Nov. 14, 1933. H. I. FINCH ET AL 1,935,314

ADJUSTABLE CEILING FAN

Filed Nov. 6, 1930 2 Sheets-Sheet 1

Fig. 1.

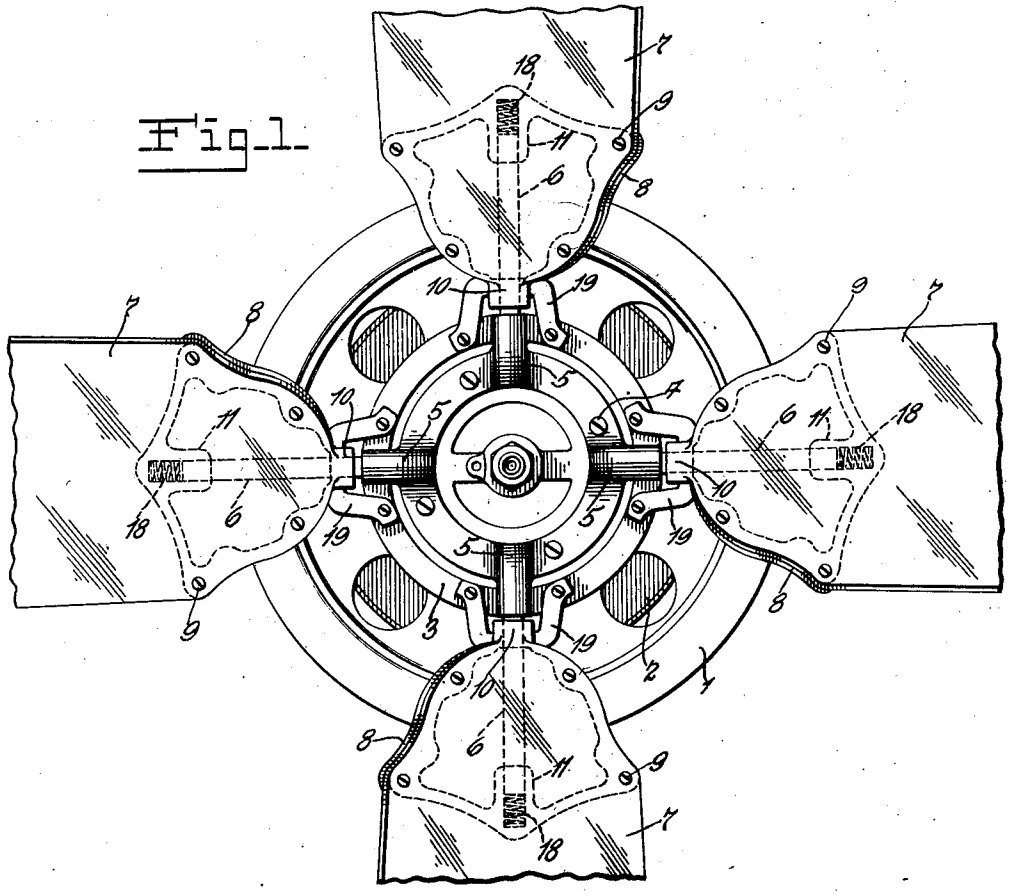
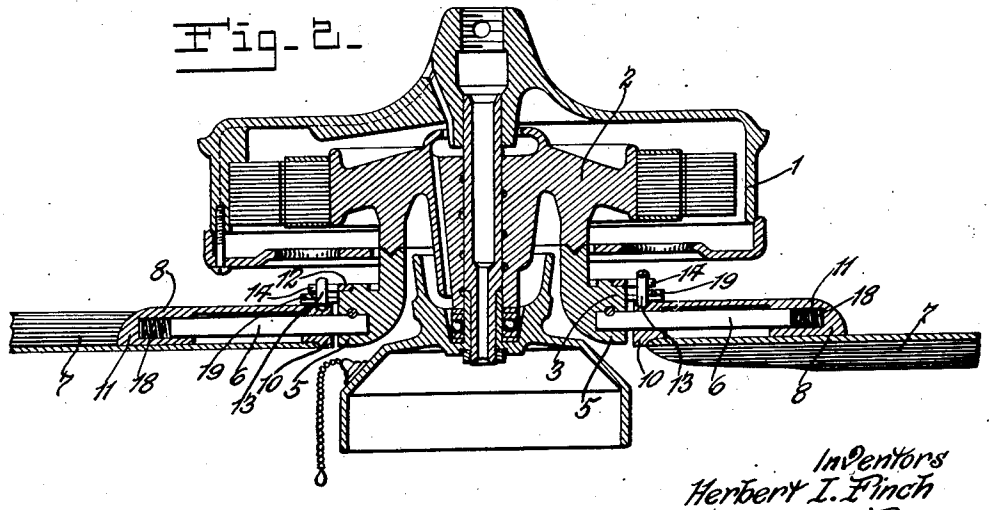


Fig. 2.



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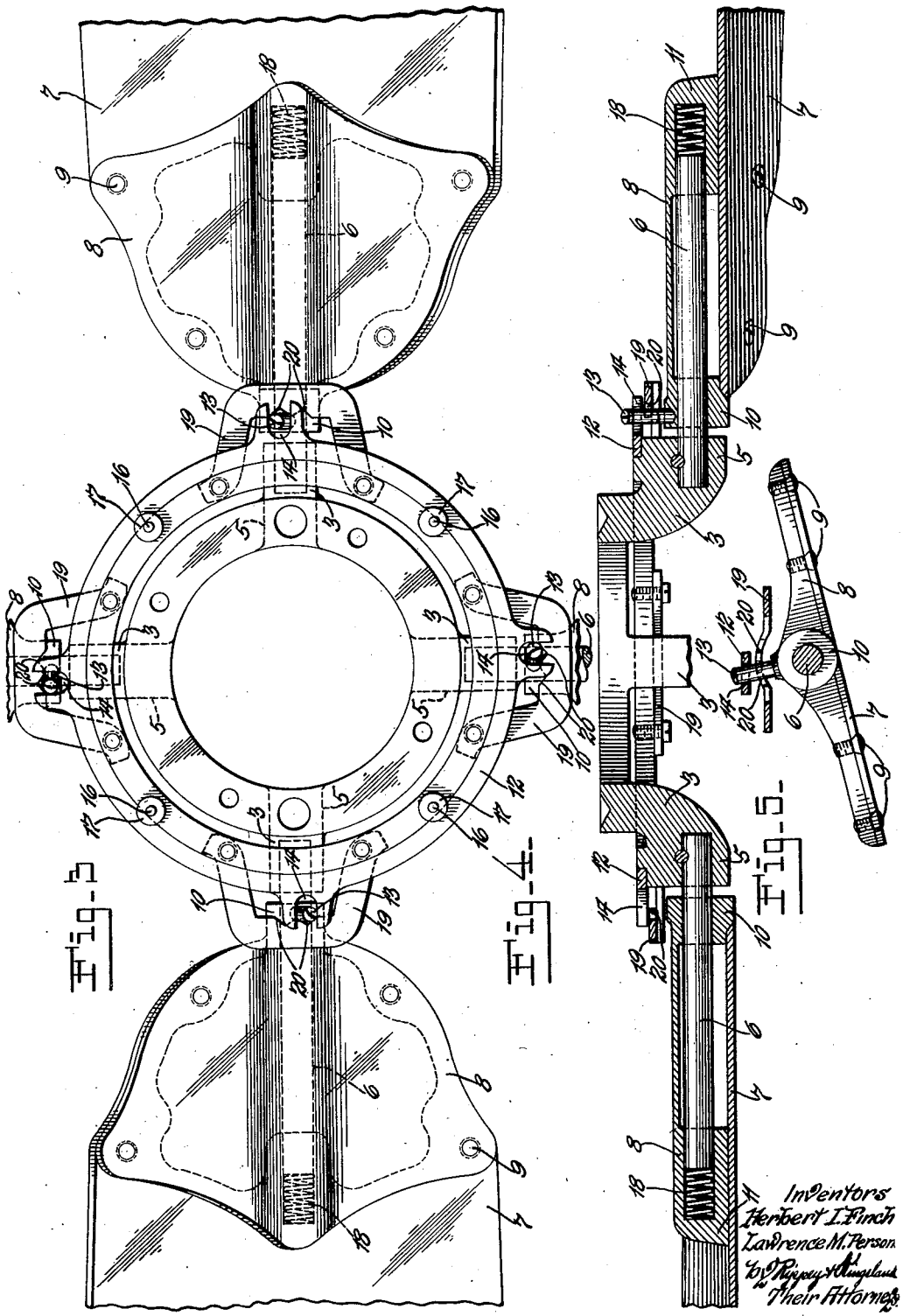


Fig-4

Fig-5

Fig-4

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Patented Nov. 14, 1933 1,935,314

UNITED STATES PATENT OFFICE

1,935,314

ADJUSTABLE CEILING FAN

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Application November 6, 1930. Serial No. 493,741

5 Claims. (Cl. 170—162)

This invention relates to ventilating fans of the type ordinarily known as ceiling fans, and more particularly to means in connection therewith whereby the blades may be adjusted to deliver a current of air downwardly or upwardly as desired.

Ceiling fans are ordinarily operated with the blades so positioned as to deliver a current of air downwardly, but it often happens that while such a current of air is undesirable, room ventilation is required and this may be secured by a reversal of the air currents.

An object of this invention is, therefore, to provide improved means whereby the pitch of the blades may be changed so as to selectively direct a current of air downwardly or upwardly as desired.

Another object of the invention is to provide improved means whereby adjustment of one blade will similarly adjust all of the other blades.

Other and further objects will be apparent from the following description.

Fans of this type are ordinarily driven by an electric motor, the blades being carried by the rotating member of the electric motor. This invention has been illustrated and will be described in such a fan. The fan blades, of which there are four in the present embodiment, are rotatably mounted on studs projecting from the armature spider and are arranged to have an operating connection with a ring concentrically and revolvably mounted on the spider. By this method rotation of one blade on its supporting stud similarly rotates each of the other blades. A detent is provided for each of the blade supports or brackets adapted to releasably secure the blade in either of two selected positions. Having thus generally described the invention, a more specific description with reference to the accompanying drawings will be made.

Fig. 1 is an inverted plan view of a device embodying the invention with the lower member, constituting a bearing support and lubricating cup, removed for convenience in illustration.

Fig. 2 is a vertical section of the device.

Fig. 3 is a top plan view of the spider including the blade supporting elements and the adjusting means.

Fig. 4 is a vertical section of the elements shown in Fig. 3.

Fig. 5 is a detail section taken on line 5—5, Fig. 4.

A motor 1 has an armature 2, which carries a spider 3 secured to the armature by screws 4. The spider has bosses 5, four in number, as illustrated in the specific embodiment, and to each boss is secured a blade supporting stud or pivot 6.

Blades 7 are each supported by a bracket 8 to which the blade is attached by screws 9. Each of the brackets has a boss 10 and a socket 11 by which the blade is rotatably mounted on the stud 6.

The spider 3 is provided with an annular groove or seat in which is revolvably mounted a ring 12 concentric with the motor axis. A pin 13 is secured in each of the bosses 10, extends into the plane of the ring 12, and engages in a slot 14 formed in a projection on the ring 12. It will thus be seen that by manual rotation of any one of the blades 7 the ring 12 will be revolved and each of the other blades 7 will be rotated in the same manner and in the same number of degrees as the one turned by hand. The ring 12 may be secured in position in the annular groove in the spider by pins 16 and washers 17, as best shown in Fig. 3.

Detent mechanism has been provided to hold the blades in either of two selected positions. That mechanism includes a compressible spring 18 positioned in the socket 11 and having one end bearing against the socket wall and the other end bearing against the end of the stud 6. The spring has a tendency, of course, to press the blade outwardly and in the same direction as that of the centrifugal force operating on the blades when they are rotated by the motor. Detent mechanism also includes a yoke or loop member 19 secured on the spider 3, extending about the pin 13 and having a pair of notches 20—20 for engagement with the pin 13.

The arrangement of the device is such that the blades when set in position will be held in position until they have been intentionally adjusted by manual rotation of the blades. Centrifugal force caused by the revolution of the fan tends to hold the blades outwardly causing the pin 13 to engage in a notch 20 and thus acting in unison with the thrust of the spring 18. The arrangement of the device as a whole, including the action of the spring 18, prevents vibration or rattling when the fan is in operation. No independent levers are required, thus providing simplicity and economy in manufacture as well as reducing the cost of maintenance. Adjustment of the blades can be made by moving any one of the blades, the operator simply grasping the blade that happens to be nearest to him.

It is obvious that parts of the invention may be used to advantage without the whole, and

that various changes may be made in the details of construction, within the scope of the appended claims, without departing from the spirit of this invention.

We claim:

1. In a ceiling fan, the improvement comprising the combination of a ring revolvably mounted on a support, which is carried by a motor armature, concentric with the motor axis, a plurality of studs carried by and extending radially from the support, blade bracket members rotatably and slidably engaging the studs respectively, engaging means operatively connecting the brackets with the ring, whereby rotation of one bracket will revolve the ring thereby rotating all the other brackets simultaneously, abutments unitary with the support and adapted to engage abutments on the bracket, and springs engaging the brackets and the studs to press the brackets radially along the studs whereby the said abutments are normally in engagement and the brackets are thereby latched in selected position.

2. In a ceiling fan, the improvement comprising the combination of a ring revolvably mounted on a support, which is carried by a motor armature, concentric with the motor axis, a plurality of blade brackets pivotally mounted on the support with axes radial to the motor axis, permanent spur connections between the ring and the brackets, whereby rotation of one bracket will revolve the ring thereby rotating all the other brackets simultaneously, and yielding detent means adapted to latch the ring in one of two positions, namely, to deliver a current of air downwardly and to deliver a current of air upwardly.

3. In a ceiling fan, the improvement comprising the combination of a ring revolvably mounted on a support, which is carried by a motor armature, concentric with the motor axis, a plurality of blade brackets pivotally mounted on the support with axes radial to the motor axis, each of said brackets having an arm extending downwardly therethrough and engaging the ring whereby rotation of one bracket will revolve the ring and thereby rotate all the other brackets, notched members secured to the support and adapted to yieldingly engage the arms respectively, and springs adapted to press the brackets radially of the motor axis to hold the arms in engagement with the notched members.

4. In a ceiling fan, the improvement comprising the combination of a ring revolvably mounted on a support, which is carried by a motor armature, concentric with the motor axis, a plurality of blade brackets pivotally mounted on the support with axes radial to the motor axis, permanent spur connections between the ring and the brackets, whereby rotation of one bracket will revolve the ring thereby rotating all the other brackets simultaneously, springs adapted to press the brackets upwardly on their pivots, and abutments unitary with the support and positioned and adapted to engage and hold the brackets in selected positions when pressed downwardly by said springs.

5. In a ceiling fan, the improvement comprising the combination of a support, carried by the motor armature, a pivot secured to the support and extending radially to the motor axes, a blade bracket mounted on the pivot, a spring arranged and adapted to press the bracket outwardly on its pivot, a yoke secured to the support adjacent the pivot and having bevelled notches on its inner surface, and an arm secured to the bracket and adapted to yieldingly engage the notches when the bracket is pressed outwardly by the spring.

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