June 4, 1929. H. W. NEAL 1,716,083

FIN RADIATOR FOR WARM AIR FURNACES

Filed Nov. 8, 1928

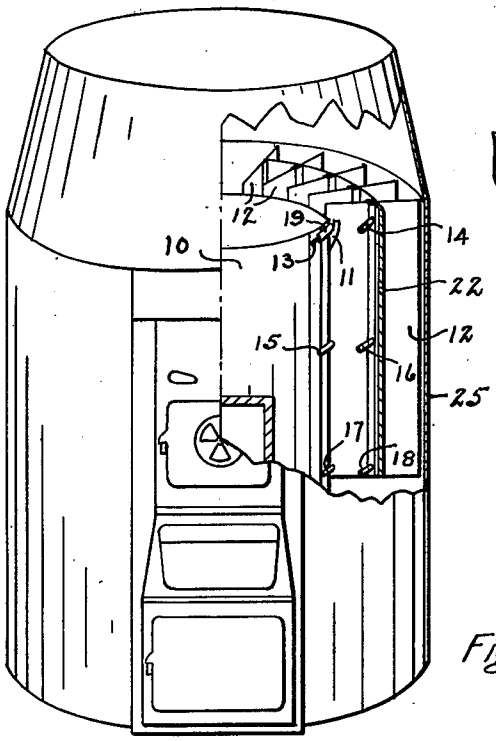


Fig. 1.

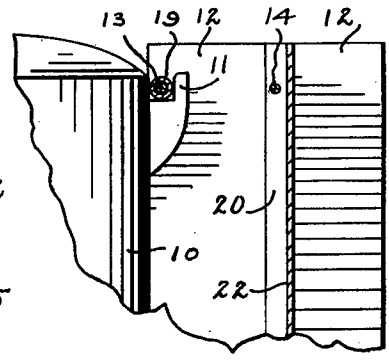


Fig. 3.

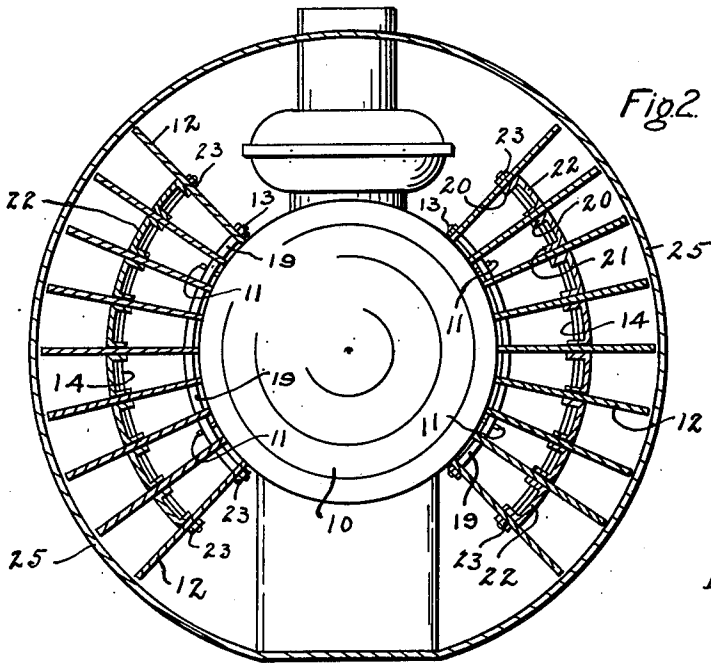


Fig. 2.

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UNITED STATES PATENT OFFICE.

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FIN RADIATOR FOR WARM-AIR FURNACES.

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This invention relates generally to a warm-air heating furnace, and in particular to means for increasing the thermal efficiency of the furnace wherein the rate of flow of air and the temperature of the delivered air are increased in comparison to the heretofore usual structure. The invention is embodied in a simple structure easily made and applied to the heating chamber of the furnace in a unique manner, as indicated by the following description which is made in reference to the accompanying drawing, in which—

Fig. 1 is a fragmentary front elevation in perspective of a warm-air furnace embodying my invention;

Fig. 2, a horizontal transverse section through the furnace across the dome of the body of the furnace; and

Fig. 3, a detail in vertical elevation.

Like characters of reference indicate like parts in the several views in the drawing.

I build a furnace with a central body 10 in the usual manner well known to those versed in the art. At the top of the body 10 and on each side, a number of hooks 11 are welded, here shown as two on each side.

Fin radiators are built up in separate units by spacing apart a plurality of sheet iron plates or fins 12, on rods 13, 14, 15, 16, 17 and 18 curved on arcs having their center of curvature at the center of the body 10. Spacing thimbles 19 are carried on the rods 13, 15 and 17 to space the fins 12 apart at their inner ends, while the rods 14, 16, and 18 pass through the legs 20 and 21 of the partition plates 22, preferably made of sheet iron, each of which plates is between two adjacent fins 12.

The lengths of the thimbles 19 and the width of the plates 22 are such that the fins 12 are equally spaced apart one from the other around the rods and are each radially positioned in respect to the curvature of the rods. The rods 13, 14, 15, 16, 17 and 18 are screw-threaded on their ends to receive nuts 23 thereon which are drawn up to compact the fins, thimbles and plates into a rigid structure.

I hang the fin radiators mounted on rods 13 on each side of the body 10 by dropping the rods 13 over the hooks 11 whereby the inner vertical edge of each fin 12 is in direct contact with the wall of the body, the normal tendency of the fins being to swing by their lower ends in toward the body 10 by reason of the supporting rod 13 being to one side and at the top of the fins.

A casing 25 surrounds the body 10 and the fins therebetween, the casing 25 being spaced out from the fins a slight distance to prevent actual contact therewith so as to prevent direct radiation of heat from the fins to the casing. The clearance between the fin ends and the casing however is held close to prevent substantially eddy currents being set up transversely around the casing.

It is therefore to be seen that heat may be directly radiated from the body 10 out through each fin 12 to its outer edge and also transversely across each separating plate 22 so that between each pair of fins there are two columns or flues provided through which air will pass to wipe heat off from not only the body and the fins but also off the plates 22, the inner column as defined between the body and the plates being narrower than is the outer column as defined between the plates and the casing.

I claim:

1. A fin radiator for a furnace comprising a plurality of curved rods, a plurality of vertically positioned fins carried on said rods, thimbles on the innermost of said rods between said fins, partition plates between said fins spaced outwardly from said thimbles, said thimbles being shorter than said partition plates, and means on said rods for pressing said fins one toward the other against said thimbles and plates therebetween.

2. The combination with a furnace body and a casing of a plurality of curved rods, a plurality of vertically positioned fins carried on said rods, thimbles on the innermost of said rods between said fins, partition plates between said fins spaced outwardly from said thimbles, said thimbles being shorter than said partition plates, and means on said rods for pressing said fins one toward the other against said thimbles and plates therebetween, a body in the furnace, and hooks on the body to receive one of said rods thereacross to cause the inner edges of said fins to contact said body.

3. In combination with a furnace body and a casing, a plurality of curved rods, a fin radiator removably hung on the rods, said radiator having a plurality of vertically positioned fins contacting the body and extending substantially to but not contacting said casing.

4. In combination with a furnace body and a casing, a plurality of curved rods, a fin radiator removably hung on the rods, said radiator having a plurality of vertically positioned fins contacting the body and extending substantially to but not contacting said casing, and a vertical partition plate between adjacent fins spaced between the body and the casing.

5. A fin radiator for a furnace, comprising a plurality of rods, a plurality of vertically positioned fin plates carried on the rods, thimbles between adjacent fin plates on the rods toward the inner vertical edges of the plates, and partition plates substantially U-shaped between adjacent fin plates, the legs of said partition plates receiving the outermost of said rods therethrough.

In testimony whereof I affix my signature.

HARRY W. NEAL.