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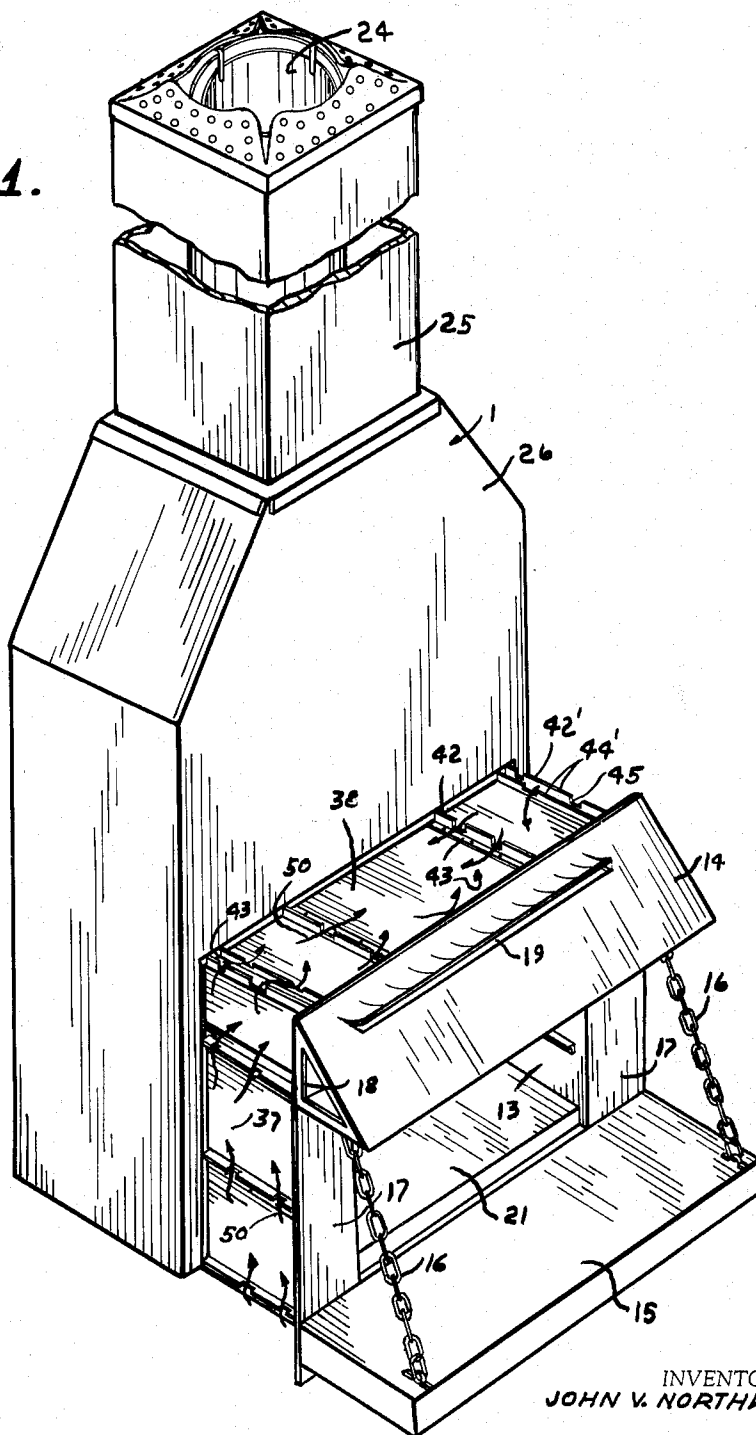
3,241,546

FIREPLACE SUPPORTING CONSTRUCTION

Original Filed Oct. 17, 1962

2 Sheets-Sheet 1

Fig. 1.



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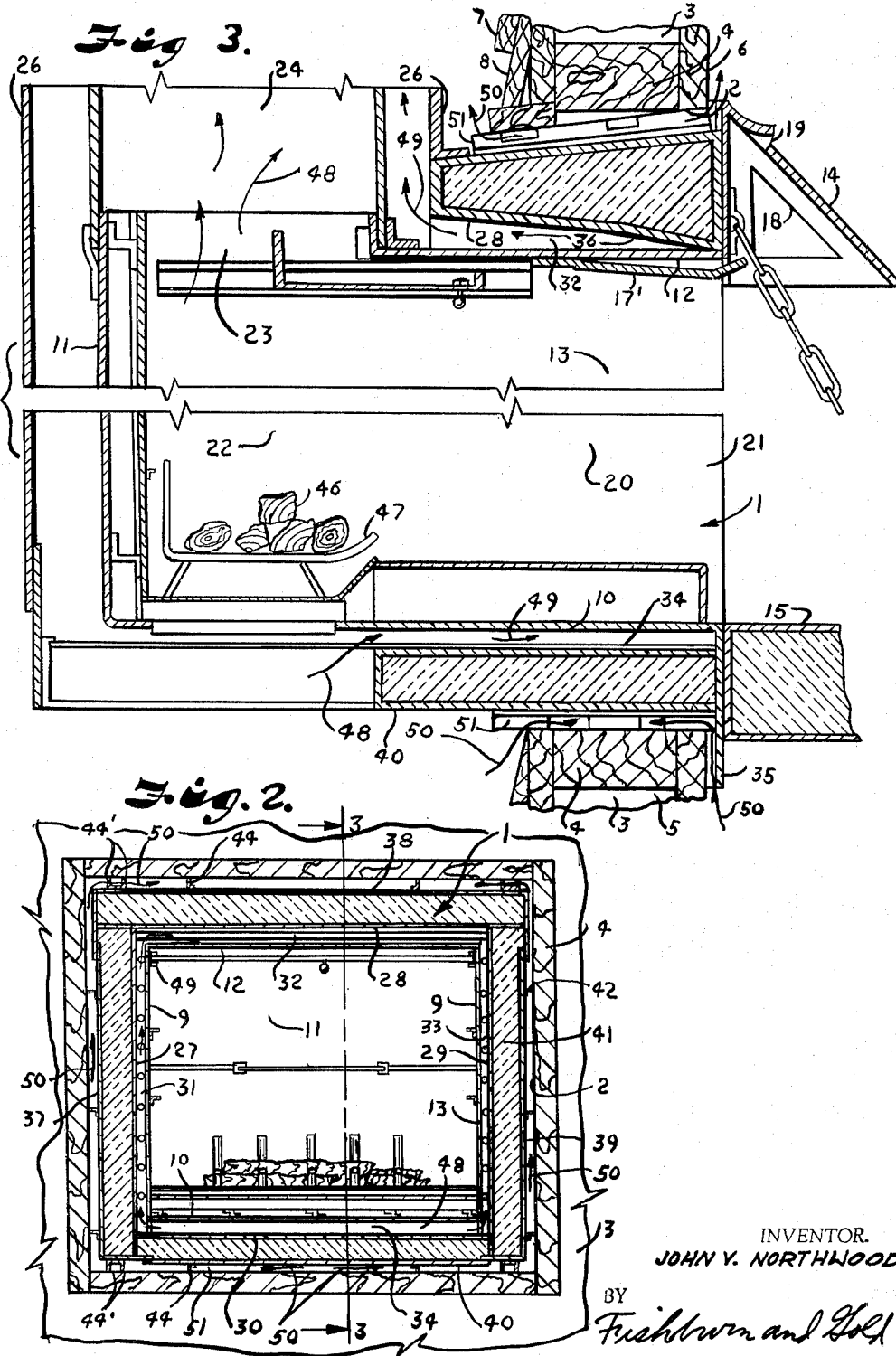
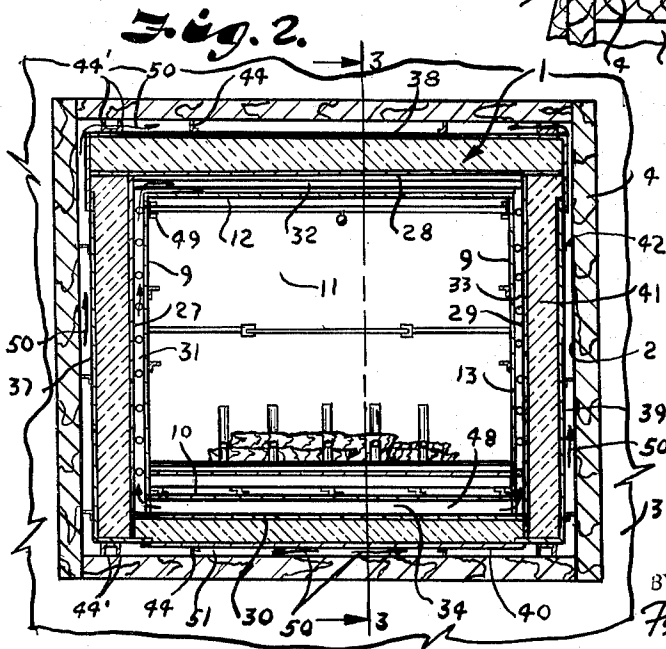
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FIREPLACE SUPPORTING CONSTRUCTION

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Original application Oct. 17, 1962, Ser. No. 231,062, now Patent No. 3,190,281, dated June 22, 1965. Divided and this application June 7, 1965, Ser. No. 461,636 6 Claims. (Cl. 126-120)

This is a divisional application of my copending patent application, Serial No. 231,062, filed Oct. 17, 1962, now Patent No. 3,190,281, issued June 22, 1965. This invention relates to fireplace supporting structure and more particularly to supports for a prefabricated fireplace construction adapted to permit mounting in contact with combustible building materials.

Heretofore, lightweight prefabricated fireplace constructions formed substantially entirely of sheet metal have been devised; however, under severe fire conditions within the firebox, the external surface temperature of the structure would increase to a dangerous level which prevented mounting directly against combustibles such as wood studs or beams in building walls.

The principal objects of the present invention are: to provide a lightweight prefabricated fireplace construction which may be located in contact with combustible supporting building materials without fire danger; to provide such a fireplace construction having support members contacting combustible surfaces for mounting, which members are relatively cool to the touch although high energy fuels such as charcoal or flashing grease are burning within the firebox; to provide support members in the form of structural angles or channels extending outwardly from exterior fireplace wall surfaces; to provide such support members having slots therein for inducing air circulation in the area of contact with building combustibles; and to provide such support members wherein the slots are staggered so as to avoid the possible insertion of strips therethrough which would inhibit free air circulation.

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 perspective view of a prefabricated fireplace construction embodying this invention, particularly illustrating the supporting members for contacting combustible materials.

FIG. 2 is a vertical transverse cross-sectional view through the firebox portion of the fireplace construction showing the mounting members in contact with opening forming combustible materials in a building wall.

FIG. 3 is a fragmentary vertical cross-sectional view through the fireplace construction taken on the line 3-3, FIG. 2, on an enlarged scale, particularly showing the supporting members in contact with upper and lower opening forming combustible materials in the building wall.

Referring to the drawings in more detail:

The reference numeral 1 generally indicates a fireplace construction adapted for mounting in an opening 2 formed in a building wall 3 by flammable structural members such as wooden boxing studs 4 abutting against wooden wall studs 5. It is to be understood that the opening 2 may take the form of a common double-hung window casing (not shown) and the building wall

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3 may be an outside or inside wall without departing from the scope of this invention. The wall 3 has a finished interior surface 6 and an exterior surface 7 illustrated herein as having exterior wooden shingles 8.

The fireplace construction 1 is mounted on and supported by the building wall 3 and extends through the opening 2 as best illustrated in FIG. 3. The fireplace construction 1 has opposed spaced sheet metal side walls 9, a sheet metal bottom wall 10, a sheet metal back wall 11, and a sheet metal top wall 12 together forming a solid fuel burning firebox 13, FIG. 2. The walls 9, 10, 11 and 12 are preferably of aluminum coated steel sheets for strength without excessive weight and for resistance to corrosion. The firebox 13 extends slightly forwardly past the building wall interior surface 6 and is there provided with decorative finishing members consisting of a hood 14, a hearth 15, hearth supporting chains 16, and firebox front framing members 17. A deflector lip 17' is secured at the rear thereof to the central underside of the top wall 12 and extends forwardly and slightly downwardly to the front of the firebox 13 where it turns upwardly into the hood 14. The hood 14 is located adjacent the firebox top wall 12 and extends forwardly therefrom. The hood 14 has openings 18 at opposite ends thereof and a ventilating slot 19 extending across the front thereof for draining any heated air flowing therein from the firebox 13.

The firebox 13 has a forward portion designated 20 with a normally open entranceway 21. The firebox forward portion 20 is surrounded by the studs 4 and opens inwardly of the interior surface 6 of the building wall 3. The firebox 13 includes a rear portion designated 22 which extends rearwardly of the building wall exterior surface 7.

The firebox top wall 12 is spaced forwardly from the firebox back wall 11 forming therewith a firebox draft opening 23 in the firebox rear portion 22. The firebox draft opening 23 communicates with a chimney 24 assembly extending upwardly therefrom. The chimney assembly 24 is surrounded at the upper portion thereof by outer walls 25 spaced outwardly therefrom and communicating at the lower ends thereof with an outer shell 26 normally extending outside the building wall on which the fireplace construction is mounted.

Secondary sheet metal walls 27, 28, 29 and 30, preferably of aluminum coated steel, are spaced outwardly of the firebox side walls and top wall and bottom wall at the firebox forward portion 20 forming air current passageways 31, 32, 33 and 34 therebetween. The framing members 17 form front closure walls extending between the firebox side walls 9 and the respective secondary side walls 27 and 29 to prevent forward leakage from the passageways 31 and 33. A lip 35 extending downwardly from the forward edge of the bottom wall 10 prevents air flow forwardly from the passageway 34. The secondary top wall 28 has a downwardly sloping forward portion 36 which terminates adjacent the forward edge of the firebox top wall 12 to prevent forward flow from the air passageway 32. The air current passageways 31, 32, 33 and 34 communicate with each other whereby the air therein is free to flow completely around the fire box walls at the forward portion 20. Outer sheet metal walls 37, 38, 39 and 40, preferably of aluminum coated steel, are spaced outwardly of the secondary walls 27, 28, 29 and 30 and suitable heat insulating material such as glass fiber blanket 41 is contained therebetween to further reduce outward heat transfer from the firebox.

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Suitable elongated members in the form of angles 42 and channels 42' have one leg 43 or web 43' respectively secured, in the illustrated example by spot welding to the exterior surface of the outer walls 37, 38, 39 and 40 in spaced relation and extending longitudinally of the firebox 13. The other leg 44 of each angle 42 and legs 44' of the channels 42' extend outwardly from the exterior surface of the outer walls and have spaced openings or slots 45 cut thereinto at respectively staggered positions. The legs 44 and 44' contact the opening forming members, in the illustrated example studs 4, supporting the fireplace construction while permitting the air circulation between the outer walls 37, 38, 39 and 40 and the studs 4. Additional air circulation is permitted transversely past the respective angles and channels through the spaced slots 45. The staggered relation between the slots 45 is provided to prevent the insertion by an uninformed workman, during fireplace installation, of wooden strips or the like (not shown), transversely across the angles 42 and channels 42' in the slots which would block free air flow. Thus, the angles 42 and channels 42' act as spacer members for maintaining the outer walls 37, 38, 39 and 40 out of direct contact with the combustible studs 4 and permit free air circulation therebetween.

In operation, a fire in the firebox 13, such as may be produced by logs 46 resting on a grate 47, causes the production of hot gases and smoke which rise toward the draft opening 23 as indicated by the arrows 48. This results in heating the firebox walls which, in turn, heat the air in the forward portion air current passageways 31, 32, 33 and 34. This air tends to flow generally upwardly in continuous streams fed by outside air at 48' as indicated by the arrows 49 and produces a cooling effect on the firebox walls. In spite of the cooling effect of the air moving in the passageways 31, 32, 33 and 34, a measure of heat is transferred through the insulation 41 resulting in heating the outer walls 37, 38, 39 and 40. These latter walls are spaced inwardly from the studs 4 which support the fireplace construction by the angles 42 and channels 42'. Air currents 50 generated by the heated outer walls 37, 38, 39 and 40 are permitted to circulate and move generally upwardly between the outer walls and studs through the slots 45 on the respective legs 44 and 44'. The air currents 50 may freely interchange with outside air at the rear portions of the respective angles and channels which open rearwardly in the space between the outer wall 7 and shell 26. The currents 50 are fed primarily at lower rear openings 51 formed between the studs 4 and the lower outer wall 40; however, some air also enters at openings 52 formed between the depending lip 35 and the inner wall surface 6 and, as noted above, free air interchange is permitted along all the rear portions of the respective angles and channels. The currents 50 discharge primarily at upper rear openings 51 between the building outer wall 7 and the shell 26.

Under normal fire conditions in the firebox, the outer walls 37, 38, 39 and 40 are not uncomfortably warm to the touch. When high energy fuel, however, such as charcoal is used as for barbecuing, and with the concurrent danger of a grease burn-out, abnormally high heat conditions may be produced for extended periods. The described support structure allows such conditions to be maintained without fire danger to combustible building wall members.

The described fireplace construction merits approval by the most conservative fire underwriter agencies. It is to be understood that although one form of this invention has been illustrated and described, 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 claims.

What is claimed and desired to secure by Letters Patent is:

1. A prefabricated fireplace construction adapted for

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mounting on a building wall against flammable structural means forming an opening in said building wall, said construction comprising:

- (a) inner walls forming a solid fuel burning firebox, said firebox having a forward portion adapted to be surrounded with said wall opening forming means and a rear portion for extending rearwardly of said building wall,
- (b) outer sheet metal walls forming a part of said construction and spaced outwardly of said firebox and surrounding said firebox at said forward portion, and
- (c) spaced apart outwardly extending spacer members of relatively thin cross section on the exterior surface of said outer walls and having outer edges, said spacer members at said outer edges contacting said opening forming means for supporting said fireplace construction while permitting air circulation between said outer walls and the opening forming means.

2. The construction as set forth in claim 1 wherein:

- (a) said spacer members include elongated angles extending longitudinally of said firebox and having one leg secured to said outer walls and the other leg extending outwardly therefrom for contacting the opening forming means.

3. The construction as set forth in claim 2 wherein:

- (a) said other leg has spaced slots therealong for freedom of air circulation transversely therepast.

4. A prefabricated fireplace construction adapted for mounting against flammable structural means forming an opening in a building wall:

- (a) sheet metal side walls and a sheet metal bottom wall and a sheet metal back wall and a sheet metal top wall forming a solid fuel burning firebox, said firebox having a forward portion adapted to be surrounded with said wall opening forming means and a rear portion for extending rearwardly of said building wall,
- (b) outer sheet metal walls forming a part of said construction and spaced outwardly of said secondary walls and surrounding said firebox at said forward portion, and
- (c) spaced apart spacer members of relatively thin cross section secured on the exterior surface of said outer walls, said spacer members having legs extending outwardly of said outer walls and being adapted for contacting the opening forming means at outer edges thereof for supporting said fireplace construction while permitting air circulation between said outer walls and the opening forming means.

5. The construction as set forth in claim 4 wherein:

- (a) said outwardly extending legs extend longitudinally of said firebox and each includes at least one slot therein to permit transverse air circulation therepast,
- (b) said slots being respectively staggered in transverse relation.

6. In combination, a prefabricated fireplace construction and a building wall, said construction being mounted against flammable structural means forming an opening in said building wall, said construction comprising:

- (a) walls forming a solid fuel burning firebox, said firebox having a forward portion surrounded with said wall opening forming means and a rear portion extending rearwardly of said building wall,
- (b) outer sheet metal walls forming part of said construction and spaced outwardly of said firebox walls, and
- (c) spaced apart outwardly extending elongated spacer members of relatively thin cross section on the exterior surface of said outer walls, said spacer members extending longitudinally of said firebox and each having a leg extending outwardly thereof and having an outer edge, said legs at said outer edges

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contacting said opening forming means for supporting said outer walls out of contact with said opening forming means and forming passageways therebetween, said passageways opening rearwardly of said opening forming means permitting air interchange about said firebox forward portion.

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5 FREDERICK KETTERER, *Primary Examiner*.