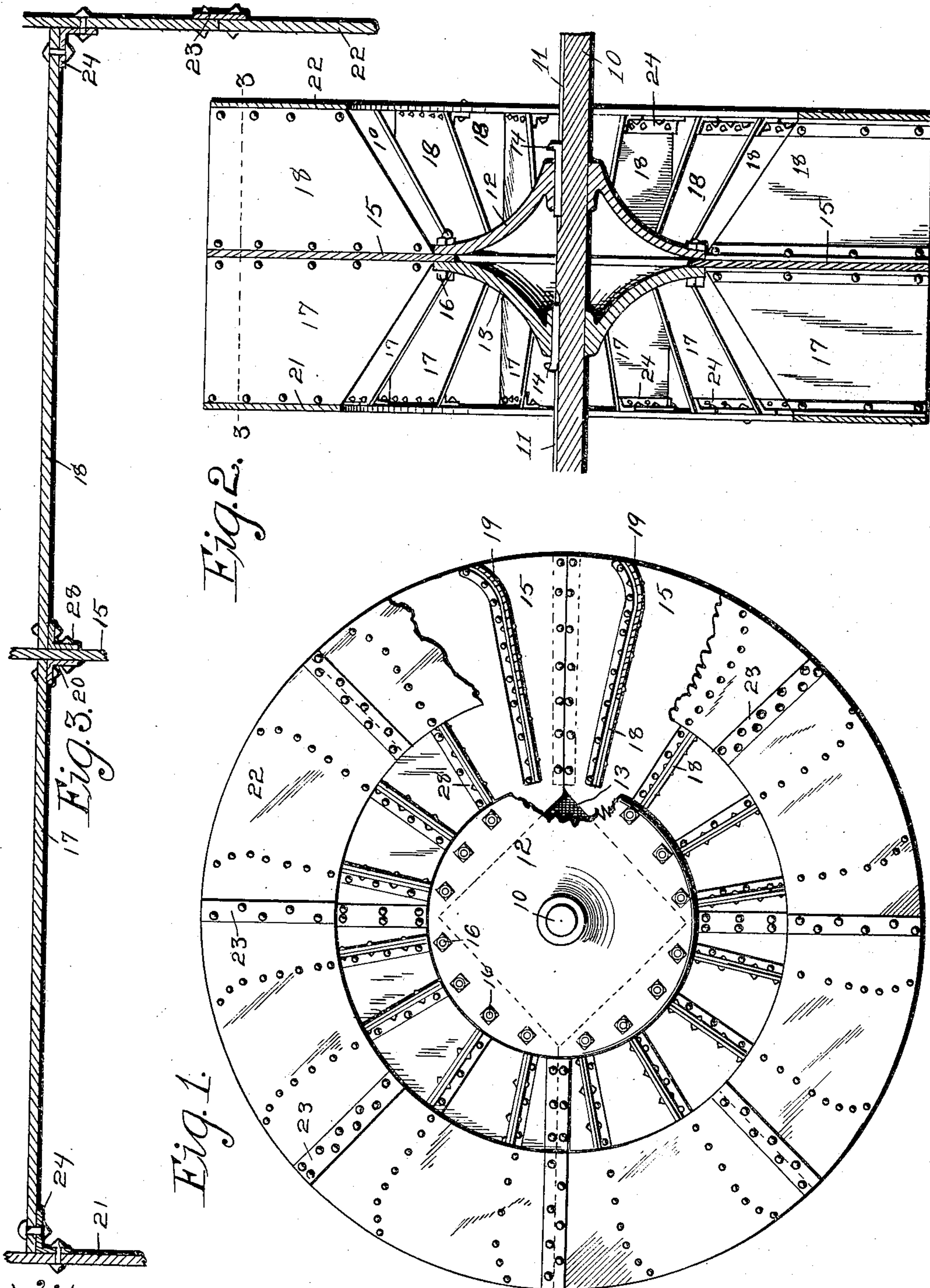


No. 868,206.

PATENTED OCT. 15, 1907.

J. W. MILLER.  
FAN VENTILATOR.  
APPLICATION FILED JAN. 16, 1905.



Witnesses

A. G. Hague  
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Inventor J. W. Miller.

By Irving Lane atty



# UNITED STATES PATENT OFFICE.

JAMES W. MILLER, OF GILLESPIE, ILLINOIS.

## FAN-VENTILATOR.

No. 868,206.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed January 16, 1905. Serial No. 241,207.

*To all whom it may concern:*

Be it known that I, JAMES W. MILLER, a citizen of the United States, residing at Gillespie, in the county of Macoupin and State of Illinois, have invented a certain new and useful Fan-Ventilator, of which the following is a specification.

The objects of my invention are to provide a fan of simple, durable and inexpensive construction especially designed for use in connection with mine ventilation and capable of being formed principally of plate metal pieces riveted together and so arranged that the fan will offer a minimum of resistance to the admission of air through the eyes of the fan and to the discharge of air from the fan blades.

My invention consists in the construction of the fan, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which—

Figure 1 shows a side elevation of the complete fan with a portion of one of the outer rims removed. Fig. 2 shows a vertical transverse sectional view of the complete fan, and Fig. 3 shows an enlarged detail view on the line 3—3 of Fig. 2.

Referring to the accompanying drawings, the numeral 10 is used to indicate the fan shaft formed with key-ways 11 at opposite sides of its center. The fan hub is composed of two mating sections 12 and 13 each section keyed to the shaft by a key 14. The outer end of each hub section is curved gradually from a point adjacent to the shaft inwardly toward the center of the shaft and then in a direction at about right angles to the shaft.

The fan proper is composed of a central disk made of plate metal segments. In the present instance four are shown. These segments are indicated by the numeral 15, their outer edges forming a complete circle and their inner margins introduced between the hub sections 12 and 13 and firmly secured therein by bolts 16. Each fan blade is composed of two plate metal sections 17 and 18. The outer edge of each is parallel with the shaft and the inner edge inclines from the central disk 15 outwardly and away from the shaft. Each of the plates 17 is curved near its outer end at 19 in a direction for inclining the outer end rearwardly relative to the line of rotation of the fan. I connect the fan sections 17 and 18 with the central disk 15 as follows: On each side of the central disk is an angle bar 20 riveted to the central disk 15 and also riveted to the adjacent blade section. Each fan sec-

tion, therefore, is composed of two plates, the inner side edges of the plates standing adjacent to the periphery of the hub and the outer side edge of each blade spaced apart a considerable distance from the axle 10.

The fan is completed by the two outer side rims 21 and 22. Each of these rims is composed of a number of segments. The outer periphery of the rim is the same size as that of the central rim 15 and each rim is formed with a relatively large opening or eye. The segmental plates of which the outer side rims are composed are connected with each other by the radial metal strips 23 overlapping the mating edges of the sections and riveted thereto. These rims 21 and 22 are supported in position by means of the angle bars 24 which are riveted to the outer side edges of the blades and also to the rims 21 and 22 and by this arrangement the outer side edges of the blades and the said rims 21 and 22 serve to mutually support and brace each other.

With the exception of the hub, the entire fan is composed of plate metal pieces of relatively small size so that they may be easily and conveniently shaped and put together. The fan when completed is of relatively great strength because the parts mutually support and brace each other and the admission of air through the eyes of the fan at the sides is not in any way obstructed but is wholly clear and open so that a fan of great efficiency is provided.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States, therefor is—

The combination in a fan for the purpose described, of two cone-shaped hub sections arranged with their large portions inward and adjacent to each other, an annular central disk fixed between and extending radially from the inner large portions of the hub sections, annular side rims, angle bars fixed to opposite sides of the central disk and having inner straight portions disposed radially to the center of the fan and also having outer portions curved outward and rearward, with reference to the direction in which the fan is rotated, correspondingly arranged and shaped angle bars fixed to the inner sides of the side rims, and radial blade sections located at opposite sides of the central disk and fixed to the angle bars on the disk and side rims and having their outer end portions curved rearward, with reference to the direction in which the fan is rotated.

Des Moines, Iowa, Nov. 4, 1904.

JAMES W. MILLER.

Witnesses:

J. B. BENNETT,  
F. A. TRAHIN.