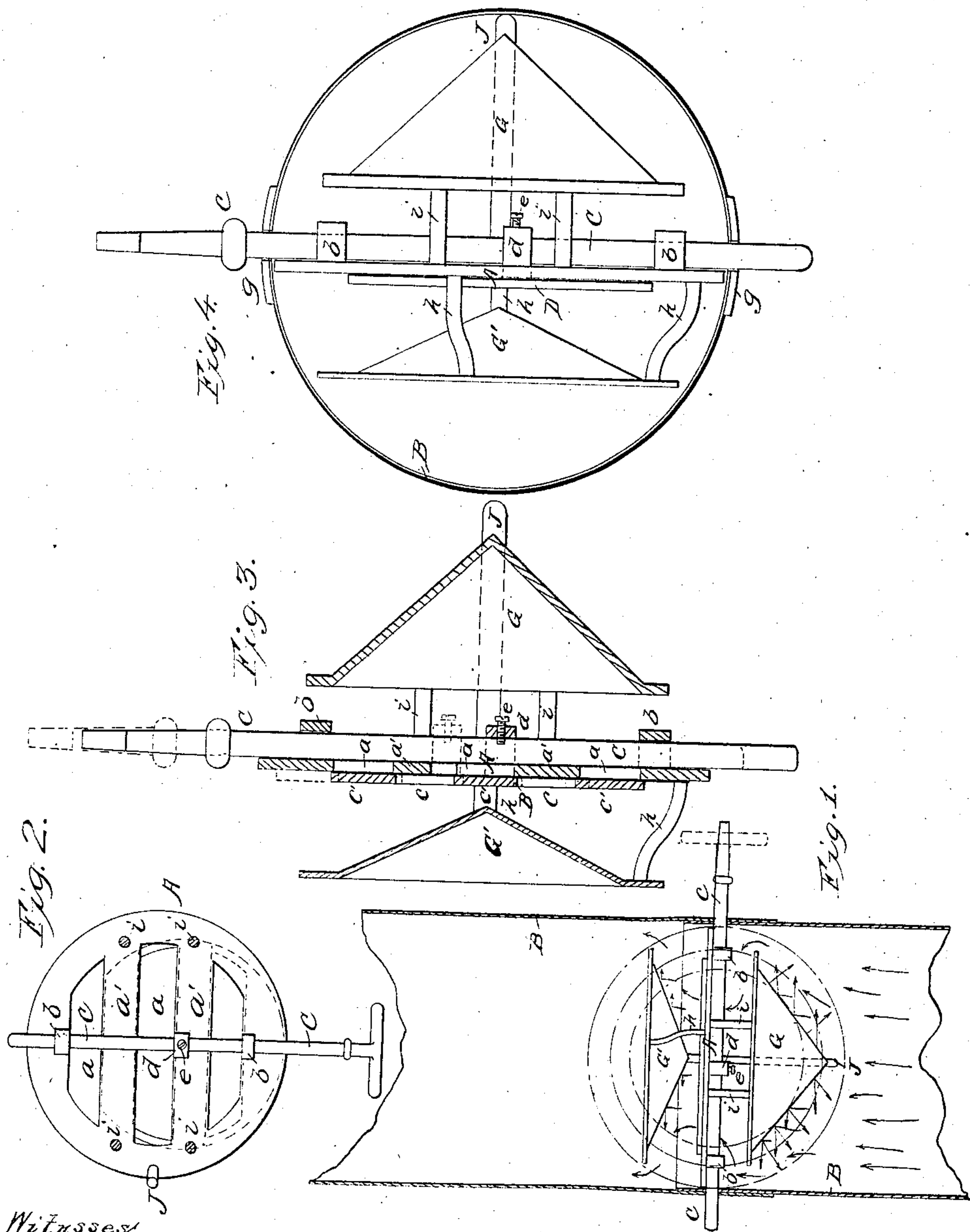


Chas. C. F. Stender's Improv^d Stovepipe Damper.
 No. 41,869.
 Patented March, 8, 1864.



Witnesses:
 R. J. Campbell
 E. Schaper

Inventor
 Chas. C. F. Stender
 by atty:
 Messrs. Knicker & Lamson

UNITED STATES PATENT OFFICE.

CHARLES C. F. STENDER, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN DAMPERS.

Specification forming part of Letters Patent No. 41,869, dated March 8, 1864.

To all whom it may concern:

Be it known that I, CHARLES C. F. STENDER, of Chicago, in the county of Cook, State of Illinois, have invented a new and Improved Stove-Pipe Damper; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a view of the improved damper arranged within a pipe, which is shown in section. Fig. 2 is a view of the open or slotted plates, seen by removing one of the cones. Fig. 3 is a diametrical section, and Fig. 4 a side view of the improved damper.

Similar letters of reference indicate corresponding parts in the several figures.

The object of my invention is to obtain a stove-pipe damper or valve by means of which the draft or the ascent of the products of combustion through the stove-pipe can be completely controlled, and a great proportion of the heat which usually passes up the chimney radiated into the room.

The objection to the disk-valve which has hitherto been used in stove-pipes for regulating the draft is that a large amount of the heat escapes with the products of combustion, and this is particularly the case when the valve or damper is entirely "open." My object is to check the ascent of the smoke, and to combine with a damper operating in this manner the principles of the oscillating and the sliding dampers, all as will be hereinafter described.

To enable others skilled in the art to make and use my invention, I will describe its construction and operation.

In the accompanying drawings, A represents a circular plate, which is nearly equal in diameter to the interior diameter of the stove pipe B, within which it is arranged, as shown in Figs. 1 and 4. This plate has a number of oblong slots cut through it, as shown in Figs. 2 and 3, *a a a* being the parallel slots, and *a' a' a'* the bars. Near the circumference of the plate A, and diametrically opposite each other, are two staples, *b b*, which may be cast with plate A if it be made of cast metal, and through these staples passes loosely the damper-rod C, which is considerably longer than the diameter of the stove-pipe B. To prevent the plate A from turning

around the rod C, that portion of this rod which passes through the staples *b* is made square, so that by turning the rod C the plate A will turn with it. At the same time this rod will be allowed a free endwise play across the plate A.

D represents a plate, which is formed with slots *c c c* through it and bars or closing-plates *c' c' c'*, which latter are intended for closing or partially closing the slotted openings *a a a* through the plate A. The latter plate, D, is of less diameter than the plate A, and an eye, *d*, is formed on it, which projects through the central slot of plate A and receives the rod C, to which the plate D is secured by a screw or pin, *e*, Fig. 3. The two plates, A and D, fit pretty close together, and when arranged in the stove-pipe B they will serve the double purpose of an oscillating-disk valve or damper and also of a sliding valve or damper. By turning these plates so that they will be in a plane with the axis of the stove-pipe the products of combustion will pass unobstructedly through the pipe, and by turning the plates so as to close up the pipe, as shown in Fig. 1, the draft will be completely checked; but by sliding the plate D so as to leave openings through the two plates for the passage therethrough of the smoke, &c., the draft may be regulated to a greater or less degree, according to the extent of such openings. Thus it will be seen that although the two plates A and D are in the position shown in Fig. 1, a greater or less draft may be allowed by increasing or diminishing the extent of opening through the plate A, as above described.

When the plates A and D stand in the position shown in Figs. 1 (in red) and 4, there will be no occasion to use the plate D; but when these plates are across the pipe, as in Fig. 1 in black lines, the plate D can be moved, so as to give a very slight draft-opening, according to the condition of the fire in the stove.

Two bearing-plates, *g g*, may be riveted to the pipe B, as shown in Fig. 4, for receiving the rounded portions of the rod C and supporting the damper within the stove-pipe.

G G' represent two conical plates, the diameters of which are less than that of the plate A. These plates or cones are both inverted and attached by their flanged bases

to the plate A, one above and the other below this plate, and separated therefrom by means of the studs *h h i i*. These two cones may vary in height, or they may both be of the same height, and they may be of different diameters at their bases; still they should not be of such a diameter as will prevent the passage of the smoke between their circumferential edges and the pipe B. The object of these cones G G' is to check the heat arising with the smoke without obstructing the passage of the latter. The inclined or conical surfaces of these plates G G' receive the heat, and radiate it toward the pipe B, or downward, as indicated by the red arrows in Fig. 1. The first cone, G, which receives the heat, may contain a larger amount of surface than the upper cone, which receives less heat than this lower or first cone. The heat rising with the smoke will, to a great extent, be absorbed by the first cone, G, and radiated in various directions toward the pipe B; then the heat which escapes past the first cone, G, and passes through the plates A D is received by and again radiated toward the pipe B, thus heating up the pipe below the damper and utilizing that heat which with the common form of disk-valve would pass up the chimney.

The advantage of the sliding-damper plate in connection with these cones is that after the fire has become started and very little, if any, smoke escapes therefrom the sliding damper can be used to retard the passage of the heated gases, and thus to allow the cones to operate to a great advantage in radiating the heat and retaining it as much as possible below the damper until it is radiated into the room. The heated air rising rapidly impinges upon the conical surfaces, and is thrown off laterally or at right angles to the direction it

strikes these surfaces, as indicated by the red arrows in Fig. 1.

Although I have described two cones, G G', as being employed in my improved damper or valve, I do not desire to confine my invention to two such cones, as one only may be used, placed either below the plates A D or above these plates. Instead of the conical shape represented in the drawings, a concavo-convex shape may be used.

The curved arm J, which is attached to one side of the plate A, as shown in Figs. 2 and 4, is intended to check the damper in its oscillating movement by coming in contact with the pipe B when the damper is in the position shown in Fig. 4, and thus preventing the damper from being turned completely around.

From this description it will be seen that I have combined in a single damper all the advantages of the solid plate valve and the heat deflecting or radiating valve, and with this combination I introduce the sliding register for regulating the passage of the heated gases through the smoke-pipe, according to the condition of the fire.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of one or more deflectors G G' with the sliding damper or register D and valve-plate A, substantially as and for the purpose described.

2. The combination of one or more deflectors G G' with an oscillating valve, A, substantially as and for the purpose described.

CHARLES C. F. STENDER.

Witnesses:

CHAS. H. BARNUM,
D. HERBERT.