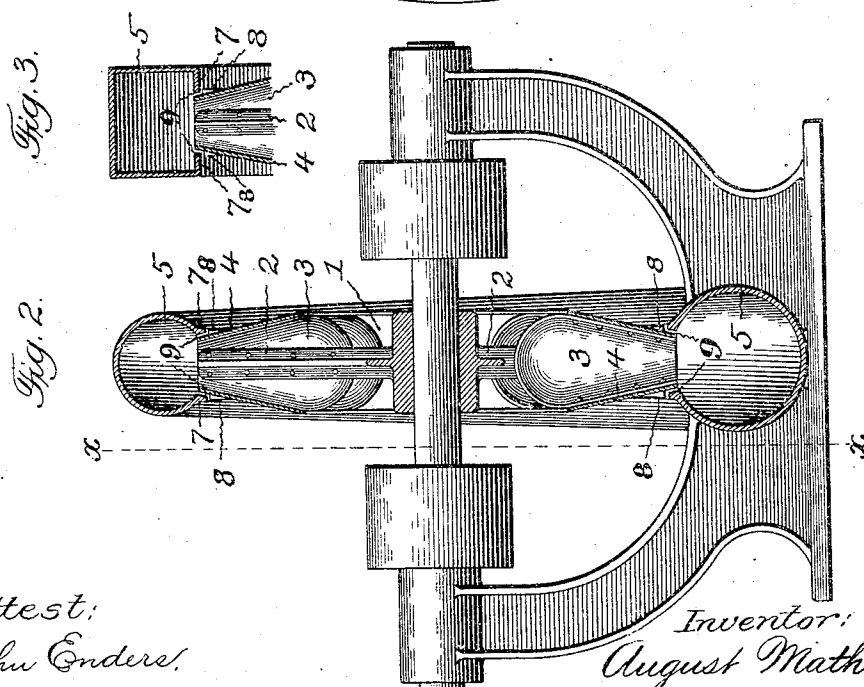
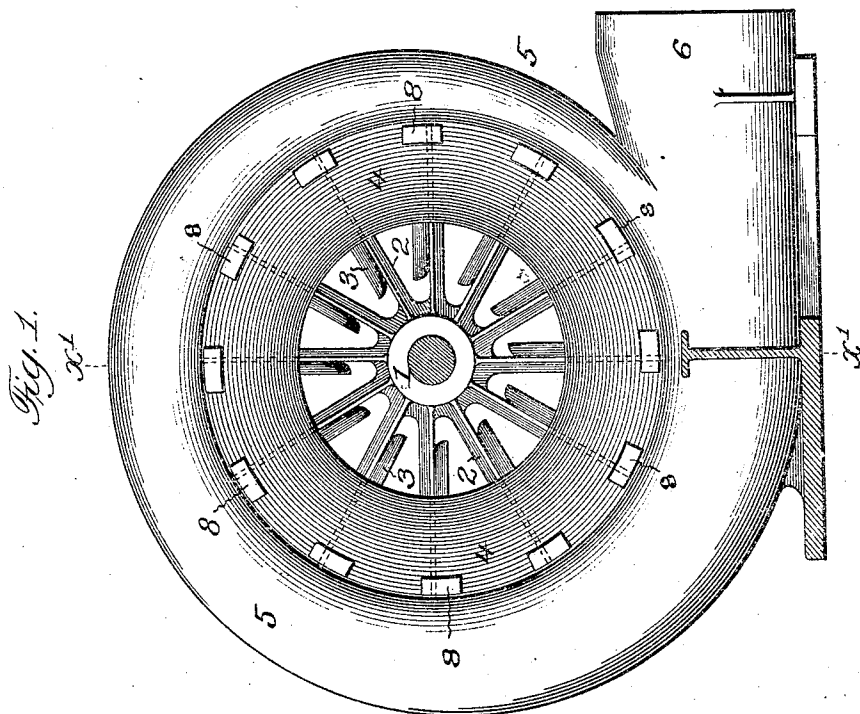


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PATENTED JUNE 4, 1907.

A. MATHIS.
PRESSURE BLOWER.

APPLICATION FILED NOV. 21, 1904.



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PRESSURE-BLOWER.

No. 856,171.

Specification of Letters Patent.

Patented June 4, 1907.

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To all whom it may concern:

Be it known that I, AUGUST MATHIS, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pressure-Blowers, of which the following is a specification.

This invention relates to rotary fans, and more especially to that type of such fans known as pressure blowers; and the present improvement has for its object to provide a simple and efficient structural formation and combination of the revolving fan and stationary fan casing adapted to afford great efficiency, and by an elimination of eddy currents, and the like, within the annular compression chamber produce an increased amount of blast with a minimum expenditure of power, all as will hereinafter more fully appear.

In the accompanying drawings:—Figure 1 is a longitudinal section at line $x-x$, Fig. 2 showing a side elevation of a pressure blower embodying the present invention. Fig. 2 is a transverse section at line $x'-x'$, Fig. 1. Fig. 3 is a detail transverse section of a modification.

Similar numerals of reference indicate like parts in the several views.

Referring to the drawings:—1 is the rotary fan, consisting of the usual radial spokes or arms 2, the series of radial vanes or blades 3, and the pair of opposed conical annular disks 4, secured to the opposite edges of the vanes or blades 3, as usual in the present type of fan blowers.

5, is the fan casing of the usual scroll form in a longitudinal direction, and ending in a tangential outlet trunk 6, which may be arranged horizontally as shown, or in any other plane, as may be found most desirable and as usual in the present type of blowers. The scroll shape form of the casing provides a gradually expanded peripheral chamber into which the air is forcibly driven by the revolving fan, and carried around to the tangential outlet trunk 6, in the continued revolution of the fan; such fan casing may have the usual or rectangular form in cross section, as illustrated respectively in Figs. 2 and 3, so far as the scope of the present invention is involved.

In the present improvement, the respective inner margins or flanges 7, of the fan casing have a concentric relation to the axis of rotation of the rotary fan member aforesaid, leaving an annular space in which the periphery of the rotary fan is adapted to travel without extending into the scroll shaped chamber of the fan casing. With such relative arrangement of parts it has been found from extended practical experiments that less power is required to obtain a given amount of air at a normal degree of compression, than with the ordinary construction of fan blowers heretofore referred to, and this I ascribe to the fact that the outer surfaces of the conical annular disks 4, have frictional contact with ordinary atmosphere instead of with the confined and partly compressed air passing between said disks and the stationary side plates of the fan casing in the ordinary construction, and also to the further fact that the eddies of air which are usually created in a transverse direction around said disks in the ordinary construction are entirely eliminated in the present improved construction.

In the preferred form of the present invention, as illustrated in Fig. 3, the inner margins or flanges 7 of the fan casing have an expanded and rectangular form and are adapted in connection with the hereinafter described joint forming plain segmental plates or sections carried by the rotary fan to afford an angular joint between the casing and the fan through which there is a minimum amount of air leakage or waste while at the same time frictional contact between the parts is avoided.

8 are a series of joint forming segmental plates or sections of angular shape secured to the outer faces of the conical annular disks 4, in transverse alinement with the vanes or blades 3, and with their outer edges in adjacent relation to the circular inner surfaces of the aforesaid margins or flanges 7 of the fan casing so as to provide angular recesses 9 within the periphery of the conical annular disks which receive the margins or flanges 7. By providing series of angular segmental plates or sections instead of continuous rings upon the sides of the conical annular disks 4 the fan is rendered much lighter. These angular segmental plates or sections virtually

close the spaces between the margins or flanges and the edges of the conical annular disks during the rotation of the fan.

Another feature of novelty of the present invention, in connection with the improved construction above described consists in the formation of the inner ends of the radial pan shaped vanes or blades 3, of the rounded concave horseshoe form shown in Figs. 1 and 2, which formation in connection with the usual outwardly decreasing width of such vanes or blades has been found to aid materially in the efficient and economical working of the present improvement.

Having thus fully described my said invention what I claim as new and desire to secure by Letters Patent, is:—

1. A pressure blower of the type herein described comprising a fan casing having flanges concentric with the axis of rotation of the fan, and separated so as to leave an annular space between them, a fan having a series of vanes, whose outer ends are flush with the inner wall of the casing, and a pair of opposed conical annular disks having their outer edges flush with the outer ends of the vanes and the inner wall of the casing, and series of angular segmental plates located upon the sides of the conical annular disks adjacent to the outer edges of the flanges and providing angular recesses which receive the flanges within the periphery of the conical annular disks.

2. A pressure blower of the type herein described comprising a fan casing having intumed flanges concentric with the axis of ro-

tation of the fan, and separated so as to leave an annular space between them, a fan having a series of vanes, whose outer ends are flush with the inner wall of the intumed flanges and a pair of opposed conical annular disks having their outer edges flush with the outer ends of the vanes and the inner wall of the intumed flanges, and series of angular segmental plates located upon the sides of the conical annular disks adjacent to the outer edges of the intumed flanges and providing angular recesses which receive the flanges within the periphery of the conical annular disks.

3. A pressure blower of the type herein described comprising a fan casing having flanges concentric with the axis of rotation of the fan, and separated so as to leave an annular space between them, a fan having a series of vanes of rounded concave horseshoe form, whose outer ends are flush with the inner wall of the casing, and a pair of opposed conical annular disks having their outer edges flush with the outer ends of the vanes and the inner wall of the casing, and series of angular segmental plates located upon the sides of the conical annular disks adjacent to the outer edges of the flanges and providing angular recesses which receive the flanges within the periphery of the conical annular disks.

Signed at Chicago, Illinois this 19th day of November 1904.

AUGUST MATHIS.

Witnesses:

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