J. WEST.

DISCHARGING MACHINE FOR GAS RETORTS

APPLICATION FILED DEC. 9, 1904.

898,537. Patented Sept. 15, 1908.

4 SHEETS—SHEET 1.

Fig. 2.

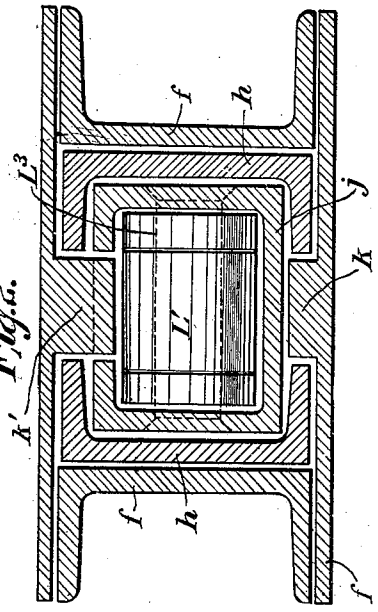


Fig. 4.

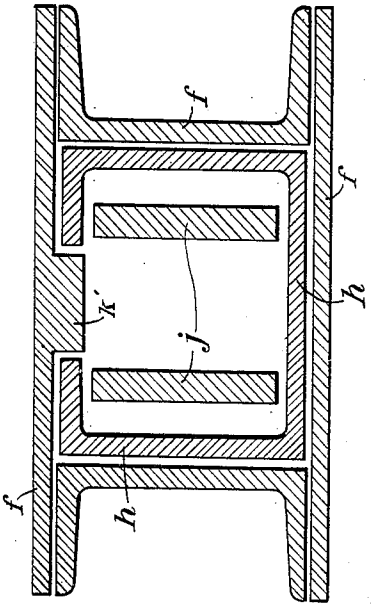


Fig. 1.

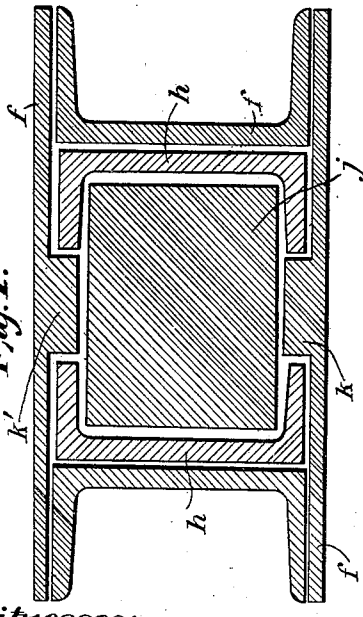
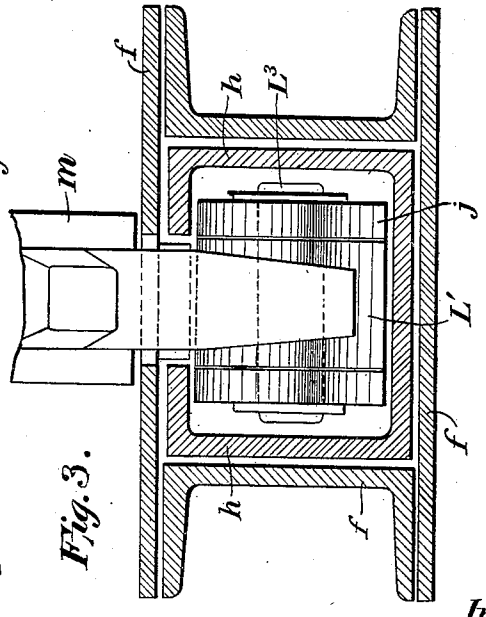


Fig. 3.



Witnesses;

James C. Herron.

C. A. Williams

Inventor,

John West

per

John H. Roney

his Att'y.

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4 SHEETS—SHEET 2.

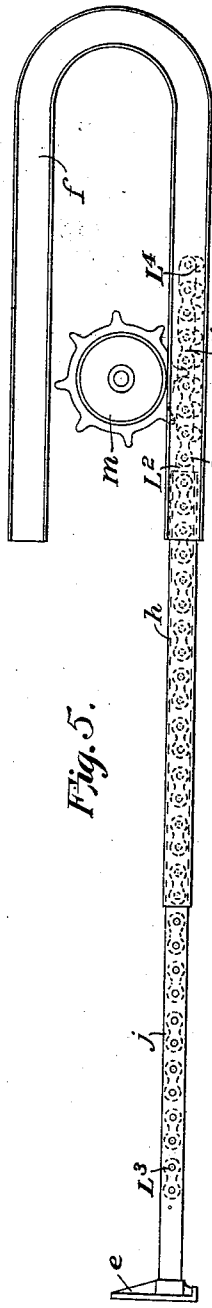


Fig. 5.

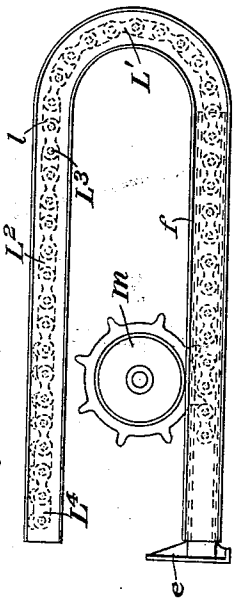


Fig. 6.

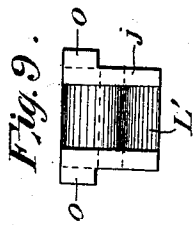


Fig. 9.

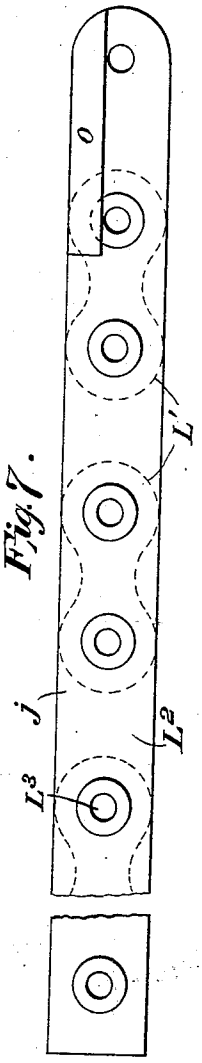


Fig. 7.

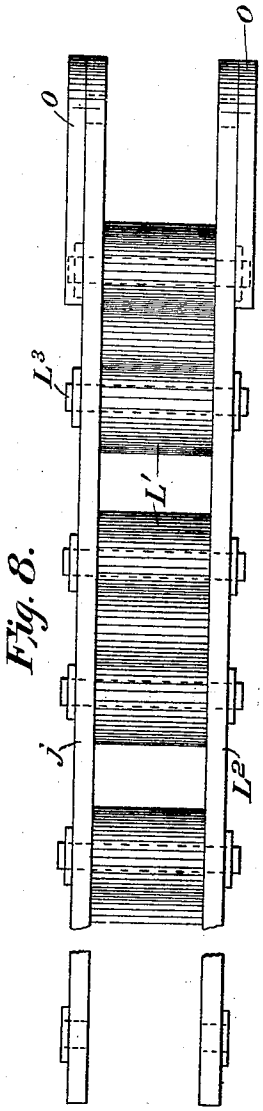


Fig. 8.

Witnesses;
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4 SHEETS—SHEET 3.

Fig. 10.

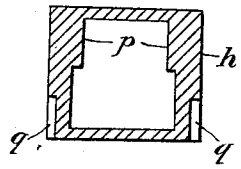


Fig. 11.

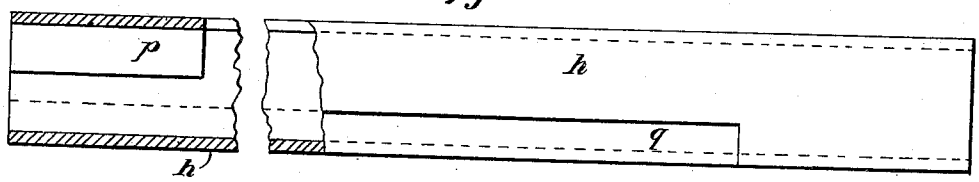
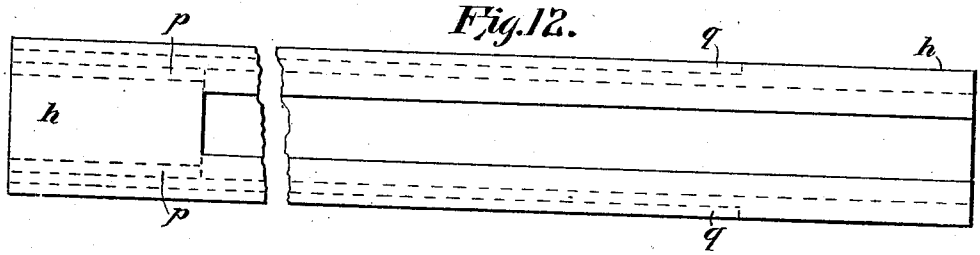


Fig. 12.



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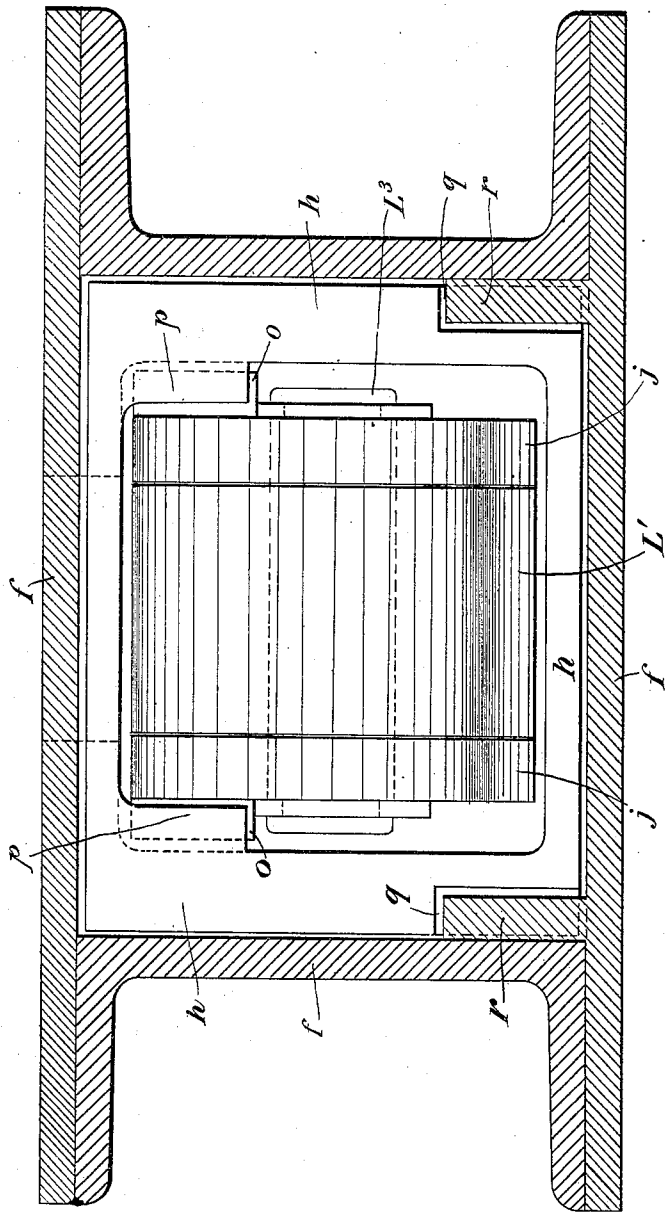
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APPLICATION FILED DEC. 9, 1904.

898,537. Patented Sept. 15, 1908.

4 SHEETS—SHEET 4.

Fig. 13.



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UNITED STATES PATENT OFFICE.

JOHN WEST, OF SOUTHPORT, ENGLAND.

DISCHARGING-MACHINE FOR GAS-RETORTS.

No. 898,537. Specification of Letters Patent. Patented Sept. 15, 1908.

Application filed December 9, 1904. Serial No. 236,210.

To all whom it may concern:

Be it known that I, JOHN WEST, a subject of the King of Great Britain and Ireland, residing at The Firs, Park Road, Southport, in the county of Lancaster, England, have invented certain new and useful Improvements in Discharging-Machines for Gas-Retorts; 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.

My invention relates to a telescopic ram forming part of a machine for discharging gas retorts.

In this invention the ram is constructed of several parts which telescope into each other so that the overall length of the ram when out of the retort is less than when in the retort and the parts forming the telescopic portion of the ram are extended to cause the head of the ram to make a stroke of sufficient length to enable the whole of the coke to be discharged out of the full length of the retort.

The telscopic ram consists of a stationary outer tube of suitable section and forming a track into which slides a part of the ram constructed of two lengths of channels or other suitable section parallel with each other and forming a box into which slides a rod or bars carrying the ram head and having spaces or gaps between them to receive two feather strips which are attached to the inside of the stationary outer tube for the pu pose of keeping a chain hereafter described rigid when the ram is being extended.

To one end of the rod or bars which carry the ram head is attached the end of a block link chain which passes round or engages with the teeth of a sprocket chain wheel placed in a fixed position on the machine, this wheel on being rotated in one direction drives the chain into and along the channel section or box tube; and the chain being attached to one end of the rod carrying the ram head pushes the rod or inner section of the ram together with its head forward, the rod sliding along the inside of the channel section or box tube, and when the inner section of the ram has made its full stroke along this tube it engages into same and the continued rotation of the sprocket driving chain wheel causes the chain to further push the inner ram forward, and carry along with it the next section of the telescopic ram until the full stroke of the ram head is completed and the coke is discharged out of the retort. The stationary outer tube is the fixed part of the frame or track in which the movable parts forming the telescopic ram slide.

In order to bring the ram head back to the machine after it has discharged a retort the direction of the running of the sprocket chain driving wheel is reversed and the chain is pulled in the opposite direction when the telescopic parts of the ram close up into each other and into the stationary outer tube or track.

The tail of the chain may be made to pass over a sprocket or plain chain wheel and stored in a box or tube, the chain wheel acting as a guide for leading the chain to the box or tube, but this guide sprocket or plain chain wheel may be dispensed with if the path of the chain track is carried round in a semi-circular path as shown on the accompanying drawing; or the chain wheel may be used for the purpose of driving the chain as well as acting as a guide for the same. Motion may be given to the chain driving wheel by any convenient method of driving gear actuated by either a compressed air, gas, oil or electrically driven motor fitted to the machine or the gear may be driven by belts, ropes, chains or shafting for communicating power from a motor or engine not necessarily fixed on the machine but apart from same.

As the motion of the discharging ram is a reciprocating motion, provision is made in connection with the gear for automatically stopping or reversing the driving gear at each end of the stroke of the ram when being driven into and out of the retort, and this automatic reversing gear may when required put into action a brake to cause the parts to come to rest on the machine without shock. The machine will be provided with gear for adjusting the ram to the level of the retorts and will be provided with traveling gear for propelling it along rails fixed parallel with the retort stack.

In the foregoing description the telescopic ram consists of a fixed outer tube and two inner rams with a chain attached to the innermost ram, but the number of parts forming the complete ram and which parts telescope into each other may be increased if it is desired to still shorten the overall length of the rams when same are telescoped into each other and out of the retort, the length of the

chain regulating the length of the complete stroke of the ram; the parts untelescoping and following the chain with the inner ram and head when the latter makes the outstroke towards the retort and telescoping into each other as the chain returns to the tube or box in which it is stored.

In order that this invention may be readily understood I will proceed to describe the same in reference to the accompanying drawings in which I show the application of my invention to a gas retort discharging machine.

Figure 1 is a cross section through the fixed outer tube showing the telescopic rams in same. Fig. 2 is a cross section through the fixed outer tube showing the chain which is connected to the rod or bar to which is attached the ram head. Fig. 3 is a cross section through the fixed outer tube showing the telescopic rams in same and a portion of the sprocket chain driving wheel in gear with the chain which is attached to the bars to one end of which is attached the ram head. Fig. 4 is a cross section through the fixed outer tube showing the telescopic rams. Fig. 5 shows the parts forming the telescopic ram extended as when the ram is in the retort. Fig. 6 shows the parts forming the telescopic ram closed up in the fixed outer tube and chain track. Fig. 7 is a side elevation, Fig. 8 is a plan and Fig. 9 is an end view of the rod to one end of which is attached the ram head and the other the chain; the rod being constructed as in Figs. 3 and 4, with two side bars having distance pieces of the same form as the blocks of the chain and riveted or fixed to the bars at the same pitch as the block links of the chain. Fig. 10 is a cross section, Fig. 11 is part sectional and side elevation and Fig. 12 is a plan of one of the telescopic rams into which the chain and the rod carrying the ram head slides; these figures show the stops which engage with the rod carrying the ram head and the fixed outer tube when the telescopic parts are extended. Fig. 13 is an enlarged cross section showing the other parts of the telescopic ram in same.

Referring to the drawings, e is the ram head; f is the stationary outer tube which is fixed to the machine; h is the telescopic ram constructed of two lengths of channels or other suitable section parallel with each other and forming a box into which slides a rod or bars j carrying a ram head e and having spaces or gaps between them to receive two feather strips k and k' which are attached to the inside of the stationary tube f. One end of the outer tube f is curved over as shown in Figs. 5 and 6 and continued to the length required to store the chain. This continuation of the outer tube f forms a box or tube into which the tail end of the driving chain l is stored when the telescopic parts of the ram are closed up in the outer tube. The chain l is constructed of a block link L′ with side links L^2 joined together with pins L^3.

m is the sprocket chain driving wheel gearing into the distance blocks L′ riveted between the bars j and j and the chain block L^2.

The chain l is attached to the end of the rod or bars j.

In order to describe the action of discharging a retort by the machine and assuming that the rod j, ram h and chain l are closed up in the fixed outer tube f, a rotary motion is given to the chain driving wheel m gearing into the block links L′ causing the chain l to push the rod j and head e forward towards the retort; the ram h remaining stationary until the projections o come into contact with projections p of the ram h when the continued forward motion of the chain causes the ram h to be drawn out of the fixed outer tube f until at the end of the stroke it is prevented from leaving the tube f by the stops q coming into contact with the stops r; the chain driving wheel m is then reversed in the direction of running and the rod j closes up into the ram h and pulls same into the outer tube f. The tail end of the chain will store itself in the continuation of the outer tube f as shown in Figs. 5 and 6. During the foregoing action of the machine the coke will be pushed forward in front of the ram head and discharged out of the retort at the other end.

The object of the feather strips k and k' formed with the outer tube f is to form guides for the chain blocks and keep the chain rigid when the ram h is extended out of the tube f. The tail end of the chain is provided with special side links L^4 which are deeper to take the place of the bottom feather strip k in the alternative arrangement in which the ram h is made constructed of channel section as shown in Figs. 3, 4, and 5. The chain l which pushes the rams forward and into the retort and drags them back into the tube on the machine is always protected and kept rigid by being inclosed in either the telescopic parts of the ram or in the outer tube f.

What I claim and desire to secure by Letters Patent is:—

1. In a mechanism for discharging coke retorts the combination of a plurality of hollow sections one adapted to telescope in the other, a chain located in said sections, a ram head attached to said chain, means to move or drive said chain, means to connect said chain with said hollow sections respectively whereby the movement of said chain is transmitted to said sections, and means associated with one of said sections to hold the chain rigid and thereby prevent buckling of the chain in the act of discharging the coke.

2. In a mechanism for discharging gas retorts, the combination of a number of telescopic sections, a chain operable in said sec-

tions, means associated with one of said sections to hold the portion of said chain adapted to project out of the forward end of said sections rigid, a ram head connected to said chain, means to connect said chain with said hollow sections respectively, and means to move or drive said chain.

3. A machine for discharging gas retorts, comprising a ram head, a flexible element for moving said head, a rigid hollow guide in which said flexible element is adapted to travel, means associated with said guide to render said flexible element rigid during its passage through said guide, and means for actuating said flexible element.

4. In a device for discharging gas retorts, the combination of a number of hollow telescopic sections, a ram head, a flexible pusher, connected to said ram head, and adapted to move backward and forward in said hollow sections, means to move said pusher, means to connect said hollow sections respectively with said pusher whereby the movement of said pusher is transmitted to said sections, and means associated with one of said sections to hold the chain rigid and thereby prevent buckling of the chain in the act of discharging the coke.

5. In a device for discharging gas retorts, the combination with a hollow rigid guide, of a plurality of telescopic sections arranged therein and movable relatively thereto, a ram head connected to one of said sections, a flexible pusher arranged in said guide for actuating said ram head, connections between said sections for actuating the latter from the flexible pusher, means for operating the flexible pusher, and means associated with said guide to hold the pusher rigid and thereby prevent buckling of the pusher in the act of discharging the coke.

6. In a device for discharging gas retorts, the combination with a hollow rigid guide one end of which is extended, of a plurality of telescopic sections arranged in said guide and movable relatively thereto, a ram head connected to one of said sections, a flexible pusher arranged in said guide for actuating said ram head, and adapted to be stored in the extended end of the guide when the device is in its contracted position, connections between said sections for actuating the latter from the flexible pusher, means for operating the flexible pusher, and means associated with said guide to hold the pusher rigid and thereby prevent buckling of the pusher in the act of discharging the coke.

In testimony whereof I have affixed my signature, in presence of two witnesses.

JOHN WEST.

Witnesses:
ERNALD SIMPSON MOSELEY,
MALCOLM SMETHURST.