

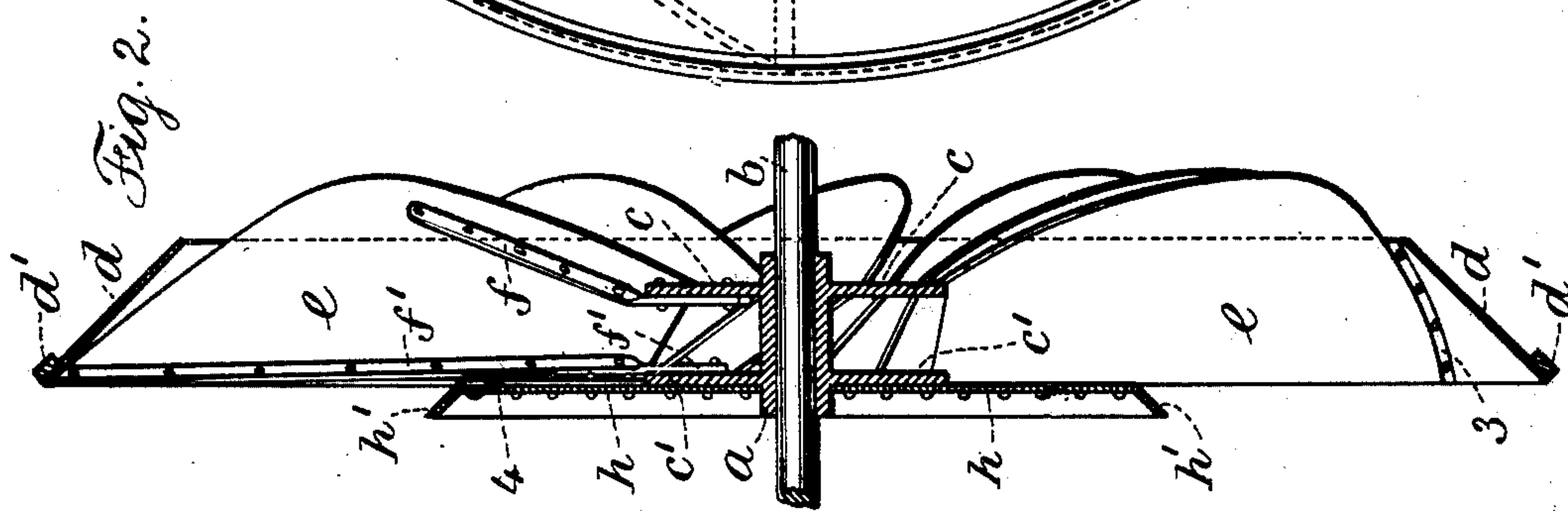
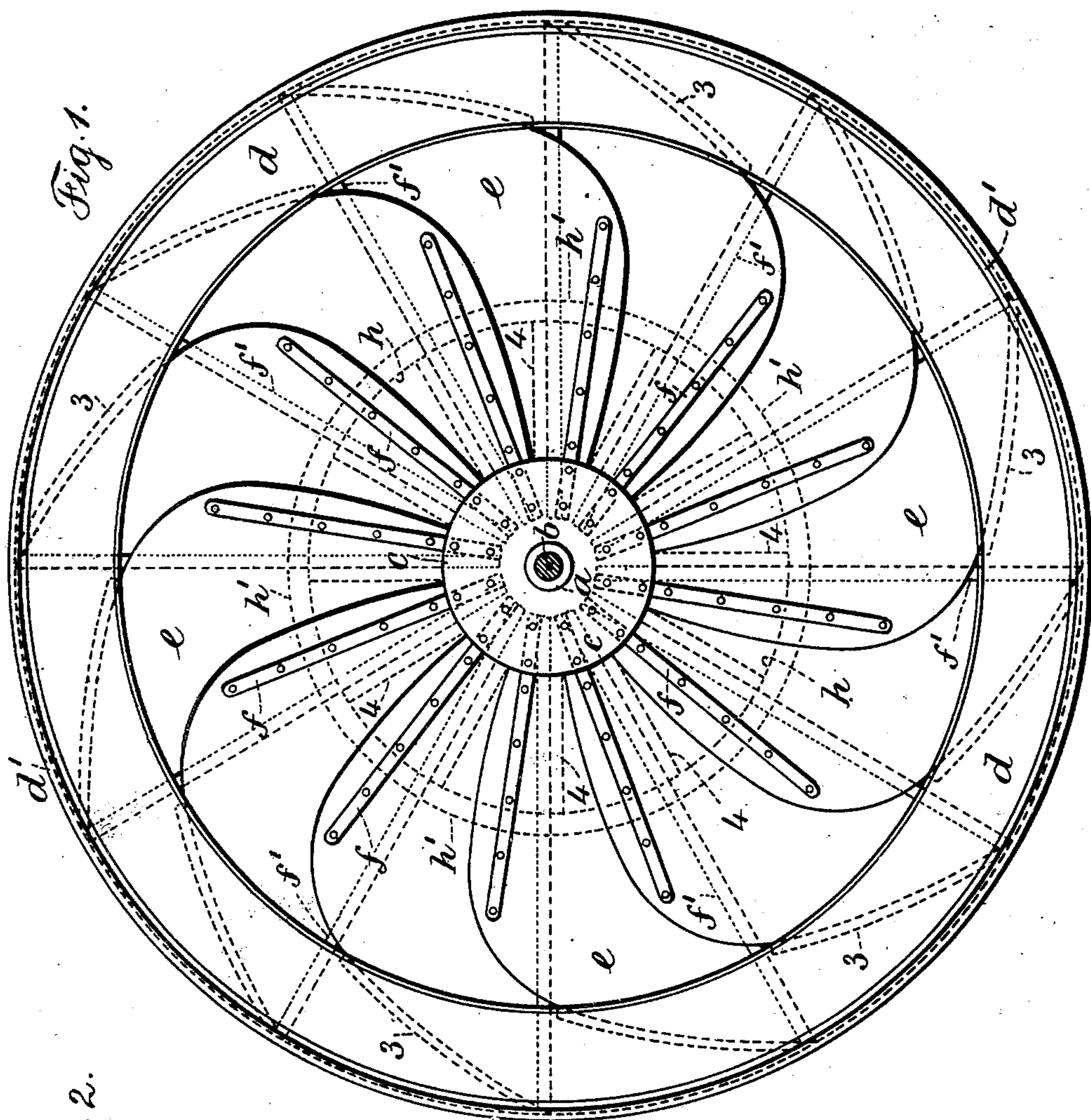
No. 679,579.

Patented July 30, 1901.

A. M. SCHREUDER.
ROTARY FAN.

(Application filed Jan. 31, 1901.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

ANDREW M. SCHREUDER, OF WOODBRIDGE, NEW JERSEY.

ROTARY FAN.

SPECIFICATION forming part of Letters Patent No. 679,579, dated July 30, 1901.

Application filed January 31, 1901. Serial No. 45,418. (No model.)

To all whom it may concern:

Be it known that I, ANDREW M. SCHREUDER, a citizen of the United States, residing at Woodbridge, in the county of Middlesex and State of New Jersey, have invented an Improvement in Rotary Fans, of which the following is a specification.

My improvement relates to a rotary fan adapted for general purposes, and especially for cooling purposes in connection with cooling-towers, in which the exhaust from engines is condensed or the water of condensation is cooled for reuse.

My invention consists in the peculiar construction and arrangement of the parts of the fan, whereby the efficiency of the same is increased and return-currents and the liability of the fan throwing water prevented.

I employ, in combination with radial diagonally-placed blades and a hub to which the same are secured, a conical peripheral band to which the outer ends of the blades are secured, stiffeners for the blades, which at the same time form the particular devices for connecting the blades to the hub, and a disk having a peripheral flange, the disk being really upon the center face of the fan.

In the drawings, Figure 1 is a front elevation of a fan embodying the features of my improvement, and Fig. 2 is a vertical cross-section and partial elevation of the same.

The hub *a* is preferably provided with circular flanges *c c'* and the hub keyed securely to the shaft *b*.

d represents the conical peripheral band, and *d'* a rib on the surface of said band at the rear.

e represents the radial blades of the fan, set diagonally and having straight rear edges and curved forward edges. The radial blades are secured at equal distances apart to the circular hub-flanges *c c'* by stiffeners *f f'*. These stiffeners *f f'* are bars of metal, the stiffeners *f* being riveted near the forward edges of the blades and fastened to the inner surface of the forward circular flange *c*, and the stiffeners *f'* are riveted to the straight rear edges of the blades and are fastened by bolts or rivets to the inner surface of the back circular flange *c'* of the hub.

Each of the radial blades *e* is provided with flanges 3 4. The blades *e* are connected to

the conical peripheral band *d* at their flanges 3, which are riveted to said band. I provide a disk *h*, that is circular and located at the rear of the hub and secured thereto by rivets or bolts, and the flanges 4 of the radial blades *e* are prolonged beyond the stiffeners *f'*, and they are riveted to the said disk *h*. This disk *h* is provided with a flanged or peripheral edge *h'* at an angle to the plane of the said disk, the disk, with the flange, being of shallow saucer-shaped form. The radial blades are thus secured to the band, to the stiffeners, and to the disk, and the stiffeners secure the blades to the hub, and the parts are united together in a firm, rigid, and substantial manner, adapted to produce the desired results and to withstand all ordinary service.

The special objects of the peripheral conical band *d* are to limit the amount of air through the fan and to impart an impetus to the air as the same is delivered from the fan and at the same time to prevent centrifugal currents of air. The special objects of the flanged disk *h* are to prevent return-currents through the center of the fan and to make the entire space or opening through the fan available for service in the forcing of air for purposes for which the fan may be employed, and at the same time the flanged edge *h'* lessens or overcomes the liability of the fan throwing water that may have collected on the surface of the disk, as by this flanged edge the water is directed away from the fan and is prevented from lodging upon the blades or passing through the fan.

The holder or case for supporting the fan or the devices employed in connection with the fan and by which the air delivered by the fan operates are not important in the present case.

I claim as my invention—

1. In a rotary fan, the combination with a hub having circular flanges and a shaft therefor, of rotary blades at spaced-apart intervals placed diagonally, stiffeners secured respectively to the blades and to the hub-flanges for connecting the parts, a conical peripheral band secured to and around the said blades, and a device connected to the hub and blades at the rear part of the fan and extending beyond the periphery of the flanges for preventing return-currents of air through the

center of the fan and for preventing the liability of the fan to throw water, substantially as set forth.

2. In a rotary fan, the combination with the
5 radial diagonal blades, a hub, a shaft therefor and devices for connecting the blades set at regular spaced-apart intervals to the said hub, of a disk having a flanged edge secured to the said hub and to the said blades at
10 right angles to the hub at the rear part of the fan, and projecting sufficiently from the hub to limit the amount of air passing through the fan and for preventing the liability of the fan to throw water, substantially as set forth.

15 3. In a rotary fan, the combination with the radial diagonal blades, a hub, a shaft therefor and devices for connecting the blades set at regular spaced-apart intervals to the said hub, of a disk independent of the hub having a flanged edge secured to the said hub
20 and to the said blades at right angles to the hub at the rear part of the fan and projecting appreciably beyond the hub, and a conical peripheral band secured around and to
25 the said radial diagonal blades and a strengthening-rib around the said band at the rear edge thereof, substantially as set forth.

4. In a rotary fan, the combination with a

hub a shaft therefor, radial diagonal blades and devices for connecting the blades to the
30 hub at regular spaced-apart intervals, and a device for connecting the free ends of said radial blades, of a disk having an inclined flanged edge secured to the hub and to the
35 blades upon the rear face of the fan with the inclined edge extending away from the body of the fan for preventing return-currents of air through the center of the fan and the liability of the fan to throw water, substantially as set forth.

40 5. In a rotary fan, the combination with a hub, a shaft therefor, radial diagonal blades and devices for connecting the blades to the hub at regular spaced-apart intervals, of a disk having an inclined flanged edge secured
45 to the hub and to the blades upon the rear face of the fan with the inclined edge extending away from the body of the fan for preventing return-currents of air through the center of the fan and the liability of the
50 fan to throw water, substantially as set forth.

Signed by me this 26th day of January, 1901.

ANDREW M. SCHREUDER.

Witnesses:

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