Nov. 11, 1958 C. L. RUHL 2,859,742

BAFFLE SYSTEM IN SPACE OR WALL HEATER

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Fig. 1

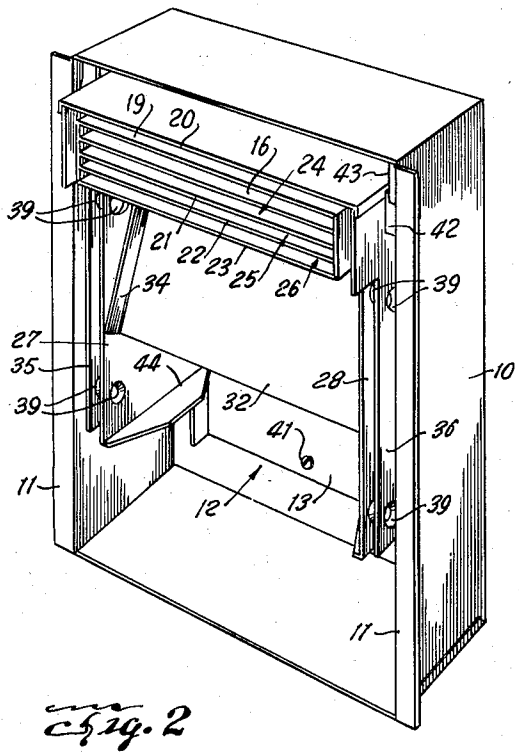


Fig. 3

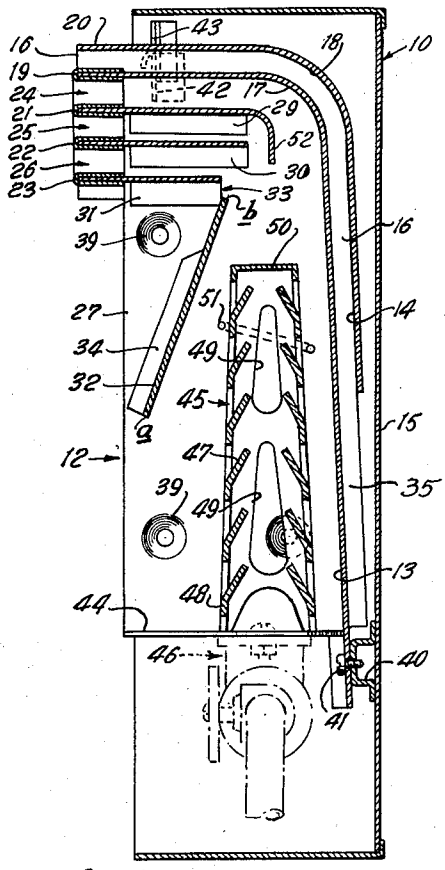


Fig. 2

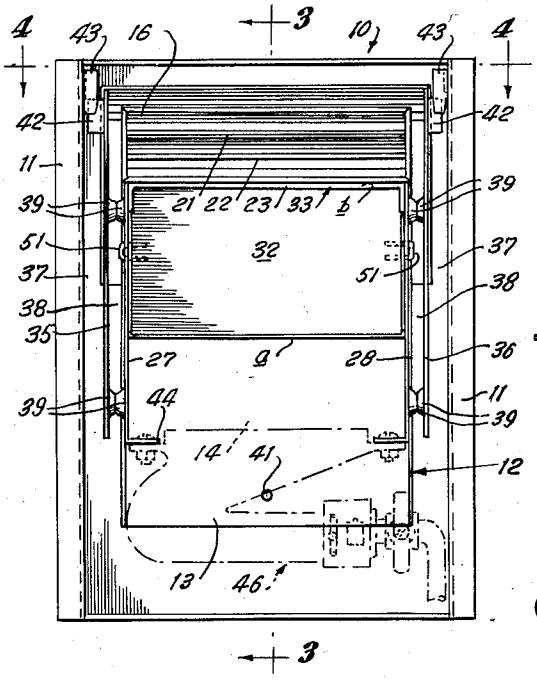
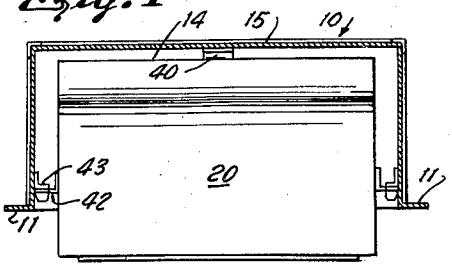


Fig. 4



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BAFFLE SYSTEM IN SPACE OR WALL HEATER

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3 Claims. (Cl. 126—92)

This invention relates to space heaters and more particularly to gas fueled heaters adapted for installation in walls.

The principal object of the invention is to provide a circulating heater designed with a view to moving the air rapidly into the space to be heated and uniformly distributing the heated air as it emerges from the heater while at the same time maintaining the face plate and surrounding frame of the heater cool to the touch without the necessity for the use of insulating material between the heater proper and its housing.

Another object of the invention is to produce, by virtue of a plurality of flues and baffles, suitably spaced, a siphoning effect on the primary air which enters the heater at the front and which comingles with the secondary air as it rises through the radiant which latter, in the present case, is designed to be effective in increasing the upward draft of air, aided by the particular construction of the flues and baffles and their relative locations.

Other objects will appear as the description proceeds when considered with the annexed drawing, wherein:

Fig. 1 is a perspective view of a wall heater embodying the invention.

Fig. 2 is a front elevational view.

Fig. 3 is a vertical sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a transverse sectional view taken on line 4—4 of Fig. 2.

Continuing with a more detailed description of the drawing, reference numeral **10** denotes the outer shell or housing of the wall heater whose depth is calculated to equal the thickness of the studs of a wall so that it can be counter-sunk into the wall with the side flanges **11** flush with the exterior surface thereof. A suitable face plate, not shown, is secured to the flanges **11**.

Within the shell **10** is mounted a "floating" casing, generally indicated by reference numeral **12** and is composed of a rear plate **13** which is a mounting plate for the floating casing and a baffle and when combined with a baffle **14** between the rear wall **15** of the shell **10**, a flue **16** is formed. The upper portions **17** and **18** of the rear plate **13** and baffle **14**, respectively, are forwardly curved along corresponding radii into a horizontal plane so that the flue **16** defined thereby will open at the front of the heater.

Disposed below the horizontal portions **19** and **20** of the plate **13** and baffle **14**, respectively, are supplemental consecutive baffles **21**, **22**, **23** which become progressively shorter from the topmost to the lowermost baffle. The baffle **21** defines, with the baffle **14**, a flue **24**; baffles **21** and **22** define a lower flue **25** and baffles **22** and **23** define the lowest flue **26**. The baffles **21**, **22** and **23** are attached at their ends to the inner side plates **27** and **28** of the floating casing by down-turned flanges **29**, **30** and **31**, respectively (Fig. 3).

Below the lowest baffle **23** is mounted an oblique baffle plate **32**, inclined to the vertical, whose lower edge *a* is located approximately midway between the top and

bottom of the shell **10** and whose upper edge *b* terminates short of the inner edge of the lowest baffle **23** to define a transverse opening **33** at this point. The oblique baffle **32** has end flanges **34** which are secured by suitable means to the inner side plates **27** and **28** of the floating casing. Further reference to the baffle **32** and the companion baffles will be made presently.

The floating casing referred to above includes the outer side plates **35** and **36** which are joined to the baffle **14** and extend below the same, in parallelism with the inner side plates **27** and **28** between these plates and the sides of the shell or housing **10**. In this manner, air spaces **37** and **38** (Fig. 2) are formed between the inner and outer plates and between the outer plates and the sides of the housing **10**, such air spaces being effective to reduce to the minimum conduction of heat to the housing **10**, it being noted that the side plates **27** and **35** and **28** and **36** are separated by confronting dimples **39** in each plate which are spot welded together to secure the parts in assembly. These dimples **39** constitute the only contact between the inner side plates of the floating casing and the outer side plates **35** and **36**, hence minimizing the amount of heat transference.

The floating casing is held in the shell **10** by means of a bracket **40** (Fig. 3) which is welded to the rear wall of the said shell **10** at a point spaced above the bottom thereof. A screw **41** passes through a hole in the rear plate **13** of the floating casing and threads into a hole in the bracket **40**, as shown. At each top corner of the floating casing is mounted a right angle flange **42**. At corresponding positions in the upper corners of the housing or shell **10** are mounted clips **43**. In installing the floating casing in the housing, the former is positioned so that its flanges **42** will slide upwardly into the clips **43**, whereupon the lower end of the floating casing is moved inwardly to bring into register the holes in the bracket **40** and in the rear plate **13**. The screw **41** is then inserted into these holes.

It is noted that the three points of contact between the floating casing and housing are at the bracket **40** and the two clips **43** and connecting flanges **42**. This reduces to a minimum the transference of heat to the housing **10** and the surrounding area.

The opposing inner plates **27** and **28** of the floating casing each has its lower end turned inwardly at right angles to form shelves or supports **44** for a radiant generally indicated by reference numeral **45** in Fig. 2. Below the radiant **45** is a burner **46**.

While the radiant **45** is not a part of the present invention, its particular construction is such as to contribute to the performance of the heater by virtue of the horizontal, vertically spaced ribs **47** which are struck out from the inclined side **48** of the radiant and the openings **49** in the ends **50** thereof. The radiant rests on the supporting flanges **44** of the inner side plates **27** and **28** and is held at its upper portion by wire clips **51** which extend inwardly from each side plate **27** and **28**. This radiant constitutes a flue and the air circulating through the louvered openings at the sides and the openings in the ends of the radiant is heated with great rapidity and influenced upwardly by the draft created by the duct assembly formed by the plurality of baffles rearwardly and above the radiant **45**.

In order to insure separation of the rising heat into uniform streams for issuance through the flues **24** and **25** at equal temperatures, the baffle **21** has an extended and downwardly turned rear edge which forms a separator **52** (Fig. 3). It is essential that the edge of this separator **52** be precisely positioned, by adjustment of the baffle **21** forwardly or rearwardly, in relation to the radiant **45** and the opening **33** above the inclined baffle **32**,

otherwise, equal distribution of heat through the ducts or flues and at equal temperature will not prevail.

As the heated air is forced and drawn upwardly and into the inner ends of the flues **24**, **25** and **26**, the venturi effect created by the inclined baffle **32** will induce outside air into the hot air stream through the opening **33** at the top of the inclined baffle **33**. Not only does the air then drawn into the heater keep the area in front of the baffle **32** comparatively cool but it aids as an admixture with the heated air in breaking up streams of air of greater or lessers temperature and causing the issuance, as stated, of air of uniform temperature.

Manifestly, the construction as shown and described is capable of some modification and such modification as may be construed to fall within the scope and meaning of the appended claims is within the spirit and intent of the invention.

What is claimed is:

1. In a space heater, the combination of a shell, a floating casing in the shell comprising inner and outer parallel side plates spaced upwardly from the bottom of the shell and connected in spaced relation to each other, inner and outer parallel rear walls connected to the inner and outer side plates, respectively, in spaced relation to each other, the rear walls being inclined upwardly and forwardly from their lower ends and being curved intermediate their ends to form forwardly extending horizontal portions terminating at the front of the shell and defining a first horizontal flue, a plurality of horizontally extending baffles connected at their ends to the inner side plates in spaced relation to each other and defining horizontal flues below the first flue, the baffles being progressively shorter from the topmost to the lowermost baffle and each having one edge aligned with the forward edges

of the first flue, horizontal confronting flanges formed on the lower ends of the inner side plates, a radiant supported on the flanges, an upwardly and rearwardly inclined baffle secured at its ends to the inner side plates and extending therebetween in front of the radiant, the upper end of the inclined baffle being spaced below the inner end of the lowest of the horizontal baffles to define an opening through which primary air is induced by and into a hot air stream rising from the radiant for release through the horizontal flues.

2. A space heater as described in claim 1 in which the topmost horizontally extending baffle is curved to form a downwardly extending rearward portion spaced inwardly from the inner end of the horizontal baffle positioned immediately below it.

3. A space heater as described in claim 1 in which the inner rear wall of the floating casing extends downwardly below the outer rear wall and is removably connected to a bracket on the rear wall of the shell intermediate its side walls, the shell having a spring clip on each of its side walls adjacent its top and in confronting relationship, the outer side plates of the floating casing each having a right angle flange thereon slidably engaging one of the spring clips to hold the upper portions of the floating casing and the shell in secure relationship.

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