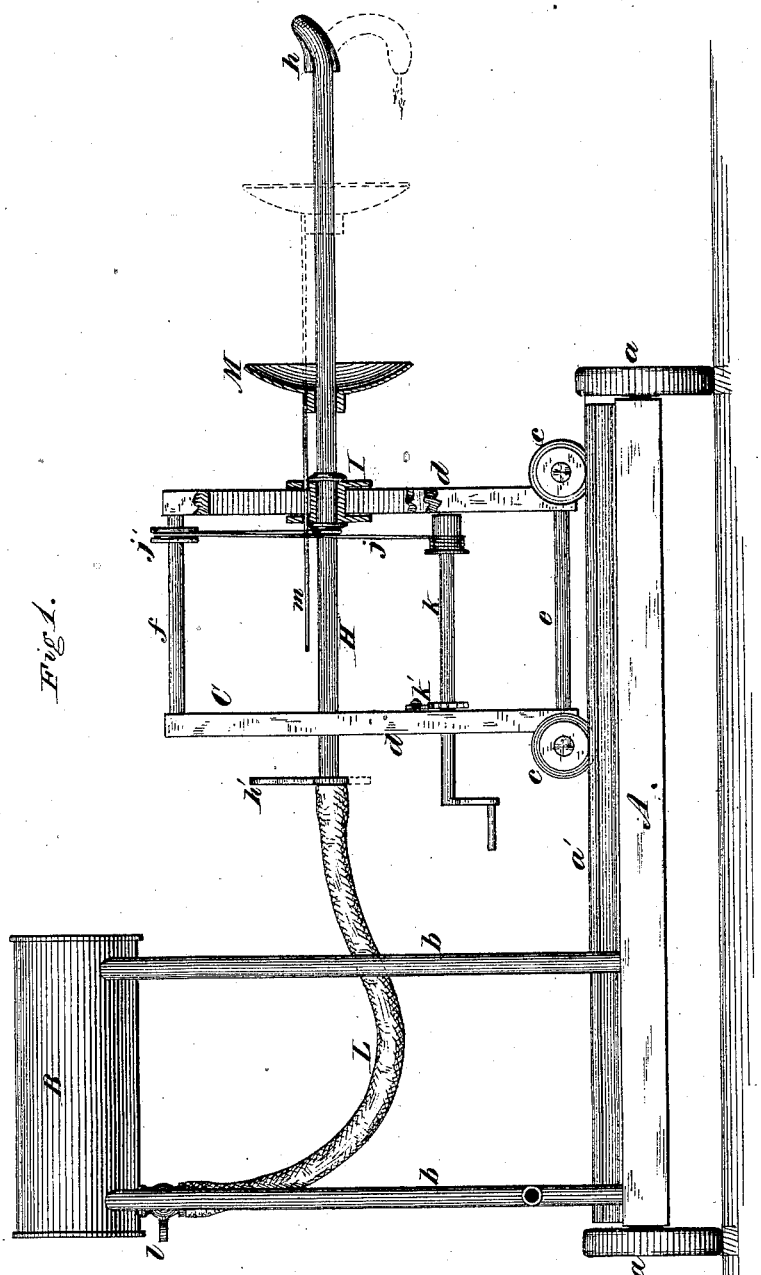
2 Sheets—Sheet 1.

A. Q. ROSS.

Gas-Retort Discharger.

No. 212,571. Patented Feb. 25, 1879.



Witnesses

Harry King

D. W. Morris

Inventor.

Abbott Q. Ross.

By L. Hill

His Atty.

2 Sheets—Sheet 2.

A. Q. ROSS.

Gas-Retort Discharger.

No. 212,571. Patented Feb. 25, 1879.

Fig 5.

Fig 3.

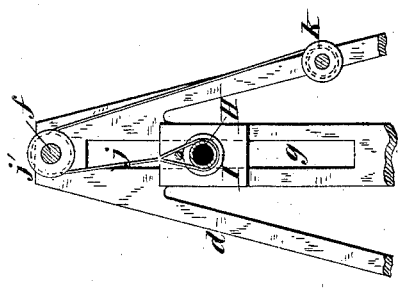
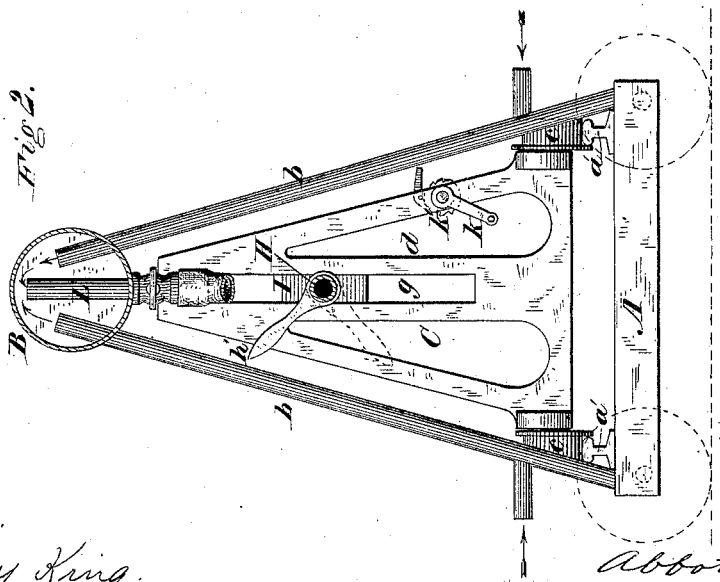


Fig 4.

Fig 2.



Witnesses.

Harry King.

S. W. Morris

Inventor

Abbott Q. Ross

By L. Hall,

His atty.

UNITED STATES PATENT OFFICE.

ABBOTT Q. ROSS, OF CINCINNATI, OHIO.

IMPROVEMENT IN GAS-RETORT DISCHARGERS.

Specification forming part of Letters Patent No. **212,571**, dated February 25, 1879; application filed September 21, 1878.

To all whom it may concern:

Be it known that I, ABBOTT Q. ROSS, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a certain new and Improved Gas-Retort Discharger; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation, showing a portion in section. Fig. 2 is an end elevation, partly in section. Fig. 3 is an elevation of a portion of the movable frame; and Figs. 4 and 5 represent details of the discharge-blast pipe.

Similar letters of reference in the several figures denote the same parts.

This invention relates to the discharge of coke and other residua from gas-retorts after the gas has been extracted therefrom, and has for its object to facilitate and expedite the operation of cleaning out the retort. By modifications and adaptations hereinafter described it is equally applicable to the discharging of double or "through" retorts and single retorts, and to the discharging of a part or all of the contents of the retort.

The invention consists, first, in the combination of a compressed-air or steam reservoir, connecting-pipes, and controlling-cock with a blast-pipe which enters the retort behind the coke and discharges a blast against it and toward the discharge-orifice of the retort, said blast being discharged directly into the chamber of the retort, and not into a surrounding guide-flue through which the coke is discharged; secondly, in a pipe adapted to properly direct the blast into the retort, in combination with a steam or air reservoir, a connecting-pipe, controlling-cock, and means for moving the blast laterally, so as to sweep the entire floor of the retort; thirdly, in a pipe adapted to enter the retort to a point behind the coke, and having a reverse bend, whereby the coke can be blown back out through the same mouth which admits the blast-pipe; fourthly, in a shield arranged upon said pipe, to prevent the coke from being forced back into the machine or against the workmen; fifthly, in making said shield adjustable on the pipe; and, lastly, in the details of construction, as hereinafter more specifically described and claimed.

In the drawings, A is a platform or frame, mounted upon wheels *a a a a*, by which it can be moved on guide-rails or otherwise back and forth in front of the benches of retorts in the gas-works. Upon said platform are arranged a pair of guide-rails, *a' a'*, at right angles to the line of movement of the platform. At the rear end of the platform is a steam or compressed-air reservoir, B, supported upon suitable standards *b b*, one or more of which may be tubular, to admit the steam or air into the reservoir from any suitable source. Mounted upon the rails *a' a'* is an upright movable frame, C, supported upon four guide-wheels, *c c c c*. This frame may be of any suitable form and construction; but I recommend the form herein shown, in which *d d'* are end standards, connected at the bottom by two rods, *e e*, and at the top by a third rod, *f*, said standards being each provided with a vertical guide-slot, *g*, which accommodate and guide the blast-pipe, H.

The blast-pipe extends through a guide-block, I, which slides in the slot *g* of the front standard, and is raised and lowered at will by means of a cord or chain, *j*, passing up over a pulley, *j'*, and down to a windlass, *k*, provided with a stop-ratchet, *k'*.

The pipe H is connected at its rear end to the reservoir B by means of a flexible telescopic or jointed tube, L, controlled by a cock, *l*, in or near the reservoir. In order that the steam may be used dry, the end of the pipe L within the reservoir extends nearly to the top of the latter, while the pipes *b*, which supply steam to the reservoir, also extend up above the bottom of the reservoir, and a suitable draw-off cock is arranged in or near said bottom, whereby any water of condensation that forms therein will not enter said pipes, but will fall to the bottom, whence it can be drawn off by said cock.

The pipe H is made of metal or of any suitable refractory material; or it may be of metal, covered or tipped at its forward end with some refractory material to prevent destruction by the heat of the retort. It should be of sufficient size to deliver a blast of steam or air not less than about two inches in diameter to

insure good work. It is made long enough to enter the retort and extend to the proper point behind the coke to enable the blast to force the latter out of the mouth or other discharge-orifice.

For single retorts (in contradistinction to double or through retorts) the forward end of the pipe should be reversed, as shown at *h*, in order that it may be projected into the rear wall of the retort and deliver the blast backward toward the mouth; and the bend may be curved laterally to make it fit the top of the retort and enter in less space.

I find it better to flatten the end of the pipe, as shown in Fig. 5, in order to produce the maximum of clearing effect.

For through-retorts, the reversed curve will not be needed, inasmuch as the coke will be driven directly forward and out of the opposite mouth.

In order to prevent the hot coke from being driven back among the machinery or against the workmen, and to direct it into the proper receptacle below the front of the retort, I arrange a shield, M, upon the pipe H; and as the pipe will not always be projected into the retort to the same distance, I adapt the shield to slide on the pipe, and provide a handle, *m*, behind it, by which the workman can slide it back and forth to adjust its position properly.

To adapt the reversed-curve pipe to sweep the whole floor of the retort, I make it capable of a partial rotary movement about its longer axis, and provide a lever or handle, *h'*, by which it can be turned. The curved end may thus be moved to one side or the other, and the blast thereby properly directed for the purpose required.

For through-retorts, with a pipe not having a reversed curve at the end, the pipe can be made to swing laterally by omitting the rear guide, *g*, and making the connection to the block I sufficiently loose for the purpose; or the end may be bent as shown in Fig. 4, in which case it may be turned to sweep the floor the same as with the reversed curve.

The reversed-curve discharge-piece may be made in the form of a separate section, adapted to be applied to, or removed from, the pipe, whereby the same pipe may be readily adjusted to clean a single or double retort.

I have hereinabove described my retort-discharger as mounted on a movable carriage and adapted for application to different retorts; but, so far as the process of discharging by steam or compressed air is concerned, it is evident that such process or mode is not confined to the use of a movable carriage or pipe, but may be applied, by means of a pipe permanently or temporarily attached to the retort itself, in such position as, when operated, to direct the blast behind and against the coke and toward the discharge-orifice of the retort.

The operation of the machine will be readily understood from the above description of the parts and their several functions.

I am aware that an apparatus has been patented for discharging grain from a ship's hold or other receptacle, in which a pipe conducts a blast of air into the hold or bin and discharges it into an open flue which surrounds the end of the air-pipe, whereby the grain is drawn into and forced through the flue, and thereby discharged from the hold or bin; but such apparatus differs from mine in having the surrounding flue, and in consequence of such difference of structure cannot be employed for the purposes of cleaning or discharging gas-retorts.

The form of the ordinary gas-retort is such as to guide the coke properly toward the discharge-orifice when my apparatus is applied and operated as hereinabove described.

Having thus described my invention, I claim as new—

1. In a retort-discharger, the combination of a blast-pipe discharging the blast directly into the retort behind the coke and toward the discharge-orifice of the retort with a steam or compressed-air reservoir, a connecting-pipe, and a controlling-cock, substantially as described.

2. In a retort-discharger, the combination of a long longitudinally-movable blast-pipe with a laterally-movable discharge end to enter the retort to a point behind the materials to be discharged therefrom, and deliver the blast directly into said retort, with a steam or compressed-air reservoir, a connecting-pipe leading from such reservoir, and a controlling-cock, substantially as described.

3. In a gas-retort discharger, the steam or air-blast pipe provided with a bent discharge end, and supported loosely in bearings, whereby the pipe may be rocked for the purpose of cleaning the retort, substantially as described.

4. In a retort-discharger, the combination of the discharge-blast pipe with a shield arranged around the same, substantially as described.

5. In a retort-discharger, the combination of the discharge-blast pipe with a shield arranged around and adjustable lengthwise of said pipe, substantially as described.

ABBOTT Q. ROSS.

Witnesses:
L. HILL,
M. CHURCH.