E. GLANTZBERG.

FAN OR BLOWER.

APPLICATION FILED NOV. 4, 1916.

1,246,086. Patented Nov. 13, 1917.

Fig. 1.

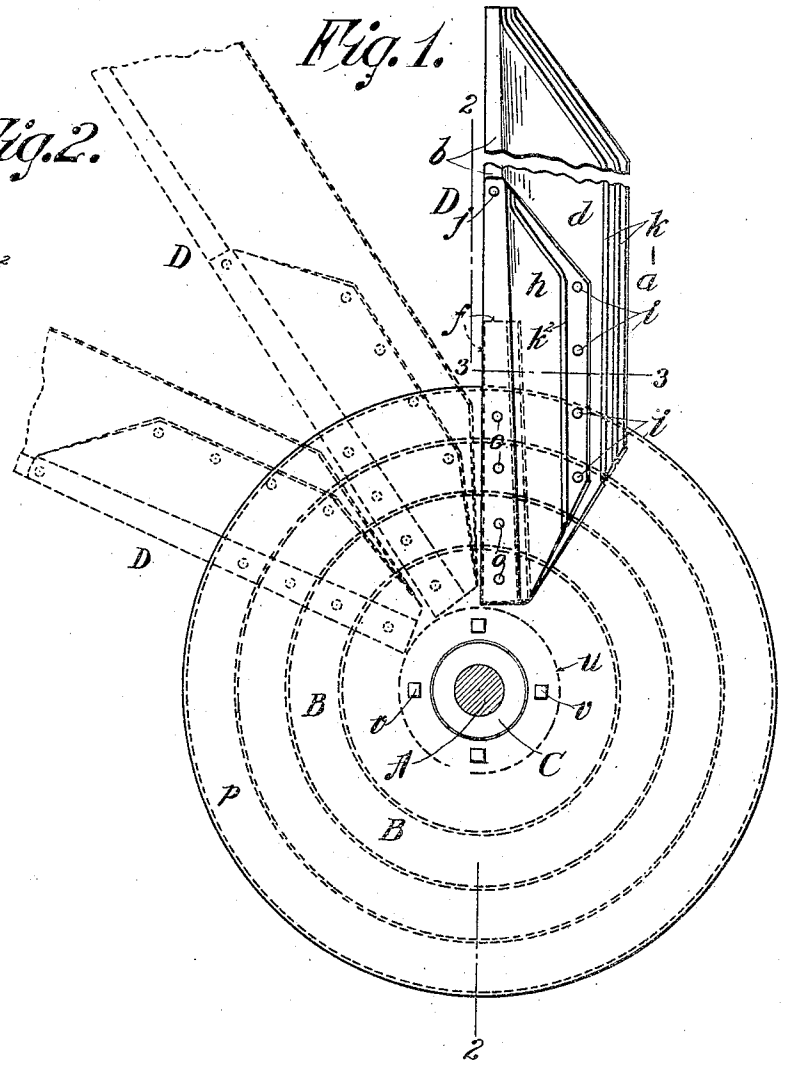


Fig. 2.

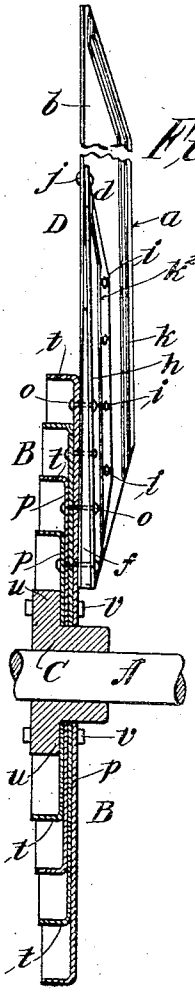


Fig. 4.

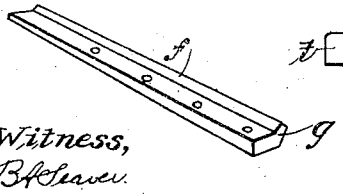
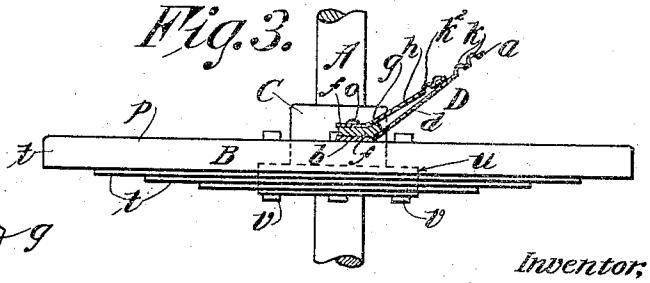


Fig. 3.



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FAN OR BLOWER.

1,246,086. Specification of Letters Patent. Patented Nov. 13, 1917.

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To all whom it may concern:

Be it known that I, ERNST GLANTZBERG, a citizen of the United States of America, and resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Fans or Blowers, of which the following is a full, clear, and exact description.

This invention relates to improvements in the rotary portion of a fan, or blower, which comprises the central shaft-carried body and radiating blades or wings, portions of which are deflected angularly to the plane of rotation.

The object of the invention is to provide a novel construction of fan blade which, while light and cheaply produced, has the capability of withstanding the leverage strains or forces which would tend to bend, distort or break it at any portion of its length, and especially at its butt end portion or shank at or near its connection with its carrying body.

Another object of the invention is to provide an improved carrying body of built up or laminated and reinforced character which while extremely strong is also exceptionally light, and is also susceptible of cheap and rapid production.

And another object is to so form, and arrange or combine the parts composing the fan blades, and those composing the body that the same fastenings employed to unite the parts of the blades, are in common to and unite the parts of the body, and also unite the blades and body to produce the revoluble unit of the fan or blower.

The invention is described in conjunction with the accompanying drawings and is set forth in the claims.

In the drawings:—

Figure 1 is a front view showing the body portion and indicating several of the blades of the fan.

Fig. 2 is a sectional elevation as taken on line 2—2, Fig. 1.

Fig. 3 is a plan and partial horizontal section as taken on line 3—3, Fig. 1.

Fig. 4 is a perspective view showing the form of cleat or spacing bar comprised in the construction of the fan blades.

In the drawings, A represents the fan carrying shaft, B the blade carrying fan body or center comprising the hub C, and D represents the blade.

Each blade comprises a sufficiently long radiating plate *a* having a comparatively narrow edge portion *b* which is oblique or angular in relation to the major portion *d* of the width of the plate.

f represents a cleat or spacing bar extending longitudinally of the plate *a* along the edge portion *b* and at the butt or inner end portion thereof.

This spacing bar is tapered in its length as shown in Figs. 2 and 4 and it has its inner edge portion *g* obliquely or angularly turned and also cross sectionally tapered.

The blades include another plate *h* considerably shorter than the plate *a* and of less width than such plate, but, however, of a length greater than that of the spacing bar; and this plate *h* is transversely obliquely or angularly shaped to conform to the cleat on the side thereof opposite the location of the first plate *a*.

The plate *h* is transversely extended inclinningly toward, and has its marginal portion in contact on, the first plate and is secured by rivets *i* or other equivalent fastenings to such plate.

The plate *h* has its outer end portion beyond the spacing bar *f* extended at a slight inclination to merge to contact on the flat edgewise portion *b* of the plate *a*, and is secured by rivets *j* or equivalent fastenings thereto.

The plate *a* is longitudinally corrugated to form ribs *k*, and the plate *h* has one or more ribs k^2 struck up in the length thereof.

The edge portions of the plates *a* and *b* and the interposed spacing bar *f* are firmly united by the rivets *o* and to which further reference will be had.

The fan body or center B is made up of a plurality of centrally apertured thin metal disks or annuli *p* of successively increasing diameters, as particularly shown in Fig. 2 and in facewise adjoined relations, all having the central apertures therein of the same diameter to fit about the hub C, and the said different sized disks have, all, at the same side thereof, angularly turned marginal flanges *t t* whereby each of the disks is rendered of a cup shape.

The disks *p p*,—to form the laminated or built up center of the fan, which while light is extremely strong,—are, as here shown, fastened one to the next by the same rivets *o o* which unite the plates *a* and *b* and the spacing bar *f* of the blades.

Thus, employing a minimum number of

fastenings, the same rivets *o* form uniting means for the component parts of the blade, form uniting means for the component parts of the thin metal built-up body B, and form also the means for uniting the blades and body.

The hub C has a shoulder forming flange *u* against which the centrally apertured blade carrying body bears; and the body is secured to the hub by bolts *v v* which pass through the body near the central aperture therein and the said flange.

It will be apparent from the foregoing description and the accompanying illustrations that the revoluble portion of a fan or blower is of very light and strong construction and capable of being produced with entire practicability at comparatively small cost; and the blades, especially, when revolved at higher than the usual speed, are not liable to breakage or distortion especially at their portions adjoined to or adjacent the central body.

While in the foregoing specification the fan has been described exactly as the same has been constructed and extensively used, it is possible, as manifest, to make departures in minor respects from the exact forms and constructions shown within the purview of my claims.

I claim:—

1. In a rotary fan, a circular rotatable body, and outwardly extending blades secured thereto, each consisting of a radiating plate, a cleat or spacing bar extending longitudinally of the plate along one edge and at the butt end portion thereof, another plate extending along the cleat and transversely inclined toward, and marginally in contact with the first plate, and means for securing the said plates and spacing bar together.

2. In a rotary fan, a circular rotatable body, having blades secured thereto each consisting of radiating plates, a cleat or bar extending longitudinally of the plate along one edge and at the butt end portion thereof, and tapering outwardly in its length, another plate extending along on the cleat and transversely inclined toward, and marginally in contact with the first plate, and means for securing the said plates and spacing bar together.

3. In a rotary fan, a circular rotatable body, and blades secured thereto, each consisting of a radiating plate, having cross sectionally angular portions, a cleat or spacing bar extending longitudinally of the plate along one edge and at the butt end portion thereof, another cross sectionally angular plate extending along the cleat and transversely inclined toward, and marginally in contact on and secured to the first plate, one or both of said plates being longitudinally corrugated, and means for securing the said plates and spacing bar together.

4. In a rotary fan, a circular rotatable body, having blades secured thereto each consisting of radiating plates, a cleat or bar extending longitudinally of the plate along one edge and at the butt end portion thereof and tapering outwardly in its length, another plate extending along on and endwise beyond the cleat and also transversely inclined toward, and marginally in contact with the first plate, securing rivets passing through the said plates and cleat, rivets fastening the marginal portion of the second plate to the first plate, and a fastening connecting the outer end of the second plate to the first plate.

5. In a rotary fan, a circular rotative body, and outwardly extending blades secured thereto, each consisting of a radiating plate having a comparatively narrow edge portion oblique to the major portion of the width of the plate, a cleat or spacing bar extending longitudinally of the plate along the edge and at the butt end portion thereof, and having its inner edge portion obliquely turned, another plate transversely obliquely shaped to conform to the cleat and laterally extended inclinedly toward, and having its marginal portion in contact on, the face of the first plate, and means for fastening the edge portion of the plates and spacing bar together, and fastenings connecting the marginal portion of the second named plate with the first plate.

6. In a rotary fan, a circular rotative body and outwardly extending blades secured thereto, each consisting of a radiating plate having a comparatively narrow edge portion oblique to the major portion of the width of the plate, an endwise tapering cleat or spacing bar extending longitudinally of the plate along the edge and at the butt end portion thereof, and having its inner edge portion obliquely turned and cross sectionally tapered, another plate longer than the cleat, transversely obliquely shaped to conform to the cleat transversely extended inclinedly toward and having its marginal portion in contact on and secured to the first plate, and having its outer end portion merging to contact on the first plate and secured thereto, and means for fastening the edge portion of the plates and cleat together.

7. In a rotary fan, a hub, a series of centrally apertured cup-shaped thin metal plates of successively increasing diameters having the plane annular portions of the relatively outer ones facewise overlapped on and secured to the plane annular portion of the one next therewithin, to form a circular built up and reinforced fan body, means for securing such body on the hub, and radiating blades affixed to said body.

8. In a rotary fan, a plurality of centrally apertured thin metal disks or annuli of successively increasing diameters, in face-

wise adjoined relations, and rivets fastening them together, and said different sized disks having angularly turned marginal flanges, concentric one with another, and radiating blades affixed on the plane faced side of the united disks.

9. In a rotary fan, a plurality of centrally apertured thin metal disks or annuli of successively increasing diameters, in facewise adjoined relations, all having the central apertures therein of same diameter, and rivets fastening them together, to form a fan body, said different sized disks having angularly turned marginal flanges, arranged concentrically one within another, and radiating blades affixed on the plane faced side of the united disks, a central hub,—about which the centrally apertured body, formed by the adjoined disks, fits,—having a shoulder forming flange against which such body bears, and securing bolts passing through the body and said flange.

10. In a rotary fan, in combination, a plurality of centrally apertured thin metal disks or annuli of successively increasing diameters, in facewise adjoined relations, all having the central apertures therein of the same diameter, to form a fan body, said different sized metallic disks having angularly turned marginal flanges, arranged concentrically one within another, and radiating blades arranged on the plane faced side of the adjoined disks, each comprising a comparatively long plate, a spacing bar on the butt end portion of such plate and another plate, spaced by said bar and transversely extended to contact on and secured to the first plate, rivets passing through and uniting said plates, the interposed bar, and said disks, a central hub,—about which the centrally apertured disk formed body fits,—having a shoulder forming flange against which such body bears, and securing bolts passing through the body and said flange.

Signed by me at New York city, N. Y., in presence of two subscribing witnesses.

ERNST GLANTZBERG.

Witnesses:
FRANK MAST,
F. A. DEESEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."