

(No Model.)

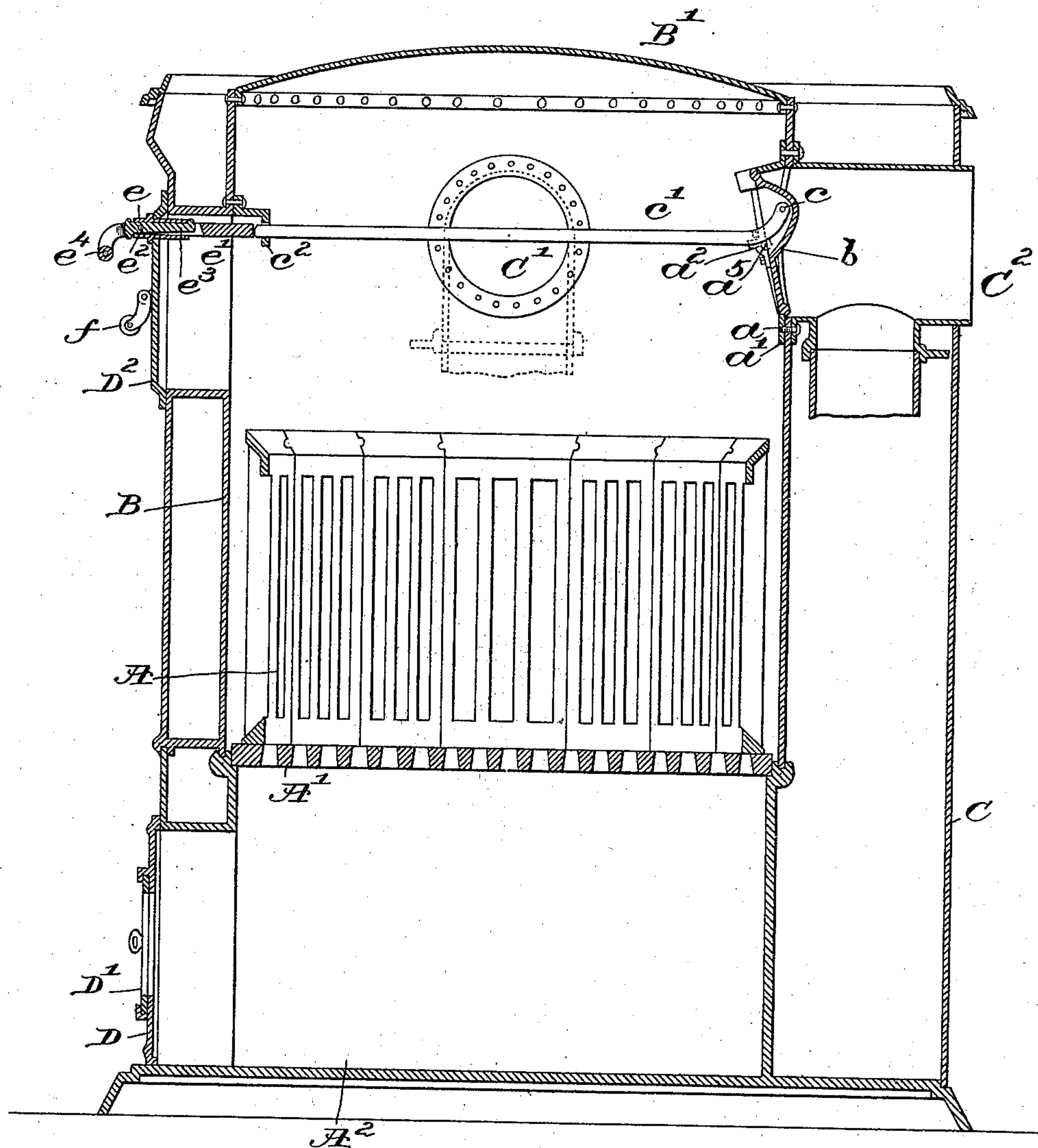
2 Sheets—Sheet 1.

C. J. RIDGWAY.  
DAMPER FOR FURNACES.

No. 547,452.

Patented Oct. 8, 1895.

*Fig. 1.*



*Witnesses.*  
*Edward F. Allen.*  
*Louis N. Howell*

*Inventor.*  
*Charles J. Ridgway.*  
*by Crosby & Gregory*  
*attys.*

(No Model.)

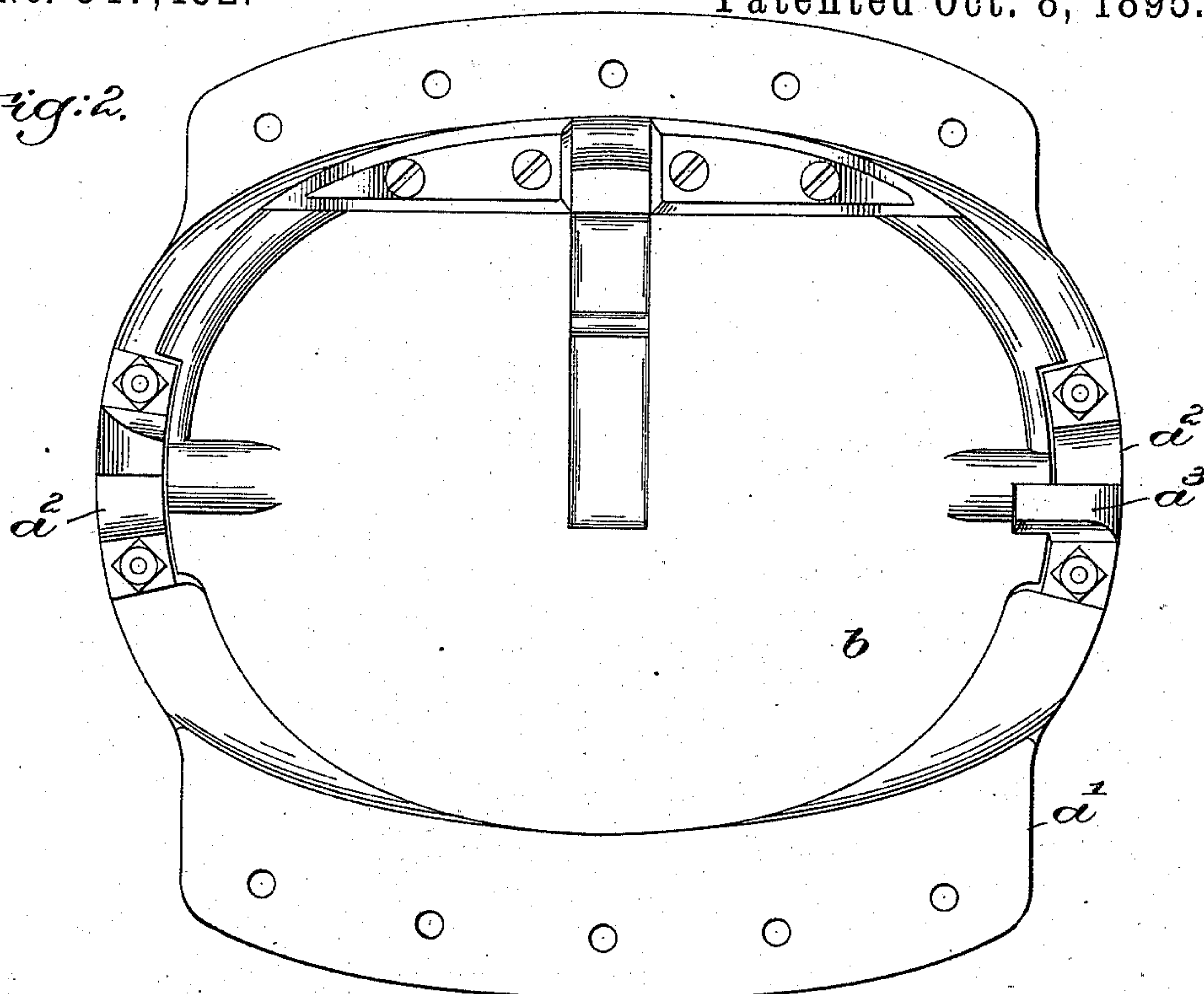
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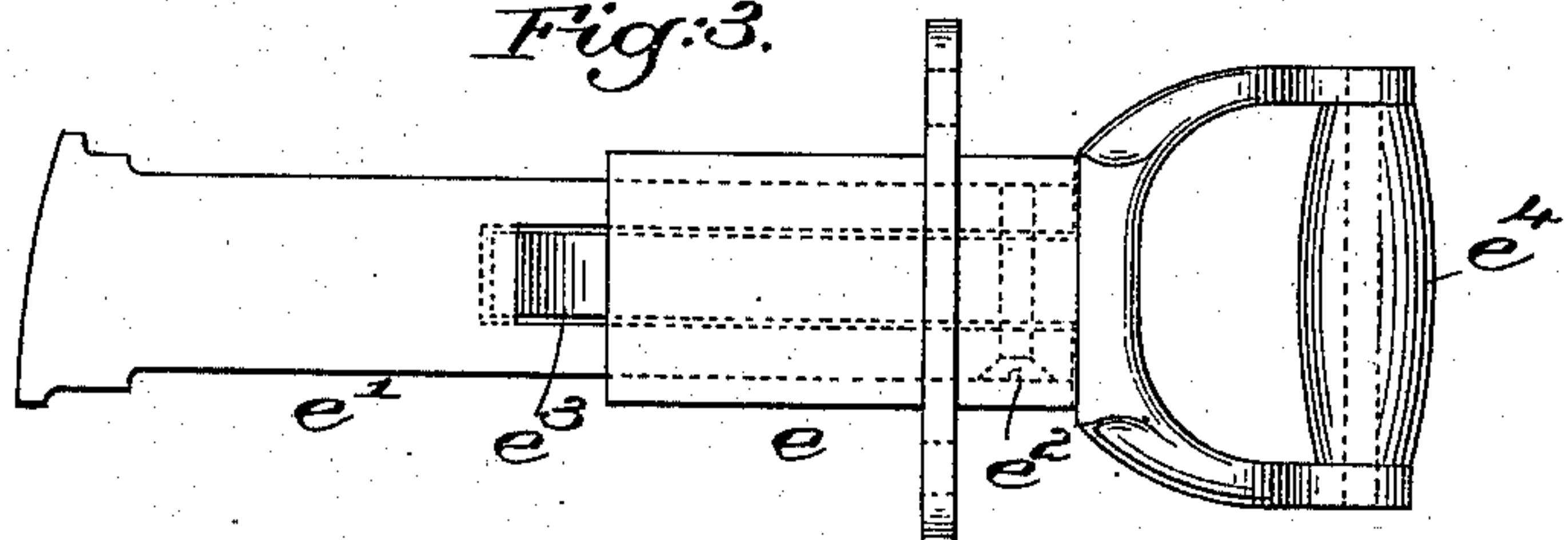
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*Fig. 2.*



*Fig. 3.*



*Witnesses.*

*Edward F. Allen.*

*Louis M. Ennell.*

*Inventor:*

*Charles J. Ridgway.*

*by Crosby & Gregory*  
*attys.*



# UNITED STATES PATENT OFFICE.

CHARLES J. RIDGWAY, OF EVERETT, MASSACHUSETTS.

## DAMPER FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 547,452, dated October 8, 1895.

Application filed May 6, 1893. Serial No. 473,208. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES J. RIDGWAY, of Everett, county of Middlesex, State of Massachusetts, have invented an Improvement in Dampers for Furnaces, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to improve the construction of furnaces, whereby when the feeding-door is opened for the introduction of coal the direct-draft damper will be automatically opened, to thus prevent the escape of gas from the door.

I have also so constructed the parts of my invention that the closing of the feeding-door, under ordinary conditions of the furnace, will automatically close the direct-draft damper, yet, if desired, the direct-draft damper may be easily opened from outside the furnace while the feeding-door is closed.

I have chosen to illustrate my invention in connection with a form of furnace wherein the shell constituting the combustion-chamber is surrounded by a suitable jacket; but my invention is applicable to any form of furnace or heating apparatus for the combustion of fuel.

Figure 1 in section represents a sufficient portion of a furnace with my improvements added to enable my invention to be understood, said figure being a sectional view. Fig. 2, on a much enlarged scale, shows an inner side view of the direct-draft damper and its supporting-frame; and Fig. 3 is a top or plan view, enlarged, of the damper-controlling hand-piece and some of its co-operating parts detached from the feeding-door.

In the drawings, A represents a suitable fire-pot, having at its bottom a suitable grate A', below which is a suitable ash-pit A<sup>2</sup>. The fire-pot is surrounded by a suitable metallic shell B, constituting the combustion-chamber, the said combustion-chamber in the form in which my invention is herein embodied having a crown-sheet B'. The combustion-chamber is inclosed by a suitable jacket C, so as to leave between it and the jacket an air-space, said space serving also for the reception of the indirect-draft pipes of whatever form employed, I preferring to let the products of combustion, during the ordinary operations

of the furnace, pass out through like openings C' at the sides of the combustion-chamber, and passing through suitable pipes, which may be of any ordinary construction, enter the direct-draft pipes C<sup>2</sup>, through which the products of combustion pass to the chimney. The ash-pit has, as shown, a suitable door, as D, having a suitable cold-air damper D', and at the proper place I have shown the casing or exterior of the furnace provided with a suitable feeding-door D<sup>2</sup>.

The parts so far described are and may be of any usual construction common to furnaces, &c.

I will now describe my invention. I have connected with the combustion-chamber, by rivets *a* or otherwise, a frame *a'*, having suitable bearing *a*<sup>2</sup> for the journals of the direct-draft damper *b*, said journals, as herein represented, having a suitable stop *a*<sup>3</sup> to arrest the damper when open, the damper being so constructed and counterbalanced or weighted that its normal condition is open, so as to let the products of combustion pass directly from the combustion-chamber through the direct-draft pipe C<sup>2</sup>. The damper has suitably jointed to it at *c* a damper-actuating rod *c'*, which in this present instance of my invention passes across the combustion-chamber and has its opposite ends supported in a suitable guide *c*<sup>2</sup>, the free end of said rod being located near the feeding-door. The feeding-door in this embodiment of my invention is provided with a suitable guide *e* for the reception of an actuator *e'*, which has connected to it by a suitable pivot *e*<sup>2</sup> (shown in section in Fig. 1 and by dotted line in Fig. 3) a locking device, as *e*<sup>3</sup>, said locking device, as represented, having a handle *e*<sup>4</sup>, located outside the feeding-door, the inner end of the locking device having a catch or lug to engage a portion of the guide *e*, preferably at a point within the feeding-door. The feeding-door has a suitable handle *f* by which to open and close it. Referring now to Fig. 1, where the feeding-door is represented as closed, it will be seen that the locking device engaging the guide keeps the end of the actuator *e'* against the free end of the damper-rod *c'* and holds the direct-draft damper shut, the products of combustion passing, under such conditions, out through the indirect-draft opening C'.



Now if it is desired to feed the furnace or combustion-chamber with coal or other fuel the attendant simply opens the feeding-door, and in so doing the damper-actuator  $e'$  is moved away from the free end of the damper-rod, and the damper, weighted or overbalanced, as described, opens by turning about its journals  $a^5$ , (shown in Fig. 1,) and the products of combustion arising from the fire-pot and fresh coal take the shortest exit and pass out through the main-draft pipe  $C^2$ . The fuel having been supplied, the attendant will close the door, and in so doing the actuator  $e'$  will strike the draft-rod and close the direct-draft damper. Now, if for any reason the attendant desires, as when a fire is first started or otherwise, to have the direct-draft damper open while the door is shut, he has only to engage the handle of the locking device and move the same sufficiently to enable the said device to be disengaged from the guide, and immediately, this having been done, the weight of the direct-draft damper through the damper-rod will push the actuator  $e'$  and the locking device in this instance of my invention outwardly in the guide. The attendant may, however, at any time again close the direct-draft damper by pushing the actuator  $e'$  into the furnace to engage the damper-rod, and when pushed in the said actuator will be locked in its normal position.

It is manifest that my invention is adapted to any form of apparatus for the combustion of fuel wherein it is desired to control the damper by or through a door.

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

1. In a heating apparatus, a self-opening direct-draft damper, combined with the door of such apparatus, and a damper-closing mechanism connected with and operated by such door and comprising a rod jointed to the damper and sustained in a guide next the door, and projected into the path of movement of the closing door by the opening of the damper, and a rod-actuator carried by the door and adapted to come into contact with the rod as the door is closed to force the said rod rearwardly and close the damper, substantially as described.

2. In a heating apparatus, a self-opening direct-draft damper, combined with the door of such apparatus, and a damper-closing mechanism connected with and operated by such door and comprising a rod jointed to the damper and sustained in a guide next the door, and projected into the path of movement of the closing door by the opening of the damper, and a rod-actuator carried by the door and adapted to come into contact with the rod as the door is closed to force the said rod rearwardly and close the damper, the said rod-actuator having an independently operating rod-releasing device capable of withdrawing the rod-actuator from the rod when the door is closed so as to permit the damper to open, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES J. RIDGWAY.

Witnesses:

M. E. ROWE,  
L. M. ACKLEY.