

(No Model.)

2 Sheets—Sheet 1.

H. O. HAYES.  
GRATE FOR HEATING PURPOSES.

No. 549,720.

Patented Nov. 12, 1895.

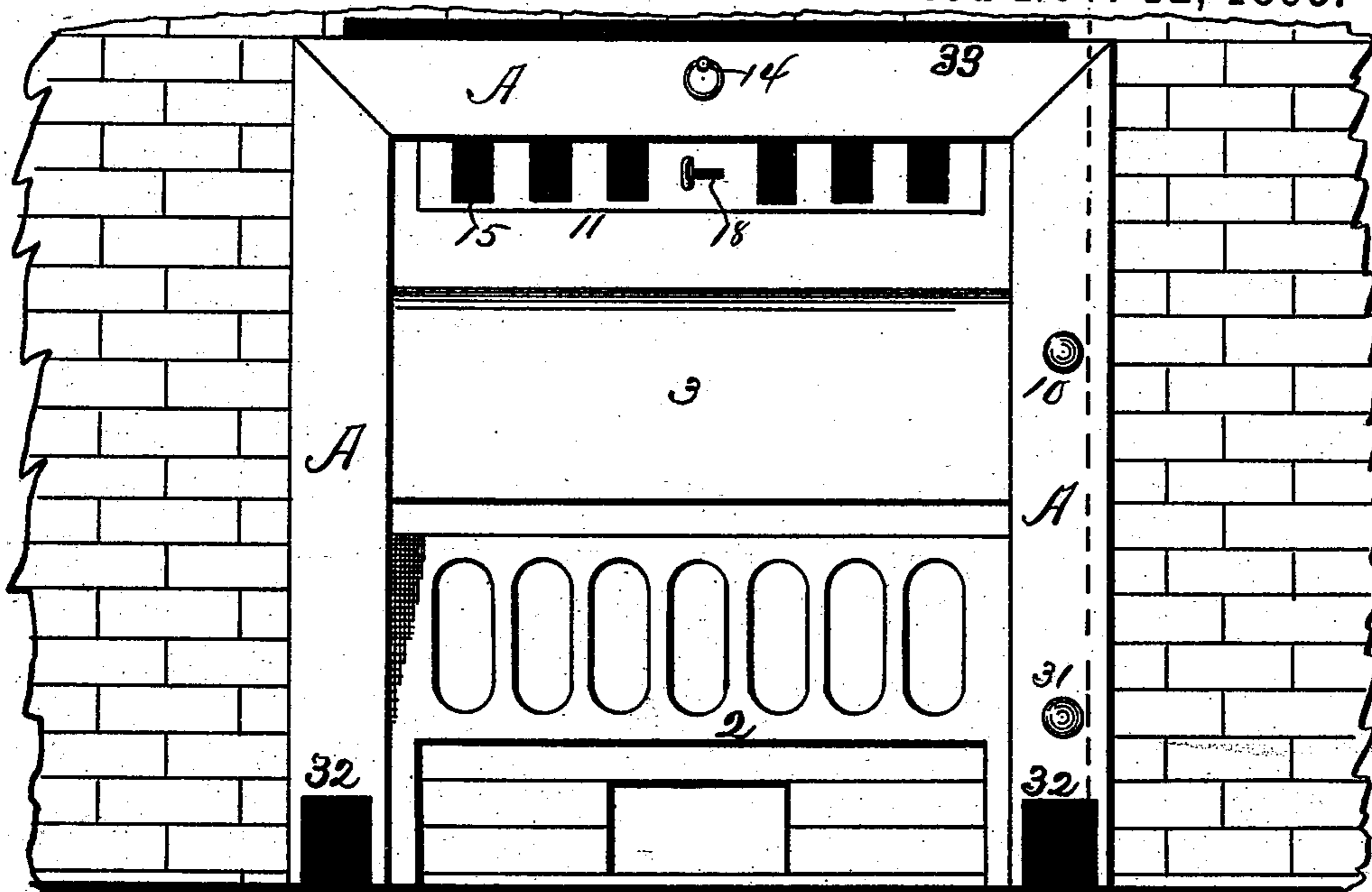


Fig. 1

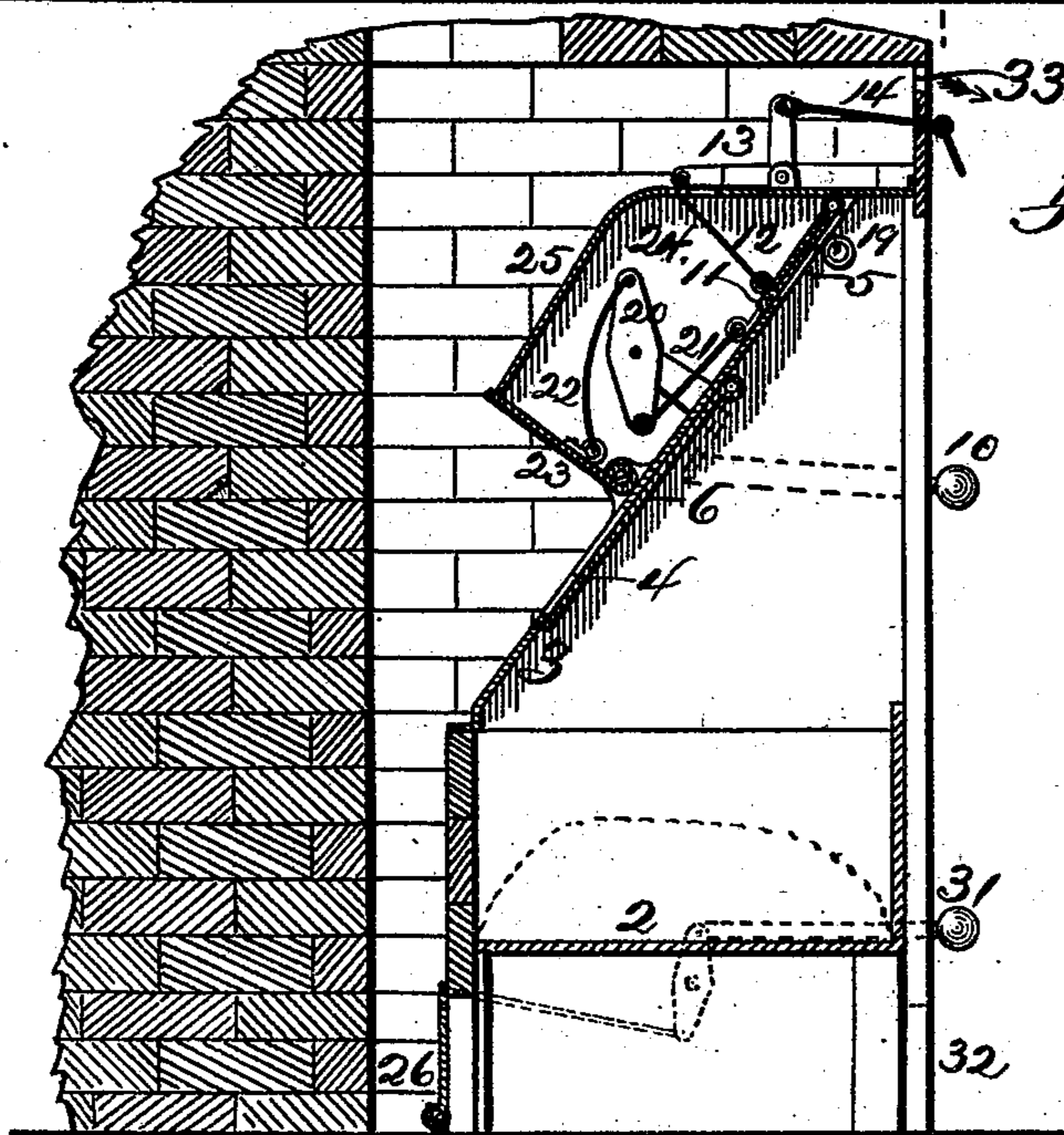


Fig. 5

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WITNESSES:

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ATTORNEYS

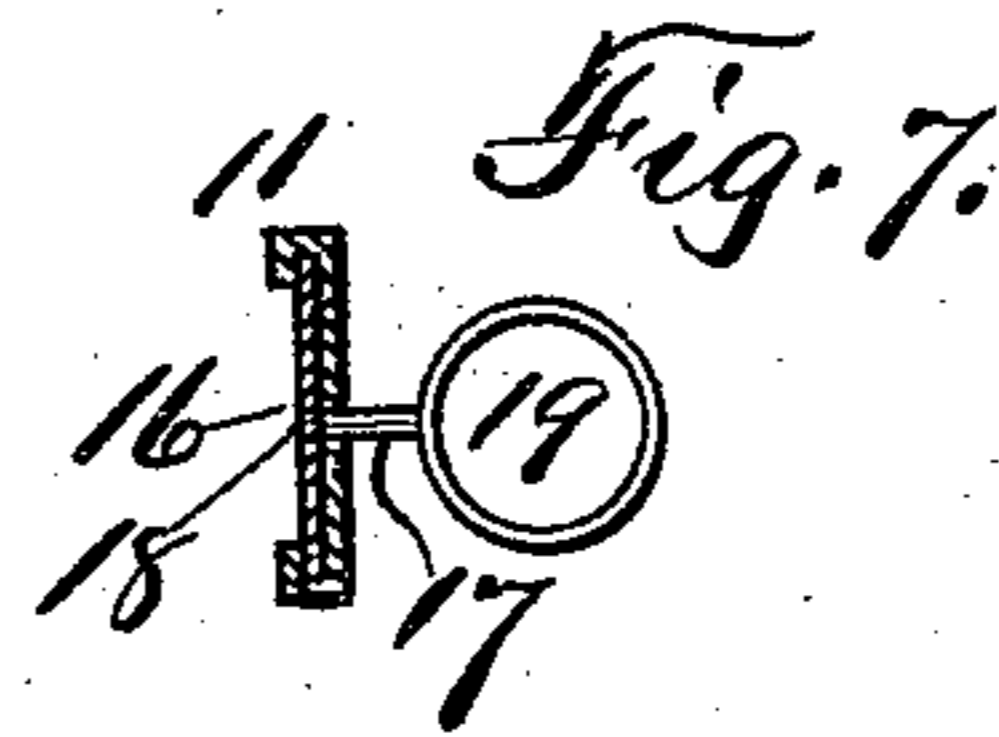
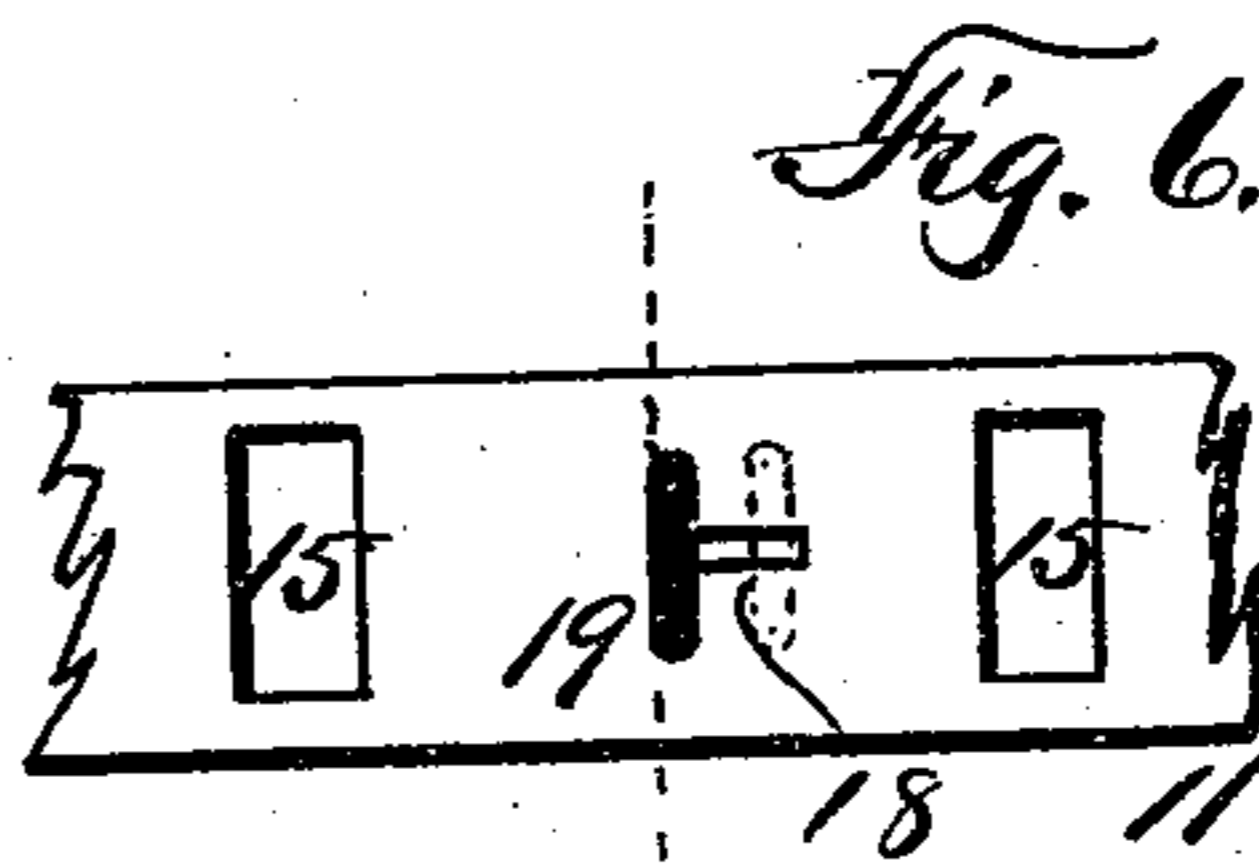
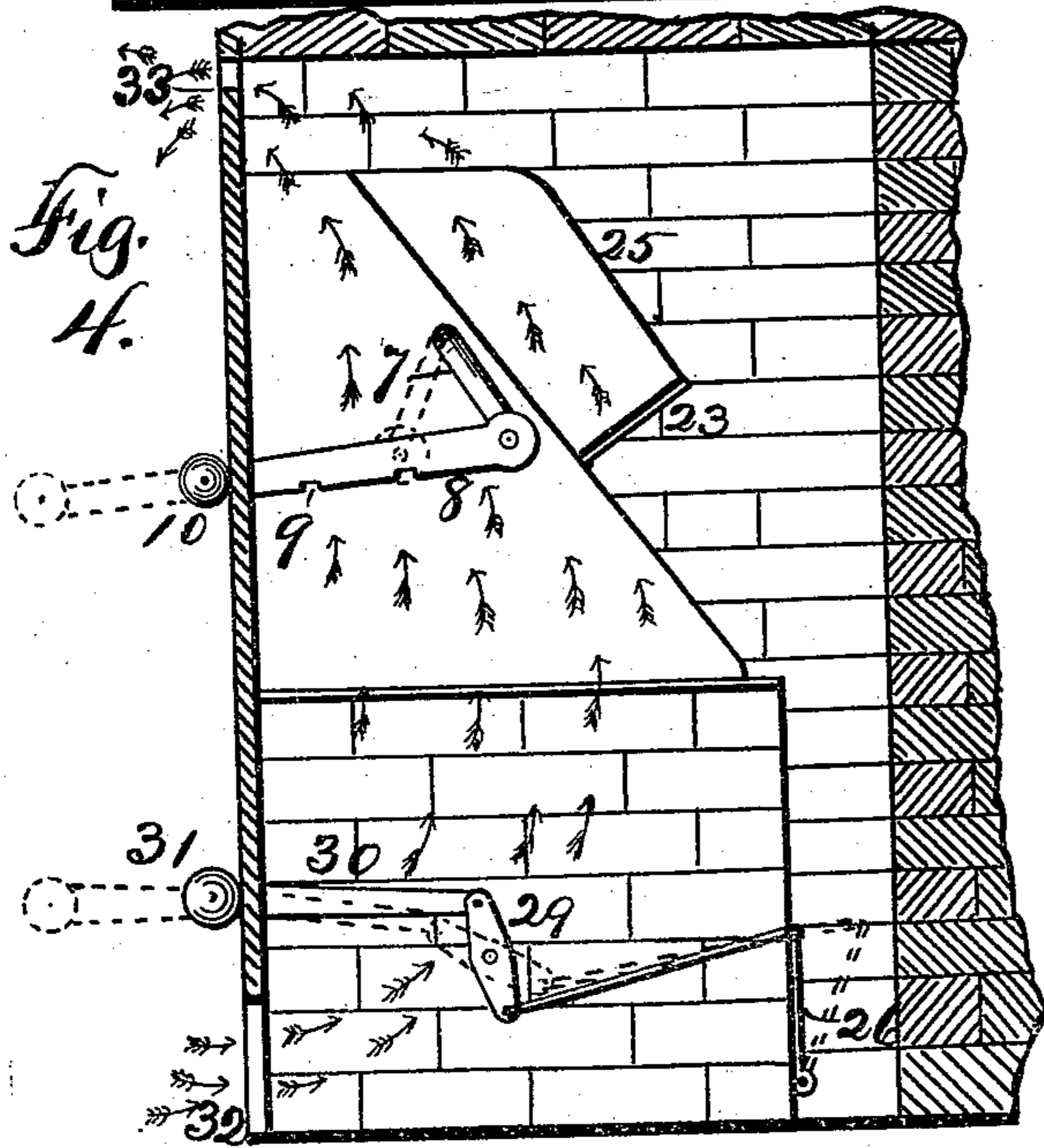
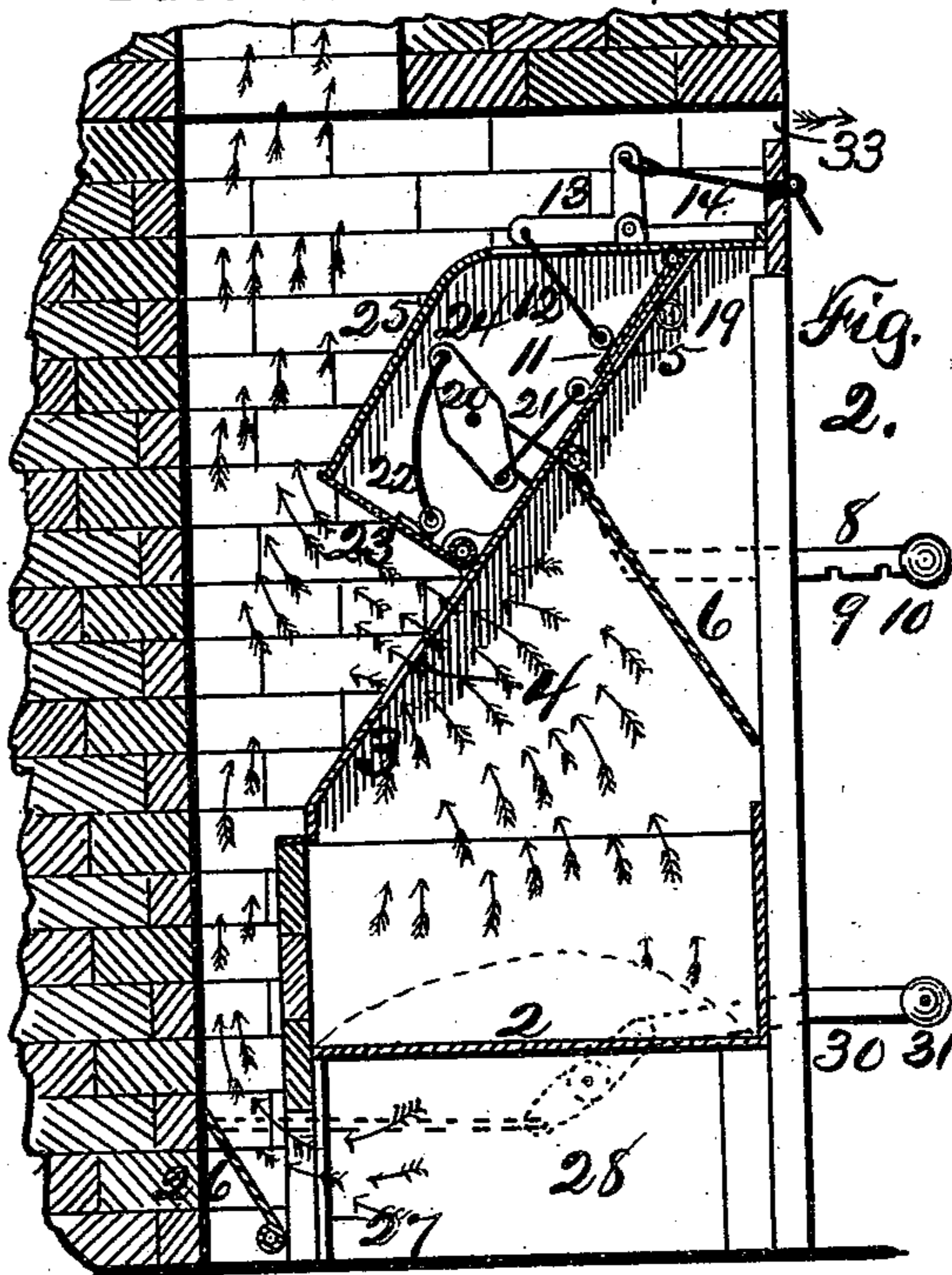
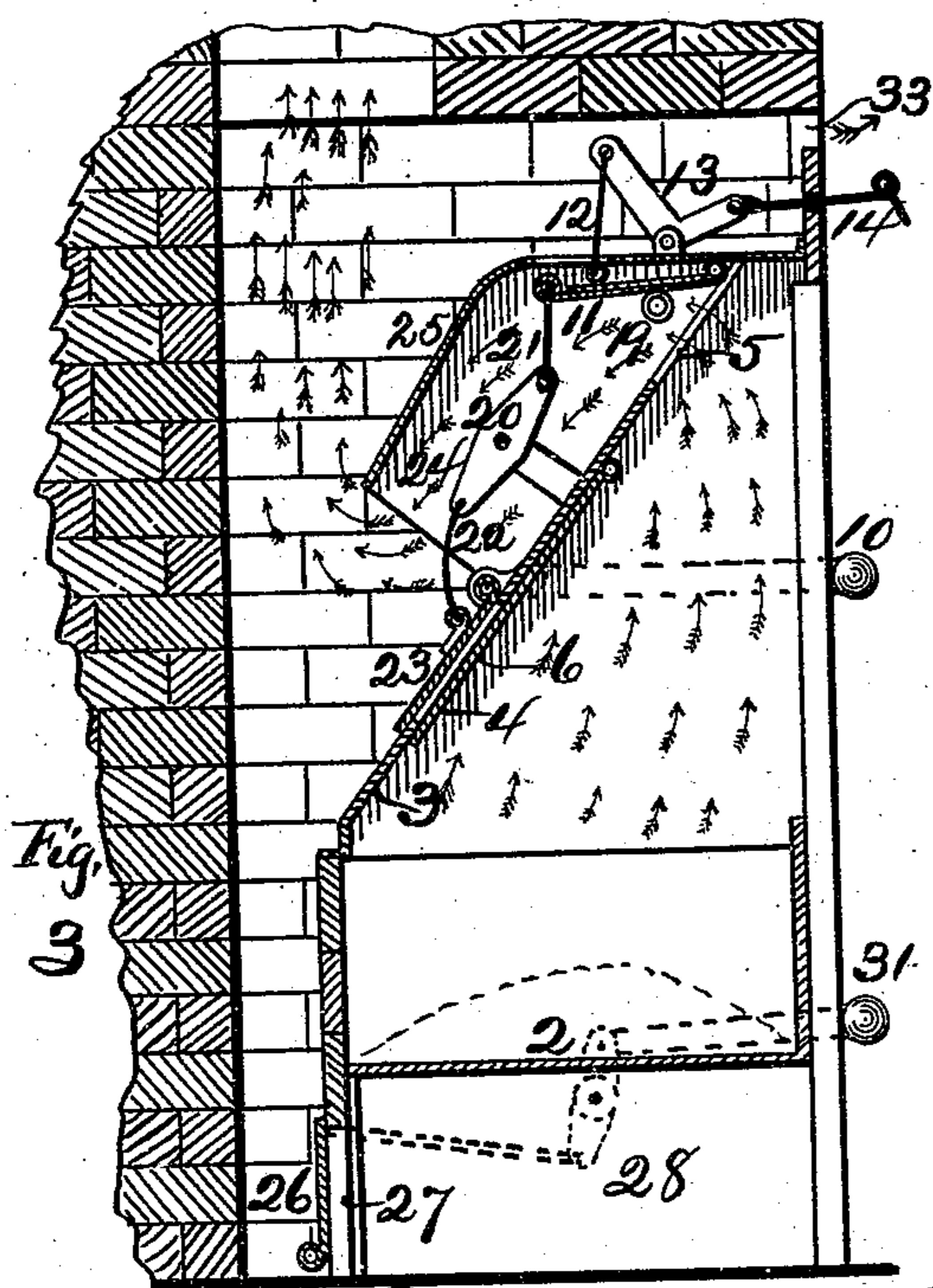
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2 Sheets—Sheet 2.

H. O. HAYES.  
GRATE FOR HEATING PURPOSES.

No. 549,720.

Patented Nov. 12, 1895.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

HENRY O. HAYES, OF ELMIRA, NEW YORK.

## GRATE FOR HEATING PURPOSES.

SPECIFICATION forming part of Letters Patent No. 549,720, dated November 12, 1895.

Application filed May 31, 1895. Serial No. 551,119. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY O. HAYES, of Elmira, in the county of Chemung, in the State of New York, have invented new and useful  
5 Improvements in Grates for Heating Purposes, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to grates for heating  
10 purposes.

My object is to construct a grate provided with means for permitting a direct draft and shutting it off to create a reverse draft, the reverse-draft flue being also provided with a  
15 damper suitable to close it when the direct-draft damper is opened, means being also provided for a checked auxiliary reverse draft, and means being also provided to permit a draft through the ash-pit to carry off  
20 the dust by opening a dust-damper, all of said dampers being operated by independent mechanisms from the front of the main frame, and said check being mounted in the reverse-draft damper, so that when it is closed the  
25 check can be adjusted as desired.

My invention consists in the several novel features of construction and operation hereinafter described, and which are specifically set forth in the claims hereunto annexed.

30 It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of the grate as set. Fig. 2 is a vertical section showing the direct-draft damper open, reverse-draft  
35 damper closed, and dust-damper open. Fig. 3 is a like view showing the direct draft closed, reverse flue open, reverse-draft damper open, and dust-damper closed. Fig. 4 is a vertical section taken through the hot-air chamber at  
40 one end of the grate. Fig. 5 is a vertical section similar to Figs. 2 and 3, but showing all of the dampers closed. Figs. 6 and 7 show enlarged detail views of the check-damper.

A is the front, of any design desired and  
45 suitably connected to the suitable vertical walls, top, and back, which inclose the fire-box, ash-pit, and combustion-chamber, fire-brick linings being used where necessary, and 2 is a suitable grate. Part of the back, as 3, is inclined forward, provided with a direct-draft  
50 slot 4 and a reverse-draft slot 5. A direct-draft damper 6 is suitably hinged upon the

back 3, and an arm 7 is connected thereto, and 8 is a draw-bar connected to said arm and passing out through a suitable opening in the  
55 front and provided with a series of notches, as 9, and a handle 10, so that when drawn out, as in Fig. 2, said damper is open full width and held there, and said damper operates as a hood to prevent the escape of smoke  
60 or coal-gas into the room, and when pushed in, as in Fig. 3, the direct draft is closed.

A reverse-draft damper 11 is suitably hinged to the top, a rod 12, extending up through the top, is connected to it and to a  
65 bell-crank lever 13, which is operated by a rod 14, extending out through the front to open the damper, as in Fig. 3, and close it, as in Fig. 2. This damper is also provided with suitable slots 15, and 16 is a slide  
70 suitably mounted thereon and provided with a rod 17, through a slot 18, and terminating outwardly in a ring 19, so that said slide can be operated to vary the width of the openings of said slots. A lever 20 is pivoted upon  
75 the inside of the side of the grate-body, is connected at one end by the rod 21 to the damper 11 and at the other end by the rod 22 to the flue-damper 23, which is pivoted upon the rear face of the back, adjacent to  
80 the mouth of the reverse flue 24, created by the extension 25 of the top, so that when the bell-crank is operated to open the reverse-draft damper the flue-damper is opened, and when operated to close said draft-damper the  
85 flue-damper is also closed.

The flue-damper should be somewhat shorter in length or of less size than the mouth of said flue, in order that a suitable opening  
90 should be left to permit of the action of the check. A dust-damper 26 is hinged at the bottom of the back, adjacent to the slot 27 therein at the back of the ash-pit 28, and a lever 29 is connected at one end thereto and to a draw-bar 30 through the front and pro-  
95 vided with a handle 31, so that when it is drawn out this damper is opened and when pushed in it is closed. At 32 openings are shown in the front connected to the spaces between the sides and back of the grate-body,  
100 whereby air is drawn from the room thereinto and more or less thereof is discharged into the room heated through a slot 33 in said front above the grate, as shown in Fig. 4.

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

1. In a grate, the body having its back inclined forward and provided with a direct and a reverse draft opening, and suitable dampers for the two openings, combined with the downwardly inclined reverse draft extension upon the back of the body, substantially as shown.

2. In a grate, the forwardly inclined body provided with an opening for the direct draft, and a higher opening for the reverse draft, and suitable dampers for said openings, combined with the reverse draft extension, and a damper for the lower end of the extension, substantially as described.

3. In a grate, the forwardly inclined body, provided with an opening for the direct draft, a separate opening for the reverse draft, and suitable valves for the said openings, combined with the reverse draft extension, and a damper that is adapted to close either the lower end of the extension or direct draft opening, substantially as set forth.

4. In a grate, the forwardly inclined body provided with an opening for the direct draft,

an opening for the reverse draft, and a suitable damper for the direct draft, combined with the reverse draft extension, having an opening through its top, a valve that is adapted to close both the opening through the top of the extension and the reverse draft opening, and a mechanism for operating the damper, substantially as specified.

5. In a grate, the forwardly inclined body provided with a direct draft opening, and a reverse draft opening, combined with the reverse draft extension, having an opening through its top, a valve that is adapted to close either this opening through the top of the extension or the reverse draft opening through the front, a damper for closing the lower end of the draft extension or the direct draft opening, and a mechanism for operating the two drafts simultaneously, substantially as shown.

In witness whereof I have hereunto set my hand on this 16th day of April, 1895.

HENRY O. HAYES.

In presence of—

EDWARD A. PRENTICE,  
JASPER CLARK.