L. STEIN.

REVOLVING FAN.

No. 12,106. Patented Dec. 19, 1854.

Fig: 2.

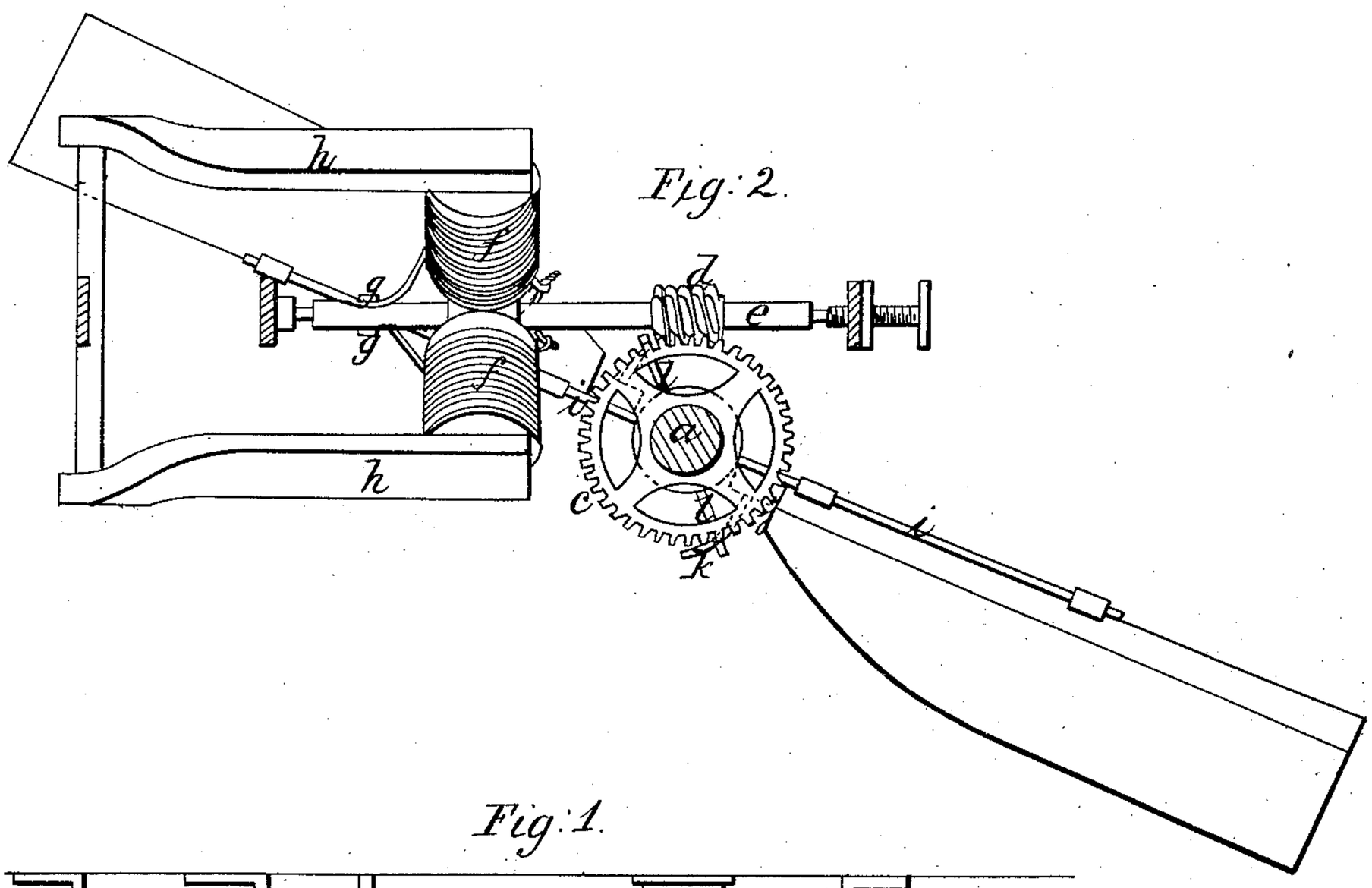
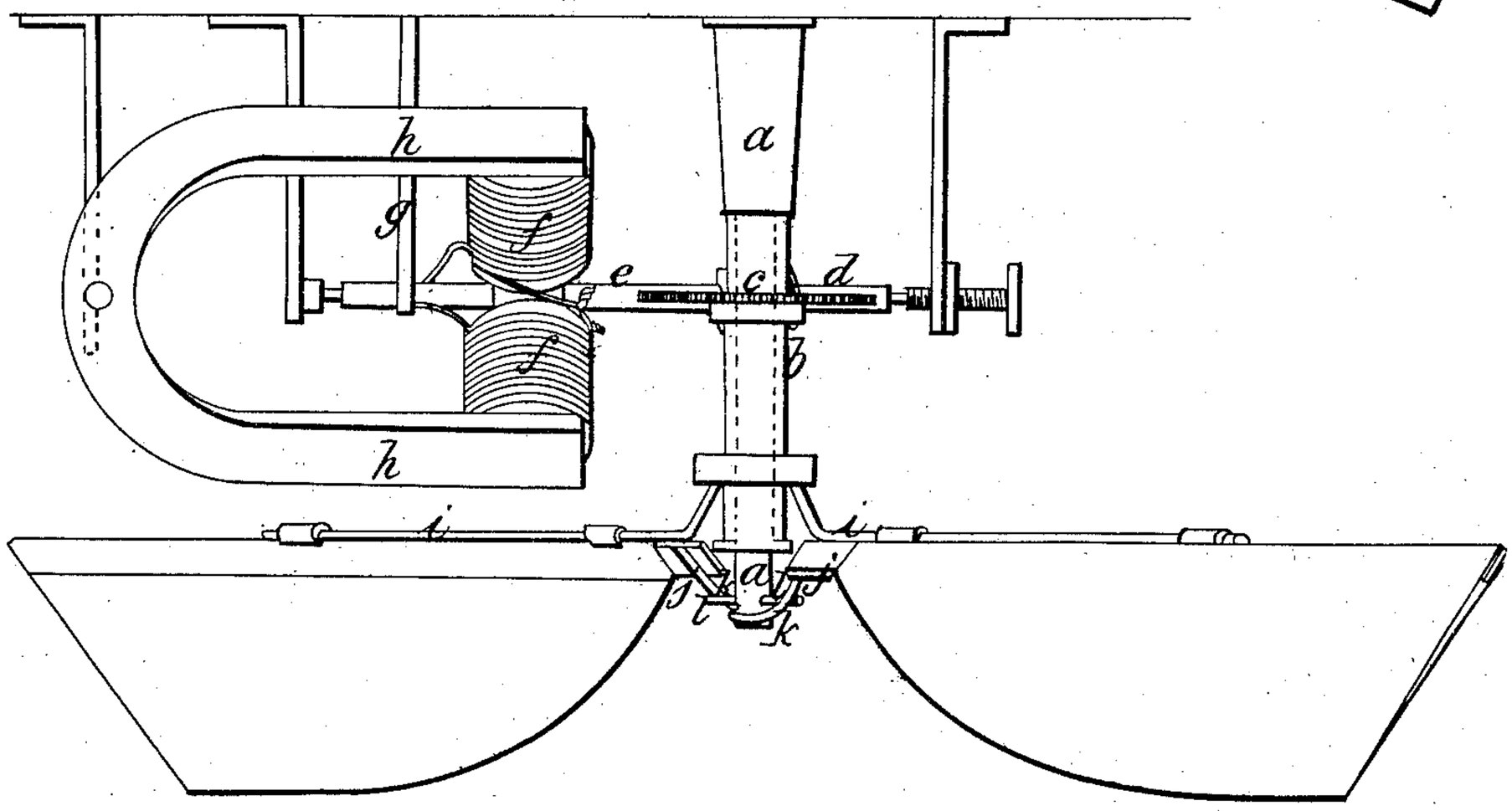


Fig: 1.



UNITED STATES PATENT OFFICE.

LOUIS STEIN, OF NEW YORK, N. Y.

IMPROVEMENT IN REVOLVING FANS FOR APARTMENTS.

Specification forming part of Letters Patent No. **12,106**, dated December 19, 1854.

To all whom it may concern:

Be it known that I, LOUIS STEIN, of the city, county, and State of New York, have invented a new and useful Improvement in the Revolving Fan for Agitating Air in Apartments; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is an elevation, and Fig. 2 a plan below the ceiling, to which it is attached when in use.

The same letters indicate like parts in the two figures.

In my improved fan the wings are hinged along one edge to the horizontal arms projecting from a hollow shaft hung on a pendent stud attached to and suspended from the ceiling of an apartment, the said wings being provided at their inner ends with crank-arms which, as the shaft rotates, strike against cam-formed projections or tappets, which cause the wings to vibrate on the arms to which they are hinged, and thus to agitate the air in the apartment by a revolving and flapping motion. The rotary motion is imparted by electro-magnets connected with a suitable galvanic battery.

In the accompanying drawings, *a* represents a stud attached by its upper end to the ceiling of an apartment. To the outside of this stud is fitted a hollow shaft, *b*, which is suspended and turns therein freely. This shaft is provided with a cog-wheel, *c*, which engages the teeth of a worm-wheel, *d*, on a horizontal shaft, *e*, which has its bearings in a suitable frame also attached to the ceiling, and this shaft *e* carries four (more or less) electro-magnets, *f*, arranged at equal distances apart around the shaft, and the different wires of the several electro-magnets are bedded in the surface of the shaft in the usual manner of making electro-magnetic engines, and against this part of the shaft there are two wires, *g g*, which spring and bear against it, and which communicate with the opposite poles of a galvanic battery of any suitable construction, not necessary to represent.

Suitable armatures, *h*, are arranged at suitable distances around the series of electro-magnets, so that when the battery is in action the shaft *e* is kept in rapid rotation by the electric current, which imparts a corresponding rotary motion to the hollow shaft *b*.

From the lower end of the shaft *b* project two horizontal arms, *i i*, to each of which is fitted one edge of a frame, *j*, so that it can turn thereon freely, and over this frame is stretched some suitable cloth, which is kept properly distended by the frame. The cloth projects beyond the outer edge of the frame, so as to yield readily in flapping. The inner end of the frame is formed with a crank-arm, *k*, which, as the shaft rotates, strikes in succession and passes over cam or tappet projections *l* on the stud *a*, so that as the shaft *b* rotates, carrying the fans around with rapidity, the striking of the crank-arms against the projections, cams, or tappets causes the wings to flap, and thus to agitate the air in the apartment.

The wings are made to return to their original position, either by gravity alone, or, if that be not sufficient, it may be aided by springs attached to the arms *i i* and bearing on the frames of the wings.

The arms and wings can be made of any desired magnitude to suit the size of the apartment, and, whatever the size, by means of a very small battery the wings can be kept in motion day and night at a very slight expense, and thus, by the combined revolving and flapping motion of the wings, produce a constant and pleasant agitation of the air, which may be increased or diminished by varying the force of the battery.

If desired, this apparatus can be inverted and placed on a pedestal.

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

Giving the combined revolving and flapping motion to the wings of a fan for cooling apartments, by having the wings hinged by one edge to arms projecting from a rotating shaft, and provided with crank-arms which, as the arms revolve, strike against fixed tappets or cams to give the flapping motion, substantially as specified.

LOUIS STEIN.

Witnesses:
O. W. M. KELLER,
WM. H. BISHOP.