

J. F. WEISHAMPEL.

Coal Grate.

No. 6,541.

Patented June 19, 1849.

Fig. 1

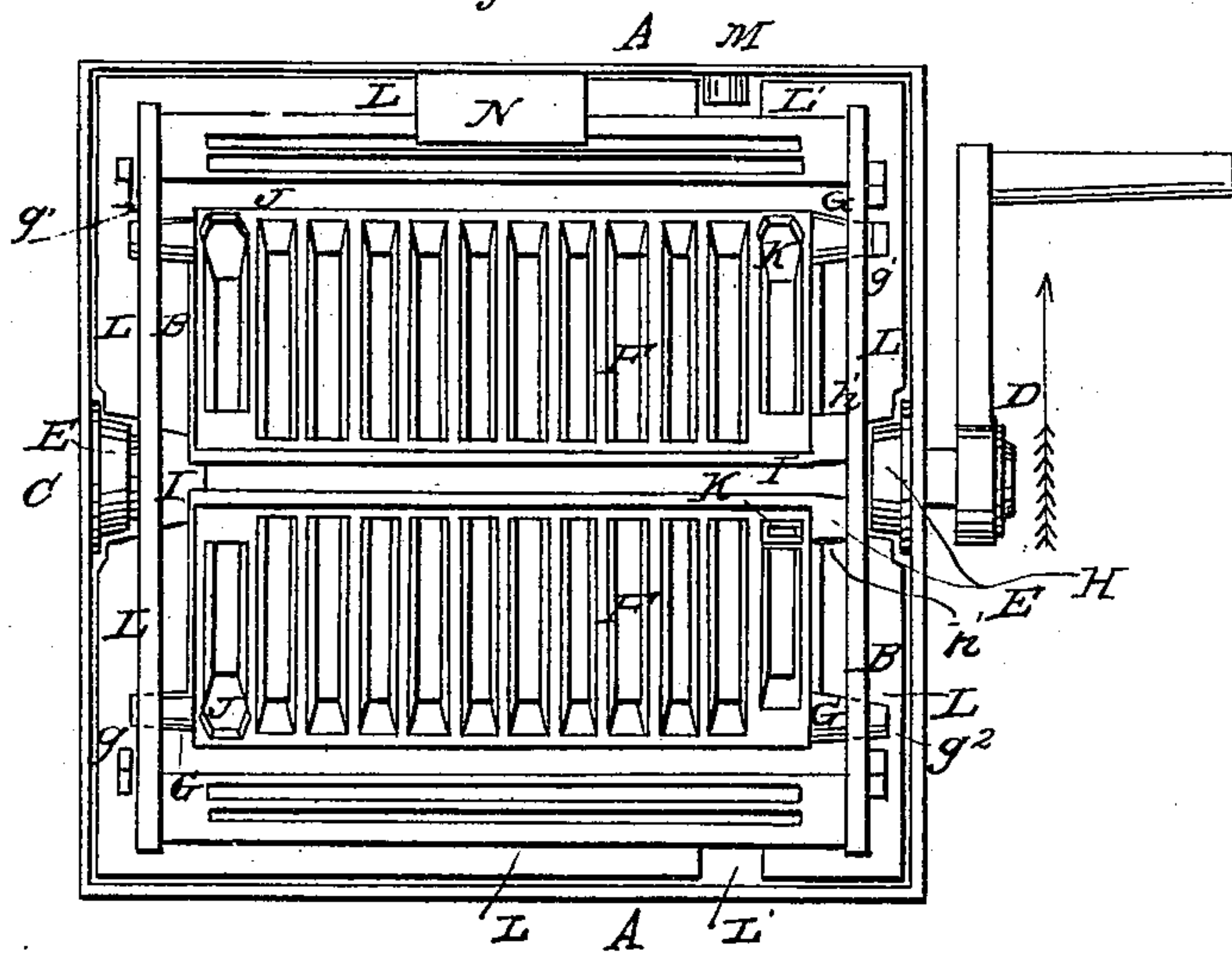


Fig. 2

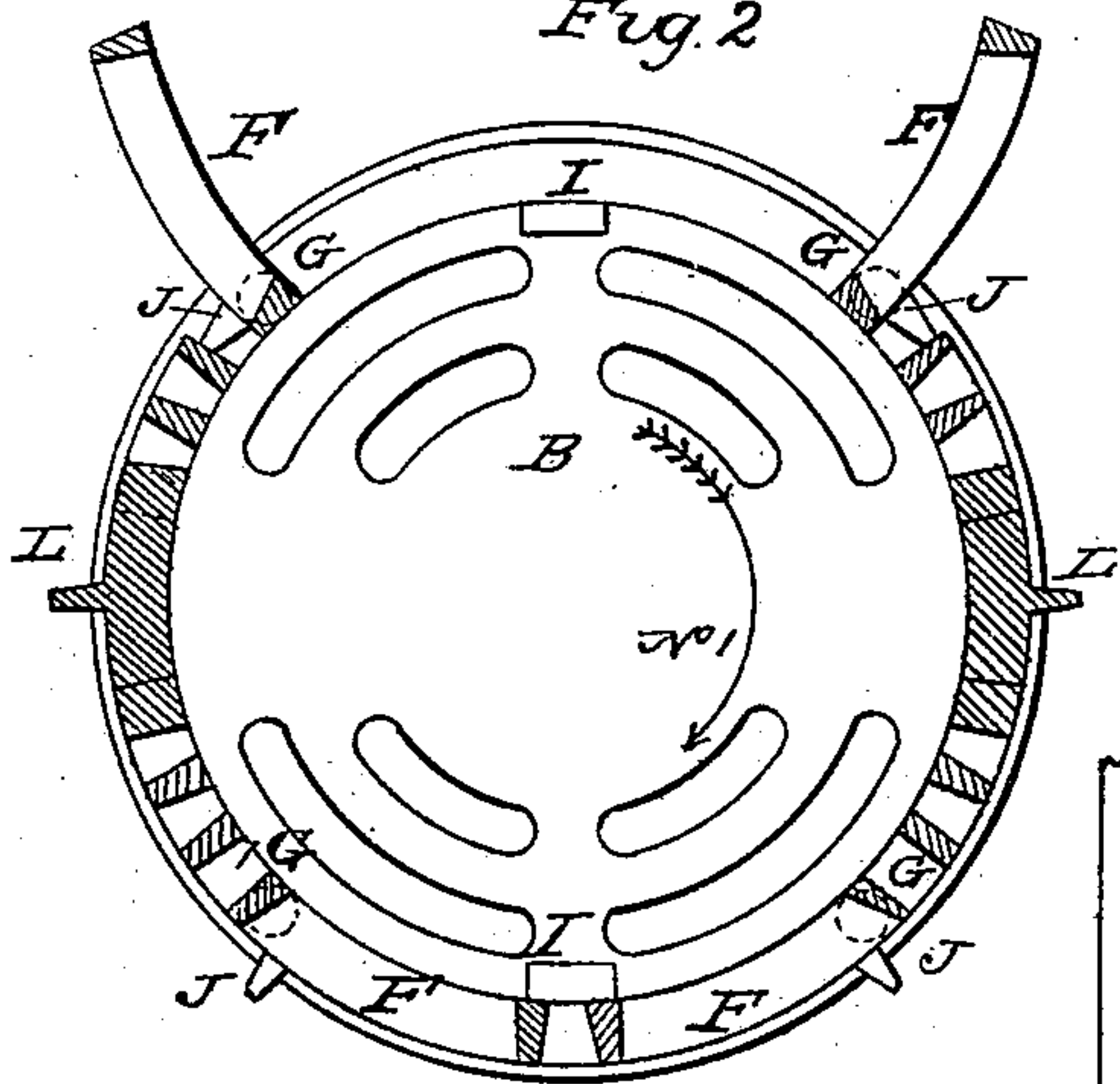


Fig. 3

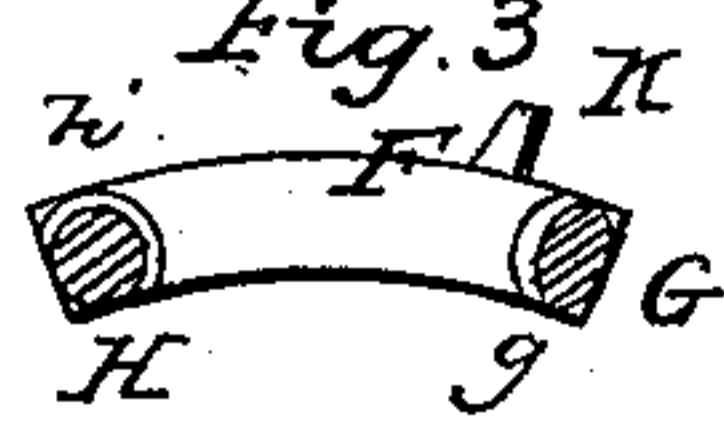


Fig. 4

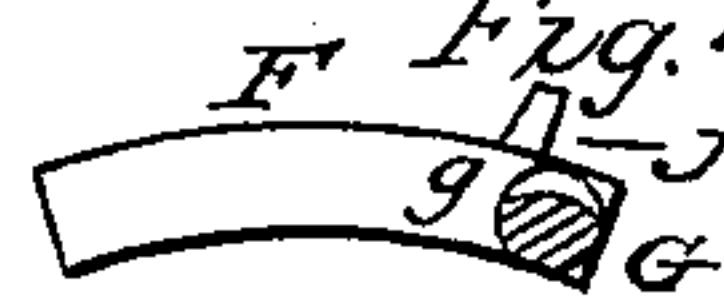


Fig. 6

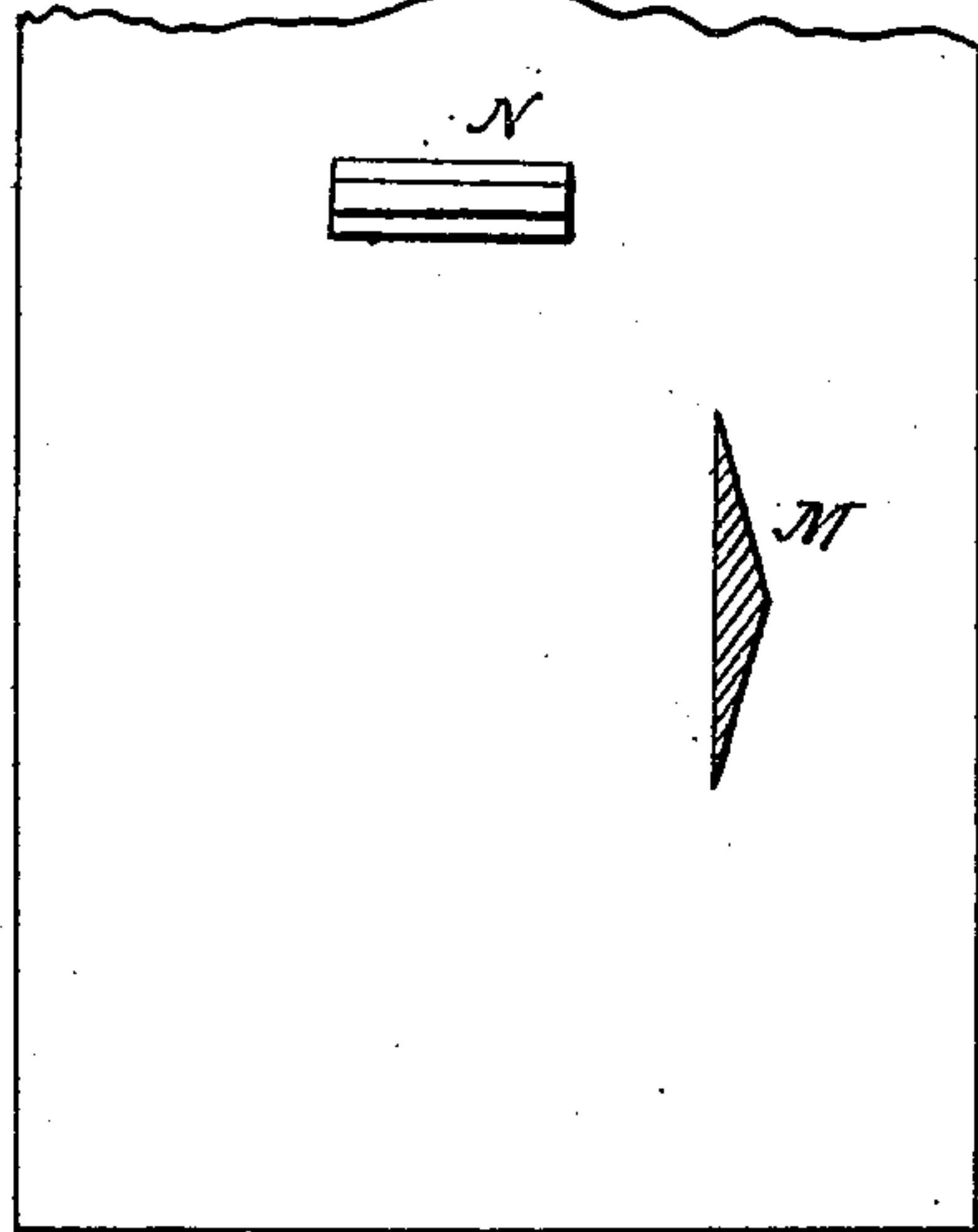
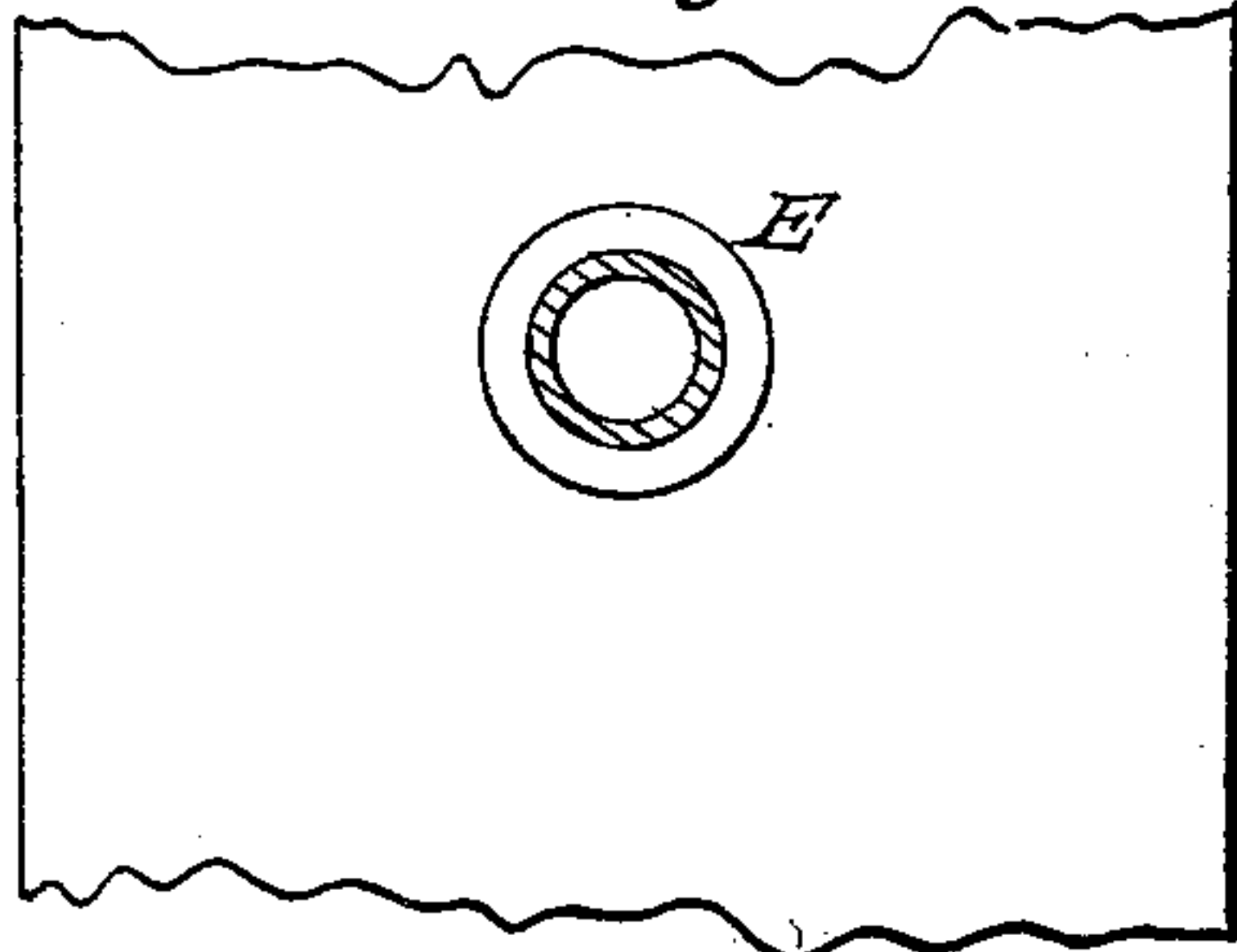


Fig. 5



UNITED STATES PATENT OFFICE.

JNO. F. WEISHAMPEL, OF BALTIMORE, MARYLAND.

REVOLVING HORIZONTAL COAL-GRATE.

Specification of Letters Patent No. 6,541, dated June 19, 1849.

To all whom it may concern:

Be it known that I, JOHN F. WEISHAMPEL, of the city of Baltimore and State of Maryland, have invented a new and useful Improvement in the Horizontal Revolving Coal-Grate, which is described as follows, reference being had to the annexed drawings of the same, making part of the specification.

Figure 1, is a birdseye view of the grate and a horizontal section of the box or case surrounding the same, the grate-doors being closed. Fig. 2, is a sectional view of the grate, showing two of the doors open and two of them closed. Fig. 3, is a front end view of one of the doors, showing the shoulders on the journal and bolt. Fig. 4, is a view of the opposite end of the same door, showing the shoulder on the opposite journal. Fig. 5 is a view of a section of the inner side of the front of the case box or stove showing one of the cylindrical boxes or bearings. Fig. 6 is a view of a section of the inside of this right side of the external case showing the stationary protuberance N for closing the right hand doors F and the inclined planes M for drawing forward and bolting all the doors as they pass by said inclined planes, rendering the doors self closing and self locking during the rotation of the grate.

The end at which the key or handle is placed for turning the grate is called the front. The periphery of the grate will be considered as its sides.

Similar letters in the several figures refer to corresponding parts.

This revolving grate is designed as an improvement on Eatons's grate patented in 1838 and on Hughe's patented in 1837, and on all others known or used by which it is rendered practicable and useful—others having failed to come into general use from a defective construction and arrangement. I do not mean to claim the invention of a revolving grate combined with an external case; nor any part or portion ever before invented. But in order to explain, intelligibly, my improvements I shall be obliged to give a short description of the revolving grate and external stationary case.

A is the external surrounding stationary case, or box, in which the grate is placed, cast in separate plates, and put together by screw bolts or other convenient means.

B is the horizontally revolving cylindrical grate also cast in separate pieces secured together in any convenient way, having four segmental doors. C are its journals—one of which is solid and the other is hollow to admit the key D by which it is turned. E are the hollow bearings, or boxes, cast on the inside of the case A in which the journals of the grate turn.

F F F F are the four segmental doors of the grate arranged in pairs on opposite sides of the cylinder—one pair being always antipodal to the opposite pair.

G G G G are the four journals of a pair of doors. These journals turn in round openings in the circular heads of the grate. g' in Figs. 1 and 4, is a shoulder on the back journals which prevents the door from working back toward the rear end of the grate and falling open while revolving the grate. g^2 is a shoulder on the front journal to prevent the door from working toward the front of the grate when thrown open to empty the grate, and while revolving.

H are bolts cast on the front ends of the doors: these bolts slide in round openings in the heads of the cylinders and move with the doors by which they bolt the doors. h' are shoulders cast on the bolts H to keep the doors in a proper position when closed.

I are ledges cast on the inner sides of the heads of the cylinders for the segment doors to shut against.

J are projections cast on the doors near the hindmost journals for the purpose of striking against the adjacent parallel bars of the grate to prevent the doors falling back too far and to serve as rests or props for the doors when open—as seen in Fig. 2.

K are other projections cast on these sliding hinged segmental doors which are designed to strike against the inclined plane M cast on the inside of the case while revolving the grate for the purpose of moving the doors longitudinally and throwing the bolts into the openings in the head of the grate. The four segmental hinged sliding doors are of the same curvature of the grate and form portions of its circle and are hinged in the same manner—narrow rectangular plates or projections.

L are cast on the heads and peripheries of the grate, forming, when the grate is in this position for consuming the fuel, a horizontal rectangular valve, or damper, for prevent-

ing the draft ascending between the grate and external case, causing the draft to ascend through the under side of the grate the cast projections or damper plates on the peripheries extending parallel with the axis of the cylinder and joining the ends of the plates on the diameters of the grate which extends from the periphery of the grate, nearly to the journals, leaving sufficient space for the admission of the circular rim of the hollow cylindrical bearings E of the grate. See Fig. 1. The damper plate or projection on the periphery of the grate have openings L' in them to pass by the inclined plane M without touching them. The inclined protuberance N for closing the two right hand doors and the inclined planes for bolting all of them are both cast on the inner side of the right hand stove plate, or case. The hollow bearings are cast on the front and back plates of the case. These cylindrical bearings project inward sufficiently far to prevent the grate touching the inside of the case the grate turning against their ends.

An ash box of the usual form and construction is placed below the grate.

The manner of using this revolving grate is described as follows. The grate being turned till the two uppermost doors are in a proper position to be opened the doors are moved back till the bolts H leave the holes in the front plate of the grate they are then opened and made to have the position represented in Fig. 2. The coal, or other fuel is put into the grate upon the concave sides of the lower doors; the kindling and fire are then placed upon the coal; the doors are then closed and secured in the manner before described by drawing forward the doors with a hook, or other suitable implement. Or they will close themselves by simply turning the grate to the right in the direction of the arrow No. 1 by the right hand door striking against the protuberance N and the left hand door closing by its own gravity as the grate revolves, being bolted by coming in contact with the inclined plane, M the grate, being turned a half revolution the position of the fuel and fire will be inverted—the former being now uppermost and the latter below, and the position of the doors being also inverted. The doors which are now uppermost must be opened by moving them back till the bolts become disengaged from the front plate of the grate the journals sliding in their bearings and must be left open to increase the draft and prevent them from being burnt out.

When the grate is required to be discharged of its contents the right hand door must be closed and bolted and the grate turned to the left a half revolution; the left hand door falling open the cinders and ashes will descend through the opening of the grate into

the ash box or drawer; and the rotary motion of the grate being continued the door will close and the projection K on it coming in contact with the inclined plane M will be bolted without any farther agency the grate having to be turned an entire revolution in order to discharge it of its contents.

The grate may be turned either to the right or to the left after the doors are bolted to invert the position of the fuel, or to agitate the fire; or to sift the ashes from the coal; the grate should be made to perform entire revolutions and as often as may be required to effect the removal of the ashes from the coal.

The damper, or rectangular projection L, which girts the grate and divides it externally into two semicircles when brought to a horizontal position increases the draft and prevents the ascent of ashes or dust between the grate and case; and should any coal, or hard substance, lodge between the dampers and case it will not prevent the rotation of the grate as it will clear itself very freely by turning the grate a portion of a revolution.

The office of the shoulders g' g^2 h^1 on the journals of the doors and on the bolts having been described in giving a description of the construction, will be sufficient.

The external case A in which the grate is placed may be of any tasteful form and have glazed windows so that the fire may be seen from all sides.

In my revolving grate I must necessarily have four doors arranged in pairs on opposite sides of the grate so that when the pair that is below is closed the other pair will be open. The doors are opened and closed alternately, by which means neither pair is constantly kept at the bottom to serve as grates. Thus the cylinder has two grates to burn out before new ones are required to be procured.

The use of my grate in stoves, cooking ranges, heaters &c. has the following advantages. 1st. It obviates all dust and dirt, the stove door and ash box being closed when the grate is turned, which confines all the dust within the stove. 2d. The old coal need never be removed from the grate to kindle a fresh fire (except occasionally to empty out slate or cinders,) consequently all the coal is consumed without the trouble of removing, sifting by hand, and replacing it in the grate. This combines economy with the saving of labor and cleanliness. 3rd. In it can be consumed all kinds of stove coal, together with tan, saw-dust and chip dirt intermixed with the coal. This grate has been fully tested in these particulars and has proved its utility and practicability to entire satisfaction.

In order to have a more clear understanding of the office of the shoulders g' and g^2 on the back and front journals of the grate-

doors I will explain more fully, the operation of the same. When the doors are all closed and the grate is turned to the right, or left, the shoulders g' come against the inner side of the rear end plate of the grate and prevent the doors moving toward the rear, and the bolts H becoming disengaged from the front plate and thereby keeping the doors closed. But when the left hand door is opened for the discharge of fuel, or any other purpose and the grate is turned to the left half a revolution the shoulders g^2 will come against the inner side of the front plate of the grate, and thus prevent the doors from moving toward the front and the bolt H, coming against the periphery of the front plate of the grate, which would prevent the door from closing.

I do not claim a revolving grate combined with an external stationary case.

All that I claim is—

1. The combination and arrangement of the four segmental hinged and sliding doors F with the revolving grate B constructed

arranged and operated in the manner and for the purpose herein set forth.

2. I claim the combination of the damper L with the revolving grate as described.

3. I claim the combination of the protuberance N on the inside of the case with the case and doors of the grate for closing the right hand doors as the grate is revolved.

4. I claim the combination of the double inclined plane M with the case and the projections on the doors of the grate for bolting the doors as the grate is turned.

5. I claim making the journals G of the doors with shoulders g' g^2 on the upper and inner sides by reducing the diameter of the journals in the manner and for the purpose described.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

JOHN F. WEISHAMPEL.

Witnesses:

WM. P. ELLIOT,

A. E. H. JOHNSON.