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THE PATENTS ACT, 1970

APPLICATION FOR PATENT

WHEN TRUE AND FIRST INVENTOR IS THE SOLE OR JOINT APPLICANT
<See Section 7>

We, M/s LAP LAB, Indian Proprietorship Firm of Mrs. Laxmiben Lalitbhai Patel, 24 Vrindavan Society 1, Ranip, Ahmedabad 382480, Gujarat, India, hereby declare:

I that we are in possession of an invention for ELECTRICALLY SWINGING FANS;
ii that we, the said M/s LAP LAB, claim to be the true and first inventors thereof;

iii that the complete specification filed with this application is, and any amended specification which may hereafter be filed in this behalf will be, true of the invention to which this application relates;

iv that we believe that we are entitled to a patent for the said invention having regard to the provisions of the Patents Act, 1970;

v that to the best of our knowledge, information and belief, the facts and matters stated herein are correct, and that there is no lawful ground of objection to the grant of patent to us on this application.

We request that a patent may be granted to us for the said invention.

We request that all notices, requisitions and communications relating to this application may be sent to M/s LAP LAB, 24 Vrindavan Society 1, Ranip, Ahmedabad 382480, Gujarat.

Dated this the 1st day December 1995.

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THE PATENTS ACT, 1970

COMPLETE SPECIFICATION

<See Section 10>

[1]

ELECTRICALLY SWINGING FANS

[2]

M/s LAP LAB

Indian Proprietorship firm of Mrs. Laxmiben Lilitbhai Patel,
24 Vrindavan Society 1, Ranip, Ahmedabad 382480, Gujarat, India

The following specification particularly describes and ascertains the nature of this invention and the manner in which it is to be performed :-

[3] This invention relates to electrically swinging fans which consume less electricity for producing a desired cooling effect, produce tangential hygienic airflow, produce ceiling-independent comfortable airflow, and do not create vibrational stress on the ceiling.

Existing types of electric fans for producing cooling effects by producing airflows are electrically rotating axial-flow fans. Such electrically rotating axial-flow fans consume much electricity for producing a desired cooling effect, produce axial unhygienic airflow, and create vibrational stress on the ceiling. Described here is a new type of electric fans, viz. Electrically swinging fans. Unlike electrically rotating axial-flow fans of existing types, electrically swinging fans described here consume less electricity for producing a desired cooling effect, Produce tangential hygienic airflow, produce ceiling-independent comfortable airflow, and do not create vibrational stress on the ceiling.

Constructions and operations of electrically swinging fans described here are based primarily on the known principles as follows:

1. an electromagnet is magnetized when direct-current electricity passes through its coil;

2. a magnetized electromagnet attracts an unmagnetized magnetizable material;

3. air pressure gradients produce airflows and subsequent cooling effects;

4. electricity consumption of an electromagnet depends on its mechanical work load.

As shown in Figures 1 and 2, an electrically swinging fan described here consists primarily of one blade and two electromagnets arranged on a platform to be fixed on a ceiling.

The blade has a near-rectangular sheet made of a nonmagnetizable material. Parallel to and near the bottom edge of the blade, there is a strip of an unmagnetized magnetizable material. The strip is so fixed on the blade that it can be attracted from either side of the blade when a magnet is brought in its vicinity. Parallel to and near the top edge of the blade, there are two hinge type protrusions. With the help of these protrusions and through two hanging supports, the blade can be kept hanging below a ceiling in such a way that the blade can easily swing on both the sides.

The two electromagnets are fixed hanging on the two sides fancing the blade. Each electromagnet has a strip surrounded by a magnetizing coil. On each electromagnet, facing the blade, there is a switch to switch on/off the electromagnet coil. The switch is of make and break type and can be activated by a very light surface pressure touch action. The distance of each electromagnet from the blade and the ceiling is such that when the blade swings towards an electromagnet, the blade strip can come very close to the electromagnet strip.

The two electromagnet switches are so interconnected that, when one is on, the other is off, and vice versa. There is an additional main switch on/off the passage of electric current. The electric supply required by the electromagnet coils is of direct current type; and hence a current rectifying circuit is introduced if alternating current is available from the mains.

The working of an electrically swinging fan is as follows.

When the mains is off and hence neither electromagnet is magnetized, the blade is in its normal updown position, as shown in Fig. 2. In this condition the touch switch of one of the two electromagnet coils has been left on and the touch switch of the other electromagnet coils has been left off. The electromagnet with initially on switch is hereunder designated as the ‘second’ one; such a designation is dependent on the earlier off setting and is therefore not permanent.

When the mains is switched on, direct current electricity flows throuch the first electromagnet coil. The first electromagnet now gets magnetized due to the current flowing through its surrounding coil. The blade strip, being made of an unmagnetizable material, gets attracted towards the first electromagnet. The blade thus swings in the directions of the first electromagnet. When the blade approaches its ‘first-side extreme’ position, as shown in Fig. 3, the blade touches the touch switch of the first electromagnet. The resultant pressure touch action on the first switch brings the first switch from its present on position to new off position.

Now, direct current electromagnet stops flowing through the first electromagnet coil and instead flows through the second electromagnet coil, if the mains is still on. The first electromagnet is demagnetized and the second electromagnet gets magnetized towards the first electromagnet and instead gets attracted towards the second electromagnet. The blade thus swings in the opposite direction towards the second electromagnet. When the blade approaches its ‘second side extreme’ position, the blade touches the touch switch of the second electromagnet. The resultant pressure touch action on the second switch brings the second switch from its present on position to new off position.

The blade now swings in the direction of the first electromagnet. And thus the swinging action of the blade continues till the mains is switched off and thereby the current stops flowing through both the electromagnet coils.

If the two electromagnets are in a horizontal plane, the gravitational pendulum action leads to an acceleration of the blade, uniformly on the both sides of the blade. Air friction however works opposite to the gravitational pendulum action, and thereby leads to a certain equilibrium swinging speed for the blade. The swinging speed of the blade, through varying with the angle between the current and initial positions of the blade, is almost symmetric on both sides of the blade.

If the two electromagnet are not in a horizontal plane, the gravitational pendulum action based acceleration of the blade is unequal on two sides of the blade. As a result, the swinging speed of the blade is asymmetric on two sides of the blade.

The swinging action of such and electrically swinging fan leads to airflows and subsequent cooling of the air. Using and aerodynamic analysis, it can be proved that such and electrically swinging fan would consume less electricity than an electrically rotating axial-flow fan for producing a desired cooling effect. This can be indirectly understood by reverting the fact that a horizontal-axis wind turbine can produce upto four times more electricity than a like area vertical-axis wind turbine.

A person sitting of sleeping under and electrically rotating axial-flow fan gets stream type impactful axial airflows. Such airflows cause bodyaches and are thus unhygienic. An electrically swinging fan on the other hand generates breeze type impactless tangential airflows. Such airflows do not cause bodyaches an are thus hygienic.

In the summer the ceiling gets warm, perticularly if the ceiling is on the top floor. An electrically rotating axial-flow fan generates airflow via contacts with the ceiling, and thus such airflow turn out to be warm, rather than cool and comforting as would have been desired. Airflow generated by an electrically swinging fan do not go through contacts with the ceiling, and are therefore not warm even if the ceiling warm.

An electrically rotating axial-flow fan and its airflow constantly and turbulently interact with the ceiling. This leads to a vibrational stress and deterioration of the strength of the ceiling. Such and interaction and resultant deteriorations are absent when an electrically swinging fan is used.

WE CLAIM :

1. A new type of electrical fans, viz. Electrically swinging fans, which consist primarily of one blade and two electromagnets arranged on a platform to be fixed on a ceiling.

2. Electrically swinging fans, which consume less electricity for air cooling.

3. Electrically swinging fans which have less side effects on health and installation.

For M/s LAP LAB

Mrs. Laxmiben Lalitbhai Patel
Proprietor

Dated this the 1st day of December 1995.