

W. E. ALLINGTON.
CENTRIFUGAL FAN WHEEL.
APPLICATION FILED SEPT. 7, 1909.

1,025,667.

Patented May 7, 1912.

Fig. 2.

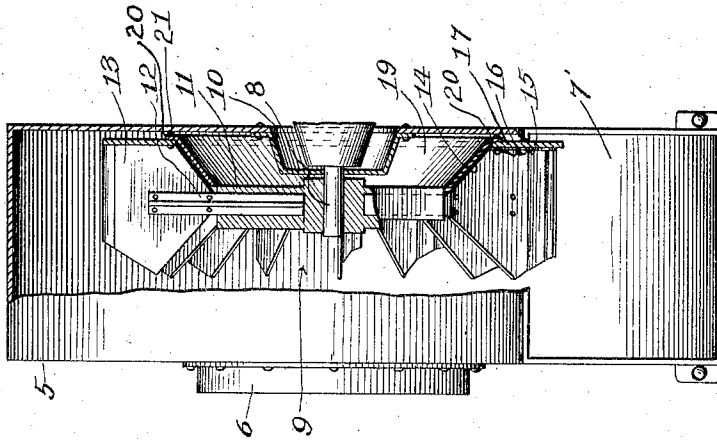
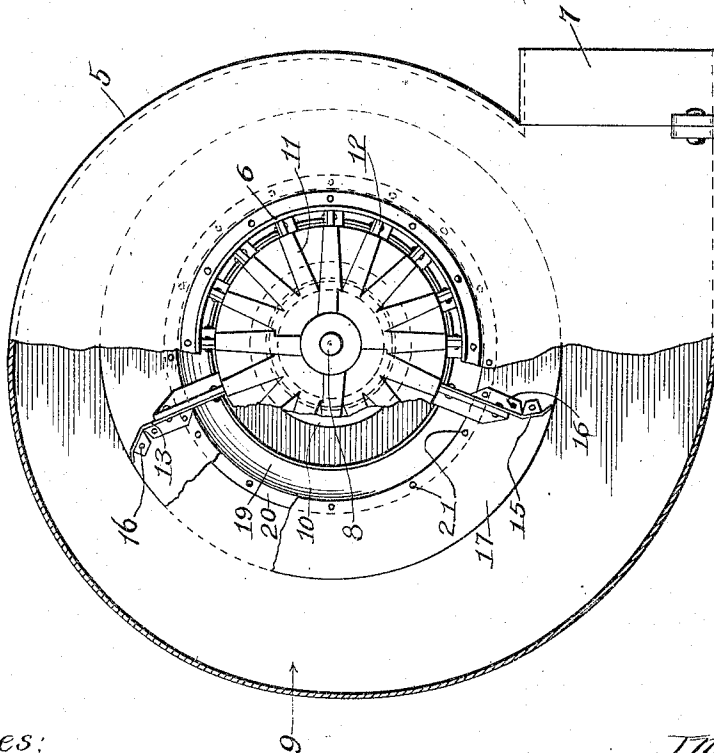


Fig. 1.



Witnesses:
B. R. White
R. A. White.

Inventor:
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By Forée Bain & May Attys.

UNITED STATES PATENT OFFICE.

WILLIAM E. ALLINGTON, OF SAGINAW, MICHIGAN.

CENTRIFUGAL FAN-WHEEL.

1,025,667.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed September 7, 1909. Serial No. 516,317.

To all whom it may concern:

Be it known that I, WILLIAM E. ALLINGTON, a citizen of the United States, residing at Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Centrifugal Fan-Wheels, of which the following is a specification.

My invention relates to improvements in centrifugal fan-wheels and more particularly to fan-wheels of the general type illustrated in my prior Patent No. 865,962.

One of the salient objects is to provide a fan-wheel construction of a type embodying blades, each free throughout its adjacent fan-inlet, all connected with a back plate at their back edges, and separately supported upon independent arms connected with their radial mid-portion and with the hub, which shall be especially adapted for the handling of shaving and stringy material such as is apt, if opportunity be offered, to mass upon any exposed edge of the wheel structure and destroy the balance of the fan-wheel.

In the drawings, Figure 1 is a view, generally in side elevation, with parts broken away in different degrees, illustrating a fan-wheel, embodying my invention; and Fig. 2 is a view, partly in elevation and partly in central vertical section through the construction shown in Fig. 1.

In the embodiment of my invention shown, 5 indicates a fan-casing having an axial inlet, 6, and a tangential peripheral outlet, 7, having extending through its back wall a shaft, 8, bearing the wheel generally indicated at 9. The wheel shown comprises a hub, 10, bearing an integral disk, 11, to which are secured radial arms, 12, one for each blade, and having secured to its front face a blade, 13, in arrangement such that the arm is attached to the blade at approximately its transverse mid-portion. The rear edge of each blade adjacent the rear wall of the casing is inclined, as at 14, from the median point of juncture with the arm, 12, and thence extends in parallelism to the back wall of the casing, or is straight in elevation, as I will term it, as shown at 15.

Each blade, however, is preferably given a forward pitch adjacent its outer edge or tip. These blades 13, entirely free along their faces adjacent the front wall of the casing, are riveted or otherwise suitably secured, as at 16, to the back plate, 17, of annular planar configuration, preferably sub-

stantially as shown in my prior patent. In practice, however, I have found that, with the constructions thus far described, stringy material, such as cotton, waste, rags, long shavings, and the like, are apt to engage the radially inner edge of the planar annulus, 17, constituting the back plate of the fan-wheel, and, accumulating thereon, will unbalance the wheel to a degree which makes its operation imperfect. For this reason, I provide a guard construction 19 in the form of a truncated cone to deflect the stringy material which would otherwise be likely to catch upon the edge of the plate 17. It is of course desirable to keep the thin blades of the fan as strong as possible, especially upon their narrower tapering portions, and since the guard must be securely attached owing to the impingement thereagainst of the stringy material which it is to deflect from the plate 17, the attaching means must be relatively strong, and if connected directly to the thin blades would require perforation thereof in a number of places, besides involving brackets or like parts upon the blades which would impede the ready slipping of the material from the blades. Since my prior device which I now improve is already provided with the plate 17 secured to the blades, I utilize this plate to avoid the disadvantages arising out of attachment of the guard to the blades. Thus, I advantageously obtain the desired ends by providing upon the guard a base flange 20, shaped to extend around the edge of the plate 17 and lie in contact with the back surface thereof, said flange being riveted or otherwise secured, as at 21, to the plate, and said conoidal guard wall, extending from such point of engagement with the guard inward into close or substantially contacting proximity to the disk 11 but preferably free therefrom. By this simple arrangement, the faults of my prior device in handling certain kinds of material may be cheaply, easily, and quickly cured by the guard without touching or imposing new strains upon the blades.

What I claim is:

1. In a fan-wheel the combination with radial arms, a central supporting disk, a plurality of blades carried by said arms, the edge of each sloping transversely from its arm at both edges, free at its front edge and having a portion substantially straight in face elevation beyond its sloping part on its

rear edge; of a back plate secured to said straight portions of the several blades, and a conoidal guard wall extending from said back plate to the disk and substantially conforming to the slope of the back edges of the blades and free therefrom, the disk, back-plate, and guard being structurally separate parts.

2. In a fan wheel the combination with 10 radial arms, a central supporting disk, a plurality of blades carried by said arm, the edge of each sloping from its arm in a rearward direction and having a portion substantially straight in face elevation beyond said sloping part; of a back plate se- 15 cured to said straight portions of the several blades; and a conoidal guard wall, secured to said back plate and free from the blades and disks, extending from said back plate to the blades and substantially conforming 20 to the slope of the back edges of the blades.

3. The combination with a fan wheel having a disk, a plurality of supporting arms, a blade for each arm, the radially inner edge

of each of said blades being inclined from 25 its point of juncture with the supporting arm toward the front of the casing to permit the centrifugal delivery of stringy material encountering the blade toward the front side of the wheel, and inclined from 30 such point of juncture with the supporting arm toward the back, whence the edge extends outwardly in a radial line, and an annular plate connected to said blades at said radial edge portions thereof, of a conical guard between said annular plate and 35 disk, secured to the plate, said guard lying adjacent to but free from connection to the blades and disk, to prevent lodgment of stringy material from the backwardly inclined edges upon the annular plate. 40

In testimony whereof I hereunto set my hand in the presence of two witnesses.

WILLIAM E. ALLINGTON.

In the presence of—

W. LINN ALLEN,

MARY F. ALLEN.