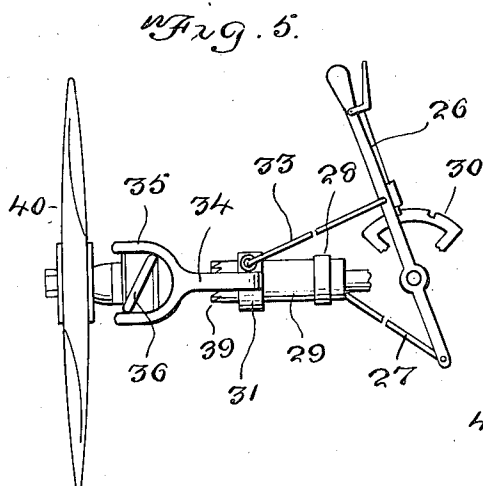
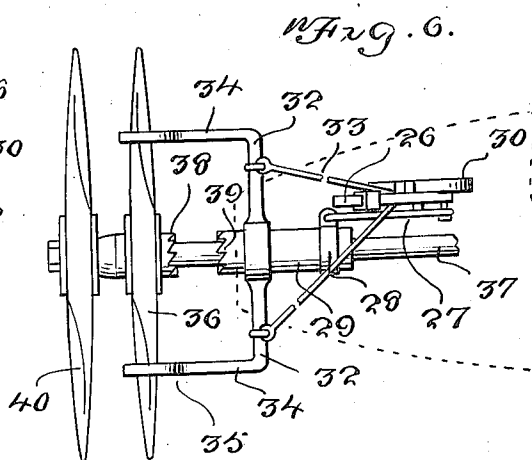
WITNESS:

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UNITED STATES PATENT OFFICE.

ALBERT MILLER, OF KNIERIM, IOWA.

EMERGENCY PROPELLER.

Application filed January 10, 1923. Serial No. 611,799.

To all whom it may concern:

Be it known that I, ALBERT MILLER, a citizen of the United States, residing at Knierim, in the county of Calhoun and State of Iowa, have invented new and useful Improvements in Emergency Propellers, of which the following is a specification.

Frequent accidents have resulted in both air and water crafts, especially the former, by the breakage of the propeller therefor, and it is the object of this invention to provide such craft with an auxiliary or emergency propeller that comprises two sections pivotally supported on the propeller shaft inward of the main propeller, said sections being normally arranged in a line with the shaft and therefore in closed position, means being provided for solely holding the propeller blades, and means being also provided for throwing and retaining the blades in the wind or water.

To the attainment of the foregoing and other objects which will present themselves as the nature of the invention is better understood, reference is to be had to the drawings which accompany and which form part of this application.

In the drawings:—

Figure 1 is a view of a sufficient portion of an aeroplane to illustrate the application of the improvement thereon.

Figure 2 is a top plan view with parts broken away, and parts in section.

Figure 3 is a fragmentary enlarged sectional view approximately on the line 3—3 of Figure 1, the body of the aeroplane not being shown.

Figure 4 is a sectional view on the line 4—4 of Figure 3.

Figure 5 is a side elevation illustrating a modification.

Figure 6 is a top plan view thereof.

While in the following specification, I shall refer to my improvement in connection with an aircraft, it is to be understood that the same is to be considered equally applicable to a watercraft.

In the drawings, the numeral 1 designates a portion of an aircraft, 2 the propeller shaft therefor, and 3 the propeller which is fixed on the outer end of the shaft 2.

On the shaft 2, inward of the propeller 3, I fix a collar 4 which serves as an abutment for the outer end of a sleeve 5. The sleeve 5 is freely mounted on the shaft 2 and has its inner face provided with clutch surfaces

6. The clutch sleeve 5 has fixed thereto or may have integrally formed therewith laterally extending channeled members 7, and in each of these there is pivoted, as at 8 the inner and reduced ends 9 of the blades 10 of my auxiliary propeller. The blades 10 are shaped similar to those of the main propeller 3.

Arranged for slidable movement on the shaft 2, inward of the clutch sleeve 5 there is another and longer sleeve 11. This sleeve has its bore provided with a groove 12 in which is received a spline 13 projecting from but fixed to the shaft 2. On its outer face the sleeve 11 is provided with clutch surfaces 14 designed, when moved in the direction to coengage with the clutch surface 6 of the sleeve 5, and consequently cause the said sleeve 5 to rotate with the shaft 2.

The blades 10 are normally swung toward each other and are held against the side of the craft 1 between parallel fingers 1' formed on the ends of brackets or plates 2'.

The sleeve 11, inward of its clutch end has an annular groove for the reception of a split ring 15. The ring has its ends provided with outturned lugs 16 suitably connected, and to these lugs and to the inner faces of the blades 10 there are pivotally connected links 17.

Surrounding the shaft 2, and received in sockets at the clutch ends of the respective sleeves 5 and 11 there is a helical spring 18. This spring moves the clutch sleeve 11 inwardly which, through the medium of its link connections with the blades 10 likewise move the blades to folded position and into engagement between the arms 1' of the brackets 2' so that the shaft 2 may be revolved to impart a like motion to the main propeller 3. When, however, the sleeve 11 is moved longitudinally on the shaft to bring its clutch end into engagement with the clutch on the sleeve 5, the folded links 17 will be straightened and the reduced ends of the blades will be housed in the channeled members 7 so that the blades will be caused to revolve with the shaft 2. This occurs only when the main propeller 3 is broken or otherwise disabled.

The sleeve 11, adjacent to its inner end is provided with a second annular groove in which is received a ring member 19 provided with a lug 20 and to this lug there is attached a rod 21 leading directly into the craft 1.

The rod 21 is connected to the lower end of a lever 22, which is pivoted to a segmental rack 23 and which carries a handle operated spring influenced dog 24. The dog, of course, engages teeth on the rack 23. The rack is provided with two notches and when the dog is arranged in one of the notches the auxiliary blades 10 are bolted against the sides of the craft and when the lever is swung to bring the dog into the second notch the blades are moved by the sleeve 11 and links 17 into active position, the clutch surface 14 on the said sleeve engaging the clutch surface 6 on the member 5 when the blades are so arranged.

Preferably the links pass through slots in the front or bow of the craft which more effectively hold the blades in inoperative position.

In Figures 5 and 6 of the drawings a pivoted lever 26 may have a link connection 27 with a collar 28, similar to the collar 19 on the sleeve 29 which is similar to the sleeve 11. The lever 26 carries a hand actuated spring influenced dog arranged to engage one of two notches in a rack segment 30.

In other respects, the construction disclosed in Figures 5 and 6 somewhat differs from that previously described, as for instance the outer collar 31, instead of being provided with lugs has arm extensions 32, and to these extensions there are pivoted links 33 that are also pivotally connected to the lever 26 above the rack 30, it being noted that the link 27 is pivoted adjacent to the bottom of the said lever. The arms 32 have rightangular outwardly directed extensions 34 whose ends are enlarged and bifurcated, as at 35 to normally receive therein the blades of a single auxiliary propeller 36. The auxiliary propeller 36 has its hub freely received on the shaft 37, similar to the shaft 2. The hub has an inner clutch surface 38, and the sleeve 29 has a similar clutch surface 39. The sleeve 29 is, of course, mounted in a keyway on the shaft 37, so that by moving the lever out of engagement with the segment 30 as disclosed in Figures 5 and 6 of the drawings, and swinging the said lever to bring its dog into engagement with the second or inner notch of the said segment 30 the links 33 will cause the collar 31 to slide on the sleeve 27 to bring the forked ends 35 of the arms 34 out of engagement with the blades of the auxiliary propeller 36. Such movement also causes the link 27 to move the sleeve 29 outwardly so that its clutch surface 39 is brought into engagement with the clutch surface 38 on the auxiliary propeller 36. This movement occurs, of course, when the main propeller 40 is damaged.

It is thought that the foregoing description, when taken in connection with the drawings will fully set forth the construc-

tion and operation of parts to those skilled in the art to which this invention relates, but it is to be understood that I do not desire myself restricted to the precise structural embodiment herein set forth and hold myself entitled to such changes therefrom as fall within the scope of what I claim.

Having described the invention, I claim:—

1. The combination of a propeller shaft and a propeller thereon, of an auxiliary propeller designed for use when the main propeller is broken or damaged, comprising opposed wing blades folded against the sides of the shaft but out of contact and non-rotatable therewith, and susceptible to swinging movement on the shaft to bring the opposed blades into longitudinal alignment and lock the same to the shaft to be rotated thereby.

2. The combination of a propeller shaft having a propeller, of an auxiliary propeller designed for use when the main propeller is broken or damaged, comprising a pair of opposed pivotally supported wing blades, means for swinging the same against the sides of the shaft but out of contact and not rotatable therewith, means for swinging the blades laterally with respect to the shaft to bring said blades in longitudinal alignment, and means locking the blades to the shaft when in such position.

3. The combination of a propeller shaft and a propeller thereon, of an auxiliary propeller designed for use upon the breakage or damage of the main propeller, comprising two opposed pivotally supported wing blades arranged to the opposite sides of the shaft directly inward of the propeller, means, comprising pivoted links designed when folded to arrange the blades in a line with the sides of the shaft but out of contact and non-rotatable therewith, means for moving the pivotally connected links to longitudinal alignment to swing the blades outward with respect to the shaft, means receiving and locking the blades in such position, and means locking the blades to the shaft when the said blades are in said mentioned position.

4. The combination of a propeller shaft having a propeller thereon, of an auxiliary propeller designed for use upon the breakage or damage of the main propeller, comprising a sleeve freely arranged on the shaft and held against longitudinal movement thereon, opposed blades pivotally supported by the sleeve, means comprising pivotally connected links between the blades and sleeve designed when folded to arrange the blades longitudinally of the shaft, means for so influencing the links, means for influencing the links to spread the same to bring the blades outward of the shaft and in longitudinal alignment, and means locking the sleeve to the shaft when the blades are so positioned.

5. The combination of a propeller shaft having a propeller thereon, of an auxiliary propeller designed for use upon breakage or damage of the main propeller, comprising a clutch sleeve freely mounted on the shaft inward of the propeller, means holding said clutch sleeve from longitudinal movement on the shaft, channeled members extending laterally from the clutch sleeve, propeller blades having reduced ends received in and pivotally secured to the channeled members, links pivotally connected to each other and to the sleeve and blades, a second clutch sleeve revoluble on the shaft and susceptible to longitudinal movement thereon, means between the last mentioned sleeve and one of each series of links for influencing the links to bring the blades along the sides of the shaft when the last mentioned sleeve is in normal position, means for moving the last mentioned sleeve to clutching engagement with the first mentioned sleeve whereby to spread the links to swing the blades outwardly from the shaft to house the inner ends thereof in the channeled members and likewise to cause the first mentioned sleeve to revolve with the shaft.

6. The combination of a propeller shaft having a propeller thereon, of an auxiliary propeller designed for use upon breakage

or damage of the main propeller, comprising a clutch sleeve freely mounted on the shaft inward of the propeller, means holding said clutch sleeve from longitudinal movement on the shaft, channeled members extending laterally from the clutch sleeve, propeller blades having reduced ends received in and pivotally secured to the channeled members, links pivotally connected to each other and to the sleeve and blades, a second clutch sleeve revoluble on the shaft and susceptible to longitudinal movement thereon, means between the last mentioned sleeve and one of each series of links for influencing the links to bring the blades along the sides of the shaft when the last mentioned sleeve is in normal position, means for moving the last mentioned sleeve to clutching engagement with the first mentioned sleeve whereby to spread the links to swing the blades outwardly from the shaft to house the inner ends thereof in the channeled members and likewise to cause the first mentioned sleeve to revolve with the shaft, and means for locking the slidable sleeve operating means in position to hold the said slidable sleeve in either of its mentioned positions.

In testimony whereof I affix my signature.

ALBERT MILLER.