

No. 644,511.

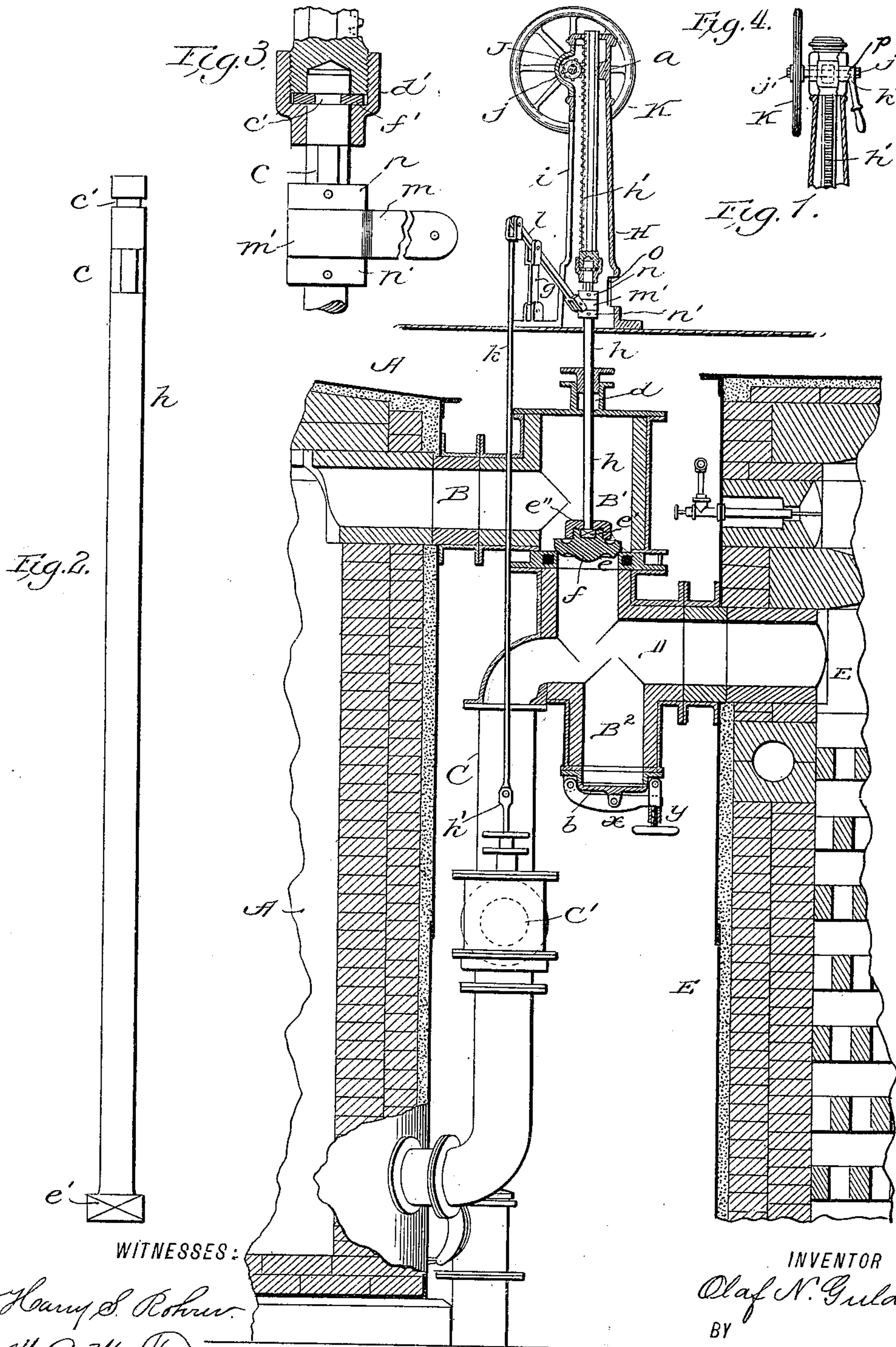
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O. N. GULDLIN.

PIPE AND VALVE CONNECTION FOR WATER GAS APPARATUS.

(Application filed Feb. 23, 1897.)

(No Model.)



WITNESSES:

Harry S. Rohrer.
W. R. W. Grayser.

INVENTOR

Olaf N. Guldlin

BY

E. B. Clark
ATTORNEY.

UNITED STATES PATENT OFFICE.

OLAF N. GULDLIN, OF FORT WAYNE, INDIANA.

PIPE AND VALVE CONNECTION FOR WATER-GAS APPARATUS.

SPECIFICATION forming part of Letters Patent No. 644,511, dated February 27, 1900.

Application filed February 23, 1897. Serial No. 624,746. (No model.)

To all whom it may concern:

Be it known that I, OLAF N. GULDLIN, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Pipe and Valve Connections for Water-Gas Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to water-gas apparatus, and more particularly to the construction of the connections between the generator and the carbureter and fixing-chamber or superheater.

One object of my invention is to prevent the deposit and accumulation of ash and cinders in the carbureting-chamber, and the consequent clogging of the brick checker-work, by providing an intercepting ash-chamber so placed in the pipe connection as to intercept and receive ash and cinder from the passing current of gas before its entrance to the carbureting-chamber.

Another object is to provide for readily clearing deposits of foreign matter—such as soot, tar, and the like—from the ball-valve and its seat in the pipe connection and collecting such matter as removed in the ash-chamber below. For this purpose means are provided for grinding the ball-valve upon its seat, and the bottom door of the ash-chamber also permits thorough inspection of ball-valve surface and the insertion of a bar or other tool through the pipe connection to scrape the valve or its seat, if necessary, to clean the same.

The details of construction of my improved devices and connections for water-gas apparatus are illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical section of the apparatus. Fig. 2 represents a side elevation of the valve-rod on an enlarged scale. Fig. 3 represents a sectional detail view, on an enlarged scale, of the connecting ends of the valve-rod and rack-bar. Fig. 4 represents a sectional elevation of the upper end of the stand and rack-bar at right angles to the view in Fig. 1.

The gas-generating furnace A and the car-

bureting and fixing chamber E are constructed in the usual manner and as described in my Patent No. 529,262. The pipe connection consists principally of the gas-outlet pipe B, leading from the top of the generator, the downtake-pipe B', the ash-chamber B², and the delivery-pipe D, leading into the carbureting and fixing chamber E. A gas-outlet pipe C, having a valve-box C', may also lead from the bottom of the generator and connect with the lower end of the downtake-pipe or with the delivery-pipe of the pipe connection, as shown in the drawings, though such pipe may be dispensed with and is not used in small generators. The connecting-pipes and ash-chamber B² are preferably lined with fire-brick, as shown. The ash-chamber B² may be made separate and bolted to the lower end of the downtake-pipe B' or the under side of the delivery-pipe D, or it may be cast with the connection forming part of the downtake-pipe B' and part of the delivery-pipe D, as shown in the drawings. It is important that the ash-chamber B² be located at the lower end of the downtake-pipe B', so that the downwardly-flowing current of gas will drive the ash and cinders into the same. I find in practice that most of the ash and cinders are deposited in the ash-chamber and that clogging of the carbureting-chamber is thus prevented. A tightly-fitting door b and fastening devices x and y are fitted to the lower end of chamber B² for removing the deposits of ash and cinder when required and also for giving access to the valve and its seat above. An annular hollow valve-seat e is connected by bolts in the downtake-pipe B', and above the same is supported the hemispherical or ball valves f, having suitable operating mechanism, as will now be described.

In the operation of the apparatus for the manufacture of gas soot and other matter become deposited upon the valve-seat e and valve f, so that the latter cannot close and make a tight joint, and it is important to be able to quickly remove such deposits and clean the valve and seat without interrupting the manufacture of gas. For this purpose I construct the valve-rod and its connections so that the valve can be quickly turned or ground upon its seat. The lower end of the valve-rod h is made with a squared head e', which is

loosely fitted in a square socket in the neck of the valve, and the parts are connected by a screw-nut e'' , whereby a loose joint is made between the ball and the stem or rod, which will permit the ball to adjust itself when brought to bear against the seat. By reason of the squared head and socket connection the valve will be turned with the stem when the latter is turned. The upper end of the rod h is joined to the rack-bar h' by a swivel-joint and for this purpose is constructed with an annular groove c' near its upper end, into which are fitted the pins or small plates f' when the parts are joined together by the screw-threaded coupler d' . The lower end of the rack-bar h' is provided with a socket into which the upper end of the rod h is fitted, and the exterior of the bar is screw-threaded for connecting the parts by the hollow coupling-piece d' . A short section of the rod h may be given a hexagon shape, as at c , for the application of a wrench for turning the rod. A short section of the rod might be made square for application of a wrench or provided with a hole for inserting a bar for turning the rod. The rod passes through a stuffing-box d at the top of the valve-chamber and is connected to the valve, as above described.

The casing or stand H incloses the valve-rod and rack-bar and is secured to the floor or other suitable support and is provided internally with a guideway a for the rack-bar. Near the top the stand H is constructed with an enlargement at one side for receiving the pinion J , which is keyed to a transverse shaft j , suitably journaled in the casing and having at its outer end a hand-wheel K for turning it and also suitable means for locking the pinion, as shown in Fig. 4. The pinion J meshes with the rack-bar h' for raising and lowering the valve. Near the bottom the stand is provided at one side with a hand-opening o for inserting a wrench to engage the hexagon portion c of the valve-rod, and it is also provided with a vertical slot i for passage of the arm or link m when the valve-rod is raised or lowered. The arm or link m is constructed with a collar m' , which is slid over the upper end of the valve-rod, and it is held in place thereon by the two collars n and n' , which are secured to the valve-rod by pins, which collars n and n' hold the collar m' from vertical displacement, but permit the rod to turn in the collar m' . It is thus seen that the valve-rod h can turn in all of its connections except at the joint connecting it with the valve. The lever l is pivotally connected to the link m , to the swinging fulcrum g , and at its outer end to the rod k , which connects at its lower end by a pivotal joint at k' with the lower valve-stem, which is inclosed in the valve-box C' for controlling the flow of gas through pipes C .

In the operation of water-gas apparatus as heretofore constructed much ash and cinder was carried by both the water-gas and the blast-gases into the carbureting and fixing

chamber or superheater, where they mixed with the oil and tarry matter present in such chambers and formed hard masses or deposits which clogged the interspaces between the brickwork and impaired the usefulness of the apparatus. I have overcome these difficulties by providing the ash-receiving chamber B^2 . As the gases and products pass from the generator through pipe B into the downtake-pipe B' they are directed downward and drive much of the ash and cinders into the chamber B^2 . The vertical walls of the downtake-pipe B' also act as a barrier to the cinder and direct it into the ash-chamber. When the chamber B^2 becomes filled, the bottom door b is swung open and the deposit quickly removed, after which the door is quickly closed, without materially interrupting the manufacture of gas. The door b being open, the seat or valve can be inspected, and if a tight joint is not effected by grinding a bar or other tool can be inserted up through chamber B^2 for scraping and detaching any deposit which may adhere to the valve-seat e or the valve f . The valve f being down upon its seat, it may be quickly turned or ground upon its seat by an attendant applying a wrench to the section c of the valve-rod, so as to clear the valve and seat at the circle of contact from deposit of foreign matter, and thereby permit close contact and a tight joint between them. The valve may be oscillated or turned back and forth on its seat until the parts are sufficiently cleaned. The matter thus detached during this operation falls into the ash-chamber B^2 below.

The valve-rod h , with valve f , and rack-bar h' can be secured in any desired position by a clutch k' , which is attached to the end of pinion-shaft j , opposite the hand-wheel K , as shown in Fig. 4. This clutch also permits the stem h to be firmly fixed in position after pressing either of the ball-valves tightly against its seat. The clutch k' consists of a cam-lever having cam-surfaces p bearing against similar surfaces at the end of the bearing for the shaft j . By turning the cam-lever the pinion may be drawn up tightly against the side of the chamber, so as to lock it, and thereby lock the rack-bar h' in any desired position. By means of this device I am able to hold either ball-valve tightly against its seat, while the other valve is held in a raised position off from its seat. The stand H instead of being a closed casing might be made simply of an open framework for supporting the pinion and its shaft to raise and lower the rack-bar.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a pipe connection for gas-generating apparatus, the combination with a ball-valve, a rod having a swivel-joint, a valve-seat and provisions for grinding the valve upon its seat, of an ash-chamber below the same for receiving deposits and having a bottom door

for admitting a cleaning-tool to clean said valve and seat, substantially as described.

2. In a pipe connection for gas-generating apparatus the combination with an annular valve-seat and a ball-valve, of a valve-rod having a swivel-joint and mechanism above the joint for raising and lowering the valve, and provisions for grinding the valve upon its seat, substantially as described.

10 3. The combination with a gas-generator and the carbureting and fixing chamber or superheater, of the pipe connection between the same, having an annular valve-seat, a hemispherical or ball valve for said seat, a valve-rod and a connected rack-bar, the valve
15 being connected to turn with the rod and the rod being connected to the rack-bar by a swivel-joint, whereby the valve may be turned or ground upon its seat.

20 4. In a pipe connection for gas apparatus, the combination with an annular valve-seat therein, of a hemispherical or ball valve, a valve-rod therefor and a connected rack-bar, a stand or casing having a guideway for said

bar, gearing for raising and lowering said bar, 25
said valve being connected to its rod by an angular joint and the rod being connected to the rack-bar by a swivel-joint and having an angular section for the application of a wrench to turn the same and the valve, for grinding 30
the latter upon its seat, substantially as described.

5. In a pipe connection for gas apparatus, the combination with an annular valve-seat therein, of a hemispherical or ball valve, a 35
valve-rod therefor and a connected rack-bar, a stand or casing having a guideway for said bar a pinion J, on a transverse shaft in said stand for raising and lowering said bar and the cam-lever *k'* for locking the pinion and 40
holding the rod with the valve either on or off its seat, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

OLAF N. GULDIN.

Witnesses:

P. PLANTINGO,
C. J. McLAIN.