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HOT AIR FURNACE

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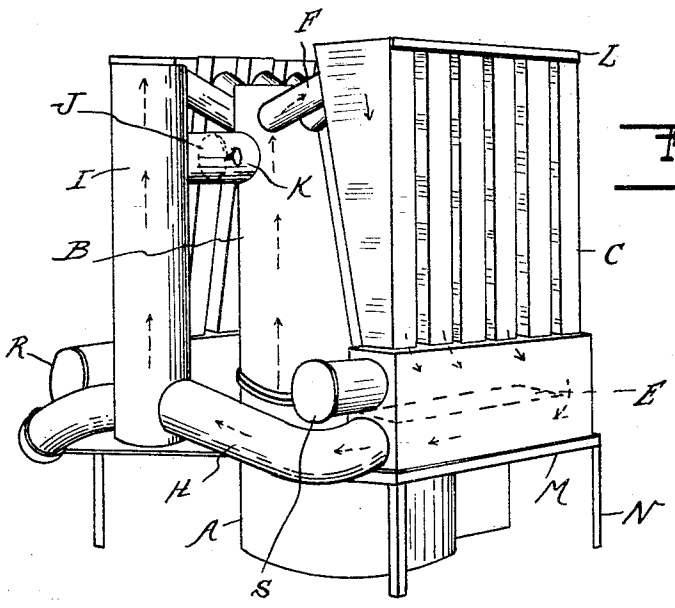


Fig. 1.

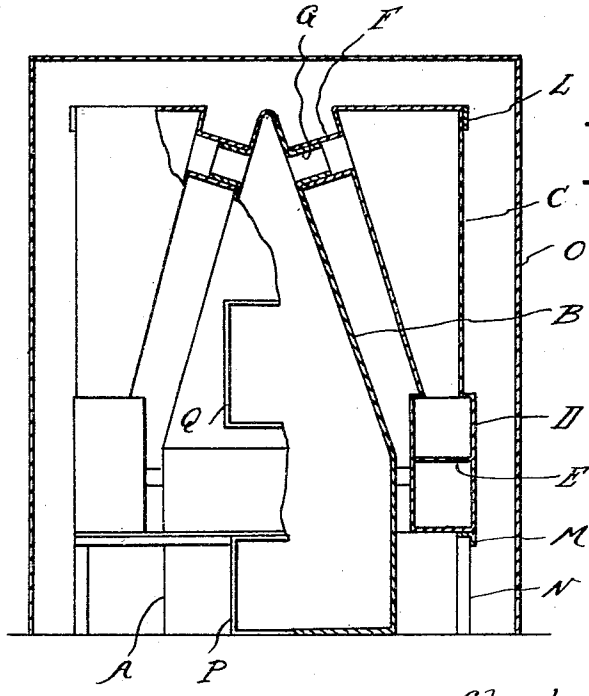


Fig. 2.

INVENTOR

Charles I. Murdock

BY Whittemore Hulbert

Whittemore & Belknap

ATTORNEYS

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CHARLES I. MURDOCK, OF ANN ARBOR, MICHIGAN

HOT AIR FURNACE

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The invention relates to furnaces, particularly designed for hot air heating and consists in the novel construction as hereinafter set forth.

In the drawing:

Figure 1 is a perspective view of the heater;

Figure 2 is a vertical cross section thereof.

While my improved construction may be used with various fuels, it is more particularly designed for use with liquid or gaseous fuels. In detail, A is a cylindrical base portion forming the fire pot and adapted to receive the oil or gas burner. B is a wedge shaped top section extending upward from the section A, being the full diameter thereof from front to rear but tapering to an apex at its upper end. C are downwardly tapering flue sections arranged in series upon opposite sides of the wedge shaped section B, being spaced from each other to form air passages therebetween. The lower ends of the sections C are connected to a flue box D which has a horizontal partition E extending from its rear end to near the forward end. The flues C at their upper ends are connected by nipples F with telescopically engaging nipples G projecting from the wedge shaped section B. Thus as indicated by the arrows in Figure 1, the heated products of combustion ascending through the wedge shaped section will pass through the nipples G and F into the flues C then downward to the box D and around the partition E to the rear. The rear end of each box D is connected by a flue H with a vertical drum I which is connected to the chimney. There is also a direct draft connection J between the upper portion of the wedge shaped chamber B and the drum I with a controlling damper K therein.

All of the elements described are preferably formed of sheet metal with welded joints so as to be gas tight. The lower ends of the flue C are also welded to the box D and the nipples F are welded to the inclined side of the section C near the upper end thereof, so as to extend substantially perpendicular thereto. The nipples G are welded to the wedge shaped section B and are adapted to telescope in the nipples F. All of the flues C on one side of the furnace are connected to each other through the box flue D and also at their upper ends are mechanically connected through a brace bar L welded thereto. Thus the complete structure is formed of three separable units which may be quickly engaged with each other by telescoping the nipples F with the nipples G. The flue box D is supported on a base frame M, the legs N depending therefrom, and the whole structure is enclosed by a jacket as indicated at O. The sections A and B are provided with the forwardly extending door frames P and Q, the latter forming the fire door opening and the former a draft opening which also gives access to the ash pit where solid fuel is used. These frames are preferably of rectangular cross section and they extend forward to the jacket O.

With the construction as described, the hot gaseous products of combustion rising from the section A will impinge against the inclined walls of the wedge shaped section B thereby rendering such walls much more effective as heating surfaces. The gases passing into the flue section C must be drawn downward by the draft of the chimney excepting when the fire is first started, at which time direct draft connection is established through the conduit J. It will also be noted that the tapering form of the section B and of the flue section C will produce a progressively decreasing cross sectional area for the gases as the heat is abstracted therefrom. All of the joints are welded with the exception of those between the nipples F and G which telescope to such an extent as to avoid danger of leakage. The flue boxes B may be provided with clean-out extensions R arranged above the partitions E and extending to the jacket O, being provided with detachable caps S.

What I claim as my invention is:

1. A hot air furnace comprising a fire box section provided with a wedge shaped upward extension, a series of downwardly tapering flue sections at the side of said wedge shaped section and connected therewith at

their upper ends, and a flue box to which the lower ends of said flue sections are connected, said box leading to the chimney.

2. A hot air furnace comprising a fire box section having a wedge shaped upward extension, a series of spaced downwardly tapering flue sections arranged at the side of said wedge shaped section, nipples connecting the upper ends of said wedge shaped section and flue section, a flue box to which the lower ends of said flue sections are connected, a partition in said flue box forming a return bend for the gaseous products passing therethrough and a connection between the lower portion of said flue box and the chimney.

3. A hot air furnace comprising a cylindrical fire box section, a wedge shaped section extending upward thereto, being the full diameter of said fire box section from front to rear but tapering to an apex, a series of downwardly tapering spaced flue sections arranged along the side of said wedge shaped section and being substantially rectangular in horizontal cross section, a horizontally extending flue box to which the lower ends of said flue sections are connected, nipples at the upper ends of said flue sections and wedge shaped section telescopically engaging each other, and a chimney connected to said flue box.

4. A hot air furnace comprising a cylindrical fire box section, a wedge shaped section extending upward therefrom, being of full diameter from front to rear with sides tapered to an apex, a series of downwardly tapering spaced flue sections arranged at the side of said wedge shaped section and spaced therefrom, said flue sections being of substantially rectangular horizontal cross section, a horizontally extending flue box to which the lower ends of said flue sections are connected, said box having a horizontal partition extending part way therethrough to form a return bend for the gaseous products, a vertically extending drum in the rear of said wedge shaped section, a conduit connecting the rear end of said flue box section with the lower end of said drum and a direct draft conduit connection between the upper end of said drum and the upper end of said wedge shaped section.

5. A hot air furnace comprising a plurality of sections each formed with welded joints, one of said sections comprising a cylindrical fire box portion and a wedge shaped portion extending upward therefrom tapering to an apex and of substantially the full diameter of the cylindrical portion from front to rear, and a series of nipples extending from the upper end of said wedge shaped section, another of said sections comprising a series of spaced downwardly tapering flues, a flue box to which the lower ends of said flues are connected and nipples extending from the upper ends of said flues, the nipples of the latter section being adapted to telescopically engage the nipples of the first mentioned section.

6. A hot air furnace comprising a plurality of sections, each formed of sheet metal with welded joints, one of said sections comprising a cylindrical fire box portion, a wedge shaped portion extending upward therefrom and tapering to an apex, being of the full diameter of said cylindrical portion from front to rear, door frames extending forward from said wedge shaped and cylindrical portions, and a series of spaced nipples extending laterally from the upper end of said wedge shaped portion, and another of said sections comprising a series of spaced downwardly tapering flue portions arranged at the side of and spaced from said wedge shaped portion, a flue box to which the lower ends of said flue portions are connected, and nipples extending from the upper ends of said flue sections and adapted to telescopically engage the nipples of said wedge shaped section.

7. A hot air furnace comprising a plurality of sections each formed of sheet metal with welded joints, one of said sections comprising a cylindrical fire box portion, a wedge shaped portion extending upward therefrom and tapering to an apex, being of a dimension from front to rear substantially equal to the full diameter of said cylindrical portion, a series of nipples projecting laterally from the upper end of said wedge shaped portion, a vertical drum in rear of said wedge shaped portion and a direct draft conduit connecting the upper portion of said drum with the upper end of the wedge shaped portion, and a pair of sections arranged on opposite sides of said first mentioned section, each comprising a series of spaced downwardly tapering flue portions, a flue box connecting the lower ends of said flue portions, nipples projecting laterally from the upper end of said flue portions adapted to telescopically engage the nipples of said wedge shaped section, and a connection between said flue box and the lower end of said drum.

8. A hot air furnace comprising a fire box section provided with an upwardly tapering extension, a series of downwardly tapering flue sections at the sides of said upwardly tapering extension and connected thereto at their upper ends, and a flue box to which the lower ends of said flue sections are connected, said box leading to the chimney.

In testimony whereof I affix my signature.

CHARLES I. MURDOCK.