

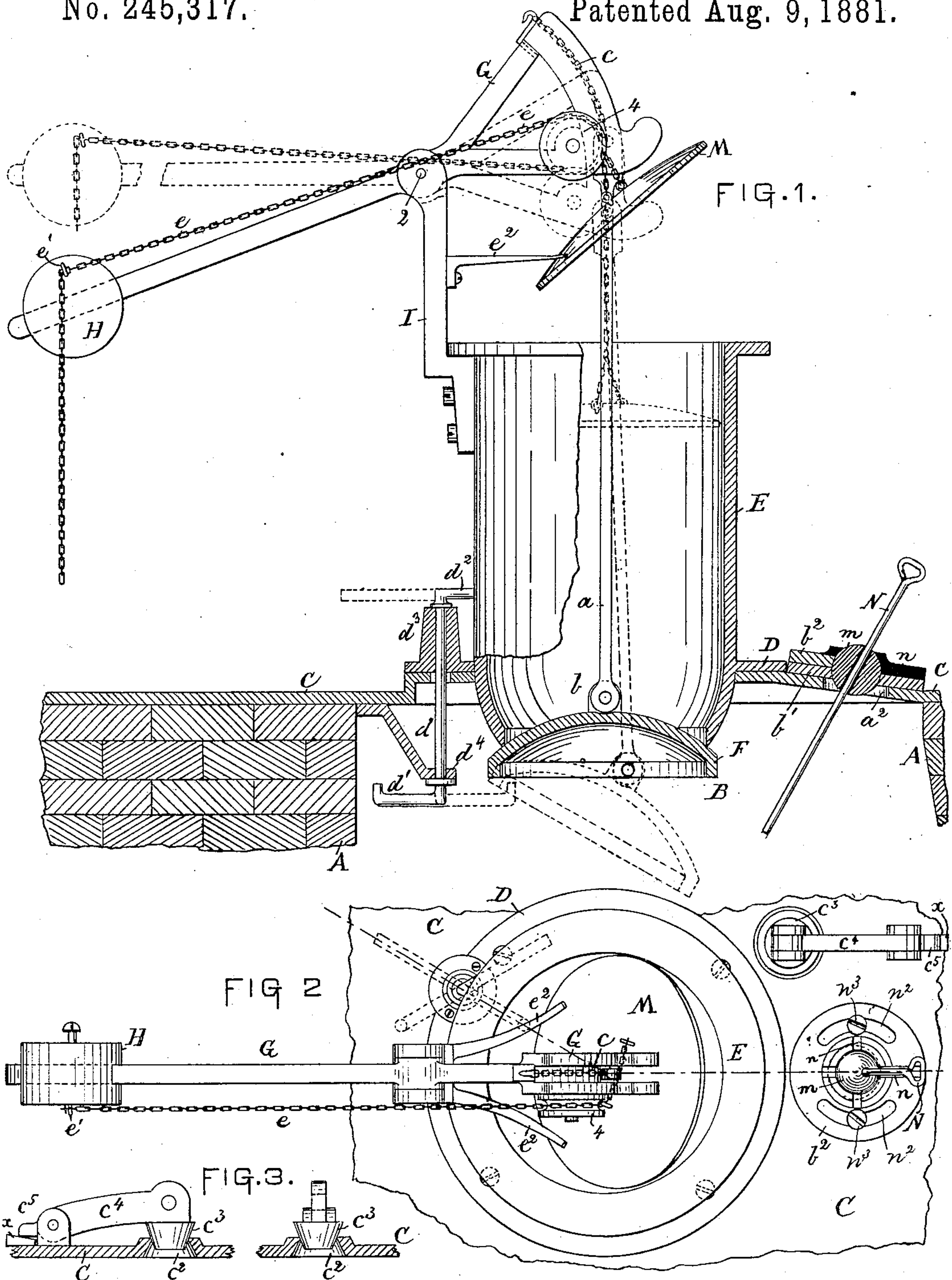
(No Model.)

J. W. RING.

FEEDING MECHANISM FOR GAS PRODUCING AND OTHER FURNACES.

No. 245,317.

Patented Aug. 9, 1881.



WITNESSES.  
*Arthur Reynolds*  
*Lawrence T. Connor*

INVENTOR.  
*James W. Ring*  
by *Brody & Morgan* Attys.



# UNITED STATES PATENT OFFICE.

JAMES W. RING, OF BOSTON, MASSACHUSETTS.

FEEDING MECHANISM FOR GAS-PRODUCING AND OTHER FURNACES.

SPECIFICATION forming part of Letters Patent No. 245,317, dated August 9, 1881.

Application filed December 11, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES W. RING, of Boston, county of Suffolk, and State of Massachusetts, have invented a new and useful Improvement in Feeding Mechanism for Gas-Producing and other Furnaces, of which the following description, in connection with the accompanying drawings, is a specification.

This invention relates to mechanism for feeding coal into gas-producing and other furnaces, and has for one of its chief objects to prevent waste of gas when the coal is being supplied to the furnace-chamber.

In this my apparatus the coal-receiving hopper is stopped at its lower end by means of an upwardly-pressed conical bottom piece supported by a weighted lever in the usual manner. With this hopper and bottom piece I employ a cover to rest upon and follow down on the top of the coal in the hopper, so that the said cover closes the hopper when the bottom piece is removed from contact with its lower end, thus preventing the escape of gas. The cover, as the coal is discharged, drops into and closes the lower end of the hopper, so that gas is not collected therein, and the cover remains in such position until the bottom piece is again raised to close the bottom of the hopper. The lower side of the cover is concaved to fit the convexed top of the bottom piece, so that the bottom piece, when rising, fits the under side of the cover closely, thus obviating trapping gas between the bottom piece and cover and the loss of the gas so trapped.

Figure 1 represents in side elevation and partial vertical section a sufficient portion of a furnace and hopper to illustrate my invention; Fig. 2, a top view of the hopper and its connected parts, a portion of the furnace-top being omitted to save room on the drawings; and Fig. 3 is a detail of the sight-hole and its cover.

The furnace having the walls A, inclosing the furnace-chamber, are and will be considered all as usual.

The top of the furnace and furnace-chamber has a cover, C, which receives the annular rim or lug D of the hopper E, through which the coal is fed into the furnace-chamber. This hopper is closed at its lower end by the bottom piece, F, having a convexed top. The bottom piece is suspended from the rod *a*, upon which it is pivoted at *b*, a chain, *c*, attached to the

upper end of the said rod, being connected with and guided in a groove in the quadrant-shaped head of a lever, G, pivoted at 2 on the bracket I, the said lever having on its longer arm an adjustable weight, H, to fully or more than counterbalance the weight of the bottom piece. The bottom piece, when lowered, may be tipped, as shown in dotted lines, by means of the tipping device *d*, made as a rod extended through bearings *d*<sup>3</sup> *d*<sup>4</sup>, it having two arms, *d*<sup>1</sup> *d*<sup>2</sup>, the latter serving as a handle by which to turn the arm *d*<sup>1</sup> into the path of movement of the bottom piece at the desired time.

The cover M, having its under side concaved to substantially fit the convexed top of the bottom piece, and having a central hole to surround the rod *a*, is suspended by the chain *e* on pulley 4, which chain, when the hopper is being filled with coal, is engaged with the link *e*<sup>1</sup>, projections *e*<sup>2</sup> then acting on the top of the cover to tip it, as in Fig. 1.

The hopper having been, say, partially charged with coal, the cover is lowered within the hopper, as in dotted lines, so as to bear on the coal, after which the bottom piece and cover are lowered together, the latter in retiring from the bottom of the hopper permitting the coal to escape into the furnace, and, if desired, insuring its discharge from one side only of the bottom piece, as when the latter is tipped, as shown. The cover is permitted to follow or descend with the coal until it reaches a position at the contracted lower end of the hopper, thus closing the hopper while the bottom piece is removed from below it. The coal having been discharged, the bottom piece is raised by the lever G, while the cover remains at the lower end of the hopper, and the convexed top of the bottom piece is elevated in contact with the concaved under side of the cover, there being very little, if any, space left between the bottom piece and cover in which to entrap gas, and when the bottom piece is seated against and again closes the bottom of the hopper the cover is again raised. Operating in this manner prevents great waste of gas now common in furnaces of this class and makes a very important saving.

It is necessary, at times, to inspect the contents of the furnace; and to do this the cover C is provided with a conical opening, *e*<sup>2</sup>, largest at the under side of the plate, and stopped



with a conical plug,  $c^3$ , loosely connected with a pivoted lever,  $c^4$ . This plug is held down in the sight-hole when the latter is to be closed—as, for instance, I have added to the lever back 5 of its pivot a short arm,  $c^5$ , to be acted upon by a wedge.

To stir or turn over the contents of the furnace-chamber with the usual long iron rod N and prevent loss of gas, I have provided the 10 cover C with a hole,  $a^2$ , and above this I have added a socketed seat composed of two plates,  $b'$   $b^2$ , between which is held the perforated ball  $m$ , the latter being free to turn or rock in the said seat as the rod N is swung or moved 15 about. The upper part of the plate  $b^2$  is provided with slots at  $n$ , (shown in heavy black at Fig. 1,) to permit the rod to enter and thus turn the bar farther than would otherwise be possible without the said slots, as will be obvious. 20 The curved slots  $n^2$  of the plate  $b^2$ , which receive screws  $n^3$  to hold the said plate in position, permit the said plate to be adjusted in order to bring the long slot  $n$  immediately below the rod N in any desired position to per- 25 mit the said rod to be inserted into the ball from any point where the person to use the rod finds it most convenient to stand.

If desired, I may provide two or more lifting devices, so as to be able at will to dis- 30 charge the coal on the hopper toward any particular part of the furnace-chamber.

I claim—

1. The hopper, its movable bottom piece, and the loose movable cover placed within the hopper to close it after the discharge of the coal, 35 combined with means, substantially as described, to raise the bottom piece to close the hopper, substantially as and for the purpose set forth.

2. The hopper and its bottom piece convexed 40 at its top, combined with the independent cover concaved at its under side to fit, or substantially so, the top of the bottom piece, substantially as described.

3. The hopper and its movable suspended 45 bottom piece, combined with the tipping device, to act upon and tip the bottom piece as it is being lowered, substantially as described.

4. The ball  $m$ , combined with the seat-plates 50  $b'$   $b^2$ , the latter being provided with a slot,  $n$ , and with slots  $n^2$ , to permit adjustment of the plate  $b^2$ , substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES W. RING.

Witnesses:

G. W. GREGORY,  
ARTHUR REYNOLDS.