

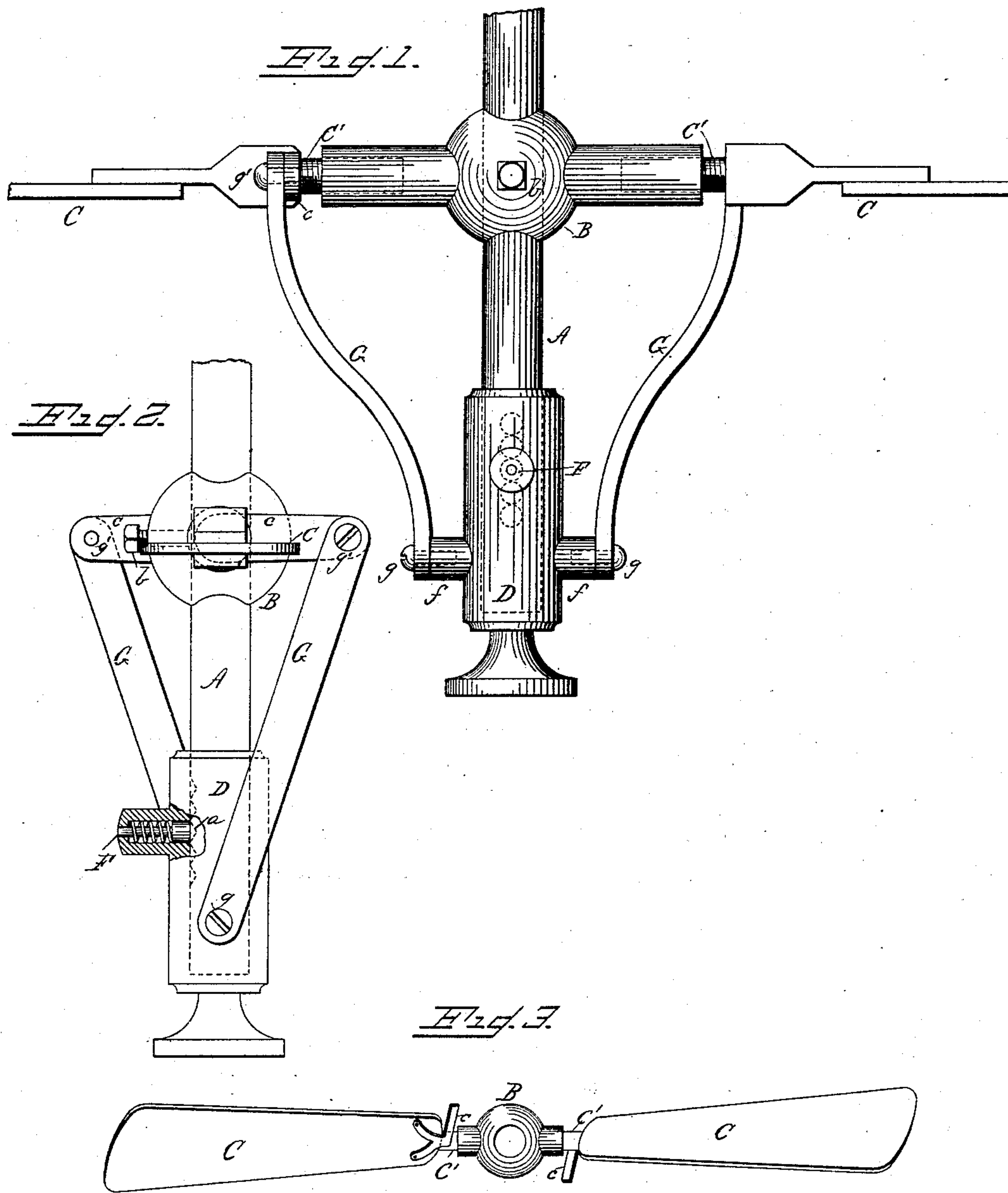
(No Model.)

W. M. SMITH & J. CALDWELL.

AUTOMATIC FAN.

No. 338,311.

Patented Mar. 23, 1886.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC FAN.

SPECIFICATION forming part of Letters Patent No. 338,311, dated March 23, 1886.

Application filed April 23, 1885. Serial No. 163,147. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM M. SMITH and JAMES CALDWELL, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Fans; and we do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification, in which—

Figures 1 and 2 are elevations of the fan and spindle on different sides, respectively, and Fig. 3 is a plan of fan blades and hub.

Our invention has relation to that class of fans used for ventilating or producing a circulation of air in apartments, and our improvements have for their objects to provide a construction whereby the fan-blade may be readily made to lie flat in the plane of their rotation or at an angle with respect to said plane, so as to vary according to circumstances the resistance or blowing action of said blades.

Our invention consists in the peculiar construction and combinations of parts hereinafter described, having reference particularly to the combination, with a fan and its spindle or shaft, of a sleeve which may be adjusted on said shaft, said sleeve having attached to it the ends of two levers or links whose opposite ends are connected to the fan-blades, whereby a vertical movement of said sleeve will produce a change of position or angle of said blades.

Referring to the accompanying drawings, A designates a vertical spindle or shaft designed and adapted to be suspended from a ceiling and to rotate on its axis.

B is a cross-head or hub rigidly secured to said shaft by any suitable means, such as a set-screw, *b*, so as to rotate with said shaft.

C C are fan-blades attached to shanks which are threaded to fit female screws in the ends of the cross-head.

D is a sleeve or knob fitted on the lower end of the spindle A and capable of being moved up and down thereon, being held in any adjusted position by a spring-plug, F, whose inner end enters one of several recesses, *a a*, or sockets in the shaft A. A vertical push

or pull on the sleeve D will overcome the resistance of the spring-plug F to permit the latter to be entered to another one of the holes *a a*. In lieu of the spring-plug, any equivalent friction clutch or fastening may be employed.

G G are levers or links whose lower ends are pivotally connected at *g g* to bosses *f f* on the sleeve D, their upper ends being similarly fastened at *g' g'* to lugs *c c* on the shanks C' C' of the fan-blades. By sliding the sleeve D up or down on the spindle A the angle of inclination of the fan-blades will be changed, their screw-shanks turning in the threaded sockets in the cross-head or hub B.

If, for example, it be desired to have the blades lie flat in the plane of their rotation, so as to move with the minimum resistance to the air, this may be readily accomplished by a single movement of the knob or sleeve, while, on the other hand, the blades may by a single reverse movement of said sleeve be set at the right angle for producing the maximum resistance or at any angle desired, the extent of movement of both blades being perfectly uniform, and these changes may be effected while the fan is in motion and without stopping it. If desired, for low ceilings, the sleeve may be located above the cross-head or hub, the links extending upwardly from the latter to the former, and two pendent rods be connected with the sleeve for moving it.

The fan-blades being screwed to the hub or cross-head, and their rotation on their longitudinal axes being prevented, except in obedience to a movement of the adjusting-sleeve, the centrifugal tendency of said fans to detach themselves from said cross-heads is overcome.

What we claim as our invention is as follows:

1. In a fan comprising a power-driven shaft or spindle with blades, the combination, with said shaft and adjustable blades thereon, of an adjustable collar which locks fast on said shaft at different points, and links or connections between said blades and collar whereby by moving said collar the angle of inclination of said blades may be varied and the latter locked in their adjusted position, substantially as described.

2. The combination, with spindle having sockets or recesses *a a*, of cross-head or hub B, having female screw-sockets, blades C C, having threaded shanks C' C', knob or sleeve 5 D, having spring-plug F, and links G G, substantially as shown and described.

In testimony that we claim the foregoing we

have hereunto set our hands this 18th day of April, 1885.

WILLIAM M. SMITH.
JAMES CALDWELL.

Witnesses:

ANDREW ZANE, Jr.,
M. D. CONNOLLY.