

(No Model.)

W. T. CHRISTY.
FAN BLOWER.

No. 516,366.

Patented Mar. 13, 1894.

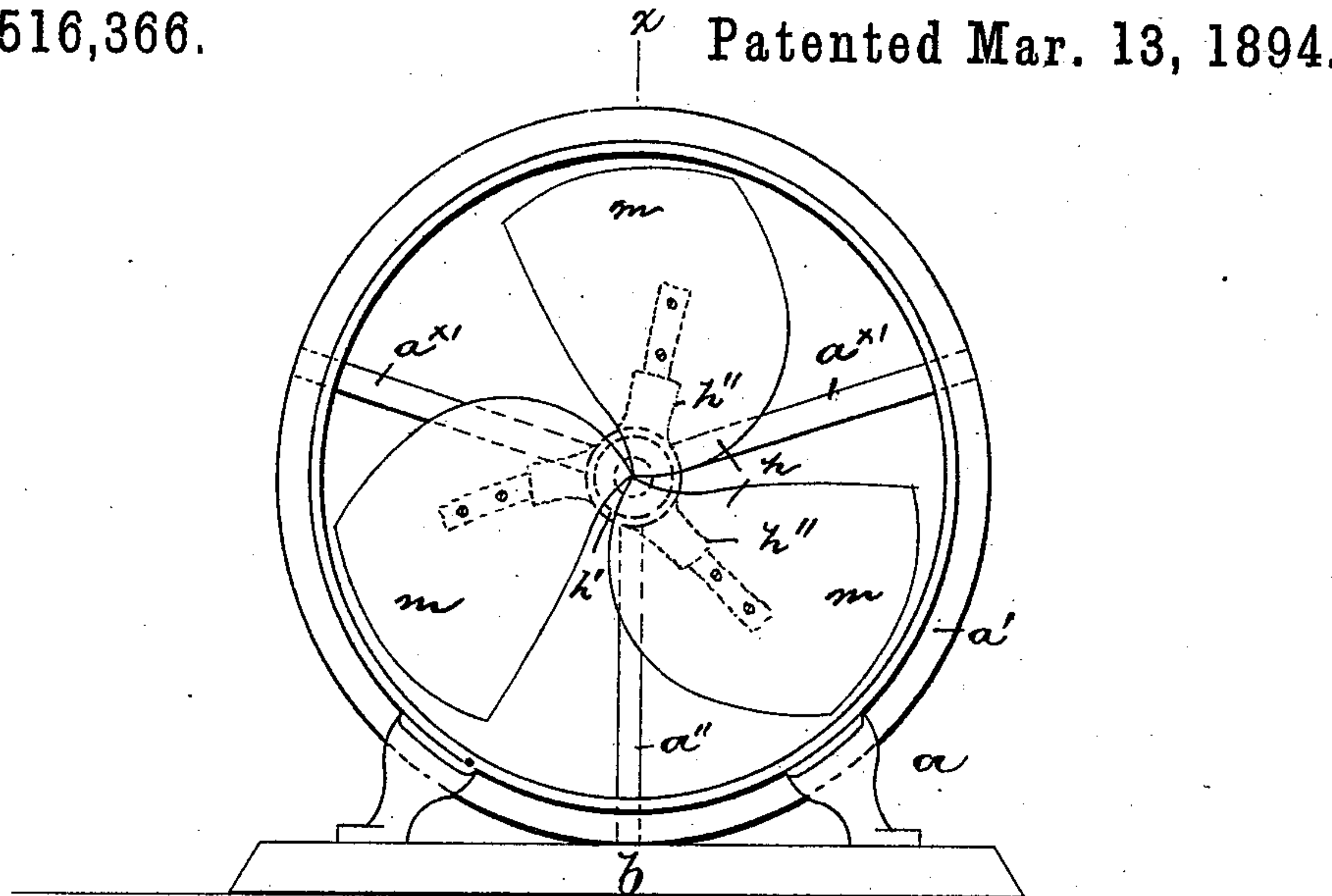


Fig. 1.

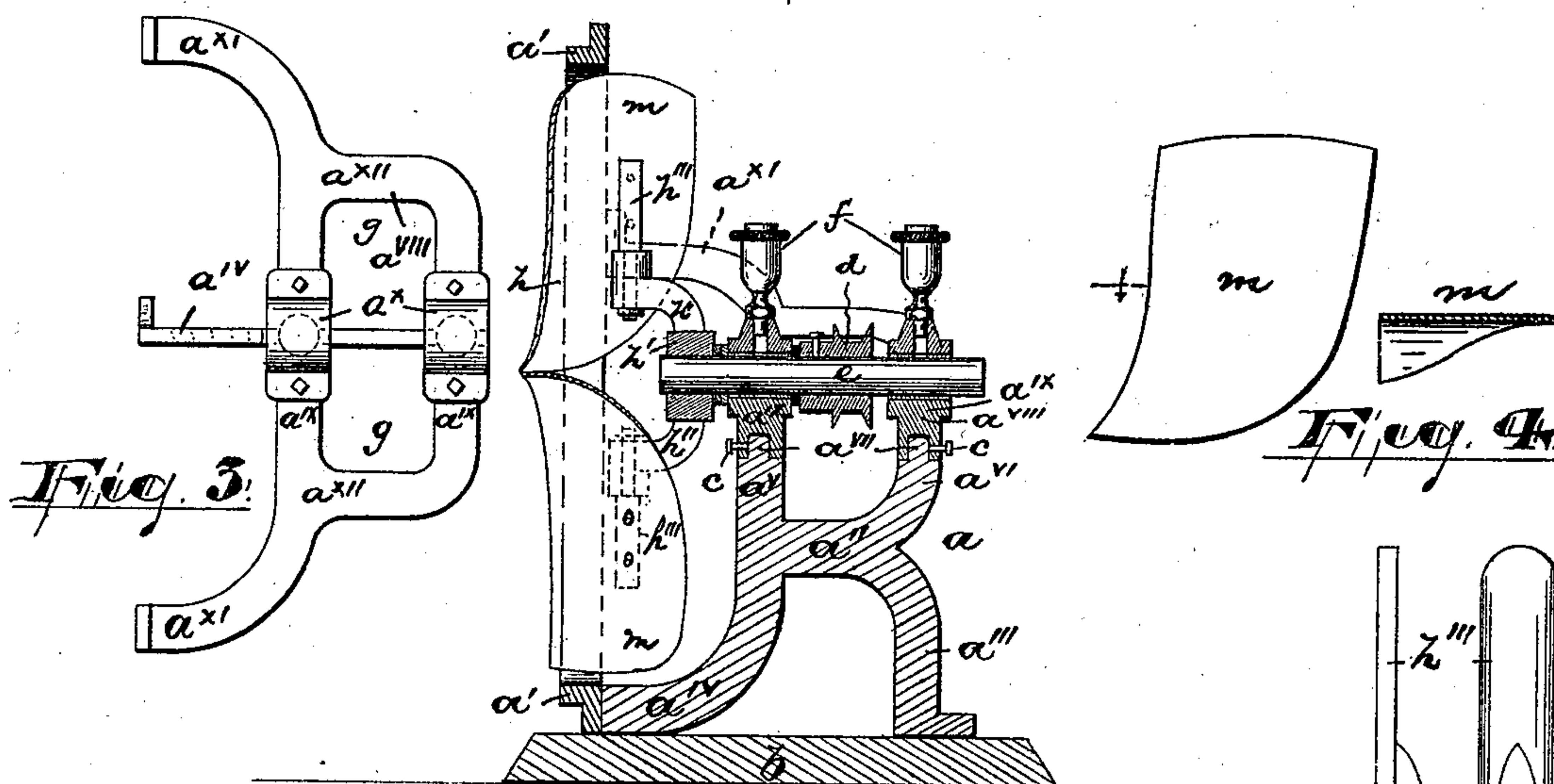
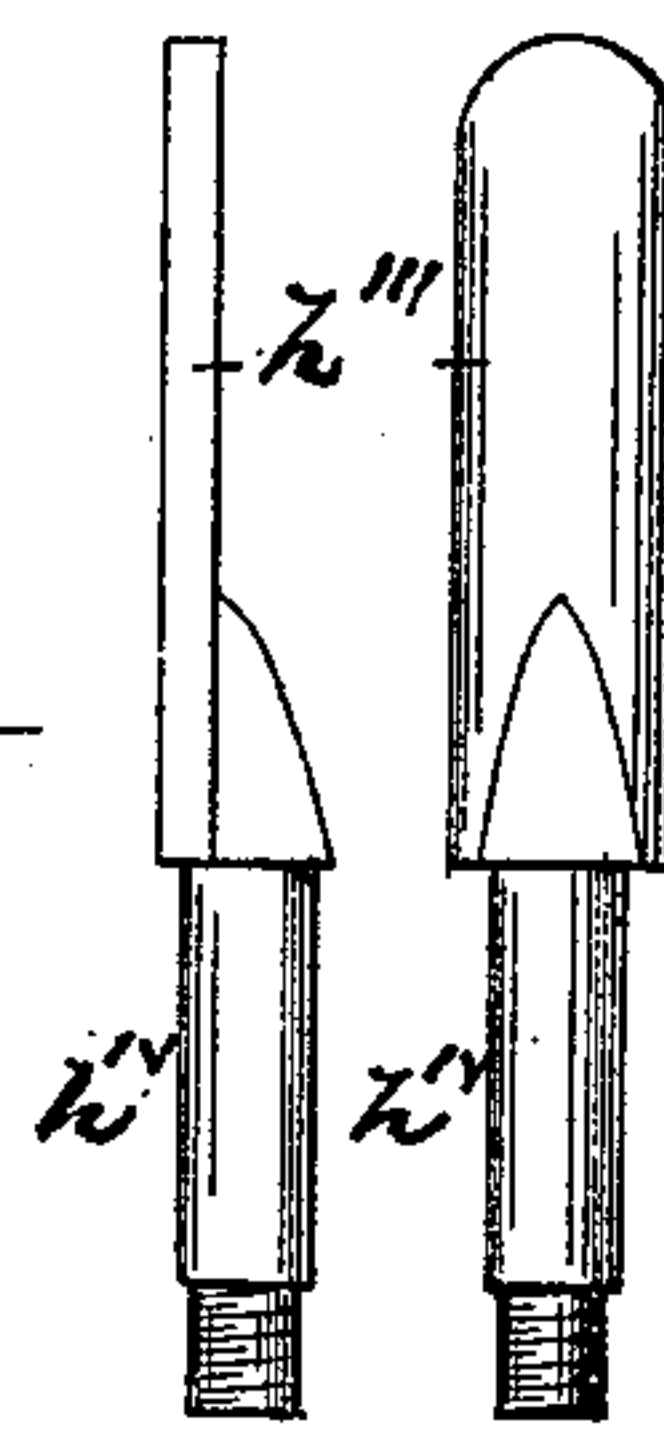


Fig. 2.



No. 5.

Witnesses

Inventor:

Oscar A. Michel.
James Wayland

William T. Christy,

By Drake & Co. Atty's.

UNITED STATES PATENT OFFICE.

WILLIAM T. CHRISTY, OF NEWARK, ASSIGNOR OF ONE-HALF TO ADAM SCHEID, OF HARRISON, NEW JERSEY.

FAN-BLOWER.

SPECIFICATION forming part of Letters Patent No. 516,366, dated March 13, 1894.

Application filed November 26, 1892. Serial No. 453,208. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. CHRISTY, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Fan-Blowers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The objects of this invention are to secure increased efficiency in the transmission of air and the ventilation of apartments, to prevent back drafts and the consequent loss of power, to centralize the current of air so as to secure greater force and a more distant effect of the device in operation, to reduce the cost of construction, facilitate the assembling of parts and to secure other advantages and results some of which will be more fully set forth in connection with the description of the working parts.

The invention consists in the improved pneumatic wheel and in the arrangements and combinations of parts, all substantially as will be hereinafter described and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters indicate corresponding parts in each of the several views, Figure 1 is a front elevation of the improved device devoid of the tube through which the air may be transmitted, and Fig. 2 is a central vertical section of the same. Fig. 3 is a detail plan of a portion of the supporting frame. Fig. 4 is an elevation and section of a blade or wing of the windwheel, and Fig. 5 a side and front view of a certain adjustable arm for carrying one of said wings.

In said drawings, a indicates a frame made in sections of which a^I indicates the annular tube section or rim, a^{II} a rear section which may have a leg, a^{III} , when the wheel is secured to a bed plate, b , at right angles thereto and which has an arm, a^{IV} , extending forward to support the annular section a^I , and arms, a^V , and a^{VI} , provided with dowels, a^{VII} ,

to receive and hold an upper or shaft carrying section, a^{VIII} , the said shaft carrying section being provided with means, such as the set screws, c , for rigidly securing the parts to one another. At the center, the said section, a^{VIII} , is provided with bearings, a^{IX} , a^{IX} , between which a small belt wheel, d , carried by the shaft, e , is arranged; and the said bearings are in separable sections to allow the shaft e to be laid in place and secured as distinguished from being thrust into position by a longitudinal movement, as will be understood. The upper sections, a^X , of the separable bearings may be provided with ordinary oil cups f . From the center of the shaft-carrying section, a^{VIII} , arms, a^{XI} , project as shown in detail, Fig. 3, extending oppositely to engage the annular rim or section and hold the same in proper relative position. These arms are forked or branched as at a^{XII} a^{XII} and connect the two bearings on opposite sides of the pulley, spaces g , g , being provided to admit free manipulation of the belt and pulley. At one of the extremities of the shaft, e , is secured the pneumatic wheel, h , consisting of the hub h^I integral arms h^{II} and wings or blades m in which a feature of the invention inheres. The said arms, h^{II} , extend radially from the shaft and are provided with bearings for the wings, m , which bearings are planes at angles to a plane cutting the shaft at right angles, so as to give the said wings fastened on said bearings the proper inclinations. The said wings are each of one integral piece of metal from the peripheries or where they close by approach the annular section a^I , to their pointed and outwardly turned inner ends where they meet one another, as shown in Fig. 1, and are properly curved to propel the air in one direction or the other when the wheel is turned. By this construction there is no opportunity for a central back draft or a movement of air toward the wheel due to the fact of there being at the center no propulsive surface of the wheel as in cases where the wings or blades terminate short of the center of motion, but the blades from the very center of movement to the periphery of the wheel serve in propelling the air. By this arrangement of the wings, a solid current of air is forced for-

ward, and because of there being no back drafts referred to, counteracting the impetus of the current and limiting its effects, greater quantities of air are transmitted. Again, by the construction disclosed, the hub, by being arranged back from the fan, does not interfere with the movement of air but the whole surface of the wheel from the center out is efficient in propelling. I prefer to make the wings adjustable on the integral arms h^{II} or hub, h^I , and to secure such adjustability, the said wings or blades, m , are secured on supplemental sections, h^{III} , of the arms h^{II} , the latter being socketed and the supplemental sections being provided with bolts, h^{IV} , which extend through the integral arms and are secured by nuts or the like in rigid relation to the co-operating parts.

Having thus described the invention, what I claim as new, and desire to cover and secure in these Letters Patent, is—

1. In combination with a suitable frame or support and shaft for giving rotary motion, a winged wheel the wings of which meet at the center of movement forward of the end of said shaft, substantially as set forth.

2. In combination with the frame a and shaft e and means for rotating the latter, a hub, h^I , secured at the extremity of the shaft and having arms with inclined bearings on which wings or blades m are secured said wing extending inward toward the center of movement and meeting at a point forward of said extremity, substantially as set forth.

3. In combination with a frame consisting of an annular section a^I a section a^{II} having arms a^{III} a^{IV} a^V , a^{VI} , a shaft-carrying section secured on said arms a^V a^{VI} and having arms a^{XI} also extending to the annular section to co-operate with the arm, a^{IV} , in supporting the same, a shaft e and wheel carried by said shaft and working in said annular section, substantially as set forth.

4. In combination with the annular frame section in which the wheel rotates, a section,

a^{II} , having an arm a^{IV} , to engage said annular frame, a leg a^{III} and doweled arms a^V , a^{VI} , a section a^{VIII} , having set screws, c , to fasten the section a^{VIII} to said section a^{II} and having bearings a^{IX} a^{IX} in separable sections, and arms a^{XI} extending to the annular frame section, a shaft arranged in said bearings and blades or wings secured to said shaft and lying in said annular frame, the parts of said blades or wings lying at the center of the wheel being bent outward and meeting at a point in line with the shaft and forward of the same.

5. In combination with a frame and shaft and means for rotating the same, a hub arranged on said shaft and having arms arranged radially and bent forward beyond the end of said shaft and thereat provided with bearings for the wings, and said wings provided with integral extensions toward the center which are pointed and bent outward or away from the end of the shaft, the points approaching close to one another in the center line of the shaft, substantially as set forth.

6. In combination with the shaft and wings, a hub having forwardly curved arms and supplementary, adjustable sections of arms carrying said wings substantially as set forth.

7. In combination with the shaft and means for rotating the same, a hub arranged on the end of the shaft and having arms extending forward of said end and provided with supplemental sections and wings arranged on said supplemental sections and extending inward or toward the center and meeting or closely approximating one another forward of the end of the shaft substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of November, 1892.

WILLIAM T. CHRISTY.

Witnesses:

OLIVER DRAKE,
ADAM SCHEID.