

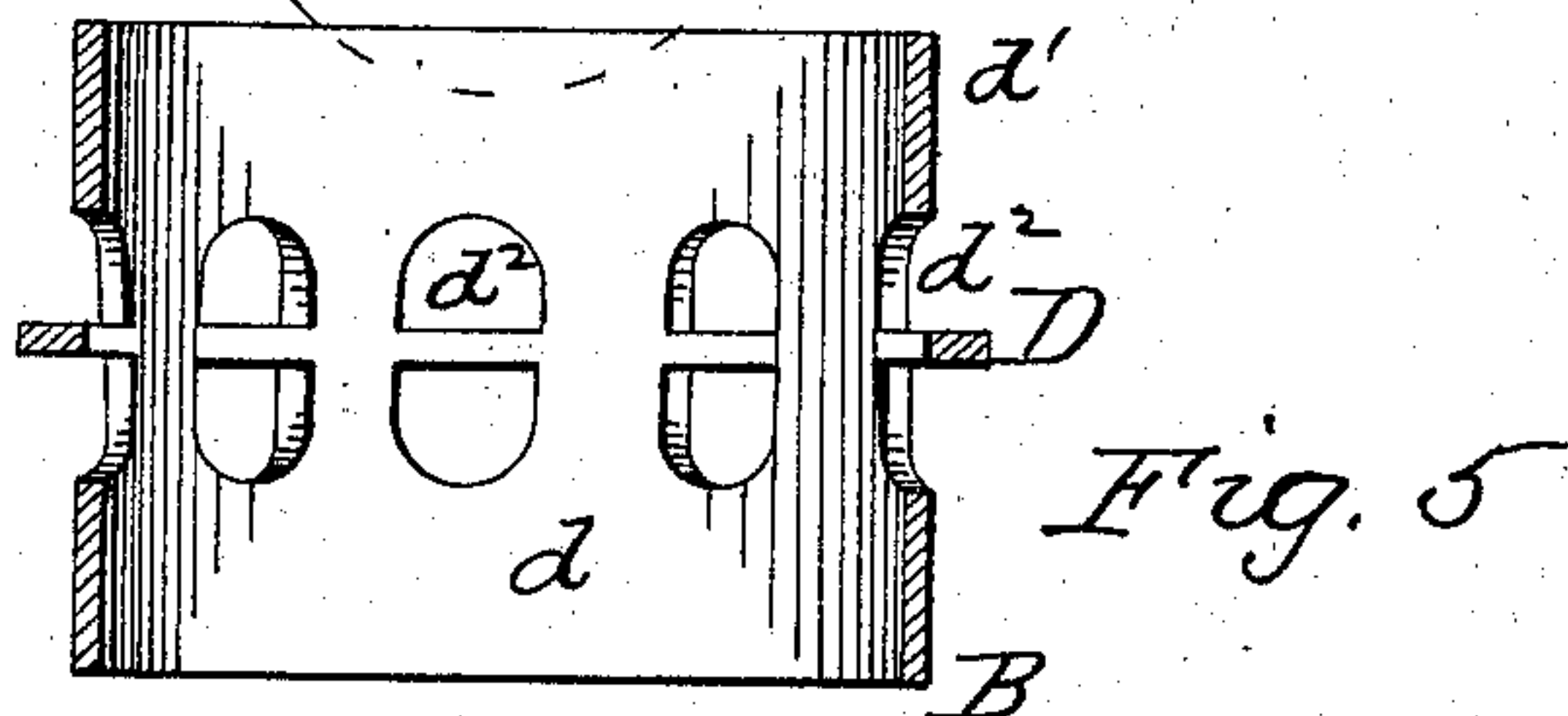
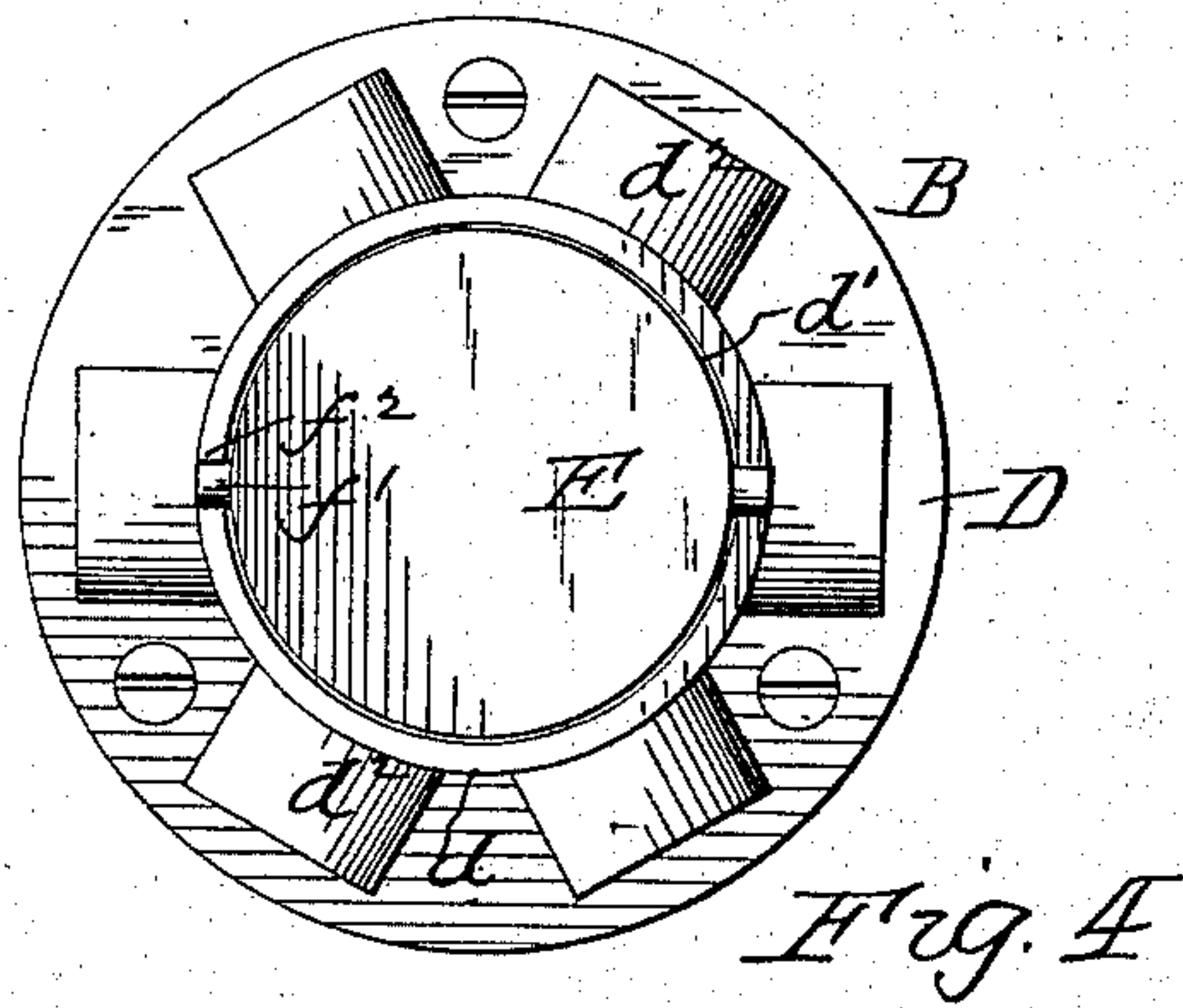
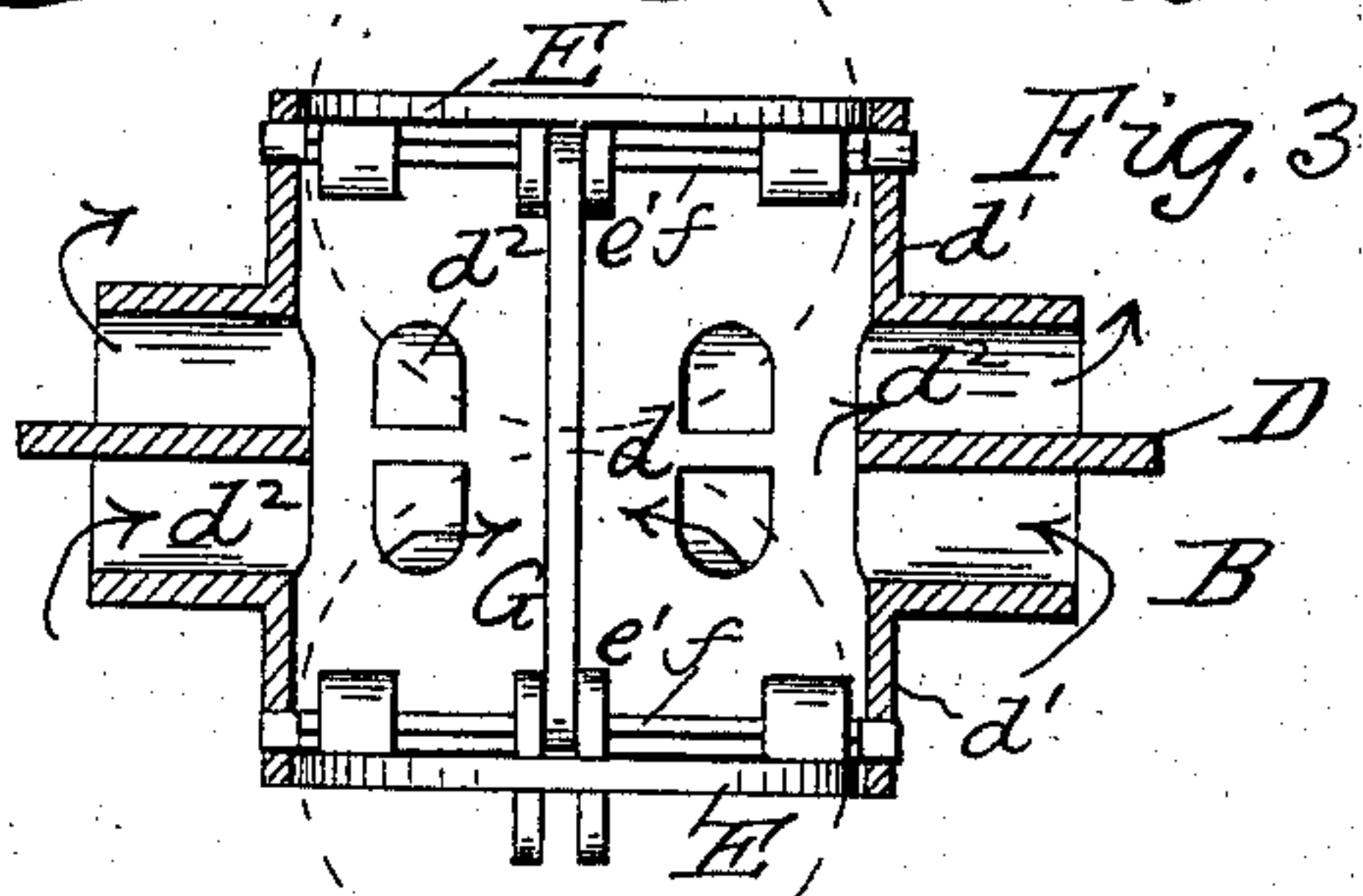
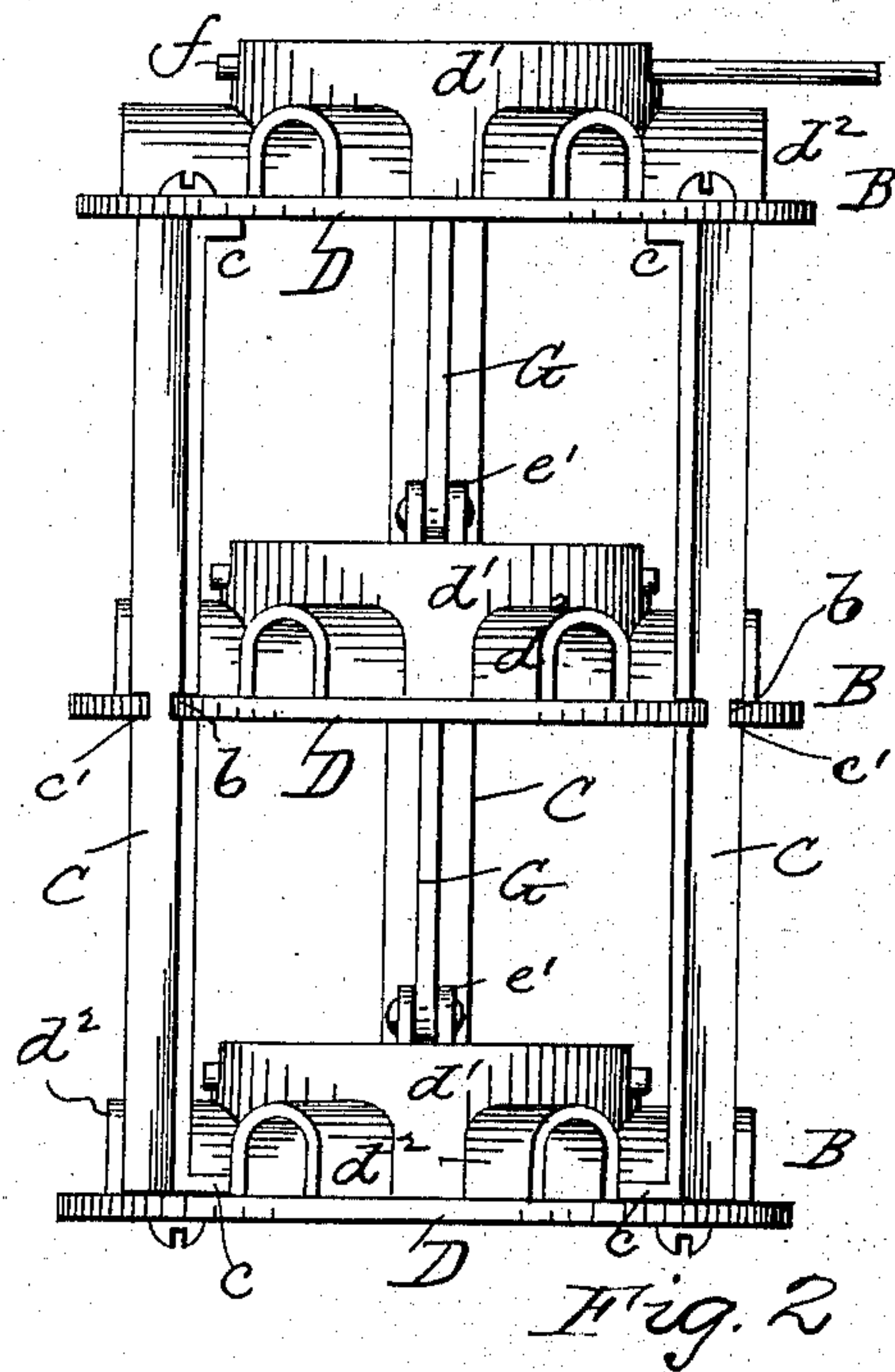
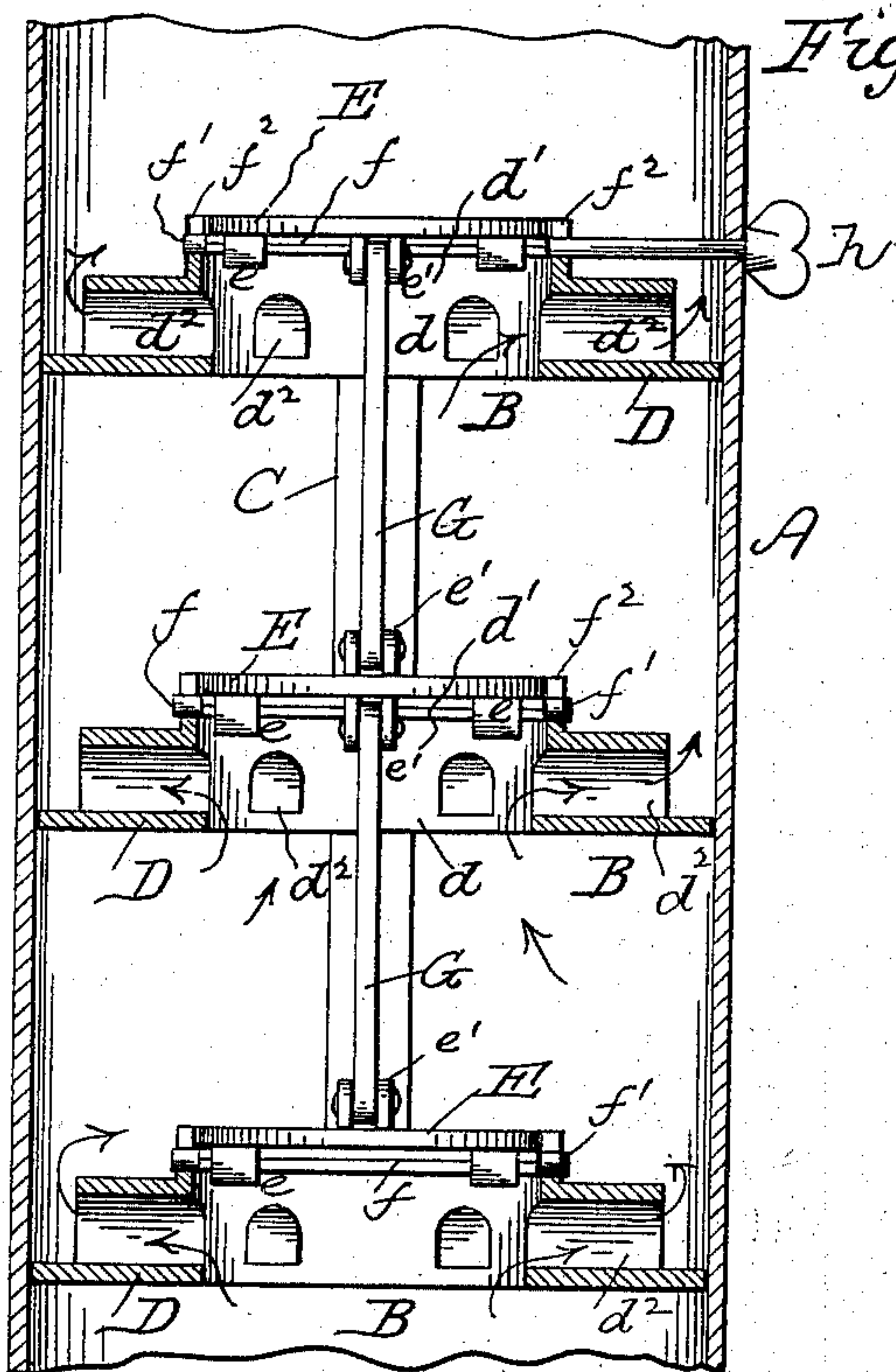
(No Model.)

M. S. BURROUGH.

DAMPER FOR STOVE AND OTHER PIPES.

No. 322,346.

Patented July 14, 1885.



WITNESSES:

B. W. Williams  
W. Van Horn

INVENTOR,  
M. S. Burrough  
By S. J. Van Stavern  
ATTORNEY



# UNITED STATES PATENT OFFICE.

MARK S. BURROUGH, OF MERCHANTVILLE, NEW JERSEY.

## DAMPER FOR STOVE AND OTHER PIPES.

SPECIFICATION forming part of Letters Patent No. 322,346, dated July 14, 1885.

Application filed October 20, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, MARK S. BURROUGH, a citizen of the United States, residing at Merchantville, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Dampers for Stove and other Pipes or Flues, of which the following is a specification, reference being had therein to the accompanying drawings, wherein—

Figure 1 is a vertical transverse section of a series of dampers embodying my improvements. Fig. 2 is an elevation of same. Fig. 3 is a vertical cross-section of a damper having two series of radial flues and a rotating valve or disk for each series of such flues. Fig. 4 is a plan of same, and Fig. 5 is a sectional view of a modified form of damper frame or casing for a small-bore pipe or flue.

My invention has relation to that form of damper which is constructed and arranged to provide a tortuous channel for the passage of hot air or gases escaping to a flue or chimney, in order that the caloric of such air or gases may be utilized for heating purposes and effect an economy in the amount of fuel required therefor; and it has for its object to so construct the damper that it not only affords a tortuous channel for the passage of the hot air or gases, but also, whenever required, a large central or direct channel for obtaining the necessary draft for starting and maintaining the fire in the heating device.

My invention accordingly consists of the combination, construction, and arrangement of parts comprising a damper, as hereinafter described and claimed, having reference particularly to a damper composed of a disk having a central aperture bounded by a vertical annular flange in which are radial openings or flues, and a rotating disk or valve placed in said central aperture beyond the plane of said openings.

In the drawings, A represents a stove pipe or flue for a heating or other device, and B a damper therefor, which is composed of a frame or disk, D, having a large central aperture,  $d$ , which is bounded by a vertically-arranged annular flange,  $d'$ , having radial openings or flues  $d''$  leading to near the outer edge of disk D, as shown.

In the aperture  $d$ , beyond the plane of the

radial openings or flues  $d''$ , is placed a rotating disk valve or cut-off, E, having loops or sleeves  $e$ , for engagement with the square or other suitably configured part of shaft  $f$ , whereby said valve and shaft move together, and the latter has end bearings,  $f'$ , in the recesses  $f''$  formed in the upper edge of vertical flange  $d$ . The valve E opens or closes the central aperture,  $d$ , accordingly as the former is either in a vertical or horizontal position. When moved to open said aperture, or when in a vertical position, a central large opening or passage-way through the damper is provided for the escape of smoke or the waste products of combustion, and the necessary draft for starting and keeping up the fire in a heating device is then afforded. When, however, said valve is moved to close the aperture  $d$ , or when in a horizontal position, the passage-way through the damper is a tortuous one, and is by way of the central aperture,  $d$ , and thence through the flues or openings  $d''$ , as indicated by the arrows in Fig. 1. The hot gases or air then escaping into the flue A are by the damper directed against and heat said flue, which heat is radiated off into the room wherein the flue is located.

By employing a successive number of dampers the hot air ascending through the dampers in the flue A is repeatedly directed against the sides of the flues at different elevations of the same to more effectually utilize the caloric of such air for heating purposes. When a successive number of dampers are used, the valve E of each damper is provided with lugs  $e'$ , to which are hinged pivoted links or connecting-bars G, for securing the valves of the dampers together, so that they may be all simultaneously turned or operated; and the dampers are secured together at suitable intervals apart by the bars C C, which have bent ends  $c$  screwed to the frames D of the end dampers and side-recesses,  $c'$   $c'$ , which enter notches  $b$  in the frames of the middle or intervening dampers to hold them in place, as more plainly shown in Fig. 2.

By such last-described construction all the dampers are firmly secured together, and their valves E are simultaneously moved to effect an opening and closing of the central apertures of the dampers.

In the last-described construction but one



turning handle or button *h* is employed, which may be either secured to the shaft of the disk or valve of the top damper of the series, as shown in Fig. 1, or to any other one of the series, as desired. To increase the efficiency of my improved damper, it may, if desired, be duplicated by providing radial flues or openings in the flange *d'* above and below the disk *D* and two rotating valves in aperture *d*, one at each end thereof, as shown in Fig. 3, which valves are linked together as above described. In this case the hot-air passage through the damper is made more tortuous, and such air impinges twice against the walls of the flues in its passage into and exit from the damper, as indicated by the arrows in said figure.

In small-size dampers, or those required for small-bore pipes, the flues radiating from the vertical flange *d'* are dispensed with, leaving only the openings in the latter, as shown in Fig. 5.

The damper-frame and cut-off may be made of cast or sheet metal, or otherwise, as desired or deemed advisable.

I do not limit myself to any particular number of dampers for a series, nor to the manner of connecting them together, nor to the number and arrangement of the radial flues or openings in or leading from the vertical flanges of the damper-frames, nor to the manner of linking or coupling the cut-off valves of each damper, as it is obvious that said parts may be variously arranged, provided for, or constructed, as desired.

I am aware that heating-drums or other pipes having frusto-conical plates variously arranged, and provided with rotary valves or cut-offs to furnish, as desired, either a tortuous passage for the hot air or gases or a cen-

tral straight passage for the smoke, are old, and I accordingly disclaim the same and kindred constructions.

What I claim is—

1. A damper composed of a disk or plate having a central aperture bounded by a vertical annular flange from which radiates a series of openings or flues, and a rotary valve or cut-off placed in said flanged aperture and located beyond the plane of said flues or openings, substantially as shown and described.

2. The combination of a series of dampers, *B*, having central flanged openings or vertical flues, *d'*, radial flues *d''*, rotary valves *E*, located in flues *d'* beyond the plane of flues *d''*, and link-connections for said valves, substantially as and for the purpose set forth.

3. The damper *B*, composed of a plate or disk, *D*, having central flanged opening or flue, *d'*; radial openings or flues above and below plate *D*, and communicating with flue *d'*, and a rotating valve at each end of the latter, substantially as shown and described.

4. A damper composed of disk *D*, having central aperture, *d*, and flanges *d'*, radial openings *d''* in said flanges, and double valves *E*, linked together, and arranged for operation substantially as shown and described.

5. In combination with dampers *B*, the supporting-rods *C*, having bent ends *e*, and notches *e'*, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

MARK S. BURROUGH.

Witnesses:

S. J. VAN STAVOREN,  
CHAS. F. VAN HORN.