

Aug. 20, 1929.

E. H. SHOLAR

1,725,484

DAMPER

Filed Jan. 7, 1929

3 Sheets-Sheet 1

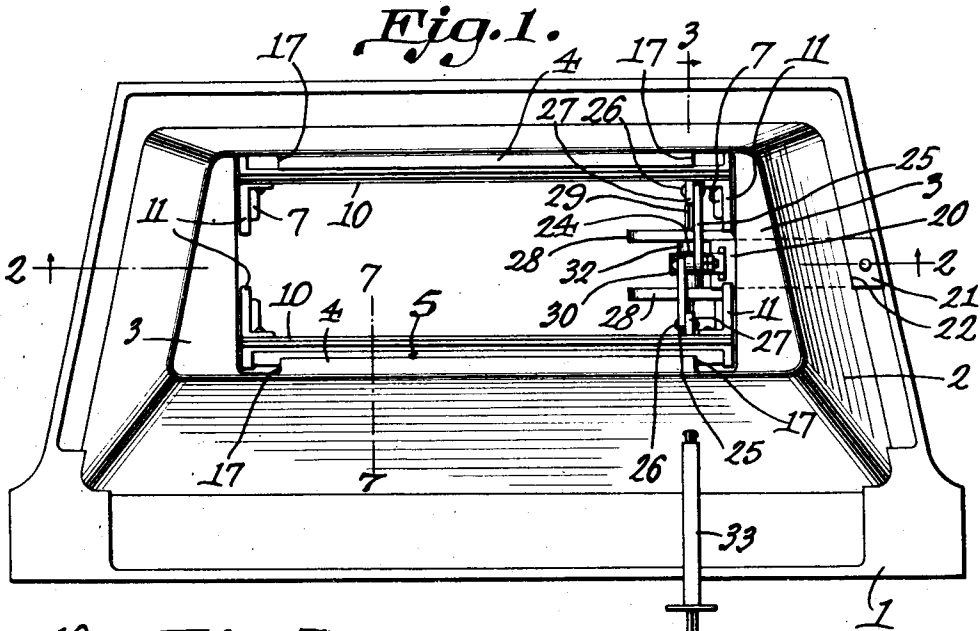
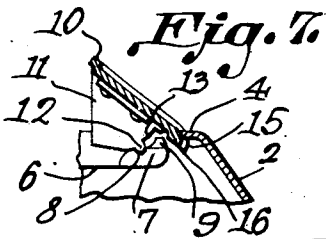
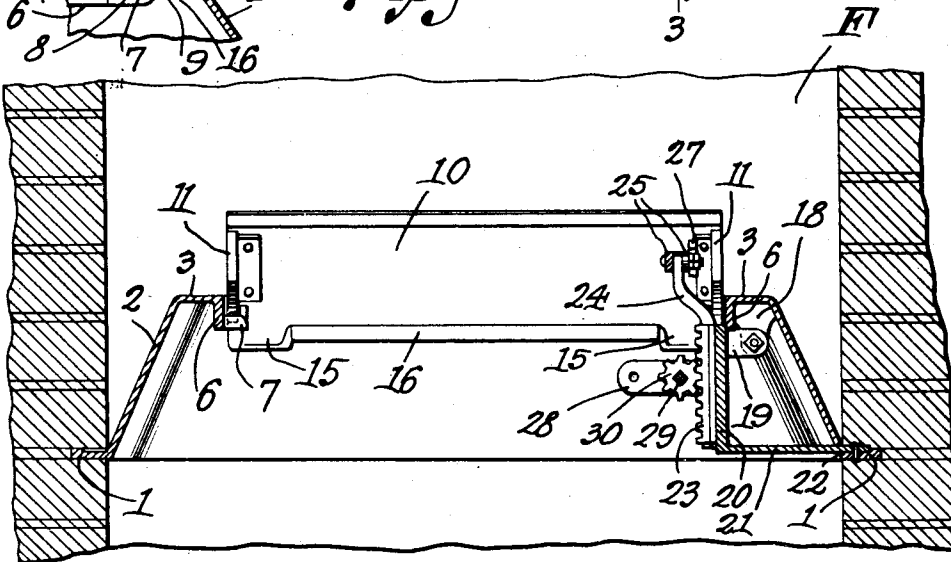


Fig. 2.



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Fig. 3.

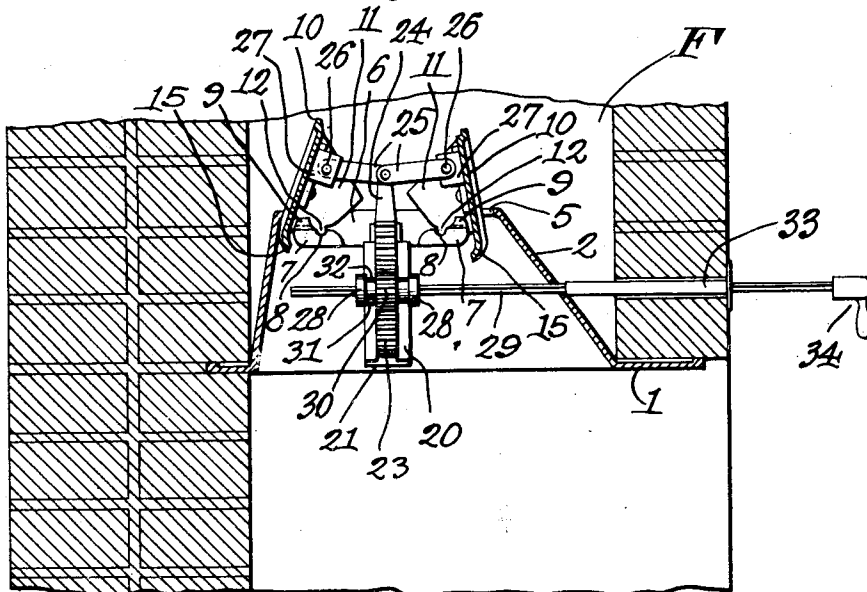


Fig. 4.

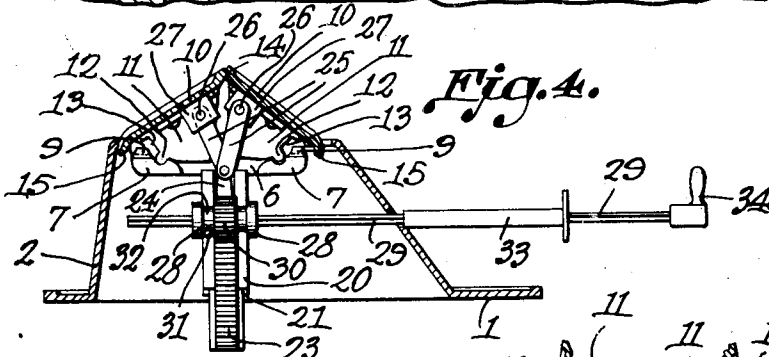


Fig. 3

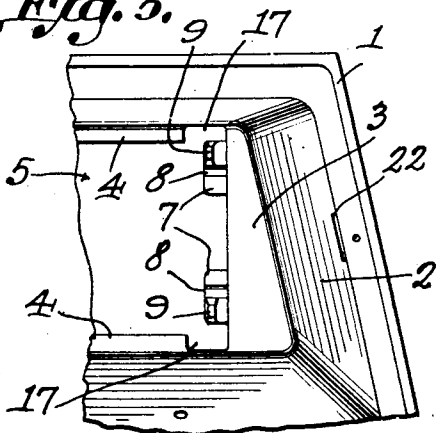
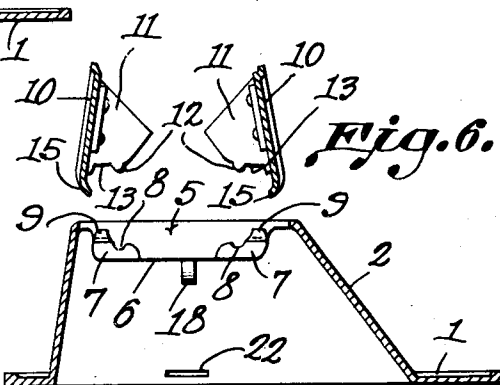


Fig. 6.



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Fig. 8.

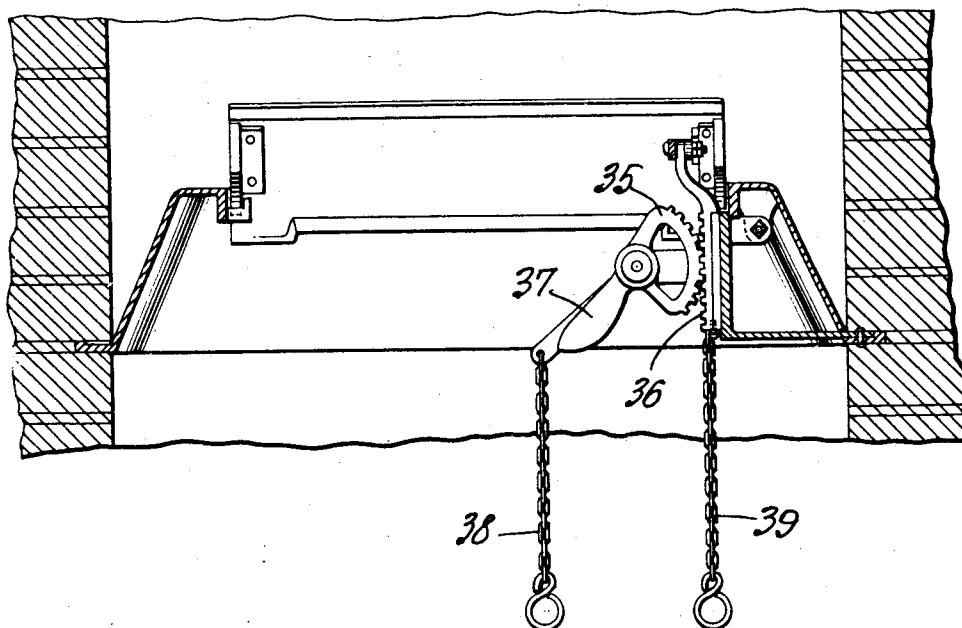
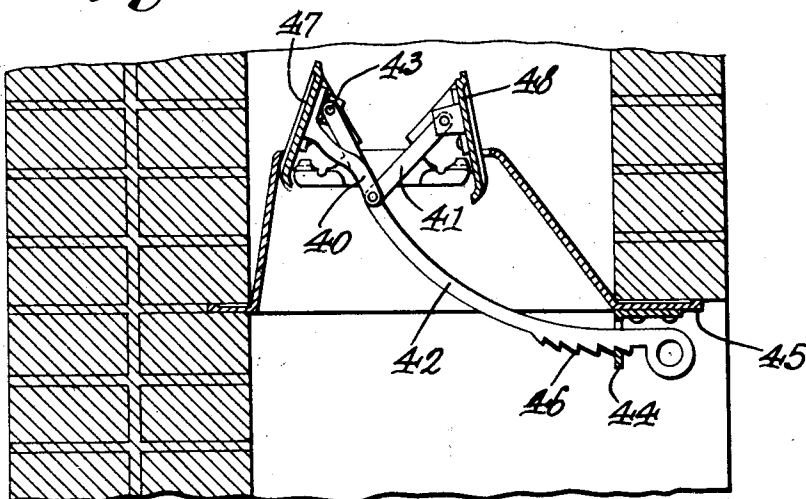


Fig. 9.



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UNITED STATES PATENT OFFICE.

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DAMPER.

Application filed January 7, 1929. Serial No. 330,736.

This invention relates to a damper designed primarily for use in controlling the draft into a chimney from an open fireplace.

It is an object of the invention to provide a damper including opposed shutters so mounted as to be substantially balanced whereby, when the shutters are shifted to any position, they will remain in said position without swinging open or closed.

A further object is to provide shutters which can be easily placed in or removed from position relative to the supporting plate.

A still further object is to provide simple and efficient means for actuating the shutters.

Another object is to provide a damper the shutters of which constitute means for deflecting or shedding soot.

With the foregoing and other objects in view which will appear as the description proceeds the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings the preferred forms of the invention have been shown.

In said drawings,

Figure 1 is a top plan view of a damper embodying the present improvements, the shutters being shown open.

Figure 2 is a section on line 2—2, Figure 1, the damper being shown in position within a chimney flue.

Figure 3 is a section on line 3—3, Figure 1, showing the damper in a flue.

Figure 4 is a transverse section through the damper, the shutters being shown closed.

Figure 5 is a top plan view of one end portion of the damper plate showing the shutter supporting lugs.

Figure 6 is a transverse section through the damper plate showing said lugs in elevation, the shutters being also shown in section but spaced above the plate.

Figure 7 is a section through a portion of the damper plate, said section being taken on line 7—7, Figure 1, and showing a portion of a shutter in closed position.

Figure 8 is a view similar to Figure 2 showing a modified structure.

Figure 9 is a transverse section showing another modified form.

Referring to the figures by characters of reference, 1 designates the damper plate the edge portions of which are adapted to be embedded in the walls of a flue F. This plate has a hollow box-like extension 2 extending upwardly therefrom the walls of which converge. Flanges 3 are extended inwardly from the upper edges of the end walls of the extension and additional flanges 4 are extended inwardly from the upper edges of the front and back walls, these flanges 3 and 4 cooperating to define an angular opening 5. Each of the flanges 3 has a depending portion 6 at its inner edge formed with supporting or bearing ears 7 provided, in their upper faces, with notches 8. A tooth 9 is extended upwardly from each of these ears adjacent to the notch.

Mounted to work within the opening 5 are opposed shutters 10 each of which is provided, at each end, with an arcuate wing 11 having a tooth 12 adapted to rest within the adjacent notch 8. The wing also has a recess 13 designed to receive the tooth 9 thereunder. The two shutters are so proportioned that, when swung toward each other, they will contact at their inner longitudinal edges, said edges being so shaped as to produce a lapped joint as clearly indicated at 14 in Figure 4.

The opposed longitudinal edges of the shutters are curved downwardly as shown at 15 to provide ears connected along the lower edge of the shutter by a counterbalance 16 in the form of a thickened portion or rib made integral with the shutter. The end portions of the flanges 4 are cut away at 17 to receive the ears 15 but the intermediate portions of these flanges extend into the path of the counterbalancing rib 16 so as to lap the outer side edges of the shutters when they are closed.

A lug 18 is formed on one of the flanges 3 and is fastened to an ear 19 extending laterally from the upper end of a guide 20 the lower end of which has a tongue 21 that extends through a slot in one of the end walls of box 2, this slot being shown at 22. The tongue is riveted or fastened to the plate 1. Thus guide 20 is held securely in position where it will properly engage a rack 23 from the upper end of which extends an arm 24. This arm is connected to toggle links 25 pivot-

ally attached at 26 to ears 27 extending from the lower faces of the shutters 10.

Extending from the sides of the guide 20 are arms 28 in which is journaled a rod 29 having a gear 30 secured thereto, this gear being located between the arms 28 and meshing with the rack 23. Rod 29 is adjustable longitudinally in the gear 30 and is adapted to be held in adjusted position by a set screw 31 seated in a spacing sleeve 32 that is located between one of the arms 28 and the gear 30.

A bearing sleeve 33 may be located outside of the extension 2 and within the wall of the flue F. This sleeve provides a bearing for the rod 29 which extends through said wall and has any suitable means, such as a handle or knob 34, whereby it can be rotated readily.

It will be apparent that when the rod 29 is rotated in one direction the gear 30 will elevate rack 23 and cause the toggle links 25 to swing the shutters 10 apart. At this time the teeth 12 will first constitute a pivot but as the shutters continue to move apart the teeth 9 will enter the notches 13 and become the fulcrums of the shutters. Thus each shutter has a rolling movement. The weighted outer edges of the shutters serve to hold said shutters in any positions to which they may be moved but when the shutters are completely open and the toggle links come into line or slightly above dead center, the shutters are obviously held securely locked against closing.

For the purpose of closing the shutters the rotation of the rod 29 is reversed whereupon the toggle links 25 will pull downwardly on said shutters, causing them to roll inwardly and downwardly until their inner longitudinal edges come together in lapped relation as shown in Figure 4. While the shutters are thus closed all parts of the outer side edges thereof, excepting the inwardly curved wings or ears 15 will press upwardly against the under surfaces of the flanges 4, forming a tight connection. Thus any soot or other foreign substances falling on the shutters will be deflected downwardly and laterally.

Instead of actuating the shutters by means of a rod and gearing as described, the mechanism illustrated in Figure 8 may be employed. In this modified structure a segmental gear 35 is substituted for the gear 30. This segmental gear meshes with the rack 36. An arm 37 is extended from the segmental gear and has a pull chain 38 attached thereto. Another pull chain 39 is attached to the lower end of the rack 36. Thus when it is desired to raise the shutters the chain 38 is pulled downwardly. This will cause the segmental gear 35 to thrust upwardly on the rack 36 so as to open the shutters as heretofore explained. When it is desired to close the shutters the chain 39 is pulled downwardly whereupon the movement of the racks will be reversed. In all other respects this modified

structure is the same as that heretofore described.

Another form of actuating mechanism has been illustrated in Figure 9. In this structure the rack and its guide are dispensed with. A downwardly and inwardly extending arm 40 is fixedly secured to one of the shutters and is connected at its free end to the other shutter by a link 41. An elongated arcuate rod 42 is pivotally connected to one of these shutters as indicated at 43 and is mounted to slide within a guide bracket 44 depending from the front portion of the damper plate 45. A longitudinal series of ratchet teeth 46 are formed on the rod 42 and any one of these teeth is adapted to engage bracket 44 so as to hold the rod 42 and the dampers against downward movement. When it is desired to open the damper rod 42 is thrust inwardly relative to the guide 44. This will cause the teeth 46 to slide over the guide bracket. Rod 42 will press against one of the shutters 47, causing its arm 40 to thrust through the link 41 against the other shutter 48. To close the shutters rod 42 is swung upwardly to disengage its teeth from the bracket 44 whereupon it will be free to slide forwardly through the bracket and allow the shutters to swing downwardly and inwardly to partly or entirely closed positions. The mounting of these shutters 47 and 48 is the same as that of the shutters heretofore described.

What is claimed is:

1. A damper including a plate having an opening, supporting lugs extending into the opening, each lug having a tooth and a notch, opposed shutters, arcuate wings at the ends of each shutter, there being a tooth and a notch carried by each wing cooperating with the notch and tooth respectively on the adjacent lug, said toothed lugs and wings cooperating to provide rolling supports for the shutters, and means for simultaneously actuating the shutters to open or close the damper.

2. A damper including a plate having an opening, supporting lugs extending into the opening, each lug having a tooth and a notch, opposed shutters, arcuate wings at the ends of each shutter, there being a tooth and a notch carried by each wing cooperating with the notch and tooth respectively on the adjacent lug, said toothed lugs and wings cooperating to provide rolling supports for the shutters, counterbalancing means carried by each shutter, a toggle connection between the shutters, and means for actuating said connection to move the shutters to open or to closed positions.

3. A damper including a plate having an opening, supporting lugs extending into the opening, each lug having a tooth and a notch, opposed shutters, arcuate wings at the ends of each shutter, there being a tooth and a notch carried by each wing cooperating with

the notch and tooth respectively on the adjacent lug, said toothed lugs and wings co-operating to provide rolling supports for the shutters, counterbalancing means carried by
5 each shutter, a toggle connection between the shutters, and means for actuating said connection to move the shutters to open or to

closed positions, said means including a rack connected to the toggle, a guide therefor, and a gear for actuating the rack.

In testimony that I claim the foregoing as
10 my own, I have hereto affixed my signature.

EDWARD HIRAM SHOLAR.