

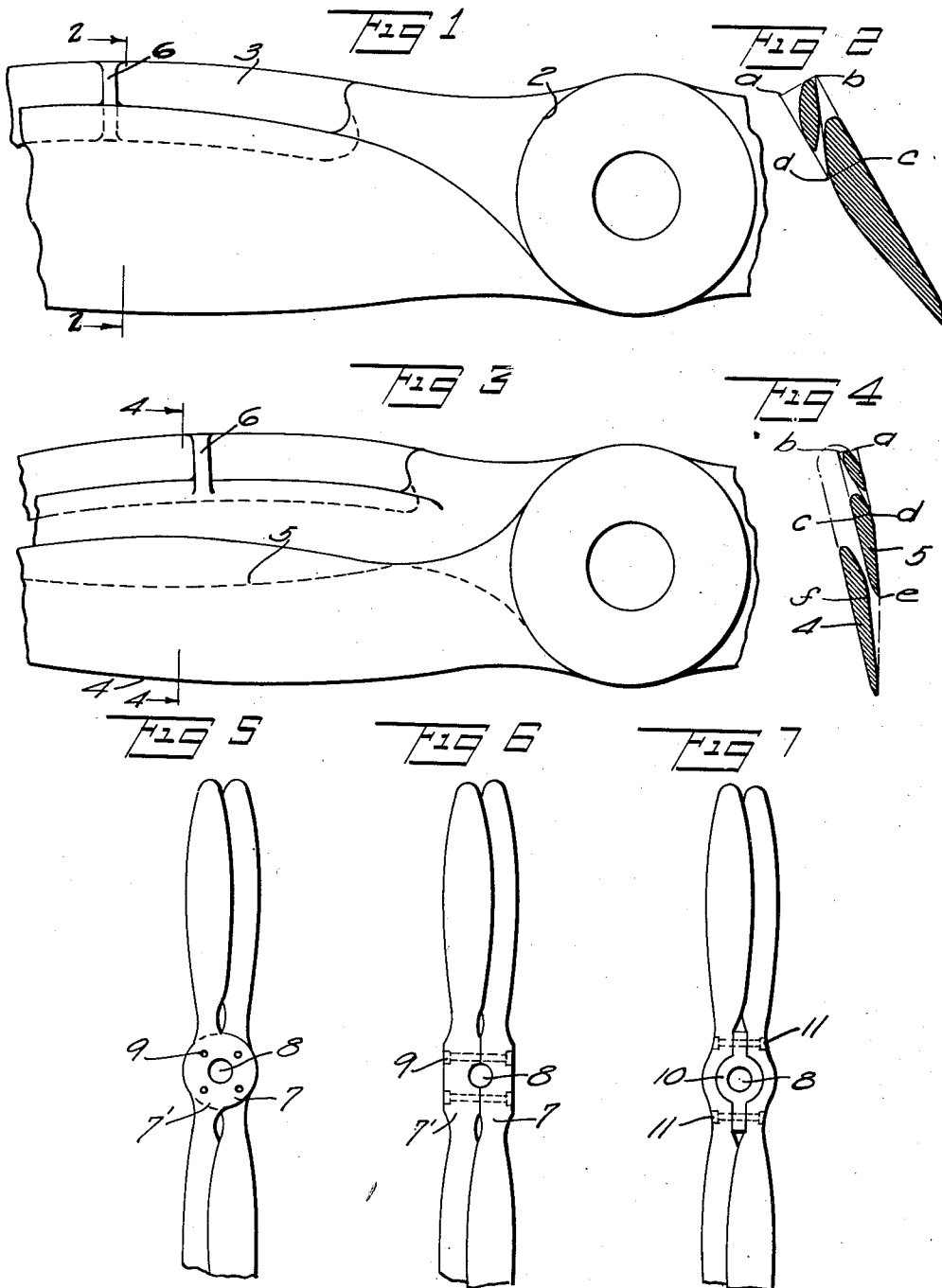
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AIR PROPELLER

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AIR PROPELLER

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My invention relates to propellers which rotate in the air. Such propellers may be driven by a motor, thereby causing a shifting reaction in the air, or the opposite action may take place, which means that such a propeller may be exposed to an air current which will make it rotate, causing a desired mechanical action on its shaft. The object of my invention is to increase the efficiency of such propellers. I attain this by providing the blades of the propeller with a longitudinal slit. Preferably this slit should be situated in the foremost third of the blade's cross section. The effect of such a slit is that more air is led from the pressure side to the back of the blade. The slit blades are adapted to generate a greater force or energy than those of equal length, but of ordinary construction, when they are employed as wind mills to operate small motors or like devices. Airships are generally equipped with such devices and, as the available space is considerably limited, it is often necessary to restrict the length of the blade. Relatively short blades constructed according to applicant's invention are peculiarly adapted to operate such devices. The same effect may be attained by providing two propellers behind each other, their blades being so shaped and in such position relative to each other, that the gap between them constitutes substantially the slit in its effect. It will be advantageous so to arrange the slit and to give the curves enclosing its cross section such a shape that the diagonal of a rectangle circumscribing the forward third of the blade's cross-section is a tangent to both of the curves enclosing the slit's cross-section. According to my experiments this arrangement produces the best effect. If two blades are arranged behind each other, the situation and shape of the gap between both blades in the cross section should be similar to that of the slit described above.

Having given a general description of my invention, I will now describe it in detail, giving examples embodying the same.

Fig. 1 is a front view of a slitted blade, partly broken up; Fig. 2 is a corresponding cross section taken on line 2—2 of Fig. 1; Fig. 3 is a front view of a double blade, one blade

also slitted; Fig. 4 gives the corresponding cross-section taken on line 4—4 of Fig. 3; Figs. 5 and 6 represent the way of fastening two double bladed propellers together in front view and in longitudinal section respectively, and Fig. 7 gives another example of a way of fastening such blades together, seen in front view.

In Fig. 1 the blade is designated by the numeral 1, and 2 is the hub. From the cross section (Fig. 2) it may be seen that a slit 3 is provided, which extends nearly to the farthest end of the blade. $abcd$ is a rectangle circumscribing the foremost third of the blade's cross section. The diagonal bd of this rectangle is a tangent to the curves defining the shape of the slit. Point d at the same time is approximately the turning point of the back curve of the blade whereas point b is the foremost edge of the pressure side thereof.

In Figs. 3 and 4 two blades are provided which are arranged behind each other so that the rear edge e of blade 5 is situated approximately behind the turning point f of the back curve of blade 4. Blade 5 is also provided with a slit just like blade 1. If desired, blade 4 can be provided with such a slit instead of blade 5, or even both blades, 4 and 5, might each have a slit. Also several slits may be provided in one blade. In Fig. 4 the left hand side of the cross section is the pressure side of the combination blade, whereas dotted line $a d e$ indicates the back curve thereof.

The narrow portions of a blade with a slit are connected to each other by special connecting parts 6. The same may be done with two blades arranged behind each other.

The blades of a double propeller may each have an individual hub 7 and 7', as shown in Figs. 5 and 6. Here they are put on the shaft 8 one behind the other and they are connected rigidly by bolts 9. As an alternative, they may each have only a portion of a hub; then be arranged around a special hub 10, shown in Fig. 7, and be fastened to this hub and connected to each other by screw bolts 11.

What I claim is:

1. An air propeller comprising a blade, said blade being divided into longitudinal por-

tions and a longitudinal slit between said portions, the forward extremity of the slit toward the leading edge of the blade section being on the pressure side thereof.

5 2. An air propeller comprising a blade, said blade being divided into longitudinal portions and a longitudinal slit between said portions, said slit in cross section having such a shape that the common tangent of the slit
10 embracing curves touches the suction side of the trailing portion of the section between the leading edge and the thicker portion thereof adjacent the latter, the extremity of the slit toward the leading edge of the blade section
15 being on the pressure side thereof.

3. An air propeller comprising two individual propellers which are situated to each other so as to form a single propeller with longitudinal slits in its blades, the forward
20 extremity of each slit toward the leading edge of the respective blade sections being on the pressure side thereof.

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