No. 780,688. PATENTED JAN. 24, 1905.

M. A. SKALL.

FAN.

APPLICATION FILED MAY 19, 1904.

Fig: 1.

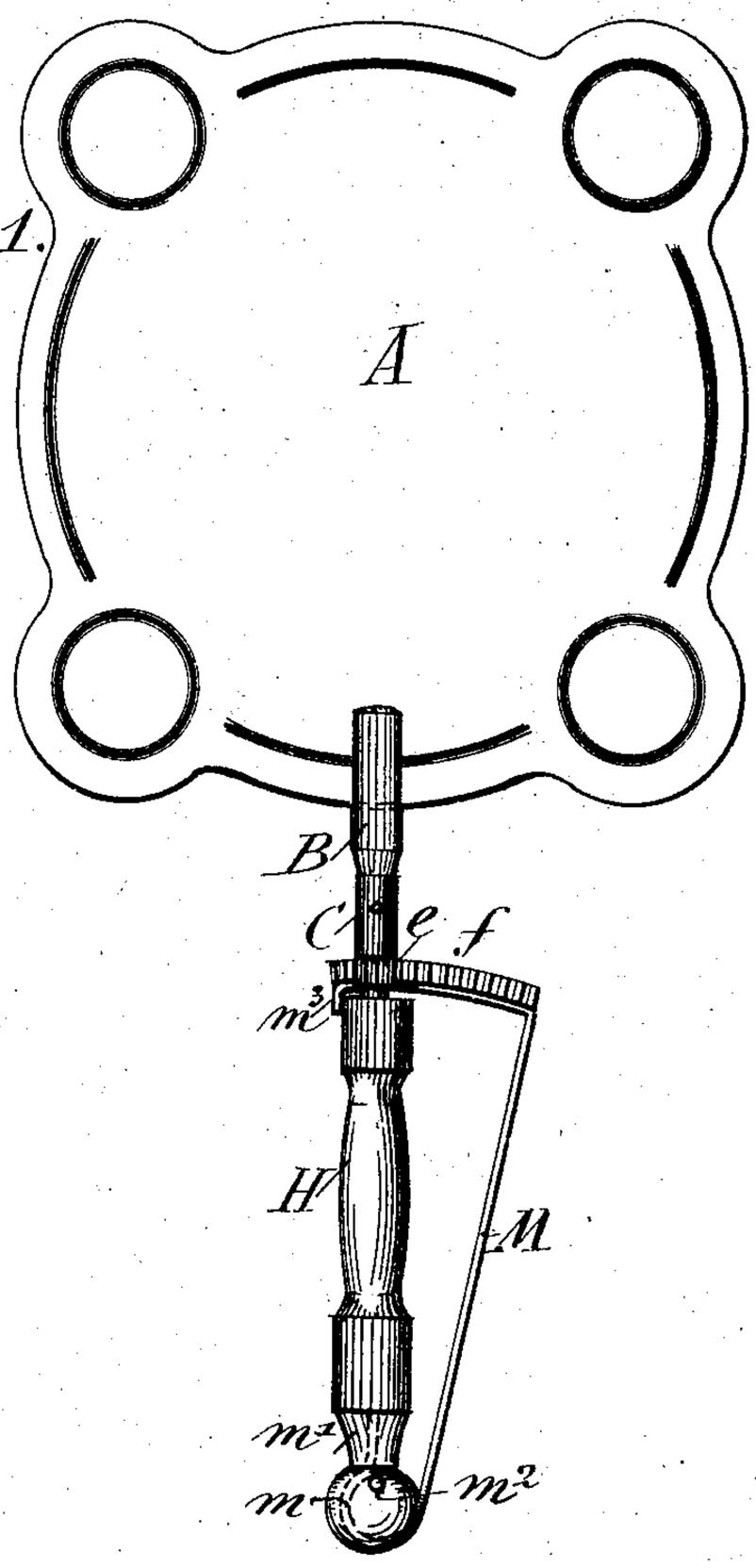


Fig: 2.

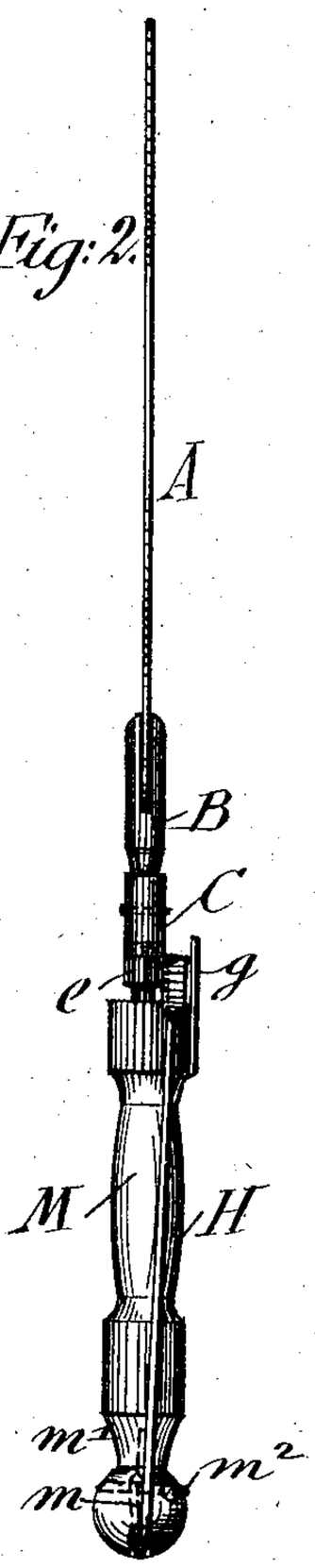


Fig: 3.

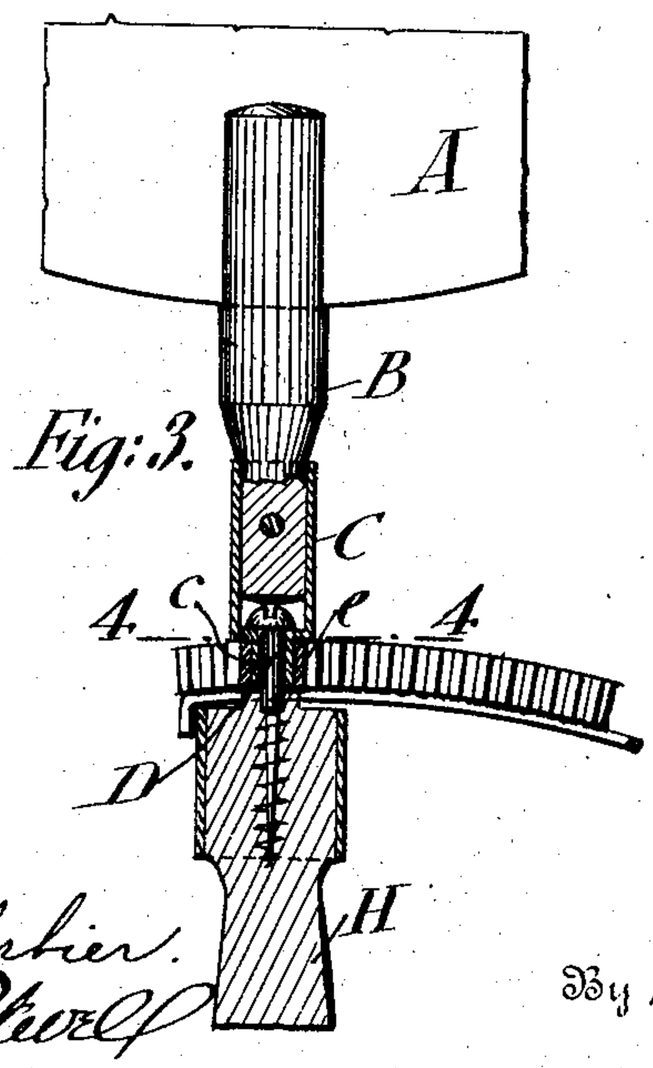
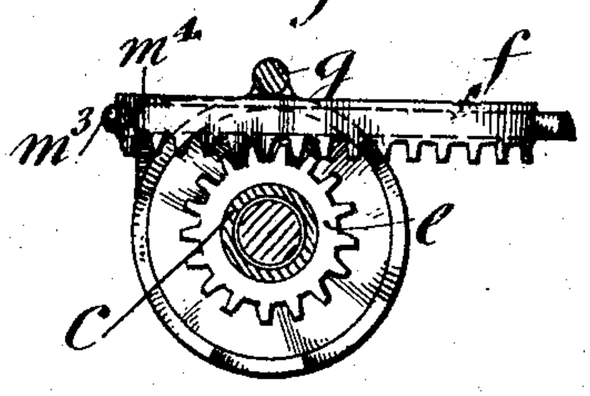


Fig: 4.



Witnesses
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No. 780,688. Patented January 24, 1905.

UNITED STATES PATENT OFFICE.

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SPECIFICATION forming part of Letters Patent No. 780,688, dated January 24, 1905.

Application filed May 19, 1904. Serial No. 208,643.

To all whom it may concern:

Be it known that I, MAX A. SKALL, a citizen of the United States, residing in New York, borough of Manhattan, in the State of New York, have invented certain new and useful Improvements in Fans, of which the following is a specification.

This invention relates to an improved fan of that type in which an alternating rotary motion can be imparted to the handle or support of the fan, so that the fan-body is moved without the usual vibrating or to-and-fro motion; and for this purpose the invention consists of a fan the body of which is provided with a short stem attached in a socket, which latter is swiveled on the handle of the fan and provided with a pinion to which alternating rotary motion is imparted by a segment supported at the upper end of a motor-spring, the coiled lower end of said spring being firmly secured in the lower end of the handle, while the upper curved end is provided at its outermost end with a stop for limiting the movement of said segment.

The invention consists, further, of means for holding the toothed segment on the upper end of the motor-spring in mesh with the motion-transmitting pinion on the stem-engaging socket of the fan-body, as will be fully described hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a front elevation of my improved fan. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical transverse section on a larger scale and showing the connection of the fan-body with the handle and the mechanism for imparting motion to the fan; and Fig. 4 is a detail horizontal section on line 4 4, Fig. 3.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A designates the body of the fan, which is made of any suitable material, form, and design. To the lower part of the fan-body A is attached a short stem B, which is secured into a socket C, the latter being connected at its lower end by a screw-spindle D to the handle H, so as to form a swiveled connection therewith, as shown clearly in Fig. 3. On the contracted end *c* of the socket C is keyed a pinion *e*, which is placed in mesh with a toothed segment *f*, soldered or otherwise attached to the curved upper end of a motor-spring M, which is made, preferably, of stout spring-wire, the lower end of the spring being bent into a coil *m*, that is inserted into a recess of the handle H, the end of said coil being extended in upward direction and driven into a bore in the lower end *m'* of the handle in order to insure the rigid connection between the motor-spring and the handle. For retaining the motor-spring in the lower recessed end of the handle a transverse pin or brad m^2 is forced through the end of the handle and coil, as shown in Figs. 1 and 2. The end of the curved upper portion of the motor-spring M is bent downwardly, so as to form a stop m^3 by which the motor-spring is held in a normal position of rest, as shown in Fig. 1. This downwardly-bent stop m^3 abuts against a projection m^4 on the upper part of the socket of the handle H, as shown in Fig. 4. The toothed segment or rack *f* is held in mesh with the pinion by means of a guide-piece *g*, which is riveted or otherwise attached to the socket at the upper end of the handle, said guide-piece preventing any lost lateral motion of the segmental rack *f*, so that during the forward and backward movement it is held in mesh with the pinion, while its stop m^3 always strikes against the abutment m^4 when the segment is returned by the coiled end *m* of the motor-spring *m* into its normal position, as shown in Fig. 1.

In using the fan the handle is taken hold of by the fingers, while the thumb is placed against the inclined arm of the motor-spring M, which is pressed toward the handle, so that the movement of the segmental rack imparts rotary motion to the stem, and thereby to the fan-body. By relaxing the pressure of the thumb on the inclined arm of the motor-spring the same moves back again until the stop m^3 is arrested by the abutment m^4, the return motion of the segmental rack imparting motion in opposite direction to the fan-body, and so on alternately by the pressure of the thumb on and release of the thumb from the arm of the motor-spring, whereby an effective alternating rotary motion is im-

parted to the fan-body and a ventilating action is produced.

The improved fan has the advantage that it is very durable, inasmuch as a motor-spring of the type employed in its construction has been found to be of sufficient power to operate the fan for a great length of time before wearing out.

The device can be cheaply manufactured and as the operative parts thereof are all exposed to view can be readily repaired in case of breakage.

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

1. The combination, with a fan-body and its stem, of a handle in which said stem is rotatable, a pinion connected to said stem, a rack engaging said pinion, and a downwardly-extending motor-spring connected at one end to said rack and at the other end to said handle.

2. The combination, with a fan-body provided with a stem, of a handle, a socket engaging said stem and having a swiveled connection with said handle, a pinion on said socket, a segmented rack meshing with said pinion, and a motor-spring having the upper end connected to said rack and the lower end secured to the lower end of said handle.

3. The combination, with a fan-body provided with a stem, of a handle, a swiveled connection between the stem and handle, a pinion on said connection, a segmental rack meshing with the pinion, a motor-spring attached at its upper end to the segmental rack and having its lower end seated in a recess at the lower end of the handle, and a stop device for arresting the outward motion of the segmental rack and the motor-spring.

4. The combination, with a fan-body having a stem, of a handle, a socket engaging said stem and having a swiveled connection with said handle, a pinion on said socket, a segmental rack meshing with said pinion, a guide-piece on the handle for holding the segmental rack in mesh with the pinion, a motor-spring provided with a bent upper portion attached to the segmental rack and having its lower end secured to the end of said handle, and a stop device for the segmental rack at the upper end of said handle.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses,

MAX A. SKALL.

Witnesses:
PAUL GOEPEL,
HENRY J. SUHRBIER.