

Aug. 14, 1962

J. V. NORTHWOOD ET AL

3,049,113

FIREPLACE

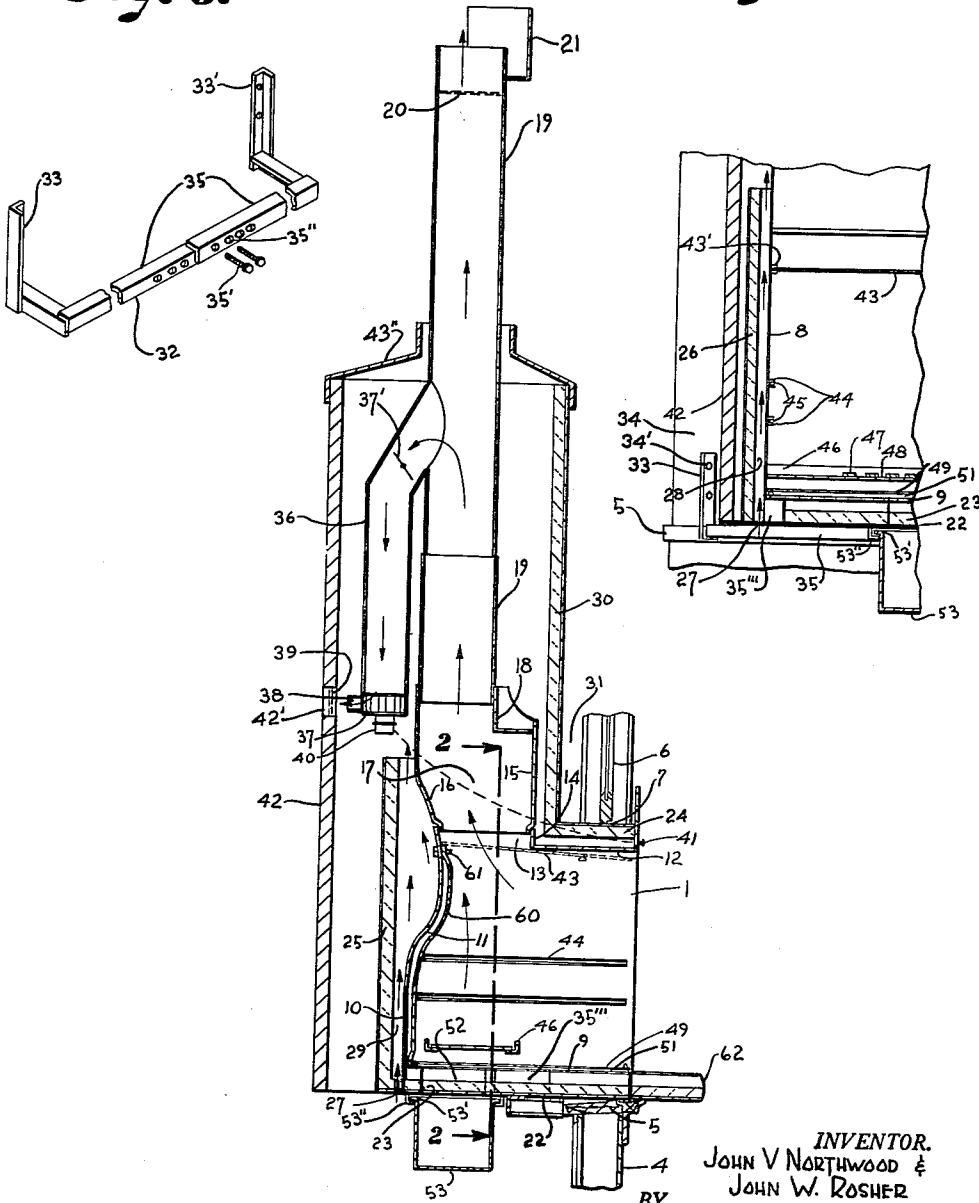
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2 Sheets-Sheet 1

Fig. 1.

Fig. 6.

Fig. 2.



INVENTOR.
JOHN V NORTHWOOD &
JOHN W. ROSHER

BY

Johnson & Gold,
ATTORNEYS

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2 Sheets-Sheet 2

Fig. 3.

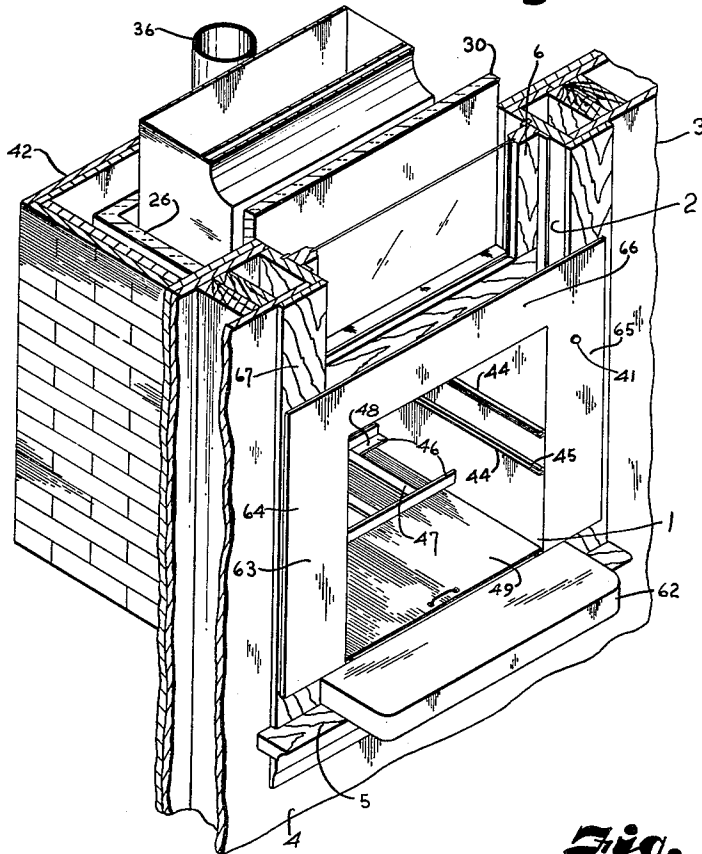


Fig. 4.

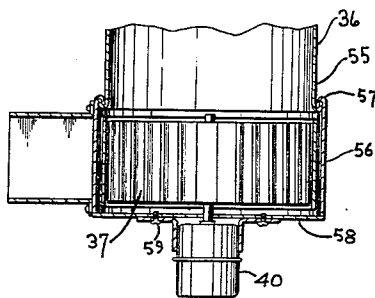
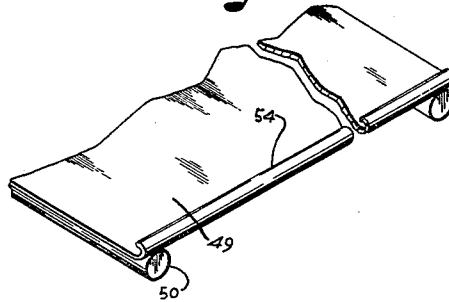


Fig. 5.



INVENTOR.
JOHN V. NORTHWOOD &
JOHN W. ROSHER
BY
Siskburn & Gold,
ATTORNEYS

1

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John V. Northwood and John W. Rosher, Lee's Summit, Mo.; said Northwood assignor to Sadie Miriam Northwood, Lee's Summit, Mo.

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1 Claim. (Cl. 126-120)

This invention relates to a fireplace, and more particularly to a fireplace adapted to be mounted in a window opening in a building structure, such as homes and buildings not equipped with a chimney.

The principal objects of the present invention are to provide a fire box for solid fuels which may be mounted within a window opening by raising the lower sash and mounting the box on the window casing and having a bracket for supporting the box exteriorly of the building; to provide fire walls in the box having air passageways associated therewith along the sides and back of the fire box whereby air entering into openings located beneath the fire box will pass upwardly through said passageways and out a false chimney to cool the fire box walls; to provide a smoke chamber and a chimney for the fire box and damper means for the chimney; to provide the chimney with a booster pipe having a damper therein and an exhaust fan at the lower end thereof, the booster pipe terminating at about the level of the smoke chamber; and to provide a decorative false chimney or wall structure around the main chimney or vent pipe and also housing the booster pipe.

Other objects of the present invention are to provide the fire box with transversely spaced angle members located toward the rear of the fire box and spaced from the bottom thereof for accommodating a plurality of movable bars for holding the fuel thereon; to provide a movable bottom in the fire box spaced from the main bottom to provide an air space therebetween; to provide insulating material located adjacent the bottom and sides and back of the fire box as well as the top thereof in a safe, compact manner; to provide insulating material extending vertically above the fire box to substantially the height of the false chimney and spaced from the building structure; to provide a damper for the fire box between the fire box and the smoke chamber operable from the open front of the fire box; to provide a spark arrester near the open top of the chimney and to provide a vane or heat deflector at the upper end of the chimney, and to provide a device of this character easily constructed and placed in a window opening and dismantled if desired.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings wherein are set forth by way of illustration and example certain embodiments of this invention.

FIG. 1 is a vertical sectional view through our window fireplace.

FIG. 2 is an enlarged cross sectional view taken on a line 2-2, FIG. 1.

FIG. 3 is a partly fragmentary perspective view of our fireplace.

FIG. 4 is an enlarged fragmentary view particularly illustrating the fan in the booster pipe of the chimney.

2

FIG. 5 is a fragmentary enlarged view particularly illustrating the slidable bottom on top of the main bottom of the fire box to provide the air space therebetween.

FIG. 6 is a perspective view of the bracket supporting the unit in the window opening.

Referring more in detail to the drawings:

1 designates a fire box embodying the features of our invention adapted to be inserted in a window opening 2 of a building structure or the like 3. 4 designates the side wall of the building structure and 5 the window sill upon which the inner portion of the fire box sits. The fire box including insulating material therefor is of a width to fit snugly in the window opening merely by raising the window 6 which engages the top of the fire box as indicated at 7 (FIG. 1) when the window is closed thereagainst. Suitable sealing material (not shown) may be utilized to seal the box in the window opening.

The fire box has side walls 8, a bottom plate 9 and a back wall 10 preferably of sheet steel of approximately $\frac{3}{16}$ " thickness although other types of metal and thicknesses may be utilized. The back wall 10 is curved inwardly as indicated at 11 and then upwardly to the top of the fire box for the retention of the heat in the fire box and also for facilitating draft to the chimney as later described. The top wall 12 is also made of sheet metal and extends outwardly of the wall 4 of the building structure but is spaced from the back wall 10 to provide a draft opening 13 at the rear of the fire box, the top wall 12 being slanted upwardly as indicated at 14 for receiving the side walls 15 and 16 of a smoke chamber 17. The wall 15 is offset as indicated at 18 and secured thereto is a sectional chimney or smoke stack 19 which extends upwardly and is spaced from the side wall 4 of the house a suitable distance for disposing of the smoke from the fire box. The chimney or smoke stack 19 is equipped near the upper edge with a spark arrester 20 and a vane 21 rigidly secured to the chimney or smoke stack 19 by welding or other suitable means and which prevents the smoke from marring the structure 3 and also dissipates high temperature gases therefrom.

The fire box has a bottom portion plate 22 spaced from the bottom plate 9 and located therebetween is insulating material 23 here illustrated of board type, but any suitable insulation may be used. Insulating material 24, also illustrated as the board type, is placed on top of the top wall 12 and spaced therefrom above the fire box and insulating material 25 is spaced rearwardly from the back wall 10 of the fire box. Each side wall 8 is provided with insulating material 26 (FIG. 2) spaced outwardly therefrom and the bottom plate 9 has openings 27 spaced therearound to align with the passageways 28 and 29 formed by said walls 8 and back wall 10 cooperating with said insulating material 25 and 26 at the sides of the fire box and at the back of the fire box so that air will enter from the outside of the building structure and pass through said passageways to cool the fire box when in use.

If desired, insulating material 30 may be connected to the strip 24 on top of the fire box positioned to extend upwardly along the outside but spaced from the building structure as illustrated at 31 (FIG. 1).

The fire box is supported in the window opening by a bracket 32 consisting of angle irons 33 and 33' secured to the outside of the window casing 34 of the fire box by screws or the like 34' (FIG. 2). The angle irons are

3

turned outwardly and connected by nesting adjustable angle bars 35 by bolts 35' engaging in the openings 35'' as illustrated in FIG. 6. The bracket engages steel blocks 35'' secured to and supporting the bottom plate 9 of the fire box.

The smoke stack or chimney 19 is provided with a booster draft tubular member or booster pipe 36 spaced from the side wall of the chimney but parallel therewith as best illustrated in FIG. 1 and enters the chimney at an angle. A damper 37' is provided in the angle portion of the booster pipe and a motor driven fan 37 is mounted in the lower end of the booster pipe 36 to pull the air from the fire box through the booster pipe and out through the opening 38 in the side of the booster pipe to induce a draft from the fire box. Use of the down draft fan particularly facilitates starting of the fire in the fire box. After the fire is burning to good advantage, the motor is turned off and draft regulated by damper 43. The air booster pipe may be used in warm temperatures when the box is used for cooking purposes to help dissipate the heat particularly when using charcoal as fuel. Should wind or air flow down the chimney 19 part of it will be dissipated through the booster pipe 36 instead of all flowing to the fire box. Operation of the fan 37 will generally take all the air out through the booster pipe 36. The motor 40 for the fan has a wire shown in dotted lines connected to a switch 41 on the front face of the box for energizing the motor to operate the fan.

A false chimney 42 is provided for the outside of the fire box and chimney to add to the appearance of the structure, and is provided with a slot 42' aligning with the opening 38 in the fan housing 37 for venting the air from the fan. A spark arrester screen 39 is provided for the slot 42'. The false chimney has a cover 43'' for the top having an opening surrounding the chimney 19. The false chimney 42 also prevents strong winds from interfering with the fan 37, while allowing air to flow upwardly from the passageways 28 and 29 and past the cover 43'' around the fire back walls, the booster pipe 36 and the chimney 19 to cool the same.

The fire box is provided with a slidable plate or damper 43 to act as a damper for the opening 13 from the fire box to the smoke chamber 17 and to the chimney 19. The damper 43 is slidable fore and aft in the box in grooves 43' on each side wall 8 over a path shown in dotted lines in FIG. 1.

The side walls 8 of the fire box are also provided with spaced bars 44 having grooves 45 for receiving a grill (not shown) should the fireplace be utilized for the cooking of foodstuffs such as meat and the like, and the bars 44 are in horizontal alignment with each other on the side walls 8 of the fire box. The two bars 44 are utilized for adjustment of the grill with respect to the fire in the box.

Transverse angle bars 46 are provided and extend across the fire box near the back of the box as illustrated in FIG. 3 for receiving a plurality of bars 47 which are slidable upon the horizontal portions 48 of the angle members 46. When using fuel such as charcoal or the like for broiling meat, the bars may be placed close together to hold the fuel, but when fuel such as wood logs are used the bars may be spread apart.

An ash plate 49 is provided in the bottom of the fire box and has rods or the like 50 along each under side thereof which act as runners for sliding over the bottom plate 9 in the fire box and providing a space 51 between the ash bottom plate 49 and the plate 9 to dissipate the heat from the plate 49. The outer edge 54 of the ash plate is curved upwardly to retain the ashes thereon and may be grasped to move the plate outwardly and inwardly in the fire box.

The bottom of the fire box consisting of the bottom plates 9 and 22 and insulation 23 is provided with an opening 52 therethrough for dispensing ashes from the fire box into a removable chamber or receptacle 53 by

4

sliding the plate 49 forwardly in the fire box so that the opening 52 will be uncovered and the ashes may fall into the receptacle or chamber 53. The ash chamber has flanges 53' for engaging grooves 53'' on the bottom of the plate 22 for removing the chamber for emptying the ashes collected therein.

The motor driven fan 37 is mounted for rotation about a vertical axis upon the lower end 55 of the booster pipe 36 as best illustrated in FIG. 4 for adjustably directing the opening 38 toward the slot 42'. Any means of rotatably mounting the fan on the booster pipe 36 may be utilized but we have here shown the lower end of the booster pipe 36 turned upwardly at its edge and the housing 56 for the fan having its upper edge turned downwardly as indicated at 57 to engage the turned up portion of the pipe to rotatably mount the fan on the pipe. The motor 40 is fastened to the bottom 58 of the housing 56 by screws or the like 59.

In order to provide an air space along the back wall 10 of the fire box, we provide a baffle plate 60 spaced from the wall 10 approximately $\frac{3}{4}$ " and secured to the upper portion of the back wall 10 by bolts or the like 61. The air space between the wall 10 and plate 60 helps prevent overheating of the back wall 10. 62 designates a hearth for the fire box which extends inside the window opening and rests on the sill 5. A frame 63 is provided for the front face of the fire box and consists of side members 64 and 65 and a horizontal member 66 which extends over the window casing 67 as shown in FIG. 3.

It will be obvious from the foregoing that we have provided an improved fire box which may be installed in a window opening of a home or other building where there is no chimney by utilizing a short smoke stack on the exterior of the building and insulating the fire box as well as providing cooling air passageways therearound to prevent overheating.

It will further be obvious that our fireplace unit may be used in any place where heat or grills are desirable such as trailers, other mobile units and house boats.

It is to be understood that while we have illustrated and described one form of our invention, it is not to be limited to the specific form or arrangement of parts herein described and shown except insofar as such limitations are included in the claim.

What we claim and desire to secure by Letters Patent is:

A solid fuel burning fireplace structure having a forward portion and a rear portion and adapted to be mounted in a building having a window opening therein for receiving said structure, said structure comprising side walls and a bottom plate and a back wall and a top wall all of sheet metal and forming a fire box, said top wall being spaced from said back wall and forming therewith a draft opening in the rear portion of said fire box, a chimney communicating with said fire box through the draft opening and extending upwardly therefrom, a booster pipe spaced from said chimney and extending substantially parallel therewith, said booster pipe at the upper end hereof communicating with said chimney, a motor driven fan secured to the lower end of said booster pipe and communicating therewith, said fan having an exhaust opening therein, said fan being adapted to pull air and combustion gases from said fire box through said chimney and booster pipe and exhaust same through said exhaust opening, a false chimney having an upper portion and a lower portion and walls surrounding said chimney and booster pipe, said false chimney walls being spaced outwardly from said back wall and side walls of said fire box forming passageways therebetween, said false chimney having an opening adapted to be outside of the building at said upper portion and said lower portion thereof and communicating with said passageways, a bracket adapted to support said fireplace structure in the window opening adjacent said forward portion of said structure with said rear portion adapted to extend out of the build-

5

ing whereby outside air is permitted to freely flow upwardly into said lower false chimney opening and out said upper false chimney opening to cool said fire box walls and booster pipe and chimney.

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