

(No Model.)

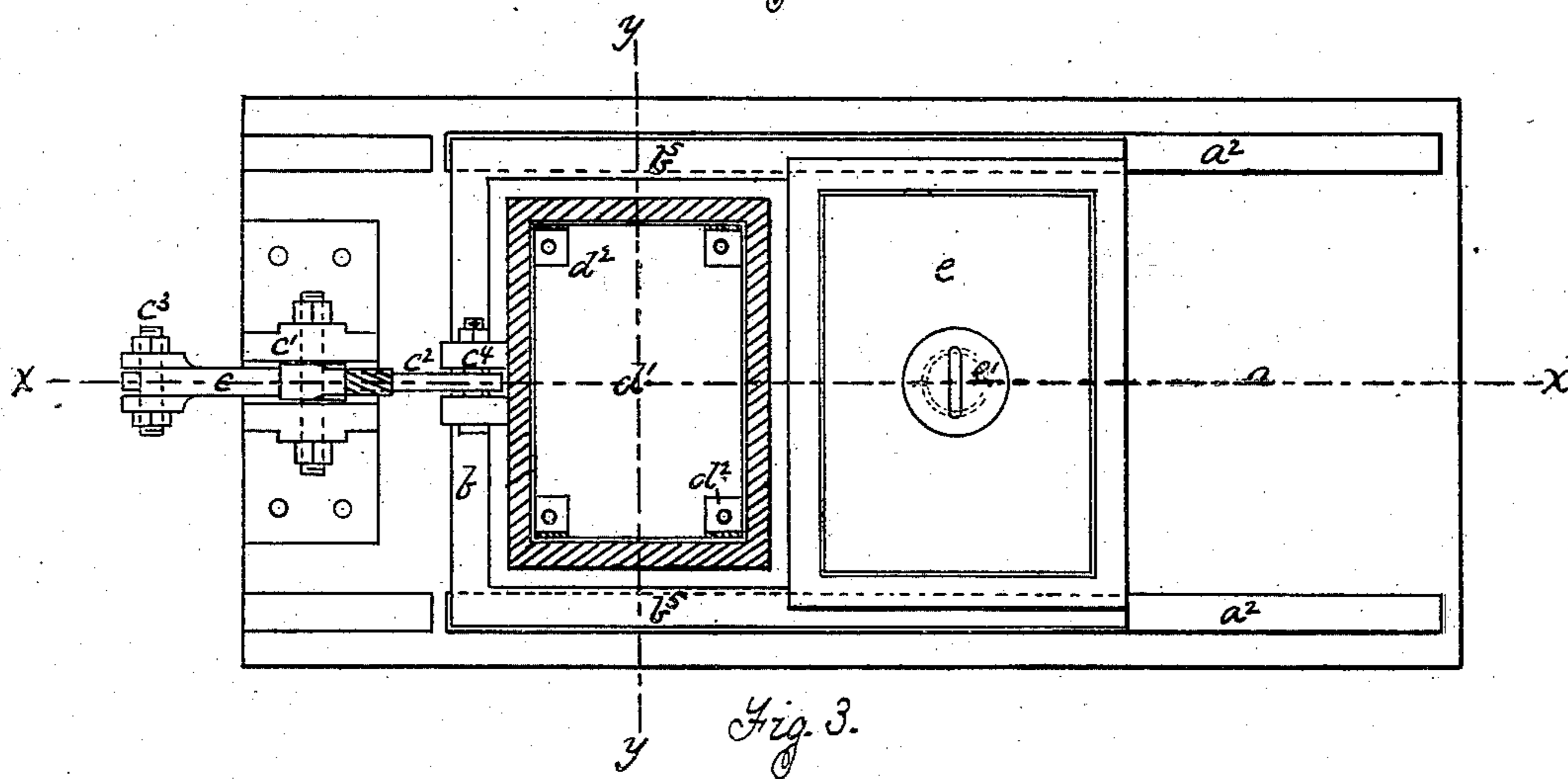
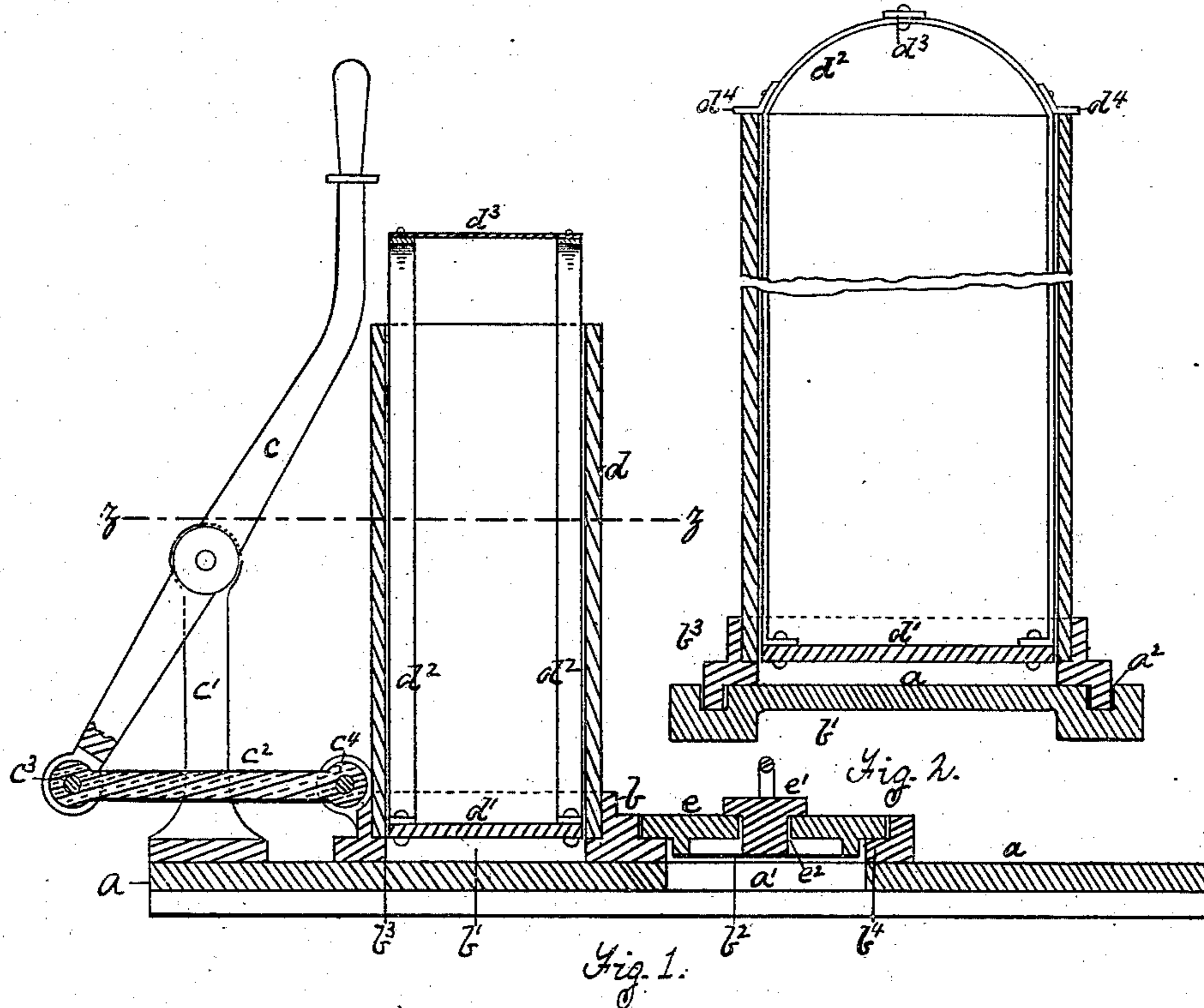
2 Sheets—Sheet 1.

W. SWINDELL.

COAL HOPPER.

No. 270,149.

Patented Jan. 2, 1883.



Witnesses

W. B. Corwin
Jno. H. Smith.

Inventor

William Swindell
by his attys
Bakewell & Kern

(No Model.)

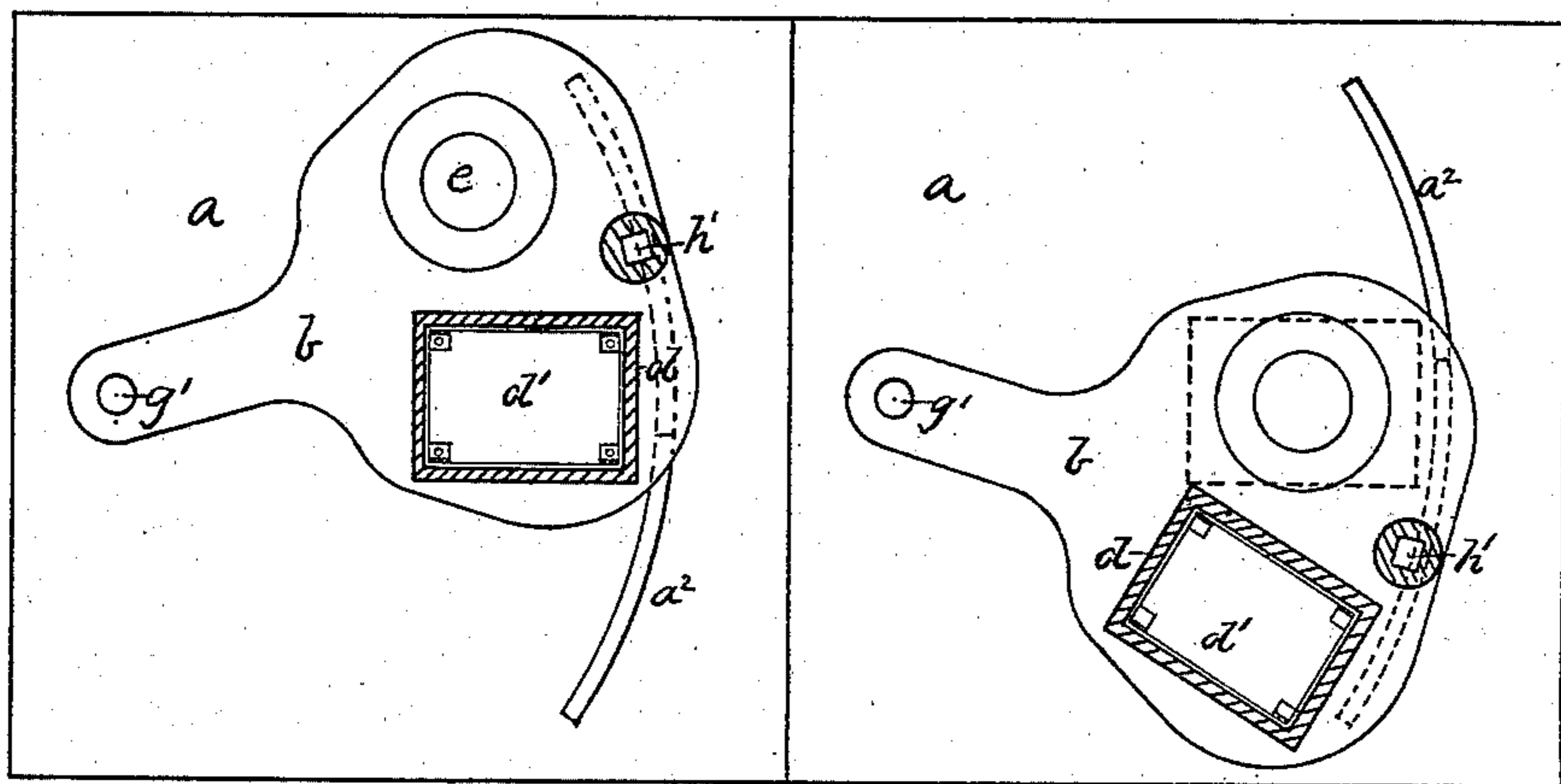
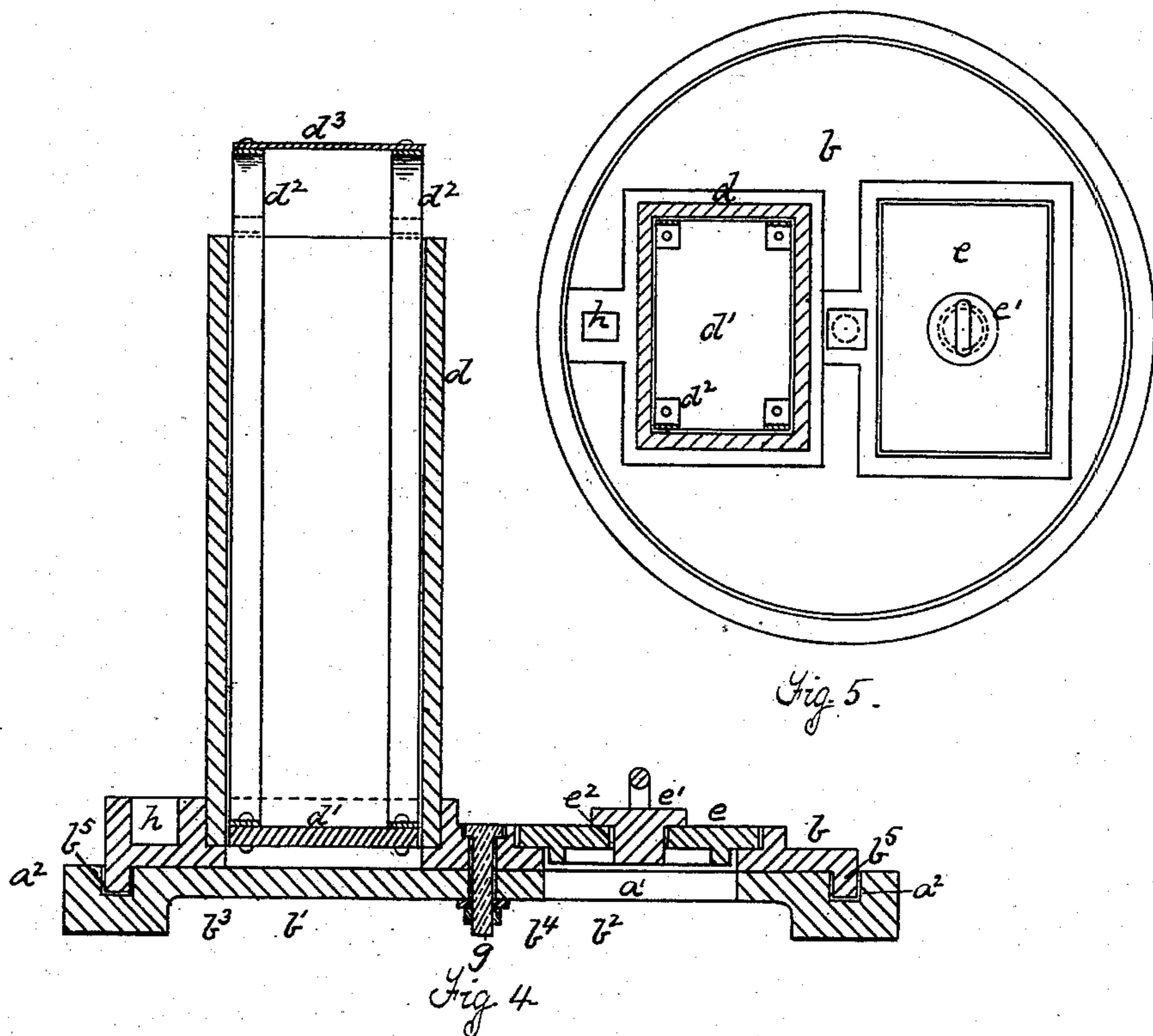
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Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLIAM SWINDELL, OF ALLEGHENY CITY, PENNSYLVANIA.

COAL-HOPPER.

SPECIFICATION forming part of Letters Patent No. 270,149, dated January 2, 1883.

Application filed October 21, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SWINDELL, of Allegheny City, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Coal-Hoppers; and I do hereby declare the following to be a full, clear, and exact description thereof.

My improved hopper is designed for use with gas-producers and similar furnaces; and it is intended to effect the instantaneous feeding of the fuel to the furnace without uncovering the feed-hole, in order to prevent the consequent escape of gas and interruption of the operation of the furnace.

To enable others skilled in the art to make and use my invention, I will now describe it by reference to the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of the same on the line xx of Fig. 3. Fig. 2 is a section on the line yy of Fig. 3. Fig. 3 is a section on the line zz of Fig. 1. Figs. 4 and 5 are respectively a vertical longitudinal section and plan partly in section of a modified form. Fig. 6 is a plan view, partly in section, of another modified form, showing the same in two different positions.

Like letters of reference indicate like parts in each.

Referring, now, to Figs. 1, 2, and 3, a indicates the top plate of a gas-producer. This plate is provided with a coal-opening, a' , and longitudinal grooves or ways a^2 .

Placed on the ways a^2 is a slide, b , having holes b' b^2 and flanges b^3 b^4 , projecting inwardly around the holes. The slide b is operated in the ways a^2 by means of a lever, c , which is pivoted to a standard, c' , and is connected to the slide by means of a link, c^2 , such link being pivotally connected to the lever and slide by pivots c^3 and c^4 .

Resting upon the flange b^3 , over a hole, b' , is a removable coal-hopper, which is of square, cylindrical, or other suitable form, and is provided with a sliding lid, d' , having bails d^2 , which are of sufficient height to extend out of the upper end of the hopper when the lid is at its lower end, as shown in Figs. 1 and 2. At the upper end the bails are connected by a cross-strap, d^3 , and are provided with stops

d^4 , which, when the lid has reached the lower end of the hopper, rest upon its upper edge and prevent the further descent of the lid. The hole b^2 is closed by a lid, e , which rests upon the flange b^4 , and is provided with a removable stopper closing a poke-hole, e^3 , the purpose of which is to enable the furnace to be poked. The placing of the end of the hopper inside of the opening b' and supporting it there by the flange b^3 not only secures it properly in place and steadies it during the movements of the slide, but also secures a tight joint between the hopper and slide, which prevents leaking at that point, and facility in placing the removable hopper on the slide.

The operation of my improvement is as follows: The hopper, being in the position shown in Fig. 1, is filled to the required height with fuel, and then the lid d' is inserted into it and rests upon the fuel. The slide is then pushed forward over the feed-opening a' by means of a lever, c . As soon as the opening b' comes over the feed-opening a' the coal slides down out of the hopper into the furnace, the lid d' following and keeping the furnace tightly closed. When all the coal is discharged the lid d' reaches the position shown in Fig. 1, with its stops d^4 resting on the upper end of the hopper. The slide is then retracted, so as to bring the lid e over the hole a' .

It will be noticed that during the operation of feeding the furnace the feed-hole a' is always closed, either by the lid e or by the solid part of the slide, or by the lid d' ; and hence the escape of gas and the interruption of the draft of the furnace are prevented. The result is a saving of the fuel and the securing of the regular operation of the furnace.

In Figs. 4 and 5 I show a modified form. Here the top plate, a , has a circular groove, f , and the slide b is of circular form and has a similarly-shaped tongue, b^5 , and is solid between the holes b' b^2 . It has a circular movement upon a central pivot, g , and is moved by a bar or lever inserted into a socket, h , made at one side. The operation of the apparatus shown in Figs. 4 and 5 is the same as that shown in Figs. 1, 2, and 3, with the exception that the slide has a circular instead of a rectilinear movement.

In Fig. 6 I show another modified form of construction, in which the slide *b* is made in the form of a segment, which oscillates upon the pivot *g'*, and is moved by a suitable bar or lever inserted into a socket, *h'*. The pivoted or circularly-moving slide is of advantage where the space for the gas-producer is limited, as it enables the slide with its double opening to be applied in a smaller space than is required for the first construction. The sliding lid prevents the gas from rising into the empty hopper, and thereby prevents any interruption of the draft and secures greater cleanliness. I do not limit myself to any particular form of hopper; but when a sliding lid is used it is necessary that the internal form should be such as to permit such movement. The hopper is removable, so as to be easily taken away when not needed, or for repairs or other purposes.

If desired, the door *c* may be lined with brick or tile to protect it from burning out or warping by the heat of the furnace.

The groove or grooves *a*² and the tongue or tongues *b*³, which slide in the grooves, have the further function of acting as a sealing-joint to prevent the escape of the gas.

If the slide were made with a plain sliding under surface, it would be liable to be raised off of the plate *a* by small pieces of coal getting between them, and thus make an opening

which would permit the escape of the gas. This danger is completely obviated by the use of the tongue and groove. The presence of this feature in Fig. 6 is indicated by the curved broken lines. The tongue and groove may be of V shape, if desired.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the top plate of a furnace, having a feed-hole, with a sliding plate covering the feed-hole and having an open-ended hopper, and a sliding lid in said hopper, substantially as and for the purposes described.

2. The combination of the open-ended hopper with a sliding lid having bails which are provided with stops to limit the movement of the lid, substantially as and for the purposes described.

3. The combination of the top plate of a gas-producer, having a feed-hole, with a sliding plate carrying a hopper, and tongue-and-groove guideways between the plate and slide, forming a sealing-joint, whereby the escape of gas is prevented, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 17th day of October, A. D. 1882.

WILLIAM SWINDELL.

Witnesses:

W. B. CORWIN,
T. B. KERR.