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2,540,136

CENTRIFUGAL BLOWER

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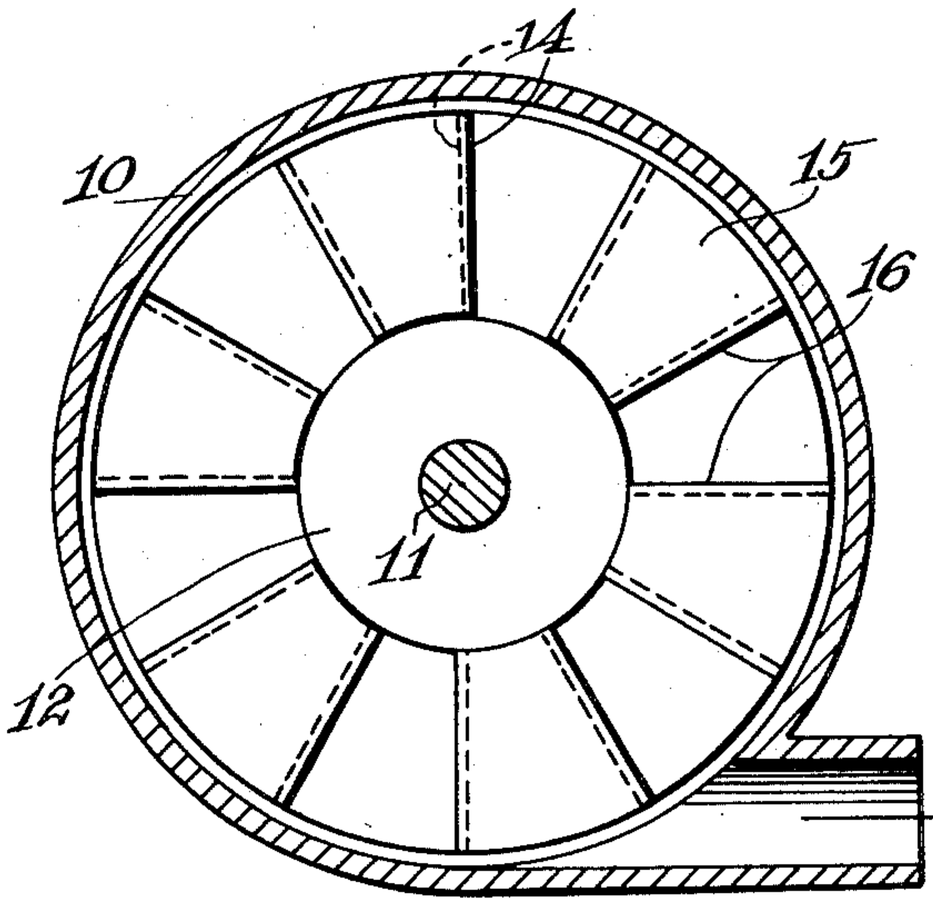

FIG. 1

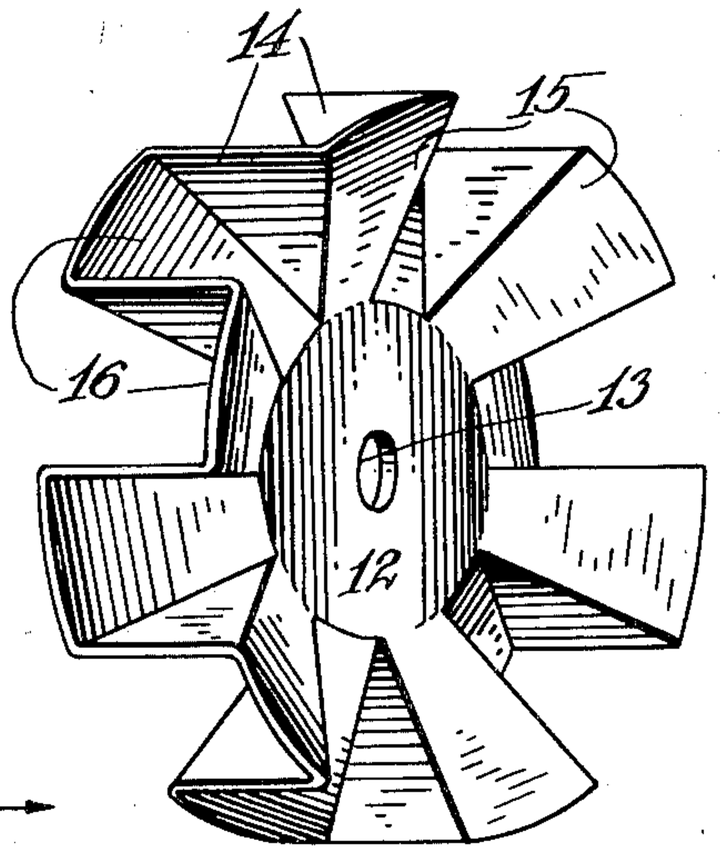

FIG. 2

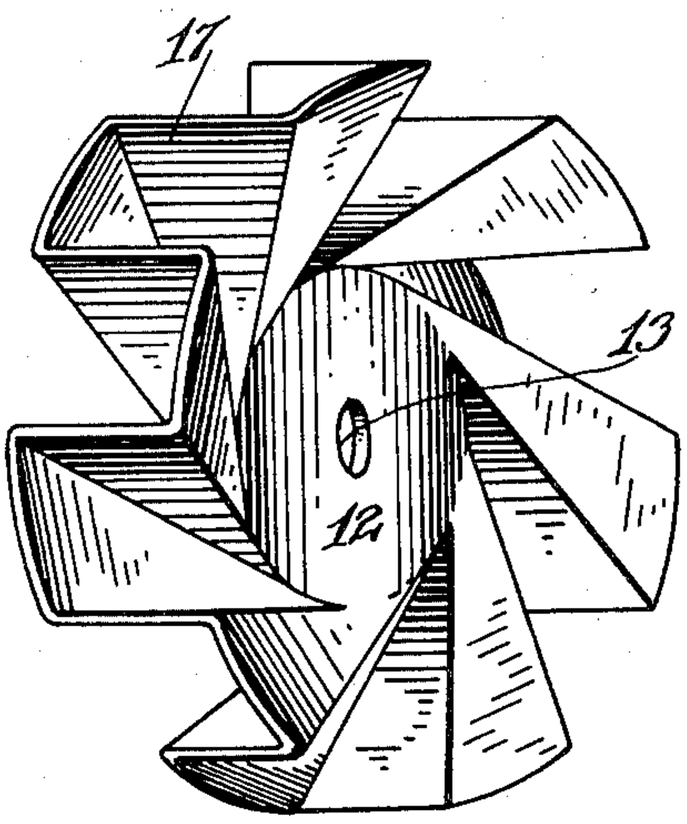

FIG. 3

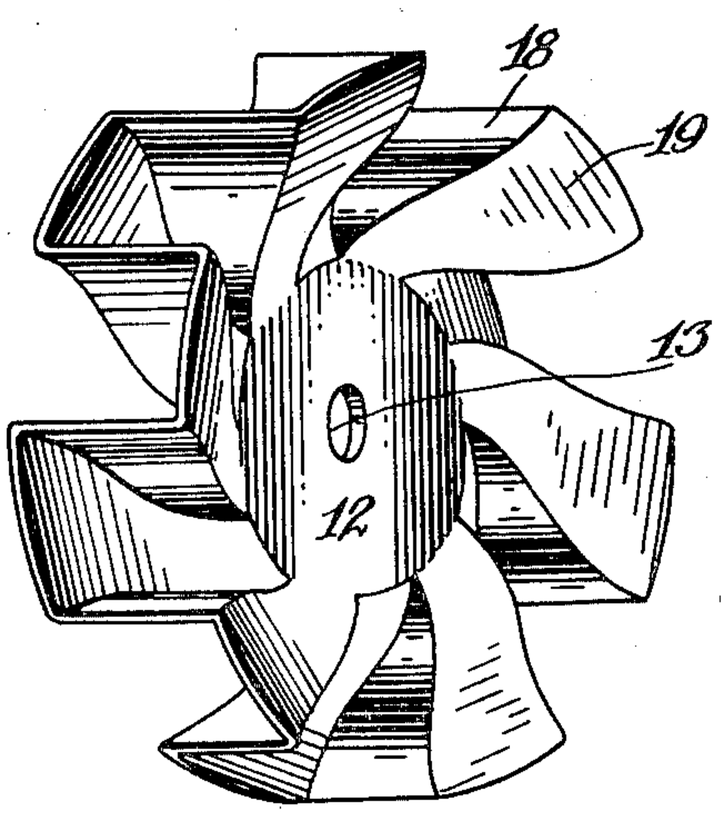

FIG. 4

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CENTRIFUGAL BLOWER

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6 Claims. (Cl. 230—134)

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My invention relates to centrifugal blowers, and more particularly to impellers for the same, and one object is to provide an impeller whose blades are extended with chambers effective to separate the radial air currents generated by the impeller and minimize their tendency to develop back pressure.

A further object is to interconnect the impeller blades in a manner to form a continuous undulating wall which renders the blades extremely rigid without complicating the construction of the impeller.

Another object is to provide the impeller with a series of inter-blade chambers which face alternately on opposite sides, each chamber increasing in capacity in radial direction and promoting the passage of a greater volume of air to the zone of discharge without a greater power requirement.

A still further object is to design the novel impeller in a manner to be cast or pressed in one piece of metal or plastic material, making its construction simple and its manufacture economical.

With the above objects in view, and any others which may suggest themselves from the description to follow, a better understanding of the invention may be had by reference to the accompanying drawing, in which—

Fig. 1 is a sectional view, showing the impeller installed;

Fig. 2 is a perspective view of the impeller; and

Figs. 3 and 4 are similar views of modifications.

In accordance with the foregoing, specific reference to the drawing indicates a typical centrifugal blower housing at 10, it being understood that such housings are open around the center shaft 11 for the entrance of air.

The improved impeller is formed as a disc 12 in the central region, such disc having an opening 13 to receive the shaft 11; and suitable means (not shown) are employed to secure the disc 12 rigidly on the shaft in a position midway between the side walls of the housing.

The disc 12 is extended radially with a series of blades 14 directed transversely of the path of impeller rotation, the form of each blade being that of an isosceles triangle with its vertex meeting the periphery of the disc 12. The blades are connected on alternate sides by walls 15, creating a rotary series of chambers 16 which open on alternate sides of the impeller.

The construction just described facilitates the formation of the impeller by casting or pressing in one piece, making the impeller extremely

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simple, smooth and economical to produce. Further, the formation of the chambers separates the air currents entering into the zone of the blades so that these currents do not conflict or overlap to create back pressure. Further, the outward deflection of the walls 15 from the plane of the disc 12 increases the capacity of the chambers 16, promoting the passage of a greater volume of air without requiring a corresponding increase in the power to drive the impeller. Further, the chambers operate to lead the incoming air currents radially, minimizing turbulence and slippage. Finally, it is apparent that the impeller is a compact unit whose plain surface promotes the passage of air currents with a negligible friction factor.

While Fig. 1 shows the main or preferred form of the impeller, it will be apparent that the same is susceptible of minor changes or modifications. Thus, Fig. 2 shows a modification wherein the blades 17 are inclined from the periphery of the disc 12, while Fig. 4 shows the blades 18 and walls 19 inclined and curved in S-fashion. These modifications may retain or vary the mechanical efficiency of the impeller while lending the same more attractive form. However, they do not change or depart from the principle of the invention as covered in the appended claims.

I claim:

1. An impeller for centrifugal blowers comprising a disc forming a central portion, a series of blades extending radially of the disc in planes transverse to the path of blade rotation and walls interconnecting the side edges of the blades in alternate succession, said walls inclining outwardly of said disc.

2. An impeller for centrifugal blowers comprising a disc forming a central portion, and a series of blades extending radially of the disc in planes transverse to the path of blade rotation, the blades being of triangular form with one angle meeting the periphery of the disc, and walls connecting the sides of the blades in alternate succession to form chambers expanding in capacity in radial direction.

3. An impeller for centrifugal blowers comprising a disc forming a central portion of a series of blades extending radially of the disc in planes transverse to the path of blade rotation, and inclined walls interconnecting the blades to form an undulating blade unit around the disc, said inclined walls forming three-sided chambers expanding in capacity in radial direction.

4. The structure of claim 3, said unit being integral with the disc.

5. An impeller for centrifugal blowers comprising a disc having an opening therein, walls stamped from said disc and inclined outwardly thereof, said walls being alternately arranged on opposite sides of said disc, and blades transversely connected to said walls to form a rotary series of three-sided chambers.

6. The structure of claim 5, said walls being curved in substantially S-fashion.

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