

UNITED STATES PATENT OFFICE

2,503,764

FAN ACCELERATED RADIATOR CABINET

Oran W. Ott, San Marino, Calif., assignor to
Trade-Wind Motorfans, Inc., Los Angeles,
Calif., a corporation of California

Application February 17, 1945, Serial No. 578,516

4 Claims. (Cl. 257—137)

1

This invention relates to heating and ventilating equipment and relates more particularly to means for obtaining a variable output of heated air in a room, or the like.

An object of this invention is to provide simple and effective equipment which includes means for regulating the output of heated air therefrom.

Another object of the invention is to provide equipment employed in combination with a typical radiator of the convector type for varying the quantity of room air circulating around said radiator to vary the heating output thereof.

Another object of this invention is to provide equipment for use in combination with a convector radiator and having novel air circulating chambers, compartments or passages, and incorporating means for variously utilizing said chambers, compartments or passages to obtain regulation of the warm air output of said radiator.

A further object of my invention is to provide equipment of the indicated type forming a compact and novel arrangement of elements and which is readily installable in connection with a radiator.

A still further object of the invention is to provide novel operating and control means in equipment of the type indicated for readily obtaining regulation of the warm air output from said equipment.

The various objects and features of my invention will be fully understood from the following detailed description of a typical preferred form and application of the invention, throughout which description reference is made to the accompanying drawings, in which:

Fig. 1 is a front view of complete equipment incorporating the invention.

Fig. 2 is a vertical sectional view thereof to an enlarged scale, as taken in the line 2—2 of Fig. 1.

Fig. 3 is a sectional view as on the line 3—3 of Fig. 2.

The disclosure that I am making in this application is intended to include such modifications which may fall within the broad concepts of my invention. The present disclosure, however, is based on the at present preferred embodiment of the invention which is illustrated in the drawing. The realization of the invention particularly incorporates a radiator 10 arranged in combination with a housing or cabinet 11 which is preferably compartmented for suitable housing and support of said radiator 10, air flow accelerating means 12, control means

2

therefor 14, and means 15 operable by said control means for obtaining desired variation in the flow of air into and out of said cabinet.

The radiator 10 may be of conventional form and design. It may be of the cast iron fin type, or the metal fin type, it being only desired that it be a convector radiator.

The housing or cabinet 11 may be made of material such as sheet metal and may comprise a front wall 16, end walls 17 and 18, a top 19, a bottom 20, and a rear wall 21. As contemplated herein, the cabinet may be divided in compartments as by means of a vertical partition 22 extending between the top 19 and the bottom 20 and a horizontal partition 23 disposed between the side wall 17 and the vertical partition 22. In this manner the cabinet is divided into a relatively large radiator enclosing compartment 24 extending from front to back of the cabinet, for the full height thereof, and between the side wall 18 and the vertical partition 22; a compartment 25 in the upper part of the remaining portion of the cabinet and housing the air flow accelerating means 12; and a compartment 26 in the lower part of said remaining portion of the cabinet and affording intermediate air passage means and housing the means 15. The compartment 25 is sealed off from the compartments 24 and 26 by the partitions 23 and 22, except as hereinafter described. However, communication between the compartments 24 and 26 is provided for by an opening 27 in the partition 22.

In accordance with the invention, the front wall 16 of the cabinet may be provided with louvred openings or grilles 28, 29 and 30 for the respective compartments 24, 25 and 26.

The flow accelerating means 12 may comprise a suitable electric motor 31 and a fan such as a centrifugal blower 32 driven thereby as by a shaft 33. The motor and blower may be supported by and be secured to the horizontal partition 23. The blower may be either single or duplex and, depending upon the quantity of air to be moved, two such blowers may be used, one on either side of the motor 31. The blower or blowers 32 may have an air intake 34 drawing air from the compartment 25 and an outlet end 35 for discharging said air into the compartment 26.

The control means 14 may include a solenoid 36 which may be disposed in the compartment 26 and may be secured in fixed position as by a bracket 37 carried by a wall of the cabinet such as the front wall 16. The solenoid 36 may include an electric coil 38 and a floating core such as a

3

plunger 39 adapted to be raised when the solenoid is electrically energized and to fall by gravity, when released. In this invention it is desired to raise the plunger when the flow accelerating means are in operation. Accordingly, the means 14 also includes common electric wiring 40 which may be connected to a suitable source of electric current and further includes switch means 41 which may be either manually or thermostatically controlled. It may be seen that with the switch 41 open, the motor 31 is at rest and the solenoid 36 de-energized; with the switch closed the motor is in operation to drive the blower 32 and the solenoid is energized to raise its plunger 39.

The means 15 which is operable by the control means 14, may comprise means arranged in the compartment 26 and associated with the grille 30 to open or shut off the flow of air through said grille. The means 15 may comprise a plurality of angularly disposed fixed vanes or louvers 42 extending between the walls 17 and 22 and adjacent to the grille 30, and a plurality of alternately disposed vanes or dampers 43, each pivoted as at 44 along the rear edges of the vanes 42. The vanes 43 are adapted to lie normally upon the vanes 42, assuming this position by gravity and providing air passages 46 between the fixed vanes 42. When the solenoid 36 is energized to raise its plunger 39, means such as a chain 45, connected to the plunger and to the vanes 43 at points between the pivots and free edges thereof, may serve to tilt or swing said vanes 43 to close the passages 46 between the fixed vanes 42. The lower vanes 43 are adapted to bear against the vanes 42 immediately above each vane 43 to effect such closure, and the uppermost vane 43 may bear against a lip 47 carried by the cabinet for similar closure purposes. It may be seen from Fig. 2 that the vanes 42 and 43, when arranged in passage closing position, effectively shut off any circulation of air through the grille 30 to the chamber 25.

When the equipment herein is to be used for normal or low output of warm air to a room, or the like, the switch 41 is turned off or any control thereof will have turned it off. The solenoid being de-energized, the passages 46 are open and air may pass through the grille 30, through said passages 46, into compartment 26. The air may then pass through opening 27 into the radiator compartment to be warmed by the radiator 10 and then pass through the grille 28 into the room. This circulation is normal and does not contemplate nor include any air circulation through grille 29.

When the equipment is to be used for accelerated or high output of warm air, the switch 41 is turned on or any control thereof may have turned it on to cause simultaneous energizing of both the motor 31 and the solenoid 36. The blower 32 will now circulate air drawn thereby through the grille 29 into the compartment 25 and passed through the blower under pressure thereof into the compartment 26. Since energizing of the solenoid has caused the vanes 43 to be lifted to close the passages 46, the air in the compartment 26 may pass only through the opening 27 into the radiator compartment 24 to be warmed by the radiator 10 and then pass through the grille 28 into the room. The more rapid circulation of air, under these conditions, will provide a relatively high output capacity of the equipment herein.

Having described only a typical preferred form and application of my invention, I do not wish

4

to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any variations or modifications that may appear to those skilled in the art and fall within the scope of the following claims:

Having described my invention, I claim:

1. In combination with a conventional fin type radiator, an enclosing flow control cabinet for the radiator having an exposed front and having a pair of compartments separated by a common vertical wall, one of said compartments being a radiator compartment enclosing said radiator and provided with an outlet grill at its front, the other compartment having continuous open communication with the radiator compartment at the lower portion thereof and provided with two vertically spaced air inlets at the front of the cabinet, each air inlet having a grill and the lower inlet being normally open, a blower in said other compartment having an inlet communicating with the upper air inlet and an outlet delivering air downwardly to flow into the radiator compartment, and flow control means for closing the lower air inlet of the said other compartment when the blower is in operation, the said other compartment being adjacent and horizontally parallel with the radiator compartment.

2. In combination with a conventional fin type radiator, an enclosing flow control cabinet for the radiator, the cabinet being an elongated rectangular box-like structure with an imperforate vertical back and having an exposed vertical front, the cabinet having a pair of compartments separated by a common vertical wall, one of said compartments being a radiator compartment enclosing said radiator and provided with an outlet grill at its front through which air flows upward and outward from the radiator, the other compartment having continuous open communication with the radiator compartment at the lower portion thereof and provided with two vertically spaced air inlets at the front of the cabinet, each air inlet having a grill and the lower inlet being normally open for air to flow into the cabinet and then up around the radiator, a blower in said other compartment having an inlet communicating with the upper air inlet and an outlet delivering air downwardly to flow into the radiator compartment, and flow control means for closing the lower air inlet of the said other compartment when the blower is in operation, the said other compartment being adjacent and horizontally parallel with the radiator compartment.

3. In combination with a conventional fin type radiator, an enclosing flow control cabinet for the radiator having an exposed front and having a pair of compartments separated by a common vertical wall, one of said compartments being a radiator compartment enclosing said radiator and provided with an outlet grill at its front, the other compartment having a horizontal partition in it dividing it into upper and lower chambers, the lower chamber being in open communication with the radiator compartment at the lower portion thereof, there being a normally open air inlet in the front of the upper chamber and a normally open air inlet in the front of the lower chamber, a blower carried by the partition and receiving air from the upper chamber and delivering it downwardly into the lower chamber to flow therefrom into the lower portion of the radiator compartment, and flow control means for closing the air inlet of the lower chamber when the blower is operating.

4. In combination with a conventional fin type

5

radiator, an enclosing flow control cabinet for the radiator having an exposed front and having a pair of compartments separated by a common vertical wall, one of said compartments being a radiator compartment enclosing said radiator and provided with an outlet grill at its front, the other compartment having continuous open communication with the radiator compartment at the lower portion thereof and provided with two vertically spaced air inlets at the front of the cabinet, each air inlet having a grill and the lower inlet being normally open, a blower in said other compartment having an inlet communicating with the upper air inlet and an outlet delivering air downwardly to flow into the radiator compartment, and flow control means for closing the lower air inlet of the said other compartment when the blower is in operation, the said other compartment being adjacent and horizontally parallel with the radiator compartment, the radiator being located in the cabinet substantially between the top and bottom thereof, and the outlet grill being in the front adjacent the

6

top of the cabinet while the air inlet is in the front adjacent the bottom of the cabinet.

ORAN W. OTT.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

	Number	Name	Date
10	1,040,084	Wine	Oct. 1, 1912
	1,364,894	Shurtleff	Jan. 11, 1921
	1,503,089	Callahan	July 29, 1924
	1,600,508	Miles	Sept. 21, 1926
15	1,611,766	Miles	Dec. 21, 1926
	1,830,273	Hill	Nov. 3, 1931
	1,845,243	Cox	Feb. 16, 1932
	2,022,333	Woolley	Nov. 26, 1935
	2,060,289	Downs	Nov. 10, 1936
20	2,135,461	Woolley	Nov. 1, 1938
	2,191,224	Adair	Feb. 20, 1940
	2,205,716	Dunham et al.	June 25, 1940