May 15, 1928. 1,669,951

R. R. STITT

FLYWHEEL AND FAN CONSTRUCTION

Filed Jan. 7, 1926 2 Sheets-Sheet 1

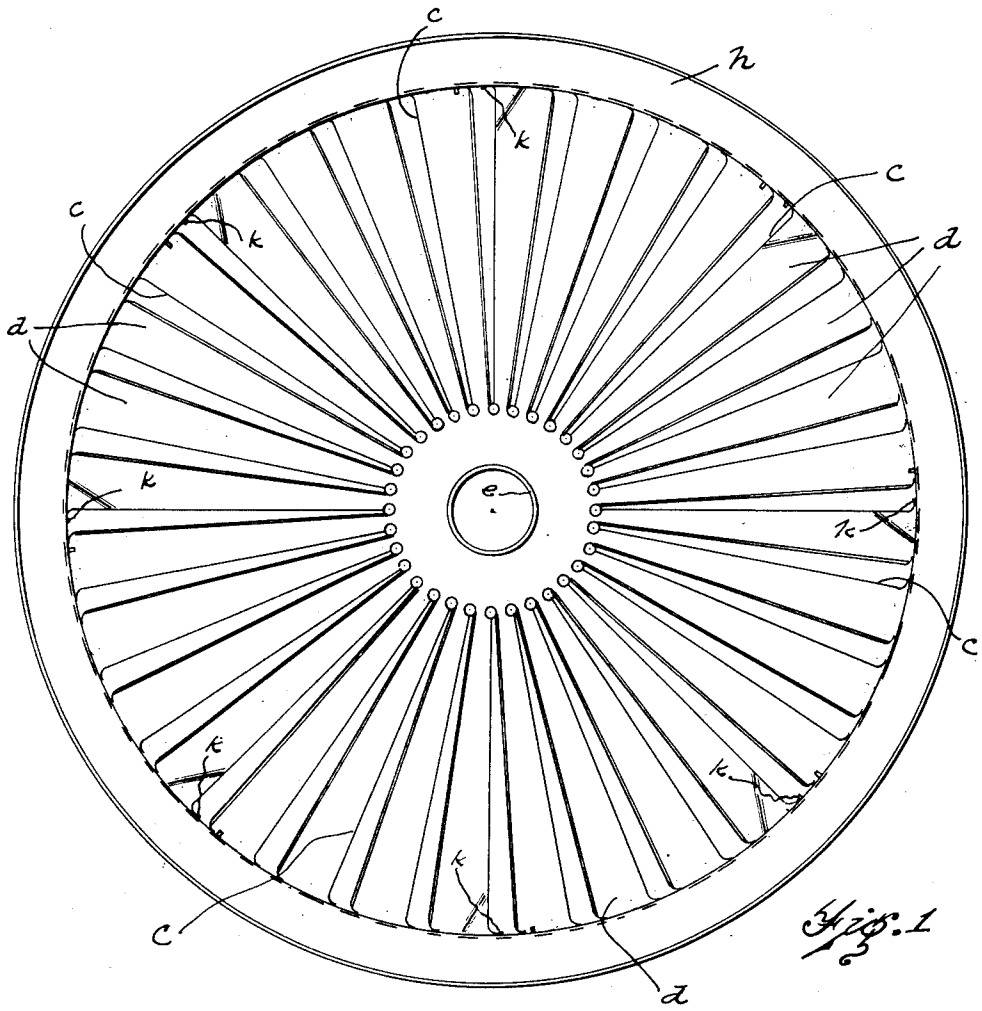


Fig. 1

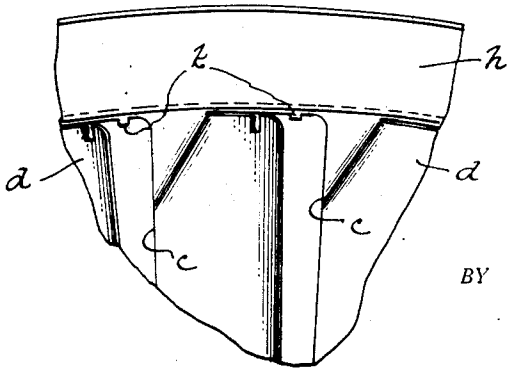


Fig. 2

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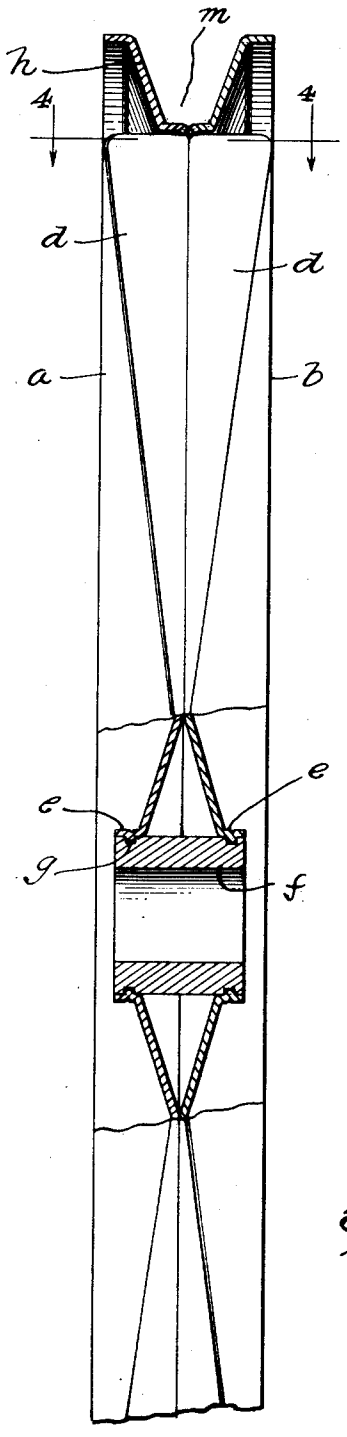


Fig. 3

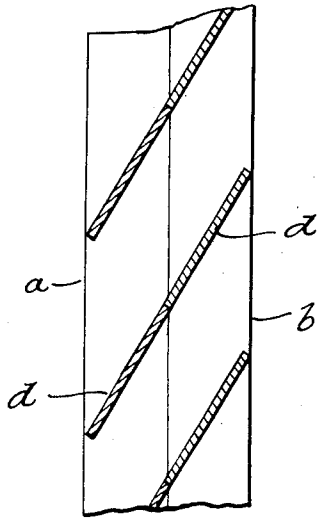


Fig. 4

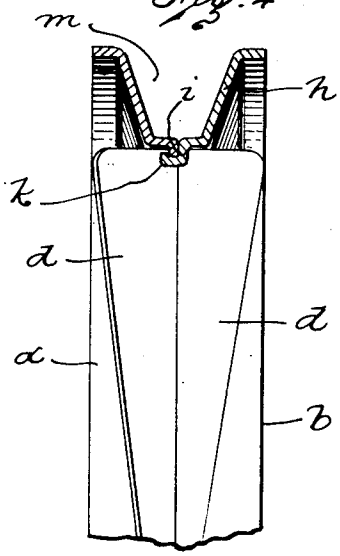


Fig. 5

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UNITED STATES PATENT OFFICE.

ROSCOE R. STITT, OF DETROIT, MICHIGAN, ASSIGNOR TO STITT REFRIGERATION COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

FLYWHEEL AND FAN CONSTRUCTION.

Application filed January 7, 1926. Serial No. 79,824.

This invention relates to a combined fly wheel and fan construction, and has for its object a construction which is particularly useful in quantity production where a uniform product is desired, and more particularly the arrangement by which the article is pressed out to form identical halves which may be assembled together to form the completed article. With this construction I am able to form a greater number of blades than would be possible where a single sheet of stock is used, thereby obtaining a fan which produces a better circulation of air.

In the drawings:

Fig. 1 is a side elevation of my improved form of fan and fly wheel construction.

Fig. 2 is an enlarged elevation of a portion of the same.

Fig. 3 is a vertical section through the same taken at right angles to the plane of the fan blades.

Fig. 4 is a section taken on the line 4—4 of Fig. 3, showing the arrangement of the fan blades.

Fig. 5 is a detailed sectional view showing how the two halves may be secured together.

This combined fly wheel and fan consists of a pair of sheet metal wheel sections *a* and *b*, each section being punched out and pressed to form one half of the article. The wheel sections are preferably slitted radially as at *c* (Fig. 2), each end of the slit being cut back a ways at one side so as to permit the metal adjacent said slit to be struck out by a suitable press operation to form radial blade sections *d*, which are positioned at an angle to the plane of the wheel section. Obviously these blades need not be radial, but by constructing them radially I find that one die will do for both wheel sections, otherwise it would be necessary to use two dies, one for each wheel section. The angularity or pitch of these blade sections is clearly shown in Fig. 4. The central portions of these wheel sections are flanged as at *e* and may be secured to a suitable hub *f* by punching or squeezing a part of the metal of the flanges *e* into the grooves or recesses *g* carried by the hub. The outer peripheral edges of these wheel sections are angularly flared as at *h*.

These wheel sections may be secured together back to back by any suitable means, but I have here shown one of the wheel sections provided with tongues *i* (see Fig. 5), which are arranged to be clinched over the wheel section as at *k*, thereby tightly securing these two wheel sections together back to back. This slot and tongue arrangement also positions the two wheel sections with respect to each other so that the blade sections *d* of each wheel section are matched together as shown in Fig. 4 to provide fan blades, the sections of each blade lying in the same common plane.

The flared flanges *h* provide a groove *m* around the peripheral edge of the article when the two wheel sections are assembled together in which a driving belt may engage for the purpose of driving the fly wheel and fan in rotation. It is obvious that the general shape of these blades may be varied within wide limits and also it is not absolutely necessary that a groove *m*, such as shown in the drawings, be used, as any kind of driving surface may be utilized, depending upon the type of belt drive found to be most efficient.

This construction makes a very good fly wheel, and also makes a very efficient fan. A problem that confronts one in a refrigerator unit of this kind is to get a relatively large volume of air with a relatively small shaft speed. This is accomplished in my fan construction by reason of the relatively great breadth of the fan blades. If one were to use a single disk out of which to stamp the fan blades in order to get a relatively large number of blades such as desirable, it would be necessary to make the blades relatively narrow. However, by using two disks and matching the blades together, I get not only the desired number of blades but they are each of relatively great width so as to be able to move a relatively great volume of air at slow speed. At the same time, by using the double disk construction I am enabled to provide two rim flanges which afford a pulley groove by which the fan may be driven.

What I claim is:

1. A device for the purpose specified, which comprises a pair of sheet metal wheel sections secured together back to back and which are provided with pressed out blade sections in planes positioned angularly to the plane of the wheel, said radial blade

sections arranged to be matched together to form fan blades.

2. A device for the purpose specified, which comprises a pair of sheet metal wheel sections secured together back to back and which are provided with bent out blade sections and with angularly flared flanges around their peripheral edges, said blade sections and flared flanges arranged to be matched together to form a wheel with fan blades and a circumferential pulley groove.

3. A device for the purpose specified, which comprises a pair of sheet metal wheel sections each slotted radially and having the metal adjacent said slots bent up angularly to form radial blade sections, the planes of which are disposed angularly to the plane of the wheel, said wheel sections secured together back to back to match the blade sections of one wheel section with the blade sections of the other wheel section to form fan blades positioned angularly to the plane of the wheel.

4. A device for the purpose specified, which comprises a pair of sheet metal wheel sections each provided with a plurality of blades sections in a plane angularly disposed with respect to the plane of the wheel section, one of said wheel sections provided with a plurality of tongues arranged to be clinched over the other wheel sections to secure said wheel sections together back to back and to position said wheel sections with respect to each other in order to match said blade sections together to form fan blades, whose sections lie in the same common plane.

5. A fly wheel of sheet metal construction consisting of two identical wheel sections and provided with pressed out fan blades.

6. A flywheel of sheet metal construction consisting of two identical wheel sections each of which is provided with pressed out radial fan blades.

7. A flywheel of sheet metal construction consisting of two identical wheel sections each of which is provided with pressed out fan blades and a belt groove around the peripheral edge of said wheel which is formed by cooperating rim portions of the sections.

8. A fan made of two disks cut and pressed to form blade portions and matched together to provide a relatively large number of blades of relatively great width by reason of matching the blade portions of each disk together in alignment to form the individual blade.

9. A fan, comprising a pair of circular disks slotted from the center out toward the periphery and distorted to provide matched-together fan blade portions which provide a relatively great number of fan blades of relatively great width.

10. In a fan, a sheet metal disk cut near the center outwardly and distorted to provide a plurality of obliquely disposed fan blades the edge of the disk being flared so as to act as one wall of a belt groove.

11. A fan, comprising a pair of substantially circular disks that are cut from the center out toward the periphery and the metal intervening between the cuts obliquely distorted while the metal of the two disks along the periphery is flanged outwardly, the said two disks being fitted together with the distorted portions aligned to form blades of relatively large width and the fan's peripheral portion matched together to form a belt groove.

12. In fan construction, a one-piece member including blades, annular inner and outer rim portions at opposite ends of the blades, and an annular hub attachment portion integral with the inner rim portion, said hub attachment portion comprising an annular leg flanged at its edge.

13. An air circulating fan formed of two discs of sheet metal secured together in concentric relation, and a plurality of radial blades struck out from the respective discs, the latter being disposed with the openings made in the discs in forming the blades in register.

14. An air circulating fan formed of two discs of sheet metal secured together in concentric relation, and a plurality of radial blades struck out from each disc, said discs being disposed with the openings made therein in forming the blades in register and with the blades in the respective discs in alignment.

15. An air circulating fan and fly-wheel formed of two discs of sheet metal secured together in concentric relation, a plurality of radial blades struck out from the respective discs, the latter being arranged with the openings made in the discs in forming the blades in register, and means at the peripheries of the discs whereby the discs may be rotated.

16. An air circulating fan and flywheel formed of two discs of sheet metal secured together in concentric relation, a plurality of radial blades struck out from the respective discs, the latter being arranged with the openings made in the discs in forming the blades in register, and means providing a channel at the peripheries of the discs to receive a driving belt.

17. An air circulating fan formed of two discs of sheet metal placed one against the other in concentric relation, a plurality of radial blades struck out from the respective discs, the latter being arranged with the openings made in the discs in forming the blades in register, and a hub member extending through the centers of the discs and being secured thereto.

18. An air circulating fan formed of two discs of sheet metal placed one against the other in concentric relation and having the

central portions flared outward in opposite directions, a plurality of radial blades struck out from the respective discs, the latter being arranged with the openings made in forming the blades in register, a hub member extending through the centers of the discs and having grooves to receive the edges of the flared portions, and means for holding the hub from rotation with respect to the discs.

In testimony whereof I have affixed my signature.

ROSCOE R. STITT.