

June 7, 1966

S. W. WALLIN  
APPARATUS FOR VARYING THE AIR QUANTITY  
IN AIR DISTRIBUTION CHAMBERS  
Filed March 18, 1964

3,254,830

FIG. 1.

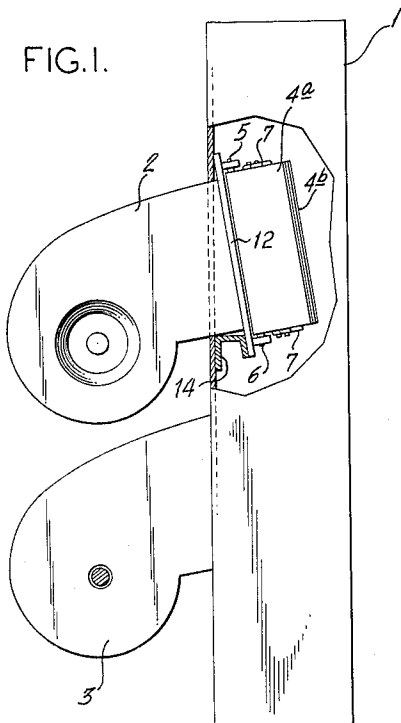


FIG. 1a.

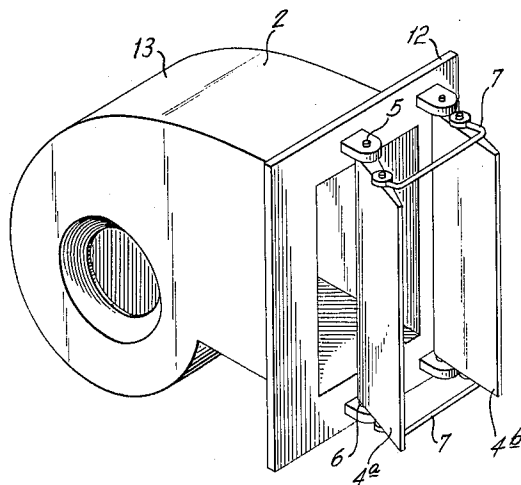
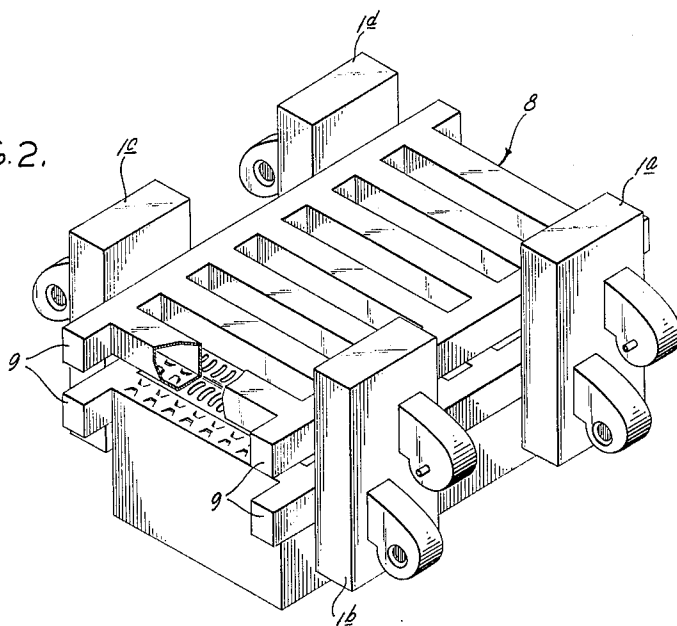


FIG. 2.



INVENTOR:  
SVEN WERNER WALLIN  
BY *Howden & Howden*  
ATTYS.

1

3,254,830

## APPARATUS FOR VARYING THE AIR QUANTITY IN AIR DISTRIBUTION CHAMBERS

Sven Werner Wallin, Taby, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden  
Filed Mar. 18, 1964, Ser. No. 353,032

Claims priority, application Sweden, Mar. 19, 1963, 3,008/63

2 Claims. (Cl. 230—44)

The present invention relates to apparatus for varying the quantity of gaseous medium in a medium distribution chamber for the supply and discharge of air or other gaseous medium. In devices of this kind it is common practice to vary the air quantity by varying the speed of the fans used or by means of throttling the fans. Devices for speed control are usually complicated, and the use of pressure regulators is an uneconomical solution in view of the great power consumed in such devices.

It is an object of the invention to solve the above-mentioned problem by simple means, which means is characterized in that the air distribution chamber is equipped with several fans operating in parallel, which fans may be connected and disconnected individually, and each of which is provided with self-closing, non-return dampers.

The non-return dampers may in a known manner be made as vertically oriented damper blades or flaps, the swinging centres of which are so displaced with respect to the vertical that a self-closing effect is automatically obtained, when the fan associated therewith is switched-off. According to a suitable embodiment the damper blades or flaps are inter-connected by a coupling rod secured at different distances from the swinging centres of the blades or flaps in such a manner that when in their open position, a diffuser is formed. In plants with a number of co-operating distributing chambers, these chambers are, according to a suitable embodiment of the invention, mutually interconnected by one or more connecting channels thus creating a common air distributing system in order to obtain increased flexibility in varying the air quantity.

The invention will now be described in greater detail with reference to the accompanying drawing, wherein:

FIG. 1 is a profile view of a distribution chamber having a pair of working fans, and a portion of which chamber is cutaway to better illustrate the mounting of the fans in the chamber;

FIG. 1a is a perspective view of a centrifugal fan constructed in accordance with the invention; and

FIG. 2 is a perspective view of a plurality of co-operating distribution chambers.

In the drawing a distribution chamber 1 is equipped with a plurality of fans, in the present instance two designated 2 and 3 comprising centrifugal fans having non-return dampers 4a, 4b as shown in FIG. 1a. The non-return dampers are, according to the invention constructed as vertically oriented damper blades or flaps having swinging centers or axes 5 and 6, which centers are displaced with respect to the vertical plane so that a self-closing effect is automatically obtained when the fan in question is switched-off. To this end, and as illustrated in FIGS. 1 and 1a the swinging axes 5 and 6, although substantially vertically oriented, are mounted in the terminal open end 12 of the fan casing 13 in such a manner that the lower portions of the axes are offset from the vertical. In the present instance offsetting the axes 5 and 6 from the vertical is accomplished by connecting the fan casing to the interior of the chamber 1 at an angle to the horizontal. As illustrated in FIG. 1,

2

the fan is angularly positioned by a spacer 14, located at the lower portion of the casing 13, and between the interior of the chamber 1 and the terminal end 12 of the fan 2. A coupling rod 7 is secured at the damper blades or flaps at different distances from the swinging axes of the damper blades or flaps in such a manner that the damper blades or flaps 4a, 4b in their open position, form a diffuser. In a typical embodiment, a treatment plant 8 comprises four distribution chambers 1a, 1b, 1c and 1d located opposite to each other. The distribution chambers are as shown in FIG. 2 mutually inter-connected by means of a number of connecting channels 9, which, together with the distribution chambers create a common air distributing system. As illustrated the fans connected to the distribution chambers may be displaced both vertically and horizontally. The fans located opposite to each other on either side of the treatment plant are preferably interconnected to be switched-on or switched-off at the same time. In order to make it possible to clean the treatment plants easily, cleaning doors are provided on the distribution chambers. During this cleaning, in order not to spoil the balance in the system, which balance is gained thanks to the invention, the cleaning doors located opposite to each other on either side of the treatment plant should preferably be inter-connected for simultaneous opening.

Although the invention has been described with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be made without departing from the spirit and the scope of the invention as hereinafter claimed.

What is claimed is:

1. Apparatus for varying the quantity of gaseous medium supplied into a distribution chamber, said distribution chamber including a plurality of fans operating in parallel, said fans adapted for connection and disconnection individually and each having at least a pair of substantially vertically oriented dampers mounted in the terminal open end of said fan, each of said dampers having vertically oriented swinging axes, said axes being offset whereby disconnection of at least one of said fans causes said dampers to substantially close off the outlet of said one fan automatically, thereby impeding reverse flow in said fan, said dampers being of a flat configuration and inter-connected by means of a coupling rod secured to said dampers at differing distances from said swing axes wherein said dampers in their open position define a flow path of increasing cross-sectional area from the swinging axes outwardly, thereby causing the flow of gaseous medium to expand as it traverses through the dampers.

2. Apparatus in accordance with claim 1 including a plurality of mutually inter-connected distribution chambers, each of said chambers connected to the other by means of connecting channels whereby a common air distribution system is obtained.

### References Cited by the Examiner

#### UNITED STATES PATENTS

1,946,300	2/1934	Vercruyssen	230—114
2,030,993	2/1936	Langenkamp et al.	230—114
2,279,425	4/1942	Voysey	230—114
2,673,512	3/1954	Henney	98—10
2,682,951	7/1954	Hamburg	230—114

MARK NEWMAN, Primary Examiner.

W. J. KRAUSS, Assistant Examiner.