(No Model.)

G. S. NICKUM.

FAN ATTACHMENT.

No. 425,449. Patented Apr. 15, 1890.

Fig. 2.

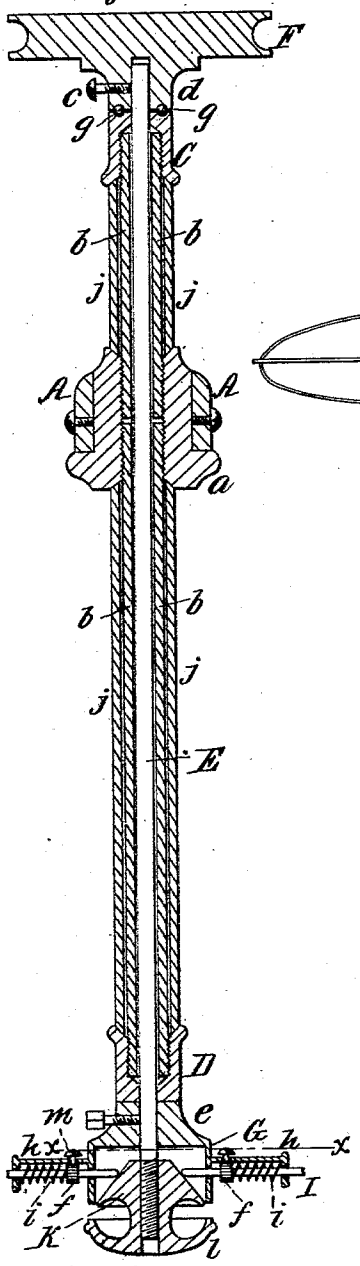


Fig. 1.

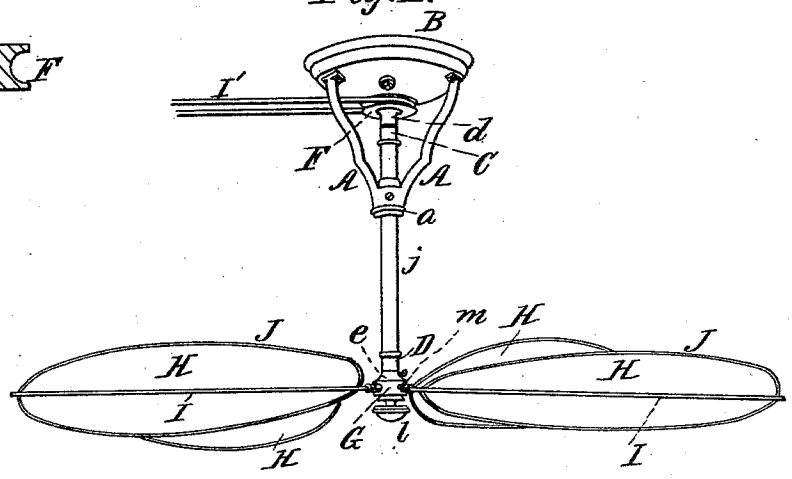


Fig. 3.

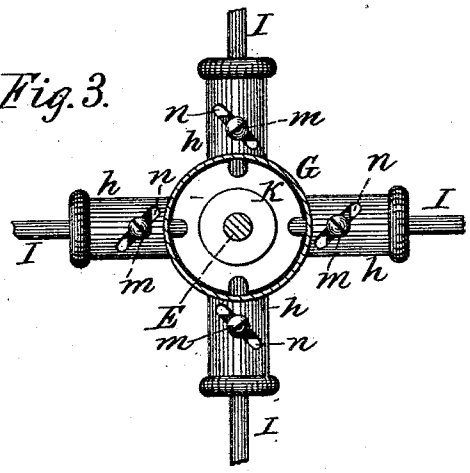
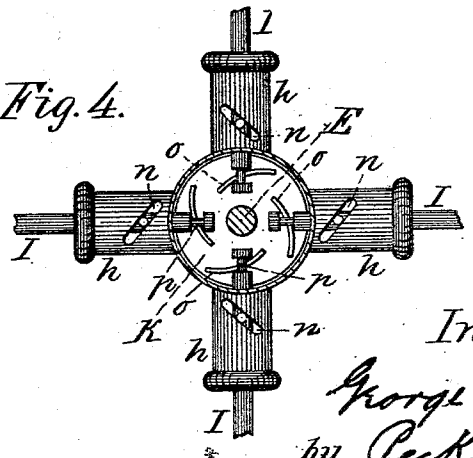


Fig. 4.



Witnesses:
W. C. Jirdinston.
Charles Billon

Inventor:
George S. Nickum
by Peck & Rector
his Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE S. NICKUM, OF DAYTON, OHIO, ASSIGNOR TO THE DAYTON FAN AND MOTOR COMPANY, OF SAME PLACE.

FAN ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 425,449, dated April 15, 1890.

Application filed February 16, 1889. Serial No. 300,185. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. NICKUM, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Fan Attachments, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that class of rotary fans carried at the lower end of revolving spindles journaled in hanger brackets secured to the ceiling; and it has for its object the improvement in the construction of the attaching and journal bearings and other parts, by which simplicity of construction and a minimum of friction in the bearing parts are obtained.

The novelty of my invention will be herein set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a fan embodying my invention. Fig. 2 is an enlarged axial section through the spindle and its attachments. Fig. 3 is an enlarged sectional plan through the dotted line *x x* of Fig. 2. Fig. 4 is a corresponding view representing a modification in the construction of the fan-hub plug.

The same letters are used to indicate identical parts in all the figures.

A is the hanger-bracket, in this instance composed of three arms, attached at their upper ends to a plate B, secured to the ceiling and having inserted through and secured in its lower tubular portion an internally-threaded collar *a*, into the opposite sides of which two portions of gas-pipe or other tubes *b* are screwed and extend vertically. Upon the upper and lower ends of the pipes *b* are screwed bearing-caps C D, with bores through their ends of less diameter than the internal diameter of the pipes *b*. The driving-spindle E for revolving the fans is inserted through and snugly fits the bores in the caps C D, without contact with the pipes *b*, and has secured, by means of a set-screw *c*, or otherwise, upon its upper projecting end the grooved driving-pulley F, formed with a lower boss *d*, to fit upon the top of the cap C, or upon balls *g*, filling an annular groove in the cap C or boss *d*, or both. The spindle E has secured upon its lower projecting end the fan-hub G by means of a set-screw G′, or other adjustable fastening, said hub being provided with a boss *e*, bearing slightly against the lower end of the cap D. In this way the weight of the fan-spindle is borne entirely upon the cap C, and the friction is reduced to a minimum, while at the same time it is held at both ends in bearings and cannot have end-play, any wear being readily compensated for by adjusting the fan hub or pulley, as will be readily understood.

The fans H are composed of paper, muslin, or other material, each secured upon a metal frame composed of the central shaft I, to which the hoop J is secured in any suitable manner.

The hub G is a hollow shell, open at its bottom and having projecting radially and horizontally from it as many tubular bearing-sockets *h* as there are fans—in this instance four. These sockets are cut away on one side to admit spiral springs *i* and collars *f*, and the inner rounded ends of the fan-shafts I are inserted through the outer heads of the sockets, through the springs and collars, and through openings in the shell of the hub, into which they project at equal lengths and bear against an inclined or wedging surface or surfaces on a plug K, screwed or otherwise made vertically adjustable upon the lower end of the spindle E, as shown in Figs. 1 and 3, and preferably having its lower end formed into a drip-cup *l*. The collars *f* are locked to the shafts I by set-screws or pins *m*, inserted through diagonal or cam slots *n* in the sockets *h*. It results from this construction that by screwing up the plug K the fan-shafts are driven outward by the wedge action of the plug, and at the same time are turned simultaneously by the slots *n* and screws *m* to angle the fans, while upon lowering the plug the springs *i*, bearing against the socket *h* and collars *f*, force the shafts in again and reverse the previous movement of the fans, as will be readily understood. In this manner all the fans may be angled simultaneously to any desired position.

In Fig. 4 I have shown a modification in

the construction, by which the fans are moved positively in and out by the plug, which need not be conical or have vertical surfaces or adjustment. Here the plug is flat on top and is provided with projections *o*, having inclined surfaces, which engage annular grooves *p* in the fan-shafts, so that by turning the plug, without raising or lowering it, the fan-spindles are moved in or out and the fans are angled to any position desired.

Where common gas-pipe is used for the tubes *b* and a neat finish is desired, said tubes may be covered by plated tubes *j*, surrounding the tubes *b* and clamped between the caps C D and collar *a*.

I′ is the usual driving-cord for revolving the spindle and fans.

Having thus fully described my invention, I claim—

1. In a fan attachment, the combination, with the hanging-bracket support, the tubular shaft formed in two parts, mounted rigidly therein, with one part projecting above and the other below the same, and the bearing-caps mounted rigidly on the ends of said shaft, with bores of less diameter than the shaft, of the driving-spindle extending through the shaft and taking its bearings in the caps, the driving-pulley secured to the upper end of the spindle above the shaft, with the friction-boss resting on the upper cap, and the fan-hub secured to the spindle below the shaft, substantially as described.

2. In a fan attachment, the combination, with the hanging-bracket support, the collar removably secured therein, the tubular shaft mounted rigidly in the collar and extending above and below the same, with the bearing-caps mounted on the ends of the shaft, of the driving-spindle passing through the shaft and taking its bearings in the caps, the driving-pulley on the spindle above the shaft, with the boss resting on the cap, and the fan-hub mounted on the spindles below the shaft, substantially as described.

3. In a fan attachment, the combination, with the hanging-bracket support, the collar removably secured therein, the tubular shaft mounted in said collar, the screw-threaded caps on the ends of said shaft, and the tubular casings surrounding the shaft and confined and held in position between the caps and collar, as described, of the driving-spindle passing through the shaft and taking its bearings in the caps, and the driving-pulley and fan-hub mounted on the spindle at opposite ends of the shaft, substantially as described.

4. In a rotary fan attachment, the combination, with the driving-spindle, the fan-shaft hub secured thereon, and the fan-shaft supported and carried by said hub, of the inclined surface engaging the end of said shaft to turn it on its longitudinal axis, substantially as described.

5. In a rotary fan attachment, the combination, with the driving-spindle and hollow shaft-hub secured thereon, of the fan-shaft journaled in said hub and projecting into the central cavity, the bearing-socket having the cam-slot *n*, the pin *m*, and the adjustable plug within the hub, having the inclined surface thereon engaging the end of the fan-shaft to project it and cause its partial rotation, substantially as described.

6. The combination, with the spindle E, hollow hub G, provided with socket *h*, having the slots *n*, and the fan-shafts inserted through said sockets and having pins passed through said slots, of a plug free to turn in the hub and engaging the fan-shafts, whereby upon turning said plug the fans are given longitudinal movement and turned on their axis, substantially as described.

7. The combination, with the spindle E, hollow hub G, provided with socket *h*, having slot *n* therein, the fan-shaft inserted through said socket and having the collar *f*, set-screw *m*, and spring *i*, said set-screw being inserted through the slot *n* and collar *f*, of the plug K, mounted on the spindle E and having an inclined surface engaging the inner end of the fan-shaft, substantially as and for the purpose specified.

GEORGE S. NICKUM.

Witnesses:
DANIEL NICKUM,
WICLIFFE BELVILLE.