

R. D. GRANGER.

Magazine Stove.

No. 33,345.

Patented Sept. 24, 1861.

Fig. 1.

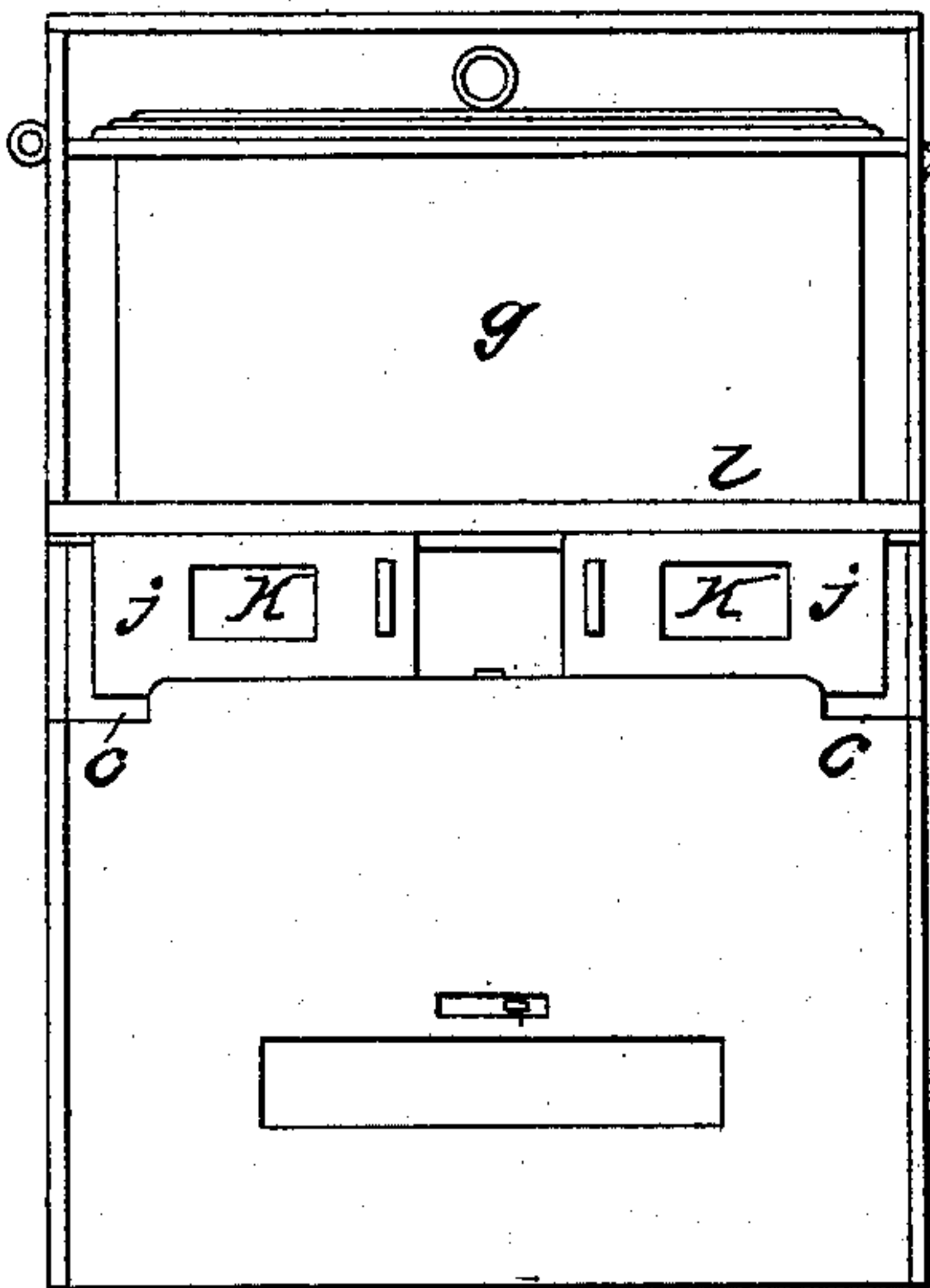


Fig. 2.

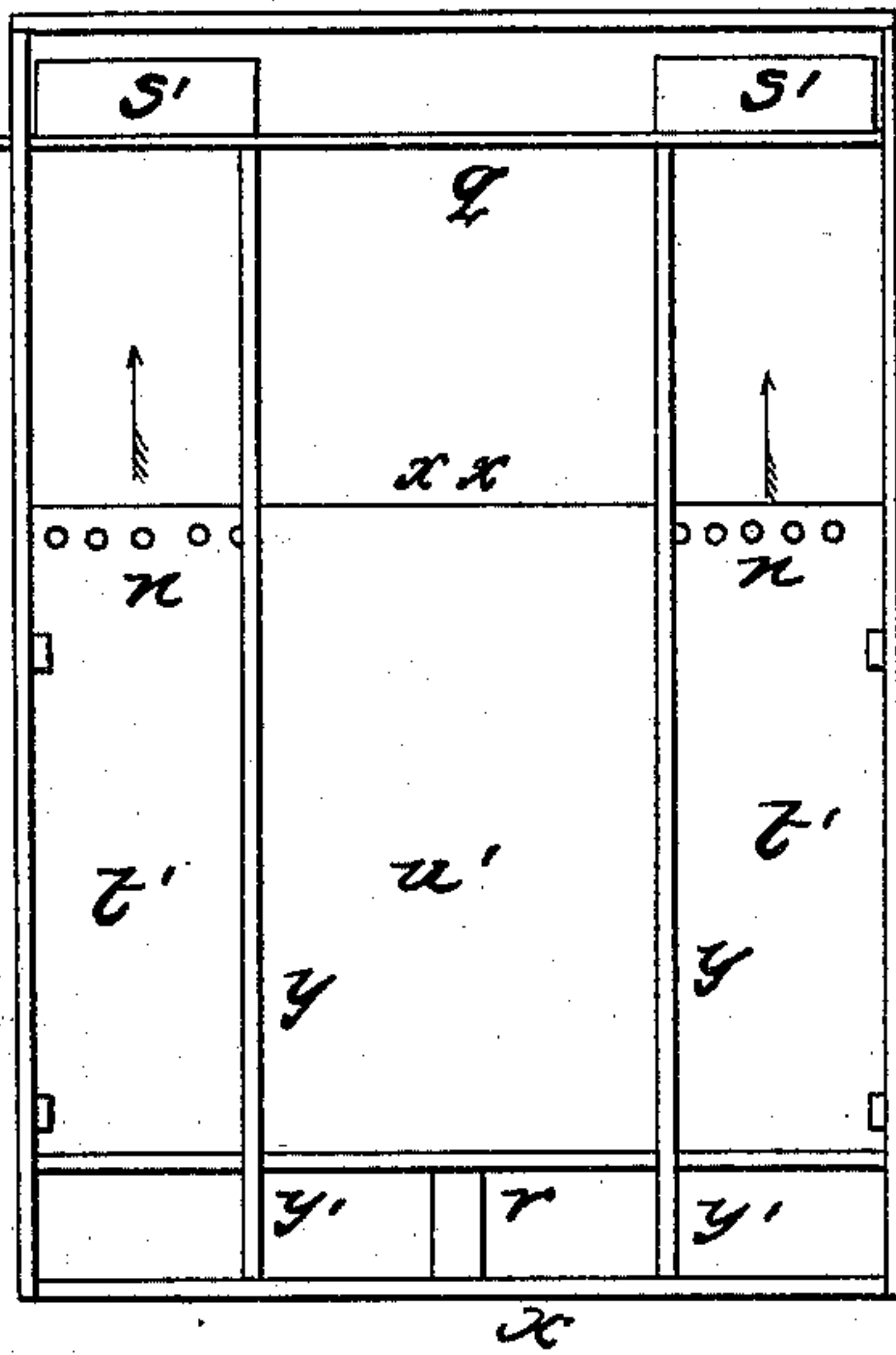


Fig. 3.

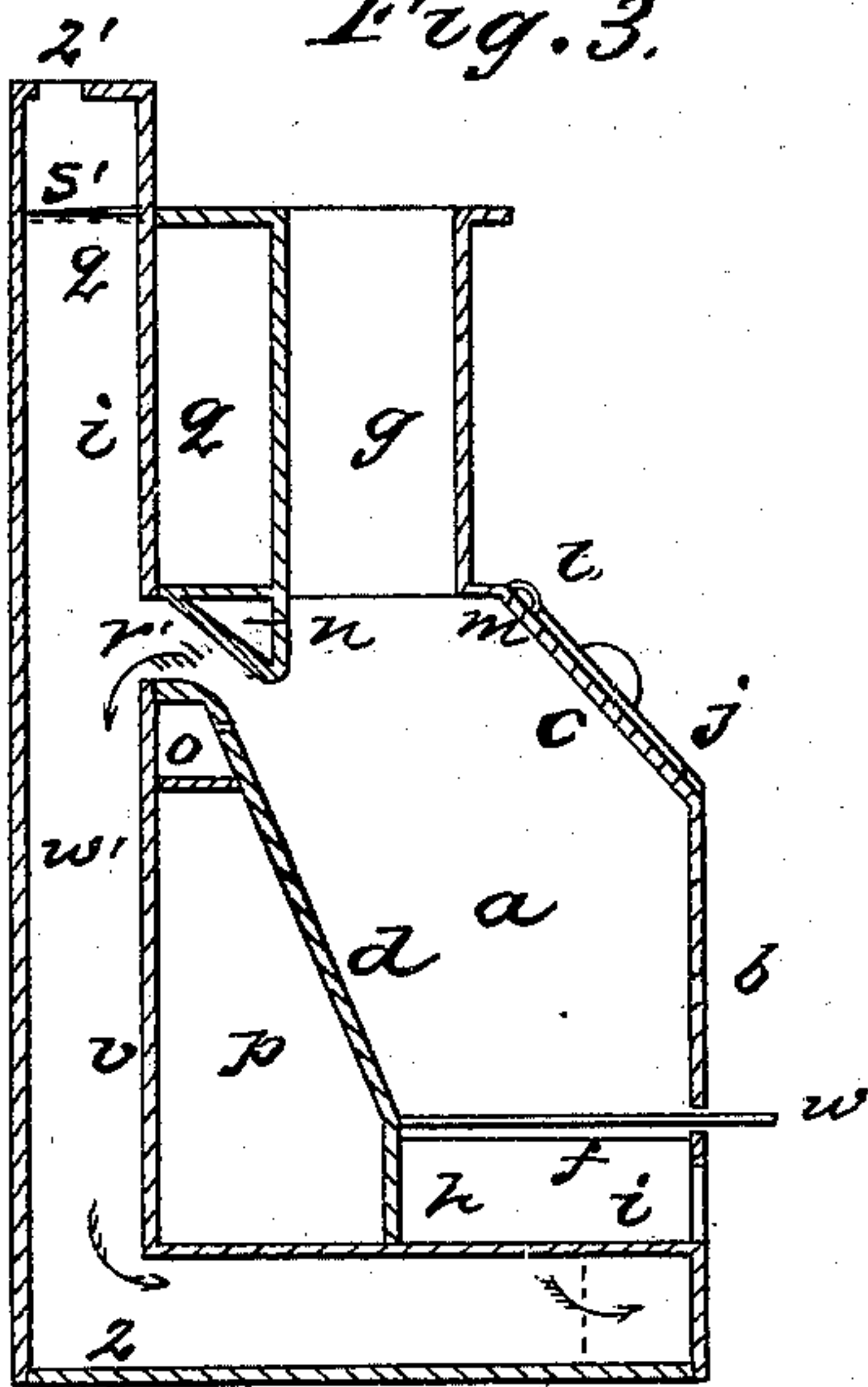


Fig. 4.

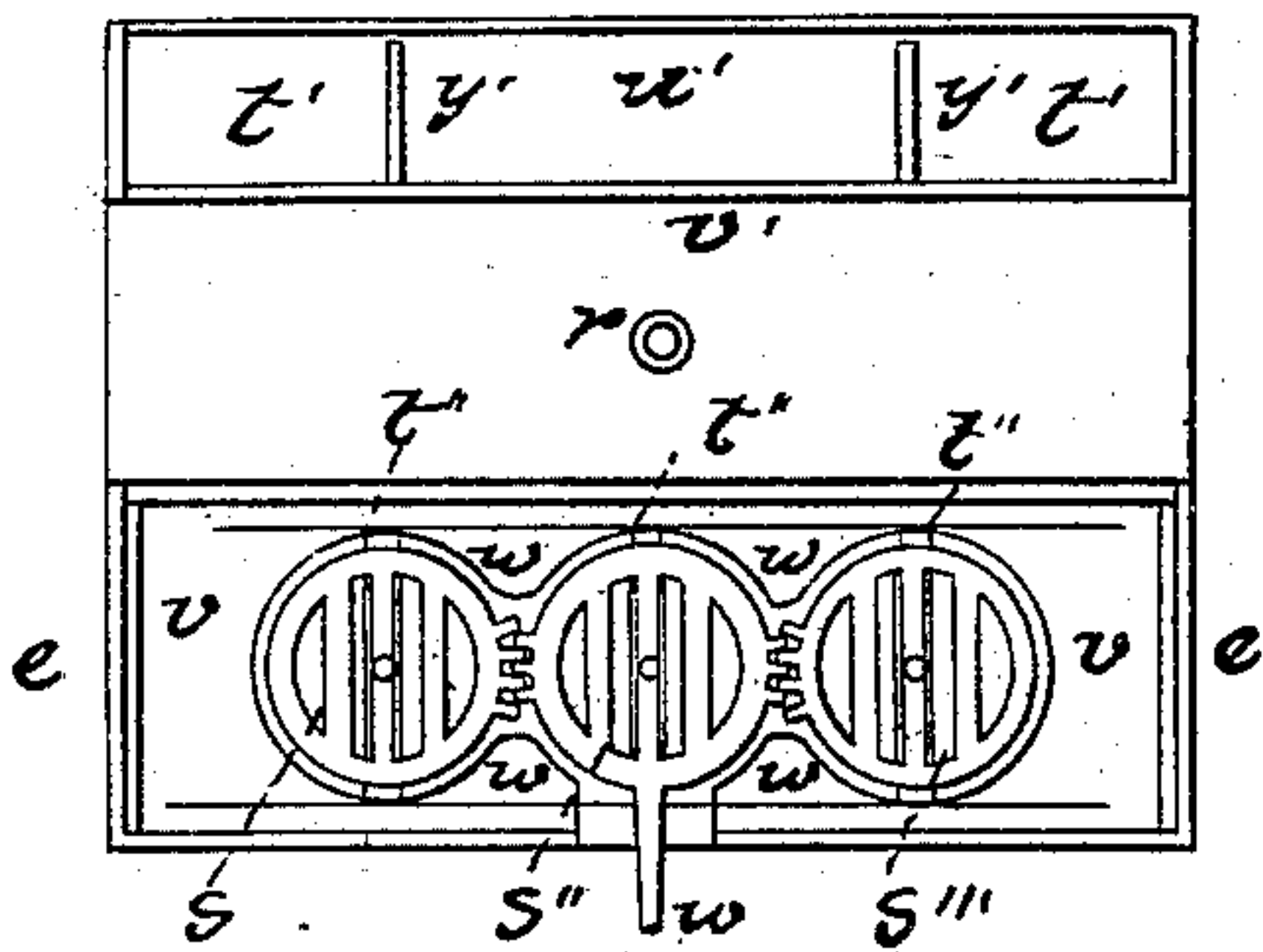
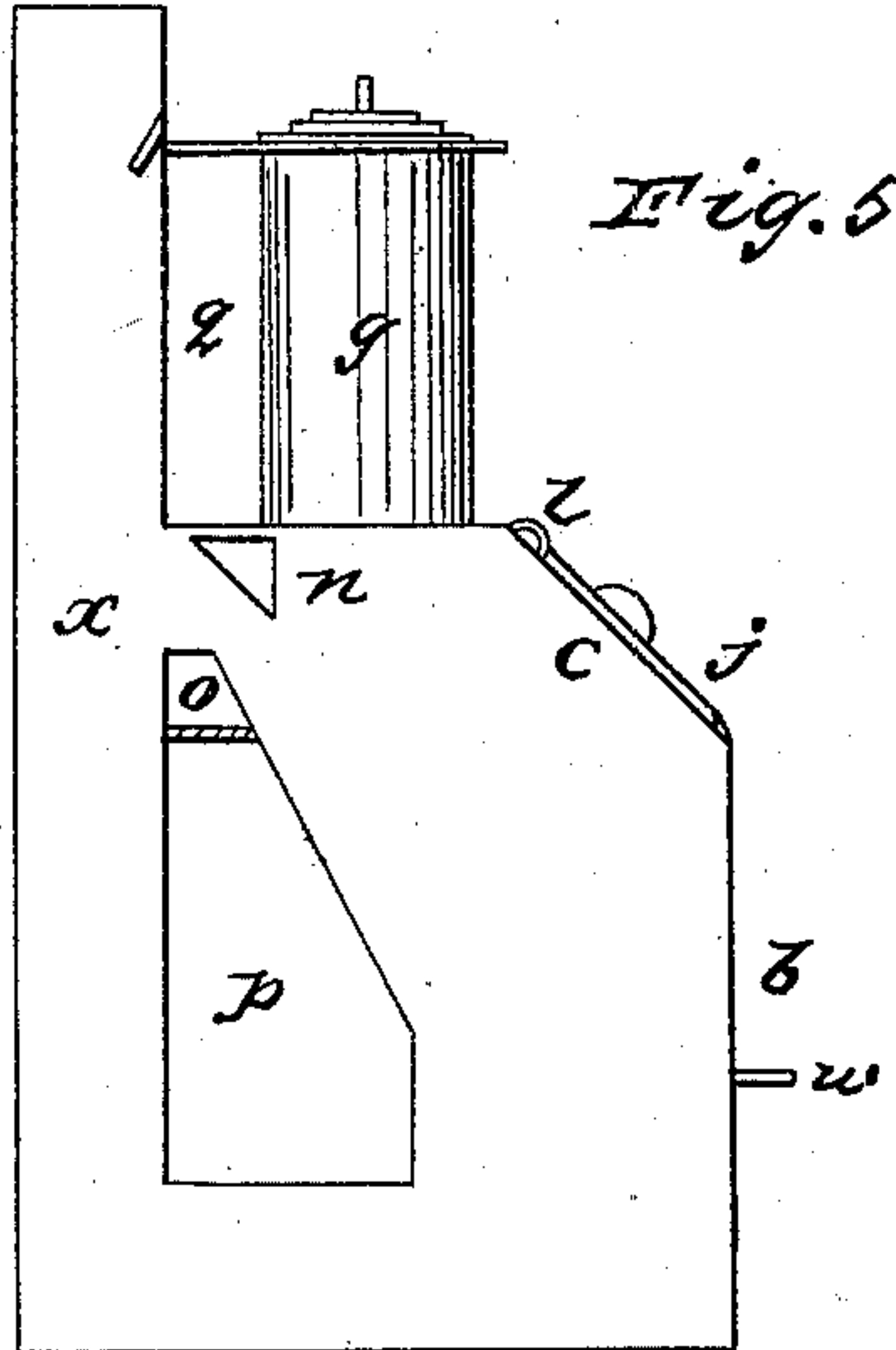


Fig. 5.



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UNITED STATES PATENT OFFICE.

R. D. GRANGER, OF ALBANY, NEW YORK.

IMPROVEMENT IN STOVES.

Specification forming part of Letters Patent No. 33,345, dated September 24, 1861.

To all whom it may concern:

Be it known that I, R. D. GRANGER, of the city and county of Albany and State of New York, have invented a new and useful Improved Coal-Burning Stove; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters and marks thereon.

My improved stove is of that class commonly denominated "magazine-stoves," and has an updraft, so that it is, in fact, a combination of the base-burner or magazine and the updraft. It is designed for the burning of anthracite or hard coal, and its construction and arrangements are such as to render it a very economical consumer, having excellent radiating qualities and unusual conveniences for a continuous and regular fire.

Of the drawings forming part of this specification, Figure 1 is a front view of my stove with the doors of the fire-box partly open. Fig. 2 is a back view, the back plate having been removed, the dampers being shown partly elevated. Fig. 3 is a view by vertical section; Fig. 4, a view by horizontal section just above the grate, and Fig. 5 a side view of the stove.

In each of the figures where like parts are shown like letters are used to indicate the parts.

The fire-box or furnace of this stove (marked *a*) is of rectangular form, or nearly so, a part of its front *b* being vertical and a part *c* being inclined. The back of the fire-box (marked *d*) is inclined. Its ends or sides *e* are vertical. The bottom *f* is flat or horizontal. Directly over the rear half of the fire-box is the magazine *g*, the center of it vertically being in line with the back plate *h* of the ash-pit *i*. The doors *j*, having mica plates *k*, are upon the inclined part *c* of the box and may be so attached thereto as to be sliding doors or hinged doors. The opening which they cover is large and gives free access to the fire-box, and whether they be hinged or sliding doors they can be used whenever it may be desirable to check or retard the process of combustion by having them open to a greater or less degree. The doors being large and placed upon the inclined part of the box, as stated, give free access to the box for any purpose. Just above the doors is an air-chamber or tube *l*, open at

both ends and having perforations *m* for the passage of atmospheric air upon the ignited fuel at this point. Like chambers *n* and *o* at the back and top part of the fire-box and forming the faces of the throat of the box afford atmospheric air to the escaping gaseous products of combustion.

Behind the fire-box is a space *p*, bounded except at its ends by the plates of the stove, which permits the air to come freely in contact with these plates, and thus form part of a large radiating-surface. A like space *q* is behind the magazine. A tube *r* passes through the bottom plate of the shell of the stove and the bottom plate of the space *p*, bracing the last-named plate at the point shown and allowing cold air to enter, thus forcing a circulation of air through space *p*.

The grate of the fire-box is made up of three circular grates *s s'' s'''*, each grate being pivoted to its supporting-bar *t'' t' t'''*. The central grate has on both sides of it teeth which fit into teeth of the side grates, and thus by the movements of the handle *u* of the central grate all the grates may be moved. The handle is not permanently attached to the central grate, but is detachable, as is usual in coal-stoves. The bar *t''* of each grate may be suspended in the bed-plate *v* of the grates and each grate and its bar be moved separately.

The bed-plate *v* has projections *w* toward the grates, so as to make the surface of the bottom of the fire-box regular and continuous. These projections have bars, as shown by Fig. 4, by which they form an extension of the grate-surface. Small lugs or teeth may be cast with the bed-plate and on the outer circle of each grate, which under the motions of the grates serve to grind up the slag. The ends and sides of the fire-box can be filled up with fire-brick.

Two plates *y y* extend from the bottom plate *z* of the shell or exterior part of the stove upward nearly to the top plate, having the exit-hole *z'* for the pipe. These plates are continuous with two other plates *y' y'*, which pass forward underneath space *p* and to within about the distance from the front plate of the stove indicated by the red line in Fig. 3. These plates divide the space between the back plate of the stove *w'* and the plate *v'* into a broad central flue *u'*, running

the whole vertical length of the stove, and two narrower flues $t' t'$ on each side of the broad flue and the space underneath that marked p into like flues, the horizontal and the vertical flues, respectively, being continuous with each other. Dampers $s' s'$ at the top of the side flues into which the escaping products of combustion pass through the throat r' give direction to the smoke and escaping products. When these dampers are open, as shown in Fig. 2, the escaping current is directly upward from the throat to the pipe, and when the dampers are closed, as shown in Fig. 3, the escaping current is downward from the throat to the side horizontal flues, and thence through the central horizontal flue and central vertical flue to the pipe. Both of these dampers may be affixed to one rod q' ; or each damper may have its independent rod.

The drawings show the vertical flues and plates bounding them extending up a short distance beyond the top of the magazine. If preferred, they may terminate on a line with the top of the magazine, and then the top plate of the magazine and the top plate of the flues having the pipe-hole can be of one piece of casting.

The top flue or flues above the base or bottom plate of the magazine may extend back and the escape-pipe be located at the point marked $+$, and the center flue be closed by a damper when you wish to force the products of combustion down and under the bottom. This form may be adopted in some cases with less expense and have about the same effect. The pipe will then be low down and can enter direct into the chimney through a fire-board and under the mantel-piece. The damper can be located at $++$, Fig. 2, to close the direct draft to the pipe, or when opened give a direct draft. The products of combustion will then pass down as formerly named; but the pipe will be lower down as well as

the damper, and only one damper will be required in the center flue.

It will readily be seen that the radiating-surface of this stove is very great and that its arrangement of parts and pieces is such as to make it a very economical consumer of fuel. It will also be perceived that when the magazine and fire-box are filled with coal ample provision exists for a regular and continuous fire, that part of the fuel which is in the magazine becoming gradually heated up by that part in combustion in the fire-box and gradually passing down for consumption as room is made for it, such passing down toward the grate-surface being facilitated by the inclined front and back of the fire-box. It will further be perceived that the motions of the grates will entirely relieve the fire-box of the slag, while the jets of air from the tubes or chambers will afford full supply of atmospheric air both to the fuel undergoing consumption and to the escaping gaseous products of combustion.

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

1. The arrangement of the flues herein set forth, in combination with a magazine or base-burning stove, substantially as described.

2. The arrangement of the air tubes or chambers in their relation to each other and to the fire-box and throat of the fire-box, as described.

3. The bed-plate, in combination with the grates.

4. The magazine substantially as it is constructed and arranged in relation to the inclined surfaces of the fire-box and to the other parts of the stove.

This specification signed this 15th day of April, 1861.

R. D. GRANGER.

Witnesses:

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