Feb. 11, 1930. B. FUHRER 1,746,997

COMPOUND VANE FAN

Filed Dec. 4, 1928 2 Sheets-Sheet 1

Fig. 1.

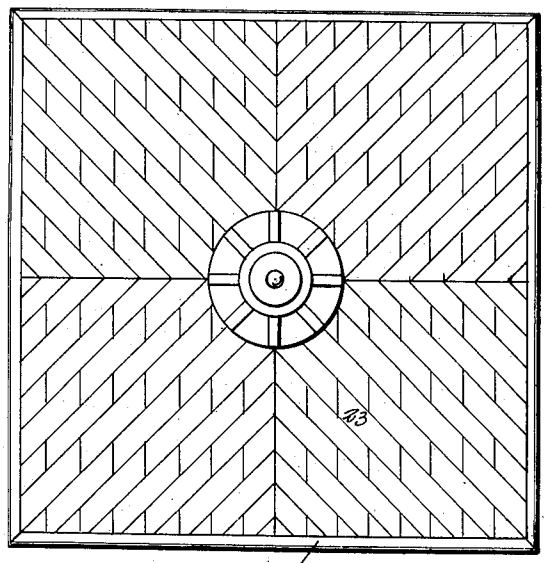
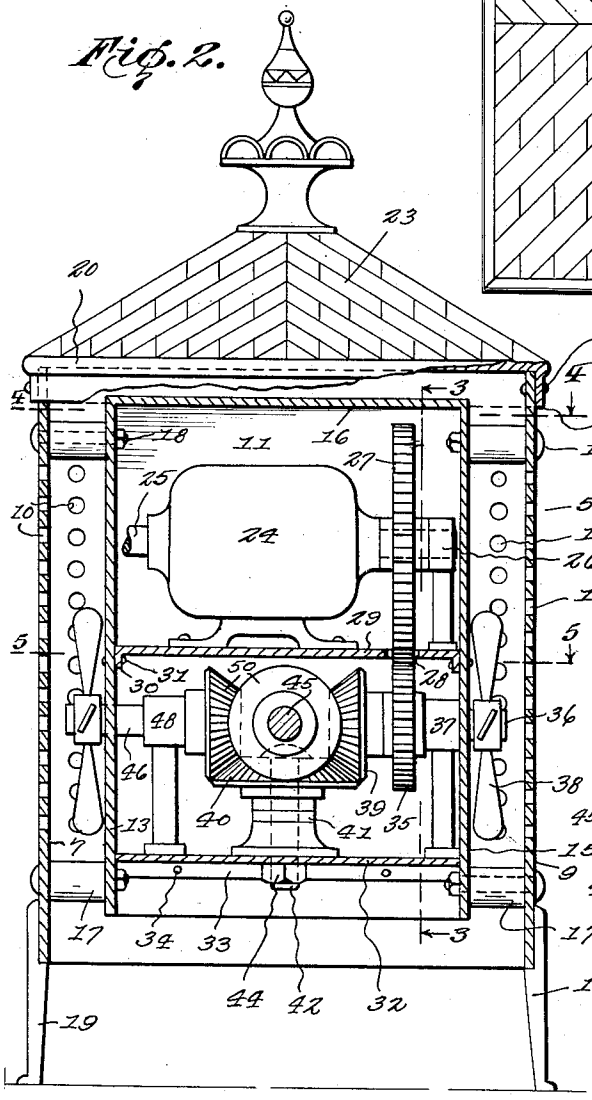


Fig. 2.



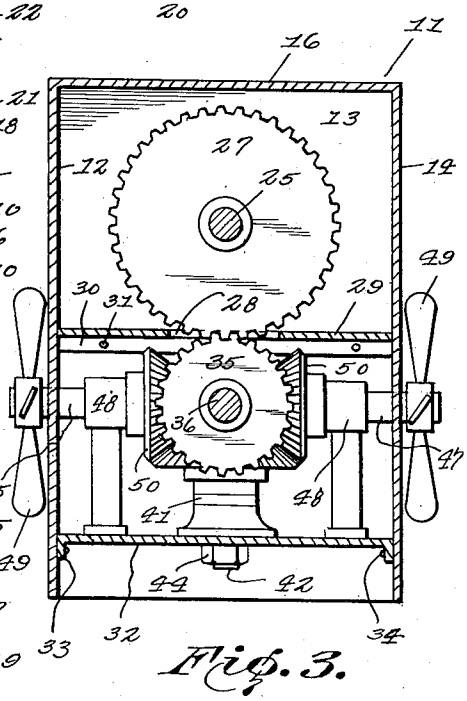


Fig. 3.

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Filed Dec. 4, 1928 2 Sheets-Sheet 2

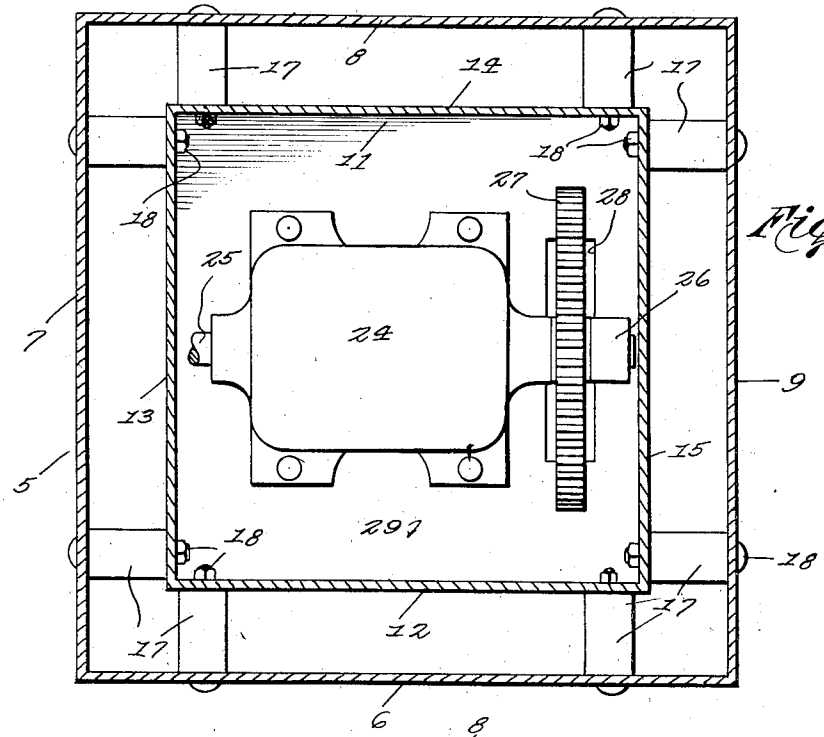


Fig. 4.

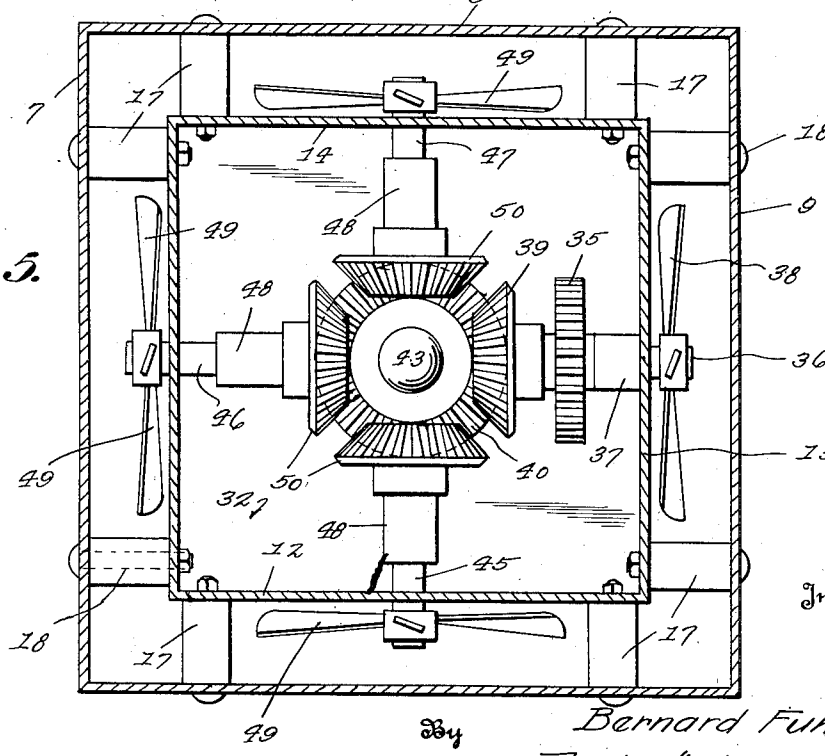


Fig. 5.

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Patented Feb. 11, 1930 1,746,997

UNITED STATES PATENT OFFICE

BERNARD FUHRER, OF NEW YORK, N. Y.

COMPOUND VANE FAN

Application filed December 4, 1928. Serial No. 323,726.

The subject matter of the present invention relates generally to fans, and the improvements are directed to a novel form of structure wherein gusts of air may be simultaneously delivered in a plurality of directions.

Those skilled in this art are aware that the present development in fans includes mechanism wherein the gust of air may be restricted to a single direction, or delivered within an arc generally larger than half a circle, the latter type being commonly known as oscillating fans.

Manifestly, fans of the oscillatory type cannot deliver a gust of air simultaneously along every degree of the arc through which they swing and so it appears that an object within this arc intermittently receives a gust of air during the travel of the fan.

It is therefore the primary object of the invention to produce a device of the above mentioned character wherein a constant gust of air may be delivered from a plurality of points during the operation of the fan, to the end that all points positioned about the device may receive the cooling breezes simultaneously and constantly as desired.

Another object is to provide a novel form of housing for the operative parts of the device wherein rigidity of structure and the facility of assembling and removal of said parts are paramount features.

Another object of the invention is the production of an outer casing which is attractive and ornamental in appearance, and further including a plurality of apertures or perforations to permit the escape of the gusts of air and further to serve as baffling means in the distribution of the air from the fans.

A further object is to provide a structure of the above-mentioned caliber wherein the housing member may be maintained in removable spaced relation within the casing, said housing member including removable supports for certain operative parts of the device wherein said parts may be separately removed or assembled within said housing, or whereby said housing and its contained mechanism may be removed and assembled within the casing as a unit.

With these objects in view, together with others which will appear as the description proceeds, the invention resides in the novel formation, combination, and arrangement of parts, all as will be described more fully hereinafter, illustrated in the drawings, and particularly pointed out in the claims.

In said drawings:

Fig. 1 is a plan view of the device.

Fig. 2 is an elevation, with parts broken away to illustrate the housing and its contained mechanism.

Fig. 3 is a sectional view of the housing removed from the casing, and taken substantially on the line 3—3 of Fig. 2.

Fig. 4 is a horizontal sectional view, slightly enlarged, and taken on the line 4—4 of Fig. 2; and

Fig. 5 is a similar section taken on the line 5—5 of Fig. 2.

The essential parts of the device, speaking broadly, have been reduced to a minimum, in order that the article may be produced within a reasonable cost and disposed of to the consuming public at an inexpensive figure. To this end, the main casing is designated by the numeral 5, in the drawings, which in the present instance is rectangular or box-like in construction and comprises side walls 6, 7, 8 and 9, with both ends open. It will further be observed that each of said side walls are provided with a plurality of apertures or perforations 10 to permit the escape of the air, as will presently appear.

The housing, generally denoted by the numeral 11, is somewhat similar in configuration to said casing 5 and includes side walls 12, 13, 14 and 15, and a top portion 16, the bottom being left open to facilitate the assembling or removal of the mechanism therein. It will, of course, be understood that both casing and housing may be circular in cross-section, and that the showing of rectangular members is but an exemplification of one of the forms of the invention.

Upon inspection of Figs. 2, 4 and 5, it will be noted that said housing 11 is maintained in spaced relation within said casing 5 by means of sleeve members 17, which in the present example of the invention are po-

sitioned adjacent the corners and top and bottom of said housing and casing, as shown in Figs. 4 and 2 respectively, suitable fastening means 18, in the form of bolts or the like, being provided to permit the removal of the parts as desired. In view of this construction the buckling of the parts is prevented and further any pulsation or vibration of the motive parts is precluded from affecting the stability of the structure as a whole.

The open bottom of said casing 5 is spaced from an object on which the device may be placed, by means of legs 19, which permits the free circulation of air into the structure. The top of said casing is closed by a cap member 20 which has its depending flange 21 secured to the upper portion of said casing, as indicated at 22, said cap member 20 being somewhat decorative and having a transparent top 23 of varying designs.

As pointed out hereinbefore, the motive or operating parts of the device are positioned within the housing 11, said parts comprising a motor 24 having the usual connections for attachment to a source of electrical energy, one end of the shaft 25 being supported in a bearing 26 and carrying a spur gear 27, partially extending into an opening 28 formed in the top platform 29, the latter supporting both motor and bearing 26 and having oppositely disposed side flanges 30 to facilitate its attachment within the housing, as shown at 31, (see Fig. 2). I further provide a bottom platform 32 which has its oppositely arranged depending flanges 33, secured within said housing, as indicated at 34, said flanges 33 and the flanges 30 of said platform 29 being arranged at right angles to each other for assuring a binding strength to the structure, as will be readily understood.

Upon inspection of Fig. 2 it will be observed that said spur gear 27 meshes with a gear 35 carried by a stub shaft 36, rotatably mounted in bearing 37 rising from said platform 32, one end of said shaft 36 being provided with a fan 38 positioned between said housing and casing, while its other end carries a bevel gear 39 enmeshed with a horizontally disposed bevel gear 40. Said bevel gear 40 is rotatably borne by a ball-bearing support 41 secured to said platform 32 by means of a bolt 42 or the like, the head portion 43 thereof and the nut 44 cooperating to maintain the parts in stable association.

Obviously the rotation imparted to said bevel gear 30 by the gears and shafts aforesaid, is conveyed to said gear 40, and it is proposed to transport the revolutions of the latter to other enmeshed beveled gears, and on this point reference should be had to Fig. 5 wherein it will be observed that shafts 45, 46 and 47 extend radially from said gear 40, each being supported by bearings 48, rising from platform 32, the outer ends of each of the shafts carrying a fan 49, arranged between said housing and casing, while their inner ends each carry a bevel gear 50, each meshing with said bevel gear 40. Thus the rotation of the latter is communicated to the said shafts and the several fans are caused to rotate in unison to produce a gust of air in their respective directions.

In assembling the operative parts within the housing 11, said motor 24 and bearing 26 are secured to said platform 29, whereupon the latter is pushed upwardly within said housing until the holes in the flanges 30 register with the predrilled holes in said housing and then the fastening means 31 may be applied. After the motor has been placed, then platform 32, which has been equipped, as shown, is also and similarly placed.

In view of the open bottom of said casing 5 and also since it is spaced from a supporting object by means of legs 19, an abundance of air is supplied to the casing for expulsion by means of said fans mounted between said casing and housing. The apertures 10 permit the escape of the air in the proper directions and the side walls of the casing serve to provide baffling means to distribute the ejectment of the air through said apertures.

While the present is a disclosure of the preferred embodiment of the invention, it is to be understood that the same is not limited thereto, as various changes in the minor details of construction, proportion and arrangement of parts may be resorted to without departing from the spirit of the invention as defined in the appended claims.

I claim:

1. A device of the character described comprising a perforated casing having an open bottom, a housing within and spaced from said casing, a plurality of angularly disposed fans positioned between said casing and said housing and a single source of power mounted in said housing for operating said fans simultaneously, said perforated casing serving to baffle and distribute the currents of air drawn in through said open bottom before passage through said perforated casing.

2. A device of the character described comprising a perforated casing having an open bottom, a housing within and spaced from said casing, a plurality of angularly disposed fans positioned between said casing and said housing, a motor arranged in said housing, a removable platform for supporting said motor, said platform being positioned within said casing, a second platform positioned below said first-named platform, a bevel gear rotatively borne by said second platform, and a plurality of bevel gears operatively connected to said fans and meshing with said bevel gear and adapted to be driven by said motor.

In testimony whereof I affix my signature.

BERNARD FUHRER.