May 17, 1949. F. HONERKAMP ET AL 2,470,488

AIR FLOW CONTROL MEANS

Original Filed Aug. 16, 1943

Fig. 1.

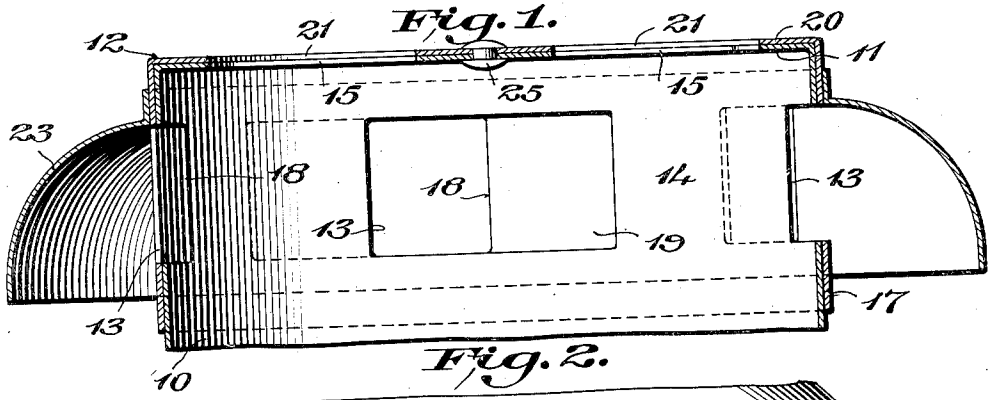


Fig. 2.

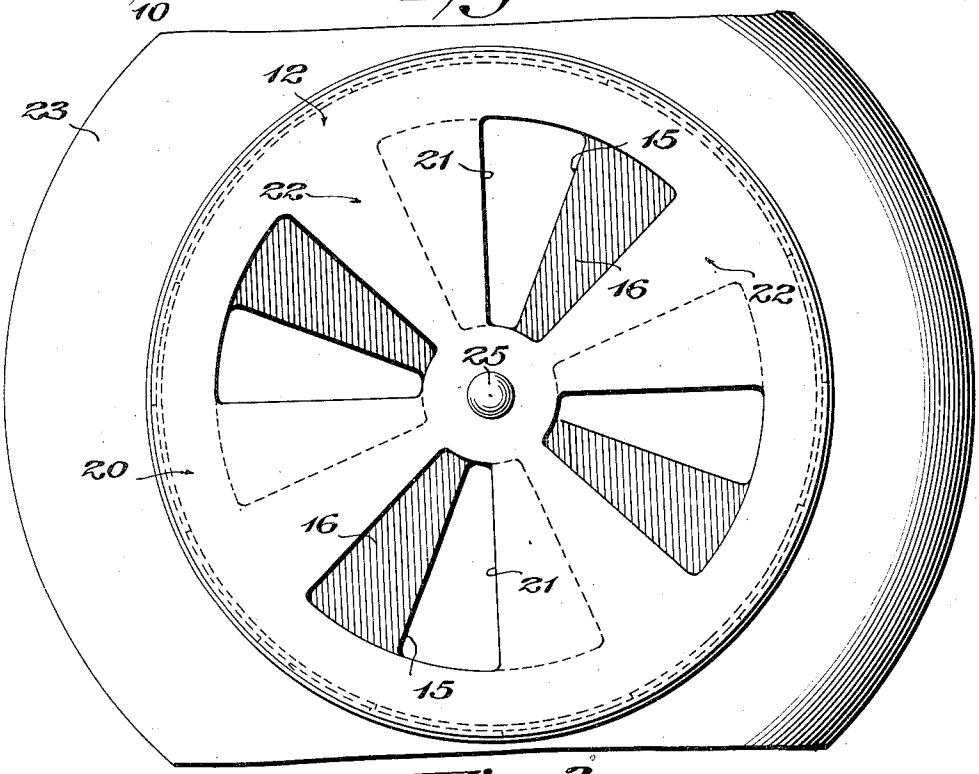
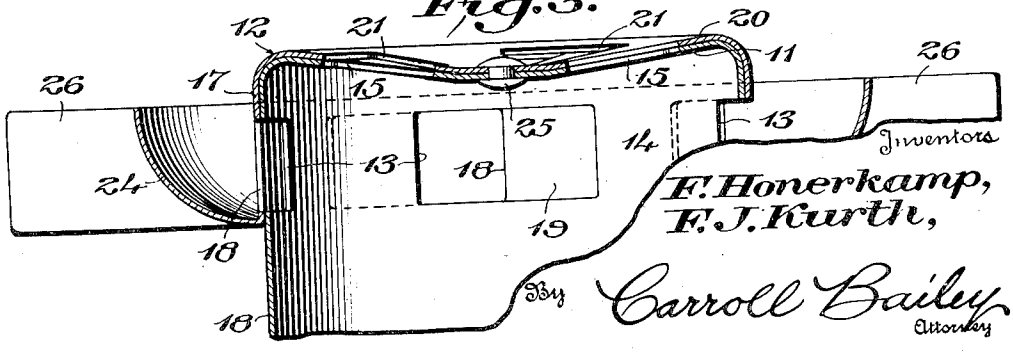


Fig. 3.



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AIR FLOW CONTROL MEANS

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Original application August 16, 1943, Serial No. 498,842. Divided and this application November 28, 1944, Serial No. 565,509

4 Claims. (Cl. 98—40)

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This invention relates to air flow control means, and has particularly reference to air flow control means as illustrated and described in our copending application, Serial No. 498,842, filed August 16, 1943, of which the present application is a division.

Generally speaking, the object of the instant invention is the same as set forth in our said prior application; viz., to provide an air flow control means which may be fixed bodily and which comprises a simple, practical combination and arrangement of parts whereby air may be caused to be delivered in its entirety in either of two different directions or manners, or in part in one of said directions or manners and in part in the other of said directions or manners, by ready and easy manipulation of a very simple form of valve element.

With the foregoing general object in view, the invention consists in an air flow control means embodying the novel features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings and defined in the appended claims.

In the accompanying drawings, wherein like characters of reference denote corresponding parts in the different views:

Figure 1 is a central, longitudinal section through an air flow control means constructed in accordance with the invention.

Figure 2 is an end view of the control means shown in Fig. 1; and

Figure 3 is a view similar to Fig. 1 of an air flow control means of alternative form.

Referring to the drawings in detail, 10 designates, according to each form of the invention, the cylindrical outlet end portion of a supply conduit for air to be used for heating, cooling or other purposes, 11 designates a disk-like wall extending across the end of said conduit, and 12 designates, generally, a cap member engaged over said conduit end portion and rotatable with respect thereto.

In the side wall of the conduit end portion 10 is an annular row of openings 13 and intermediate closed portions 14 of approximately equal widths and lengths, while in the end wall 11 is another annular row of openings 15 and intermediate closed portions 16 which, likewise, are of approximately equal widths and lengths. Moreover, the openings 13 and the closed portions 14 are of approximately the same lengths, angularly, as the openings 15 and the closed portions 16.

The cap member 12 includes a cylindrical side

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wall 17 which closely embraces the conduit end portion 10 and has therein an annular row of openings 18 and intermediate closed portions 19 which are substantially duplicates of the conduit side wall openings 13 and intermediate closed portions 14, respectively. In addition, said cap member 12 includes a disk-like end wall 20 which overlies the conduit end wall 11 and has therein an annular row of openings 21 and intermediate closed portions 22 which are substantially duplicates of the conduit end wall openings 15 and intermediate closed portions 16, respectively.

Either the openings 13 and 15 are radially disalined and the openings 18 and 20 are radially alined or vice-versa. In either case, rotation of the cap member 12 to aline the openings 18 thereof with the openings 13 will disaline the openings 21 from the openings 15 and vice-versa. It follows, therefore, that by rotatably adjusting said cap member discharge of air from the conduit end portion 10 may be caused to be entirely from the side or from the end thereof or partly from the side and partly from the end thereof.

According to the construction shown in Figs. 1 and 2, an annular air deflector 23 is carried by and surrounds the cap member 12 and, in cross section, extends from the side wall 17 of said cap member, forwardly of the openings 18 therein, outwardly and rearwardly in overlying relationship to said openings 18. Accordingly, when the openings 13 and 18 are alined, or partly alined, air flowing through the same from the conduit 10 will be deflected rearwardly relative to said conduit. On the other hand, according to the Figs. 1 and 2 construction, the end walls 11 and 19 are flat and the edges of the openings 15 and 21 in said end walls, respectively, are parallel to the axis of the conduit so that when these openings are alined or partly alined, air discharged through the same from the conduit has a direction of flow forwardly relative to the conduit.

Obviously, the air deflector 23 may be replaced by an air deflector of any other form to cause air discharged through the openings 13 and 18 to have any desired direction of flow relative to the conduit 10. Obviously, too, the device may be devoid of any air deflector for controlling the direction of flow of air discharged through the openings 13 and 18, in which event the flow from said openings will be laterally relative to the conduit 10. Furthermore, air deflector means may be provided, if desired, to cause air discharged through the openings 15 and 21 to follow any desired direction of flow relative to the device.

According to the construction shown in Fig. 3,

the portion of the side wall 17 of the cap member 12 rearwardly of the openings 18 is turned outwardly and forwardly in overlying relationship to said openings 18 to provide an annular air deflector 24 which is effective to cause air discharged through the openings 13 and 18 to take a direction of flow outwardly and forwardly relative to the device. Alternatively, the air deflector 24 may be a part separate from the cap member 12. Also, according to the construction shown in Fig. 3, the end walls 11 and 19 are of rearwardly and inwardly inclined conical form and the edges of the openings 15 and 21 are at right angles to said walls so that air discharged through said openings is caused to have a direction of flow toward a prolongation of the axis of the conduit 10. If desired, this same effect may be attained in a construction as illustrated in Figs. 1 and 2 by inclining the side edges of the openings 15 and 21.

The cap member 12 may be connected to the conduit end portion 10 in any suitable manner as, for example, by means of a rivet 25 or the like extending centrally through the end walls 11 and 20. Also, any suitable means may be provided for use in effecting rotation of the cap member 12. For example, said cap member may be provided with one or more hand or foot engageable arms 26 extending laterally therefrom as shown in Fig. 3.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

We claim:

1. Air flow control means comprising an air supply conduit member including side and end walls each having therein an annular row of spaced apart openings for outlet of air therefrom, and a cap member rotatably mounted on said conduit member and including side and end walls each having therein an annular row of spaced apart openings for alinement with and disalinement from the openings of the corresponding row in the side and end walls of said conduit member, respectively, by rotation of said cap member relative to said conduit member, thereby to control discharge of air from said conduit member through the sets of openings in the side and end walls thereof, respectively, and air deflector means mounted on one of said members and disposed to intercept air discharged through the openings in the side walls of said conduit member and said cap member and to cause it to take a desired direction of flow relative to the direction of flow of air discharged through the openings in the end walls of said conduit and said cap members, said air deflector means extending around said cap member and being open at one end and closed at its other end and being secured at its closed end to the member on which it is mounted.

2. Air flow control means comprising an air supply conduit member including side and end walls each having therein an annular row of

spaced apart openings for outlet of air therefrom, and a cap member rotatably mounted on said conduit member and including side and end walls each having therein an annular row of spaced apart openings for alinement with and disalinement from the openings of the corresponding row in the side and end walls of said conduit member, respectively, by rotation of said cap member relative to said conduit member, thereby to control discharge of air from said conduit member through the sets of openings in the side and end walls thereof, respectively, and air deflector means carried by and extending from the side wall of said cap member into overlying relationship to the openings in said side wall to intercept air discharged through said side wall openings and to cause it to take a desired direction of flow relative to the direction of flow of air discharged through the openings in the end walls of said conduit and said cap members, said air deflector means extending around said cap member and being open at one end and closed at its other end and being secured at its closed end to said cap member.

3. Air flow control means comprising an air supply conduit including side and end walls each having therein an annular row of spaced apart openings for outlet of air therefrom, and a cap member rotatably mounted on said conduit and including side and end walls each having therein an annular row of spaced apart openings for alinement with and disalinement from the openings of the corresponding row in the side and end walls of said conduit, respectively, by rotation of said cap member relative to said conduit, thereby to control discharge of air from said conduit through the sets of openings in the side and end walls thereof, respectively, the end walls of said conduit and said cap member being of rearwardly and inwardly inclined conical form and the inner and outer edges of the openings in said end walls being disposed perpendicularly to said walls so that air discharged through the openings in said end walls is caused to flow toward a forward prolongation of the axis of the conduit.

4. Air flow control means as set forth in claim 1 in which the inner end portion of the cap member is extended outwardly and forwardly relative to said cap member to provide the air deflector means.

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