

M. S. DUPONT.

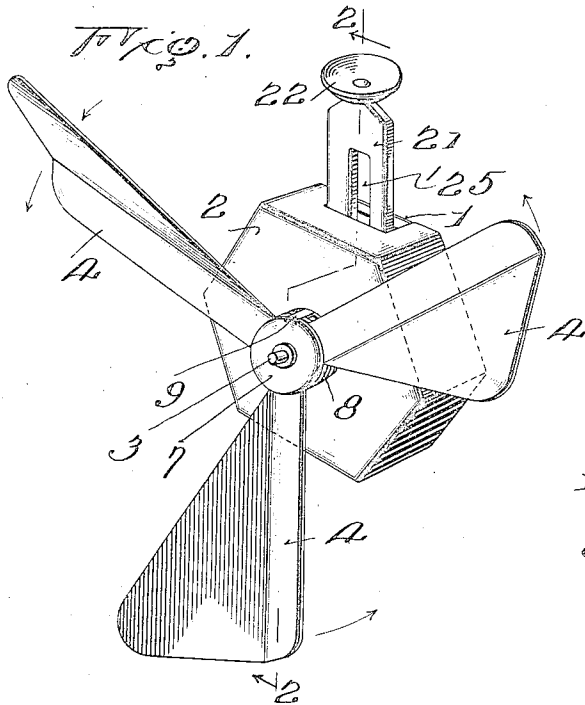
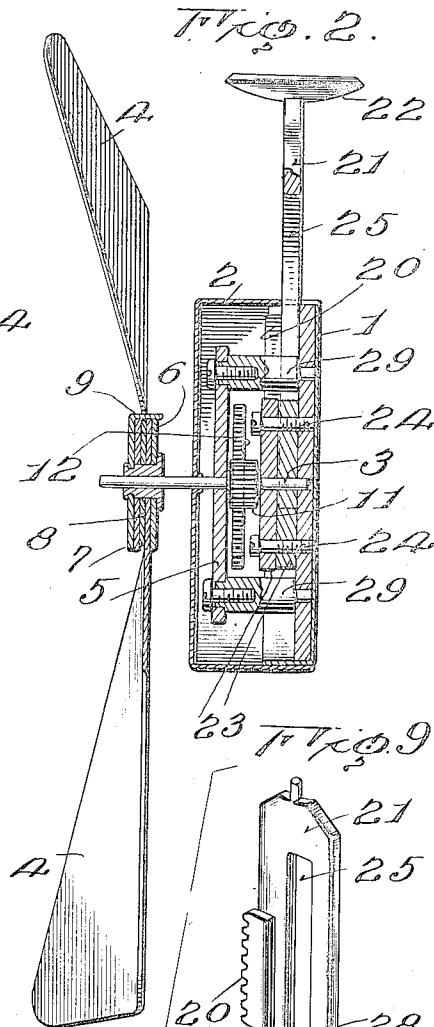
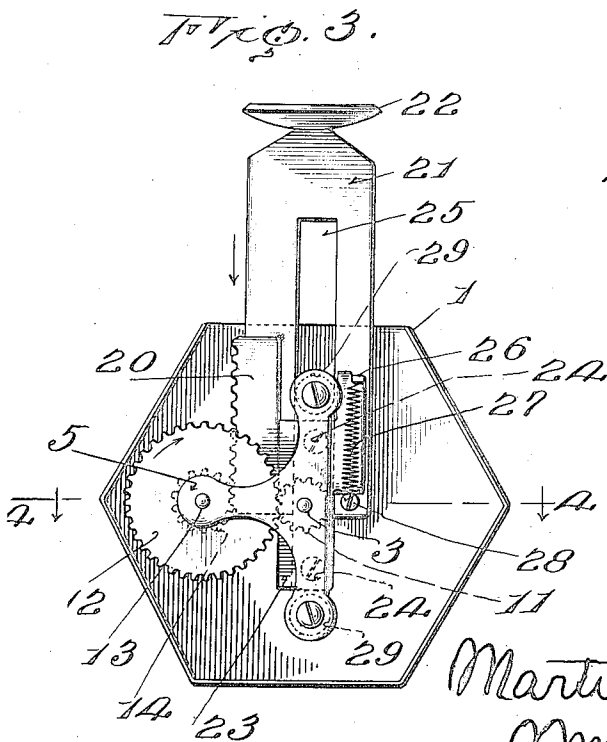
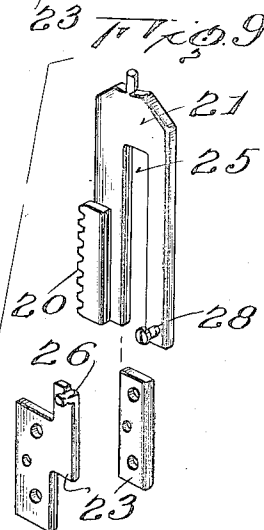
FAN.

APPLICATION FILED JULY 29, 1920.

1,384,053.

Patented July 12, 1921.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

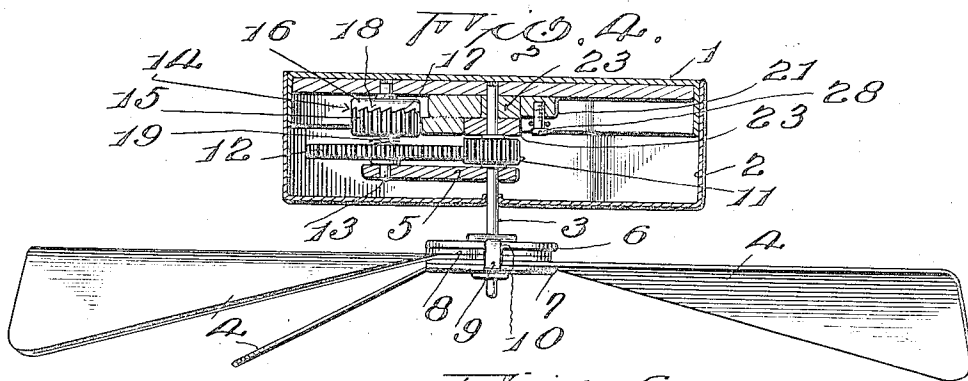


Fig. 4.

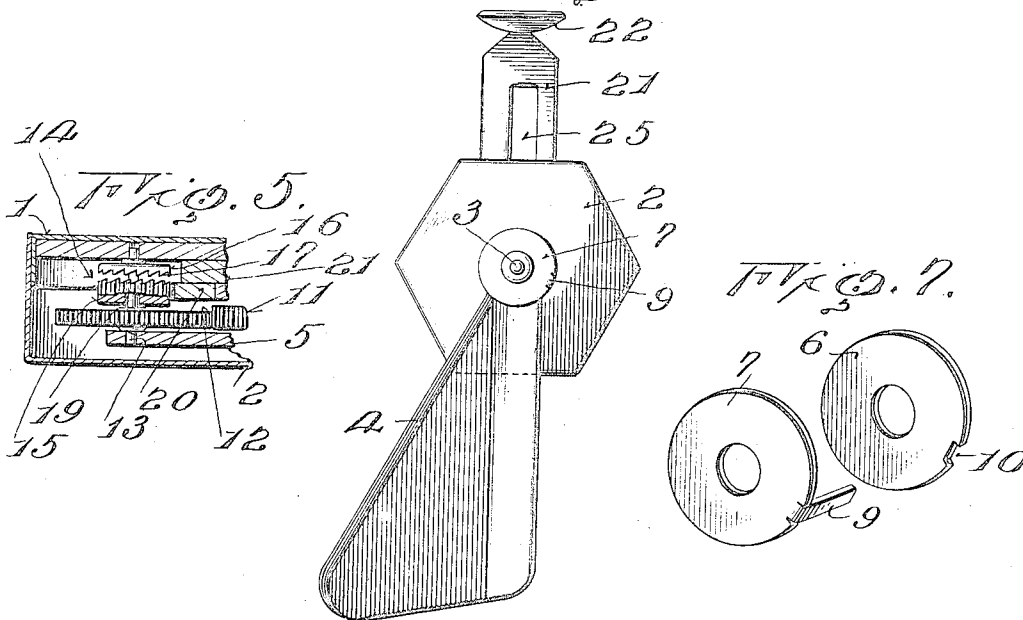
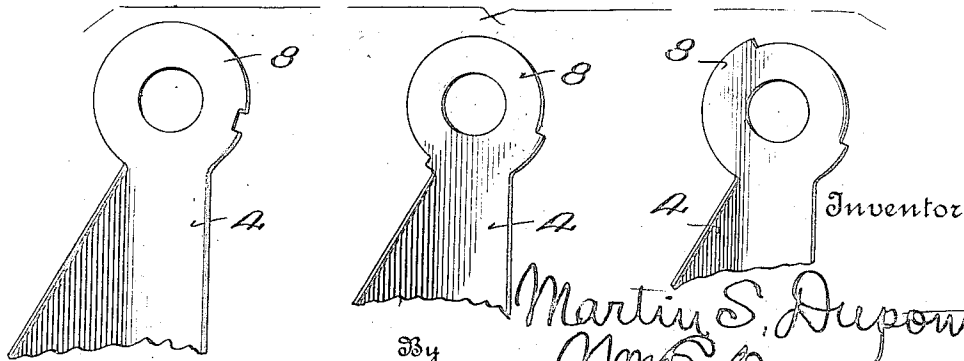


Fig. 5.



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UNITED STATES PATENT OFFICE.

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To all whom it may concern:

Be it known that I, MARTIN S. DUPONT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fans; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to fans, and contemplates more particularly a mechanically revolved fan held within and operated by the hand of the user.

15 An object of the invention is to produce a relatively small fan unit which can be readily held within the palm of the hand and continuously revolved through the manipulation of a novel mechanical driving means by the thumb or fingers.

20 Another object of the invention is the production of a hand operated revoluble fan in which a comparatively simple clutch device is provided for effecting the continuous rotation of the fan blades in one direction.

25 Another object of the invention is to produce a compact and durable fan unit, the blades of which can be collapsed, and the device otherwise constructed so that it can be easily carried in the pocket or hand bag of the user.

30 With these and other objects in view the invention further consists in the construction and arrangement of the several parts hereinafter described and pointed out in the appended claim.

35 In the drawings illustrating an embodiment of my invention, and whereon similar reference characters designate corresponding parts in the several views:—

40 Figure 1 is a perspective view of the fan as assembled for use;

Fig. 2 is a vertical sectional view on the line 2—2 of Fig. 1;

45 Fig. 3 is an enlarged face or front view of the blade revolving mechanism with the cover plate removed;

Fig. 4 is an enlarged horizontal sectional view on the line 4—4 of Fig. 3, the cover plate being applied and shown in section;

50 Fig. 5 is a fragmentary horizontal sectional view of a portion of the clutch mechanism, showing the parts disengaged for permitting the continuous rotation of the fan blades when the slide is returned for the succeeding operating movement;

Fig. 6 is a front elevation of the fan with the blades shown collapsed;

Fig. 7 is a detail perspective view of the washers between which the blades are 60 mounted;

Fig. 8 is a group view of the hub sections of the fan blades showing the relation of each to the other for effecting folding of the blades; and

Fig. 9 is a detached perspective view of the operating slide and guides.

The present invention has been primarily designed for use as a portable fan unit in which ease of operation in the hand of a 70 user is the predominating feature. Its utility as a part of one's toilet when attired in evening clothes has also been found to be particularly effective, although I do not wish to be understood as limiting myself to 75 this particular use only, as various modifications in its size and capacity for other purposes may be resorted to without departing from the spirit of the invention.

Reference being had to the drawings, my 80 invention includes among other things a casing formed of a supporting section 1, and a detachable cover section 2, through which latter extends the shaft 3 upon which are mounted the several fan blades 4. The shaft 85 3 is journaled in the supporting section 1 and the cover section 2, an intermediate supporting frame 5 being provided as shown.

Suitable washers 6 and 7 are secured to the outer end of the shaft 3, and serve to 90 retain the hub sections 8 of the fan blades 4 in position. The hub sections 8 of each fan blade are notched as shown in Fig. 8, and are designed to receive a retaining and limiting lug 9 carried by the washer 7. This 95 lug 9 extends through the notches of the hub sections and enters a notch 10 provided in the washer 6. This lug can be bent downwardly as will be understood and serves to retain the hub sections in position. 100

The notches in the hub sections 8 vary in length sufficient to permit of the collapsing of the blades. This is done by swinging the blades which are held frictionally between the washers 6 and 7 so as to bring 105 them into the position shown in Fig. 6 as will be understood. When collapsed in this position the fan can be easily carried in the pocket, hand bag or other similar carrying device. 110

The means for imparting rotary motion to the fan blades consists of a pinion 11 se-

cured to the shaft 3, and adapted to mesh with a relatively large gear 12 secured to a shaft 13 journaled in the supporting section 1 and the frame 5.

5 A clutch device 14 is carried by the shaft 13 and comprises mating members 15 and 16 respectively. The mating member 15 is in the form of a gear loosely mounted on the shaft 13 and provided with a series of
10 beveled or slanting lugs 17. The mating member 16 is provided with similar lugs 18. The construction of this clutch is such as to permit motion being transmitted there-
15 through in one direction only, and to provide for the automatic disengagement of the mating members as will be presently described.

A relatively light spring 19 is interposed between the large gear 12 and the mating member 15, the purpose of said spring being to normally engage the clutch members, but at the same time permit of their immediate disengagement as will be understood.

25 While I have shown a relatively light spring interposed for this purpose, the normal engagement of the clutch device may be obtained through the gravitation of the mating clutch member 15 into the lugs of the
30 mating member 16 when the casing is held in the palm of the hand with the fan blades uppermost. The disengagement of the clutch when in this position is obtained through the lifting of the mating member 15
35 out of engagement with the lugs 17 of the member 16 upon reversal of the operating mechanism as will be understood.

The means for imparting movement to the fan blades through the clutch device just
40 described comprises a rack 20 provided on an operating slide member 21 which projects from the casing as shown. The sliding member 21 is provided with a knob or
45 finger engaging device 22, the design of which is such that the user of the device can readily place either his thumb or finger upon such knob and depress the sliding member to effect the operation of the fan.

Guide plates 23 are secured to the frame
50 section 1 by means of screws 24 for retaining the operating slide in position. These guide plates are superimposed and are arranged in the bifurcated portion 25 of the slide member as shown. The shaft 3 also
55 passes through the guide plates as shown in Figs. 2 and 4.

A lug 26 is provided on the uppermost guide 23 and has secured thereto one end of

a returning spring 27, the other end of said spring being attached to a screw 28 carried 60 by the slide member. This screw 28 serves as a stop for limiting the outward movement of the slide member as will be understood. The action of the spring 27 is to return the slide 21 after each depression of the knob 22 65 as hereinbefore described.

The supporting frame 5 is shown as secured to studs 29 projecting from the frame section 1. It will be understood, however, that variations in the form of this support- 70 ing frame may be resorted to.

In operation the fan blades are extended as shown in Fig. 1 and the casing positioned within the hand with the thumb or finger arranged upon the knob 22. Successive de- 75 pressions are then imparted to the slide member 21, whereupon the rack 20 causes the rotation of the clutch member 15. Motion is transmitted through the clutch member 15 to the mating member 16 secured to
80 the shaft 13, and in turn the motion is imparted through the relatively large gear 12 to the pinion 11 secured to the shaft 3, thereby rapidly revolving the fan blades.

As the slide member is returned after each 85 depression of the knob 22, the clutch members 15 and 16 are automatically disengaged, thereby permitting the fan blades to continuously revolve in a single direction, and at the same time permitting the return of the 90 slide 21 after a succeeding depression.

From the foregoing construction it will be obvious that I have provided a rapidly revolving fan in which the use of an automatically acting clutch serves to transmit 95 the reciprocating movement of the operating slide in an even and effective manner.

I claim:

A mechanically operated fan comprising a support and casing adapted to be held in 100 the hand, a shaft journaled in said support and casing, fan blades carried by said shaft, means for rotating the fan blades continuously in one direction, a bifurcated slidable member extending from said casing and controlled by the thumb or finger for operating 105 the aforesaid means, a relatively long guide plate secured to the aforesaid support and projecting into the bifurcated portion of the slidable member, a bracket in which the 110 aforesaid shaft is journaled, and studs connecting said bracket to the support, said studs also serving to guide the aforesaid slidable operating member.

In testimony whereof I affix my signature. 115
MARTIN S. DUPONT.