A. W. CARLSON.

FAN.

APPLICATION FILED JULY 11, 1919.

1,370,284. Patented Mar. 1, 1921.

Fig. 1.

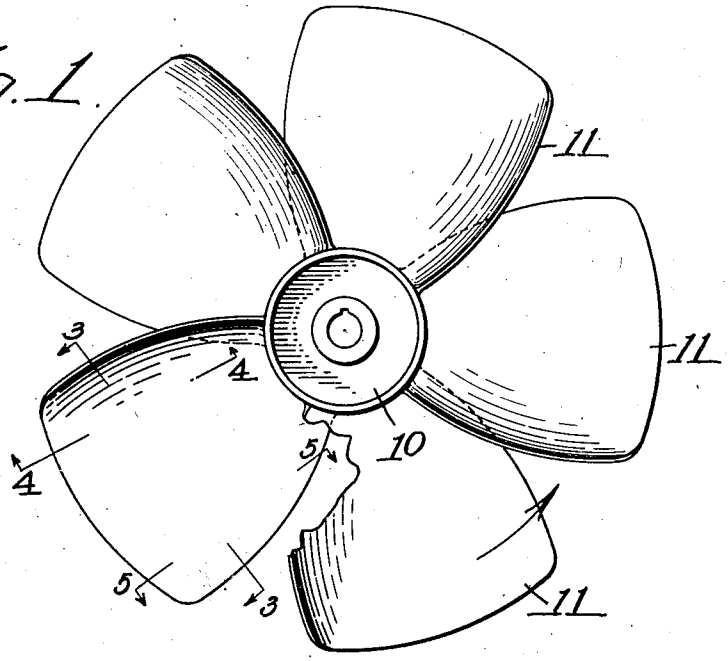

Fig. 2.

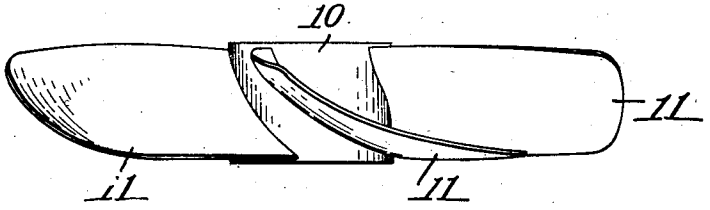



Fig. 3

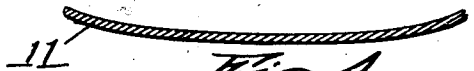

Fig. 4

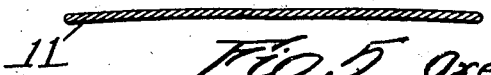

Fig. 5.

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UNITED STATES PATENT OFFICE.

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To all whom it may concern:

Be it known that I, AXEL W. CARLSON, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Fan, of which the following is a specification.

This invention relates to a fan capable of general use but particularly designed for a turbine blower.

It is the object of my invention to provide a fan so constructed that increased efficiency may be attained.

With this object in view, an important feature of my invention relates to the provision of fan blades angularly disposed relative to the axis of the fan and having overlapping inner portions.

Other features of my invention relate to the curvature and outline of the separate blades and also to the provision of blades of unusual width in relation to their length.

My invention further relates to the design and arrangement of parts hereinafter described and more particularly pointed out in the appended claims.

A preferred form of my invention is shown in the drawing in which—

Figure 1 is a front view of my improved fan;

Fig. 2 is a side elevation thereof, and

Figs. 3, 4 and 5 are sectional views taken along the lines 3—3, 4—4 and 5—5 in Fig. 1.

My improved fan comprises a hub or bearing portion 10 to which a plurality of fan blades 11 are secured, the hub and blades being preferably cast as an integral structure.

The blades are disposed at an angle to the axis of the fan and are of such width that the portions adjacent the hub over-lap each other, as is clearly shown in Fig. 1.

The blades are of unusual width, being substantially equal in length and breadth and filling substantially $\frac{3}{4}$ of the circumference of the fan at their outer edges.

The radial edges of the blades are preferably disposed in substantially parallel planes perpendicular to the axis of the fan, and the radial edges are also oppositely convexly curved in their respective planes. Each blade is preferably curved in cross section, both lengthwise and transversely, the leading face of the blade being nearly straight or slightly convex at its forward edge and being somewhat concave at its rear edge. The general angle of the fan blades relative to the axis of the fan is approximately sixty-nine degrees in the fan shown in the drawings.

It is found by actual test that a fan constructed to embody the features above described possesses very much greater efficiency than the ordinary fans heretofore used, the increase in efficiency in some cases amounting to from 75 to 100 per cent.

Having thus described my invention, it will be evident that changes and modifications can be made therein by those skilled in the art within the spirit and scope of my invention as set forth in the claims, and I do not wish to be otherwise limited to the details herein disclosed.

What I claim is:—

1. A fan comprising a hub and a plurality of blades mounted thereon and having their base portions disposed at an oblique angle to the axis, the radial section of each blade increasing in curvature toward the rear edge, the front and rear radial edges of the blades lying substantially in parallel planes perpendicular to the axis and being reversely curved outwardly in said plane, and the radial edges of each blade being substantially perpendicular to the circumferential edge thereof.

2. A fan comprising a hub and a plurality of blades mounted thereon and having their base portions disposed at an oblique angle to the axis, the front and rear radial edges of the blades lying in substantially parallel planes perpendicular to the axis but being reversely curved outwardly in said planes.

In testimony whereof I have hereunto affixed my signature.

AXEL W. CARLSON.