

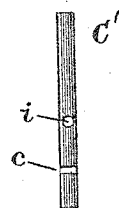
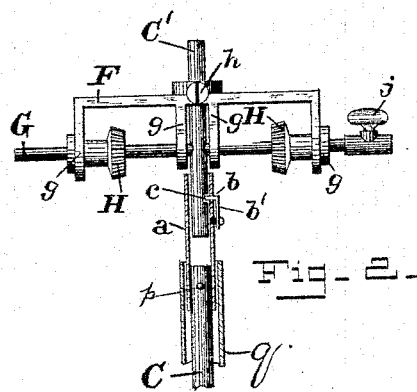
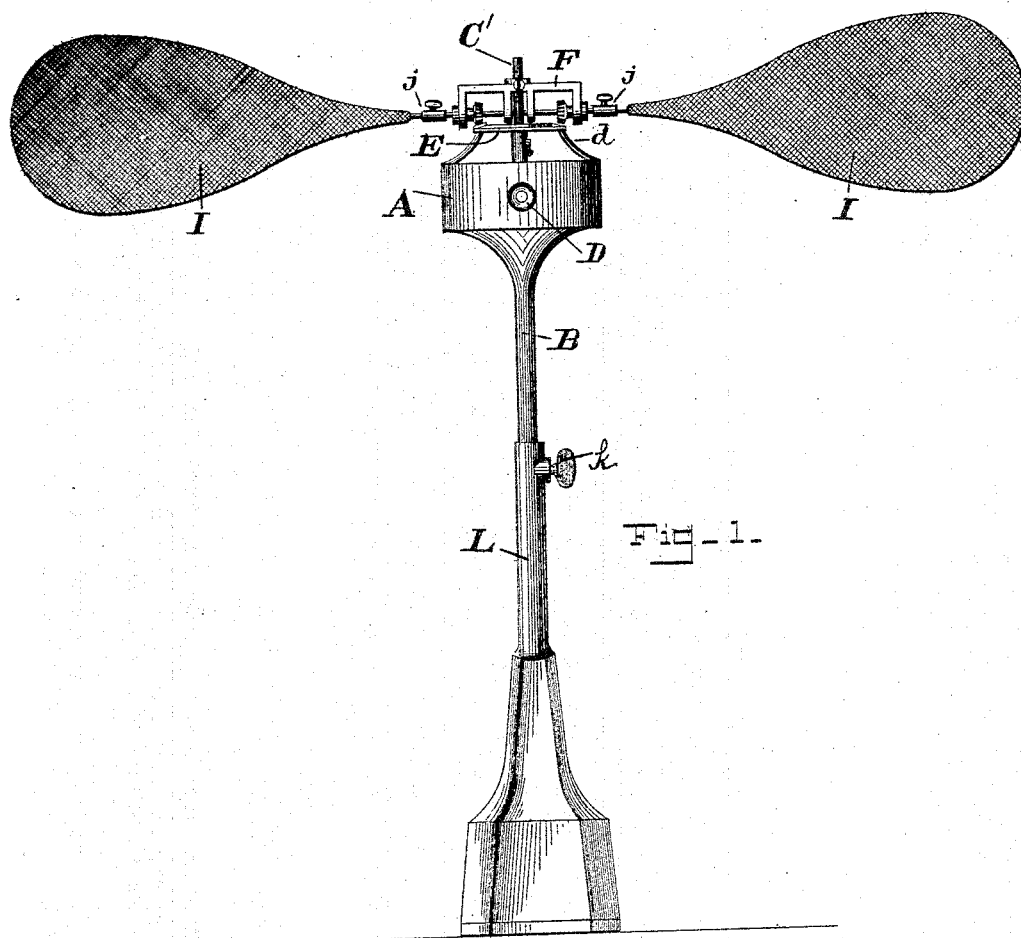
(No Model.)

2 Sheets—Sheet 1.

J. W. KIRKMAN.
FLY FAN.

No. 491,287.

Patented Feb. 7, 1893.



Witnesses:
Otto H. Ehlers.
J. Parker Davis.

Inventor:
Jas. W. Kirkman

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Attorney.

(No Model.)

2 Sheets—Sheet 2.

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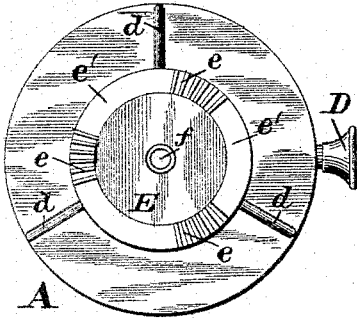


Fig - 4-

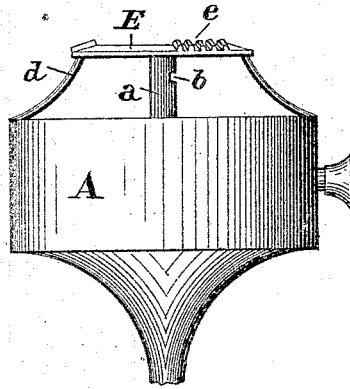


Fig - 5-

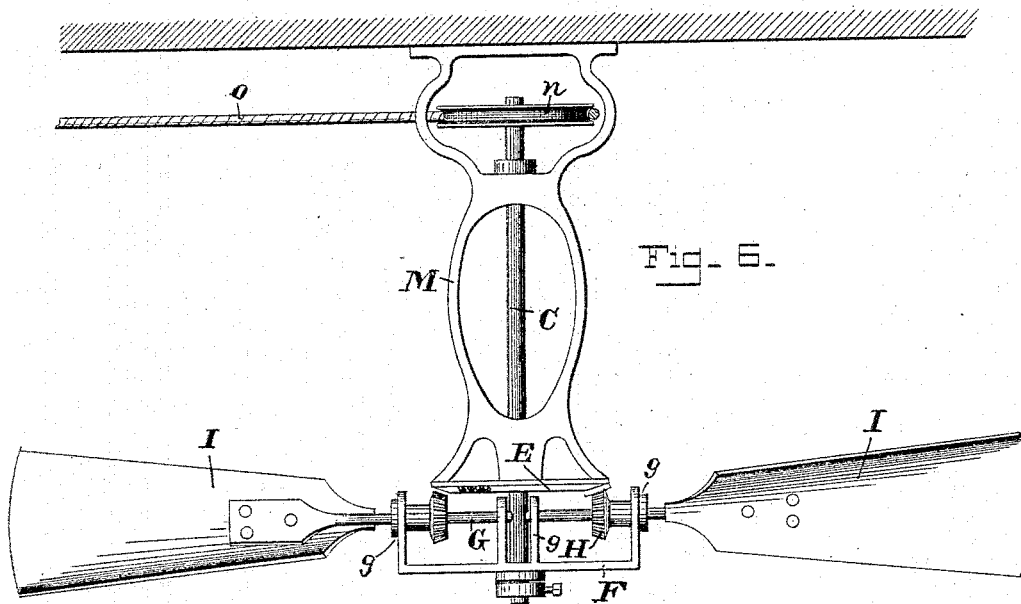


Fig - 6-

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UNITED STATES PATENT OFFICE.

JAMES W. KIRKMAN, OF BALTIMORE, MARYLAND.

FLY-FAN.

SPECIFICATION forming part of Letters Patent No. 491,287, dated February 7, 1893.

Application filed February 4, 1892. Serial No. 420,292. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. KIRKMAN, a citizen of the United States, residing at Baltimore city, in the State of Maryland, have invented certain new and useful Improvements in Fly-Fans, of which the following is a specification.

This invention relates to an improvement in revoluble fans driven by a motor, and the object is to impart to a horizontal revoluble fan-carrying shaft an oscillatory motion.

To this end the invention consists in the novel construction and combinations of parts hereinafter described and claimed.

The invention is illustrated in the accompanying drawings in which,—

Figure 1 is a side elevation of a fly-fan embodying my invention; Fig. 2 is a detail view, larger scale, of the revoluble part of the driving and oscillatory mechanism; Fig. 3 is a view of the upper end of the driving shaft; Fig. 4 is a top view of the stationary sector-wheel supported on the case of the motor; Fig. 5 is a side view of same; Fig. 6 is a view of the driving and oscillatory mechanism in a position inverted from that shown in Figs. 1 and 2.

In carrying out my invention I employ suitable spring power clock-movement which is inclosed in a case, A, and mounted on an upright stem or rod, B. This motor revolves a vertical shaft, C, the upper end of which has a suitable coupling, in the present instance consisting of a tube or sleeve, *a*, attached by a pin, *p*, or otherwise to the vertical shaft and having a cross-slot, *b*, and carrying a pivoted catch, *b'*; a short detachable section of shaft, C', has its end slipped into the said sleeve, *a*, and a notch, *c*, on the side of this short piece of shaft co-incides with the cross-slot, *b*, and receives the inward-pointing end of the pivoted catch, *b'*. This coupling enables the revoluble part of the oscillatory mechanism to be detached from the vertical driving shaft. The lower end of the shaft, C, may extend through a tube, *g*, and is connected with the clock-movement or power. Suitable means, such as a thumb-button, D, serve for turning and winding up the driving movement.

Supported by suitable posts, *d*, above the case, A, is a circular horizontally disposed

sector-wheel, E, which is stationary; this wheel has gear-teeth on its upper face in three equidistant series of cogs, *e*, with clear spaces, *e'*, between the series and in a lower plane than the said cogs.

The vertical shaft, C, fits loosely through the central hole, *f*, of the stationary sector-wheel and projects above the same; this shaft carries a cross-frame, F, which is rigidly secured to the shaft by a screw, *h*, and has depending bearings, *g*, at the middle and ends; a horizontal revoluble fan-shaft, G, extends longitudinally through these bearings and also loosely through a hole, *i*, in the vertical shaft. On each side of the vertical shaft, C, the fan-shaft carries a bevel pinion, H, which pinions are adjusted to engage the cogs, *e*, of the stationary sector-wheel, E.

A fan, I, is fastened on each end of the horizontal shaft, G, and to facilitate packing the apparatus for shipment or carriage, the said shaft will be made in sections coupled together outside the frame, F, by means of socket and set-screw, *j*, so that when thus coupled the several sections form one continuous shaft.

By the construction as above set forth a firm and rigid support is provided for the sector wheel and an equally firm support is secured for the fan shaft through the frame F, without the latter coming in contact with the attachment for the former. If the frame F were below the sector wheel it would strike against the posts *d* and be prevented from rotating, hence the necessity of extending the shaft above the fan shaft. But as the fan shaft must be continuous, it is necessary that some means be provided by which the two shafts can cross each other without interfering with the rotation of the fan shaft. This is preferably accomplished by providing the shaft C' with a hole *i* and passing the fan shaft G through the hole. In this manner the outer arms *g* of the frame F can be extended beyond the pinions H and form bearings for them, or rather for the shaft which passes through them, which, together with the bearings in the inner arms and the hole through the shaft C' gives a firm support for the fans and the shaft. Besides avoiding the

interference of the frame F with the sector wheel E and its supports, the construction permits of the detachable union of the shaft C' with the shaft C near the fan shaft which
 5 gives a very neat and compact form of device and it also permits of the ready detaching of the frame and the fans from the standard for packing and shipping, as all that is necessary is to lift the catch *b'* out of the notch *c* and
 10 take the section C' out of the sleeve *a*.

The operation is as follows:—The spring-motor is wound by turning the button, D, and continuous rotary motion is imparted to the vertical shaft, C, which carries the cross-
 15 frame, F, around above the sector-wheel. The two bevel pinions, H, on the fan-shaft alternately engage the cogs, *e*, of the sector-wheel; while one of said pinions is traveling over one series of cogs the other pinion is
 20 traveling over the diametrically opposite clear space, *e'*, and hence the fan-shaft is revolved or partly revolved in the direction of the said pinion which is in engagement with the cogs. Immediately upon said pinion
 25 leaving or disengaging the section of cogs, the pinion on the opposite side of the center or vertical shaft enters into engagement with a section of cogs on the crown-wheel and consequently the revolution of the fan-shaft or
 30 partial revolution is reversed and the motion is positive in either direction. By this back and forward revolution the desired oscillatory motion of the fans is produced, while the shaft is continuously rotating in a horizontal plane.
 35 Instead of the cog-gear shown it is obvious that well-known friction gear may be employed to produce the oscillatory motion. It is evident that with friction gear the operation will be the same as with the cog-gear
 40 construction.

The fans are rendered vertically adjustable by providing a tubular standard, L, down into which the supporting stem or rod, B, enters and which may be locked at the desired ad-
 45 justment by means of a thumb-screw, *k*.

The combined oscillatory and rotary motion of the fans produces a flickering shadow that is very effective in dispersing flies.

A modification in the mounting of this
 50 double motion fan is shown in Fig. 6; here it is shown pendent or suspended instead of supported on a base. A suitable bracket or hanger, M, supports the sector-wheel, E, and the vertical shaft, C, but instead of a spring
 55 motor to drive this shaft a pulley, *n*, is fixed to it and a belt, *o*, connects therefrom with some source of rotary power. It will thus be seen that the double motion here described may be applied to fans for other purposes than
 60 merely driving flies.

It is evident that the mechanical structure of my improvement may be varied or changed in details without affecting the scope of my invention.

65 Having thus described my invention what

I claim as new and desire to secure by Letters-Patent is:—

1. In a fly fan, the combination with the support, of a cross shaft journaled therein, and provided with means for continuously rotat-
 70 ing said shaft in the plane of its length, and driving mechanism for positively rotating said shaft upon its axis, first in one direction and then in the opposite direction as it rotates in said plane, substantially as set forth. 75

2. In a fly fan, the combination with a standard the outer end of which is provided with a fixed wheel, a rotating shaft projecting through said wheel, a cross shaft, connected with said first mentioned shaft and continu-
 80 ously rotated thereby in the plane of its length above and parallel with said wheel, the cross-shaft being provided with means for engaging with the wheel and alternately rotating said shaft in its bearing as it is
 85 rotated above said wheel, and means for rotating the vertical shaft, substantially as set forth.

3. In a fly fan, the combination with a stationary plate or wheel the outer surface of
 90 which is circumferentially provided with multiple series of cogs and smooth surfaces, the cogs projecting above the smooth portions, and each series being located diametrically opposite a smooth portion of the wheel, a
 95 shaft extending diametrically across said wheel in a plane parallel therewith and alternately engaging with the cogs upon opposite sides of the wheel, and means for continuously rotating said shaft in said plane, substantially
 100 as set forth.

4. In a fly fan, the combination with a standard the outer end of which is provided with a fixed plate or wheel, the outer surface of
 105 which is circumferentially provided with multiple series of cogs and smooth portions, the cogs projecting above the smooth portions and each series being located diametrically opposite a smooth portion, a shaft projecting through said wheel, a frame secured to the
 110 shaft and provided with arms, a cross shaft journaled in bearings in said arms and extending diametrically across said wheel, and rotated in a plane parallel with said wheel
 115 two pinions upon said shaft, one upon each side of the center of rotation thereof, said pinions alternately engaging with the cogs upon diametrically opposite sides of the wheel, and alternately rotating the cross-shaft
 120 in opposite directions on its axis and means for rotating said first mentioned shaft, substantially as set forth.

5. In a fly fan, the combination with a standard, the outer end of which is provided with a wheel, the outer surface of which is pro-
 125 vided with multiple series of raised and depressed portions, each raised portion located diametrically opposite a depressed portion, a rotatable shaft, the upper end of which is detachable and projects through the wheel 130

and is provided with an opening and a notch,
a frame secured to the detachable portion
above the opening and provided with arms,
a cross shaft journaled in bearings in the
5 arms of the frame and through the opening
of the detachable portion of the shaft, two
pinions upon said horizontal shaft, one upon
each side of the other shaft adapted to alter-
nately engage with the raised portions upon

diametrically opposite sides of the wheel, and 10
a fan secured to each end of the cross shaft,
substantially as set forth.

In testimony whereof I affix my signature in
the presence of two witnesses.

JAMES W. KIRKMAN.

Witnesses:

G. ERNST REARDON,
R. E. SCALLY.