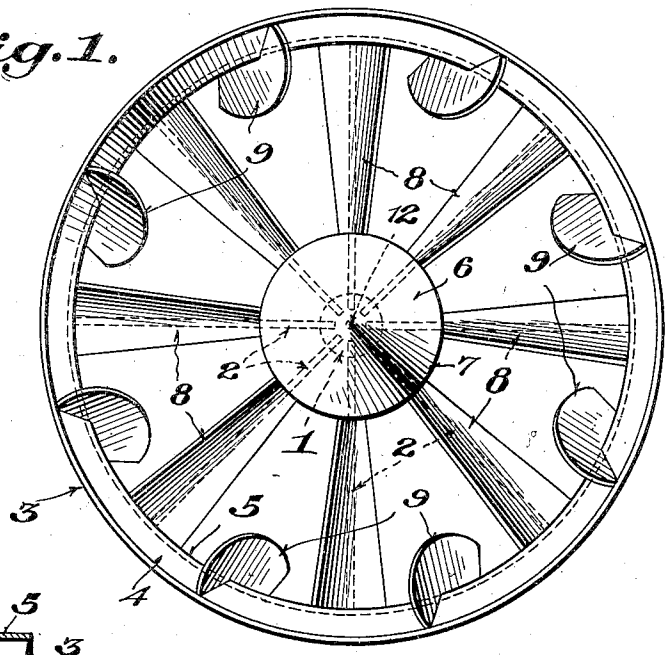
Nov. 22, 1938. L. C. ALGEE 2,137,559

WINDMILL

Original Filed July 16, 1935

Fig. 1.



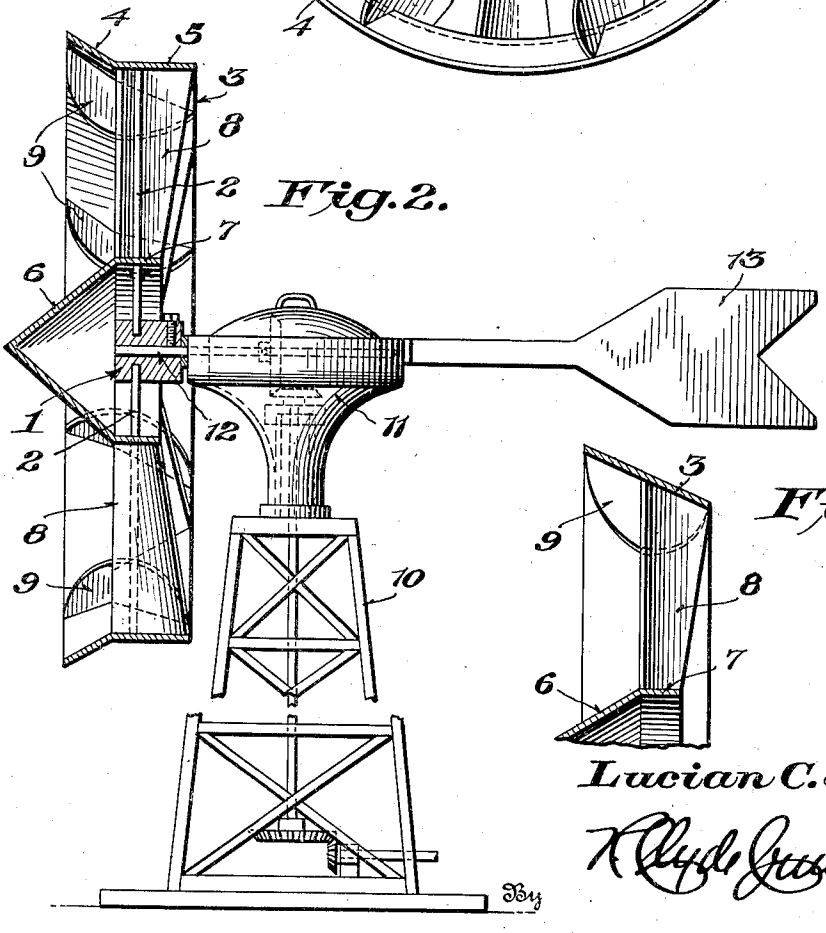


Fig. 2.

Fig. 3.

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WINDMILL

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Renewed June 2, 1938

2 Claims. (Cl. 170—79)

This invention relates to certain improvements in windmills and more particularly to the construction and design of the wind-wheel per se.

The object of the invention is the provision of a wind-wheel involving simplicity and strength in its construction yet capable of efficient performance at a nominal cost of production.

Another object is the production of a windmill adapted to obtain the full effect of all the wind blowing through the area defined by the outer circumference of the wheel.

Another object of the invention is to so design the wheel that the air currents or the wind are collected at the outer edge of the wheel where the greatest force is exerted and from there diverted along and through the wheel blades towards the middle of the wheel. At the same time, the wheel facing the air currents direct, the center circle of air as described by the base of the hub cone is put to effective work and directed towards the periphery of the wheel.

A further object is to provide additional vanes on the inner face of the wheel rim, intermediate the main radiating vanes for intercepting and receiving the air currents collected at the outer circumference of the wheel as a whole, whereby practically all of the air passing through the wheel is converted into useful work.

This rim just referred to is in the form of an annular band to which the extreme ends of the spokes or blades are secured and to the inner face of this band, preferably between said spokes, are secured what might be called "booster blades" or fins, which blades or fins, being mounted where the greatest pulling or power effect is had from the force of the wind, virtually doubles the capacity of the improved wheel over the ordinary wheel of a similar diameter.

Furthermore the entire construction produces a well balanced wheel with properly distributed weight having increased rigidity and stability, thus tending to increased smoothness in action and a more regular flow of power.

The preferred embodiment of the invention is illustrated in the accompanying drawing, in which

Figure 1 is a front elevational view of the wheel mounted in operative position;

Figure 2 is a view partly in section and partly in side elevation; and

Figure 3 is a modification illustrating a slightly different form of wheel rim.

Referring to the drawing in detail the improved wind-wheel comprises a hub 1 having mounted therein in any improved manner a series of radiating spokes 2, the ends of the spokes being rigidly secured to an annular rim or band 3.

This annular band or rim 3 has an outwardly flared portion, and in normal working position this outward flare is in a direction facing the wind currents so that said air currents are directed inwardly toward the center of the wheel.

To accomplish this, the band 3 may be formed with a continuous flare as shown in Figure 3 or a flared portion 4 may be secured to a straight rim portion 5 as illustrated in Figure 2.

Positioned about the hub 1 is secured a conical member 6 provided with an annular straight base portion or band 7, said base portion tending to smooth out the wind currents and prevent loss of power usually caused by the wind escaping into the spoke and hub area.

Secured to the spokes 2 are a series of inclined vanes 8, of any desired number, the pitch or inclination of said vanes to be determined and varied according to the greatest efficiency desired under working conditions.

The inner ends of these vanes 8 are secured to the hub band 7 and the outer ends are mounted in the annular band or rim portion 3.

Mounted between the outer ends of the vanes 8 and carried by the rim portions 3 and 4 are "booster blades" or inwardly projecting inclined fins 9, said fins being inclined in the same general direction as the vanes 8, although the degree of inclination of the vanes and the fins might be different and can also be varied in accordance with the desired efficiency.

With this arrangement of annular band 3 the air is confined at the ends of the vanes 8 and fins 9 where it is held to perform its most effective work at the extreme ends of said vanes or fins.

The inclined fins or blades 9 secured to the annular base 3 and flared portion 4, inwardly direct the air collected at the outer area of the wheel rim, whereby the air is compacted or confined by the combined action of the inner cone directing the air outwardly and the flared outer rim or band and inclined fins forcing the air inwardly and thereby increasing the force and pressure of the air passing through the confines of the wheel.

Any preferred means may be provided for transmitting power from the wind-wheel through the necessary gearing to the desired place of use.

For the purpose of illustration there is shown a standard or tower structure 10 provided with a rotatable head 11 in which the shaft 12 keyed to the hub of the wind-wheel is properly jour-

nalled, the rotatable head 11 being provided with a wind vane for the obvious purpose of maintaining the wind-wheel in proper relation to the direction of the wind.

What I claim is:

1. In a windmill, the combination with a support, of a wind-wheel comprising a hub, an annular band surrounding said hub, a cone shaped member having a base of the same diameter as said hub band, mounted on said band, a series of inclined vanes radiating from the hub band and rigidly connected thereto, an annular band connecting the outer ends of said vanes, an outwardly flared portion carried by said last mentioned annular band, and inwardly directed fins secured to both the said annular band and outwardly flared portion intermediate the ends of said inclined vanes.

2. In a windmill, the combination with a support, of a wind-wheel comprising a hub, an annular band surrounding said hub and spaced therefrom, a cone shaped member mounted on said hub band, a series of inclined vanes radiating from said hub band, an annular band connecting the outer ends of said vanes, the edge of said last mentioned annular band forward of said vanes being outwardly flared and inwardly projecting fins intermediate the inclined vanes rigidly secured to said annular band and its flared portion.

LUCIAN C. ALGEE.