June 25, 1946. P. BLAIR 2,402,595

CIRCULATING HEATER

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Fig. 1.

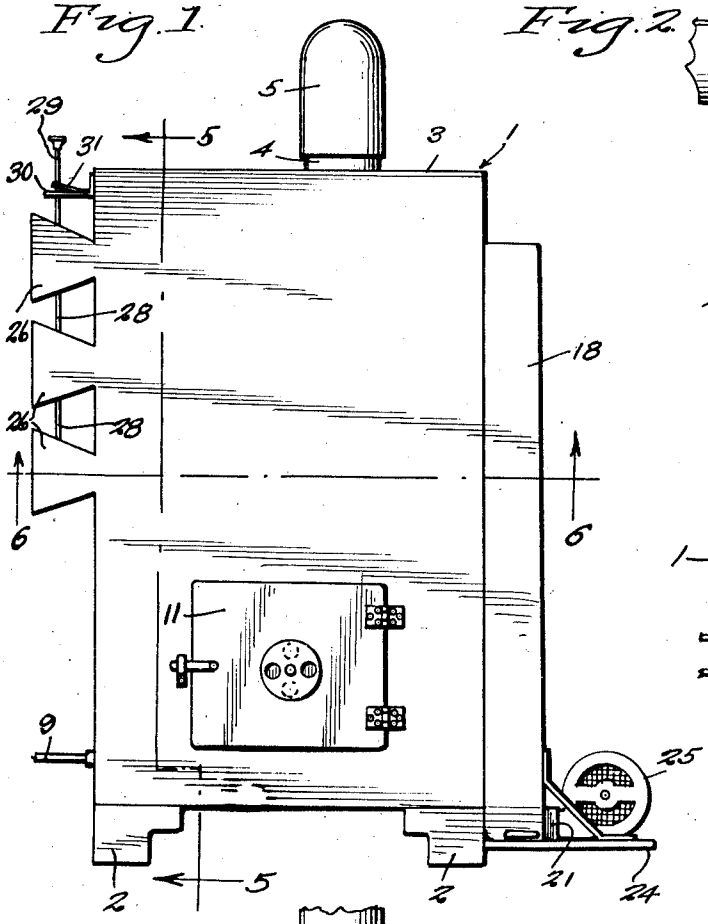


Fig. 2.

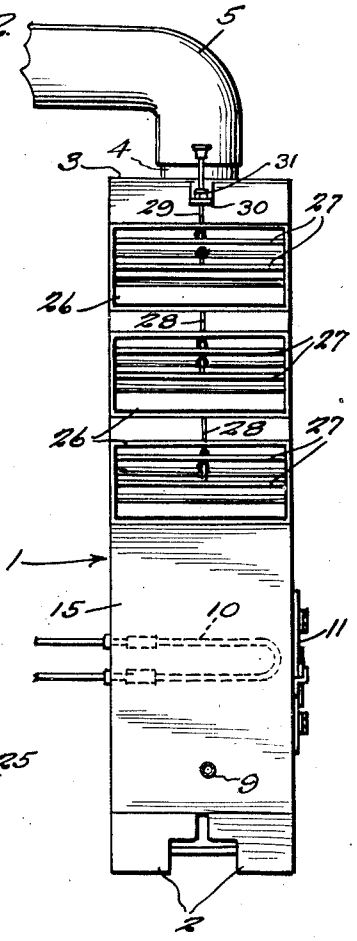
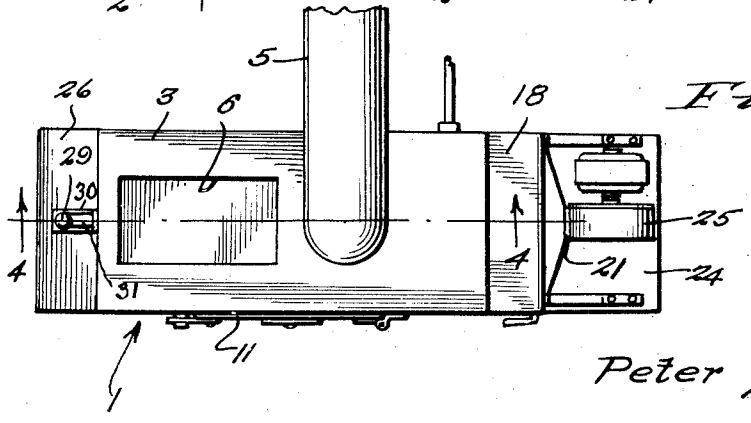


Fig. 3.



Inventor

Peter Blair

By Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

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Fig. 4.

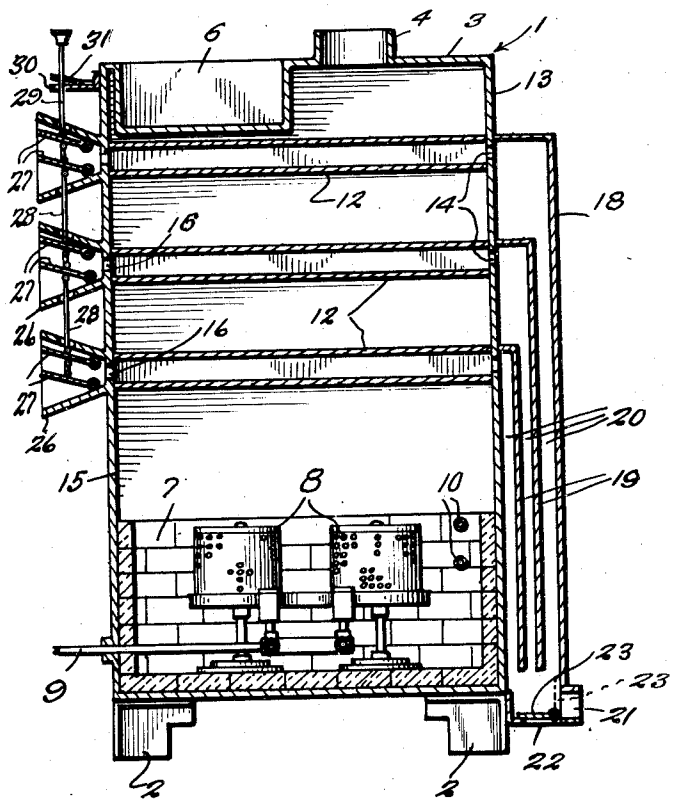


Fig. 5.

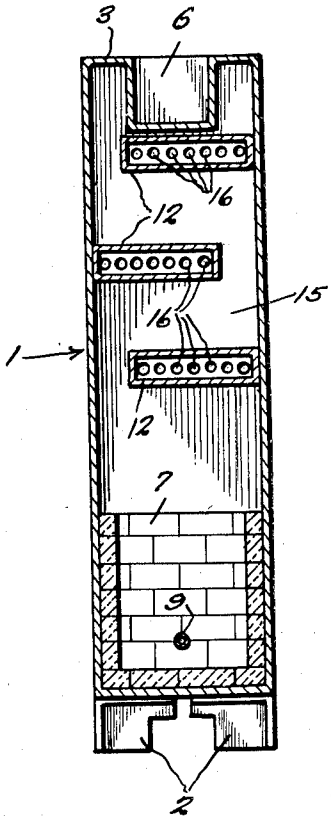
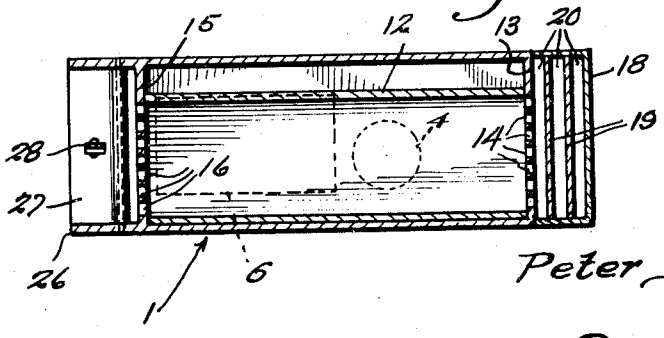


Fig. 6.



Inventor

Peter Blair

By Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

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UNITED STATES PATENT OFFICE

2,402,595

CIRCULATING HEATER

Peter Blair, Tacoma, Wash.

Application December 30, 1942, Serial No. 470,620

1 Claim. (Cl. 126—110)

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The present invention relates to new and useful improvements in space heaters particularly for domestic use and has for its primary object to provide, in a manner as hereinafter set forth, a unitary device of this character comprising a novel construction and arrangement for thoroughly heating and circulating the air.

Other objects of the invention are to provide a circulating heater of the character described which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact, attractive in appearance and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in side elevation of a heater constructed in accordance with the present invention.

Figure 2 is a view in front elevation thereof.

Figure 3 is a top plan view.

Figure 4 is a vertical sectional view, taken substantially on the line 4—4 of Figure 3.

Figure 5 is a cross sectional view, taken substantially on the line 5—5 of Figure 1.

Figure 6 is a view in horizontal section, taken substantially on the line 6—6 of Figure 1.

Referring now to the drawings in detail, it will be seen that the embodiment of the invention which has been illustrated comprises a casing 1 of suitable dimensions and material, said casing being substantially rectangular in plan. The casing 1 is provided with supporting legs 2.

The top 3 of the casing 1 is provided with an outlet 4 for connection with a flue 5. The top 3 of the casing 1 further includes a depressed portion constituting an integral pan 6 for the reception of water for humidifying the air.

The lower portion of the casing 1 is lined in a manner to provide a chamber 7 in which burners 8 are mounted. A conduit 9 connects the burners 8 to any suitable source of fuel. Also mounted in the burner chamber 7 is a water heating coil 10. A hinged door 11 on the front of the casing 1 provides access to the burners 8.

Mounted longitudinally in the casing 1 are a plurality of horizontally extending vertically spaced staggered air flues 12 of substantially rectangular cross section. The side wall 13 of the casing 1 has formed therein air intake openings 14 which communicate with the flues 12. The

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other side wall 15 of the casing 1 has formed therein a plurality of outlet openings 16 which also communicate with the flues 12.

Mounted on the side wall 13 of the casing 1 is a vertical air conduit 18. Partitions 19 divide the conduit 18 into a plurality of air passages 20 which communicate with the flues 12 through the intake openings 14.

The lower portion of the conduit 18 is provided with a pair of intake openings 21 and 22 which are controlled by a single valve 23. A support 24 projects horizontally from the lower end of the conduit 18. A blower 25 on the support 24 is connected to the inlet 21 of the conduit 18.

Projecting from the side 15 of the casing 1 are what may be considered discharge nozzles 26 which communicate with the air flues 12 through the outlet openings 16. Deflectors 27 are pivotally mounted in the nozzles 26 for controlling the flow of the heated, discharged air in a horizontal plane or at an incline to the horizontal. Links 28 connect the deflectors 27 for operation in unison. An operating rod 29 is connected to the uppermost deflector 27. The rod 29 passes slidably through a guide 30 which is provided therefor on the upper portion of the casing 1. A locking device 31 on the guide 30 frictionally secures the rod 29 in adjusted position.

It is thought that the operation of the heater will be readily apparent from a consideration of the foregoing. Briefly, with the valve 22 in the full line position of Figure 4 of the drawings and with the blower 25 in operation, said blower forces air upwardly through the passages 20 in the conduit 18 into the flues 12 through the intake openings 14. Of course, this air is thoroughly heated as it passes through the flues 12 by the burners 8. As illustrated to advantage in Figure 5 of the drawings, the construction and arrangement of the flues 12 is such that they constitute staggered baffles in the casing 1 above the burners 8. The heated air passes through the outlets 16 and is discharged from the nozzles 26. By swinging the pivoted baffles 27 upwardly or downwardly the discharged air may be caused to flow in any desired substantially horizontal plane. By swinging the valve 23 to the dotted line position of Figure 4 of the drawings, the inlet 21 is closed and air may be taken into the conduit 18 directly from the atmosphere through the inlet 22.

It is believed that the many advantages of a heater constructed in accordance with the present invention will be readily understood and although a preferred embodiment of the device is as illustrated and described, it is to be understood that

changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

Having described the invention, what is claimed as new is:

In a circulating heater, a casing having an air intake conduit, said conduit having a bottom air inlet and a side air inlet at its lower end, a single vertically swinging valve hinged at a point between said inlets for selective positioning to close either inlet and simultaneously open the other, and a blower having its outlet connected to the side inlet of said conduit, the bottom inlet being directly open to the atmosphere.

PETER BLAIR.