Nov. 30, 1965 H. L. YAGER 3,220,400

STOVE CONSTRUCTION

Filed Dec. 14, 1962 3 Sheets-Sheet 1

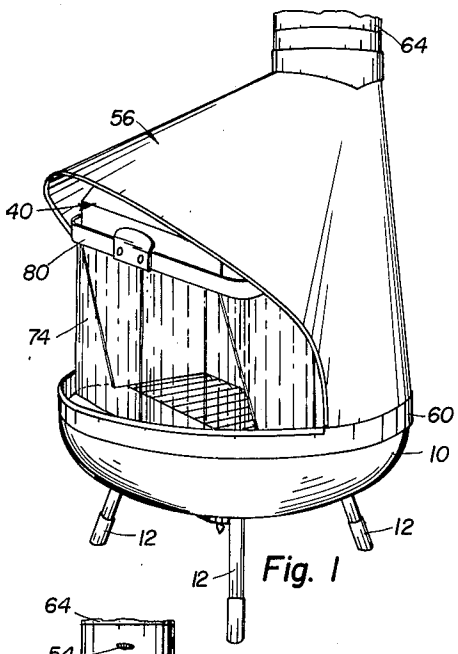

Fig. 1

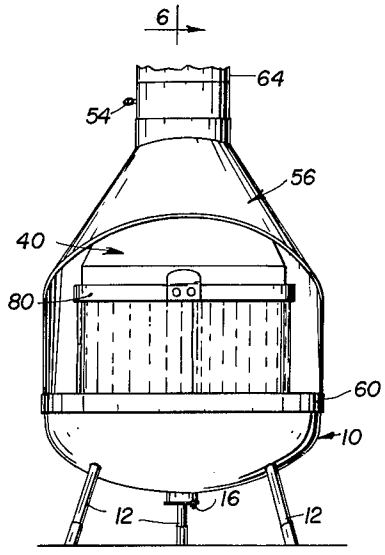

Fig. 2

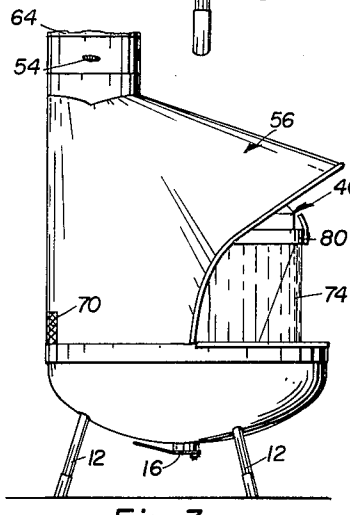

Fig. 3

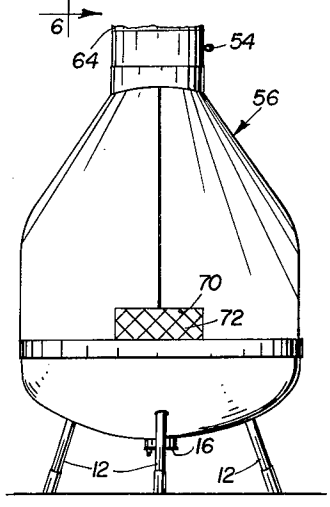

Fig. 4

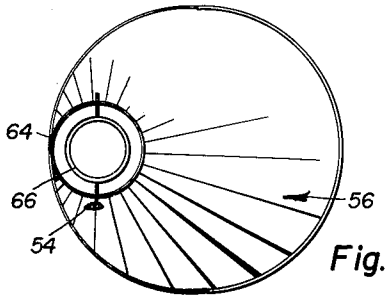

Fig. 5

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STOVE CONSTRUCTION

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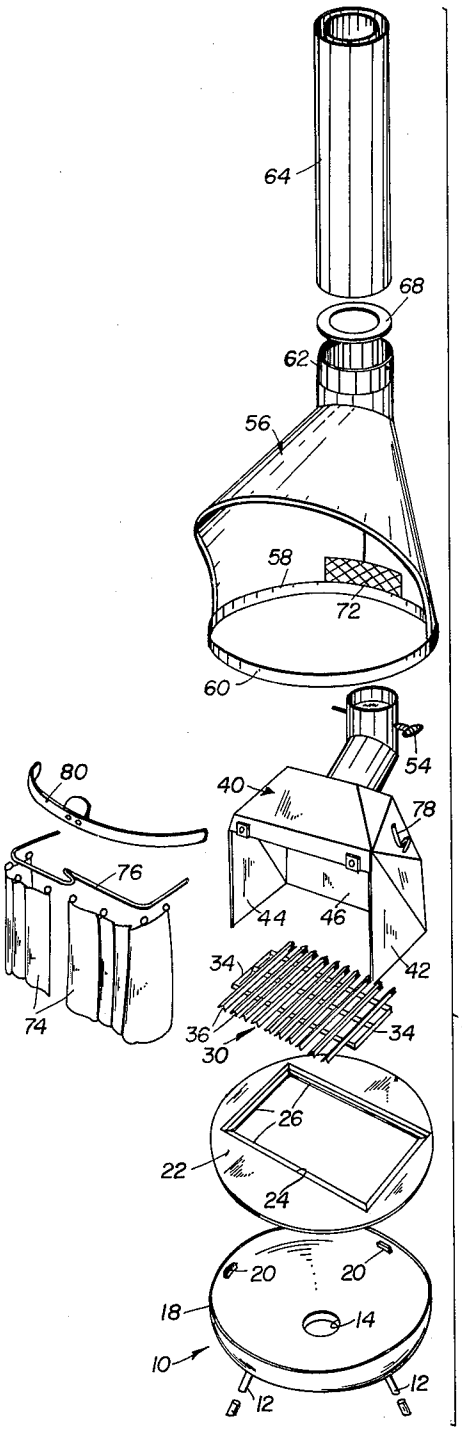

Fig. 7

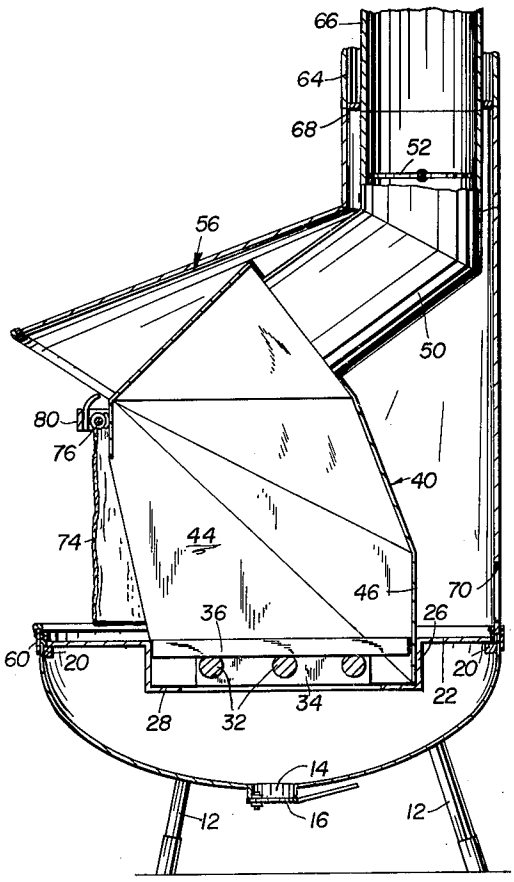

Fig. 6

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Fig. 8

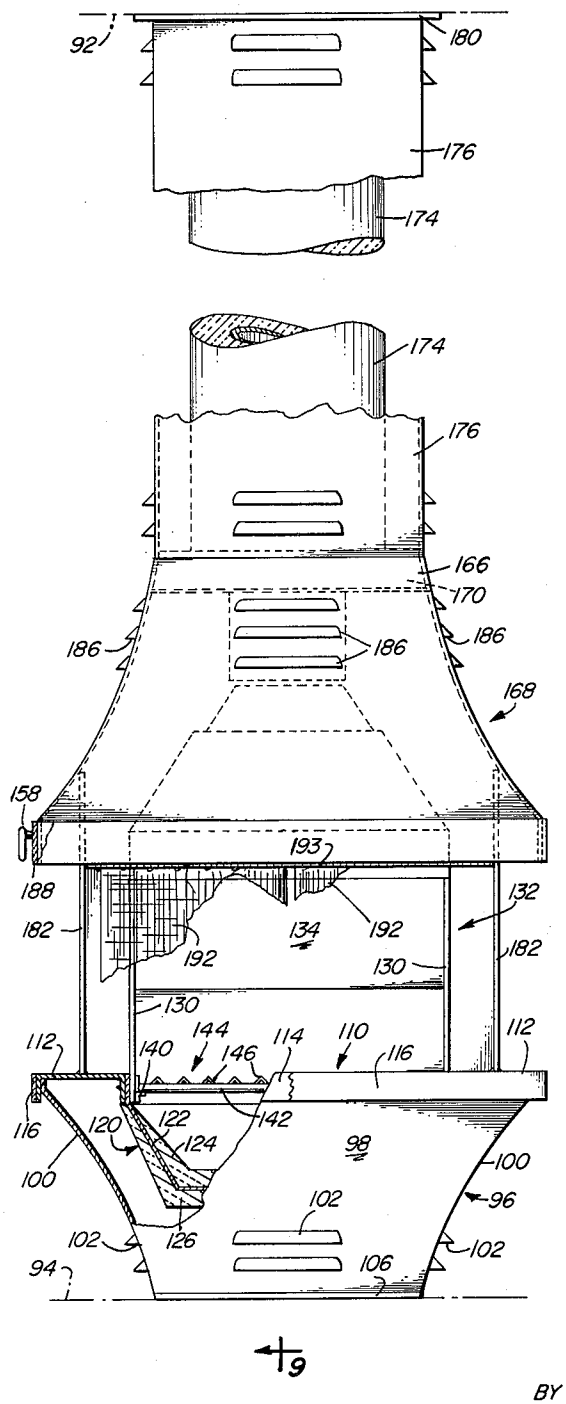
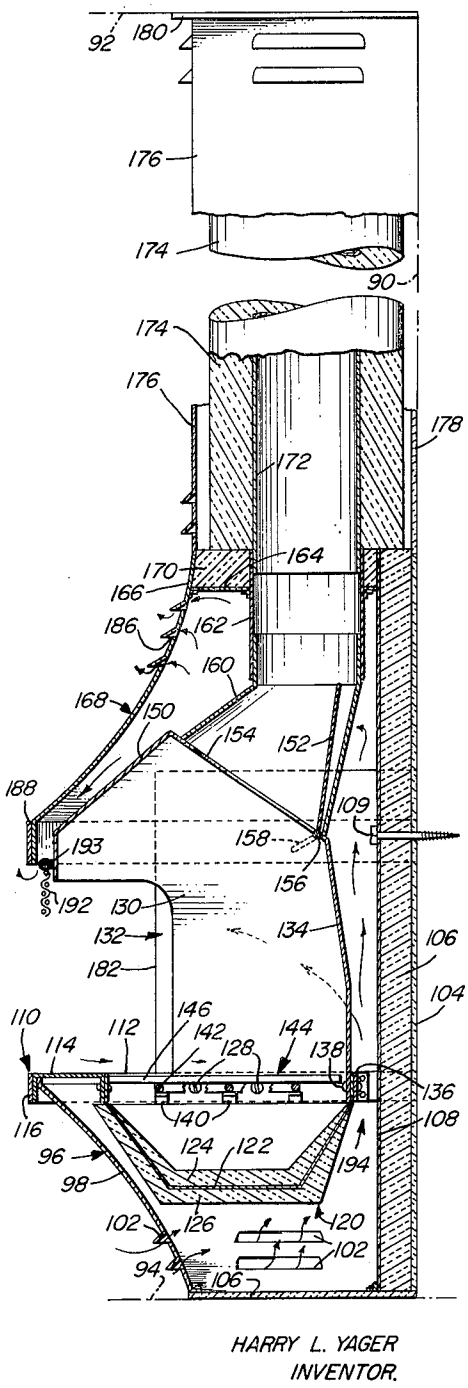


Fig. 9



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United States Patent Office 3,220,400 Patented Nov. 30, 1965

3,220,400

STOVE CONSTRUCTION

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Filed Dec. 14, 1962, Ser. No. 247,791
7 Claims. (Cl. 126—6)

This application is a continuation-in-part of my copending application Serial No. 129,575, filed August 7, 1961 for "Stove Construction."

My present invention comprises a metal stove.

The principal object of the present invention is to provide a free-standing metal stove which may be placed in living quarters as an ornamental feature thereof, the preferred form of the stove being generally known as an "acorn" stove. A further object of the present invention is to provide a stove of the foregoing character which is made of interfitting parts which may be easily fabricated and assembled to form a variety of final products.

A further object of the present invention is to provide a device of the foregoing character which may be readily assembled into various combinations at the factory, in the shops of distributors and dealers, or at the home of the purchaser.

Another object of the invention is to provide a fireplace stove of high heat efficiency.

A still further object of the invention is to provide a fireplace stove which can be installed against a wall of a room.

The objects and advantages of the present invention will be more readily understood by reference to the accompanying drawings, taken in connection with the following specification, wherein like numerals refer to like parts throughout.

In the drawings,

FIG. 1 is a view, in perspective, of the present invention in one manner of assembly;

FIG. 2 is a front elevation of FIG. 1;

FIG. 3 is a side elevation of FIG. 1;

FIG. 4 is a rear elevation of FIG. 1;

FIG. 5 is a plan view of FIG. 1;

FIG. 6 is a vertical section taken substantially along line 6—6 of FIG. 2, on an enlarged scale;

FIG. 7 is an exploded view, in perspective and on a smaller scale, illustrating each of the component parts of the assembly of FIGS. 1 to 6 inclusive;

FIG. 8 is a fragmentary, front elevation view of a fireplace stove forming an alternate embodiment of the invention; and

FIG. 9 is a vertical sectional view taken along line 9—9 of FIG. 8.

The stove comprises a base member **10** in the form of an upwardly open, dished member, formed of three-sixteenth inch plate and deeply drawn so as to comply with normal building codes. The base member is supported on legs **12** preferably arranged in a tripod manner, and is preferably provided with a central ash dump opening **14** with which there is associated a pivoted gate **16**. The member **10** terminates in a horizontally disposed, circular rim **18**.

Welded to the inner surface of the above member **10**, slightly below the rim **18**, are a plurality of lugs **20** upon which may be rested a hearth disc **22**. The hearth disc is provided with a symmetrically disposed, rectangular grate opening **24** of substantial dimensions with respect to the diameter of the disc, and a plurality of angle bars **26** welded to the edges of the opening provide a continuous flange **28** projecting inwardly from the edges of the opening **24** at a distance below the hearth plate **22**.

A grate **30**, preferably composed of a plurality of three-quarter round bars **32** welded to end plates **34**, and upwardly angled transverse angle bars **36** welded to the bars **32** may be dropped into place, resting upon the continuous flange **28**. The grate is of substantial thickness vertically, so that the upper edges of the transverse bars **36** rest substantially in the plane of the hearth disc **22**. The longitudinal and lateral dimensions of the grate are slightly less than the corresponding dimensions of the opening **24**, so that the edges of the grate are slightly spaced from the edges of the opening.

A fire shell **40** having a regular fireplace type opening at the front, and being open at the bottom, is also rested on the flange **28**, the side walls **42** and **44** and rear wall **46** thereof being frictionally wedged between the edges of the grate and the edges of the opening so that the fire shell is firmly retained in proper position. The fire shell has a flue **50** mounted thereon in which there is mounted a damper **52** provided with a conventional operating handle **54**. The arrangement is preferably such that the handle **54** may be withdrawn to permit association of an air chamber shell **56** with the assembly. The air chamber shell is attractively formed in acorn shape, having a wide open front which is positioned in surrounding relation to the front opening of the fire shell, and is provided with a circular lower edge **58** of less than a complete circle. An ornamental band **60** is attached to the lower edge of the air chamber shell in downwardly extending relation thereto, so that the band **60** may be frictionally fitted around the rim of the base **10**, thus holding the lower edge **58** of the air chamber shell in alignment with the rim **18**. The air chamber shell **56** is provided with a flue-encircling sleeve **62**, with which may be associated an extension **64** so as to insulate the flue **50** and its extension **66** to thereby protect passersby. A sealing ring **68** is preferably provided to seal off the hollow space between the flue extension **66** and the sleeve extension **64**. The walls of the air chamber shell **56** are spaced from the fire shell **40** throughout, so that cold air may enter from the room at the lower front, circulate about the fire shell to be heated, and re-enter the room at the upper front. Additional air may enter through an opening **70** in the rear of the air chamber shell **56**, with which is preferably associated a screen **72**. A pair of separable fireplace drawscreens **74** may be provided, the same being mounted upon a rod **76** adapted to be attached to brackets **78** mounted on the fire shell **40**. An ornamental bar **80** may be conveniently provided to conceal the rod **76**.

From the foregoing it will be seen that a variety of different constructions may be easily fromed. In the first place, the base **10** may be utilized along as a portable, open barbecue. Then the base **10** may have the air chamber shell **56** and the extension **64** associated therewith to provide an open barbecue having a smoke-withdrawing flue. As another possible combination, the open base may have the removable hearth disc **22** and the removable grill **30** associated therewith. As another combination, the disc and grill may be utilized in combination with the base and air chamber shell. As another combination, the fire shell may be associated with the assembly, and as a final combination the screens may be mounted on the fire shell. I have thus provided a versatile commercial item which permits the sale or use of various combinations of parts as desired.

The fireplace stove shown in FIGS. 8 and 9 is adapted to be installed in a position against a wall **90** of a room and fitting between a ceiling **92** and a floor **94** of the room to resemble a fireplace. The fireplace stove includes a fluted hollow pedestal or base **96** having a front wall **98** and side walls **100** provided with cold air inlet louvers **102**. The open back of the base is closed by a heat insulating board **104**, a layer **106** of loose, heat insulating material and a metal plate or wall **108** welded

to the side walls **100**, the board **104** also being bolted to bracket portions of the base. A bottom heat insulation board **106** is bolted to the bottom of the base. Lag screws **109** screwed into the wall **90** hold the stove against the wall. Downwardly facing side channels **112** and a downwardly facing front channel **114** joined integrally to the side channels form a U-shaped hearth plate **110**, the side channels extending back to the wall **90**. A U-shaped trim strip **116** is secured to the outer flange of the channels **112** and **114**. The hearth plate fits over and rests on the top rim of the base **96**.

An ash chamber **120** includes a dished metal cup **122** having coverings **124** and **126** of heat insulation cast on the top and bottom of the cup **122**. The sides of the upper, rim portion of the ash chamber are secured to the inner flanges of the side channels **112** by self-tapping screws **128** along with lower edge portions of sides **130** of a firebox or fire shell **132**. The back of the upper, rim portion of the ash chamber and back **134** of the firebox **132** are secured to a crossbar **136** by self-tapping screws **138**. The crossbar **136** is fixed at its ends to the hearth plate. Thus, the hearth plate supports the ash chamber and the firebox. The sides **130** of the firebox have projections **140** supporting bars **142** of a grate **144** having angle bars **146**. The grate may be lifted out of the firebox or tilted for cleaning ashes out of the ash chamber.

The firebox **132** has a forwardly extending hood portion **150**, and a damper plate **152** is adapted to open and close top opening **154** in the firebox. A shaft **156** and a handle **158** are operable to position the damper plate.

A flue adapter **160** of the firebox **132** supports flue section **162**, and the upper end of the flue section **162** forms an annular chamber with annular plate **164**, upper portion **166** of hood **168** and the wall **108**. An annular plate **170** of a castable type of heat insulation is formed by casting the material into the annular chamber. A flue **172** surrounded by a cover **174** of cast heat insulation extends through the ceiling **92** and the roof. A louvered chimney wrapper **176** and a back, heat insulating board **178** loosely surround the covered flue. An annular, top, heat insulating board **180** is secured at the top of the wrapper in a position abutting the ceiling **92**.

Side plates **182** are spaced outwardly from sides **130** of the firebox **132** to provide for air flow and are welded to the top of the side channels **112**, the lower interior portion of the hood **168** and the plate **108**. The hood **168** has vents or louvers **186**. A trim strip **188** is provided around the lower, rim portion of the hood **168**, and the hood is fluted. Screens **192** are slidable on rod **193** supported by the firebox and may be positioned to completely enclose the opening in the front and sides of the firebox.

In the operation of the fireplace stove of FIGS. 8 and 9, the solid fuel is supported on the grate **144** in the firebox **132** and burns thereon. The hot gases travel upwardly to and through the flue **172** and heat the metal firebox **132**. Cold air travels by convection into the space around the firebox from the louvers **102** and a passage **194** between the back wall of the ash chamber **120** and the plate **108**, and the air travels around and over the heated firebox and is heated thereby. The so heated air travels out into the room through the louvers **186** and under the forward side portions and front portion of the lower edge of the hood **168**. The heated air also travels around the firebox and out into the room through at least the top halves of the passages formed by the sidewalls **130** and **182** of the firebox and the hood, respectively, cold air being drawn into the lowermost portions of the last-mentioned passages by convection to add to the flow of air through these heating passages around the firebox. The air flowing around the firebox and out again into the room is heated efficiently by the firebox, and prevents overheating of the hood, the side walls **182**, the hearth plate **110** and the base **96**.

The fireplace stove of FIGS. 8 and 9 is highly attractive in appearance and is installed easily against any wall of a room, in which position it operates like a fireplace but much more efficiently and without any danger to the wall, ceiling and floor of the room. The exterior portions of the fireplace stove are cooled so that they are not uncomfortably hot to the touch.

Having illustrated and described a preferred embodiment of the invention, it should be apparent to those skilled in the art that the invention permits of modification in arrangement and detail. I claim as my invention all such modifications as come within the true spirit and scope of the following claims.

What is claimed is:

1. A stove comprising an upwardly open, dished base member having a circular rim,
legs supporting said base member,
a hearth disc horizontally spanning the interior of said base member,
said hearth disc having a large, rectangular grate opening therein,
flange means on said hearth disc projecting inwardly with respect to the edges of said grate opening below the level of said edges,
a grate resting on said flange means,
said grate having its edges slightly spaced from the respectively adjacent edges of said grate opening,
and a forwardly and downwardly open fire shell resting on said flange means,
said shell having side walls and a rear wall,
the lower edge portions of said walls being slidably embraced between the respectively adjacent edges of said grate and said grate opening.

2. A stove comprising an upwardly open, dished base member having a circular rim,
legs supporting said base member,
a hearth disc horizontally spanning the interior of said base member,
said hearth disc having a large, rectangular grate opening therein,
flange means on said hearth disc projecting inwardly with respect to the edges of said grate opening below the level of said edges,
a grate resting on said flange means,
said grate having its edges slightly spaced from the respectively adjacent edges of said grate opening,
a forwardly and downwardly open fire shell resting on said flange means,
said shell having side walls and a rear wall,
the lower edge portions of said walls being slidably embraced between the respectively adjacent edges of said grate and said grate opening,
and a forwardly and downwardly open air chamber shell resting upon said base member and spaced from said fire shell throughout.

3. A stove comprising an upwardly open, dished base member having a circular rim,
legs supporting said base member,
a hearth disc horizontally spanning the interior of said base member,
said hearth disc having a large, rectangular grate opening therein,
flange means on said hearth disc projecting inwardly with respect to the edges of said grate opening below the level of said edges,
a grate resting on said flange means,
said grate having its edges slightly spaced from the respectively adjacent edges of said grate opening,
a forwardly and downwardly open fire shell resting on said flange means,
said shell having side walls and a rear wall,
the lower edge portions of said walls being slidably embraced between the respectively adjacent edges of said grate and said grate opening,
a forwardly and downwardly open air chamber shell

resting upon said base member and spaced from said fire shell throughout,

and means mounted on the lower edge of said air chamber shell engaging the rim of said base member to retain said air chamber shell in position.

4. In a stove,

an upwardly open, dished ash member,

means for supporting the ash member in a position elevated from a floor,

a hearth plate member having a central ash opening,

means for supporting the hearth plate member in position such that the central ash opening overlies the bottom of the ash member,

a grate covering the ash opening,

a unitary fire shell open at the bottom and front thereof, having an upwardly extending flue at the upper rear portion thereof, and supported by the hearth plate in a position surrounding the ash opening and spaced inwardly from the side edges and back edges of the hearth plate,

a cup-shaped hood open at the bottom and front,

means for supporting the hood in a position surrounding and spaced from the sides and the back of the fire shell,

the hood having a flue portion surrounding the flue of the fire shell,

screen means covering the front opening of the fire shell,

the hood, the fire shell and the hearth plate defining a heating chamber surrounding substantially the entire sides, the entire back and the entire top of the fire shell, the front opening in the hood being spaced

from the sides and top of the fire shell to permit free flow of air into and out of the heating chamber.

5. The stove of claim 4 in which the flue of the fire shell is smaller in diameter than the flue portion of the hood and the flue of the fire shell is spaced at all points thereof from the flue portion of the hood,

and there is provided a ring member of heat insulation closing the space between the flues.

6. The stove of claim 4 in which

the hearth plate has vertical flange means adjacent the opening,

the ash chamber having an upper rim portion overlapping the flange means,

the fire shell having a lower skirt portion overlapping the flange means,

and means fastening together the flange means of the hearth plate, the upper rim portion of the ash chamber and the lower skirt portion of the fire shell.

7. The stove of claim 4 including insulating board means covering the back sides of the ash member and the hood.

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