

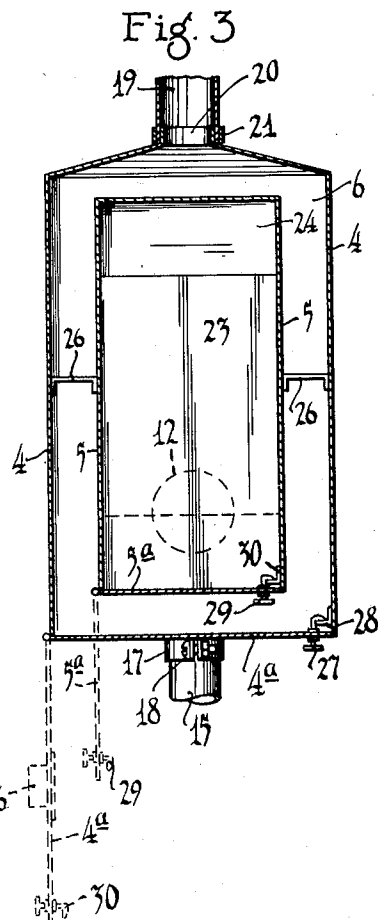
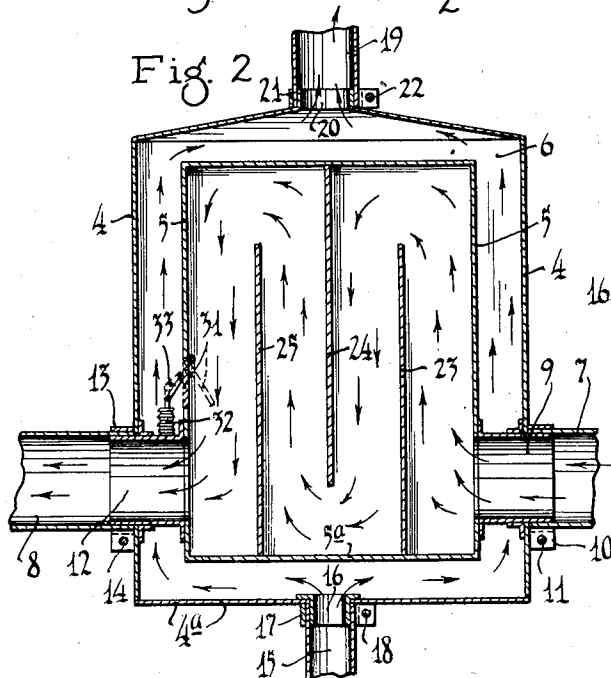
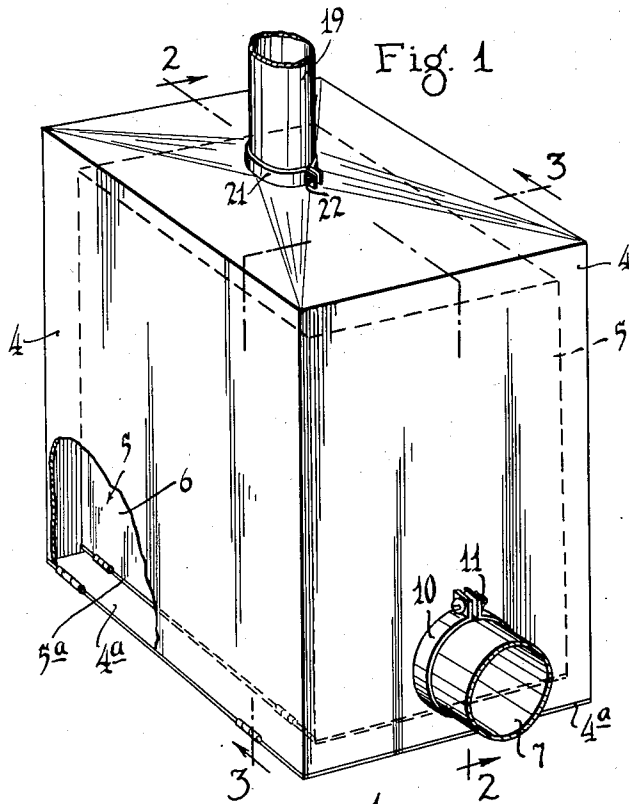
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HEAT RETARDER

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HEAT RETARDER

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2 Claims. (Cl. 257—168)

My invention provides an improved auxiliary heater or fuel saver adapted to be interposed in the smoke pipe between a furnace and the chimney or flue; and generally stated, the invention consists of the novel devices, combinations of devices and arrangement of parts hereinafter described and defined in the claims. The device is preferably made from sheet metal and comprises inner and outer casings spaced to afford an air-heating chamber surrounding the inner casing, combined with inlet and outlet passages and baffles, all as will hereinafter more fully appear.

In the accompanying drawings, which illustrate a commercial form of the invention, like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a perspective showing the auxiliary heater, some parts being broken away;

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1; and

Fig. 3 is a vertical section taken on the line 3—3 of Fig. 1.

Preferably, both the outer and the inner casings or sheet metal shells are rectangular. The outer casing is indicated by the numeral 4 and the inner casing or shell by the numeral 5, said parts being spaced to afford an air-heating chamber 6 that extends around all four sides, under the bottom and over the top of the inner shell. The numeral 7 indicates the smoke pipe leading from the furnace and the numeral 8 the smoke pipe leading to the outlet flue or chimney. A short pipe section 9 is rigidly connected to the lower portion of the inner shell 5 and to the outer shell 4 and projects from the latter so that the smoke pipe 7 is telescoped onto the projecting end thereof and is rigidly but detachably clamped thereto by a split clamping collar 10 equipped with a nut-equipped bolt 11. At its opposite side, the inner shell 5 is provided with a short pipe section 12 that is secured thereto and to the outer shell, preferably in alignment with the pipe section 9. This pipe section 12 projects from the outer shell so that the smoke pipe 8 is telescoped onto the same and is clamped thereto by a split collar 13 provided at its ends with a nut-equipped clamping bolt 14. An air intake pipe 15 is connected to the bottom of the outer shell and opens into the bottom of the air-heating chamber 6. This connection, as shown, is made by a thimble 16 and a clamping collar 17, which latter at its ends is provided with a nut-equipped bolt 18. A hot air delivery pipe 19 is

connected to the top of the outer shell and opens from the top of the chamber 6. This connection, as shown, is made by providing the top of the shell 4 with a flange 20 that is telescoped into the lower end of the pipe 19 and by a split collar 21, provided at its ends with a nut-equipped bolt 22.

Within the inner shell 5 are vertically overlapping baffle plates 23, 24 and 25. The baffle 24 extends from the top of the shell 5 downward between the upwardly extended baffles 23 and 25 so as to form a tortuous air passage for the products of combustion through the said inner shell. As shown in Fig. 3, small tie brackets 26 connect the sides of the shells 4 and 5.

Preferably, both the outer and inner shells are provided with hinged bottom plates which, when opened, afford access to the interiors thereof for the purpose of cleaning or repair. As shown in Fig. 3, the outer shell 4 is provided with a hinged bottom plate 4a and the inner shell 5 is provided with a hinged bottom plate 5a. The above noted connection between the air intake pipe 15 and the bottom of the outer shell is therefore made directly to the hinged bottom plate 4a and must be disconnected therefrom before the said bottom plate can be dropped to a position shown by dotted lines in Fig. 3. To normally hold the bottom plate 4a in closed position as shown by full lines in the various views, it is shown as provided with a sort of turn button 27, the hooked upper end of which is engageable with a detent 28 on the interior of the adjacent wall of the outer shell; and in like manner the bottom plate 5a is provided with a turn button 29, the hooked upper end of which is engageable with a detent 30 on the interior of the adjacent wall of said inner shell.

The numeral 31, see Fig. 2, shows a hinged damper located on the wall of the inner shell, preferably just above the pipe section 12. This damper will be normally closed as shown by full lines in Fig. 2, but is adapted to be moved into its open position indicated by dotted lines in said view, under the action of a thermostat such as a siphon bulb 32, shown as anchored to the pipe section 12 and connected to said damper by a short link 33.

The air intake tube 15 may extend from the outside of the room or building for the intake of fresh air or it may be a return pipe from one of the rooms. The warm air discharge pipe 19 will extend to one of the rooms or suitable place within the building to be heated. The furnace is

not shown, but the smoke pipe 7 will extend from the outlet thereof.

From the foregoing and from inspection of the drawings, it is obvious that the cross-sectional
5 conducting capacity of the tortuous passage through the inner shell is much greater than that of the smoke pipes 7, 8, 9 and 12, so that it follows that the hot products of combustion from the furnace will move very slowly through the said inner
10 shell and will have plenty of time to give up or radiate the heat that would otherwise be carried into the flue or smoke stack and hence wasted. Of course, the arrangement of baffles makes a long travel for the heated gases through the inner shell. Also the flow of air through the chamber
15 6 will be very slow so that it will have time to absorb all of the heat radiated from the inner shell.

If the air in the chamber 6 becomes heated beyond a predetermined extent depending on the
20 setting of the thermostat, damper 31 will be opened so that under the strong draft from the flue, some overheated air will be drawn into the interior of the inner shell and carried to the chimney or flue through the pipe 8. This will
25 prevent overheating or burning of the air delivered into the room. Obviously, all of the heat that is absorbed or taken up by this auxiliary heater will be saved heat, that is, the auxiliary heater
30 operates on heat that would otherwise be carried into the chimney and wasted. It will be understood that the device described as to details of

construction such as dimensions and exact arrangement of parts may be varied within the spirit of the invention herein disclosed and claimed.

What I claim is:

1. An auxiliary heater comprising inner and
5 outer shells spaced to afford an air chamber, said outer shell having air intake and outlet pipes and said inner shell having smoke pipe connections leading thereto and therefrom through the
10 walls of said outer shell, said inner shell having overlapping baffles for causing the products of combustion to take a tortuous course there-
through, said inner and outer shells having
15 hinged bottom plates affording access to the interiors thereof when dropped, said air inlet pipe being detachably connected to and delivering
through the hinged bottom of said outer shell.

2. An auxiliary heater comprising inner and
outer shells spaced to afford an air chamber, said
20 outer shell having air intake and outlet pipes and said inner shell having smoke pipe connections leading thereto and therefrom through the walls
of said outer shell, said inner shell having over-
lapping baffles for causing the products of com-
25 bustion to take a tortuous course therethrough, in which said structure, the inner shell is provided with an opening normally closed by damper combined with a thermostat arranged to move said
damper to an open position when the air in the
30 air chamber is heated beyond a predetermined temperature.

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