FORM 2

THE PATENTS ACT, 1970
(39 OF 1970)
&
THE PATENTS RULES, 2003

COMPLETE SPECIFICATION

(See section 10; rule 13)

1. 'THIN AIRFOIL CEILING FAN BLADE'

2. (A) DELTA T CORPORATION

(B) US

(C) 2425 MERCHANT STREET LEXINGTON, KY 40511, USA

The following specification (particularly) describes the nature of the invention (and the manner in which it is to be performed):

WE CLAIM:

1. A fan blade configured to mount to a rotating fan hub, the fan blade comprising:

a. a root end configured to couple with the rotating fan hub, wherein a profile of the root end comprises a substantially convex top surface and a substantially concave domed sector;

b. a blade region, wherein a profile of the blade region comprises a substantially convex top surface and bottom surface;

c. a transition region extending between the root end and the blade region, wherein the transition region comprises a profile which transitions the root end profile to the blade region profile;

d. a leading edge;

e. a trailing edge; and

f. a tip, wherein the leading edge and trailing edge terminate into the tip.

2. The fan blade of claim 1, wherein the root end comprises an arcuate cutout.

3. The fan blade of claim 2, wherein the domed sector is configured to terminate into a region which is parallel to a plane of rotation of the fan blade at a position proximal to the arcuate cutout.

4. The fan blade of claim 3, wherein the transition portion comprises a first potion, an inflection portion, and a second potion.

5. The fan blade of claim 4, wherein the first portion comprises an extension of the concave domed sector of the root end which terminates at the inflection portion.

6. The fan blade of claim 5, wherein the inflection portion comprises a quasi-parabolic shaped portion that extends from the leading edge to the trailing edge and

transitions the fan blade from the extension of the concave domed sector of the first portion to a planar portion.

7. The fan blade of claim 6, wherein the second portion extends from the inflection portion and the planar portion to the profile of the blade region.

8. The fan blade of claim 7, wherein the top surface of the profile of the blade region comprises:

a first top convex curvature proximal to the second portion of the transition region, and a second top convex curvature proximal to the tip.

9. The fan blade of claim 8, wherein the bottom surface of the profile of the blade region comprises a first bottom convex curvature proximal to the second portion of the transition region, and a second bottom convex curvature proximal to the tip.

10. The fan blade of claim 9, wherein the top surface of the blade region transitions from the first top convex curvature to the second top convex curvature along a length of the blade region.

11. The fan blade of claim 10, wherein the bottom surface of the blade region transitions from the first bottom convex curvature to the second bottom convex curvature along the length of the blade region.

12. The fan blade of claim 11, wherein the bottom surface of the blade region slopes upward along the length of the blade region.

13. The fan blade of claim 12, wherein the top surface of the blade region slopes upward along the length of the blade region.

14. The fan blade of claim 13, wherein the leading edge is located at a position higher than a position of the trailing edge.

15. The fan blade of claim 14, wherein the tip is curved.

16. A fan assembly comprising:

a. a fan motor;

b. a fan hub, wherein the fan hub is attached to the fan motor; and

c. the fan blade of claim 14, wherein the fan blade is one of a plurality of similar fan blades mounted to the fan hub.

17. A fan blade configured to mount to a rotating fan hub, the fan blade comprising:

a. a root end, wherein the root end comprises:

i. a root end profile comprising a concave bottom surface and a convex top surface,

ii. a cutout on the bottom surface configured to receive a bottom surface of the fan hub,

iii. a plurality of holes configured to allow the root end to be coupled to the rotating fan hub, and

iv. a cutout on the top surface configured to receive a top surface of the fan hub;

b. a blade region, wherein a profile of the blade region comprises a substantially convex top surface and bottom surface; and

c. a transition region located between the root end and the blade region, wherein a profile of the transition region transitions the profile of the root end into the profile of the blade region.

18. The fan blade of claim 17, wherein the relief on the top surface of the root end is substantially square in shape.

19. The fan blade of claim 18, wherein the bottom surface of the root end is configured to terminate into a region which is parallel to a plane of rotation of the fan blade at a position proximal to the cutout.

20. A fan assembly, wherein the fan assembly comprises:

a. a fan motor;

b. a fan hub, wherein the fan hub is couple to the fan motor; and

c. a plurality of fan blades, wherein the each one of the fan blades of the plurality of fan blades comprise:

i. a root end capable of being coupled to the rotating fan hub, wherein a profile of the root end comprises a substantially convex top surface and a substantially concave domed sector,

ii. a blade region, wherein a profile of the blade region comprises a substantially convex top surface and bottom surface, and

iii. a transition region extending between the root end and the blade region, wherein the transition region comprises a profile which transitions the root end profile to the blade region profile.

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(Ranjan Narula)
IN/PA - 920
Of Ranjan Narula Associates
Agent of the Applicant