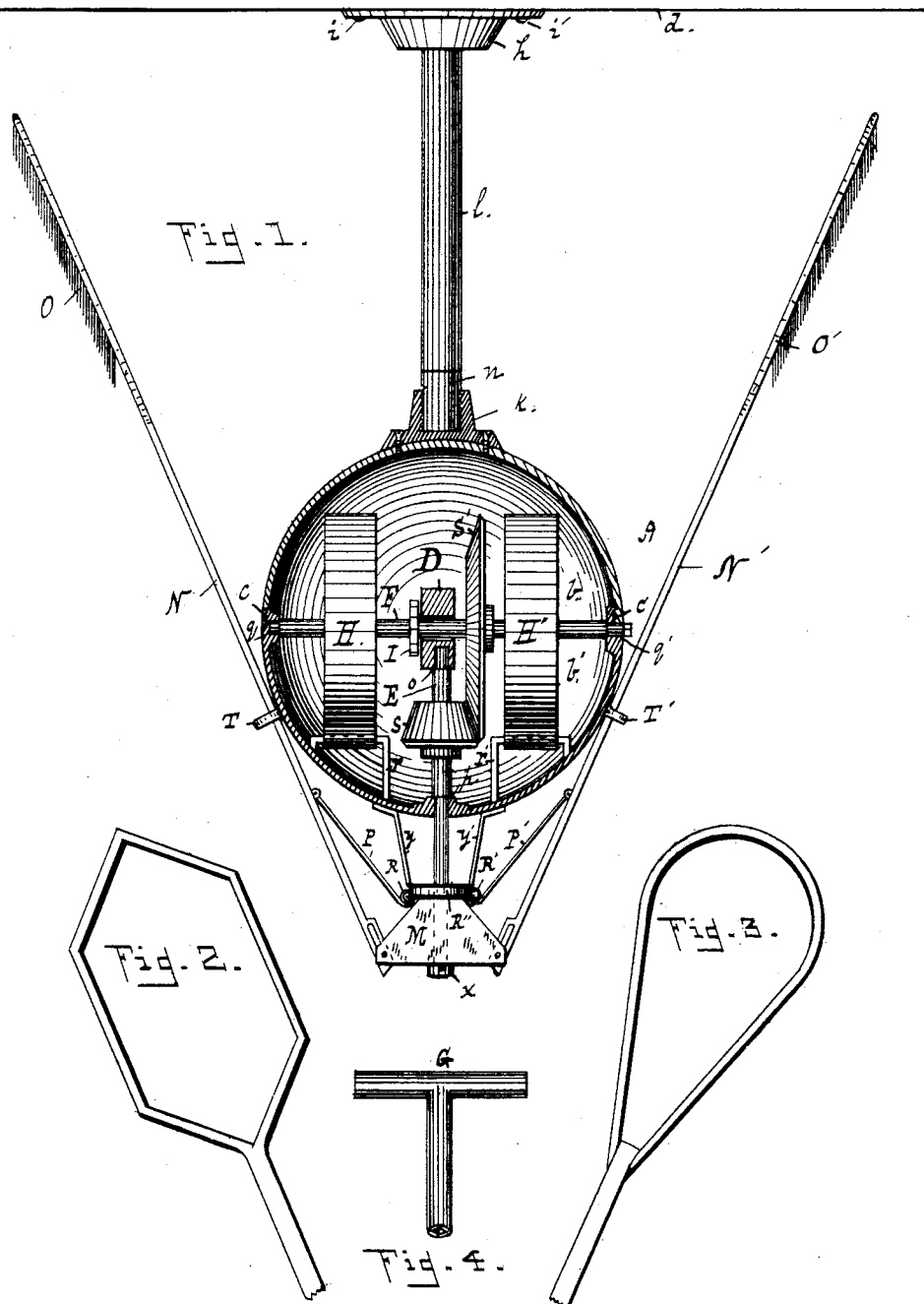


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No. 401,526.

Patented Apr. 16, 1889.



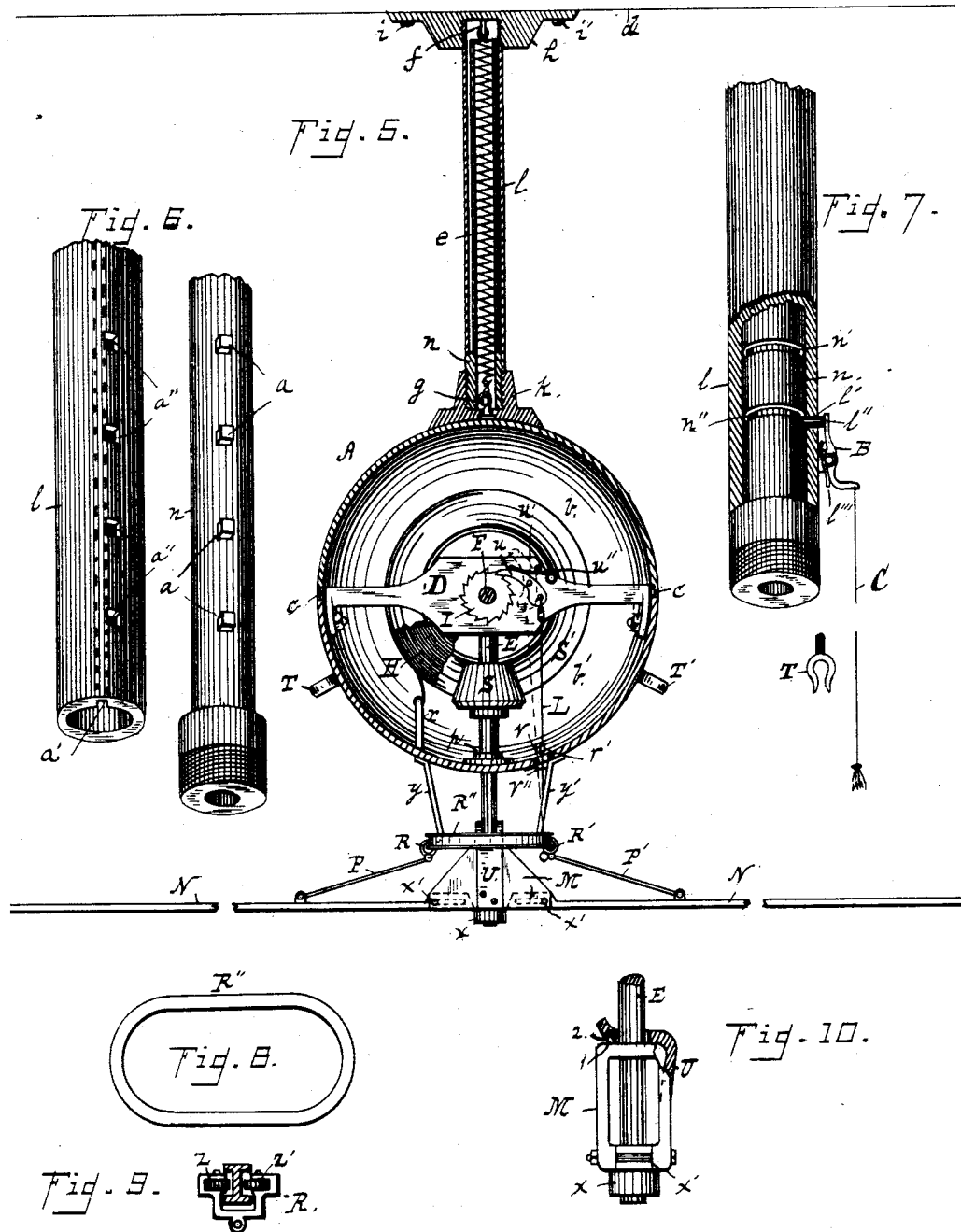
Witnesses.
A. J. Wetmore.
Wm. C. Stone

Inventor.
Wm. C. Whitner
By *H. N. Jentkins*
Attorney.

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Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM CHURCH WHITNER, OF ROCK HILL, SOUTH CAROLINA.

SUSPENSION FLY-FAN.

SPECIFICATION forming part of Letters Patent No. 401,526, dated April 16, 1889.

Application filed October 12, 1888. Serial No. 287,882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CHURCH WHITNER, a citizen of the United States, and a resident of Rock Hill, county of York, State of South Carolina, have invented new and useful Improvements in Suspension Fly-Fans, of which the following is a full and exact description, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is an elevation of my invention with certain parts removed, in order that the operating mechanism may be readily understood. Figs. 2 and 3 represent different forms of fan-frames. Fig. 4 is a key for winding up the apparatus. Fig. 5 is an elevation showing the spherical casing and pendant in sectional lines. Fig. 6 are perspective views of pipes provided with locking-catches for holding the fan at any desired elevation. Fig. 7 is a modification of same. Fig. 8 is a plan of an endless band or track; Fig. 9, a cross-section of one side of the track and traveler connected therewith. Fig. 10 represents the lower end of the fan-shaft with a loose collar and spring-clutch fitted thereon.

A is a hollow sphere composed of two sections, $b\ b'$, one having an internally and the other an externally threaded rim to permit of their being secured together, as shown at c in Figs. 1 and 5.

The sphere A is adapted to be suspended from a frame or ceiling, d , by means of a spring, e , and hooks $f\ g$. The hook f is preferably connected with a socket-plate, h , that is bolted or otherwise secured to the frame or ceiling, as shown at $i\ i'$, and the hook g is secured to the top of the sphere or to a socket-plate, k , that is connected therewith in any desired manner. The socket-plates h and k are each provided with internal threads, the former to receive the threaded end of a downwardly-projecting pipe, l , and the latter to receive the butt of a pipe, n , which is of less diameter than the pipe l , in order that it may freely operate therein. To permit of the sphere being held at a lower elevation than is shown in the drawings, the pipe n is provided with a series of annular grooves, $n'\ n''$, (see Fig. 7,) and the pipe l with a side perforation, l' , for the reception of a pin, l'' , which is formed at the upper

end of a rock-arm or catch, B, that is provided with a spring, l''' , for holding it in a given position.

From the lower end of the rock-arm or catch B is suspended a cord, C, whereby the spring l''' is depressed and the pin l'' withdrawn from the adjacent groove of the inner pipe when it is desired to again change the elevation of the sphere, or to allow it to return to its normal position.

Instead of the locking device above described, the inner pipe may be provided at certain distances apart with a series of projections, a , (see Fig. 6,) and the interior of the outer pipe with a longitudinal groove, a' , having side grooves or perforations, a'' , at proper distances apart to receive the projections a of the inner pipe when the same has been brought into line therewith.

The letter D designates a horizontal bar, the ends of which are secured by bolts or other means to opposite sides of the sphere. This bar has the center of its lower edge provided with a vertical hole or socket, o , in which is journaled the upper end of a shaft, E, which projects downwardly through the lowest part of the sphere, where it is supported by a shoulder or collar, p .

The bar D has an opening in the center thereof for the passage of a shaft, F, that is supported at right angles therewith in journal-bearings $q\ q'$, the latter continued through the side of the sphere in order to allow one end of the shaft to project a sufficient distance outward to receive thereupon a key, G, (see Fig. 4,) by which it is turned when the mechanism, hereinafter described, is to be wound up for operation.

To the shaft F are secured the inner ends of a pair of coil-springs, H H', the outer ends of which are anchored to the sphere, as shown at $r\ r'$, or in any other suitable manner.

The shafts E F are connected by gear-wheels $s\ s'$, and the shaft F is provided with a fixed ratchet-wheel, I, the teeth of which are engaged by a pawl, u , that is pivoted to the side of the bar D, as shown at u' in Fig. 5, so that a spring, u'' , also connected with the bar D, shall cause the pawl to act against the teeth, as required. To the rear end of the pawl is secured a chain or cord, L, which

passes outwardly through an opening, v , in the bottom of the sphere, near which it is provided with a link or ring, v' , for engaging a pin, v'' , when it is desired to remove the pawl from contact with the ratchet-wheel, and thereby release the springs for action on the balance of the mechanism.

To the lower end of the shaft E is secured a collar, x , which serves to support upon said shaft a loose sleeve, M, having pivots x' at the lower outer ends of same to receive the slotted ends of a pair of rods, N N', having fans O O' connected with the outer ends thereof, as shown in Fig. 1. To the rods N N' are pivotally connected the links P P', the upper ends of which are pivoted to the lower ends of the travelers R R', which, in the operation of the mechanism, move around an endless track or band, R'', that is supported in a horizontal position below the sphere A by means of brace-rods, as shown at $y y'$ in Figs. 1 and 5.

The band or track R is preferably formed with an upper and lower flange, as shown in cross-section at Fig. 9, and the travelers may be provided with friction-wheels $z z'$ to act against the opposite sides of the web of the track, and thereby prevent any binding or wedging on same.

The band or track R'' may be made of circular form, if desired; but it is preferred to make it of elliptical form, as shown in Fig. 8, as the movement of the travelers around same will cause the fans to move in wave-lines, the highest plane being obtained when the travelers are operating at the sides of the track and the lowest plane when moving around the ends thereof. This feature is of especial importance, especially in fans which are intended for operation above oblong or extension tables, as it causes the fans to be raised above the heads of those seated at the sides of the tables, while the parties at the ends of the tables are beyond reach, and are therefore not annoyed by the downward movement of the fans when in their proximity.

The letters T T' represent spring-catches, which are secured to the sides of the sphere, as shown in Figs. 1 and 5, for the purpose of holding the fans in elevated positions when the mechanism is not in operation.

The loose sleeve M has a spring-clutch, U,

secured at one side thereof, so that one edge of an opening in the top of the clutch shall impinge against the shaft, and thus transmit its motion to the sleeve and fans connected therewith. At such times as it may be necessary to wind up the mechanism the clutch is pressed outward and released from contact with the shaft, in which position it is held by a pin, 1, engaging a notch or perforation, 2, in the adjacent edge of the clutch, as shown in Fig. 10. Thus the mechanism may be wound up without imparting any motion to the fans.

The fan-frames may be made as shown in Figs. 2 or 3, or of any desired form and provided with fringe, as shown in Fig. 1, should same be required by the purchaser.

Other adjustable devices may be employed for holding the sphere in suspension; or the same may be secured to pendants of given lengths.

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

1. The combination, with a vertical shaft to the fans provided with a sleeve mounted on the shaft, of the elliptical-shaped track concentric with the shaft and the links connected with the fans and provided with travelers operating on the track, whereby a wave-like motion is imparted to the fans.

2. The combination, with a vertical shaft and the fans provided with a sleeve mounted on the shaft, of the flanged horizontal elliptical track and the travelers connected by links to the fans and provided with double anti-friction rollers operating on the inside and on the outside of the said flanged track.

3. The combination, with the sphere provided with spring-catches T T', vertical shaft E, provided with collar x , loose sleeve M, fan-arms N N', having slotted ends, and the pivots $x' x''$, whereby said ends are secured to the sleeve, of the endless track R'' and the travelers R R' and links P P', all arranged for operation substantially as described.

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

WM. CHURCH WHITNER.

Witnesses:

R. T. LONG,

FRANK C. WHITNER.