(Model.)

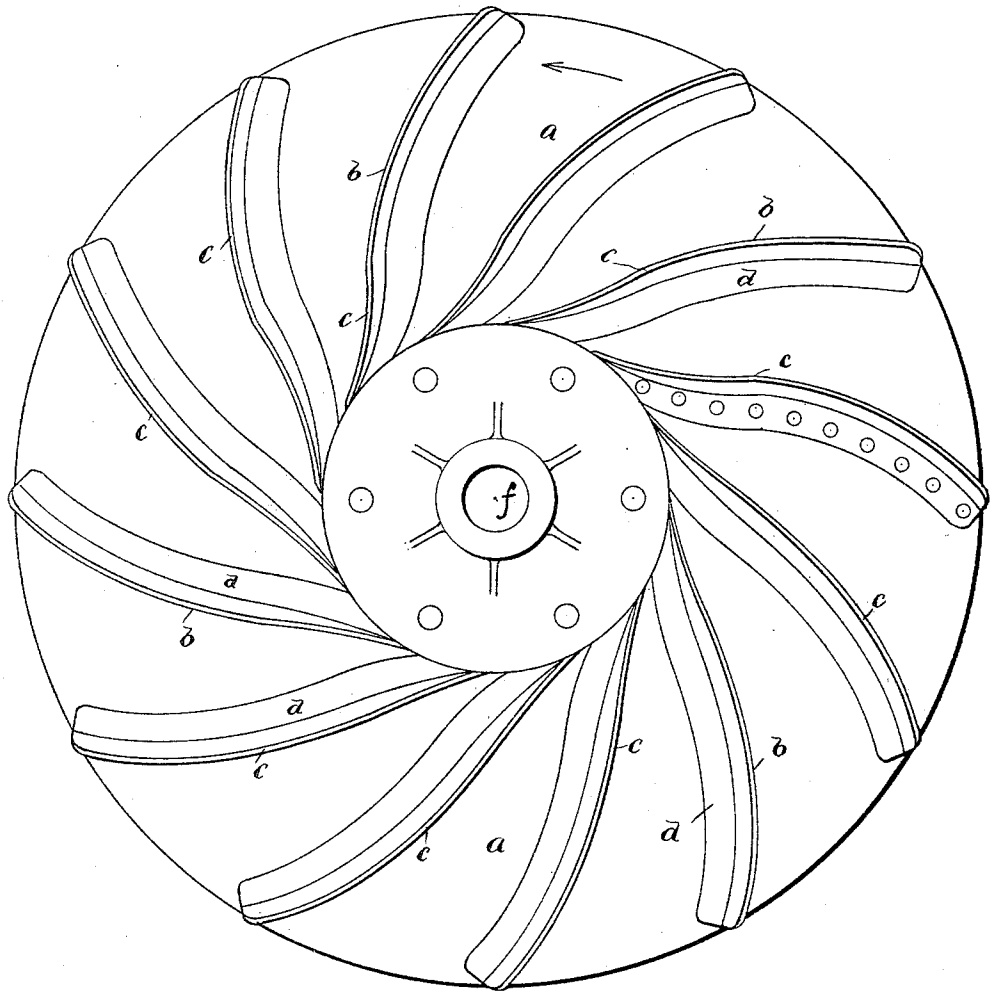
2 Sheets—Sheet 1.

N. CHANDLER.

CENTRIFUGAL FAN.

No. 445,043. Patented Jan. 20, 1891.

Fig. 1.



WITNESSES:

E. E. Duffy

H. E. Peck

INVENTOR

Noel Chandler

BY O. E. Duffy

ATTORNEY.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(Model.)

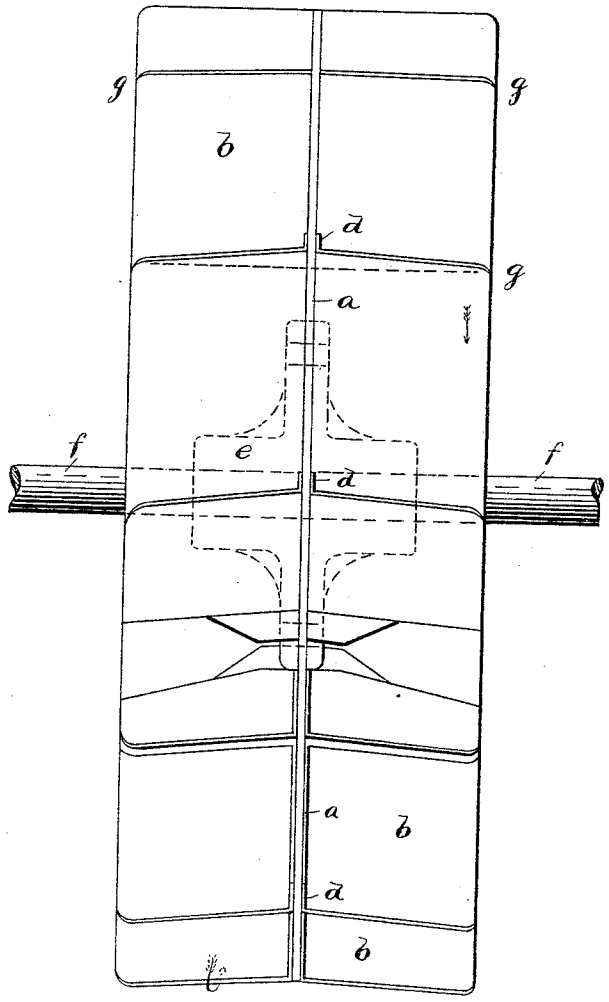
2 Sheets—Sheet 2.

N. CHANDLER.

CENTRIFUGAL FAN.

No. 445,043. Patented Jan. 20, 1891.

Fig. 2.



WITNESSES:

E. C. Duffy

Chas. M. Wertz

INVENTOR

Noel Chandler

BY O. E. Duffy

ATTORNEY.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

NOEL CHANDLER, OF HEDNESFORD, ENGLAND.

CENTRIFUGAL FAN.

SPECIFICATION forming part of Letters Patent No. 445,043, dated January 20, 1891.

Application filed September 24, 1888. Serial No. 286,275. (Model.)

To all whom it may concern:

Be it known that I, NOEL CHANDLER, a subject of the Queen of Great Britain and Ireland, residing at Hednesford, in the county of Stafford, Kingdom of Great Britain and Ireland, have invented Improvements in Centrifugal Fans, of which the following is a specification.

I employ a number of vanes or blades radiating from a common center, each somewhat of the shape of the letter S—that is to say, the outer parts of the blades shall be curved in the opposite direction to the inner parts of the blades.

The object of my employing blades of this particular form is to enable the fan to pass (or inhale and exhale) a larger volume of air than a fan having all its blades curved in one direction. I prefer to make the inner portion of the blades curved in a direction so that they act as collectors of air—that is to say, the ends of the blades nearest to the center shall present their edges in the direction in which the fan is revolving, and thus scoop up and inhale the air, acting upon the air in the same way that the plane-iron of a hand-plane shaves a piece of wood.

To diminish leakage between the edges of the blades and the fan-case, I so arrange the blades that these edges are in advance of the general plane of the blade.

To further explain the nature of my invention, I may state that if an elevation of the fan be taken showing all the blades, and the direction of rotation being opposite to that of the hands of a watch, the outer half of each blade shall present a convex curved surface and the inner half of each blade shall present a concave curved surface on its front or forward side, the curve of the outer half of each blade being struck from a center behind the blade and the curve of the inner half being struck from a center in front of the blade. The blades are each set at an angle less than a right angle with the center or plate that carries them, so that the outer edge or side of such blade is in advance of the general plane of the acting face thereof, and a line drawn across such edge or side normal to the center or plate would not lie on the said face, but would be at an angle with, and thus in advance of, such face.

In the accompanying two sheets of drawings, Figures 1 and 2 are two elevations at right angles to each other of the rotating part of a fan with blades according to my invention.

On each side of the metal disk *a* there are applied the vanes or blades *b b*. These blades or vanes are connected to the disk by angle-irons *d d*, or angles bent from the blades themselves and are curved in different directions at the two extremities, the acting faces *c* being concave near the center of the fan and convex near the periphery. The acting face of each blade is arranged to make an acute angle with the disk *a*, so that when the disk and blades are rotated in the direction mentioned the side edge *g g* of each blade is in advance of the general plane or working-face of such blade.

The central disk *a* is riveted or bolted to a boss *e*, mounted on a shaft *f*, on which the whole rotates.

What I claim is—

1. A centrifugal fan consisting of the central disk secured upon a central hub, the series of blades secured on both sides of said disk, each blade extending from said hub to the periphery of the disk and having its outer edge set in advance of the general plane of its acting face, said working-face being concave near the hub and convex near the periphery of the disk.

2. A centrifugal fan having blades extending outward from a common center, the acting face of each blade being inclined transversely and forwardly and longitudinally concaved near its root and longitudinally convexed at its outer portion, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NOEL CHANDLER.

Witnesses:

W. CROSS,

J. J. BROUGHAM,

Both of 46 *Lincoln's Inn Fields, London.*