

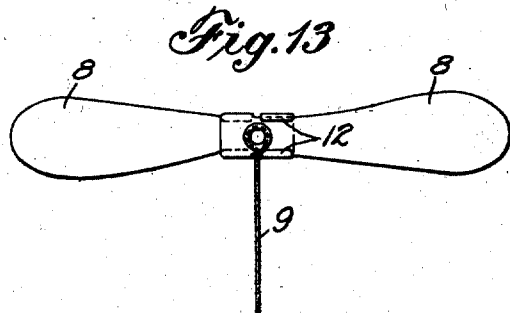
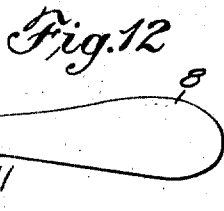
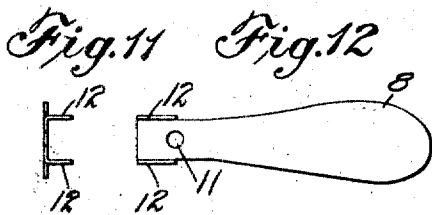
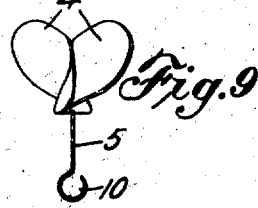
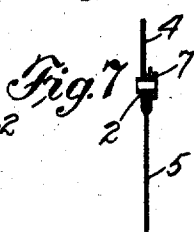
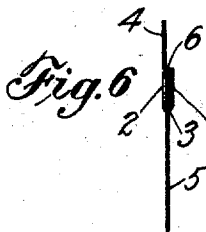
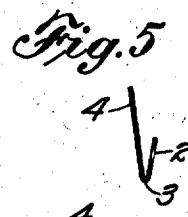
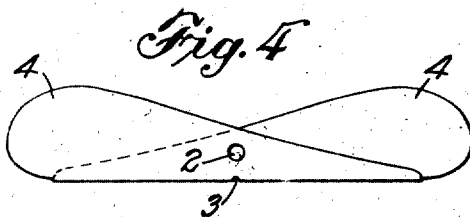
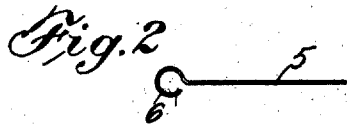
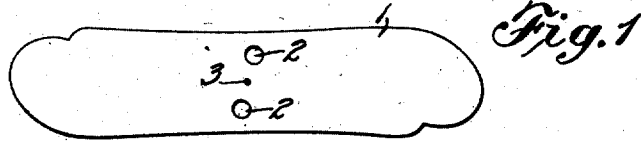
O. A. DANIELSON & L. R. JONES.

PROPELLER.

APPLICATION FILED DEC. 29, 1910.

1,000,999.

Patented Aug. 22, 1911.



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UNITED STATES PATENT OFFICE.

OSCAR A. DANIELSON AND LYMAN R. JONES, OF NEW YORK, N. Y.

PROPELLER.

1,000,999.

Specification of Letters Patent. Patented Aug. 22, 1911.

Application filed December 29, 1910; Serial No. 599,810.

To all whom it may concern:

Be it known that we, OSCAR A. DANIELSON and LYMAN R. JONES, citizens of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Propellers, of which the following is a specification, reference being had therein to the accompanying drawing.

Our invention relates to means for securing shafts to the propeller blades of aeroplanes and other similar devices, the object being to provide a strong and efficient connecting means whereby the said shaft may be secured tightly and immovably to the blades of the propeller and the resulting article be one that will not easily loosen or come apart from the strain in use.

Although the invention primarily relates to small flying machines and toy aeroplanes having an inconsiderable size, yet it will be realized that we are not restricted to the size or shape of the device, but it will be found useful with devices of larger and more practical forms, and, also, it may be adapted for use with other propellers than those used in aerial navigation.

The invention, therefore, consists essentially in the construction, arrangement and combination of parts substantially as will be hereinafter described and then more particularly pointed out in the claims.

In the accompanying drawings illustrating our invention, Figure 1 is a metal blank from which are shaped the blades or vanes of an aeroplane propeller. Fig. 2 is a detailed view of a short shaft intended for use with such propeller. Fig. 3 is a detailed view of the eyelet for securing the shaft to the propeller. Fig. 4 is a side elevation of the propeller as it appears after the blank in Fig. 1 has been bent into suitable shape to provide blades. Fig. 5 is a cross section of the same. Fig. 6 is a cross section showing the first step in applying the shaft to the propeller blades. Fig. 7 is a similar section showing the next step which consists in inserting the eyelet through the shaft eye and the propeller. Fig. 8 is a similar section showing the eyelet clenched and riveted so as to securely fasten the shaft between the blades of the propeller. Fig. 9 is a perspective view of a complete and finished device. Fig. 10 is a side elevation of a modified form of propeller. Fig. 11 is a detailed view of one of

the blade clamps. Fig. 12 is a detailed side view of one of the blades. Fig. 13 is a plan view of a complete propeller of this modified form.

Similar characters of reference designate corresponding parts throughout the different parts of the drawing.

Referring first to Fig. 1, 1 denotes a blank consisting of a flat strip or piece of some suitable metal and having rounded ends, as shown, and designed to be bent along a diagonal longitudinal line to form the two wings 4, 4 as indicated in Fig. 4. Near the middle part of the blank 1 is a central perforation 3, and on opposite sides of it are two perforations 2, 2, said perforations being so located that when the blank is bent to provide the two wings or propellers 4, 4 a small opening 3 will be at the central point of the bend to serve as a shaft opening, while the two perforations 2, 2 will come into coincidence with each other, as shown in Fig. 4 to receive the eyelet 7, which retains the shaft in place.

5 denotes the shaft which consists of a short piece of wire having an eye 6 bent in one end thereof. 7 denotes an eyelet of the usual common form and of suitable size to pass through the perforations 2 and the eye 6 of the shaft 5 and then be securely clenched in a press or by some suitable implement or tool used for the purpose.

In Fig. 5 we have illustrated a cross section of the device shown in Fig. 4, and it will be seen that the two perforations 2, 2 are coincident with each other while the smaller shaft perforation 3 is contiguous to the perforations 2, but in the bend itself of the metal. The mode of assembling the propeller, the shaft and the eyelet, and of bringing all these parts into solid combination is set forth in the views in Figs. 6, 7 and 8. In Fig. 6 it will be observed that the shaft 5 has passed through the hole 3 so as to bring the eye 6 into coincidence with the opposite perforations 2, 2 in the propeller. In Fig. 7, the eyelet 7 is also placed in its relative location to these other parts, being inserted through the perforations 2 and the eye 6, but as yet not clenched or hammered tightly into place. In Fig. 8, however, the completed union is shown. The eyelet has a flange formed at both ends so as to bind tightly the shaft between the over-lapping wings, which form the propeller and thus secure a very tight and effective combina-

tion. In this way it will be seen that the folded parts of the blank 1 which make the wings, are themselves securely fastened to each other in the folded position, and, also, the shaft 5 is riveted very strongly to the propeller, so that it is, practically impossible to loosen or dislodge it no matter how strenuous the service of the propeller may be. In the ordinary application of such a propeller to a toy aeroplane the shaft 5 will be provided on its inner end with a loop or eye at 10 for the connection therewith of an elastic device, not shown. In Fig. 9 an end perspective of the completed propeller is shown.

A modification in the construction of the propeller blades is offered in Figs. 10, 11, 12 and 13, where, instead of utilizing a blank 1, which is folded to form two wings, we employ two separate pieces 8 which are cut into the form of propeller blades, and which are furnished near their inner ends with perforations 11, alongside of which are short flanges 12. The two blades 8 thus formed are brought into association with each other in the manner shown in Figs. 10 and 13, with their flanged and perforated ends over-lapped so that the openings or perforations 11 are in coincidence with each other. The shaft 9 with its eye having first been placed between the ends of the blades and between the coincident perforations 11, the flanges 12 are then bent down and tightly clenched so that the two flanges on each propeller will embrace and grip the end of the other propeller. The eyelet 7 is then inserted as in the form of the invention shown in Fig. 8, and tightly forced into a clenched and gripping position by means of a suitable press or otherwise.

Other forms of propeller blades may be employed in connection with the same means for attaching the shaft thereto without exceeding the scope of our invention, and we reserve the liberty, therefore of attaching the shaft to any kind of propeller in an airship, aeroplane or other machine for aerial

or maritime navigation. Furthermore, it will be noted that various changes in the precise construction of the shaft and the means for securely anchoring the end of the same may be made without departing from the spirit and scope of the invention.

Having thus described our invention what we claim as new and desire to secure by Letters Patent is:

1. The combination with a propeller and a shaft therefor, of means for securing the shaft to the propeller consisting essentially of an eyelet engaging the end of the shaft and the folded part of the propeller within which said end of the shaft is placed.

2. In combination with a propeller having overlapping wings or blades which are perforated, a shaft having a looped end inserted between and coincident with said perforations, and a clenched retaining device passing through said perforations.

3. The combination with a propeller having blades which overlap and are perforated, of a shaft having a looped end, and means for connecting said looped end to the perforated portions of the propeller blades.

4. In a propeller for aeroplanes and the like, the combination with the blades having perforations therein, of a shaft having an eye located coincident with said perforations and an eyelet engaging the shaft eye and the perforations.

5. The improvement in means for attaching shafts to propellers, which consists in the combination with a perforated propeller blade, of a shaft having a looped end placed coincident with the perforation in the blade, and a flanged device engaging the same and clenched on both sides of the shaft.

In testimony whereof we affix our signatures in presence of two witnesses.

OSCAR A. DANIELSON.
LYMAN R. JONES.

Witnesses:

NAP. MYERS,
Wm. M. DOWNING.