No. 783,355. PATENTED JUNE 27, 1905.

J. DE BROUWER.

APPARATUS FOR DISCHARGING COKE.

APPLICATION FILED MAR. 25, 1904.

Fig. 1

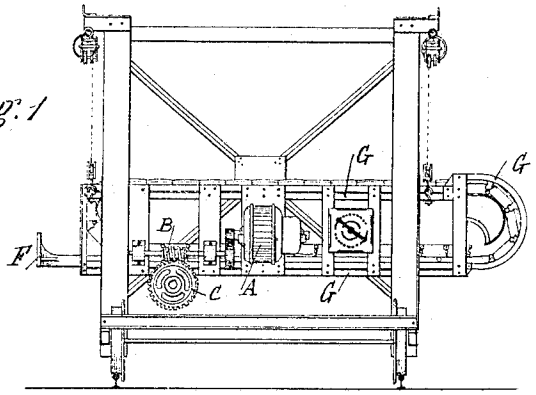


Fig. 2

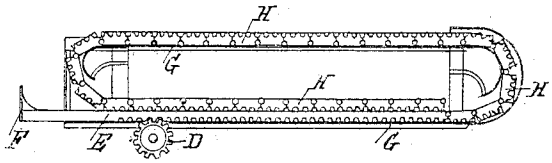


Fig. 3

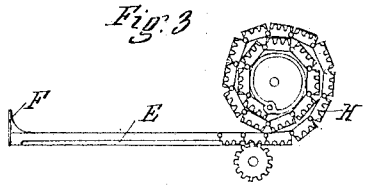


Fig. 4

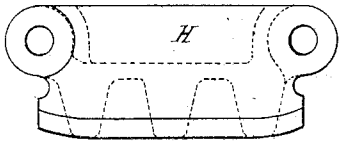


Fig. 5

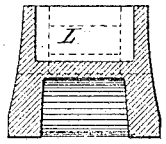
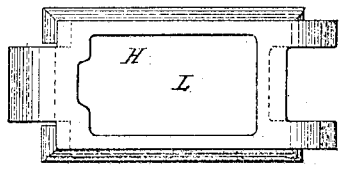


Fig. 6



WITNESSES:

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No. 793,355. Patented June 27, 1905.

UNITED STATES PATENT OFFICE.

JOSEPH DE BROUWER, OF BRUGES, BELGIUM.

APPARATUS FOR DISCHARGING COKE.

SPECIFICATION forming part of Letters Patent No. 793,355, dated June 27, 1905.

Application filed March 25, 1904. Serial No. 199,995.

To all whom it may concern:

Be it known that I, JOSEPH DE BROUWER, manager of the Bruges Gas Works, residing at Bruges, Belgium, have invented Improvements in Apparatus for Discharging Coke, of which the following is a specification.

This invention of improvements in apparatus for discharging coke from through gas-retorts relates to mechanism by which coke may be pushed out of gas-retorts which are capable of being opened at both ends and which are commonly called "through-retorts" to distinguish them from other forms of retorts in which the retort is formed with a solid end or has a division-wall built in the middle to divide the retort into two separate parts.

The object of this invention is to provide a simple and convenient apparatus for pushing the coke from or out of through-retorts in gas-works; and the chief feature of the invention consists in the construction of the pusher.

In carrying this invention into practical effect the pusher is carried in a frame adjustably pendent from a carriage arranged to run on the floor of the retort-house and at any desirable distance from the ends of the retorts or on an overhead railway extending along the front of the retorts, also at any desirable distance from the ends of the retorts. This carriage is provided with vertical guides between which the pusher and its frame can be raised or lowered according to requirements. The pusher consists of a rigid rod of comparatively short length provided with a plate at the end to act as a pushing-plate. The other end of the rigid rod is connected with a series of links which form a rearward continuation of the rigid rod or pusher. These links, as well as the rigid rod, are formed each with a recess on the top to contain water, and on the under side the rigid rod and the links have teeth and virtually form a jointed rack. The links are wound over pulleys or suitable guides in the frame or round a disk carrier, the axle of which is mounted in suitable guides or bearings in the pusher-frame. To project or withdraw the pusher, a toothed wheel gearing with the jointed rack is driven through a worm-wheel on its shaft by a worm on a shaft parallel with the frame, the worm-shaft being actuated by suitable gearing from a prime mover of some suitable form, preferably electric, or by any other source of power.

I do not confine myself to the exact details of the driving mechanism mentioned above, but use any more suitable arrangement. For instance, the worm-shaft can be provided with a friction clutch mechanism by which the proper belt and pulley to project or withdraw the pusher is brought into operation as and when required by a suitable lever, or I can make use of a reversing electric or other motor. I can also manage the gearing to drive from the motor-shaft by means of a train of spur-pinions and wheels and flexible chain to the axle of the rack-pinion before mentioned.

In order that this invention may be more readily understood and more easily carried into effect, I will proceed to describe the same with reference to the accompanying drawings, in which I show the arrangements as follows:

Figure 1 is a side view of my invention as arranged for being supported on rails laid in or on the floor and with the driving mechanism actuated by means of a reversing electric motor. Fig. 2 is a side view of the pusher in its guides in the frame. Fig. 3 is a similar view of the pusher wound up on a disk carrier in a spiral. Fig. 4 is a side view, on an enlarged scale, of a link of the jointed rack. Fig. 5 is a cross-section of the same. Fig. 6 is a plan view of the same.

Referring to Figs. 1, 2, 3, E is the rigid rod; F, the plate. E, the rigid rod, is connected at the other end to a series of links H H, jointed in such a manner that they can only fold up in one direction. Each link is formed with a recess L in the top to contain water, and on the under side there are teeth, Fig. 4, to gear with the pinion D, Fig. 2. The links are guided along the carrier G, Fig. 2, and coiled along the suitable guides of the pusher-frame G. The links can equally well be wound round a disk carrier in spiral, Fig. 3, the axle of which is mounted in suitable guides in the pusher-frame G. To project or withdraw the pusher, a toothed wheel D, gearing with the jointed rack E and H H, is driven through a worm-wheel C on its shaft by a

worm B on a shaft parallel with the frame G, the worm-shaft being actuated from a prime mover A of some suitable form, preferably electric, as shown in Fig. 1, in which case the direction of the rotation is changed by reversing the electrical current.

I claim as my invention—

1. An apparatus for pushing coke from through-retorts, consisting of a rigid rod-bar, toothed links attached thereto, forming a rack flexible in one direction only, means on which the rack may be folded up, and an operating-pinion meshing with said rack.

2. An apparatus for pushing coke from through-retorts, consisting of a rigid rod-bar, toothed links attached thereto forming a rack flexible in one direction only, curved guides on which the flexible rack may be folded up, and an operating-pinion meshing with said rack.

3. An apparatus for pushing coke from through-retorts, consisting of a rigid rod-bar, and jointed cup-shaped links attached thereto forming a flexible rack, said links adapted to hold water for the purpose of keeping the parts cool, substantially as described.

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

JOSEPH DE BROUWER.

Witnesses:
GUSTAVE TIERRY,
EMILE NUYTS.