

S. GLOVER & J. WEST.
DISCHARGING APPARATUS FOR VERTICAL RETORTS.
APPLICATION FILED AUG. 8, 1916.

1,207,019.

Patented Dec. 5, 1916.
4 SHEETS—SHEET 1.

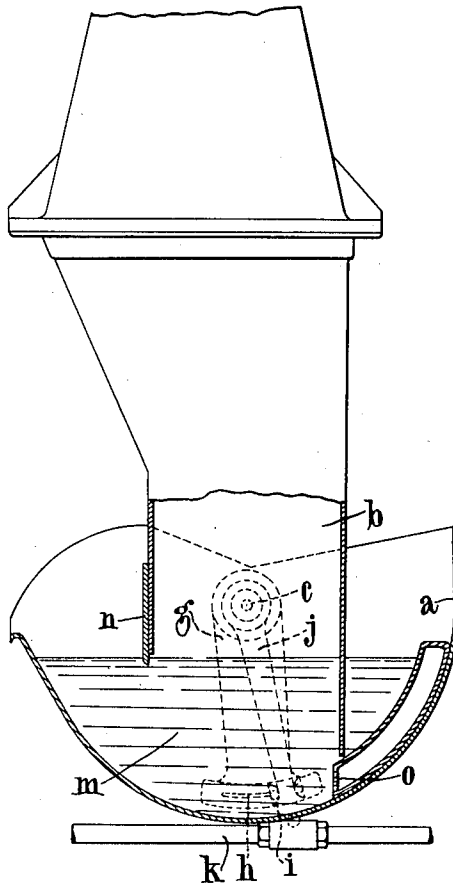


Fig. 1.

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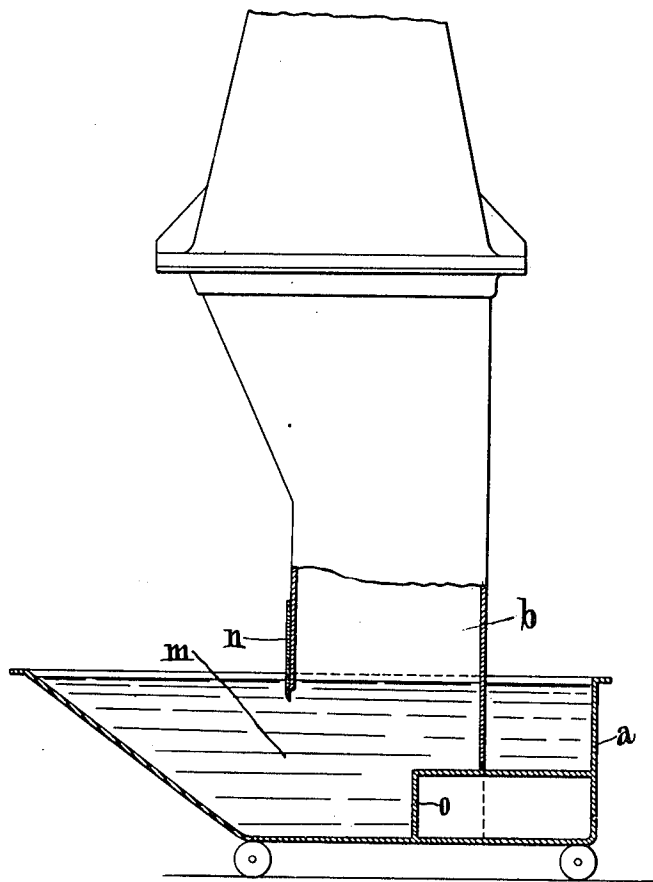


Fig. 2.

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4 SHEETS—SHEET 3.

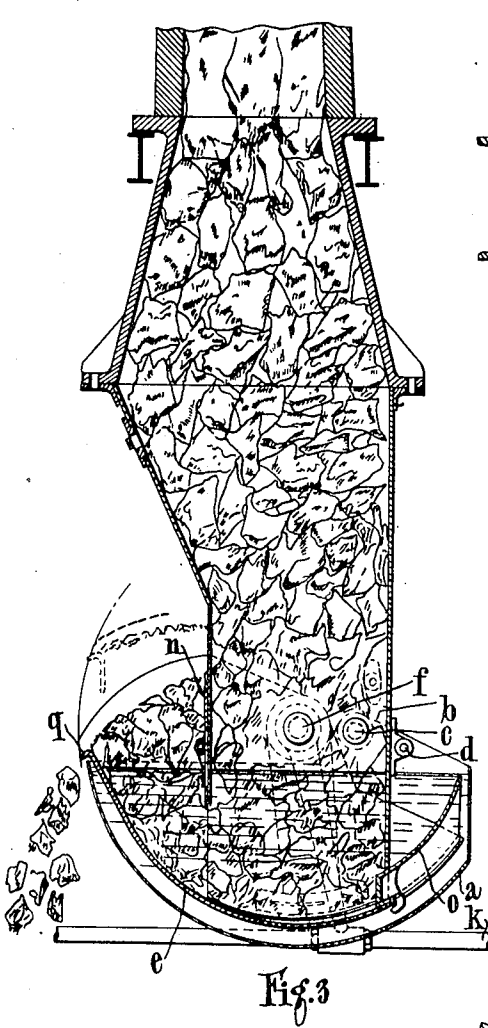


Fig. 3.

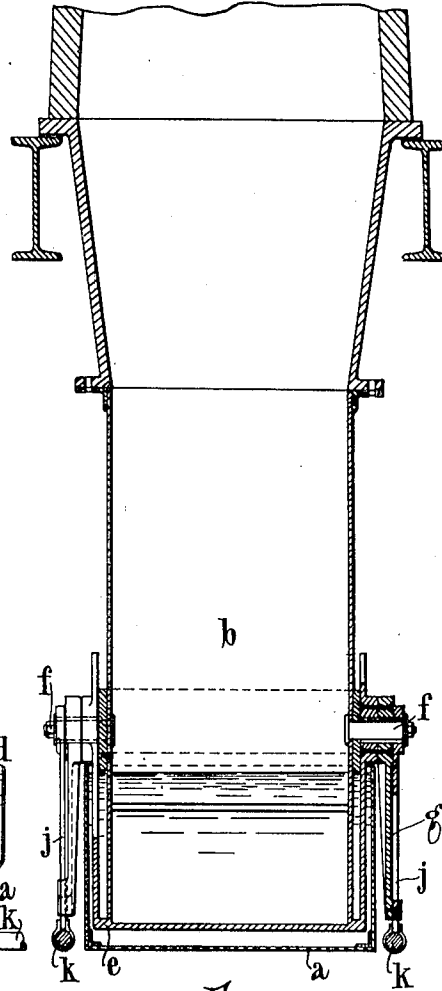


Fig. 4.

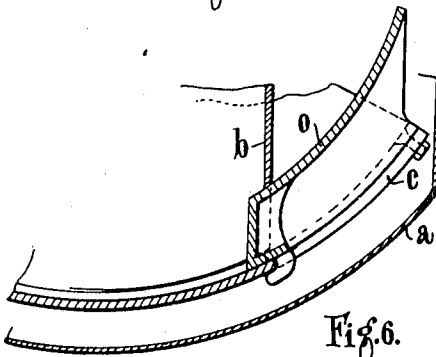


Fig. 6.

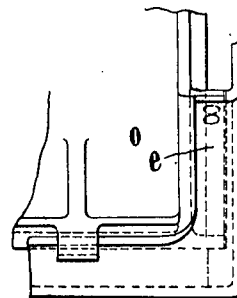


Fig. 7.

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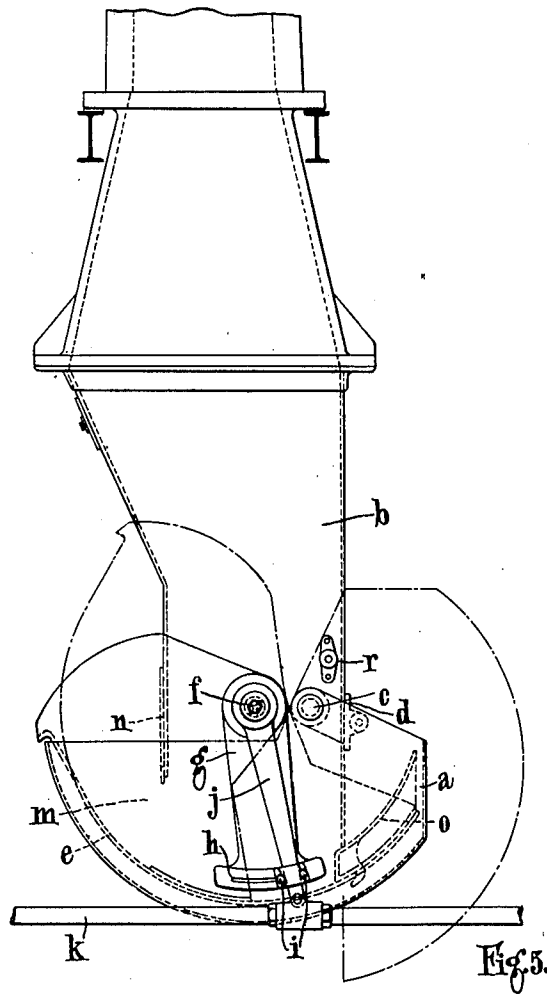
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

SAMUEL GLOVER, OF ST. HELENS, AND JOHN WEST, OF SOUTHPORT, ENGLAND.

DISCHARGING APPARATUS FOR VERTICAL RETORTS.

1,207,019.

Specification of Letters Patent.

Patented Dec. 5, 1916.

Application filed August 8, 1916. Serial No. 113,797.

To all whom it may concern:

Be it known that we, SAMUEL GLOVER and JOHN WEST, subjects of the King of Great Britain and Ireland, and residents, respectively of Olive Mount, St. Annes, St. Helens, in the county of Lancaster, England, and Alton Lodge, Park Crescent, Southport, in the county of Lancaster, England, have invented certain new and useful Improvements in Discharging Apparatus for Vertical Retorts, of which the following is a specification.

This invention relates to discharging apparatus for vertical retorts used in the continuous distillation of gas coal, shale and the like, and has for its object to provide improved means for effecting the coke discharge while maintaining a water seal at the lower end of the retort.

We have heretofore proposed to provide beneath the retort mouth a water sealed door which is oscillated or swung out of position to allow of the discharge of the retort; it has also been proposed to place a water sealed door or trough at such a distance from the retort mouth that coke falls into the same, and is discharged therefrom through the water seal by providing means for preventing the coke receiving fully the oscillatory or reciprocatory movements which are given to the trough.

Our invention comprises the combination with the receptacle, by the oscillatory or reciprocatory movements of which the discharge of coke is effected through a water seal, of a pusher-like portion attached to or formed integrally with said part and adapted to carry coke with it when it is moving in one direction of its traverse, while the part of such pusher-like portion which extends behind its forward stop-like end is shaped and adapted to serve to prevent coke from falling behind the said forward end.

Our invention further comprises the provision in combination with a trough forming a stationary water seal for the retort mouth, of a receptacle, within said trough, into which the material from the retort can fall, means for imparting an oscillatory or back and forth movement to said receptacle, and means for insuring that the receptacle shall carry coke with it when moving in one direction of its traverse.

Referring to the accompanying explanatory drawings:—Figure 1 is a sectional end elevation of retort discharging means con-

structed in one convenient form in accordance with our invention. Fig. 2 is a view similar to Fig. 1 but showing a modified arrangement of parts. Fig. 3 is a sectional end elevation, Fig. 4 a sectional front elevation and Fig. 5 an end elevation of retort discharging means constructed and arranged in another convenient form in accordance with our invention. Figs. 6 and 7 are detail views to be hereinafter referred to.

The same reference letters in the different views indicate the same or similar parts.

In the application of our invention illustrated at Figs. 1 and 2 to a receptacle *a* forming a water sealed closure for the open lower end of a vertical retort *b* or an extension of same, the said receptacle *a* being reciprocated or oscillated to effect the discharge of the coke from the retort in a known manner, we provide said receptacle with a pusher-like portion *o* which may extend from side to side of the trough and work beneath the open end of the retort; or it may be of just sufficient width to be capable of passing within the retort through a recess in one of the walls thereof. The forward end of said pusher-like portion acts to insure that when the receptacle *a* is being moved to withdraw coke from the retort it shall carry coke with it and not be dependent upon the friction between receptacle and coke for the said withdrawal. The upper or top surface of said portion *o* may be shaped to correspond with the path through which the receptacle is moved and thus prevent coke from falling behind the forward end. Thus, if the receptacle *a* is reciprocated with a straight line motion, as shown in Fig. 2, the top of the raised portion may be flat and in a plane parallel with the line of motion of the receptacle, while if the receptacle moves in an arc of a circle as shown in Fig 1, where the receptacle is supported on trunnions *c* on the retort or its extension, then the said upper or top surface may be shaped as a segment of a cylinder having its axis coincident with the axis of rotation of the receptacle. The pusher like portion *o* aforesaid may be formed integrally with the receptacle *a* or be attached thereto in any convenient manner.

The means for oscillating the receptacle *a* are described in detail with reference to the form of apparatus illustrated in Figs. 3 to 7 of the drawings.

The lower end of the retort preferably has one side only cut away as at *m* to provide an opening, the amount of which may be adjusted by the sliding door *n*, through which the coke from the retort can gain free access to the receptacle *a*.

In the modified arrangement shown in Figs. 3 to 7, we support the trough *a* around the mouth *b* of the retort upon trunnions *c*, a pin or stud being passed through the trough into the bracket *d* for locking the trough in its service position. Within said trough is provided a receptacle *e* carried by trunnions *f* upon the retort or an extension thereof and adapted to be oscillated by any suitable means. In the illustrated example, arms *g* are fitted to the receptacle *e* at the boss portion, said arms having slots *h* therein to receive adjustable stops *i*. Further arms or levers *j*, freely supported one at each side of the trough upon the pins *f*, pass between said stops and are rocked or oscillated by a rod *k* from suitable mechanism (not shown). The stroke of the receptacle *e* is regulated by adjusting one of the stops *i* relatively to the other in the slot *h* so as to vary the amount of lost motion between the arms *j* and *g*. The receptacle *e* is provided with a pusher-like portion *o* acting in the same manner as the same part in the Figs. 1 and 2 arrangements. The pusher-like portion *o* is preferably made detachable from the rest of the receptacle so that it can be removed from position when full access is required to the lower end of the retort. The discharge edge of the receptacle *e* has a turned-over ledge *q* and extended sides for preventing coke from dropping into the water trough and for limiting the discharging area to the aforesaid discharge edge. When the receptacle moves out of the trough, as shown in dotted lines in Fig. 3, it carries coke with it; further coke then discharges down the retort. As the receptacle returns, a portion of the coke is forced over its delivery edge and may be received by any suitable means. The side of the retort mouth opposite to the aperture *m* prevents the coke from following the movement of the receptacle *e* as it returns to its original position in the water seal.

With the arrangement aforesaid, the water trough insures a constant level of water around the retort mouth notwithstanding that the rear edge of the receptacle *e* may be continuously lower than the upper end of the opening in the retort through which the coke discharges into the receptacle.

When it is desired to gain access to the retort for scouring or other purposes, the trough *a* is turned to the position shown in dotted lines in Fig. 5 and is held therein by inserting a pin or stud through a hole in the side of the trough and into the bracket

7. The receptacle *e* is also turned in the opposite direction to the trough *a*, as shown in Fig. 5, and the detachable part *o* thereof removed, the driving levers or arms *j* having been detached from the rods *k*.

We may vary the details of our device to suit any particular circumstances or requirements.

Having now described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. In discharging apparatus for vertical retorts, the combination with the open lower end of a retort, one side of which also is open, of a receptacle disposed beneath said lower end, means imparting back and forth movement to said receptacle, a water seal for the retort, and pusher-like means upon the receptacle for positively forcing material from the retort discharging mouth, as set forth.

2. In discharging apparatus for vertical retorts, the combination with the lower end of a retort, the bottom and one side of which are open, of a receptacle disposed beneath said lower end, means imparting back and forth movement to said receptacle, means for varying the amplitude of such back and forth movements, the said receptacle having an extended pusher-like portion thereon, and a water seal for the retort, as set forth.

3. In discharging apparatus for vertical retorts, the combination with the lower end of a retort, the bottom and one side of which are open, of means for adjusting said side opening, a receptacle beneath the retort, means imparting back and forth movement to said receptacle, means for varying the amplitude of said back and forth movements, a pusher-like part upon said receptacle the front end of which acts to push material from beneath the retort while its rearward part prevents material falling behind said front end, and a water seal for the retort, as set forth.

4. In discharging apparatus for vertical retorts, the combination with the discharging portion of the retort having its bottom and one side open, of a receptacle disposed beneath said discharging portion so that the material in the latter rests thereon, a trough disposed around said receptacle and providing a water seal for the open portion of the lower end of the retort, means imparting back and forth movement to said receptacle, and pusher-like means upon the receptacle for positively forcing material from the retort discharging mouth, as set forth.

5. In discharging apparatus for vertical retorts, the combination with the discharging portion of a retort having its bottom and one side open, of a receptacle disposed beneath and fulcrumed upon said discharging portion so that the material in the latter rests thereon, a trough disposed around said

receptacle and providing a water seal for the mouth of the discharging portion of the retort, the said trough being fulcrumed upon the latter, means imparting back and forth movement to said receptacle, and pusher-like means upon the receptacle for positively forcing material from the retort discharging mouth, as set forth.

6. In discharging apparatus for vertical retorts, the combination with the discharging portion of a retort having its bottom and one side open, of a receptacle disposed beneath said discharging portion so that the material in the latter is supported thereby, means imparting back and forth movement to said receptacle, a detachable pusher-like part upon said receptacle the front end of which acts to push material from beneath the retort, while its rearward part prevents material from falling behind said front end, and a trough disposed around said receptacle and providing a water seal for the open portion of the lower end of the retort, as set forth.

7. In discharging apparatus for vertical retorts, the combination with the discharg-

ing portion of a retort having its bottom and one side open, of means for adjusting said side opening, a receptacle disposed beneath said discharging portion so that the material in the latter is supported thereby, means imparting back and forth movements to said receptacle, means for varying the amplitude of said back and forth movements, a detachable pusher-like part upon said receptacle, a trough disposed around said receptacle and forming a water seal for the open portion of the lower end of the retort, said receptacle and trough being both fulcrumed upon the discharging portion of the retort, and means for holding both receptacle and trough clear of the bottom of said discharging portion, as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

SAMUEL GLOVER.
JOHN WEST.

Witnesses:

ARTHUR HUGHES,
HILDA HUGHES.