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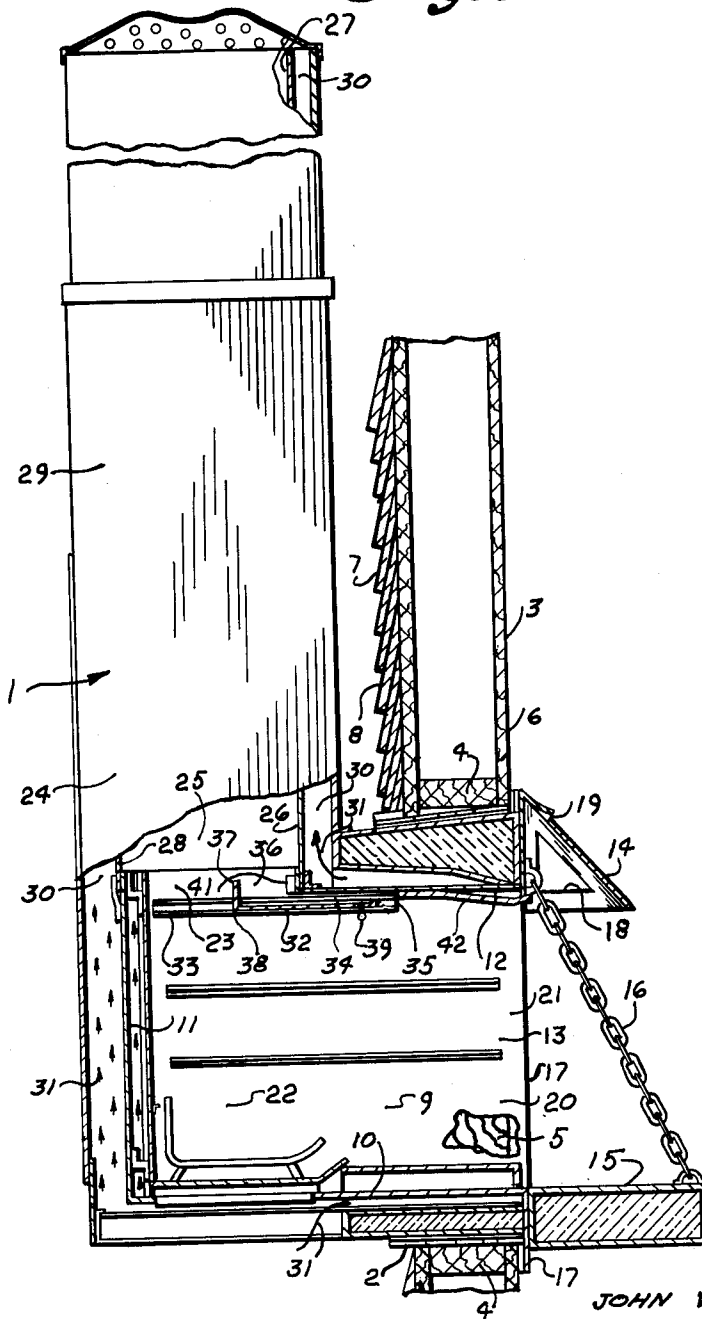
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FIREPLACE DAMPER CONSTRUCTION

Original Filed Oct. 17, 1962

2 Sheets-Sheet 1

Fig. 1.



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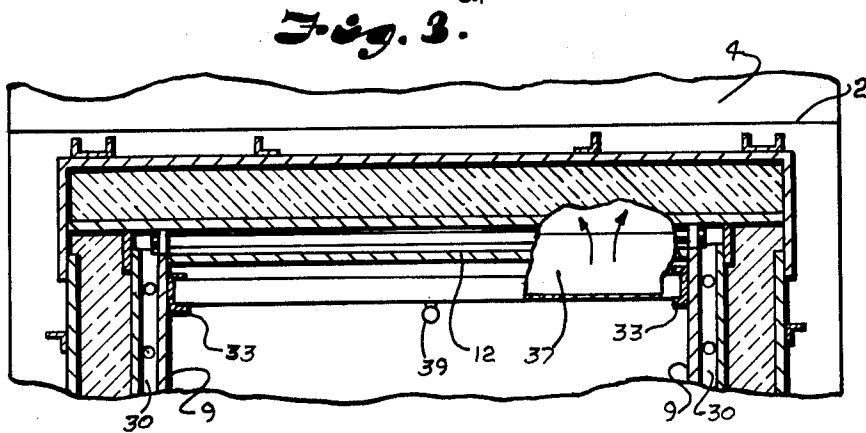
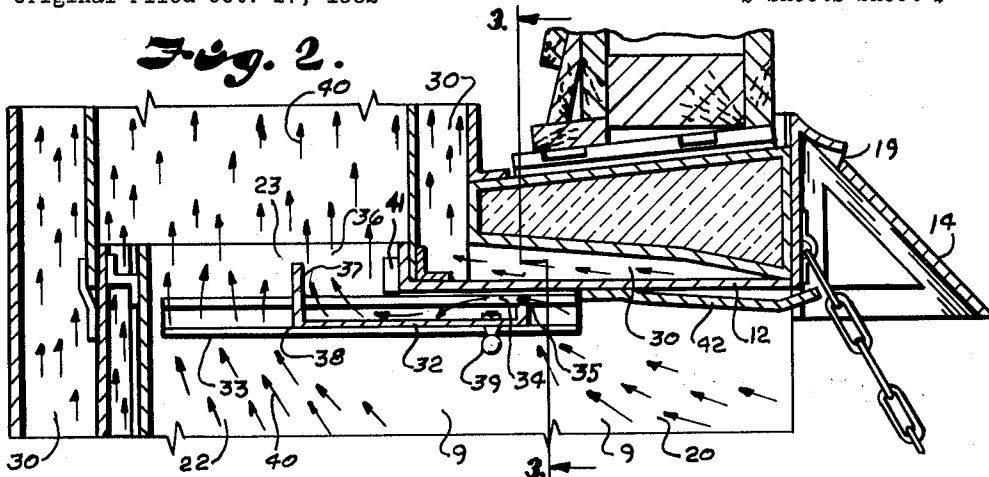
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FIREPLACE DAMPER CONSTRUCTION

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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. 461,670
5 Claims. (Cl. 126-288)

This application is a division of patent application, Serial No. 231,062, filed October 17, 1962, now Patent No. 3,190,281, issued June 22, 1965. This invention relates to a prefabricated fireplace construction and more particularly, to a unique damper plate arrangement therein.

Heretofore, lightweight prefabricated fireplaces formed substantially entirely of sheet metal material have been devised; however, under severe fire conditions within the firebox, the external temperatures of such devices often reached a dangerous level which prevented mounting against combustibles such as wooden studs and beams in building walls.

The principal objects of the present invention are: to provide a lightweight prefabricated fireplace construction for mounting on building walls and formed substantially entirely of sheet metal, which construction may be located in contact with combustible surfaces without fire danger; to provide such a fireplace construction wherein the exterior surface of the entire device is relatively cool to the touch although high energy fuels such as logs, charcoal, flashing grease or the like are burning therewithin; to provide such a device having air flow interior passageways which result in cooling air being directed over interior heated surfaces to reduce heat transfer to the exterior surface of the device; to provide such a construction having a sliding plate damper forming an air flow passageway with the firebox top wall; to provide such a damper plate arrangement which includes a rear flow directing lip for creating a greater air flow in the damper passageway which helps cool the top wall of the firebox; to provide such a device wherein the damper plate cannot be moved to a position which entirely closes the damper passageway; and to provide such a device which is simple in construction and convenient in use.

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 side elevation of a prefabricated fireplace embodying this invention with portions broken away to show the damper and structure adjacent thereto.

FIG. 2 is a fragmentary cross-sectional view in side elevation through the fireplace construction, on a larger scale, showing further details of the damper and adjacent structure.

FIG. 3 is a fragmentary cross-sectional view taken on the line 3-3, FIG. 2, further showing the damper construction and adjacent structure.

Referring to the drawings in more detail:

The reference numeral 1 generally indicates a fireplace construction illustrated mounted in an opening 2 formed in a building wall 3 by conventional flammable structural members such as wooden boxing studs 4 abutting against wall studs 5. It is to be understood that the opening 2 may be preexisting in the form of a common double-hung window opening and the building wall 3 may be an outside or an 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 wooden shingles 8 thereon.

2

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. 1. The fireplace construction 1 has opposed spaced apart 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. The walls 9, 10, 11 and 12 are preferably of aluminum coated steel for resistance to corrosion. The firebox 13 extends slightly forwardly of 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 front framing members 17. 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 opened entranceway 21. The firebox 13 includes a rear portion 22 which extends rearwardly of the building wall exterior surface 7.

The rear edge of the firebox top wall 12 is spaced forwardly from the firebox back wall 11 forming therebetween a firebox draft opening 23 in the firebox rear portion 22. A smoke box and chimney assembly 24 extends upwardly from the firebox rear portion 22 and has a lower part 25 communicating with the firebox draft opening 23. The assembly 24 includes upwardly extending inner walls 26 of sheet metal terminating in an upper exhaust end 27. The assembly 24 exhausts flue gasses, smoke and air entering the firebox entranceway 21 out the exhaust end 27. The assembly 24 includes an outer shell 29 spaced outwardly from the inner walls 26 and firebox walls forming passageways 30 through which cooling air 31 moves generally upwardly for reducing the external temperature of the fireplace construction when fire conditions exist within the firebox 13.

A horizontally extending damper plate 32 is located within the firebox 13. The damper plate 32 rests on opposed channel guides 33 secured to the firebox side walls 9 which selectively slidably support the plate for movement into and out of draft opening 23. The damper plate 32 is generally parallel to and spaced downwardly from the firebox top wall 12 forming an air passageway 34 therebetween having a front end 35 communicating with the interior of the firebox forward portion and a rear end 36 communicating with the firebox opening 23. The damper plate 32 has a rear deflector lip 37 extending upwardly from the rear edge 38 thereof into the draft opening 23. A suitable handle or knob 39 is secured to the damper plate 32 to aid in sliding same into a desired position with respect to the draft opening 23.

In operation, a fire in the firebox 13 causes the production of hot gasses which rise toward and pass through the draft opening 23 as indicated by the arrows 40. The hot gasses pass adjacent the damper lip 37 and induce a partial vacuum at the rear end 36 of the passageway 34. This partial vacuum causes the relatively cooler air from the forward portion 20 of the firebox to flow rearwardly through the passageway 34 for cooling the firebox top wall. A stop 41 is mounted on one of the inner walls 26 in the path of the lip 37 and prevents the damper plate 32 from being pulled into open position to the extent that the lip 37 closes the end 36 of the passageway 34, always insuring sufficient cooling flow in the passageway.

A deflector lip 42 is secured at the rear thereof to the central underside of the top wall 12 and extends for-

3

wardly and slightly downwardly to the front of the firebox where it turns upwardly into the hood 14. The deflector lip 42 is instrumental in further preventing excessive heat transfer to the top wall 12 and tends to deflect rising gasses rearwardly toward the front end 35 5 of the damper plate air passageway 34 where it is drawn rearwardly and then upwardly for exhausting at 27.

The fireplace construction described above provides a minimum of heat transfer to the outer walls and particularly reduces heat transfer at the critical top wall area of the firebox wall adjacent the flue opening. This is accomplished while providing a conveniently moveable damper plate for controlling the fire draft flow and thereby controlling the rate of combustion in the firebox. 10

It is to be understood that while 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. 15

What is claimed and desired to secure by Letters Patent is: 20

1. In a fireplace construction having a forwardly open firebox with a top wall and having a front and a rear portion, a draft opening extending upwardly through said firebox adjacent said top wall at said rear portion for carrying off hot gasses from said firebox: 25

(a) an adjustable damper plate in said firebox, guide means in said firebox for adjustably supporting said damper plate across said firebox draft opening, 30

(b) said guide means supporting said damper plate spaced downwardly from said firebox top wall forming therewith an air passageway having one end communicating with said firebox at said forward portion and the other end opening at said rear portion into said draft opening, 35

(c) whereby relatively cool air is drawn into said firebox through said passageway and into said draft opening due to the adjacent movement of hot gases through said opening for cooling said firebox top wall. 40

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

(a) said damper plate has a deflector lip extending upwardly therefrom within said draft opening for aiding the formation of a partial vacuum in said passageway's other end. 45

3. A fireplace construction having side walls and a back wall and a sheet metal top wall forming a forwardly open firebox having a forward portion and a rear fire containing portion, said top wall terminating short of said back wall forming a draft opening in said firebox rear portion and walls forming a passageway communicating with said draft opening for carrying off flue gasses from said firebox, said construction including: 50

(a) a damper plate in said firebox and having a rear

4

edge and a forward edge and extending generally parallel to said top wall, opposed guides on said firebox side walls for adjustably slidably supporting said damper plate for sliding said rear edge into and out of said draft opening,

(b) said guides supporting said damper plate spaced downwardly from said firebox top wall forming therebetween an air passageway having one end communicating with said firebox forward portion and the other end opening into said draft opening,

(c) whereby flue gasses rising into said draft opening cause relatively cool air to be drawn into said firebox through said passageway from said forward portion for cooling said firebox top wall.

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

(a) said damper plate has a rear deflector lip extending upwardly from said rear edge and within said draft opening, said deflector lip aiding the formation of a partial vacuum in said passageway other end.

5. A fireplace construction having a forwardly open firebox with a forward portion and a rear fire containing portion, said firebox being formed of sheet metal side walls and a sheet metal back wall and a sheet metal top wall terminating short of said back wall forming a draft opening in said firebox rear portion, walls forming a passageway communicating with said draft opening for carrying off hot gasses from said firebox, said construction including: 55

(a) an adjustable damper plate in said firebox, spaced apart opposed channels on said firebox side walls for slidably supporting said damper plate for selective movement across said firebox draft opening.

(b) said channels supporting said damper plate generally parallel to and spaced downwardly from said firebox top wall forming therewith an air passageway having one end opening into said firebox forward portion and the other end opening into said draft opening, 35

(c) a deflector lip on said plate and extending upwardly within said draft opening, and a stop member on one of said passageway forming walls and positioned in alignment with said deflector lip for engaging said deflector lip to prevent closing said other end. 40

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