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STOVE CONSTRUCTION

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2 Sheets-Sheet 1

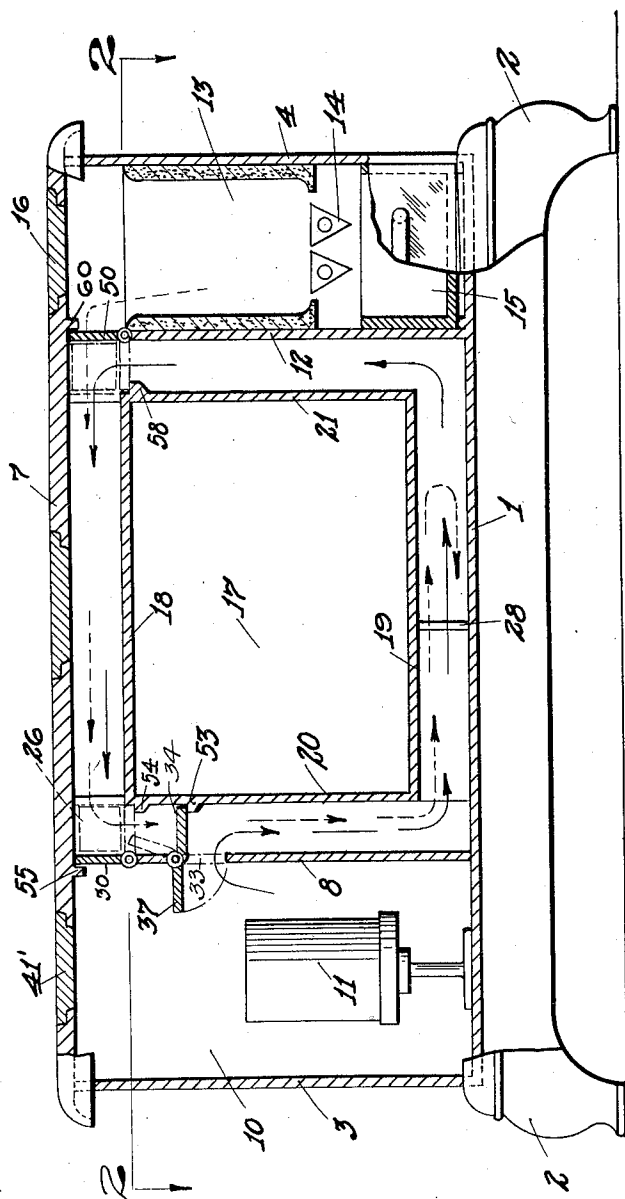


Fig. 1.

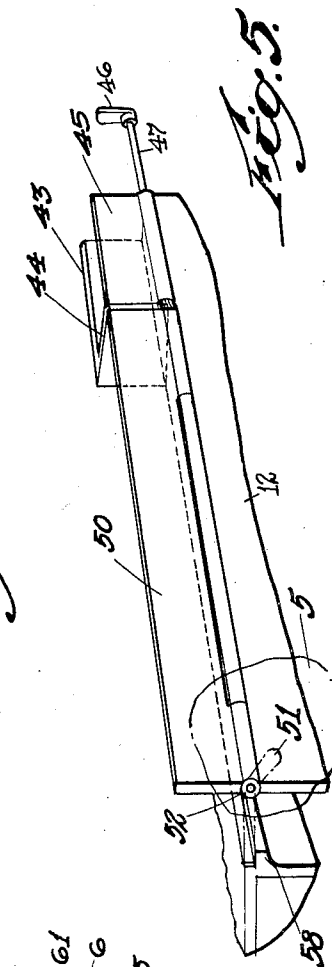


Fig. 5.

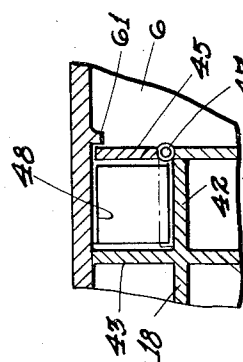


Fig. 6.

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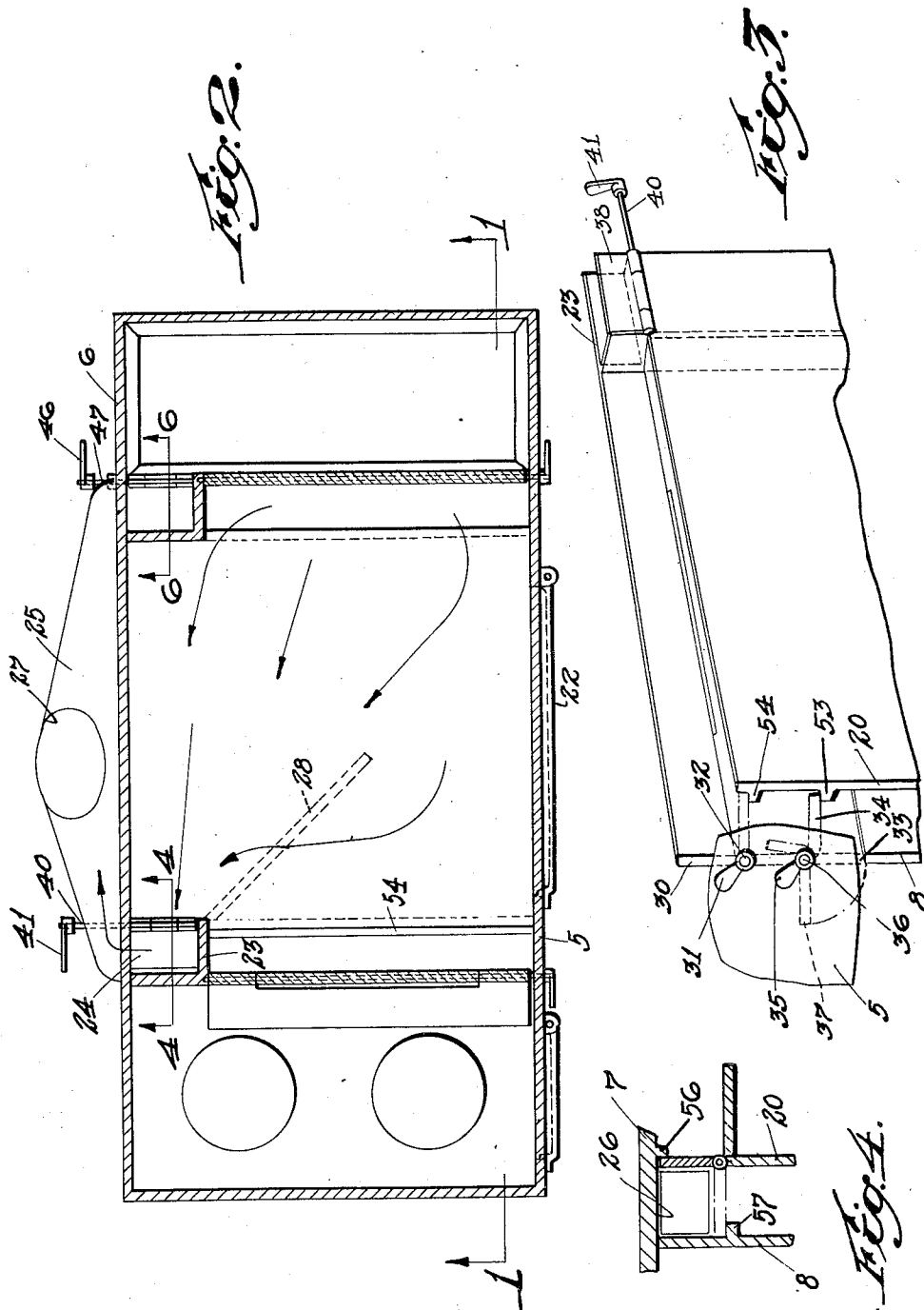
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2 Sheets-Sheet 2



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STOVE CONSTRUCTION

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2 Claims. (Cl. 126—36)

This invention relates to stove constructions and particularly to a type of combination stove which will utilize either solid fuel such as coal or wood, or liquid fuel such as oil. A novel arrangement of dampers is provided to permit the oven, connected with the stove, to be heated selectively either from the oil burning apparatus or from the part of the stove in which the solid fuel is burned. The stove is also designed to provide for use of the fire-box, which receives the solid fuel, as an incinerator for burning rubbish, without interfering with the operation of the structure for burning the liquid fuel.

The novel arrangement of dampers is arranged to direct the heat from the oil burning apparatus entirely around the oven with the gases from the apparatus passing first underneath the oven so that the latter is uniformly heated throughout. While the oil burning apparatus is being started, the gases therefrom are allowed to pass directly to the chimney to avoid any objectionable smoking of the stove. The damper arrangement further provides for cutting off the circulation of heat from the fire-box in which the solid fuel is burned from the rest of the stove to avoid interfering with the operation of the oil burning apparatus and to permit use of the fire-box for burning rubbish during the time that the oil burning apparatus is in operation for heating the top of the stove and the oven.

The objects and further advantages of the invention will appear from the following detailed description taken in connection with the accompanying drawings in which:—

Fig. 1 is a vertical section through the stove substantially along the line 1—1 of Fig. 2.

Fig. 2 is a horizontal section of the stove construction substantially along the line 2—2 of Fig. 1.

Fig. 3 is a perspective view of the damper arrangement which controls the operation of the oil burning apparatus.

Fig. 4 is a fragmentary vertical section substantially along the line 4—4 of Fig. 2.

Fig. 5 is an isometric view showing the damper arrangement between the fire-box for the solid fuel and the rest of the stove.

Fig. 6 is a fragmentary vertical section substantially along the line 6—6 of Fig. 2.

Like reference characters refer to like parts in the different figures.

Referring first to Figs. 1 and 2, the stove comprises a bottom plate 1 suitably supported upon legs 2, side walls 3 and 4 extending upwardly from opposite side edges of the bottom plate 1, a front

wall 5 extending upwardly from the front edge of the bottom plate 1 and a rear wall 6 extending upwardly from the rear edge of the plate 1 and parallel to the front wall 5. A top plate 7 engages the upper edges of the front, back and side walls forming, with said walls and the bottom plate, a box in which the structure hereinafter described is positioned. The front and rear walls 5 and 6 are connected by a partition 8 spaced from the side wall 3, said partition defining a chamber 10 adjacent the left hand end of the stove, in which a suitable liquid fuel burning apparatus such as an oil burner 11 is positioned. A similar partition 12 connects the front and rear walls of the stove adjacent to and spaced from the side wall 4 defining, between said partition and the wall 4, a fire-box 13 which is arranged to receive solid fuel. The fire-box is provided with grates 14 and beneath said grate is a suitable ash pit or drawer 15 for the removal of ashes resulting from the burning of solid fuel in the fire-box. Fuel is placed in the fire-box through an opening in the top 7 of the stove, said opening being normally closed by a cover 16.

An oven box 17 is positioned in the stove between the partitions 8 and 12 and this oven, as shown, comprises top and bottom walls 18 and 19 spaced respectively from the top and bottom plates 7 and 1 and extending the entire depth of the stove between the front and rear walls 5 and 6. The opposite edges of the top and bottom walls 18 and 19 of the oven are connected by side walls 20 and 21 which extend in parallel relation to the partitions 8 and 12 respectively, and engage at opposite ends with the front and rear walls 5 and 6 of the stove. An oven door 22, Fig. 2, is provided in the front wall 5 of the stove and opens into the oven box 16 to permit access to said box.

A vertical partition 23, preferably integral with the partition 8, connects said partition and the side wall 20 of the oven and extends from the bottom plate 1 to the top plate 7 of the stove adjacent and parallel to the rear wall 6, thereby defining a flue 24 which is connected to the smoke chamber 25 by an opening 26 formed in the rear wall 6 of the stove adjacent the top thereof. The smoke chamber 25, which is positioned on the back of the stove has an opening 27 which is suitably connected to a chimney, not shown, for the discharge of gases and smoke from either the liquid or solid fuel burning apparatus. A division plate 28 is positioned between the bottom plate 1 of the stove and the bottom wall 19 of the oven and extends from a point substantially cen-

trally of said bottom wall into engagement with the partition 23 for directing gases to the lower end of the flue 24 as will hereinafter appear.

One of the features of the invention is the control of the heated gases from the oil burning apparatus 11 by a system of dampers best shown in Fig. 3. Referring to this figure, and to Fig. 1, it will be seen that the partition 8 adjacent the oil burning apparatus is provided with a rectangular opening adjacent the top plate 7 and this opening extends forwardly from the partition 23 to the front wall of the stove. A damper 30 which is pivotally connected, along its lower edge, to the lower edge of the opening, normally closes said opening. Said damper is arranged to be turned into the horizontal position shown in dot-dash lines in Figs. 1 and 3 by a handle 31 provided on the front of the stove. The handle is secured against turning movement on a hinge pin 32 on which the damper 30 is also secured against turning movement.

The partition 8 is also provided with a second or lower horizontal opening 33 spaced below the damper 30 and extending forwardly from the partition 23 to the front wall of the stove. A damper 34 which is pivotally connected to the partition 8 along the upper edge of the opening 33 normally extends horizontally from the upper edge of the opening and the free edge of the damper engages the wall 20 of the oven, thereby closing the space between the partition 8 and said wall 20. The damper 34, which is controlled by a handle 35 on the front of the stove, said handle being secured to the hinge pin 35 to which the damper is also secured, has, in addition to the main portion, an oppositely extending portion 37 which projects into the chamber 10 above the liquid fuel burning apparatus 11, as shown in Fig. 1, to aid in directing the heat from said apparatus through the opening 33 beneath said damper.

An additional flue damper 38 is hingedly connected to the upper edge of the side wall 20 of the oven adjacent the rear wall of the stove and this damper, in the vertical position shown, closes an opening into the flue 24, said opening being defined by the upper edge of the oven wall 20, the rear wall of the stove and the right hand vertical edge of the partition 23 extending upwardly beyond the wall 20 of the oven. The flue damper 38 is secured against movement on the hinge pin 40 and a suitable handle 41 is also secured against turning movement on the end of said hinge pin, the latter projecting beyond the rear wall of the stove and through the main flue 25. The handle 41 is thus in an accessible position to provide for turning of the damper into the horizontal position shown in dot-dash lines, Fig. 4, in which position gases from above the oven are permitted to exhaust into the flue 24 and from said flue through the opening 26 into the smoke chamber or main flue 25.

In the use of the liquid fuel burning apparatus 11, the damper 34 is in the horizontal position shown, the damper 30 is in the vertical position shown and the flue damper 38 is in the horizontal position shown in dot-dash lines. With the dampers in these positions, hot gases from the apparatus 11 pass through the opening 33 in the partition 8 as shown by the full line arrows of Fig. 1 into the space between said partition and the wall 20. Since the space between the partition 8 and wall 20 is closed by the damper 34 above the opening 33 in said partition, the gases are directed downwardly between said par-

tion and wall 20, passing beneath the oven and thence upwardly between the partition 12 and wall 21 of the oven. The gases then pass over the top of the oven, beneath the top plate 7 of the stove, into the flue 24, and through the opening 26 into the smoke chamber 25. The bottom of the oven thus receives the greatest amount of heat from the gases so that the heat in the oven is uniformly distributed throughout providing for more satisfactory heating of articles within the oven. The damper 38 which is in horizontal position closes the flue 24, thereby preventing the passage of gases directly from underneath the oven upwardly from the lower end of the flue 24 and into the smoke chamber 25.

When the apparatus is being started or lighted, access to said apparatus for lighting being provided through suitable openings in the top 7 which openings are normally closed by covers 41', only one of which is shown, the damper 34 is turned counterclockwise from its horizontal position into the vertical position shown in dot-dash lines in Fig. 1. To permit the fumes from the apparatus 11 to pass directly through the upper opening in the partition 8 and around the partition 23 into the flue 24 and directly into the chimney, thus avoiding any smoking of the stove which might otherwise occur while the oil burners or apparatus 11 was being adjusted to operate properly, the damper 30 is turned clockwise from the vertical position shown. The damper 34, as above stated, is in its vertical position at this time and the free edge of said damper is in a position to engage the damper 30 when the latter is only partially opened. This arrangement prevents the damper 30 from being opened so wide as to provide an excessive draft directly to the chimney which would prevent the apparatus 11 from being quickly heated and adjusted to operate properly. After the apparatus 11 begins to function properly, the dampers 30 and 34 are returned to the full line positions of Figs. 1 and 3, thereby directing the heat around the oven in the manner above pointed out.

As above stated, the stove is arranged to provide for burning of solid material in the fire-box 13, the latter operating as an incinerator without interfering with the movement, around the oven, of the gases from the oil burning apparatus. Referring now to Figs. 5 and 6, the wall 18 of the oven is extended, adjacent its rearward edge, into engagement with the partition 12, thereby defining a partition 42 extending forwardly from the back wall 6 a short distance. The wall 21 of the oven in this location is extended upwardly to engage with the top 7 of the stove forming a vertical partition 43. A small vertical partition 44 connects the forward edges of the partitions 42 and 43, and the right hand edge of said partition 44 defines the forward edge of an opening in the partition 12, said opening extending upwardly from the partition 42 to the stove top 7 and forwardly from the back wall 6 of the stove to the partition 44. A damper 45 is pivotally connected along its lower edge to the lower edge of the opening and normally extends in the plane of the partition 12 to close said opening. A handle 46 which is accessible from the back of the stove is secured against turning movement on the hinge pin 47 to which the damper 45 is also secured, and said handle provides for a turning movement of the damper into the horizontal position shown in dot-dash lines. In the horizontal position of the damper, smoke and gases 75

from the fire-box 13 are allowed to pass through said opening and through an opening 48 in the rear wall 6 of the stove, the latter opening connecting with the main flue 25, thus providing for exhaust of smoke and fumes from the fire-box directly to the chimney. While the fire-box is in use as an incinerator, the partitions 42, 43 and 44 define a box-like structure which effectively prevents the exhaust of gases from the oil burning apparatus through the opening 48, said box also providing for movement of the damper 45 into horizontal position.

The partition 12 is further provided with an elongated rectangular opening adjacent the upper edge of said partition and extending from the partition 44 to the front wall 5 of the stove. This opening is normally closed by a damper 50, the lower edge of which is pivotally connected to the partition 12 at the lower edge of said opening. A handle 51 is connected to the hinge pin 52 on which the damper 50 is secured against movement and this handle which is acceptable from the front of the stove provides for turning movement of the damper 50 from the normal vertical position into the horizontal position shown in dot-dash lines in Fig. 5. In the horizontal position of the damper, the space between the partition 12 and the wall 21 of the oven is effectively closed. Thus, when the liquid fuel burning apparatus 11 is not in operation, the damper 50 may be placed in its horizontal position and the damper 45 in its vertical position so that gases from the fire-box will be directed, as shown by the dotted arrows of Fig. 1 across the top of the oven and downwardly between the partition 8 and the wall 20 of the oven. At this time, the dampers 30 and 34 are both placed in their vertical positions, and the damper 38 is also in a vertical position to prevent passage of the gases into the chamber 10 or through the opening normally closed by said damper 33 into the flue 24. The gases are thus directed downwardly between the partition 8 and the wall 20 of the oven and pass beneath the oven and around the division plate 28 above-mentioned into the lower end of the flue 24, the latter having an opening therein between the partition 23 and the rear wall 6 of the stove. The gases then pass upwardly through said flue 24 and through the opening 26 into the smoke chamber 25, said flue 24 being open throughout its length at this time since the damper 33 has been placed in a vertical position as above stated.

Each of the above described dampers is positively located in the several positions of the dampers by suitable stop members. Referring first to Figs. 1 and 3, the partition 20 is provided with an elongated stop 53 which extends from the front wall 5 of the stove to the partition 23 for engagement with the free edge of the damper 34 providing a positive limit to the clockwise movement of said damper from the horizontal position shown. Said damper, as will be apparent, is turned counterclockwise for closing the opening 33 in the partition 8, and the main portion of said damper is slightly heavier than the oppositely extending portion 37 thereof, so that the damper normally remains, under the influence of gravity, in the horizontal position. Another elongated stop 54 extends parallel to the stop 53 and provides a limit for the downward movement of the damper 30 when the latter is in

the horizontal position shown in dot-dash lines in Fig. 3. The vertical position of the damper 30 is also positively located by an elongated stop 55 which extends along the top 7 of the stove and engages with the free edge of the damper 30 when the latter is in its vertical position. Each of said stops 53, 54 and 55 aids in forming a substantially tight seal for the opening in which the dampers are positioned. As shown in Fig. 4, a stop member 56 formed on the under side of the top 7 of the stove is positioned for engagement with the flue damper 38 when the latter is in its vertical position and another stop 57 formed on the partition 8 engages said damper when the latter is in its horizontal position, thereby aiding in forming a positive closure for the flue 24.

Similar elongated stop members 58 and 60 formed on the wall 21 of the oven and the top 7 of the stove respectively limit the movement of the damper 50 and provide for positive closing of the openings in which said damper is located when the latter is in its horizontal and vertical positions respectively. The vertical position of the damper 45 is determined by a stop member 61 secured to the top 7 of the stove and engaging said damper when the latter is in the vertical position of Fig. 6. The positive seals provided by the above described stop members provide for cutting off the oil burning apparatus completely from the rest of the stove when the solid fuel burning apparatus is in use for heating the oven, or, in case the oil burning apparatus is in operation, the dampers or associated stop members seal the solid fuel-burning apparatus completely away from the rest of the stove.

From the foregoing, it will be apparent that the arrangement of dampers provides for heating the oven selectively by an oil burning apparatus or by solid fuel in a fire-box positioned in the stove, said oil burning apparatus and the fire-box both being arranged for heating the top of the stove as well as the oven. The dampers also provide for the use of the fire-box as an incinerator while the oven is heated by the apparatus for burning liquid fuel and this arrangement of dampers avoids any interference between the oil burning apparatus and the incinerator by passing gases directly from the latter to the chimney.

I claim,

1. In a stove construction, the combination with a liquid fuel-burning apparatus, solid fuel-burning apparatus, and an oven, of dampers for directing hot gases from said liquid fuel-burning apparatus around the oven, said gases passing first beneath the oven, said dampers being movable for directing hot gases from said liquid fuel-burning apparatus directly to a chimney to which the stove is connected, and means for directing fumes and hot gases from the solid fuel-burning apparatus directly to the chimney while the liquid fuel-burning apparatus is in operation.

2. In a stove construction, the combination with liquid fuel-burning apparatus, solid fuel-burning apparatus, each apparatus being utilized in heating a portion of the top of the stove, and an oven, of dampers for directing hot gases from either apparatus around said oven, with certain of the dampers arranged to direct hot gases from the liquid fuel-burning apparatus downwardly and beneath the oven before they pass over the top thereof.

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