D. FRASER.

ROTARY FAN.

APPLICATION FILED AUG. 19, 1910.

998,889. Patented July 25, 1911.

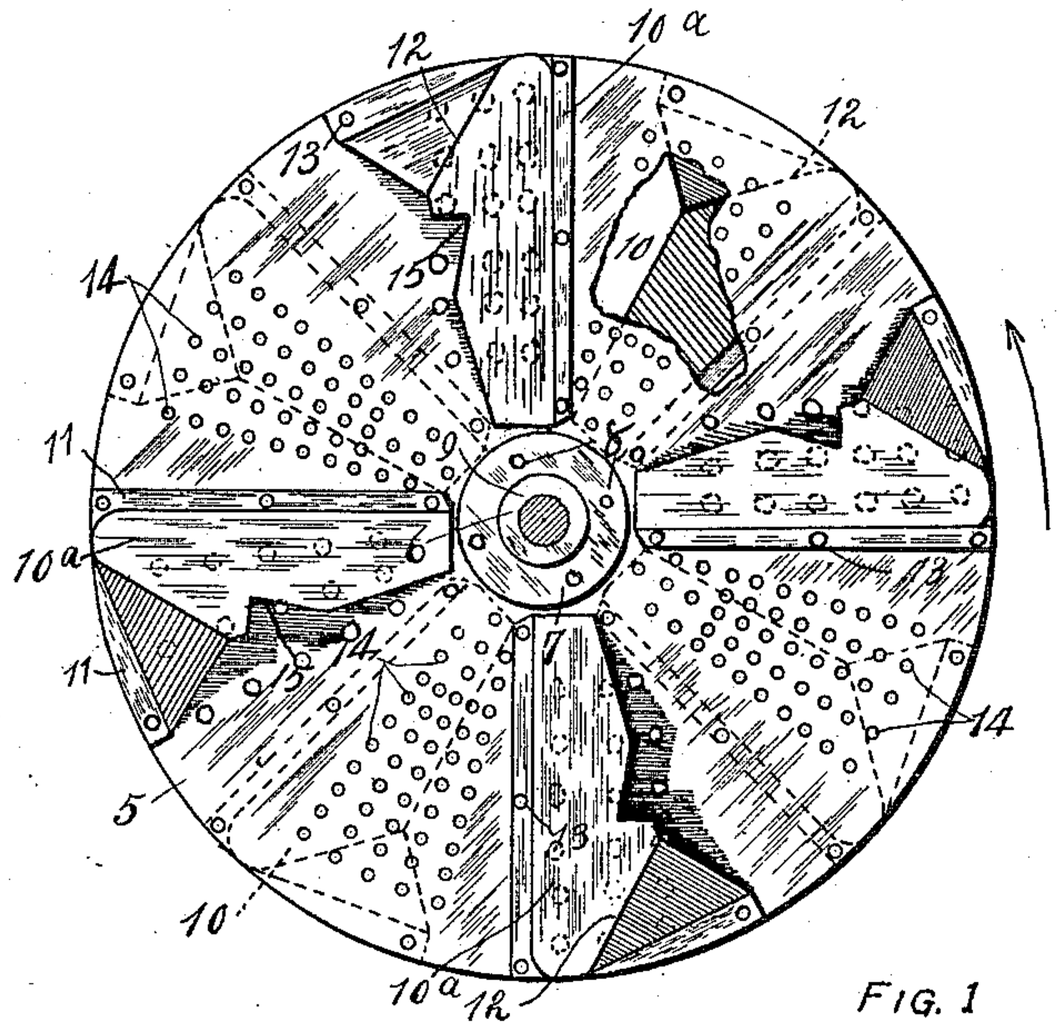

FIG. 1

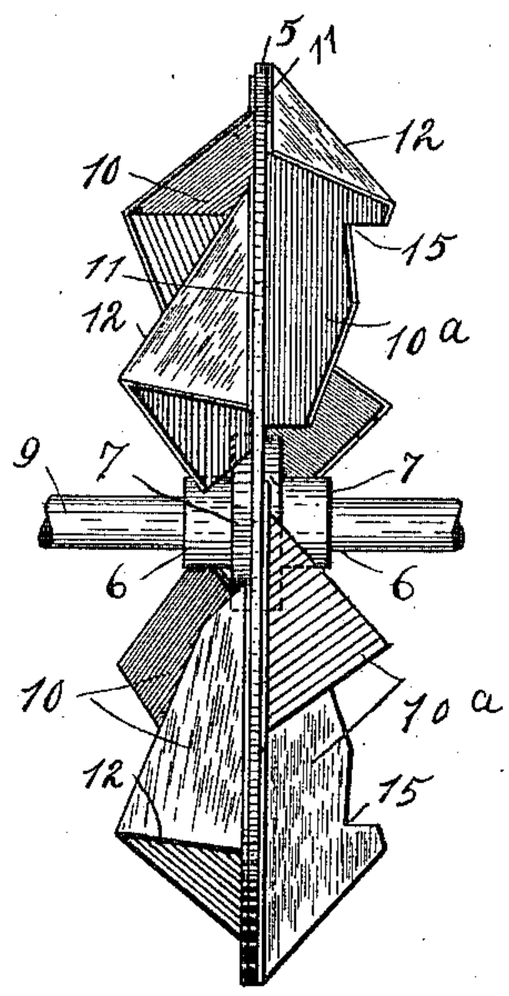

FIG. 2

WITNESSES:

Wm. G. Blomstrom.

C. F. Bassett

INVENTOR

David Fraser

BY Fulwider & Benjamin

ATT'YS.

UNITED STATES PATENT OFFICE.

DANIEL FRASER, OF LOS ANGELES, CALIFORNIA.

ROTARY FAN.

998,889. Specification of Letters Patent. Patented July 25, 1911.

Application filed August 19, 1910. Serial No. 578,041.

To all whom it may concern:

Be it known that I, DANIEL FRASER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Rotary Fans, of which the following is a specification.

My invention relates to rotary fans and has particular reference to devices of this class designed to be used for ventilating apartments although it may be employed wherever a current of air is required to be produced for other purposes.

The chief object of the improvements which constitute the subject matter of this application for patent are:—to provide a ventilating fan that is simple in construction so that it may be economically manufactured, effective in operation and having the very important additional function of serving as a dust collector, thus tending to cool and purify the air of the heavier foreign particles that may be floating therein.

An incidental advantage of the construction of the fan is observed in the balancing or equalizing of the air pressure upon opposite sides of the wheel web or central disk, due to perforations formed therein, and to the form and arrangement of the fan blades.

I accomplish the desired results by employing the device illustrated in the accompanying drawing which forms a part of this application, the details of construction being disclosed in the following views:—

Figure 1 is a side elevation, and Fig. 2 an edge view of a ventilating wheel or fan embodying my improvements.

Referring to the details of the drawing the numeral 5 indicates a circular disk forming the web of the wheel and provided with a suitable hub, preferably formed in two halves 6, furnished with flanges 7, between which the disk 5 is clamped and firmly secured by screws or rivets 8, the wheel thus assembled being mounted upon a drive shaft 9, supported in any desired manner. Upon each side of the said disk at spaced intervals are secured radially arranged vanes 10, 10^a, which have the function of the ordinary blades of a fan or blower. Each vane is formed of a single piece of sheet material, approximately triangular in shape and bent at an angle along the line 12, so that its opposite portions are relatively inclined, and having two of its edges bent to form attaching flanges 11, secured to the disk by rivets 13. As these flanges are in the same plane, the remaining portion of the vane or blade will incline away from the disk producing an angular cavity or pocket bounded by relatively inclined plane sides. The pockets are arranged alternately, or in staggered relation upon the opposite sides of the fan and that portion of the disk forming the inner wall of the pockets upon one or both sides of the wheel are furnished with perforations 14, arranged in groups, the inner walls of the buckets upon the opposite side being imperforate or blank, and the free margins of these imperforate cups or buckets are cut away or notched, as shown at 15, thus reducing the resistance proportionately to the lessening of the area of the bucket.

The operation of the wheel is as follows:— When rotated in the direction of the arrow, the mouths of the buckets being in advance, the effect will be to cause a certain amount of compression within the cavities of the cups or pockets, producing a rotary circulation of the air from both sides at once, the greater portion of the air being thrown by the centrifugal force of the rapidly rotating cups radially from the periphery, when the wheel is rotated without a casing, as shown. A considerable proportion of the air which enters the buckets will pass through the perforations 14, and as this will have a tendency to retard the air movement, this reduction of the flow causes the heavier particles of dust which are carried along by the swifter current, to move more slowly at this point and finally settle and become lodged in the imperforate buckets, thus collecting a large proportion of the dust in the air which comes under the influence of the rotating fan.

Having thus described my invention what I claim as new, is:—

A rotary fan comprising a disk, a series of triangular blades arranged in staggered relation upon each side of said disk, said blades being bent so that they form pockets having relatively inclined plane sides, said disk having perforations therethrough arranged in groups, each group being covered upon one side by one of said blades.

In testimony whereof I affix my signature in the presence of two witnesses.

DANIEL FRASER.

Witnesses:

OCTAVE LAGMAN,

ANGUS R. LINDLEY.