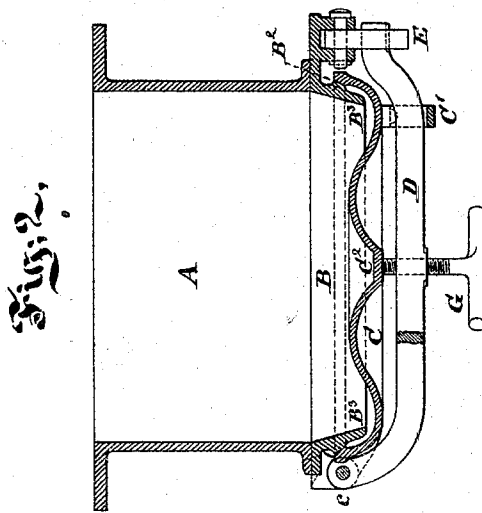
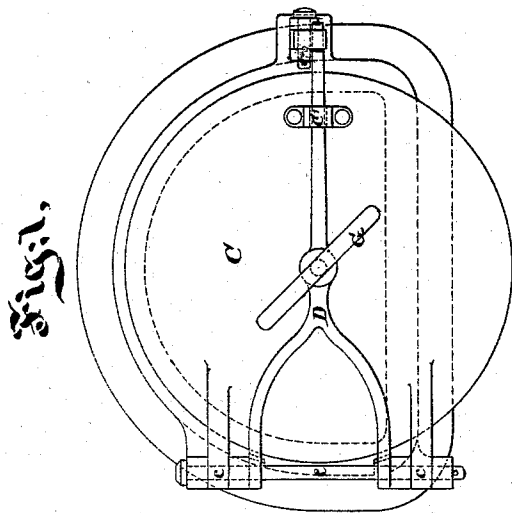
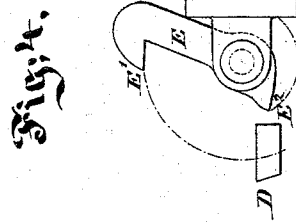
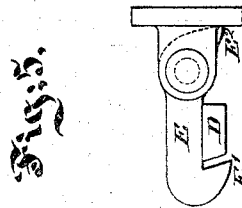
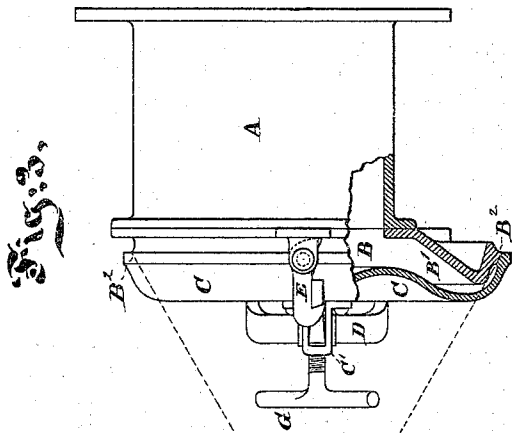


T. F. ROWLAND.
Gas-Retort Mouth-Pieces.

No. 143,998.

Patented Oct. 28, 1873.



Witnessed:

Arnold Hermann.

W. C. Day

Inventor:

T. F. Rowland,
by his attorney *J. L. Eaton*

UNITED STATES PATENT OFFICE.

THOMAS F. ROWLAND, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN GAS-RETORT MOUTH-PIECES.

Specification forming part of Letters Patent No. **143,998**, dated October 28, 1873; application filed October 15, 1873.

To all whom it may concern:

Be it known that I, THOMAS F. ROWLAND, of Brooklyn, Kings county, New York, have invented certain Improvements relating to Mouth-Pieces for Gas-Retorts, of which the following is a specification:

I make a frame-work in iron, of size and dimensions to fit over and be secured to existing mouth-pieces, and make the face or frame-work of a circular form; but this is not my invention, being set forth in those words in the specification of an English patent granted to Dunbar and Nicholson, April 6, 1868. The circular front being turned to form a cone surface, a correspondingly-turned door forms a tight fit therewith by bringing the metal surfaces directly together. I so construct and arrange the parts that the bearing-surfaces are unusually well protected against injury. The interior on the lower side is so formed that all the coke is promptly discharged on being raked out. The door is so formed that the heating and cooling does not materially increase or diminish the tightness of its fastening. A tilting catch is provided, which drops and secures the cross-bar immediately on the door being closed.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a face view. Fig. 2 is a horizontal section, and Fig. 3 a side elevation, partly in section. These figures represent the entire door and its adjuncts. The additional figures represent certain details on a larger scale. Both are side elevations. Fig. 4 shows the tilting catch raised. This is the position maintained while the door is open. Fig. 5 shows the tilting catch down and engaged with the cross-bar, but the screw has not yet been tightened.

Similar letters of reference indicate like parts in all the figures.

A is a mouth-piece, formed and mounted in the ordinary manner. B is an extra face-piece secured tightly on the front edge of the mouth-piece A. The several parts of the piece B will be indicated by B¹ B², &c. C is a door, turning on stout hinges *c*. Its section describes an

ogee curve from the periphery to the center. D is a cross-bar, turning on the same hinge pin or bolt *c*, and working a little in a keeper, C¹, bolted on the door C. E is a tilting catch, adapted to engage with and release the cross-bar D. On the inside of the face-piece B, at the bottom, the casting is formed with a continuous descent to the extreme front, as indicated at B¹. This causes the coke to be all discharged as fast as it is raked out of the mouth-piece, and provides no lodgment for any large or small pieces. A conical bearing-surface, B², is provided on the exterior of the face-piece B, and within this a projecting lip extends a considerable distance forward, as indicated by B³. The form of the door C allows this projecting lip to be received in it without contact with anything. The lip B³, by projecting forward of the bearing-surface B², carries the coke so far forward that none of the gritty particles can touch or lodge thereon. The projecting lip B³ also receives all the blows and battering action due to unskillful handling of rakes or other tools employed. The projecting lip may be battered to an indefinite extent without deranging the action. G is a tightening-screw, which performs the ordinary function of tightening the door. The ogee curve of the door not only provides an ample cavity in which the battered lip B³ may be received without contact therewith, but by its swelling first outward, and then nearer the center swelling to a corresponding extent inward, exerts an important influence on the effect of changes of temperature. Were the swells entirely outward or entirely inward, the effect due to changes of temperature, and particularly the effect of unequal heating—heating the middle part more than the periphery—would be to carry the bearing C², which receives the end of the screw G, further outward or inward, which would cause either too great strain on the parts by too much tightening the contact, or too little strain, so as to cause the joint between the door and the front piece to leak. The ogee form, rightly proportioned, causes the expansion outwardly of one part to balance the expansion inwardly of another part, so that the door being shut in a relatively cold condition maintains the same tightness after it has become heated, and also

during the intermediate stages while the center is heated more or less than the periphery. The tilting catch E deserves attention. It is formed not only with a hook-catch, E¹, at its proper working end, but with a projection, E², at its opposite end, which latter performs an important function by receiving the impact of the cross-bar D when the door is slammed, and causing the catch to be immediately tilted over, and to engage with the cross-bar.

In preparing to open the door, after the screw G is slackened, the catch E is put out of use by simply knocking its front end upward. Its gravity holds it up in the position shown in Fig. 4, and allows the door to be opened. When the retort has been emptied and recharged the simple closing of the door causes the cross-bar D to strike forcibly against the lower end E² of the catch, and this blow immediately tilts the catch, and causes it to drop into its working position, and catch hold of the cross-bar. The operator can rely upon this instantaneous engagement of the cross-bar, so that by the same movement with which he closes the door he can commence to tighten the screw G.

Some of the features here described may be used with advantage without the others; but I prefer the use of the whole, as here shown. None of the work is peculiarly delicate or fragile; and the entire improvement affords better than any means heretofore known to me a durable, reliable, and tight-fitting joint.

The door is preferably hung a little loose on

its hinges, so that it may accommodate itself perfectly to its conical seat B² on the mouth-piece. The bearing-surface on the interior of the door, and the corresponding surface B² may be turned and finished with the degree of taper here shown, or with a considerable less or greater, as may be preferred.

I do not claim a casting or frame having a circular front, and adapted at the back to match against and form a tight joint with the mouth-pieces of ordinary retorts, whether in the D form or in any other; but

I claim as my invention—

1. The lip B³, in combination with the conical bearing-surface B², and projecting forward thereof, so as to serve in guarding the same substantially as and for the purposes herein specified.

2. The circular door C, formed with an ogee section extending uniformly quite around the center, as and for the purposes herein specified.

3. The tilting catch E E¹ E², in combination with the cross-bar D, and arranged to operate relatively to the door C of the retort and the tightening means G, as herein specified.

In testimony whereof I have hereunto set my hand this 1st day of July, 1873, in the presence of two subscribing witnesses.

THOS. F. ROWLAND.

Witnesses:

JOHN W. OGDEN,
JAS. P. HALLETT.