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P. J. SWANSON
AUXILIARY DRAFT DEVICE

Filed Oct. 12, 1925

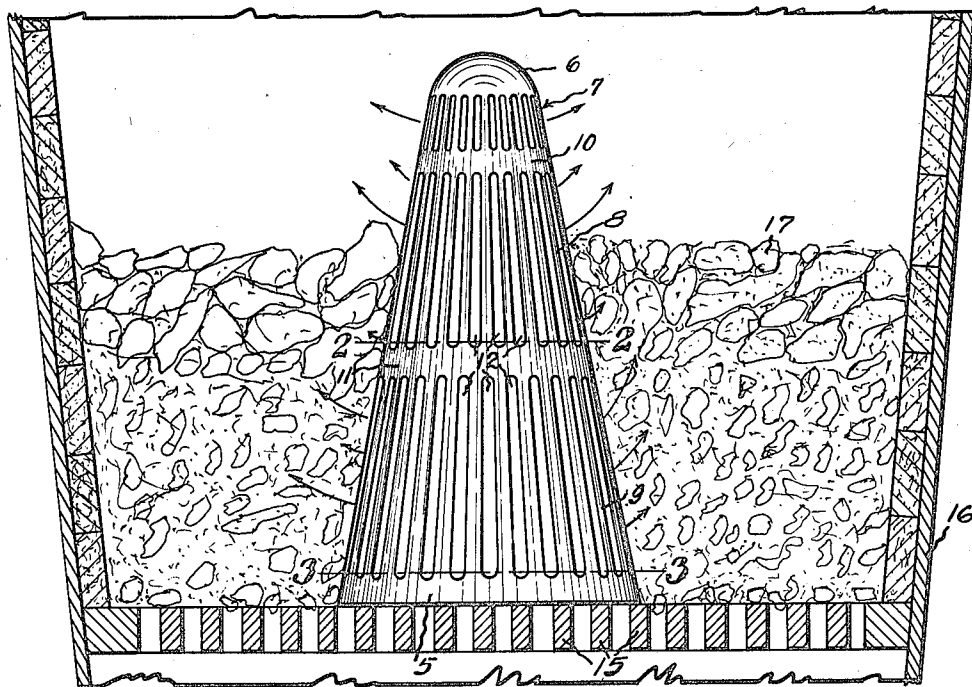


FIG. 1

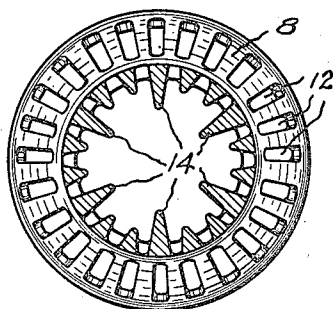


FIG. 2

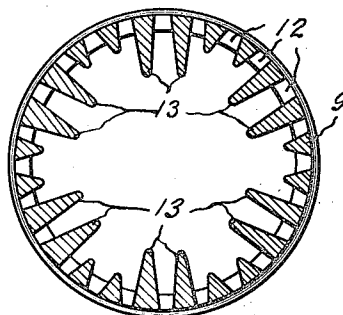


FIG. 2

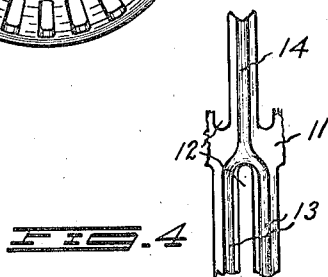


FIG. 4

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AUXILIARY DRAFT DEVICE.

Application filed October 12, 1925. Serial No. 61,940.

My invention relates to improvements in auxiliary draft means for use in fire boxes of furnaces and the object of my invention is to provide an auxiliary grate member that may be placed within a fire box on the usual furnace grate in such a manner as to extend upwardly into, or through, a bed of coals to provide more grate surface and afford more draft means for combustion purposes.

A more specific object is to provide an auxiliary grate member composed of a hollow cone with side walls formed of spaced grate bars and having an open bottom end arranged to rest on the usual grate within a furnace fire box and support said cone in an upright position within the fire box whereby air for combustion purposes may pass upwardly through the center and out through the sides of said cone.

Other and more specific objects will be apparent from the following description taken in connection with the accompanying drawings wherein—

Figure 1 is a view in elevation of an auxiliary draft means constructed in accordance with my invention showing the same in an operative position within a fire box of a furnace, the fire box being shown in section.

Figs. 2 and 3 are sectional views of the auxiliary draft means on broken lines 2, 2 and 3, 3, respectively; and

Fig. 4 is a fragmentary view illustrating a detail of the invention.

Referring to the drawings, throughout which like reference numerals indicate like parts, I show an auxiliary draft means, preferably cast in a single integral piece, which embodies a cylindrical base 5 and a rounded top 6 between which are disposed three sets or sections of grate bars 7, 8 and 9 that are separated from each other by two integral reinforcing rings 10 and 11. The grate bars of each set are spaced from each other to leave openings or passageways 12 therebetween as shown in Figs. 2 and 3.

To make the auxiliary draft means strong and substantial and capable of withstanding great heat I preferably construct every alternate pair of grate bars 13, in the lower grate section 9, of greater depth, as measured in a direction radial to the device, as shown in Figs. 3 and 4, and, at the location of the

reinforcing ring 11, I unite the two grate bars of each pair 13 with a single grate bar 14 in section 8 which is of greater depth than the other grate bars of said section 8.

If desired, the reinforcing rings 10 and 11 and the deeper bars 13 and 14 may be dispensed with and the device may be a simple cone with bars of uniform shape extending continuously from bottom to top thereof. I find, however, that the rings 10 and 11 and the deeper bars 13 and 14 are desirable due to the fact that the device is subjected to the external pressure of the coal while it is intensely hot and is most susceptible to bending and warping. Obviously the reinforcing rings 10 and 11 extending entirely and continuously around the device and the deeper bars 13 and 14 serve to resist this external pressure and prevent distortion of the device.

In operation this device is placed on the usual grate 15 within a fire box 16 of a furnace so as to extend up into or through a bed of coals 17 as shown in Fig. 1. The grate bars of the cone being relatively close together will exclude all heavy and large chunks of coal and ashes so that the space within the cone will always be open and will permit air to pass upwardly through the cone and out through and above the fuel thus furnishing oxygen needed for combustion and greatly increasing the efficiency of the furnace. The air that is supplied above the bed of coals is especially useful in facilitating the burning gases and smoke and in preventing the formation of soot.

It will be obvious that this device provides for more grate surface for the reason that the side surface of the cone is much larger in area than the bottom surface which surface rests upon the usual grate and when the fuel rests against the side surface it will ignite and burn.

This device is a separate and independent unit in itself, is not connected with the usual grate of a furnace in any way except that it rests upon the top of the grate and is adapted to be placed in any ordinary furnace fire box.

The foregoing description and accompanying drawings clearly disclose a preferred embodiment of my invention but it will be understood that this disclosure is

merely illustrative and that such changes in the invention may be made as are within the scope and spirit of the invention.

What I claim:

- 5 1. An auxiliary draft device for a furnace embodying a hollow integral cone provided with sides formed of a lower section of longitudinally extending spaced grate bars and an upper section of longitudinally ex-
10 tending spaced grate bars, said lower section and said upper section of grate bars being separated from each other by an annular reinforcing ring of solid metal, each alternate pair of bars of said lower section being
15 of greater depth radially of the cone and each third bar of said upper section being of greater depth radially of the cone, said deeper third bars of said upper section be-

ing disposed in planes between the two bars of each pair of deeper bars of said lower section and merging therewith at the loca- 20
tion of said reinforcing ring.

2. An auxiliary draft device embodying a hollow integral cone provided with sides 25
formed of a lower and an upper section of longitudinally extending spaced grate bars and an intermediate section of longitudinally extending spaced grate bars, said lower and upper sections of grate bars being sepa- 30
rated from said intermediate section by an annular reinforcing ring of solid metal, each alternate pair of bars of said lower sections being of greater depth radially of the cone.

In witness whereof, I hereunto subscribe my name this 5th day of October A. D. 1925.

PETER J. SWANSON.