

J. W. HEARST.
 PROPELLER WHEEL FOR AIRSHIPS.
 APPLICATION FILED JAN. 15, 1910.

984,812.

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Fig. 1.

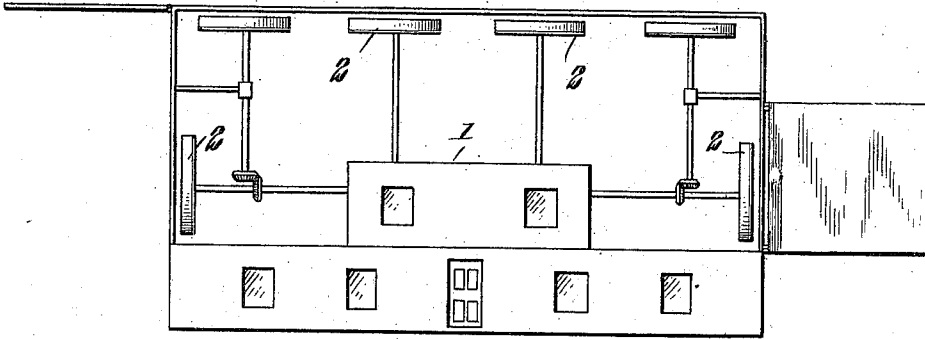


Fig. 2.

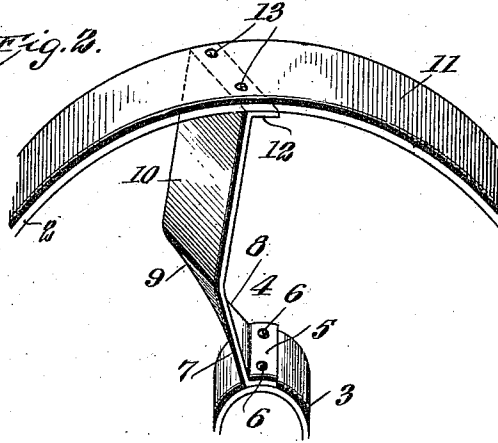
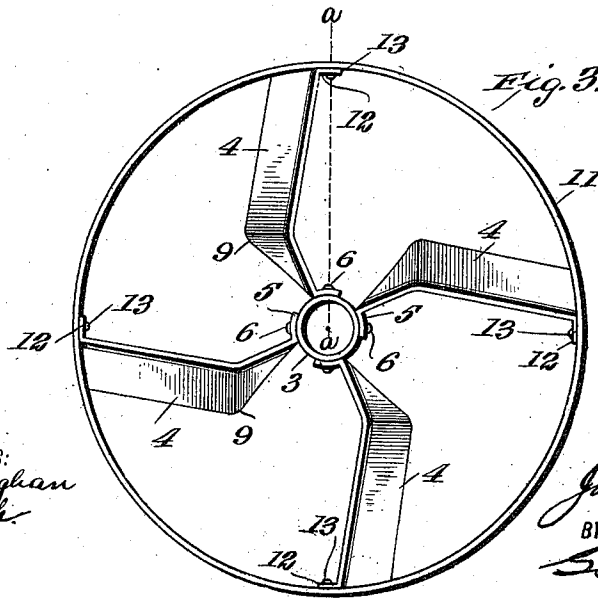


Fig. 3.



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PROPELLER-WHEEL FOR AIRSHIPS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN W. HEARST, citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Propeller-Wheels for Airships, of which the following is a specification.

This invention relates to certain new and useful improvements in propeller wheels designed primarily for use in airships, and it has for its objects among others to provide a novel form of propeller wheel so constructed as to obtain maximum power with the least resistance and of such construction as to hold the air so that the same will not be wasted but the maximum benefit thereof attained.

It has for a further object to provide a propeller wheel of this nature in which the blades shall be so disposed as to present and combine strength with minimum waste and of such form as to catch the air quickly and to save all the power that it is possible to obtain therefrom. I construct the blades in such a manner that they extend for a portion of their distance radially from the hub and thence are bent at an angle therefrom, the blades being set in the wheel with a pitch, and their outer ends connected by a band. The number of blades employed will vary, being dependent upon the conditions under which they are to serve and the diameter of the wheel.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be particularly pointed out in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the numerals of reference marked thereon, form a part of this specification, and in which—

Figure 1 is an elevation of an airship employing propeller wheels of my improved construction. Fig. 2 is an enlarged sectional detail in perspective, showing the form and mode of application of one of the blades. Fig. 3 is a face view of one form of wheel embodying four blades.

Like numerals of reference indicate like parts throughout the several views.

It is to be understood that the peculiar construction of propeller wheel forming the subject-matter of this application is applicable to any and all forms of aeroplanes, airships and other devices of that character,

and is in no wise restricted to the particular form of airship herein illustrated, the latter being given merely as an example of the mode of application of the propeller wheels.

Referring to Fig. 1, the numeral 1 designates an airship of any well-known or approved form of construction, of which 2 are the propeller wheels, the particular construction of which forms the basis of the present application.

In constructing my propeller wheel, I employ a hub 3 of any suitable material and of a diameter in accordance with the size and capacity of the wheel to be constructed. In the present instance, I have chosen to show a wheel having but four blades, but it will be evident that the number of blades may be varied under varying conditions and depending in a measure upon the size of wheel.

4 represents one of the blades. It may be formed of any suitable material found best adapted for the purpose. At one end it is provided with a flange 5 which is formed to conform to the hub 3 to which it is secured by rivets, bolts or the like 6, as seen clearly in Fig. 2. For a portion of its length this blade extends out substantially straight from the hub having one edge, as at 7, at a different angle from its opposite edge 8 and at a point 9 the blade is bent at an angle of ten degrees, more or less, the outer portion extending toward the band 11 and provided with a flange 12 conforming to the contour of the inner face of the band to which it is secured by suitable bolts or rivets 13, as seen clearly in Fig. 2. The blades are set in the wheel with a pitch of one foot in two feet, more or less, measured on the outside rim, about one-fourth of the length of the blade in the center being turned at an angle, so as to save all the power possible. When four blades are employed, as in the present instance, they are arranged in pairs, the two opposite blades of each pair being set diametrically opposite each other and the angularly disposed portions adjacent the hub set with their angles oppositely disposed, as seen clearly in Fig. 3, the flanges 12 of the oppositely disposed blades being also oppositely disposed. The greater number of blades are employed in wheels of greater diameter or a greater number may be employed in a wheel of the diameter shown if it be found expedient to increase the number of blades so as to increase the power, or for any other purpose. The outer

band 4 is preferably of the same width as that of the blades so that the band will hold in the air in connection with the blades, so that the air will be forced downward and not wasted at the edge, although it is evident that the band may be of greater width than the blades if found more expedient.

The particular construction of the blades, the manner in which they are bent and their disposition with relation to the hub and band, are what I have found best suited to catch the air the quickest and, by reason of the pitch of such blades of the form and construction specified, all the power possible is saved and there is a minimum air resistance.

As will be clearly understood upon reference to Fig. 3, the disposition of the securing means 6 and 13 is such that they fall within a line drawn radially from the center of the hub to the band, as indicated by dotted line *a-a* in Fig. 3, it being noticed that such disposition of the parts is maintained throughout the circumference of the wheel. This permits me to get the proper angle and pitch of the blades and yet get the points of resistance in a direct line from the center of the hub outward to the band or rim of the wheel.

From the above, it will be seen that I have devised a propeller wheel for the purpose named which combines strength, lightness, and all the other essential features desirable in a propeller wheel for airships, and while the structural embodiment of the invention as herein disclosed is what I at the present time consider preferable, it is evident that the same is subject to changes, variations and modifications in detail without departing from the spirit of the invention or sacrificing any of its advantages. I, therefore, do not intend to limit myself to the particular construction, proportion of parts and other details herein disclosed, but reserve the right to make such changes, variations and modifications as come properly within the scope of the protection prayed.

What I claim as new is:—

1. A propeller for the purposes described, comprising a hub, a band, and blades connected with the hub parallel with the axis thereof and with said band, said blades having their opposite edges bent at different angles intermediate their ends, the outer portions of said blades being bent at an angle to the inner portions whereby the lines of attachment with the hub and band are

located in the same radial plane passing through the axis of the hub.

2. A propeller for the purposes described, comprising a hub, a band, and blades connected with the hub parallel with the axis thereof and with said band, said blades having their opposite edges bent at different angles intermediate their ends, the outer portions of said blades being bent at an angle to the inner portions whereby the lines of attachment with the hub and band are located in the same radial plane passing through the axis of the hub.

3. A propeller for the purposes described, comprising a hub, a band, and blades connected with the hub parallel with the axis thereof and with said band, said blades having their opposite edges bent at different angles intermediate their ends, the outer portions of said blades being bent at an angle to the inner portions whereby the lines of attachment with the hub and band are located in the same radial plane passing through the axis of the hub, said blades being set with a pitch.

4. A propeller for the purpose described, comprising a band, a hub and blades, each blade having a portion conforming to the curvature of the hub and band and secured thereto with the portion attached to the hub disposed parallel thereto, each blade having portions set at different angles, the outer portions of said blades being bent at an angle to the inner portions whereby the lines of attachment with the hub and band are located in the same radial plane passing through the axis of the hub.

5. A propeller for the purposes described, comprising a band, a hub and blades, each blade having a portion conforming to the curvature of the hub and band and secured thereto with a portion attached to the hub disposed parallel to the axis thereof, each blade having portions set at different angles, the outer portions of said blades being bent at an angle to the inner portions whereby the lines of attachment with the hub and band are located in the same radial plane passing through the axis of the hub, the band being substantially the width of the blades.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN W. HEARST.

Witnesses:

CHRISTIAN BOCKLIN,
ALBION S. MEELY.