Nov. 30, 1937. D. L. CAGE 2,100,732

DRAFT CONTROL MEANS FOR FIREPLACES

Filed Aug. 29, 1936

Fig. 1.

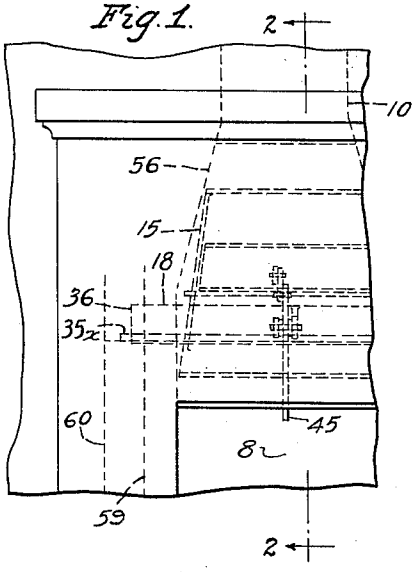


Fig. 2.

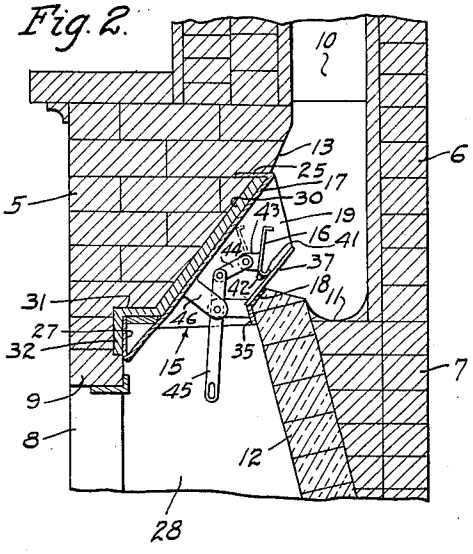


Fig. 3.

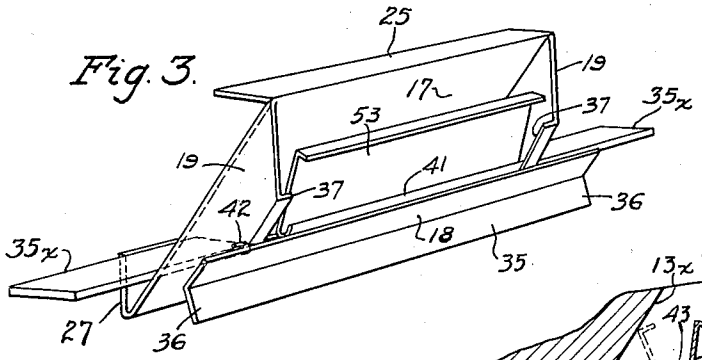


Fig. 4.

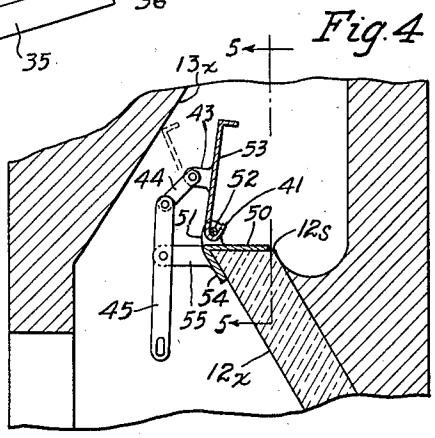
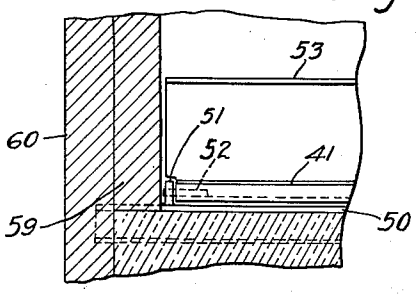


Fig. 5.



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Patented Nov. 30, 1937

2,100,732

UNITED STATES PATENT OFFICE

2,100,732

DRAFT CONTROL MEANS FOR FIREPLACES

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Application August 29, 1936, Serial No. 98,543

8 Claims. (Cl. 126—288)

This invention relates to draft control means for fireplaces.

Among the objects of the invention are:

To provide a simplified, more efficient sheet metal form or flue section to afford a mounting means for a damper in an operative position in a fireplace; to furnish a sheet metal construction of the kind stated that may more readily combine with bricks or building blocks arranged in courses; to provide an improved bracing or reinforcing means for the sheet metal structure; to provide a draft control means that can be installed in already built fireplaces at a minimum cost, and, more specifically speaking, to provide for a sheet metal damper supporting means an improved arrangement of supporting flanges peculiarly well adapted to nest upon and fit between the brick or building block structure of a fireplace.

A further object of the invention is to provide a draft control means which has a rear extension angle bar to be secured into brickwork in fireplaces to hold same firmly in place.

The invention includes the brick or building block structure in combination with the sheet metal parts described.

Other objects, advantages and features of the invention may hereinafter appear.

Referring to the accompanying drawing, which illustrates what is at present deemed to be a preferred embodiment of the invention, and also a modification thereof,

Fig. 1 is a front elevation of a fragment of a fireplace structure, dotted lines indicating the position of the draft control means provided by the invention.

Fig. 2 is a mid-sectional view of the structures shown in Fig. 1, sectioned on line 2—2 of the latter view.

Fig. 3 is a perspective view, separately showing the sheet metal portion of the structure.

Fig. 4 is a vertical cross-section of a modification.

Fig. 5 is a sectional detail taken on line 5—5 of Fig. 4.

Referring in detail to the drawing, a fireplace structure is shown comprising a front-top portion 5, rear flue wall 6 and lower-back wall section 7. The fireplace has the usual front opening 8 and above this a lintel portion or lower-front wall portion 9. Between the wall portions 5 and 6 is the flue 10 which is widened throughout its lower portion and is extended downwardly thus forming a pocket 11 behind the inclined face portion 12 of the back wall section 7.

Between the upper edge portion of the inclined course of brick or blocks 12 and the reversely inclined surface 13 of the front wall portion 5 the flue has a contracted throat portion within which is fitted the sheet metal support or frame 15 through which the draft passes and within which is mounted the adjustable closure plate 16.

Said sheet metal form 15 includes a broad face plate 17 and, in parallel, spaced relation thereto, a narrow back plate 18, said plates 17 and 18 extending the entire width of the throat portion of the flue and each being united to the end walls 19 of the form 15.

The face plate 17 of the sheet metal form extends at an upward inclination owing to the fact that it overlies the inclined wall surface 13. Said face plate is furnished along its upper edge with a forwardly extending flange 25 which joins said plate 17 at an acute angle and occupies a horizontal position between two adjacent courses of the brick of the wall 5.

At its lower edge the plate 17 has a like flange 27. However, owing to its location, this flange is directed upwardly. It occupies a front corner position of the fireplace, abutting against the inner side of the wall 9 at the front of the fireplace chamber 28. A heat insulating layer 30 is located in a depression provided therefor in the wall surface 13, said layer underlying the plate 17 to a point near its lower edge and then extending forwardly at 31, whence it extends downwardly at 32 across the outer face of the flange 27.

Oppositely projecting arms 35x are provided to aid in supporting the form 15. Said arms consist of strips of metal which are considerably thicker than the sheet metal of which the form 15 is made. They each have one edge welded to the outer portion of the flange 27 and the opposite edge welded to the adjacent part of the body portion of the plate 17. These arms underlie the part 31 of the heat insulating material, but they extend only a fractional part of the distance across the sheet metal form 15 and occupy the end portions of the form only a sufficient distance to anchor them securely to said form, it being desirable to make the entire metallic structure as light as possible.

The plate 18, which is located at the back side of the sheet metal structure, is furnished with a backwardly directed lower portion 35, and by this means is made to conform to the shape of the upper part of the wall portion 12 of the fireplace. Said plate 18, together with its said deflected part 35, is made considerably longer than the body portion of the form 15, thus being furnished with projecting end portions 36 which enter the

brick work of the fireplace and aid in supporting the form 15.

The back plate 18, together with its deflected part 35, extends across only the lower portion of the back edges of the end plates 19, the upper portion of these edges being stiffened by flanges 37, which also afford footings for welding on said plate 18. It will be seen that the end plates 19 are each of the same shape, being each of a generally triangular form with the rear apex of the triangle recessed in the angular manner shown to fit against the upper part of the wall portion 12.

At each side of the fireplace and rear thereof, the wall structure, as shown in Figs. 1, 2, 4 and 5, consists of the outer rough brickwork 59 and the inner fire brick 60. In Fig. 1 the supporting metal extensions or arms 18 and 35x are both shown extending beyond the firebrick into the rough brick work, or other suitable masonry work, it being understood that this arrangement is the same at both sides of the fireplace.

The firebrick layer 60 need be provided only in the upper firebox portion of the fireplace, as shown in Figs. 2, 4 and 5.

The closure plate 16, which forms a part of the damper structure, has along its lower edge a flange 41 which is joined to the body portion of the plate by a rather obtuse bend, the pivot rod 42 being welded on at the convex side of said bend. The length of said rod is greater than the length of said plate and the projecting end portions of said rod extend loosely through pivot holes in the end plates 19.

To the closure plate 16 is secured, preferably at about its mid-length and mid-width, an operating lug 43. A link 44 has one of its ends pivoted to said lug and its opposite end is pivoted to the operating lever 45. Said lever, in turn, is pivoted between its ends to an arm or extension 46 secured in any desired manner to the front plate 17 of the form 15. The lower portion of the lever 45 is accessible through the opening 8 of the fireplace.

In Figs. 4 and 5 the pivot rod is designated 52 and is placed on the inner or concave side of the flange 41.

In the structure shown in Fig. 4 the furnace walls 5, 6 and 7 are substantially the same as that shown in Figs. 1 and 2, but the wall surface 13x is unobstructed, and the wall portion 12x has a horizontal top surface 12s which, at its front edge, joins the wall surface below at an acute angle. Over this angle is fitted an acutely bent angle iron member 58 having at each end an upstanding ear 51. The projecting end portions of the damper rod 52 are pivotally mounted upon these ears. In Fig. 4 the damper plate 53 has a flange 41 joined to it by a somewhat arcuate bend, and the rod 52 is seated in said bend when it is welded in place.

The plate 50 has secured to it a forwardly projecting mounting arm 55 to which is pivotally secured the operating lever 45, said lever, and the parts 43 and 44 being like those of the same designation already described.

It will be seen that, in the modification shown in Fig. 4 most of the sheet metal structure shown in Figs. 1, 2 and 3 is dispensed with, the free end of the damper plate 53 cooperating directly with the inclined wall surface 13x. The longitudinal locations and dimensions of the parts shown in Fig. 4 correspond to, and therefore, will readily be understood from the showing of the corresponding parts in the other views.

In both forms of the invention the means for operating the damper will be furnished with joints which will offer sufficient frictional resistance to their movement to insure that the damper plate will be prevented from accidental displacement from its adjusted position.

It will be seen that in both forms of the invention an acutely angular sheet metal portion, (either the plate 50 of Fig. 4 or the top flanged portion of plate 18, Fig. 2) is fitted over a like angular portion of the refractory material of which the fireplace is built, and this sheet metal member has the damper construction operatively connected with it. The end portions of plate 50 are anchored in the side walls 60 of the fireplace as shown in Fig. 5, after extending beyond the fire brick 59. The advantage of this construction resides in that it enables the builders to support the sheet metal walls of the device upon the masonry or ordinary brick before the fire brick lining is added to complete the structure.

As indicated at 56 in Fig. 1, the width of the flue 10 diminishes from below upwardly to aid in promoting upward draft. The sheet metal form 15 is correspondingly tapered so as to properly fit within said flue.

The lower part 35 of the plate or angle bar 18 guards against the top brick of the inclined wall 12 from falling into the fire box.

I claim:

1. In a construction of the kind described, a sheet metal form adapted to line a portion of the flue of a fireplace, said form having a front wall made of a sheet metal plate which has a backwardly bent flange extending along an edge thereof, and a bracing strip uniting said flange with the body portion of the metal, said strip having a projecting end portion adapted to extend into the fire place wall and thereby aid in supporting the aforesaid sheet metal form.

2. A sheet metal form having a draft passage through it, a damper to control the draft through said passage, and supporting arms for said form, said arms consisting of metal strips of greater thickness than the sheet metal of which said form consists, said arms being rigidly secured to the form and occupying end portions only thereof.

3. The subject matter of claim 2 and, said form having angularly directed flanges and said arms uniting edge portions of said flanges with body portions of said form.

4. In a construction of the kind described, a sheet metal form having an angularly directed marginal flange, and a supporting arm consisting of a strip of metal one edge of which is welded to an edge portion of said flange and the opposite edge of which is welded to a wall of said form.

5. The subject matter of claim 4 and, said arm extending only a fractional part of the distance across said form.

6. In a structure of the kind described, a fireplace structure built of refractory material and having a draft flue leading upwardly therethrough, a sheet metal form forming a lining for a portion of said flue, and a damper construction mounted upon said form to control the draft therethrough, said form having a side plate furnished with projecting end portions entering the end walls of the fireplace to aid in supporting said form, said form having also another side plate, the latter plate having a flange extending into said refractory material to aid in supporting said sheet metal form.

7. In a structure of the kind described, a fire-

place having end wall structures each of which consists of an inner portion made of fire brick and an outer portion made of rough brick, and a metallic form having a flue therethrough and an extension at each end which extends beyond said fire brick and into said rough brick.

8. In a structure of the kind described, a fireplace having wall structures which consist of an inner portion made of fire brick and an outer portion made of rough masonry, and a metallic form having a flue therethrough, said metallic form having a front plate with an extension at each end and a back plate with an extension at each end, all of said extensions projecting beyond said firebrick and into said rough masonry.

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