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(54) **COOLING FAN**

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(76) Inventor: **Hsin-Mao Hsieh, Pingtung City (TW)**

Correspondence Address:

**ROSENBERG, KLEIN & LEE**  
**3458 ELLICOTT CENTER DRIVE-SUITE 101**  
**ELLICOTT CITY, MD 21043 (US)**

(57) **ABSTRACT**

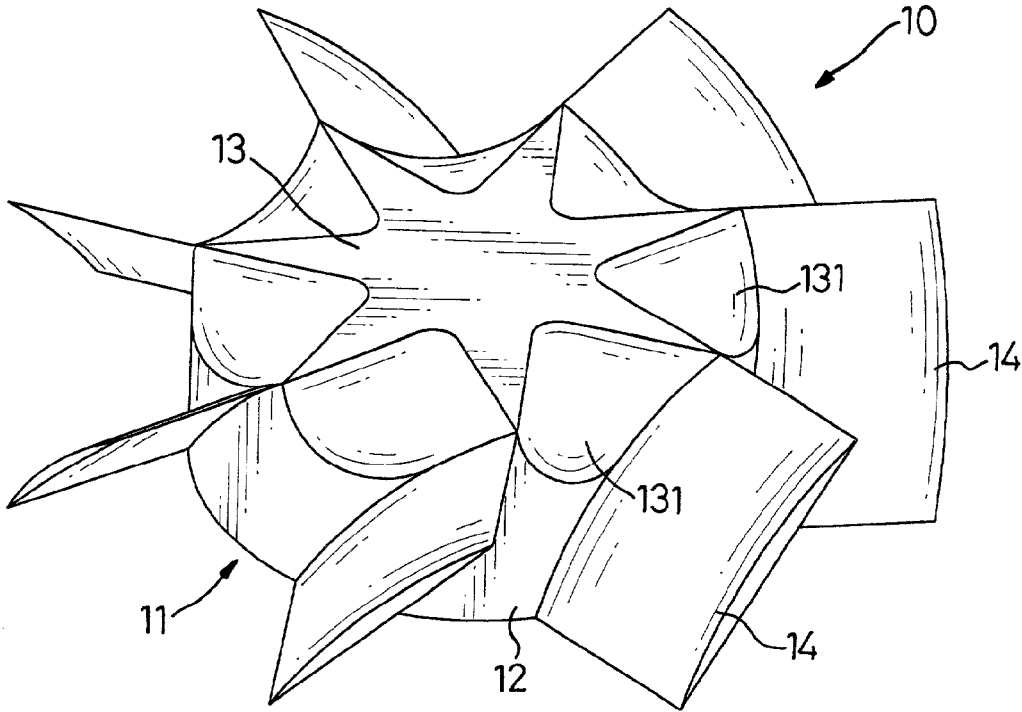
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A cooling fan is composed of a rotor and a stator received in the rotor. The rotor has a cylindrical housing with an outer periphery and a top surface. The cylindrical housing has a plurality of cutouts defined at the edge of the outer periphery and the top surface and inclined outwards and downwards from the center of the top surface. A plurality of blades is radially formed on the outer periphery of the cylindrical housing and respectively between adjacent cutouts.



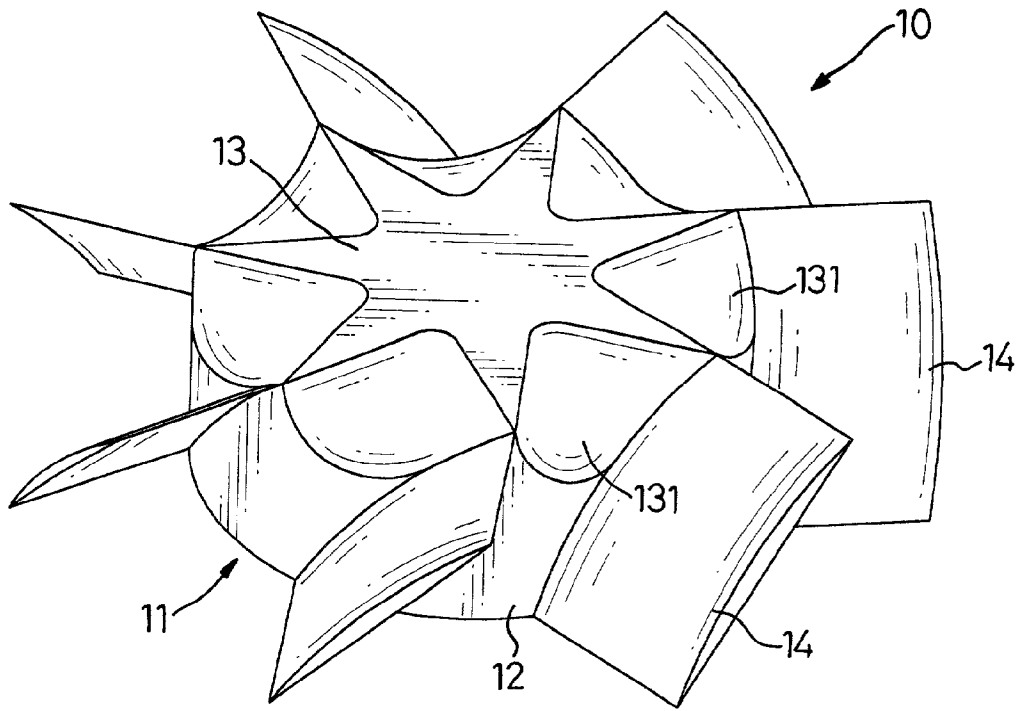


FIG. 1

FIG.2

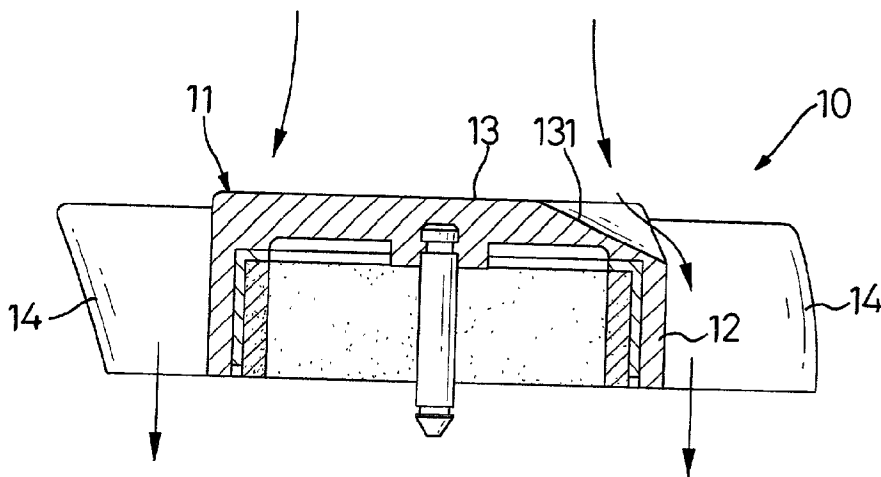
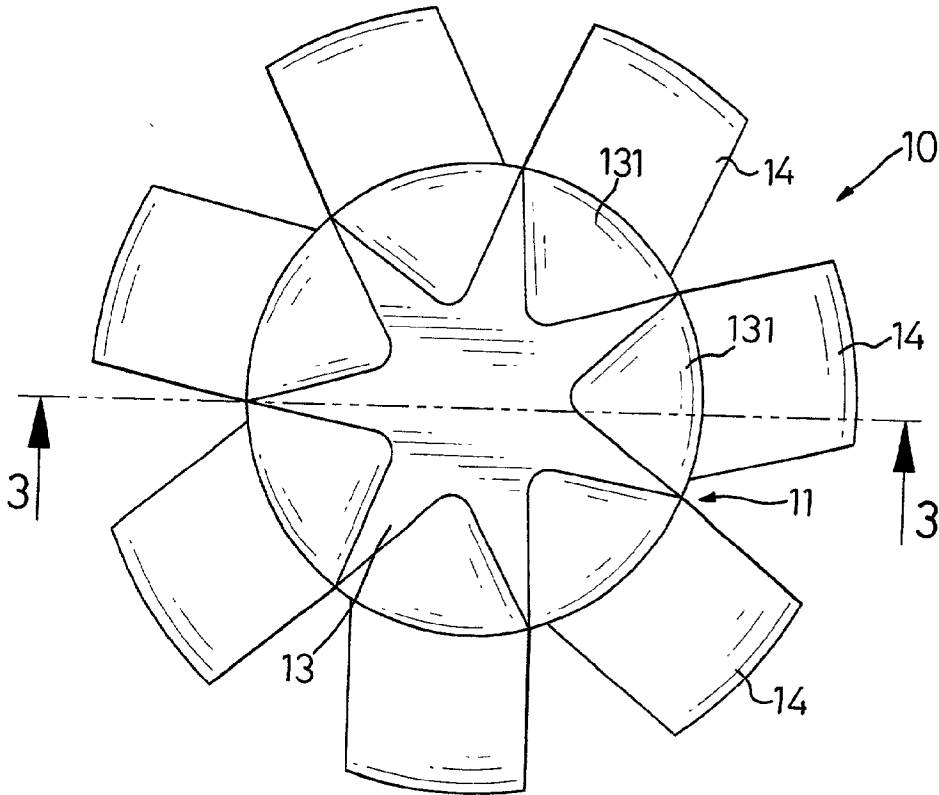


FIG.3

FIG. 4  
PRIOR ART

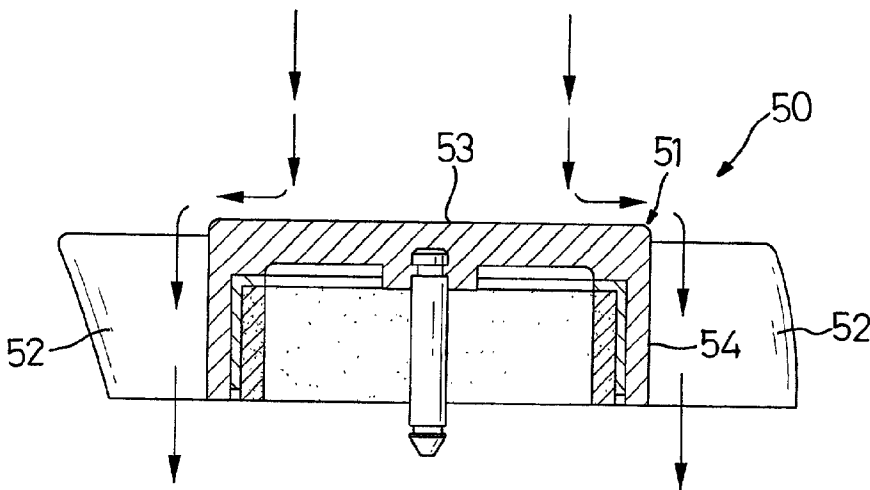
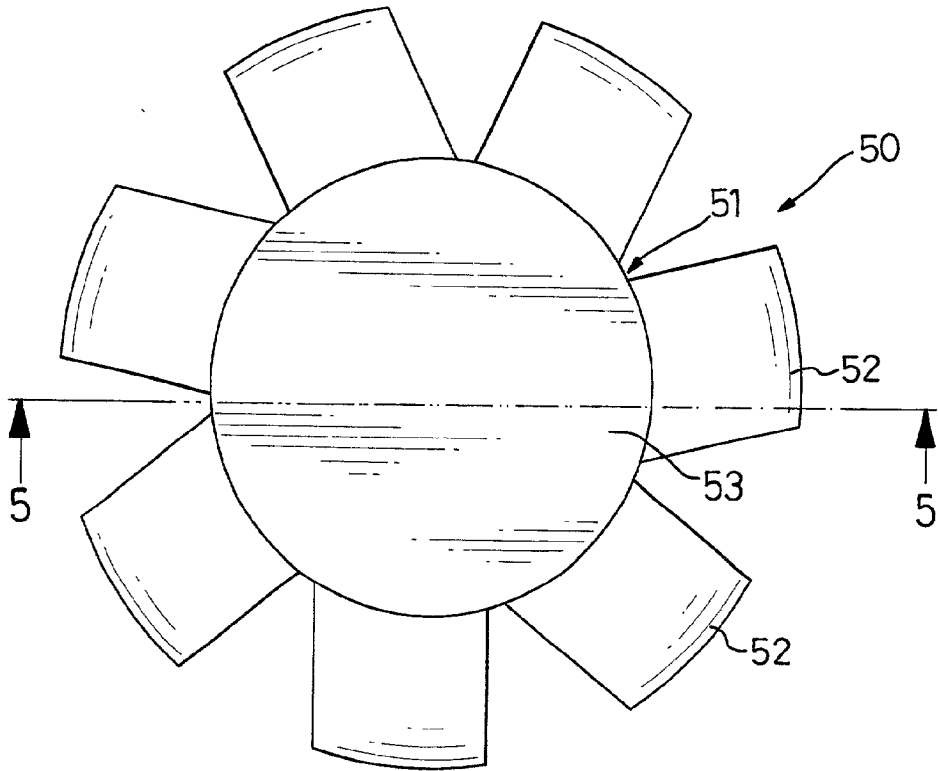


FIG. 5  
PRIOR ART

## COOLING FAN

### BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention is related to a cooling fan, and more particularly to a rotor of the cooling fan.

[0003] 2. Description of Related Art

[0004] Referring to **FIG. 4**, a conventional axial-flow cooling fan is composed of a rotor (**50**) and a stator (not shown or numbered). The rotor (**50**) has a cylindrical housing (**51**) and a plurality of blades (**52**) radially formed on an outer periphery of the cylindrical housing (**51**). Referring to **FIG. 5**, when the rotor (**50**) is driven to rotate, air flows along a top surface (**53**) of the cylindrical housing (**51**) and through the blades (**52**). As indicated by the arrows, there are airflows formed in the fan and discharged by the blades (**52**).

[0005] Because the top surface (**53**) has resistance that reduces a speed the airflow, a high-speed cooling fan must use a high power motor and needs an excessive size in relation to the task to be done. However, the cooling fan usually is fitted in a computer which provides a limited space for the cooling fan, so that it is difficult to increase the size of the fan.

[0006] Therefore, the invention provides an improved cooling fan to mitigate and/or obviate the aforementioned problems.

### SUMMARY OF THE INVENTION

[0007] The main objective of the invention is to provide a cooling fan that can reduce a resistance to the airflow through the fan and provide an appropriate airflow speed without need for an excessively-sized fan.

[0008] Other objects, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0009] **FIG. 1** is a perspective view of a cooling fan in accordance with the invention;

[0010] **FIG. 2** is a top view of the cooling fan of the invention;

[0011] **FIG. 3** is a cross sectional view of the cooling fan of the invention;

[0012] **FIG. 4** is a top view of a conventional cooling fan; and

[0013] **FIG. 5** is a cross sectional view of the conventional cooling fan in **FIG. 4**.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0014] Referring to **FIG. 1**, a cooling fan in accordance with the invention includes a rotor (**10**) and a stator (not shown or numbered) received in the rotor.

[0015] The rotor (**10**) is composed of a cylindrical housing (**11**) and a plurality of blades (**14**). The cylindrical housing (**11**) has an outer periphery (**12**) and a top surface (**13**). The blades (**14**) are radially formed on the outer periphery (**12**). The blades (**14**) each have a cambered upper surface (not numbered) formed thereon. An identical plurality of cutouts (**131**) is defined at the edge of the outer periphery (**12**) and top surface (**13**) and between adjacent blades (**14**) respectively.

[0016] Referring to **FIGS. 2 and 3**, the cutouts (**131**) each have a triangular shape inclined outwards and downwards from the center of the top surface (**13**). Thus, the circumferential portion of the top surface is lower than the central portion of the top surface (**13**). When the rotor (**10**) is rotated, air above the top surface (**13**) can flow through the cutouts (**131**) and the blades (**14**) as indicated by arrows in **FIG. 3**. An air intake of the cooling fan of the present invention is higher than that of the conventional cooling fan of the same size. Furthermore, a resistance to the airflow through the cooling fan is small and a wind generated by the cooling fan has a high speed.

[0017] It is to be understood, however, that even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

What is claimed is:

1. A cooling fan being composed of a rotor (**10**) and a stator received in the rotor (**10**), wherein the rotor (**10**) comprises

a cylindrical housing (**11**) with an outer periphery (**12**) and a top surface (**13**), the cylindrical housing (**11**) having a plurality of cutouts (**131**) defined at the edge of the outer periphery (**12**) and the top surface (**13**) and inclined outwards and downwards from the center of the top surface (**13**); and

a plurality of blades (**14**) radially formed on the outer periphery (**12**) of the cylindrical housing (**11**) and respectively between adjacent cutouts (**131**).

2. The cooling fan as claimed in claim 1, wherein the blades (**14**) each have a cambered upper surface formed thereon.

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