No. 625,179. Patented May 16, 1899.

F. & A. S. LYONS.

FAN.

(Application filed Mar. 7, 1899.)

(No Model.)

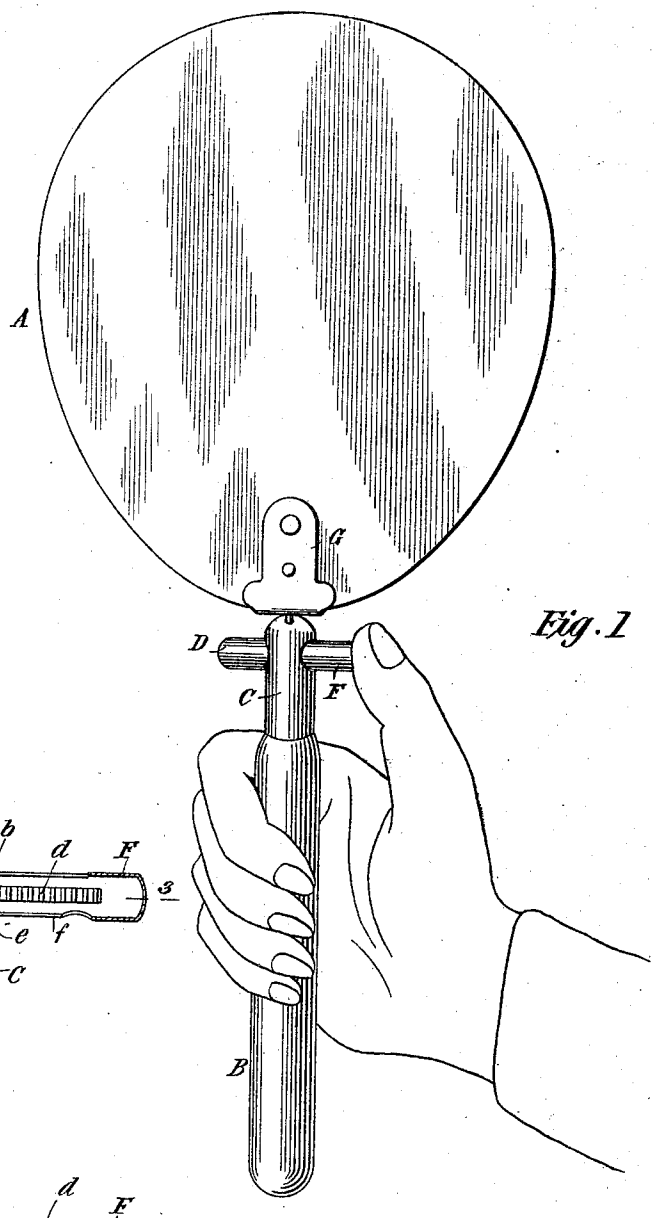


Fig. 1

Fig. 2

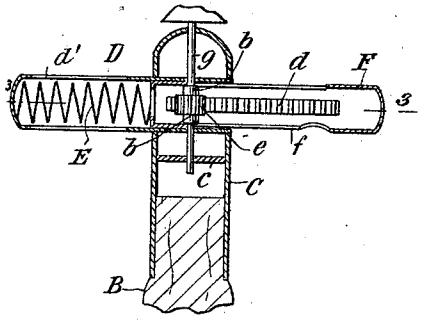
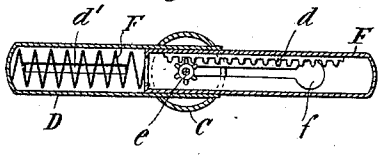


Fig. 3



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UNITED STATES PATENT OFFICE.

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FAN.

SPECIFICATION forming part of Letters Patent No. 625,179, dated May 16, 1899.

Application filed March 7, 1899. Serial No. 708,073. (No model.)

To all whom it may concern:

Be it known that we, FRANCIS LYONS, residing at the city of New York, borough of Brooklyn, county of Kings, and ALBERT S. LYONS, of the city of New York, borough of Manhattan, county of New York, State of New York, citizens of the United States, have invented certain new and useful Improvements in Fans, of which the following is a specification.

Our invention relates to certain improvements in fans; and the object of the invention is to so apply to the stick of the fan which is held in the hand of the person making use of the same, mechanism whereby motion may be imparted to the fan without the usual and tiresome exertion of moving the arm or hand to and fro.

The invention is illustrated in the accompanying drawings, forming a part of this specification, and the subject-matter for which protection is desired is pointed out in the claims at the end hereof.

In the drawings, in which the same parts are indicated by the same letters of reference in the several views, Figure 1 is an elevation showing the manner of making use of the fan. Fig. 2 is a vertical horizontal section through the cylinder receiving the stick and the parts containing the mechanism for imparting motion to the fan; and Fig. 3 is a section on the line 3 3, Fig. 2.

Referring to the drawings, A indicates the fan, which obviously may be of any design or form and of any suitable material, and B indicates the stick or holder, which also may be of such material and form as taste may dictate. The stick B is secured in the lower end of the part C, which is preferably made of metal on account of the superior finish that may be given to metal by nickel-plating, &c. Projecting laterally from part C, near its upper end, is the tube D, open at its inner end and closed at its outer end. The tube D is fixed in position within the part C and is adapted to receive the spiral spring E, as shown. The part C is perforated coincident with the open inner end of the tube D, so that the piston F may be inserted into said tube. The piston F is hollow, but is closed at its outer end, its inner end being in contact with the spiral spring E within tube D, and on the inside of said piston there is secured a rack *d*, as shown.

The fan is fixed by any suitable device, such as clamp G, to the spindle *g*, which passes through a hole in the top of part C and extends below the tube D and through the guide *c*, fixed within the part C. The spindle *g* is provided with a pinion *e*, which is adapted to coöperate with rack *d*. Below and above the pinion *e* the spindle *g* is provided with bearing-collars *b*, which also serve to maintain the pinion *e* in proper relation to rack *d*. The tube D and piston F are slotted, as shown, respectively, at *d' f*, in order that the piston F when forced forward by the thumb may not have to work against an air-cushion confined within tube D. The perforation or slotting of these parts is found to be very desirable in the operation of the device, for without such provision the movement of the piston would be slow and hard and the wear on the parts much increased.

When the stick or holder B is held in the hand and the piston F is forced in by the thumb, the spring E is compressed and rotary motion is imparted to the spindle *g* through the rack and pinion *d e*. When the pressure of the thumb on the piston is removed, the expansion of the spring E will force the piston outward and thus impart to the spindle *g* a reverse rotary motion.

Having thus described our invention, what we claim is—

1. The combination with a fan and its stick or holder, of a hollow part to which the stick is attached, the said hollow part provided with a laterally-projecting tube, a spiral spring within said tube, a piston fitting in said tube and provided interiorly with a rack, a spindle to which the fan is connected and which is supported in said hollow part, and a pinion on said spindle adapted to coöperate with said rack.

2. The combination with a fan and its stick or holder, of hollow part C having a perforated lateral tube D, spindle *g* provided with pinion *e*, spiral spring E, and a hollow piston F provided interiorly with a rack *d* with which pinion *e* coöperates.

Signed at New York, N. Y., this 6th day of March, 1899.

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