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Whitlock

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[54] **CHIMNEY DRAFT CONTROL DEVICE**

[76] Inventor: **James T. Whitlock,** 833 Vannah Ave., Louisville, Ky. 40223

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[52] **U.S. Cl.** **98/74**

[51] **Int. Cl.** **F23l 17/02**

[58] **Field of Search** 98/67, 74, 77, 82, 119

[56] **References Cited**

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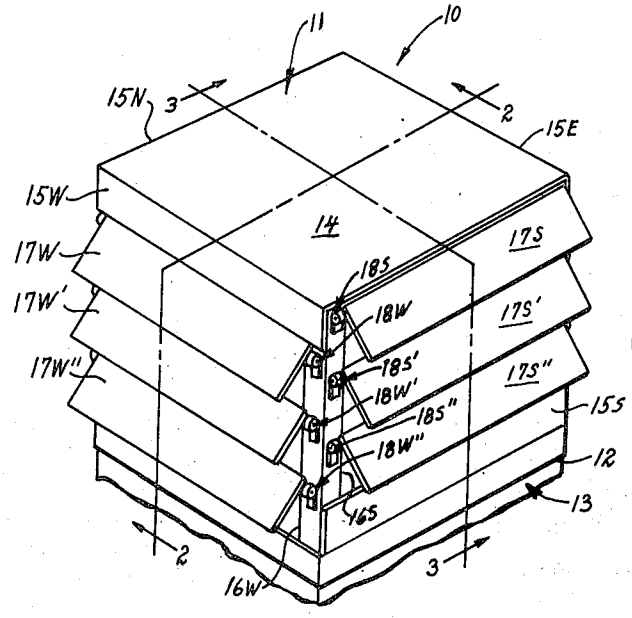
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Primary Examiner—William F. O'Dea
Assistant Examiner—Peter D. Ferguson
Attorney, Agent, or Firm—Harry B. O'Donnell, III

[57] **ABSTRACT**

The present invention provides a draft control device for a chimney of a fireplace and the like. Basically, the device of the present invention comprises a generally hollow box-like member having six sides including one open side that can be fixed over the top of a chimney and a closed side opposite from that one side, and four other sides, including two sets of opposite sides, each having a vent. At least one shutter is pivoted on the member adjacent each of the side vents for movement by wind forces and rigid linkage means are provided for pivotally interconnecting the shutters for each of the sets of the vented opposite sides of the member to provide two shutter sets wherein one shutter for each of the two sets of opposite vented sides of the member will be moved away from its vent when the other shutter of the set is moved towards its vent by pivotal movement of the one shutter of the set by the wind forces. In particular accordance with the present invention, the linked shutters of one of the two shutter sets have their pivotal mountings to the member offset from those of the other of the shutter sets so as to avoid jamming of the linkage means.

3 Claims, 6 Drawing Figures



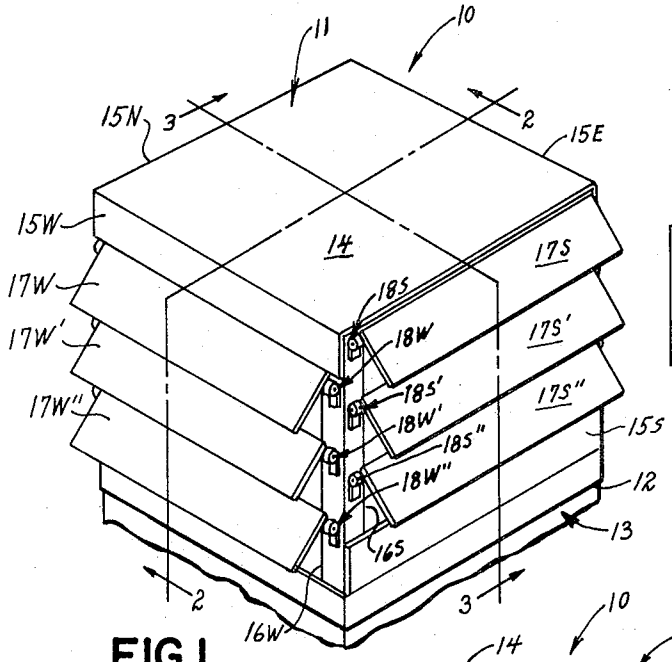


FIG.1

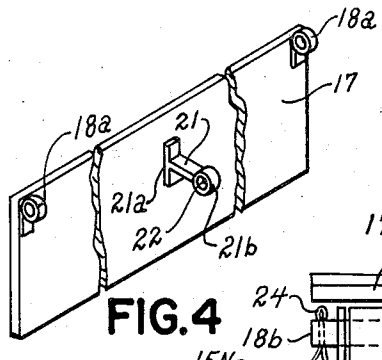


FIG.4

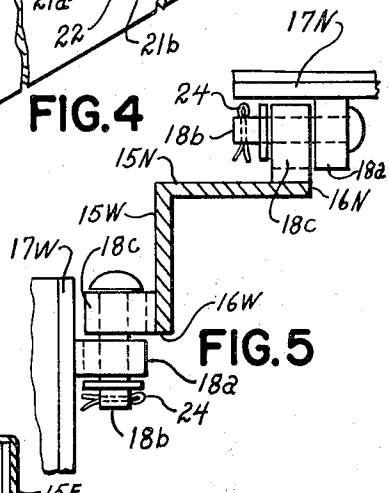


FIG.5

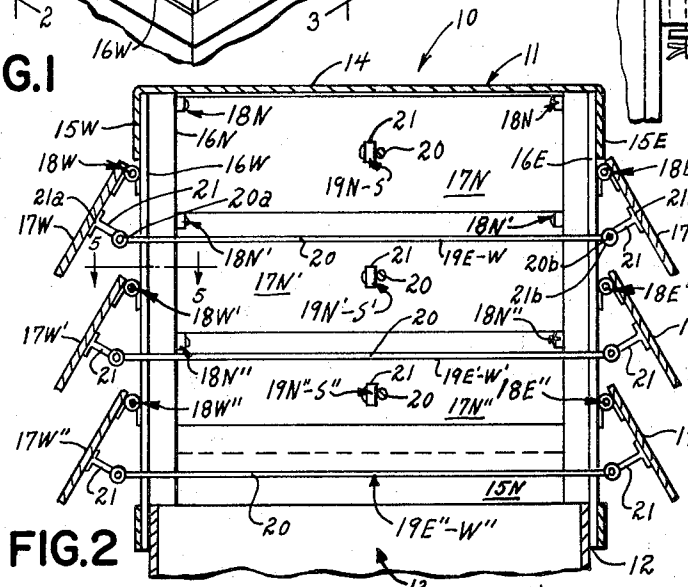


FIG.2

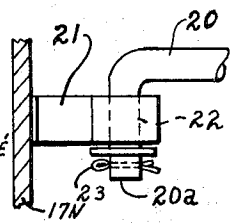


FIG.6

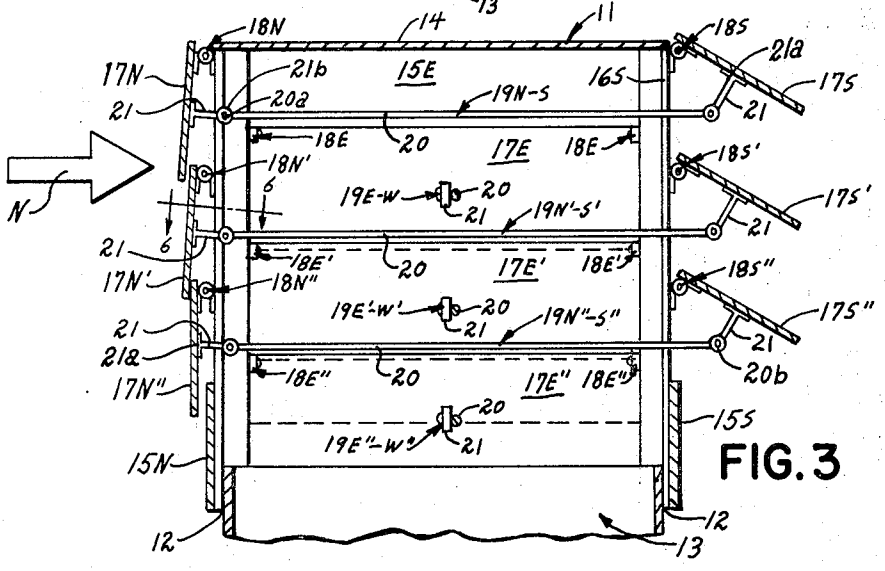


FIG.3

CHIMNEY DRAFT CONTROL DEVICE

BACKGROUND OF THE INVENTION

This invention relates to draft control means for a chimney and, more particularly, to a draft control device for a chimney and the like.

More specifically, the present invention relates to a draft control device that can be attached to the upper end of a chimney for a fireplace and the like to improve its operation, as by preventing undesirable downdraft of air or back movement of smoke in the chimney, regardless of the direction and force of the wind and thus insuring a constant upward draft through the chimney and the proper escape of smoke from the chimney.

In the past, various forms of draft control devices have been provided for this purpose. Basically these prior-art devices have included a rectangular hollow member having six sides including one open side that can be fixed over the top of a chimney and a closed side opposite from that one side, and four other sides, including two sets of opposite sides, each having a vent. These prior-art devices have also included at least one shutter pivotally mounted on the member adjacent each of the side vents for movement by the wind forces and connector means for interconnecting the shutters of each of the sets of the vented opposite sides of the member to provide two shutter sets wherein one shutter for each of the two sets of the opposite vented sides of the member will be moved away from its vent when the other shutter of the set is moved towards its vent by pivotal movement of the one shutter of the set by action of the wind forces.

In the older forms of these prior-art draft control devices, such as described in detail in U.S. Pat. Nos. 141,541 and 535,663, the shutter set connecting means comprised rigid linkage means including a rigid rod having a length greater than the space between the set of vented opposite sides shuttered by one of the shutter sets and the rod had its opposite ends respectively directly pivotally connected to one of the shutters forming the one shutter set for each set of the vented opposite sides of the member. In these old devices, the linked shutters of both of the two shutter sets had their pivotal mountings to the member aligned with, rather than offset from, those of the other of the shutter sets, and this prior-art construction frequently resulted in jamming of the shutter connecting or rigid linking means employed therein caused by interference between the two crossed rigid rods employed therein.

U.S. Pat. No. 614,368 describes a more recent prior-art form of such a draft control device which employed non-rigid wire-type means instead of the aforedescribed earlier rigid linkage means for the shutter set connecting means in an effort to overcome the aforenoted jamming problem. However, this wire-type shutter set connecting means was subject to rather rapid deterioration by the action the flue gases and, thus, had other problems of its own.

The present invention is particularly concerned with providing improved draft control device, which though somewhat similar to the aforedescribed prior-art devices, it is of superior construction which enables it to overcome the aforenoted problems that had heretofore been present in the aforedescribed prior-art forms.

SUMMARY OF THE INVENTION

The present invention provides a draft control device for a chimney of a fireplace and the like.

Basically, the device of the present invention comprises a generally hollow box-like member having six sides including one open side that can be fixed over the top of a chimney and a closed side opposite from that one side, and four other sides, including two sets of opposite sides, each having a vent. At least one shutter is pivoted on the member adjacent each of the side vents for movement by wind forces and rigid linkage means are provided for pivotally interconnecting the shutters for each of the sets of the vented opposite sides of the member to provide two shutter sets wherein one shutter for each of the two sets of opposite vented sides of the member will be moved away from its vent when the other shutter of the set is moved towards its vent by pivotal movement of the one shutter of the set by the wind forces. In particular accordance with the present invention, the linked shutters of one of the two shutter sets have their pivotal mountings to the member offset from those of the other of the shutter sets so as to avoid jamming of the linkage means.

Preferably, the shutters are pivotally mounted on the box-like member such that their pivotal movement will be about a generally horizontal axis when the open side of the member is fixed over the chimney top so that such pivotal mountings of the linked shutters of one of the two shutter sets will be offset generally vertically from those of the other one of the two shutter sets, and each of the shutters will be mounted thereby for pivotal movement adjacent its upper end. It is also desirable that the linkage means for each of the shutter sets comprise a rigid rod having a length greater than the space between the set of vented opposite sides shuttered by the linked set of shutters and that this rod has its opposite ends respectively indirectly pivotally connected to one of the shutters forming the one shutter set through a rigid arm having one of its ends fixed to one of the two shutters and its opposite end pivotally connected to the rod. It is further preferred that each set of the opposite vented sides of the member be provided with a plurality of such shutter sets.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is illustrated in the accompanying drawing, wherein:

FIG. **1** is a somewhat schematic fragmentary elevational perspective view of a presently preferred form of a draft control device constructed in accordance with the present invention and installed atop a chimney for a fireplace and the like;

FIG. **2** is an enlarged elevational sectional view taken along line **2—2** of FIG. **1**;

FIG. **3** is an enlarged elevational sectional view taken along line **3—3** of FIG. **1**;

FIG. **4** is a greatly enlarged, party broken, elevational prospective view of the innerface of each of the shutters employed in the device illustrated in FIGS. **1–3**;

FIG. **5** is a greatly enlarged sectional view taken along line **5—5** of FIG. **2**; and

FIG. **6** is a greatly enlarged sectional view taken along line **6—6** of FIG. **3**.

DETAILED DESCRIPTION

Turning now to the drawing and, more particularly,

to FIGS. 1–3 thereof, there is illustrated a presently preferred form of a draft control device **10** that is provided in accordance with the present invention.

As shown, the device **10** comprises a generally hollow box-like member **11** having six sides. These six sides include one open side **12** that can be fixed over the top of a chimney **13** for a fireplace or the like and a closed side **14** opposite from the open side **12,** and four other sides **15N, 15S, 15E** and **15W,** including two sets of opposite sides **15N, 15S** and **15E, 15W** each respectively having a vent **16N, 16S, 16E** and **16W** through which the chimney flue gases may escape to the atmosphere.

As further illustrated in the drawing, at least one shutter **17N, 17S, 17E** and **17W** is respectively pivoted on the member **11** adjacent each of the side vents **16N, 16S, 16E** and **16W** by pivotal mounting means **18N, 18S, 18E** and **18W** for movement by wind forces present in the area adjacent the top of the chimney **13** (note arrow N indicating a generally northerly wind force). And, as further shown, two sets of rigid linkage means **19N–S** and **19E–W** are provided for respectively pivotally innerconnecting the shutters **17N, 17S** and **17E, 17W** for each of the sets **15N–S** and **15E–W** of the vented oposite sides **15N, 15S, 15E** and **15W** of the member **11** to provide two shutter sets **17N–S** and **17E–W.** With the illustrated construction of the rigid linkage means **19N–S** and **19E–W** (note especially FIG. **3**), one shutter of each of the two shutter sets **17N–S** or **17E–W** will be moved away from its vent when the other shutter of the set is moved towards its vent through pivotal movement by the one shutter of the set by the wind forces.

As best shown in FIGS. **1–3,** and in particular accordance with the present invention, the linked shutters **17N** and **17S** of one **17N–S** of the two shutter sets **17N–S** and **17E–W** have their respective pivotal mountings **18N** and **18S** to the member **11** offset from those **18E** and **18W** of the other **17E–W** of the two shutter sets **17N–S** and **17E–W** so as to avoid jamming of their two respective linkage means **19N–S** and **19E–W.**

Preferably, the shutters **17N, 17S, 17E** and **17W** are pivotally mounted on the box-like member **11** by their mounting means **18N, 18S, 18E** and **18W** such that their pivotal movement will be about a generally horizontal axis when the open side **12** of the member **11** is fixed over the chimney top (as shown in FIGS. **1–3**) so that such pivotal mountings **18N** and **18S** of the linked shutters **17N** and **17S** of one **17N–S** of the two shutter sets **17N–S** and **17E–W** will be offset generally vertically from those pivotal mountings **18E** and **18W** of the other one **17E–W** of the two shutter sets **17N–S** and **17E–W** and each of the shutters **17N, 17S, 17E** and **17W** will be pivotally mounted thereby to the member **11** for pivotal movement adjacent its upper end.

As further shown in FIGS. **2–3,** it is also desirable that the linkage means **19N–S** and **19E–W** for each of the shutter sets **17N–S** and **17E–W** each comprise a rigid rod **20** having a length greater than the space between the set **15N–S** or **15E–W** of the vented opposite sides **15N, 15S, 15E** and **15W** respectively shuttered by the linked set of shutters **17N–S** or **17E–W.** It is further preferred that this rigid rod **20** have its opposite ends **20*a*** and **20*b*** respectively indirectly pivotally connected to one of the shutters forming one **17N–S** or **17E–W** of the two shutter sets **17N–S** and **17E–W** through a rigid arm **21** having one of its ends **21*a*** fixed to one of the two shutters forming that one shutter set **17N–S** or **17E–W** and its opposite end **21*b*** pivotally connected to one of the two ends **20*a*** or **20*b*** of the rigid rod **20** of its linkage means **19N–S** or **19E–W.**

FIG. **4** shows in detail the construction of each of the shutters **17N, 17S, 17E** and **17W** which are employed in the illustrated form of the device **10,** particularly with respect to the rigid arm **21** through which each shutter is indirectly pivotally connected to one of the opposite ends **20*a*** or **20*b*** of the rigid rod **20** that is employed in the rigid linkage means **19.** FIG. **6** shows in detail a presently preferred form of the means which is employed to pivotally interconnect one of the opposite ends **20*a*** or **20*b*** of this rigid linkage means rod **20** of the rigid arm **21.** As illustrated, the rigid rod end **20*a*** or **20*b*** is hooked through an aperture **22** that is provided in one end of the rigid arm **21** and held therein place for pivoted movement by a cotter key **23.** And, as further shown in FIGS. **4** and **6,** the other end of the rigid arm **21** is fixed to the shutter **17** by suitable fastening means such as welding and the like adjacent its geometric center.

As still further illustrated in detail in FIGS. **4** and **5** the pivotal mounting means **18N, 18S, 18E** and **18W** which mount each of the shutters **17N, 17S, 17E** and **17W** to the member **11** preferably include a pair of journal members **18*a*** which are fixed to the upper corners of the shutter inner face and are pivotally innerconnected by pins **18*b*** to other journal members **18*c*** which are fixed to the member **11.** Other cotter keys **24** are provided to retain the pins **18*b*** in place.

As also shown in FIGS. **1–3,** it is further preferred that each set **15N–S** or **15E–W** of the vented opposite sides **15N, 15S, 15E** and **15W** of the member **11** be provided with a plurality of shutter sets (three of each as illustrated). It should be understood that these additional shutter sets **17N′–S′, 17E′–W′, 17N″–S″** and **17E″–W″** are substantially identical in construction to the previously described shutter sets **17 N–S** and **17 E–W** as are their pivotal mounting means **18N′–S′, 18E′–W′, 18N″–S″** and **18E″–W″** which pivot them to the member **11** and their rigid linkage means **19N′–S′, 19E′–W′, 19N″–S″** and **19E″–W″.**

The draft control device **10** of the present invention can be utilized by fixing the open side **12** of its hollow box-like member **11** over the top of a chimney **13** for a fireplace or the like as shown in FIGS. **1–3.** As further illustrated, the shutters **17N, 17N′** and **17N″** for one of the four side vents **16N** of the member **11** are located generally on the north side of the chimney **13;** the shutters **17S, 17S′** and **17S″** for the side vent **16S** of the member **11** are located generally on the south side of the chimney **13;** the shutters **17E, 17E′** and **17E″** for the side vent **16E** of the member **11** are located generally on the east side of the chimney **13;** and the shutters **17W, 17W′** and **17W″** for the side vent **16W** of the member **11** are located generally on the west side of the chimney **13.**

Assuming the wind forces adjacent the top of the chimney **13** are from a generally northerly direction, as indicated by the arrow N in FIG. **3,** the six shutter sets **17N–S, 17N′–S′, 17N″–S″, 17E–W, 17E′–W′** and **17 E″–W″** will be aligned as shown in FIGS. **1–3,** with the shutters **17N, 17N′** and **17N″** being moved towards closure of their side vent **16N** by the pressure of the wind force (arrow N) upon them and this movement of

these shutters **17N**, **17N'** and **17N''** will be respectively transmitted to the opposite shutters **17S**, **17S'** and **17S''** through the shutter set rigid linkage means **19N–S**, **19N'–S'** and **19N''–S''** to cause the shuters **17S**, **17S'** and **17S''** to be moved away from their vent **16S** of the member **11.** However, the shutters **17E**, **17E'** and **17E''** for the side vent **16E** which are respectively innerconnected to the shutters **17W**, **17W'** and **17W''** for the side vent **16W** by the rigid linkage means **19E–W**, **19E'–W'** and **19E''–W''** will be substantially unaffected by the illustrated prevailing generally northerly wind forces (arrow N — FIG. **3**) and will be moved by gravity to their "neutral" positions (FIG. **2**) such that neither of these two side vents **16E** nor **16W** will be closed by its shutters.

It should, of course, be apparent that the prevailing wind direction atop the chimney **13** might be from a direction other than the illustrated generally northerly direction and that this would result in closure of the shutters for the device **10** which are disposed adjacent the direction from which whatever prevailing wind forces are present, while the other vents which are disposed towards the other three major points of the compass would be open.

It should be apparent that while there has been described what is presently considered to be a preferred embodiment of the present invention in accordance with the Patent Statutes, changes may be made in the disclosed apparatus without departing from the true spirit and scope of this invention. It is, therefore intended that the appended claims shall cover such modifications and applications that may not depart from the true spirit and scope of the present invention.

What is claimed is:

1. A draft control device for a chimney of a fireplace and the like comprising:

a. a generally rectangular hollow box-like member having six sides including one open side that can be fixed over the top of a chimney and a closed side opposite from said one side, and four sides, including two sets of opposite sides, each having a vent;

b. at least one shutter pivotally mounted on said member adjacent each of said side vents for movement by wind forces; and

c. rigid linkage means for pivotally interconnecting said shutters for each of said sets of vented opposite sides to provide two shutter sets wherein one shutter for each of said two sets of opposite vented sides will be moved away from its vent when the other shutter is moved towards its vent by pivotal movement of said other shutter by said wind forces,

d. the linked shutters of one of said two shutter sets having their pivotal mountings to said member offset from those of the other of said shutter sets so as to avoid jamming of said linkage means,

e. said shutters being pivotally mounted on said member such that their pivotal movement will be about a generally horizontal axis when said open side of said member is fixed over said chimney top,

f. said pivotal mountings of said linked shutters of one of said two shutter sets being then offset generally vertically from those of the other of said shutter sets,

g. each of said shutters being then mounted for pivotal movement adjacent its upper end by said pivotal mountings,

h. said linkage means for each of said shutter sets comprising a rigid rod having a length greater than the space between the set of vented opposite sides shuttered by one of said shutter sets and having its opposite ends respectively indirectly pivotally connected to one of the shutters forming said one shutter set, and

i. said indirect pivotal connection being through a rigid arm having two opposite ends with only one of said two opposite ends being fixed to said one of said shutters and the other of said two opposite ends being pivotally connected to said rod.

2. The invention of claim **1,** wherein said only one of said two opposite ends of said arm will be fixed at the elevational center of said shutter.

3. The invention of claim **2,** wherein said vented opposite sides are provided with a plurality of shutter sets.

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