Dec. 14, 1926. 1,610,360

G. CLEMENTS

MULTIPLE UNIT FAN

Filed March 10, 1925 3 Sheets-Sheet 1

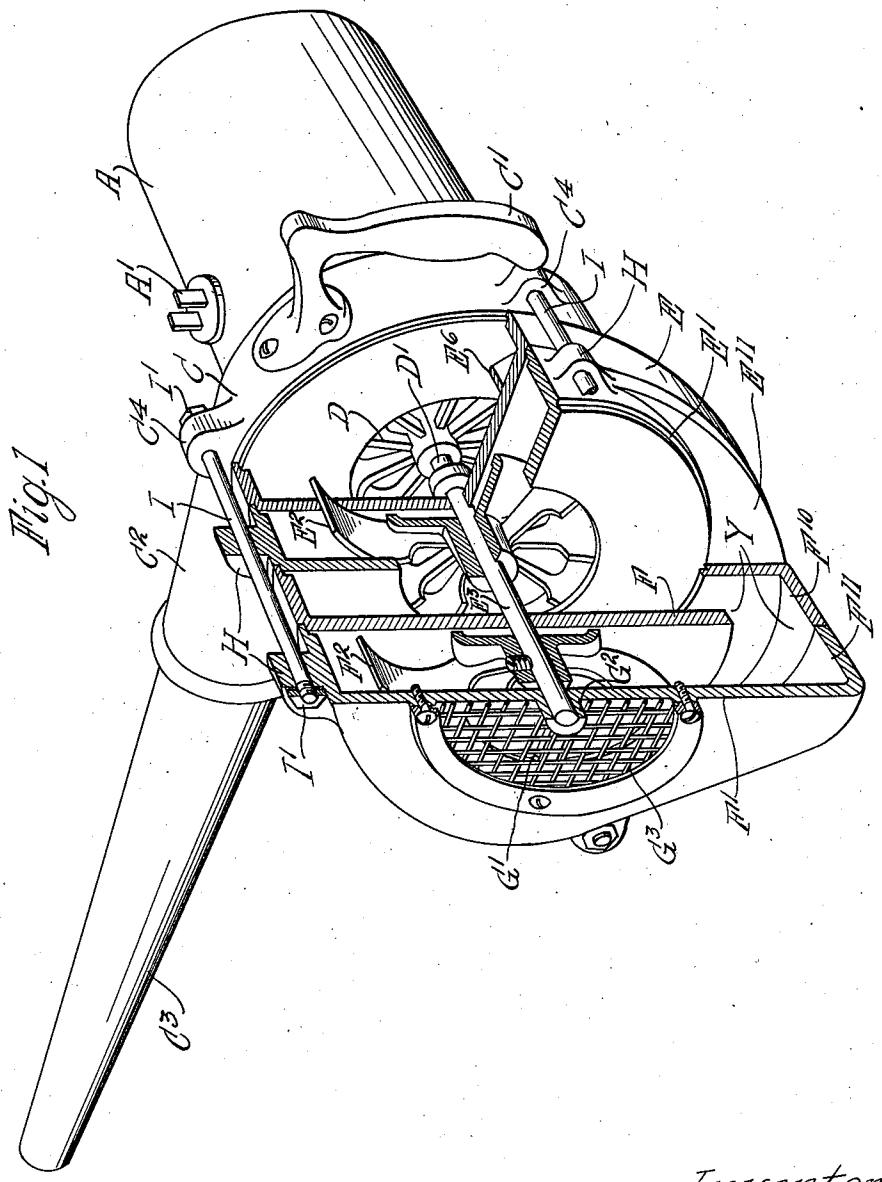


Fig. 1

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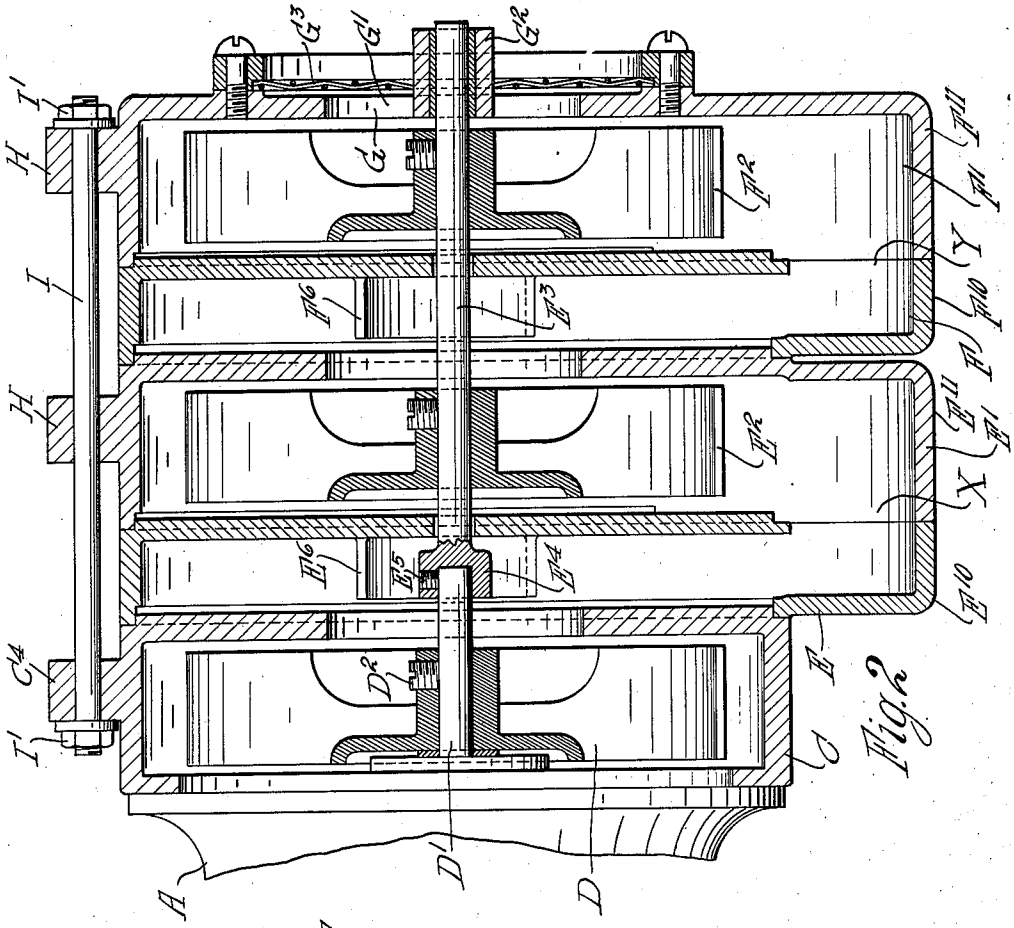


Fig. 2

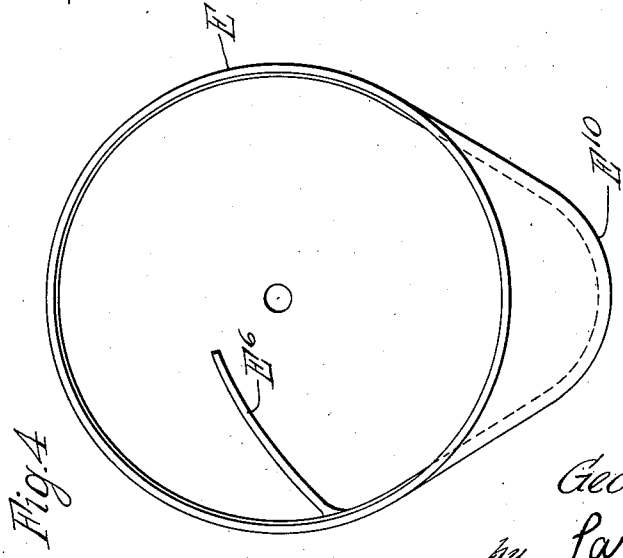


Fig. 4

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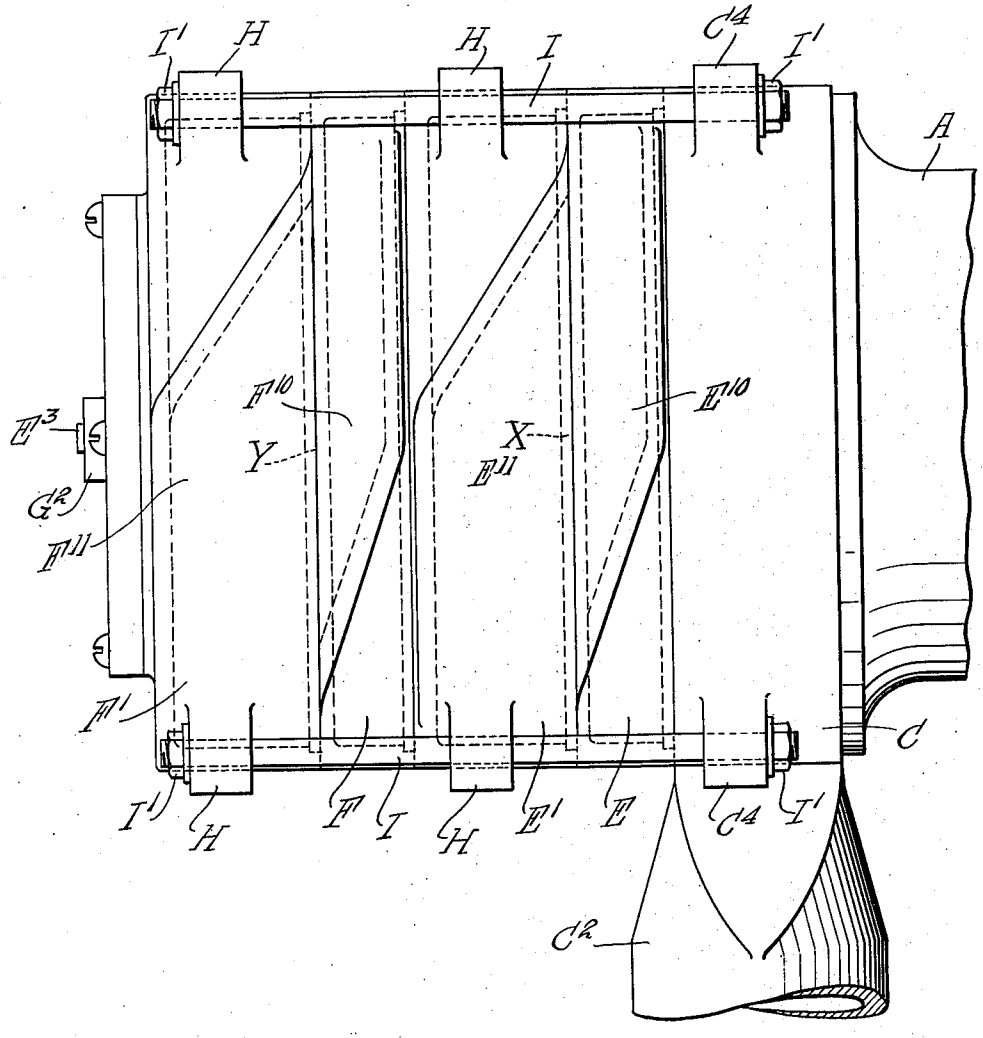
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MULTIPLE UNIT FAN

Filed March 10, 1925 3 Sheets-Sheet 3

Fig. 3



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Patented Dec. 14, 1926. 1,610,360

UNITED STATES PATENT OFFICE.

GEORGE CLEMENTS, OF CHICAGO, ILLINOIS, ASSIGNOR TO CLEMENTS MFG. CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MULTIPLE UNIT FAN.

Application filed March 10, 1925. Serial No. 14,417.

This invention relates primarily to a portable blower and particularly to a motor driven blower adapted to be provided with a plurality of fans so as to deliver air in increased velocity. One object is to provide in a portable blower means for producing a rapidly moving current of air. Another object is to provide in such a blower means whereby additional fans may be added at the will of the user so as to increase or vary the velocity of the current produced. Other objects will appear from time to time throughout the specification and claims.

My invention is illustrated more or less diagrammatically in the accompanying drawings, wherein:

Figure 1 is a perspective of the blower with parts in section;

Figure 2 is a vertical cross section through the composite fan casing;

Figure 3 is a view looking upward at the bottom of the fan casing; and

Figure 4 is a detail view of one of the air chambers.

Like parts are designated by like characters throughout.

A is a motor casing in which a motor of any suitable type is positioned. A′ is a plug connection to which a conduit member may be connected to provide current for driving the motor. C is the main fan casing to which is attached an operating handle C′. Extending forwardly and projecting from the upper part of the casing C is a discharge nozzle C^2 to which is attached an extended blower nozzle C^3. On the exterior of the casing C are three ears C^4, C^4 which may be used when additional fan casings are attached.

Within the fan casing C is a rotary fan D which is mounted upon and adapted to rotate with the motor shaft D′. It is held in position thereupon by means of a set screw D^2.

E is an additional air chamber which may be fastened upon the outside of the casing C. E′ is an additional fan casing which co-operates with the chamber E to permit the use of a second fan. This fan E^2 is mounted upon an extension shaft E^3 which is provided in one end with a socket E^4 adapted to engage the exposed end of the shaft D^1 and to be held in engagement therewith by means of a set screw E^5. There are registering openings from the air chamber E to the fan casing E′ which form together the opening X through which air is driven from the casing E′ into the air chamber E and thence to the fan D. E^6 is a directing vein extending inwardly from the periphery of the chamber E to the axial inlet.

F is a second additional air chamber similar to E and F′ is a second additional fan casing within which is mounted a fan F^2 which is secured upon the shaft E^3 and rotates therewith. Between the casing F′ and the chamber F is an opening Y similar to the opening X. F^6 is a vein similar to E^6.

In the outer wall of the casing F′ is an opening G within which a spider G′ is positioned. This spider carries a bearing G^2 within which the outer end of the shaft E^3 is journaled. Across the opening G a screen G^3 is mounted.

Each of the fan casings is provided with ears H, H which correspond to the ears C^4 of the main fan casing. Holding rods I extend through all of the ears and in cooperation with the nuts I′, I′ serve to hold the entire assembly together.

In Figure 3 I have shown a bottom view of the fan casings. As shown each of the fan casings and each of the air chambers is provided in its bottom with an enlargement which permits the formation of an air passage to each air chamber. This is indicated also in the other figures, but more clearly in Figure 3.

I have shown an operative device, still it will be obvious that many changes in form, shape and relation of parts may be made without departing materially from the spirit of my invention and I wish therefore that my showing be taken as in a sense diagrammatic. In particular while I have shown three fans it would be possible to take off the two additional fans and use the blower with one fan, or almost any number of fans might be used so long as a motor of sufficient strength to carry them is also used.

The use and operation of my invention are as follows:

The blower is intended primarily for use as a portable blower where it may be carried about readily by hand and used for any blowing purpose. It is often desirable to have a very rapidly moving current of air and for this purpose a sufficient number of fans will be used to produce the desirable

speed of air current. As shown in the figures the air enters the passage moving into one fan where it is given a certain velocity. It moves then directly to the next fan and its velocity is increased and it so moves through the series of fans into the discharge nozzle, and out.

It will be noted that the fan casings and air chambers are all shaped with aligned outwardly projecting extensions shown as E^{10} E^{11} and F^{10} F^{11}. These extensions provide the air passage between the adjacent units, each unit consisting of a fan casing and an air chamber. The function of each air chamber is to receive the air discharged by the fan and conduct it to the axis of the succeeding fan. The veins E^{6} F^{6}, being positioned adjacent the outward extensions or enlargements E^{10} F^{10}, receive the air and guide it directly to the succeeding fan axis.

I claim:

1. In a portable hand blower, a motor, a fan, and a fan casing, and a plurality of removably attachable additional fans, casings therefor, and means for attaching said casings to said first mentioned fan casing, each of said fan casings adapted to deliver the air from the fan within it to the next successive fan and fan casing, said additional fan casings being formed with a fan casing proper and an air chamber, the two being formed of separable parts.

2. In a portable hand blower, a motor, a fan, and a fan casing, and a plurality of removably attachable additional fans, casings therefor, and means for attaching said casings to said first mentioned fan casing, and an extension shaft adapted to be secured to the shaft of said motor and to carry said additional fans, each of said fan casings adapted to deliver the air from the fan within it to the next successive fan and fan chamber, said additional fan casings being formed with a fan casing proper and an air chamber, the two being formed of separable parts.

3. In a portable hand blower, a motor, and a motor casing thereabout, a handle associated with such casing, a primary fan casing about said fan and permanently associated with said motor casing, an air discharge outlet member associated therewith and an air inlet therefor, a plurality of removably attachable fan casings, an extension shaft adapted to be secured to the motor shaft and a plurality of removably attachable fans adapted to be positioned on said extension shaft within said additional casings, and means for aligning and securing said supplemental casings in relation to said primary casing.

4. In a portable hand blower, a motor, and a motor casing thereabout, a handle associated with such casing, a primary fan casing about said fan and permanently associated with said motor casing, an air discharge outlet member associated therewith and an air inlet therefor, a plurality of removably attachable fan casings, an extension shaft adapted to be secured to the motor shaft and a plurality of removably attachable fans adapted to be positioned on said extension shaft within said additional casings, means for aligning and securing said supplemental casings in relation to said primary casing, comprising apertured lugs upon the primary fan casing, apertured lugs upon said additional casings, securing shafts adapted to pass through said lugs and locking means associated therewith.

5. In a portable hand blower, a motor, and a motor casing thereabout, a handle associated with such casing, a primary fan casing about said fan and permanently associated with said motor casing, an air discharge outlet member associated therewith and an air inlet therefor, a plurality of removably attachable fan casings, an extension shaft adapted to be secured to the motor shaft and a plurality of removably attachable fans adapted to be positioned on said extension shaft within said additional casings, means for aligning and securing said supplemental casings in relation to said primary casing, each of said fan casings being formed to include a fan chamber and an air chamber and a passage member adapted to direct the air from each fan chamber to the succeeding air chamber.

6. In a portable hand blower, a motor, and a motor casing thereabout, a handle associated with such casing, a primary fan casing about said fan and permanently associated with said motor casing, an air discharge outlet member associated therewith and an air inlet therefor, a plurality of removably attachable fan casings, an extension shaft adapted to be secured to the motor shaft and a plurality of removably attachable fans adapted to be positioned on said extension shaft within said additional casings, means for aligning and securing said supplemental casings in relation to said primary casing, each of said fan casings being formed to include a fan chamber and an air chamber and a passage member adapted to direct the air from each fan chamber to the succeeding air chamber, and directing means, associated with said air chambers, for directing the air inwardly toward the center of the succeeding fan chamber.

Signed at Chicago county of Cook and State of Illinois, this 5th day of March, 1925.

GEORGE CLEMENTS.