

May 7, 1935.

C. F. HAYNES

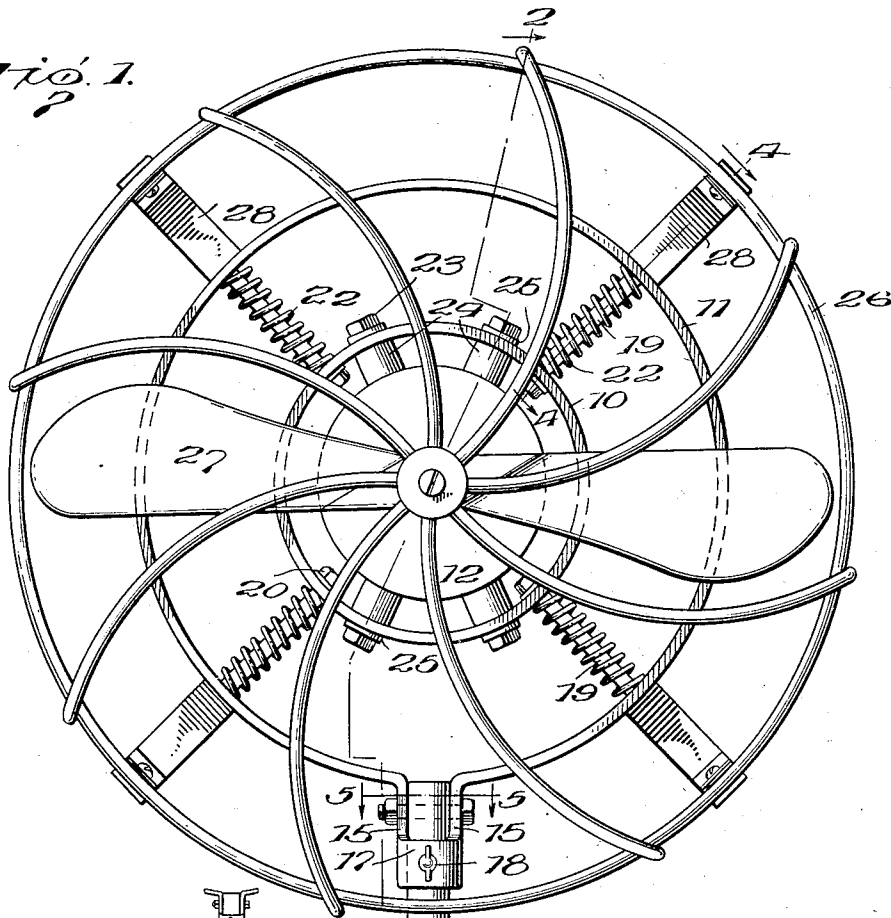
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ELECTRIC FAN

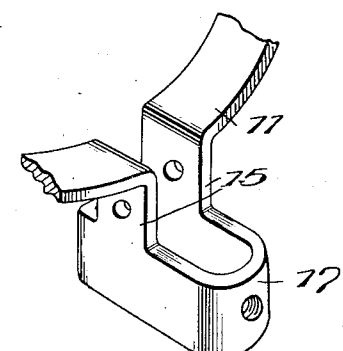
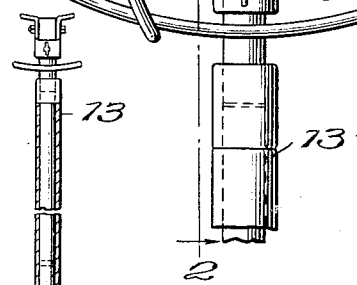
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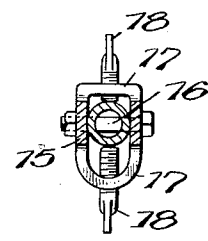
*Fig. 1*



*Fig. 2*



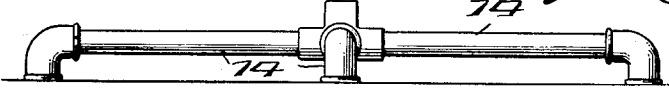
*Fig. 5*



*Fig. 6*

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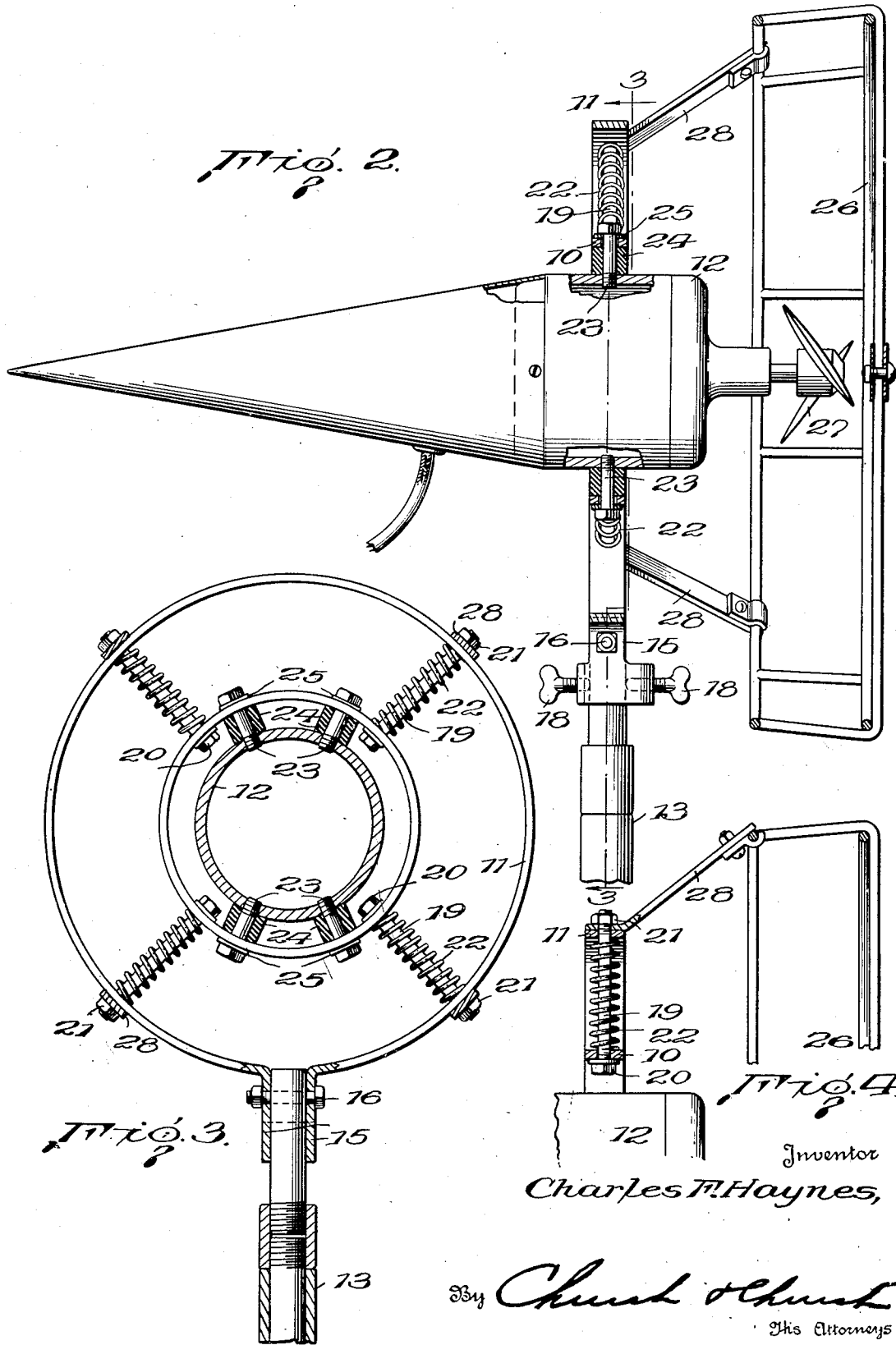
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# UNITED STATES PATENT OFFICE

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## ELECTRIC FAN

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10 Claims. (Cl. 230—273)

This invention relates to improvements in motor driven fans and particularly fans employed for ventilation purposes in restaurants, stores, schools and such places where quietude is desirable.

One object of the invention is to provide a fan mounting which will maintain perfect balance of the fan, motor, and motor casing at all times and under all operating conditions.

A further object is to provide a novel form of fan mounting wherein the fan and motor are yieldingly supported within a main supporting ring and said ring also constitutes the support for the fan guard.

A still further object is to provide a fan mounting with novel means for altering the plane in which the blast of air is propelled by the fan.

More specifically, the mounting consists of inner and outer concentrically arranged ring members, preferably but not necessarily of circular shape, the inner ring being yieldingly suspended at a number of points from the outer ring. The inner ring is somewhat flexible and is connected to the motor casing by lag screws which extend loosely through the ring but the proper degree of stability is obtained by the use of buffers interposed between the ring and casing and resilient washers between the heads of the lag screws of the inner ring.

With these and other objects in view the invention consists in certain details of construction and combinations and arrangements of parts, all as will hereinafter be more fully described and the novel features thereof particularly pointed out in the appended claims.

In the accompanying drawings—

Figure 1 is a front elevational view illustrating the preferred embodiment of the invention;

Fig. 2 is a side elevation;

Fig. 3 is a sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a sectional view on line 4—4 of Fig. 1;

Fig. 5 is a sectional view on the line 5—5 of Fig. 1; and

Fig. 6 is a detail perspective view illustrating the devices for varying the inclination of the fan.

Fig. 7 is a side view of the support of the fan.

The mounting proper of the present fan consists of inner and outer ring members 10, 11, respectively, with resilient connections between the two rings and between inner ring 10 and the motor casing 12. This mounting may, in turn be used in combination with different forms of supporting

means but in the present instance there is illustrated a supporting standard 13 provided with a plurality of lateral stabilizing extensions 14 at its lower end. The mounting is attached to the upper extremity of standard 13 and in order to facilitate adjustment of the fan to vary the direction of the air currents created thereby, the ring 11 is formed with extensions 15. A pivot pin 16 extends through the standard and said extensions 15 and at opposite sides of said pin, the extensions 15 are connected by cross bars 17. Adjusting screws 18 are threaded through the cross bars 17 and engage against opposite sides of standard 13 so that by backing off one screw and advancing the other, the ring 11 of the mounting may be adjusted to vary the inclination of the fan.

In order to provide stability to the fan, motor and motor casing, and still secure the degree of resiliency in the mounting that is necessary to maintain perfect balance and quiet operation, the ring 10 is interposed between the main supporting ring 11 and the fan and is connected to the fan by means which afford a firm but nevertheless resilient support for the fan parts. Described in detail, the inner ring 10 is connected to outer ring 11 by connecting rods 19 which extend loosely or slidably through both rings. At the inner side of ring 10, rods 19 are provided with heads 20 and at the exterior of outer ring 11 with nuts 21, and surrounding each rod between the two rings is a coil spring 22, so that by taking up on nuts 21, springs 22 can be placed under the desired compression. Ring 10 is, in turn connected to motor casing 12 by lag screws 23 which extend loosely or slidably through said ring and are threaded into the casing. Interposed between said ring and casing are a plurality of buffer elements 24, preferably in the form of rather heavy rubber sleeves which may be held in place by the lag screws. At the exterior of the ring 10, rubber washers 25 are provided between said ring and the heads of the lag screws. Ring 10 is somewhat flexible and with the present form of connection, vibratory motion of the motor and motor casing will be taken care of by the resiliency of the buffers 24 and washers 25 and the flexing of the ring itself. At the same time, the density of the buffers is such as to impart considerable firmness to the support of the fan as compared to the structures wherein the main supporting ring is directly connected to the fan by springs.

It will be appreciated that the compression of springs 22 and of the buffers 24 can be adjusted

simply by taking up or relieving the rods 19 and lag screws 23, respectively.

In the preferred construction, the guard 26 for the fan 27, is mounted on ring 11. As illustrated, the ring 11 is provided with a plurality of lateral, forwardly projecting extensions 28 to which the guard is attached.

With the mounting constructed as illustrated, the fan although quite large is capable of operating at high speeds with a minimum amount of noise. This is believed to be due to the fact that the fan, its motor, and the motor casing are yieldingly though firmly secured within the inner ring 10 and the latter is, likewise, yieldingly suspended within the outer ring 11. The ring 10 is preferably of metal but sufficiently light to possess the desired resiliency or flexibility. It will also be noted that the bolts 19 and the buffers 24 surrounding the lag screws 23 are offset with respect to one another in the sense that said bolts are spaced circumferentially of the rings with respect to said buffers.

While specific embodiments of the invention are illustrated in the drawings, by way of example, it will, of course, be understood that changes and obvious variations in the construction shown, and the carrying out of the invention in other forms as will appear to those skilled in the art, and falling within the scope of the appended claims, may be practiced without departing from the spirit of the invention.

What I claim is:

1. In a motor driven fan, a motor casing, and supporting means for said casing comprising concentrically arranged inner and outer ring members encircling said casing, said inner ring being spaced from said casing and resilient connections between said inner ring and both the outer ring and motor casing.

2. In a motor driven fan, a motor casing, and supporting means for said casing comprising concentrically arranged inner and outer ring members encircling said casing, said inner ring being spaced from said casing and resilient connections between said inner ring and both the outer ring and motor casing, and means for varying the resiliency of each of said connections.

3. In a motor driven fan, a fan casing, radially spaced inner and outer ring members encircling said casing, said inner ring being spaced from said casing, lag screws extending loosely through said inner ring into said casing, resilient buffer members interposed between said inner ring and casing and between the outer surface of said inner ring and the heads of said screws, and means for resiliently supporting said inner ring within said outer ring.

4. In a motor driven fan, a fan casing, a flexible ring surrounding said casing, said ring being

spaced from the casing, resilient spacer elements interposed between said casing and ring, a supporting member, and means for yieldingly suspending said ring from said supporting member.

5. In a motor driven fan, a fan casing, an inner flexible ring around said casing in spaced relation thereto, an outer ring arranged concentrically of the flexible ring, connections between said casing and flexible ring, resilient buffers interposed between the flexible ring and casing, and resilient supporting connections between said two rings.

6. In a motor driven fan, a fan casing, inner and outer ring members arranged concentrically around said casing, lag screws extending loosely through the inner ring and threaded into said casing, rubber buffers compressed between said inner ring and casing, rubber washers between the heads of said screws and the outer surface of said inner ring, connecting bolts extending loosely through the inner and outer rings and springs under compression between said inner and outer rings.

7. In a motor driven fan, a fan casing, a ring encircling said casing, means for yieldingly supporting said casing within said ring, a standard, radial extensions on said ring, a pivot pin extending through said standard and extensions, cross pieces connecting said extensions at opposite sides of said pin, and adjusting screws threaded through said cross pieces and engaging said standard.

8. In a motor driven fan, a fan casing, an inner ring member spaced from said casing, means for resiliently supporting said casing within said ring member, an outer ring member, connecting elements extending from said outer member loosely through said inner ring into the space between said inner ring and casing, and springs on said connecting elements yieldingly maintaining said ring members in spaced relation.

9. In a motor driven fan, a fan casing, an inner ring member spaced from said casing, connecting elements loosely securing said ring and casing together, resilient means for yieldingly holding said ring and casing in spaced relation, an outer ring member, and means for yieldingly holding said inner and outer ring members in spaced relation.

10. In a motor driven fan, a fan casing, an inner flexible ring spaced from and encircling the casing, means for resiliently holding said ring and casing in spaced relation, an outer ring member, and means for yieldingly holding said inner and outer ring members in spaced relation, said means for holding the inner ring spaced from the casing being off-set circumferentially of said ring from the spacing means for the inner and outer rings.

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