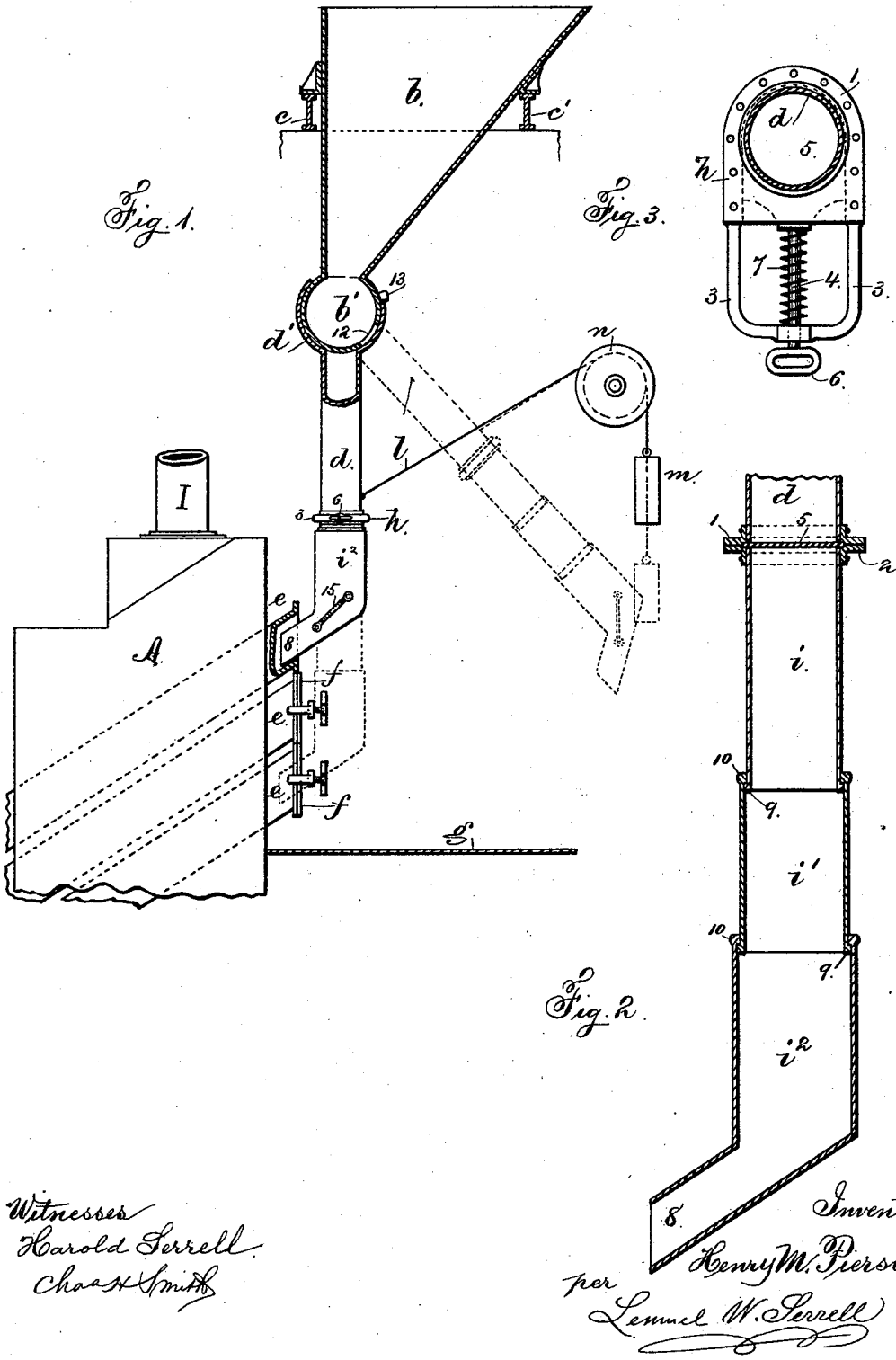


(No Model.)

H. M. PIERSON.
MEANS FOR CHARGING GAS RETORTS.

No. 539,295.

Patented May 14, 1895.



Witnesses
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UNITED STATES PATENT OFFICE.

HENRY M. PIERSON, OF BROOKLYN, NEW YORK.

MEANS FOR CHARGING GAS-RETORTS.

SPECIFICATION forming part of Letters Patent No. 539,295, dated May 14, 1895.

Application filed June 25, 1894. Serial No. 515,594. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. PIERSON, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Means for Charging Gas-Retorts, of which the following is a specification.

My present invention is designed as an addition to and improvement upon the method described and the apparatus described and shown in Letters Patent granted to me July 5, 1892, No. 478,459, and June 27, 1893, No. 500,424, and the object of my present invention is to render more perfect, efficient, economical and productive the method and apparatus therein set forth. In said patents bituminous coal is distilled continuously in inclined coal gas retorts and the same is converted into red hot coke and coal gas, which coal gas contains marsh gas and hydrogen. The coal gas is conveyed away by suitable pipes to a holder and the red hot coke is employed as fuel in the other parts of the apparatus. The feeding or charging of said coal gas retorts quickly and economically is of the greatest importance, and my present invention relates principally to a means for accomplishing this object. I employ a hopper that is supported above the bench of inclined coal gas retorts, and this hopper is filled continuously by any well known automatic coal handling and delivering mechanism. A discharge pipe and telescopic chute provided with a valve hang by a ball and socket joint from the under surface of said hopper, the valve below the ball and socket joint determining the charge to be placed in each retort at one delivery, and the telescopic chute provides for delivering the bituminous coal into the retorts of the bench as they exist one above the other, and this discharge pipe is capable of a backward and forward movement and is held back by a chain and weight over a fixed pulley, and I prefer to make an opening in the ball of the ball and socket joint so that coal is delivered into the discharge pipe over the valve when the pipe is drawn back in a state of rest, said opening being closed when the pipe is drawn forward to deliver the charge into the retorts, the valve employed being self-

closing, so that after the mouth of the chute is inserted into one of the retorts the valve is drawn to deliver the charge of bituminous coal into the retorts and is then released and closes automatically preparatory to receiving above it the next charge of coal as the pipe returns to a normal position.

In the drawings, Figure 1 is an elevation and partial section illustrating my improvement. Fig. 2 is a vertical section, in larger size, of the telescopic chute; and Fig. 3 is a sectional plan of the valve, also in larger size.

A represents the upper portion of the retort combustion chamber, and I is the chimney extending therefrom.

e represents the upper higher ends of the coal gas retorts, and f the gas-tight covers thereto.

b represents the hopper for receiving a supply of bituminous coal. This hopper is shown as supported upon I-beams cc'. These beams may be supported in any desired manner, or the hopper b may be otherwise supported if found more desirable. The bituminous coal is supplied into the hopper b continuously by any well known automatic coal handling and delivering mechanism, and as the same forms no part of my present invention it has not been illustrated, as any means that will accomplish this purpose will be sufficient.

The lower part of the hopper b is provided with a ball b' having an opening at one side, and the discharge pipe d is provided with a socket joint d' encircling the ball b' so that the discharge pipe is flexibly suspended by the ball and socket joint. This discharge pipe d is provided with a valve h which is placed at such a distance below the ball and socket joint according to its area, as will insure the proper amount of coal being received into the discharge pipe d for a single charge into the coal gas retorts. I have shown in Fig. 3 a valve suitable for this purpose and will describe the same, although I do not limit myself to this precise construction.

Two plates 1 2 are provided between the inner edges of which is an annular recess, these plates being bolted together and the plate 1 is bolted to the lower end of the pipe d, and the plate 2 is bolted to the upper sec-

tion *i* of the telescopic chute. The U arm 3 extends out horizontally from these plates 1 2, and the same is provided with a central opening for the stem 4 of the plate valve 5. The stem 4 and plate 5 are connected together and are provided with a handle 6, and around the stem 4 is a helical spring.

It will be apparent that when the handle 6 is grasped and drawn outwardly against the action of the spring 7, the plate 5 is drawn away to open up the connection between the pipe *d* and the section *i* of the chute, so that whatever coal may be in the discharge pipe *d* above the plate 5 is allowed to fall when the plate is withdrawn, and after the coal falls, the release of the handle 6 permits the spring 7 to act and force the plate 5 home to place.

The telescopic chute is shown as composed of three sections *i* *i'* *i''*, the lower section *i''* having a discharge mouth 8 which is adapted to be inserted into the ends of the inclined coal gas retorts after the removal of the gas-tight covers. The lower ends of the chute sections *i* and *i'* are provided with external rings 9, and the upper ends of the chute sections *i'* and *i''* are provided with internal rings 10, these rings forming stops against one another, as shown in Fig. 2, when the sections are extended.

A rope or chain *l* is secured at one end to the discharge pipe *d*, and its other end is provided with a weight *m*, and said rope or chain passes over a fixed pulley *n*, the object of this weight being to draw the discharge pipe and chute back into the position shown by dotted lines in Fig. 1, and this weight is sufficient to slightly overbalance the discharge pipe and chute and the charge of coal in the discharge pipe above the valve *h*; and it will be noticed that when the discharge pipe and chute are in this dotted position Fig. 1, they are in line with the opening 12 in the ball *b'*, so that in this position the coal runs freely from the hopper *b* into the discharge pipe *d* and fills the same over the valve *h*. I prefer to employ a stop 13 on the ball *b'* to limit the backward movement and insure the position of the discharge pipe *d*.

The attendant in filling any one of the bench of inclined coal gas retorts, stands on the platform *g* and grasps a handle 15 on the lower section *i''* of the chute or other convenient equivalent means, and draws the discharge pipe and chute forward toward the coal gas retorts. In so doing the socket joint *d'* shuts off the opening 12 in the ball *b'* so that the coal in the hopper cannot escape into the discharge pipe. If it is now desired to fill one of the lower retorts of the bench, the chute is of the proper length as extended. If it is desired to fill the next higher retort the lower section *i''* is elevated, and if it is desired to fill the highest retort of the bench the sections *i'* *i''* are both elevated by hand so as to introduce the discharge mouth 8 into the retort

after removing the gas-tight covers. When this discharge mouth 8 is introduced into any one of the bench of retorts, the attendant opens the valve *h* by pulling the handle 6, thereby allowing the charge of bituminous coal to slide down through the discharge mouth into the retort after which the release of the valve permits the spring 7 to close it, and the release of the pipe and chute permits the weight *m* to draw the parts back into the normal position wherein a second charge is delivered from the hopper into the discharge pipe ready for the operations to be repeated.

It is preferable to employ a ball and socket joint, discharge pipe and telescopic chute for each set or bench of inclined coal gas retorts, because it will be apparent that where there are six retorts in a bench, three deep and in pairs of two, the discharge pipe and chute can be swung slightly sidewise to provide for discharging the coal into each one of the retorts composing the bench.

I claim as my invention—

1. In an apparatus for the manufacture of gas, the combination with inclined coal gas retorts and an elevated supply hopper, of a discharge pipe, a jointed connection between the discharge pipe and the supply hopper, a valve in said discharge pipe located below the jointed connection so as to regulate the charge of coal received into the discharge pipe, and a telescopic chute in movable sections connected at the lower end of said discharge pipe, substantially as set forth.

2. In an apparatus for the manufacture of gas, the combination with inclined coal gas retorts and an elevated supply hopper, of a discharge pipe, a ball and socket joint connecting the upper end of the discharge pipe with the lower end of the supply hopper, a valve at the lower end of said discharge pipe so located as to regulate the required charge of coal to be received into the discharge pipe, a telescopic chute in three sections, and a discharge mouth for the lower section, and a chain and a device such as a weight and pulley for drawing back the discharge pipe and chute, substantially as set forth.

3. In an apparatus for the manufacture of gas, the combination with inclined coal gas retorts, an elevated hopper, a discharge pipe, a telescopic chute and a jointed connection between the discharge pipe and the hopper, of a valve composed of the plates 1 2, the U frame 3, the plate 5, stem 4, the handle 6 at the end of the stem, and the helical spring 7 around the stem for keeping the valve normally shut, substantially as set forth.

4. In an apparatus for manufacturing gas, the combination with inclined coal gas retorts and an elevated hopper, of the ball *b'* connected to the lower end of the hopper and having an opening at one side, the discharge pipe *d* and socket joint *d'*, the valve connected with the discharge pipe and the telescopic chute, the fixed pulley, chain and weight, the parts

being so constructed and arranged that when
the discharge pipe is placed substantially ver-
tical to feed the coal gas retorts, the supply
of coal from the hopper is shut off, and when
5 the discharge pipe is drawn back out of the
way the opening in the ball is exposed or
brought into alignment with the discharge
pipe so that the coal from the hopper fills

into the discharge pipe to the required ex-
tent, substantially as set forth. 10

Signed by me this 22d day of June, 1894.

H. M. PIERSON.

Witnesses:

GEO. T. PINCKNEY,
HAROLD SERRELL.