May 10, 1949. J. FISCHER 2,469,919

PROPELLER

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Fig. 1.

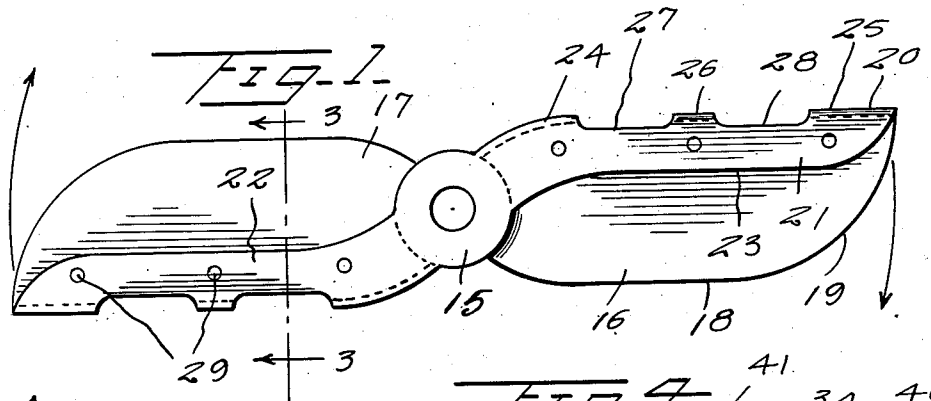


Fig. 4.

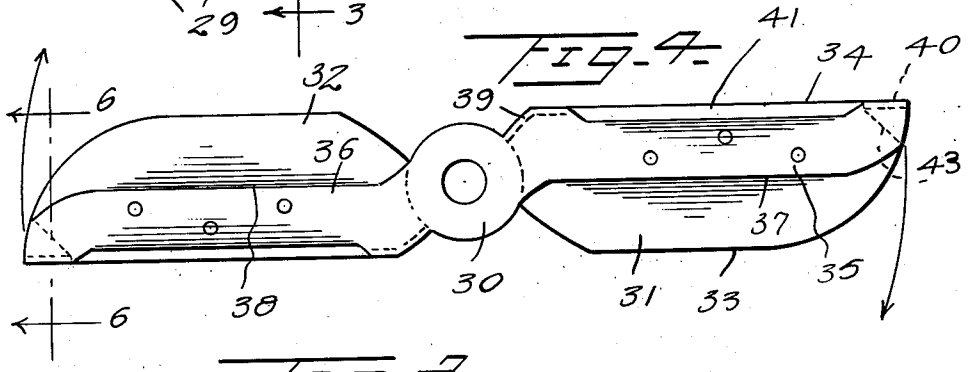
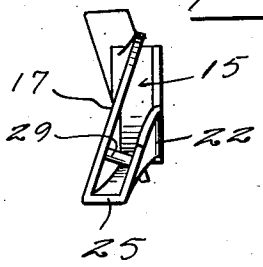


Fig. 2.



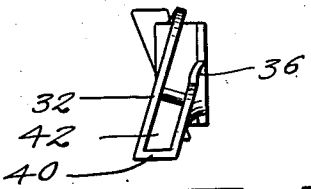


Fig. 5.

Fig. 3.

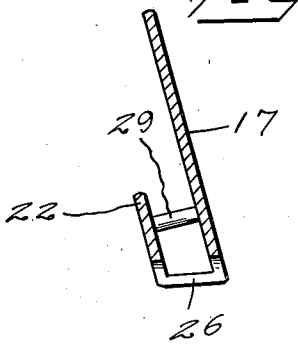
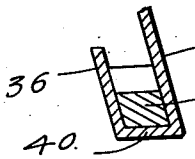


Fig. 6.



Inventor
Joseph Fischer

By Kimmel & Crowell
Attorneys

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Fig. 7.

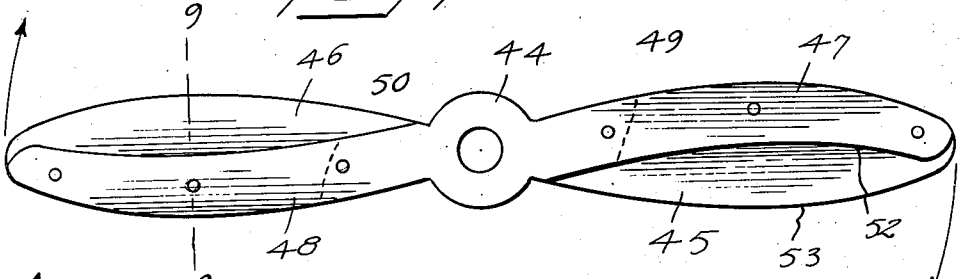


Fig. 10.

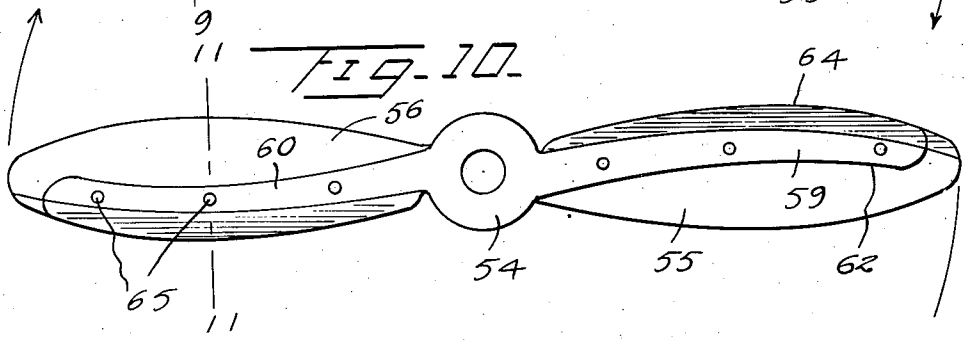


Fig. 8.

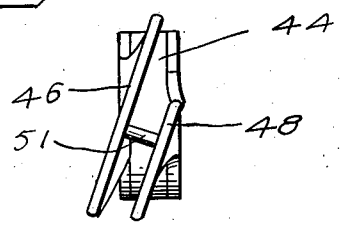


Fig. 9.

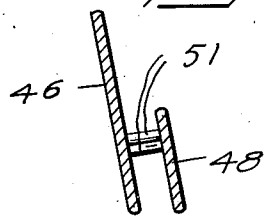
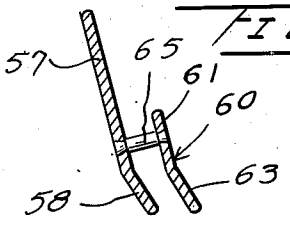


Fig. 11.



Inventor

Joseph Fischer

By Kimmel & Crowell

Attorneys

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UNITED STATES PATENT OFFICE

2,469,919

PROPELLER

Joseph Fischer, San Diego, Calif.

Application October 18, 1944, Serial No. 559,309

1 Claim. (Cl. 170—165)

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This invention relates to propellers or airscrews.

An object of this invention is to provide a propeller which is constructed in the form of a double blade, there being a main blade and an auxiliary blade with the latter having the same pitch as the main blade and spaced forwardly therefrom.

Another object of this invention is to provide a propeller having extending from the forward side of each blade thereof an auxiliary blade which is of the same pitch as the main blade and which is narrower than the main blade with the leading edge thereof trailing the leading edge of the main blade.

A further object of this invention is to provide a propeller in which the main and auxiliary blades are mounted on a common hub and are connected together at their trailing edges.

In the drawings:

Figure 1 is a detail front elevation of a propeller constructed according to an embodiment of this invention.

Figure 2 is a detail end elevation of the propeller shown in Figure 1.

Figure 3 is a sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a detail front elevation of a modified form of this invention.

Figure 5 is a detail end elevation of the propeller shown in Figure 4.

Figure 6 is a sectional view taken on the line 6—6 of Figure 4.

Figure 7 is a detail front elevation of another modification of this invention.

Figure 8 is a detail end elevation of the propeller shown in Figure 7.

Figure 9 is a sectional view taken on the line 9—9 of Figure 7.

Figure 10 is a detail front elevation of another modification of this invention.

Figure 11 is a sectional view taken on the line 11—11 of Figure 10.

Referring to the drawings and first to Figures 1, 2 and 3, the numeral 15 designates generally a hub which is adapted to be secured to a drive shaft for rotation therewith.

The hub 15 has secured thereto a pair of oppositely extending main propeller blades 16 and 17 which are formed with the desired pitch angle and the blades 16 and 17 which are of like construction are formed with a leading edge 18, which at the outer portion thereof is curved rearwardly as indicated at 19, and the curve 19 terminates at the trailing edge 20 of the blade 16.

The propeller also includes a pair of auxiliary

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blades 21 and 22 which are disposed in forwardly spaced parallel relation to the blades 16 and 17 respectively. The auxiliary blades 21 and 22 are of like construction and each includes a leading edge 23, which is positioned rearwardly from the leading edge 18 of the main blade 16. The trailing edge of the auxiliary blade 21 is connected or secured to the leading edge 20 of the main blade 16 by means of inner and outer connecting members 24 and 25 and an intermediate connecting member 26. A pair of openings 27 and 28 are formed between the inner connecting member and the intermediate connecting member 26, and between the intermediate connecting member and the outer connecting member 20. The body of the blade 23 is additionally braced or secured to the forward side of the main blade 16 by means of a plurality of combined spacer and securing pins 29.

Referring now to Figures 4, 5 and 6, there is disclosed a modified form of propeller blade structure which includes a hub 30, having secured thereto a pair of radially arranged main propeller blades 31 and 32. The propeller blades 31 and 32 include a leading edge 33 and a trailing edge 34. A pair of auxiliary blades 35 and 36 are disposed in forwardly offset relation with respect to the blades 31 and 32, respectively, and the blades 35 and 36 have their leading edges 37 and 38, respectively, disposed in rearwardly spaced relation with respect to the leading edges 33 of the main blades. The auxiliary blades 35 and 36 are of like construction and each auxiliary blade is connected to the trailing edge of the main blades by means of integral connecting members 39 and 40. The connecting members 39 and 40 are inner and outer connecting members, respectively, thereby providing a relatively long slot or passage 41 at the trailing edges of the main and auxiliary blades. The outer end of each auxiliary blade is additionally braced by means of a substantially triangular block 42 which is positioned between the tips of the main and auxiliary blades, and one side of the block 42 extending upwardly and rearwardly as indicated at 43.

Referring now to Figures 7, 8 and 9 there is disclosed a further modification of this invention embodying a hub 44, having extending radially therefrom a pair of main propeller blades 45 and 46. A pair of auxiliary blades 47 and 48 are disposed in forwardly spaced parallel relation to the forward side of the blades 45 and 46, respectively. The inner portions of the blades 47 and 48 are spaced from the blades 45 and 46 by means of spacer blocks 49 and 50, respectively, and the

outer ends of the auxiliary blades are secured to the outer portion of the main blades by means of combined spacer and securing pins **51**. The leading edges **52** of the auxiliary blades are of longitudinally concave configuration, which is opposed to the convex configuration of the leading edges **53** of the main blades. The leading edges **52** are spaced rearwardly from the leading edges of the main blades.

Referring now to Figures 10 and 11, there is disclosed a further modification of this invention embodying a hub **54** having a pair of main propeller blades **55** and **56** extending radially therefrom. The blades **55** and **56** are of like construction and each includes a body **57** disposed on the desired pitch angle and including a trailing portion **58**, which is disposed on an obtuse angle with respect to the body **57**. A pair of auxiliary blades **59** and **60** are disposed in forwardly spaced parallel relation with respect to the blades **55** and **56**. The auxiliary blades **59** and **60** are of like construction, and each includes a body **61** comprising the leading portion and which is formed with a concave leading edge **62**.

An obtusely disposed trailing portion **63** is disposed parallel with the obtusely disposed portion of the main blade and a rear or trailing edge **64** of the auxiliary blade is coplanar with the convex trailing edge of the main blade. The auxiliary blades **59** and **60** are substantially shorter in length than the length of the main blades **55** and **56**, and the outer end portions of the auxiliary blades are firmly secured in spaced relation with respect to the main blades by means of combined spacer and securing pins **65**.

With a propeller constructed according to this invention, the auxiliary blade being forwardly of the main blade, and being not only small in width, but positioned rearwardly of the leading edge of the main blade, will not materially

affect the operation of the main blade, but will provide an additional pulling force so that the main blade will not slip as greatly in the air stream.

What I claim is:

A propeller comprising a cylindrical hub, oppositely extending main blades overlying the rear end of said hub and extending radially therefrom, an auxiliary blade overlying each of said main blades on the forward side thereof, said auxiliary blade overlying the forward end of said hub and extending outwardly therefrom parallel to said main blade, spacers between said auxiliary blade and said main blade, the leading edge of said auxiliary blade being disposed rearwardly of the leading edge of said main blade, the trailing edge of said main blade extending rearwardly at least as far as the trailing edge of said auxiliary blade.

JOSEPH FISCHER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
285,212	Bell et al.	Sept. 18, 1883
1,344,496	Flattum	June 22, 1920
1,345,055	Willour	June 29, 1920
1,623,863	Fischer	Apr. 5, 1927
2,199,823	Kessery	May 7, 1940
2,344,266	Reissner	Mar. 14, 1944

FOREIGN PATENTS

Number	Country	Date
3,379	Great Britain	1913
416,799	Great Britain	Sept. 21, 1934
427,493	Great Britain	Apr. 25, 1935