

(No Model.)

3 Sheets—Sheet 1.

E. W. ANTHONY.
Damper for Furnaces.

No. 229,515.

Patented July 6, 1880.

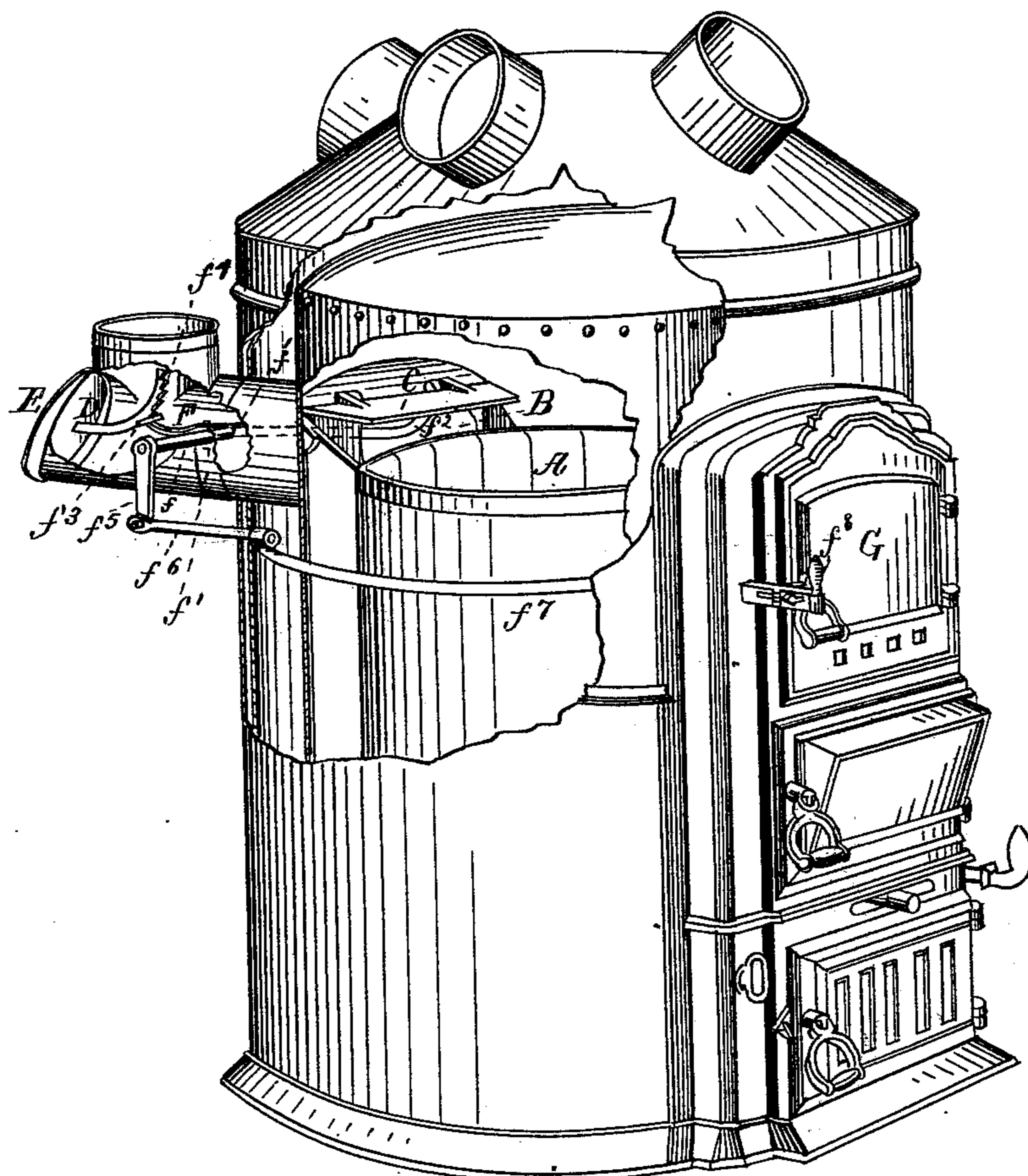


Fig. 1.

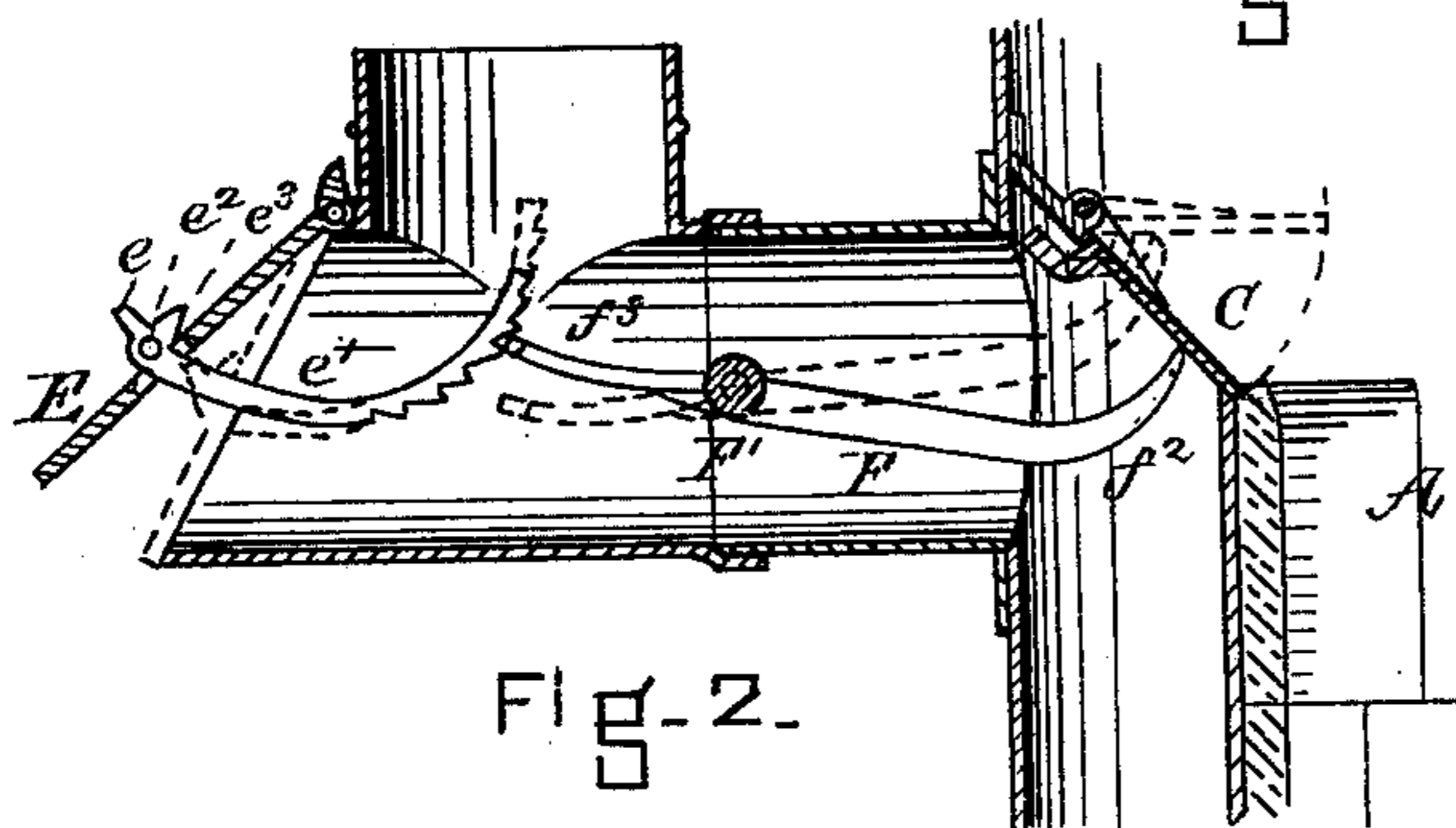


Fig. 2.

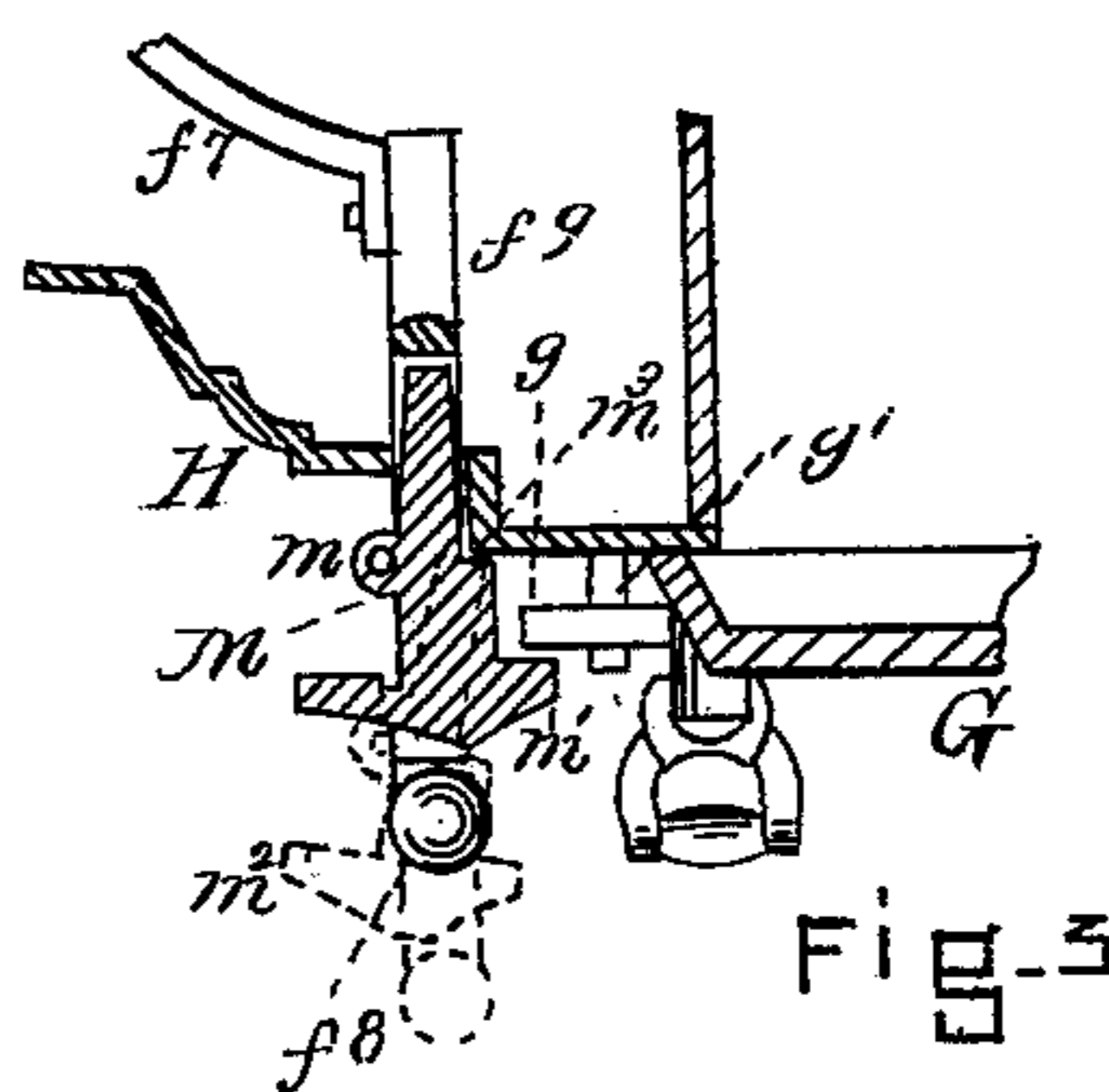


Fig. 3.

WITNESSES

Frank G. Parker.
A. J. Ottinger

INVENTOR

Edgar W. Anthony
by his atty
Clark & Raymond

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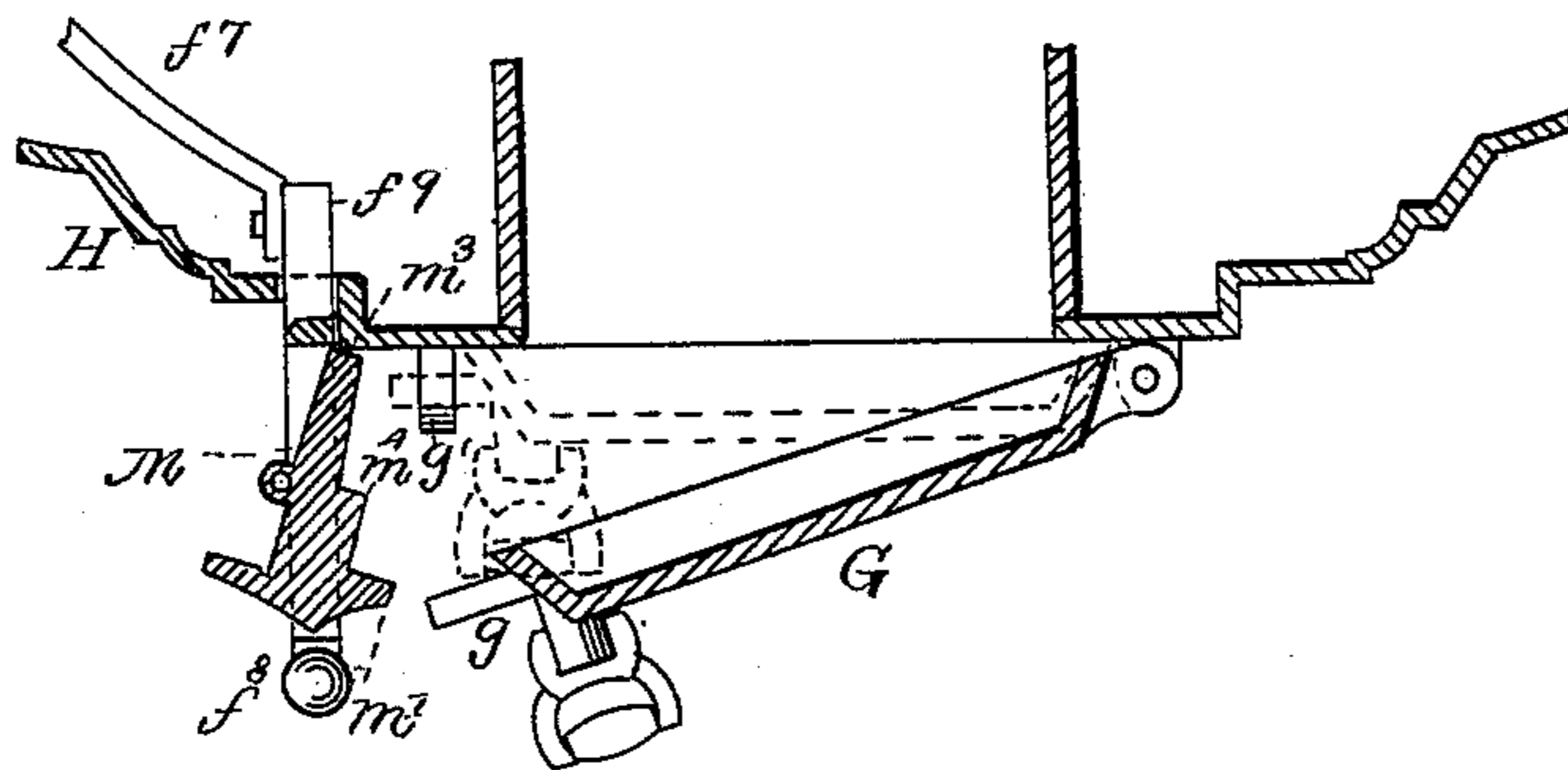


Fig. 4.

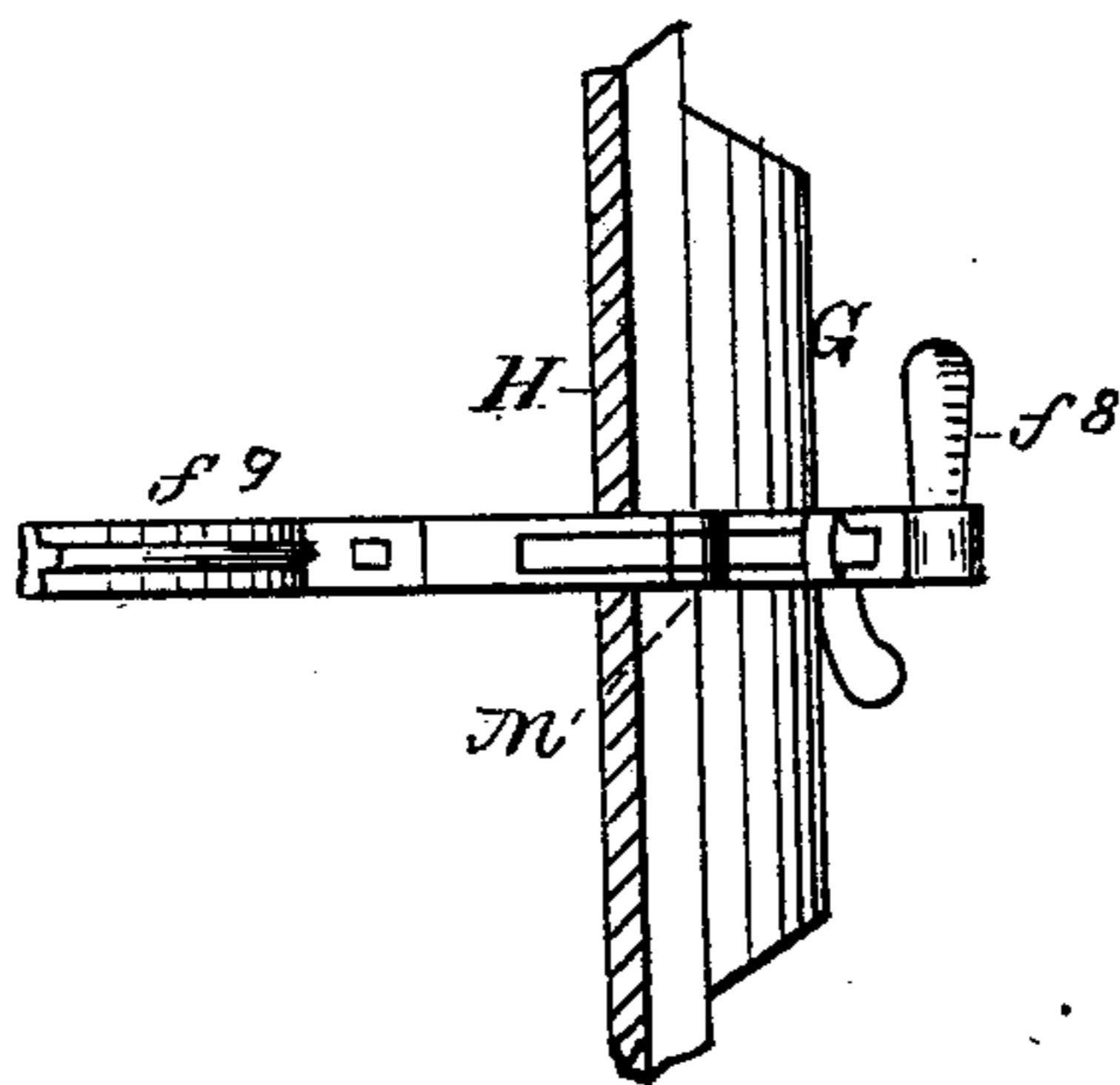


Fig. 5.

WITNESSES

Frank G. Parker
A. J. Oettinger.

INVENTOR

Eugene W. Anthony
by his attys
Charles & Raymond P.

(No Model.)

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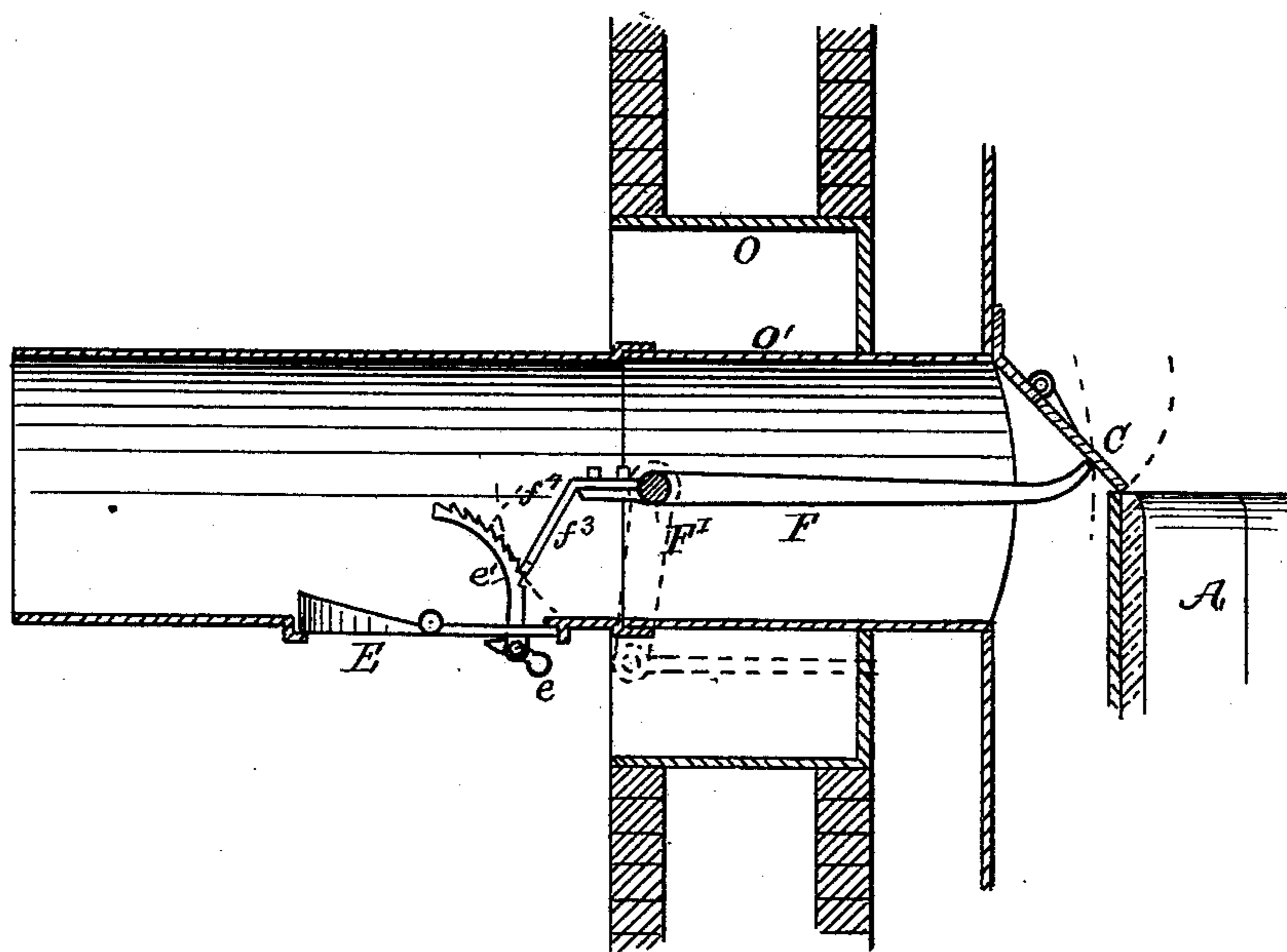


Fig. 6.

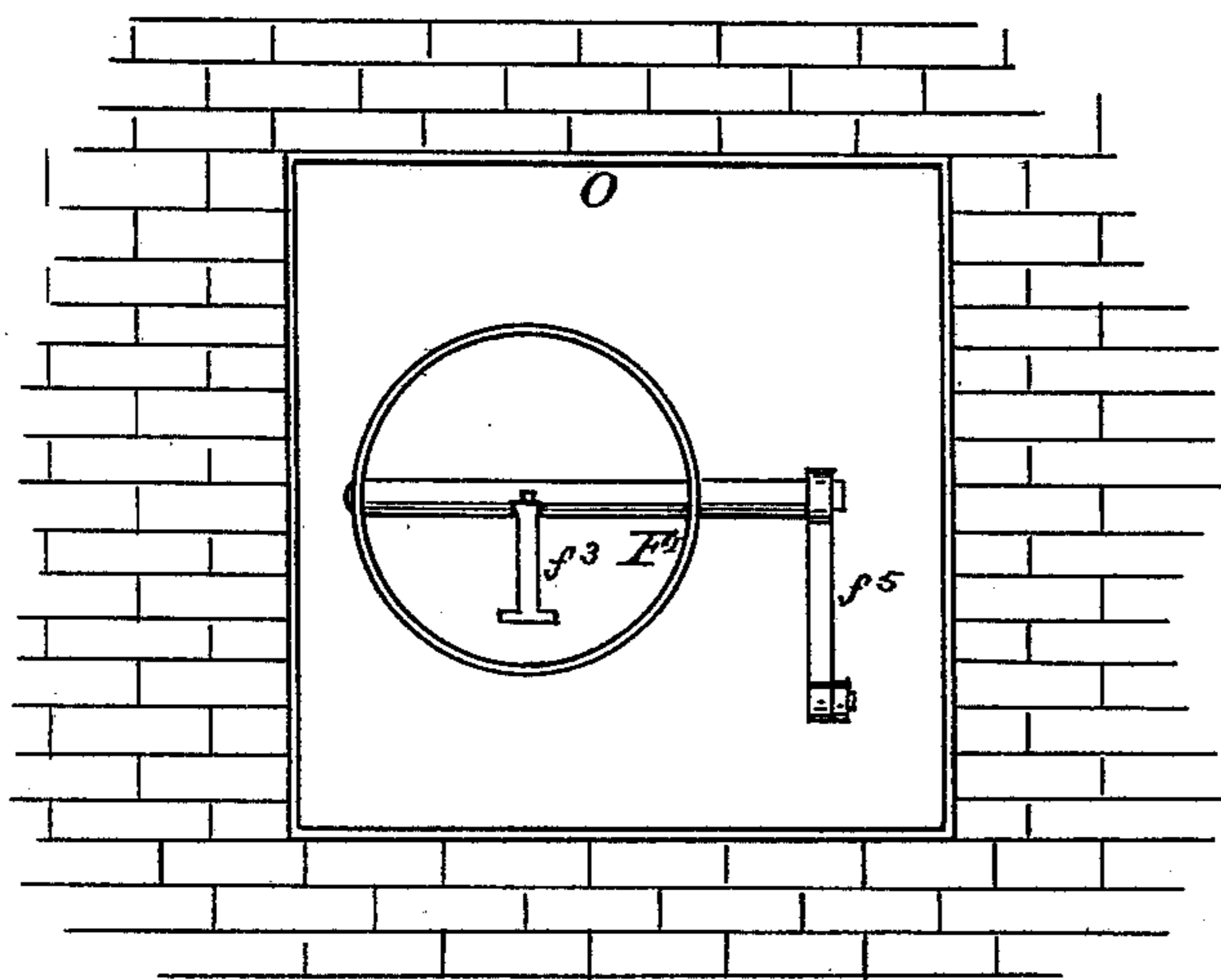


Fig. 7.

WITNESSES

Frank G. Parker.
A. J. Oettinger.

INVENTOR

Edgar W. Anthony
by his attys
Charles & Raymond.

UNITED STATES PATENT OFFICE.

EDGAR W. ANTHONY, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO SMITH & ANTHONY STOVE COMPANY, OF SAME PLACE.

DAMPER FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 229,515, dated July 6, 1880.

Application filed April 12, 1880. (No model.)

To all whom it may concern:

Be it known that I, EDGAR W. ANTHONY, of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented an Improvement in Dampers for Furnaces and Stoves, of which the following is a specification.

This invention has for its object the following-described improvement in dampers for furnaces and stoves, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature, in which—

Figure 1 is a perspective of a furnace with a portion of the outer casing broken away to illustrate the construction of my invention. Fig. 2 is a vertical section through the direct and indirect passages, representing in full outline one position of a portion of my mechanism embraced in the invention, and in dotted outline a part of the same when moved in operation. Figs. 3 and 4 are vertical sections of a part of my invention. Fig. 5 is a view of a portion of the device shown in Fig. 4.

The invention relates to means for automatically opening a damper controlling the direct passage opening from the combustion-chamber of a furnace or stove, and for automatically closing a damper controlling the indirect or cold-air flue by the opening of the door to the combustion-chamber.

It is very essential that furnaces and heating-stoves be provided with a device of this nature, because, if the direct passage is not open sufficiently to cause a draft from the combustion-chamber, upon the opening of the feed-door the gas and heat is very liable to rush out of the doorway, not only rendering it dangerous to open the door, but also scattering dust and gas in the room in which the furnace or stove is contained, and thence over the building.

In order that this invention may be properly used it is necessary that the dampers controlling the direct and indirect passages be so operated that the former is opened and the latter closed upon the opening of the feed-door of the furnace or stove.

It is desirable that the damper controlling

the cold-air inlet or passage be so constructed and arranged in relation to the mechanism for closing it from the front of the stove or furnace that it can be opened independently of said mechanism, although a portion of said mechanism may be employed in holding the same open.

A represents the combustion-chamber of a furnace. B is the direct passage, leading from the combustion-chamber. C is the damper for opening or closing said passage. D is a cold-air passage, opening into the direct passage, and E is the damper for controlling the same.

The damper C may be arranged to be opened and closed in regulating the draft by any common mechanism for such purpose independent of the mechanism for operating the same, which I am about to describe.

The cold-air inlet is upon a horizontal line with the direct passage B, (this construction is not essential,) and in it is arranged an arm, F, which is attached to the end of the rod f , which has a bearing in the collar f' . Each end of this arm F is curved upwardly, and the end f^2 terminates immediately below the under surface of the damper C when closed, and the end f^3 engages with the notches on the curved ratchet f^4 , which is attached to the damper E, when the damper C is closed. Upon the movement of this arm on the center F' , by which the end f^2 is lifted and the end f^3 is depressed, the damper C is opened and the damper E is closed. This movement is imparted to the arm by means of the rod f' , the crank f^5 , the short rod f^6 , the curved rod f^7 , and the operative mechanism attached thereto and adapted to be operated either by the handle f^8 or upon the opening of the furnace-door G.

The rod f^7 is attached to the bar f^9 , and this bar is adapted to be moved in and out in the casing or frame H of the furnace. It is provided with the handle f^8 and with the latch M, which is pivoted at m to the bar, which is slotted to receive it and is provided with the short arms m' m^2 .

The arm m' projects sufficiently to come in line with the latch g on the furnace-door, and upon lifting the latch from the catch g' , and opening the door G, the latch g comes in con-

tact with the arm m' , and the bar f^3 is moved outwardly sufficient to move the arm F enough to open the damper C and close the damper E, and the bar is locked in this position by means of the latch M, which, by means of the latch g and arm m' , is moved upon its pivot m , when it has been moved outwardly sufficiently far to enable its inner end to move outwardly and come in contact with the edge m^3 of the frame of the furnace, which acts as a stop. The latch g then moves past the arm, and the furnace-door is swung wide open, while the arm F is locked by the latch M and the stop m^3 .

Of course the damper C may be opened and the cold-air damper E closed without opening the furnace-door; but the furnace-door cannot be opened without automatically opening and closing these dampers.

After the door G is closed the latch m^2 is thrown back in line with the bar f^3 , and the bar is pushed inwardly, thereby moving the arm F to a position (shown in Fig. 2) not to impede the closing of the damper C and to act as a catch for the ratchet f^4 .

The damper E is opened by the thumb-piece e , which is cast upon the end of the arm e' , the inner end of which forms the rack f^4 . This arm is pivoted at e^2 to lugs on the outer face of the damper, and upon lifting the damper the notches in the ratchet engage with the end of the arm f^3 .

It will be observed that this damper E is a gravity-damper, and closes automatically upon tripping the support to the ratchet.

It will also be observed that the arm F supports the entire weight of the damper C, and therefore it is necessary that there should be a latch, M, or some equivalent mechanism for locking the arm f^3 when drawn out, in order that the damper may not close, or partially close, and so that upon releasing the latch M the damper serves to assist in returning the bar and connecting mechanism by its weight to their original position.

It will further be observed that the arm f^4 passes through the slot in the damper E, and that the stop e^3 prevents it from falling into the path of the arm F more than is desirable, while free movement is given to the arm in an upward direction by the thumb-piece e , whereby the ratchet may be disengaged from the end of the arm F, when it acts as a stop simply.

Operation: When it is necessary to open the door G for any purpose, the bar f^3 may be drawn out by the handle f^8 until the latch M is in a position to act as a stop, or the bar may be drawn out, on opening the furnace-door, by the contact of the latch with the projection m' , and by so doing the direct passage is opened and the check-draft passage is closed, thereby providing for an unchecked draft from the combustion-chamber of the furnace to the chimney-flue. Upon the closing of the furnace-door the draft remains open until the bar is returned

to its original position, when the dampers C and D may be regulated in the ordinary way.

The advantages of this invention are too obvious for comment.

I do not intend to confine the principle of this invention to furnaces, as it may be used in any heating-stove in which gas and ashes are liable to escape into the room upon opening the door on account of the direct passage being closed. Neither do I intend to confine myself to the specific mechanism for connecting the damper with the furnace or for operating them, or either of them, from a point near the door or front of the furnace.

Figs. 6 and 7 represent a modification of my invention when applied to bricked-in furnaces.

In furnaces of this construction the escape-passage is generally horizontal its entire length to the chimney-flue, and I have arranged the cold-air inlet upon the under surface of the connecting-pipe. The construction of the various parts, however, is substantially the same as that already described, with the exception that the end f^3 of the arm F is curved downwardly instead of upwardly, and the damper E is weighted upon one side of its axis sufficient to automatically return it to a horizontal position when the arm f^3 is moved in tripping the holding mechanism, and I prefer that the metal box O be inserted into the brick-work, in order that the various parts may be easily gotten at, instead of abutting the bricks against the pipe o' .

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a stove or furnace, the combination of a damper for opening or closing the direct passage opening from the combustion-chamber, the handle f^8 , located in relation to the feed-door as shown and described, and connecting devices whereby said damper may be opened from the front of the furnace either by moving the handle f^8 or by opening the feed-door G, substantially as and for the purposes described.

2. The combination, in a stove or furnace, of a damper, C, the feed-door G of the combustion-chamber, the handle f^8 , located in relation to the feed-door as shown and described, and connecting devices whereby the said damper may be opened from the front of the furnace either by moving the handle f^8 or by opening the feed-door G, substantially as and for the purposes described.

3. The damper E of the check-draft D, adapted, substantially in the manner shown, to be closed upon the opening of the door of the combustion-chamber, substantially as and for the purposes described.

4. The combination of the damper E in the check-draft passage D, the door G to the combustion-chamber, and connecting devices whereby, upon the opening of the door, the passage D is automatically closed, substantially as and for the purposes described.

5. In a stove or furnace, the damper C in the direct passage and the damper E in the check-draft, adapted, by connecting mechanism, the first to be opened and the second to be closed upon the opening of the feed-door, substantially as and for the purposes described.

6. The combination, in a stove or furnace, of the damper C in the direct passage, suitable connecting mechanism, and the handle f^8 , adjacent to the feed-door of the combustion-chamber, and the latch M, pivoted to the bar f^9 , and adapted to operate as described, whereby, upon the movement of the handle, the damper C is opened and held open, substantially as and for the purpose set forth.

7. The combination of the damper E in the direct passage, suitable connecting mechanism, and the handle f^8 , adjacent to the door to the combustion-chamber, whereby, upon the movement of the said handle, the said damper may be closed, substantially as and for the purposes described.

8. The combination, in a stove or furnace, of the damper C, the arm F, the rod f , the crank f^5 , connecting-rods f^6 f^7 , the bar f^9 , handle f^8 , and the latch M.

9. The combination of the damper E with the curved ratchet f^4 , the arm F, rod f , cranks f^5 , arms f^6 f^7 , the bar f^9 , and the handle f^8 , substantially as and for the purposes described.

10. The combination of the dampers C E and the arm F, adapted to be operated to simultaneously open the former and close the latter damper, substantially as and for the purposes described.

11. The combination of the dampers C E and arm F, for simultaneously opening the first and closing the second damper, the door G to the combustion-chamber, and suitable connecting mechanism whereby, upon the opening of the door, the damper C is opened and the damper E closed, substantially as and for the purposes described.

12. The combination of the bar f^9 , for operating the damper C, as described, and provided with a short arm, m' , with the furnace-door G and the latch g , or other projection, for engaging with the arm upon the opening of the door, whereby the said bar f^9 is moved outwardly in relation to the casing of the furnace, substantially as and for the purposes described.

13. The damper E, for closing or opening the check-draft passage D, provided with the curved ratchet f^4 , which is adapted to engage with the end f^3 of the arm F, substantially as and for the purposes described.

EDGAR W. ANTHONY.

Witnesses:

F. F. RAYMOND, 2d,
M. W. SAWYER.