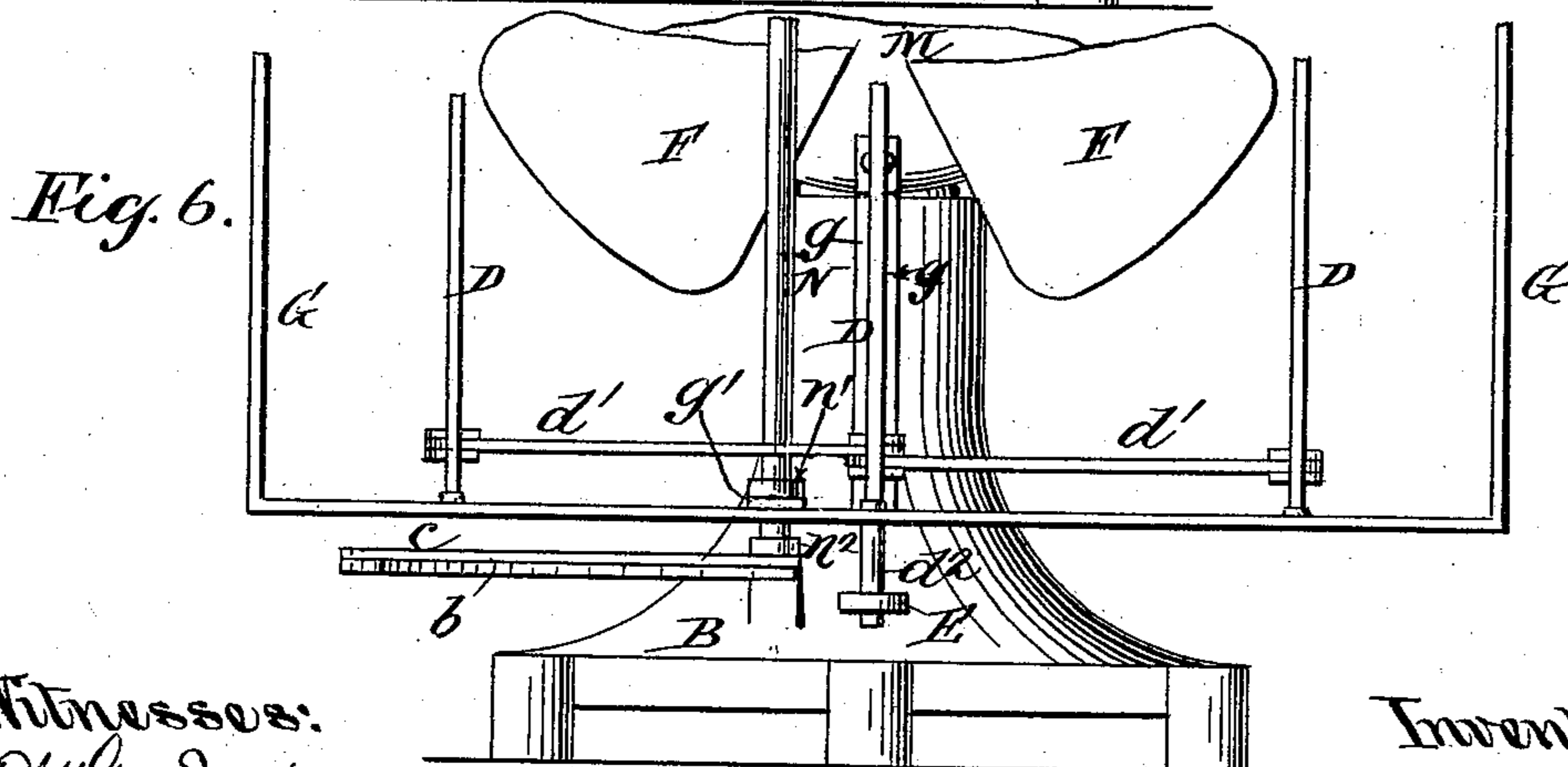
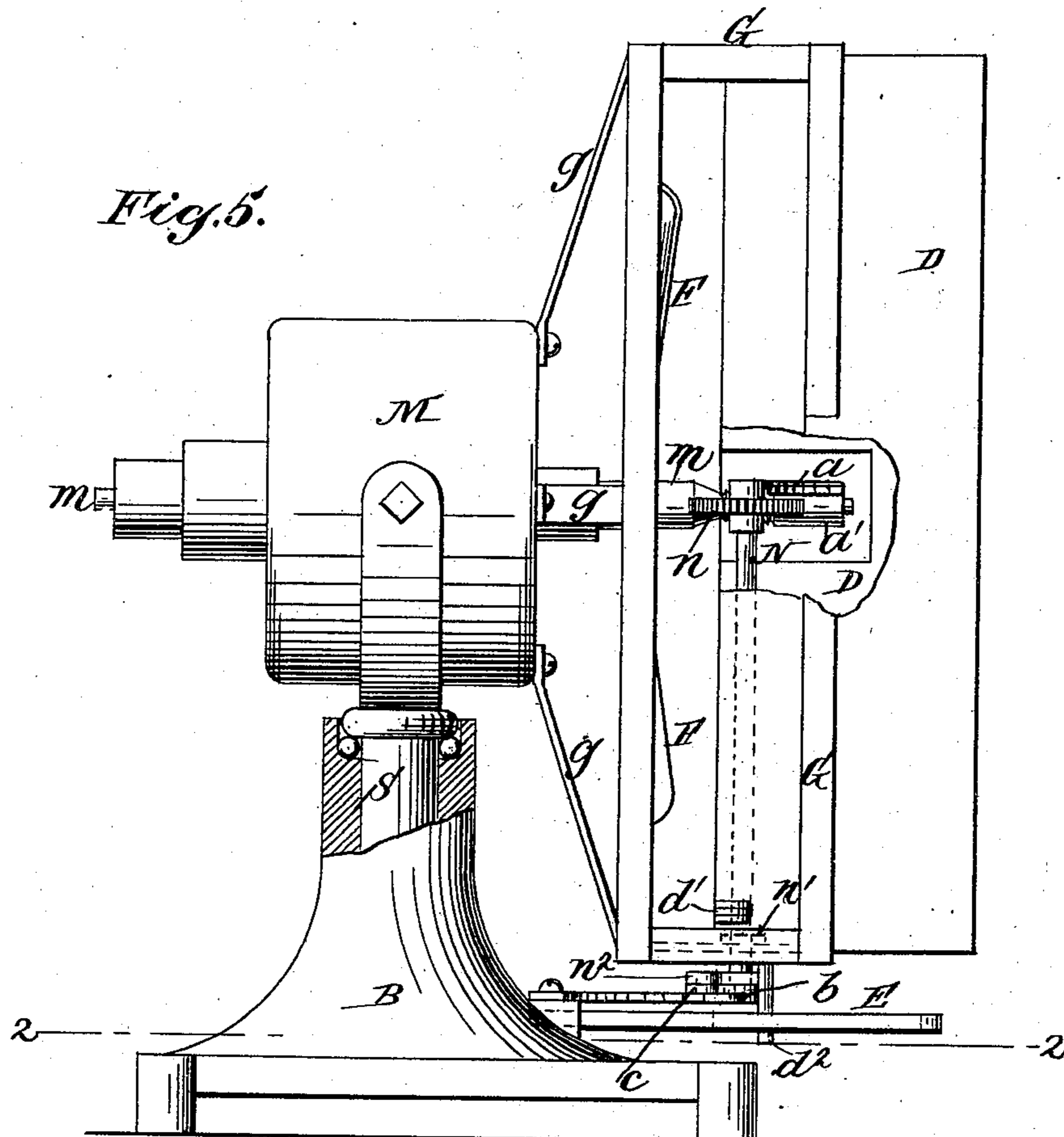


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UNITED STATES PATENT OFFICE.

WALTER E. COLEMAN, OF NEWDORP, NEW YORK, ASSIGNOR TO THE COLEMAN MANUFACTURING COMPANY, A CORPORATION OF NEW YORK.

FAN.

SPECIFICATION forming part of Letters Patent No. 708,624, dated September 9, 1902.

Application filed March 31, 1902. Serial No. 100,665. (No model.)

To all whom it may concern:

Be it known that I, WALTER E. COLEMAN, a citizen of the United States, residing at Newdorp, Richmond county, and State of New York, have invented certain new and useful Improvements in Fans, of which the following is a specification sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

My invention relates to means for controlling and directing air-currents generated by electric fans, and is an improvement upon the construction disclosed in my concurrent application, Serial No. 90,144; and it consists in the special construction of parts hereinafter described, and claimed specifically.

In the accompanying drawings, Figure 1 is a plan of my improved device. Fig. 2 is a view of the under side of the device, the base being shown in section in plane of line 2-2, Fig. 5. Fig. 3 is a detail view of the lower end of one of the deflectors, showing a means of adjusting the deflecting-pin. Fig. 4 is a section upon plane of line 4-4, Fig. 3. Fig. 5 is a side elevation, partly broken away. Fig. 6 is a front elevation of the lower portion of the device.

In my concurrent application hereinbefore referred to I employ separate worm-gears and connections for effecting the movement of the motor upon its base and of the deflectors upon the guard-frame.

A distinguishing feature of my present invention is that I so arrange and construct the parts that a single worm-gear and connections are so arranged as to turn the motor on its axis and simultaneously change the inclination of the deflectors with relation to said motor. The motor is movable only in a horizontal plane, being mounted upon a vertical spindle S, supported upon ball-bearings or otherwise in the base B.

Attached to the arms *g g* is the guard-frame G, in which are pivotally mounted the deflectors D by means of pivots *d*, as heretofore.

F is the fan, mounted upon the motor-shaft *m*, the forward end of which is formed with a worm-screw *m'*, which meshes with a worm-gear *n* upon the upper end of the vertical shaft N. The lower end of this shaft N is journaled in a cross-bar *g'* of the guard-frame

G, the shaft being formed with a collar *n'*, which rests against the upper side of said cross-bar. The extreme upper end of the vertical shaft N is journaled in a bracket-arm *a*, formed with a sleeve *a'*, which fits over the end of the motor-shaft *m*, as in my concurrent application hereinbefore referred to. The lower extremity of the vertical shaft N is provided with a crank-arm *n²*, to which is pivotally connected the lever-arm *c*, the other end of said lever-arm *c* being pivotally connected to the fulcrum-arm *b*, attached rigidly to the base B. Thus the rotation of the worm-gear *n* by the worm *m'* on the motor-shaft will cause the crank *n²* and lever-arm *c* to oscillate the motor M and its spindle S in the base B, thereby changing the general direction of the current of air induced by the rotation of the fan F.

The deflectors D are held together by links *d' d'*, so that they will all move in unison. One of the deflectors, preferably the central one, is provided with a stem or stud *d²*, the lower end of which rests in a longitudinal slot *e*, formed in the arm E, rigidly secured to the base B and projecting therefrom radially with relation to the vertical axis of the spindle S in the construction shown in the drawings. While I do not limit myself to this identical construction of parts, it is preferable to have the arm E and its slot *e* in alinement with the center, so as to render the motion of the deflectors equal on both sides of their pivots, since it will be seen that as the crank-arm *n²* and the lever *b* rock the motor and guard-frame G back and forth the stud *d²*, being held and confined within the slot *e*, will turn the central deflector upon its pivot *d* in the opposite direction, at the same time by reason of the links *d' d'* moving the other deflectors in parallel lines therewith.

It is obvious that the stud *d²* can be attached to any one of the deflectors and the arm E modified in form to meet the change, the slot *e* being preferably in alinement with the deflector when the latter is in its central position, as shown in the drawings.

In order to vary the angle and extent of deflection of the deflectors B, I design in some cases to make the stud *d²* adjustable, substantially as shown in Figs. 3 and 4, in which

the lower end of the deflector is formed with a horizontal slot d^3 , through which passes a screw-stud d^4 , projecting from the shank d^5 of the stud d^2 , a washer f and thumb-screw f' being used to clamp the shank d^5 to the lower end of the deflector D. It is obvious that any other well-known mechanical expedient may be substituted for this particular means of adjustment.

It will be seen that by these improvements I simplify and cheapen the structure of the apparatus as a whole, while attaining like results as compared with my prior structures.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the fan F, electric motor M, mounted upon the vertical spindle S, said spindle S, supported in the base B, by means which admit of its turning axially, said base B, the fulcrum-arm b , rigidly secured to said base, the lever-arm c , pivotally connected to said rigid arm b , and to the crank n^2 , said crank n^2 , the vertical shaft N, the worm-wheel n , the motor-shaft m , formed with the screw-worm m' , engaging with said worm-gear n , for the purpose and substantially in the manner set forth.

2. The combination of the fan F, electric motor M, mounted on the vertical spindle S, said spindle S, supported in the base B, by means which admit of its turning axially said base B, the arm E, rigidly secured to the base B, and formed with the longitudinal slot e , the stud d^2 , attached to a deflector D, and resting in said slot e , the deflectors D, pivotally mounted in the guard-frame G, said guard-frame G, rigidly secured to the motor, and means for vibrating the motor for the

purpose and substantially in the manner described.

3. The combination of the fan F, electric motor M, mounted upon the vertical spindle S, said spindle S, supported in the base B, by means which admit of its turning axially, said base B, the arm E rigidly secured to the base B, and formed with the longitudinal slot e , the stud d^2 , attached to a deflector D, and resting in said slot e , means for adjusting said stud d^2 , horizontally upon said deflector, the deflectors D, pivotally mounted in the guard-frame G, said guard-frame G, rigidly secured to the motor, and means for vibrating the motor for the purpose and substantially in the manner described.

4. The combination of the fan F, the electric motor M, mounted upon the spindle S, said spindle S, supported in the base B, by means which admit of it to turn axially, said base B, the fulcrum-arm b , rigidly secured to said base the lever-arm c , pivotally connected to said rigid arm b , and to the crank n^2 , said crank n^2 , the vertical shaft N, the worm-gear n , the motor-shaft m , formed with the screw-worm m' engaging said worm-gear n , the arm E, rigidly secured to the base B, and formed with the longitudinal slot e , the stud d^2 attached to a deflector D, and resting in said slot e , the deflectors D, pivotally mounted in the guard-frame G, and said guard-frame G, rigidly secured to the motor, the whole arranged and operating substantially in the manner and for the purpose described.

WALTER E. COLEMAN.

Witnesses:

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