(No Model.)

F. W. TUERK, Jr.

FAN.

No. 477,614. Patented June 21, 1892.

Fig. 1.

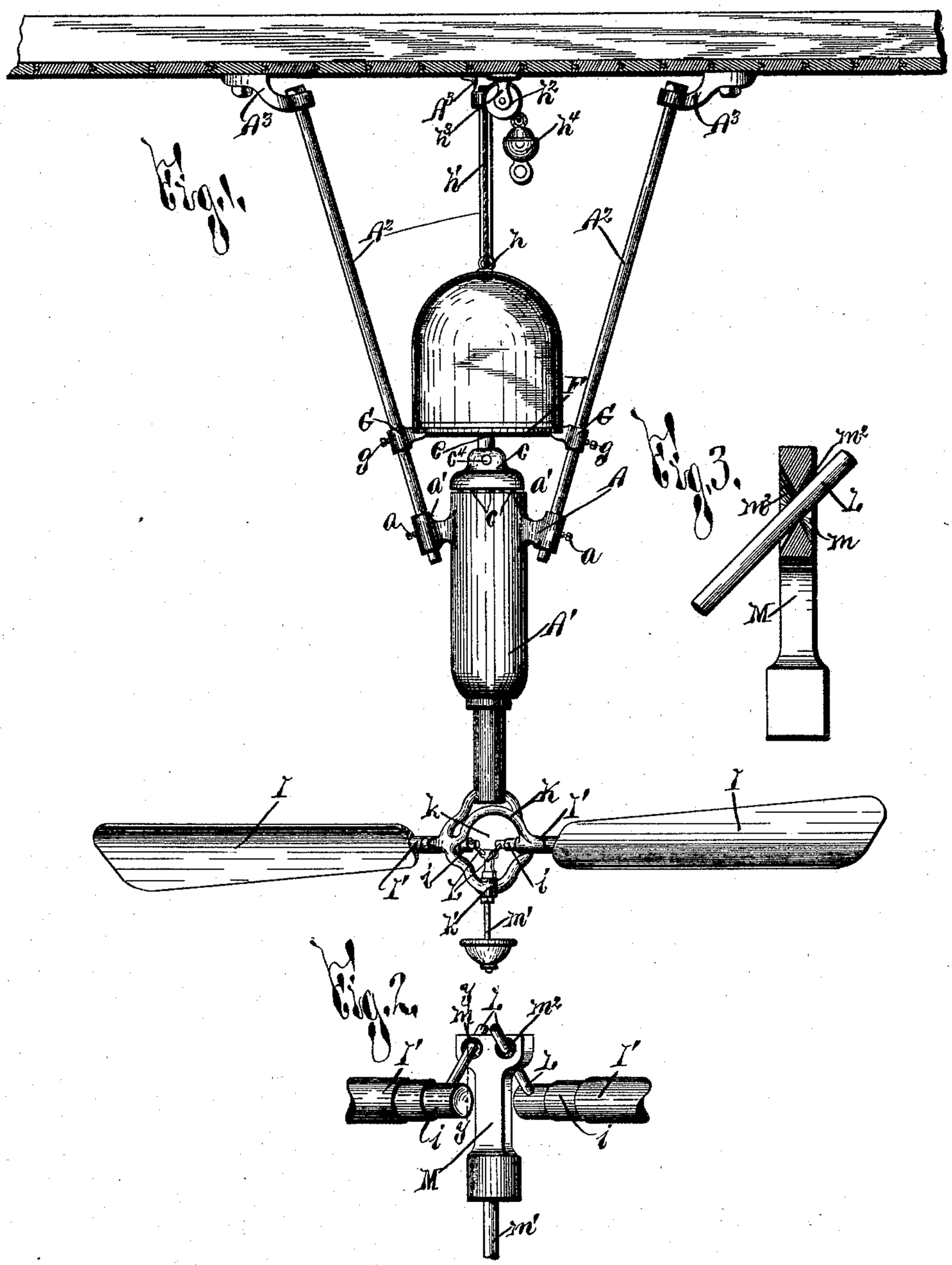
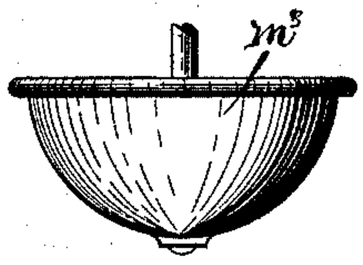


Fig. 3.

Fig. 2.



WITNESSES:

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FREDERICK W. TUERK, JR., OF FULTON, NEW YORK, ASSIGNOR OF TWO-THIRDS TO JOHN HUNTER AND JAMES HUNTER, OF SAME PLACE.

FAN.

SPECIFICATION forming part of Letters Patent No. 477,614, dated June 21, 1892.

Application filed January 24, 1890. Serial No. 337,953. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. TUERK, Jr., of Fulton, in the county of Oswego, in the State of New York, have invented new and useful Improvements in Fans, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to an improvement in fans, and has for its object the production of a simple and effective device whereby the altitude of the fan-blades is readily adjusted for varying the agitation of the air; and to this end the invention consists, essentially, in a revoluble shaft, fan-blades supported on said shaft, projections or pins provided on the adjacent extremities of the fan-blades, and a movable head having openings therethrough in a line also substantially at right angles to the longitudinal axes of the blades for registering with said projections or pins, said openings having countersunk extremities, whereby cramping of the pins is prevented when the head is moved for adjusting said blades.

The invention also consists in the detail construction and arrangement of the parts, all as hereinafter more particularly described, and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming a part of the specification, in which like letters indicate corresponding parts in all the views.

Figure 1 represents an elevation of my invention, illustrating the relative construction and arrangement of its parts. Fig. 2 is a detail view illustrating the connection between the adjacent extremities of the fan-blades for axially rotating them; and Fig. 3 is a sectional view taken on line *y y*, Fig. 2.

This invention relates to a simple construction of means for adjusting the altitude of the fan-blades, somewhat similar to that shown in my previous patents, Nos. 420,024 and 423,839, dated, respectively, January 1 and March 18, 1890.

In the Patent No. 420,024 I have shown the adjacent extremities of the fan-blades as provided with toothed disks or gear-wheels meshing with an interposed head having rack-teeth on its faces adjacent to said wheels for meshing therewith, and in the aforesaid Patent No. 423,839 I have shown the inner extremities of the fan-blades as provided with laterally-extending arms, a head movable between said extremities, and independently-moving supports carried by said head. In the practical use of the device shown in my former Patent No. 423,839 I have discovered that the independently-moving supports upon the adjacent interposed head are extremely liable to bind on the head and bend the arm engaged therewith and provided on the adjacent end of the fan-blade. By my present invention I have sought to obviate this difficulty by dispensing with the independently-moving supports and forming the head with openings therethrough arranged in a line substantially at right angles to the longitudinal axes of the fan-blades and formed with countersunk or enlarged extremities, whereby the head is permitted to move up and down and rock the fan-blades through the medium of the arms secured thereto and engaged with said openings without the slightest liability of bending said arms. Moreover, this latter construction is much more simple, durable, and economical than that set forth in said Patent No. 423,839, as is evident to one skilled in the art.

By this adjuster the fan-blades are axially rotated for varying their altitude and regulating the agitation of the air without varying the speed of rotation of the fan. The fan-supporting bracket A, which may be of suitable form, size, and construction, is here illustrated as composed of the lower tubular-shaped portion or shell A′ and the bars or arms A^2, secured at their lower extremities by set-screws or other means *a* to lugs *a′* upon the shell A′ and mounted at their opposite extremities in brackets A^3, secured to any suitable support, as the ceiling of a room, whereby the fan may hang pendent. This construction of bracket is very cheaply and economically produced, effective and durable in operation, and pleasing in appearance, thereby producing an extremely desirable article at a minimum cost of expense.

C represents the fan-rotating shaft, which

is supported by the bracket A and preferably by the tubular portion A′, being driven by any suitable kind of motive power. As illustrated, the shaft is driven by an electric motor F, which is mounted on supports G, projecting from the rods A^2, and is incased within a movable shell H, to which is secured a cord h', which passes over a pulley h^3, journaled in a bracket h^2, and is secured to a counter-balance h^4. The operation of this motor forms no part of my invention, and hence it is unnecessary to further illustrate or describe the same, it being understood that any kind of motive power may be used to rotate the shaft C.

As shown, the shaft C does not extend entirely into the motor, but is connected to a spindle *e*, depending from the motor, by a collar *c*, secured by a pin c^4 to said spindle. It is evident, however, that, if desired, the shaft may be run continuous instead of being subdivided, and that this divided construction of the shaft forms no part of my present invention.

As illustrated in the drawings, the fan-blades I are arranged with their axes disposed in parallel planes at one side of each other and are journaled in a bracket K, preferably of the form described in my aforesaid patents, which bracket is firmly secured to the shaft C, in order that it may be rotated thereby. In the central portion of the bracket is an open space *k*, into which project the inner extremities *i* of the fan-blade spindles I′. Formed or provided upon these extremites are the projections or lugs L, which extend toward each other in planes at substantially right angles to the longitudinal axes of the blades and enter openings *m* on opposite sides of the center of a sliding head M, which extend through said head in planes at substantially right angles to the longitudinal axes of the blades. This sliding head M is formed with a depending guide-rod *m′*, sliding or guided in the hub *k′* of the bracket K. The opposite faces or extremities m^2 of these openings *m* are countersunk, as best illustrated in Fig. 9, thereby enabling the said head without cramping the arms L to be readily forced upward or downward with its openings considerably above or below the axes of the fan-blades. Secured to the lower extremity of the guide-rod *m′* is a suitable handpiece m^3, here illustrated as an oil-cup loosely mounted on said extremity. The fan-blades and their axially-rotating mechanism are preferably so arranged that when the said oil-cup is pulled downward the air displaced by the fan-blades I is forced downward, and when desired to force the air upward, as set forth in my previous patents, the said oil-cup is forced upward, effecting the desired result. This construction of arms L and sliding head M for axially rotating the fan-blades is very simple and effective, since the parts are so proportioned that the fan-blades are held in their adjusted position without the aid of any spring-catch or other contrivance, although such may be used, if desired. It will be understood, however, that the construction of the head and other parts of my fan may be somewhat changed from that shown and described without departing from the spirit of my invention. Hence I do not limit myself to the precise detail construction and arrangement of the parts.

I am aware that fan-blades have been formed with projecting arms provided with laterally-extending lugs movable in slots provided in arms formed upon a movable head and extending through said arms in a plane substantially parallel with the axes of the fan-blades; but such a construction I do not herein wish to claim.

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

1. In a fan, the combination of a rotating fan-shaft, fan-blades revolved by said shaft, projections or pins provided on the adjacent extremities of said fan-blades, and a movable head having openings extending therethrough in a plane at substantially right angles to the longitudinal axes of the blades for receiving said projections or pins, said openings having countersunk extremities, whereby cramping of the pin is prevented when said head is raised so that the said openings are above or below the axes of the fan-blades, substantially as and for the purpose set forth.

2. In a fan, the combination of a rotating fan-shaft, a bracket secured to said fan-shaft, fan-blades supported by said bracket and disposed in parallel planes at one side of each other, projections or pins provided on the adjacent extremities of said fan-blades, a moving head guided in said bracket and having openings extending therethrough on opposite sides of a perpendicular to the fan-blade axes in planes at substantially right angles to said fan-blade axes for receiving said projections or pins, said openings having countersunk extremities, whereby cramping of the pins is prevented, and a rod connected to said head for operating the same, substantially as and for the purpose specified.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga and State of New York, this 26th day of December, 1889.

FREDERICK W. TUERK, JR.

Witnesses:

CLARK H. NORTON,

M. BAXTER.