A. SETTERBERG.

DOOR FAN.

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1,038,667. Patented Sept. 17, 1912.

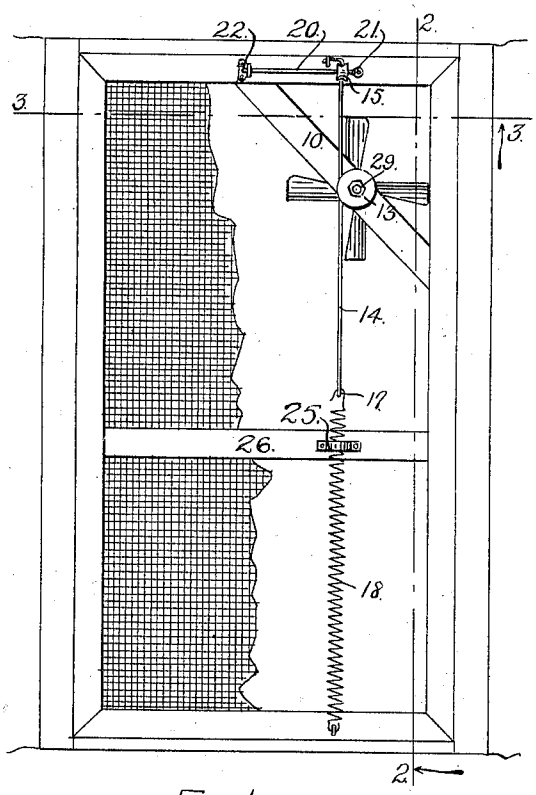

Fig. 1.

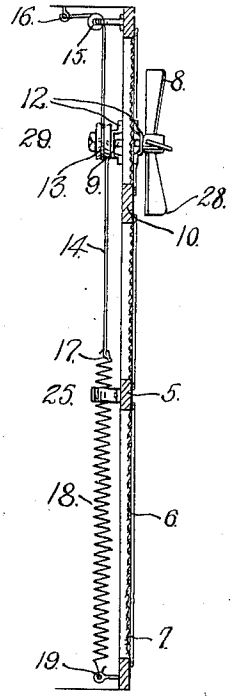

Fig. 2.

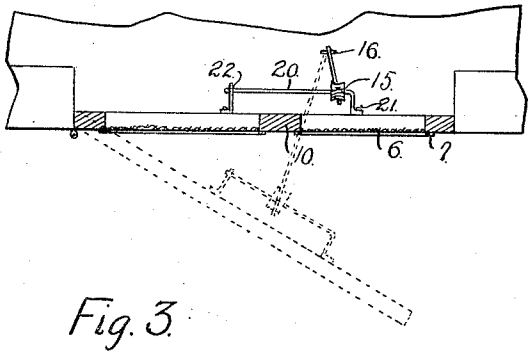

Fig. 3.

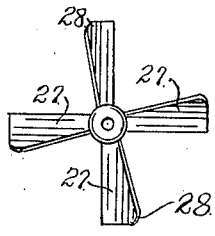

Fig. 4.

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DOOR-FAN.

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To all whom it may concern:

Be it known that I, ALBERT SETTERBERG, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented new and useful Improvements in Door-Fans; and I do declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in door fans and has for its object the provision of a fan of this character adapted to be operated by the opening and closing of the door for scaring away flies and other insects in order to prevent them from entering the room when the door is opened.

Another object of my invention resides in the provision of means for closing the door.

My invention consists, in brief, of a fan journaled on the screen door and of a flexible device connected at one extremity to the bottom of the door and at its upper extremity to the door casing. The journal of the fan, on the inner side of the door is provided with a pulley around which the flexible device is passed. The lower portion of this flexible device consists of a coil or spiral spring, whereby when the door is opened the spiral spring will be extended under tension and the flexible device caused to operate the fan which is arranged on the exterior of the door. The door casing above the door is provided with a pulley over which the flexible device passes. This last named pulley is slidably journaled upon a rod, whereby when the door is opened the pulley will be caused to slide upon the said rod toward the hinged edge of the door. When the door has been opened the spiral spring, constituting a part of the flexible door, will have been placed under tension, consequently as soon as the door is released this spiral spring will operate to close the door. I also provide a specially constructed fan such construction residing in arranging the inner edges of the blades of the fan parallel with the surface of the door.

Having thus set forth the objects of my invention and described the same in brief, I will now proceed to describe the same in detail, reference being had to the accompanying drawing, forming a part hereof.

In the drawing: Figure 1 is an elevation view of a door illustrating the manner of attaching the fan thereto. Fig. 2 is a longitudinal section taken on the line 2—2 Fig. 1, looking in the direction of the arrow. Fig. 3 is a cross section taken on the line 3—3, looking in the direction of the arrow. Fig. 4 is a detailed view of the fan which I employ.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the frame work of a screen door, and 6 the screen attached thereto, said screen being secured in position upon the frame work 5 by means of molding strips 7. In the upper corner of the screen door 6, on the outer side of the latter, is arranged a fan 8, the said fan having a journal pin 9, which passes through the screen of the door to the inner side of the door. A brace 10 extends diagonally across the upper corner of the door and serves as a sort of support for the fan. To the opposite sides of the screen door 6, I secure brackets 12 which serve as an additional support for the fan, the journal pin 9 being journaled in these brackets 12. On the inner extremity of the journal pin 9, on the inner side of the door, I secure a grooved pulley 13, around which is wrapped a cable 14. The upper extremity of the cable 14 passes over a grooved pulley 15 journaled at right angles to the hinge of the door and is rigidly secured to a hook 16 or other suitable device embedded in the upper part of the door casing. To the lower extremity of the cable 14, I connect one extremity 17 of a spiral spring 18, the other extremity of this spiral spring being connected to a pin 19 inserted in the lower portion of the frame.

To the upper portion of the frame work 5 is secured a rod 20 upon which is journaled the pulley 15. This rod 20 is secured at one extremity as shown at 21 and is offset from the frame or door so that the pulley 15 may be journaled thereon. The opposite extremity of the rod 20 is inserted into a perforation of a bracket 22, the said bracket being secured to the door by means of screws. By virtue of this construction, in order to remove the pulley 5 from the rod 20, it is only necessary to detach the bracket 22 from the frame work of the door and remove the same from the rod 20, whereby the pulley may be slid off the end of the rod.

Attention is here called to the fact that

the fan is on the outer side of the door and that the cable 14 and spiral spring 18 are arranged on the inner side of the door. The cable 14 is wrapped around the pulley 13, attached to the journal spindle or pin 9 of the fan 8. By this arrangement, whenever the door is opened, the spring 18 will be extended and placed under tension, the cable 14 operating to revolve the fan 8. In order to hold the spring 18 in position I arrange a U-shaped member 25 over the spring, the said U-shaped member 25 being secured to a cross bar 26 of the frame work 5. This U-shaped member 25 holds the spring 18 in position against the influence of the vibrations of the spring incident to the opening of the door.

Attention is here called to the fact that the spring 18 will operate to close the door, resulting from the fact that when the door is opened the spring 18 is placed under tension and its retraction causes the door to be drawn to the closed position. Whenever it is desired to detach the fan from the door it may be accomplished by removing the pulley 13 from the journal pin of the fan making it possible to detach the fan from the door by simply withdrawing the journal pin 9 from its journals. In this manner the spring 18 and flexible device 14 and other parts of the invention may be left in position for the purpose of a door closer. Of course, in order to utilize this device as a door closer when the fan is detached, it will be necessary to shorten the cable 14, since when this cable is not wrapped around the pulley 13 there will be an additional slack in the cable which must be taken up in order to produce the said tension upon the spring 18 when the door is opened. This slack or additional length in the cable may be taken up at the extremity which is attached to the spring 18.

Whenever the door is opened the cable 14 will be drawn around the pulley 13 and cause the fan to revolve, the spring expanding so as to permit the door to be opened the desired distance. While the door is being opened the pulley 15 slides upon the rod 20 toward the hinged edge of the door, whereby the strain upon the flexible device 14 and the pulley is relieved to a minimum degree and the door allowed to swing to the wide open position. The spring 18, after the door has been released, retracts, whereby the cable 14 is drawn in the opposite direction around the pulley 13 causing the fan 8 to revolve in the opposite direction, and the pulley 13 to travel or slide upon the rod toward the opening edge of the door.

Attention is here called to the fact that the blades 27, of the fan 8, have their inner edges parallel with the plane of the door. The corners of the outer edges of the blades 27 are rounded as shown at 28. The inner edges of these blades arranged parallel with the door and the rounded corners 28 of the blades serve to reduce the fan to a minimum compact structure and removes the awkward and cumbersome appearance, making the fan especially adaptable for the use or application to a door.

The operation of my improved door fan is as follows:—Whenever the door is opened the cable 14 is drawn around the pulley 13 causing the fan 8 to revolve, whereby any flies or other insects which may have collected upon the door will be either scared away or blown off through the influence of the air currents resulting from the revolutions of the fan. The opening of the door causes the cable 14 to be drawn upwardly thus placing the spring 18 under tension, and causing the pulley 15 to slide upon the rod 20 toward the hinged edge of the door. After the door has been released the retraction of the spring 18 causes the cable 14 to be drawn around the pulley 13 in the opposite direction, thus reversing the revolution of the fan and at the same time the retraction of the spring 18 causes the door to be drawn to the closed position.

Attention is here called to the fact that the pulley 13 is made fast upon the spindle or journal pin 9 of the fan and is secured in position thereon by means of a fastening device 29. By removing the fastening device 29, the pulley may be removed from the spindle and the fan 18 removed from the door by withdrawing its spindle or journal pin 9 from its journals.

While I have described and illustrated herewith a specific form of my invention it is understood that the same may be varied and modified without departing from the spirit of my invention and the domain of the appended claims.

Having thus described my invention, what I claim is:

1. A door fan comprising a fan journaled on the door, a flexible device arranged parallel to the hinge of the door and connected in operative relation with the said fan, one extremity of the said flexible device being secured to the upper portion of the door casing, means connected with the opposite extremity of the flexible device and secured to the lower extremity of the door for permitting the flexible device to operate the fan when the door is opened, and a pulley journaled on the upper extremity of the door at right angles to the hinge of the latter and over which the upper extremity of the flexible device passes.

2. A device of the class described, comprising a door, a fan journaled thereon, a pulley connected with the fan, a cable passing around the said pulley and having one extremity fixedly secured to the upper portion of the door casing, a spring having one extremity connected with the door and its

opposite extremity secured to the cable, whereby whenever the door is opened the spring is caused to expand and the cable caused to be drawn around the pulley connected with the fan for operating the latter, the said spring acting to close the door and draw the cable in the opposite direction around the pulley when the door is released, and a pulley journaled on the upper extremity of the door and over which the upper extremity of the flexible device is passed, substantially as described.

3. A door fan comprising a fan journaled in one corner of the door, the journal of the said fan having a grooved pulley made fast thereto, a flexible device passing around the said pulley, one extremity of the said flexible device being made fast to the upper portion of the door casing, a spring connected with the opposite extremity of the said flexible device and secured to the lower extremity of the door, whereby whenever the door is opened the spring will be caused to expand and the flexible device drawn around the pulley for revolving the fan, substantially as described.

4. A door fan comprising a fan journaled on the door, a flexible device connected in operative relation with the said fan, one extremity of the said flexible device being secured to the door casing, and a spring connected with the opposite extremity of the flexible device and secured to the lower extremity of the door, whereby when the door is open the said spring is caused to expand and the flexible device caused to operate the fan, substantially as described.

5. A device of the class described comprising a door, a fan journaled thereon, means for operating the fan consisting of a cable connected in operative relation with the said fan, one extremity of the said cable being fixedly secured to the door casing, a spiral spring connected with the opposite extremity of the cable, the said spring being fixedly connected to the lower extremity of the door, whereby when the door is opened the spring is caused to expand and the cable caused to operate the fan, and a roller mounted on the door to have a horizontal sliding movement and over which the upper extremity of the cable passes, substantially as described.

6. The combination with a door, of a fan journaled thereon, a pulley connected with the journal of the said fan, a cable passing around the said pulley and having one extremity fixedly secured to a stationary part of the door, a coil spring having one extremity fixedly secured to the door, the cable and the said spring being connected together, whereby whenever the door is opened the cable is drawn around the pulley for operating the fan, and the spring is extended to permit the said cable to be drawn around the pulley, and a second pulley mounted on the upper portion of the door and over which the cable passes, the said pulley being mounted to have a sliding movement in a horizontal plane at right angles to the hinge of the door when the door is opened and closed, substantially as described.

7. A device of the class described comprising a door, a fan journaled thereon, a cable connected in operative relation with the said fan, one extremity of the said cable being fixedly secured to the door casing, a spring connected with the opposite extremity of the cable, the said spring being fixedly secured to the door, whereby the door is permitted to be opened and the fan caused to be operated by the cable, a rod horizontally mounted on the upper extremity of the door, and a roller slidably mounted on the said rod and over which the upper extremity of the cable is passed, substantially as described.

8. A device of the class described, comprising a door, a fan journaled thereon, a flexible device connected in operative relation with the said fan, one extremity of the said flexible device being fixedly secured to the door casing, means secured to the door and connected with the said flexible device for permitting the door to be opened, and to cause the fan to be operated by the flexible device, and a roller mounted on the door and over which the upper extremity of the cable passes, the said roller being mounted to have a sliding movement in a lateral direction when the door is opened and closed, substantially as described.

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

ALBERT SETTERBERG.

Witnesses:

CHAS. K. KNOWLES,

OLGA BERLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."