

(No Model.)

2 Sheets—Sheet 1.

J. H. WALKER.
RETORT CHARGING DEVICE.

No. 406,409.

Patented July 2, 1889.

FIG. 1.

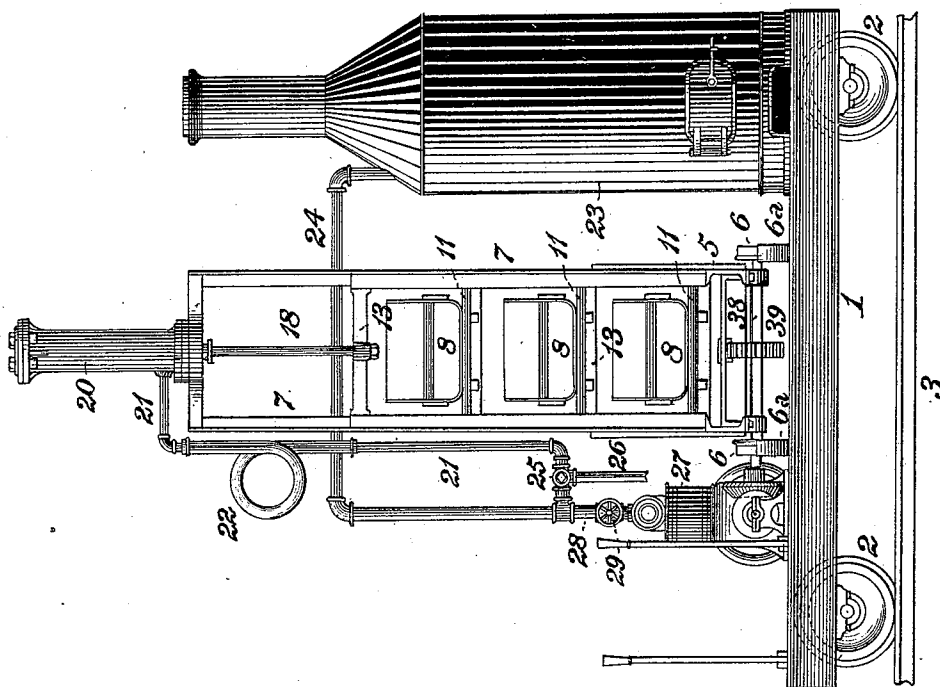
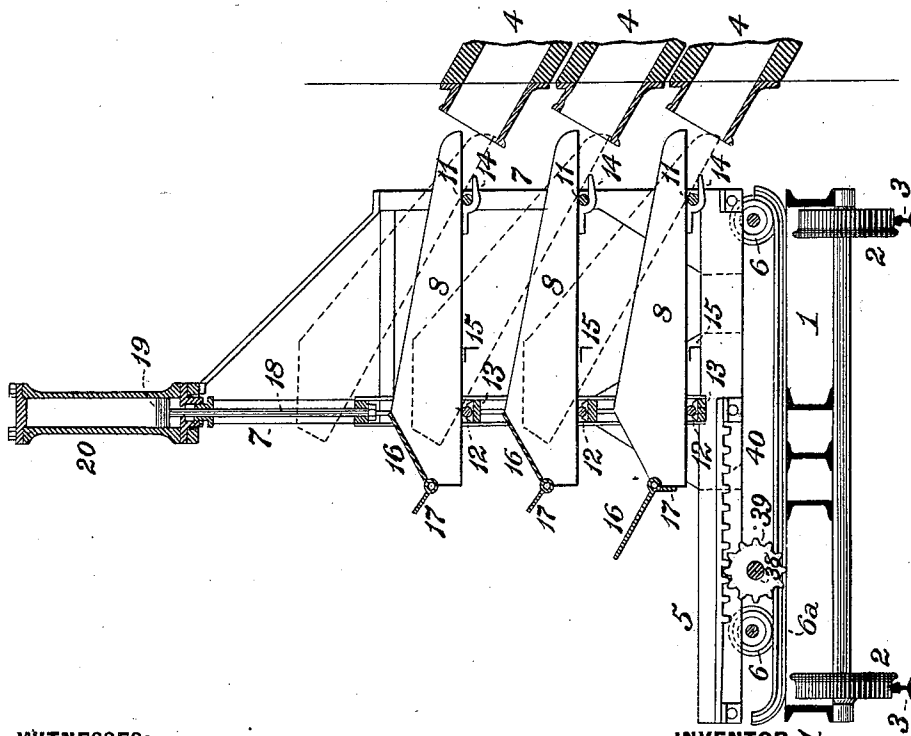


FIG. 2.



WITNESSES:

John W. Bell
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INVENTOR, J. H. WALKER.

James H. Walker
by *George H. Christy*
Att'y.

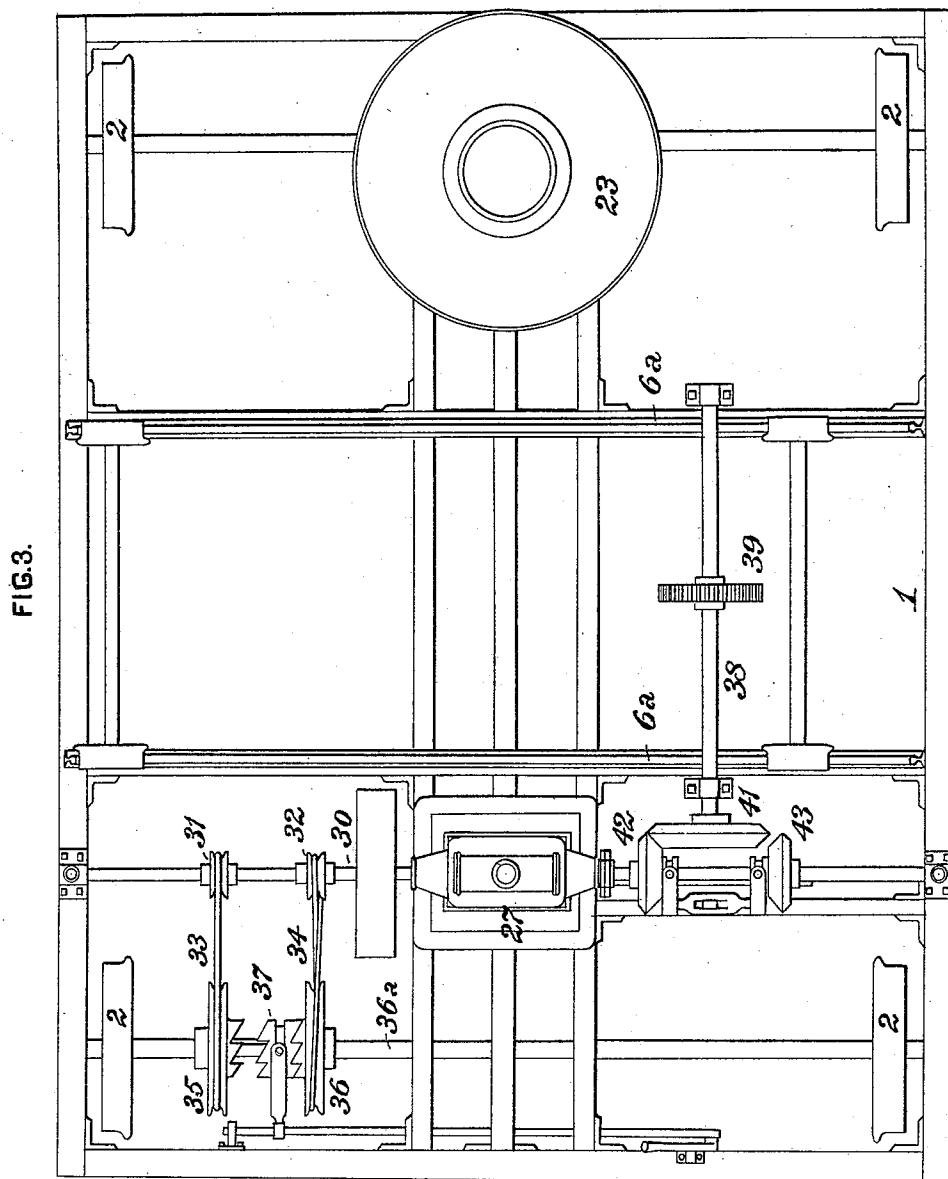
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2 Sheets—Sheet 2.

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RETORT CHARGING DEVICE.

No. 406,409.

Patented July 2, 1889.



WITNESSES:

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 F. E. Gaither

INVENTOR,

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UNITED STATES PATENT OFFICE.

JAMES H. WALKER, OF SEWICKLEY, ASSIGNOR TO THE FUEL GAS AND ELECTRIC ENGINEERING COMPANY, (LIMITED,) OF PITTSBURG, PENNSYLVANIA.

RETORT-CHARGING DEVICE.

SPECIFICATION forming part of Letters Patent No. 406,409, dated July 2, 1889.

Application filed February 16, 1889. Serial No. 300,165. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. WALKER, a citizen of the United States, residing at Sewickley, in the county of Allegheny and State of Pennsylvania, have invented or discovered a certain new and useful Improvement in Retort-Charging Machines, of which improvement the following is a specification.

The object of my invention is to provide convenient and desirable means for mechanically charging or supplying coal or other material from which gas is to be evolved by distillation into retorts of the class which are set in an inclined or in a vertical position in retort-furnaces.

To this end my invention, generally stated, consists in certain novel devices and combinations, comprehending a main traveling carriage, a supplemental carriage adapted to traverse thereon, a series of chutes supported on the supplemental carriage, fluid-pressure-actuated tilting mechanism for raising and lowering one end of the chutes, and a motor adapted to impart either conjoined or independent movement to the carriages.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a transverse section through a retort-charging machine embodying my invention; Fig. 2, a side view in elevation; and Fig. 3, a plan or top view of the same, with floor-plate and supplemental carriage removed.

In the practice of my invention I provide a main supporting truck or carriage 1, which, in order to combine lightness and strength, is preferably formed of a channel-iron frame, as shown, and is supported on wheels 2, adapted to traverse on rails 3, extending lengthwise in a retort-house in front of a series of benches of retorts 4, which are set in inclined positions in retort-benches therein. A supplemental carriage 5 is mounted on wheels 6 and adapted to be moved transversely to the line of traverse of the main carriage 1 on rails 6^a, fixed to the latter. A vertical frame 7 is fixed upon the carriage 5, said frame serving to support a series of charging chutes or troughs 8, arranged one above another, and a tilting mechanism composed of a fluid-pressure cyl-

inder and a vertically-moving frame actuated by the piston thereof, by which the chutes are raised at one end to discharge coal into the mouths of the retorts and thereafter lowered to their normal horizontal position to be resupplied. The chutes 8 rest freely and without connections adjacent to their ends, which adjoin the mouths of the retorts, upon rods 11, fixed to the side standards at the outer end of the frame 7, which rods may be fitted with friction-rollers, if desired, and the opposite ends of the chutes are supported also freely and without connection upon rollers 12, which are journaled in a frame 13, adapted to be moved vertically on guides fixed to side standards at the inner end of the frame 7.

The chutes 8, which are each independently removable from their supports at pleasure and are independently movable in horizontal planes upon their supports, are provided with hooks or stops 14, which abut against the supporting-rods 11 when the chutes are brought into normal position for receiving a supply of the material to be charged into the retorts and from which they are tilted to deliver the same. Stops 15 are fixed upon the bottoms of the chutes to limit their traverse when drawn back to clear the mouth-pieces of retorts which are not to be charged. A receiving-plate 16 is hinged to the inner end of each of the chutes, said plates being provided with arms 17, by which the plates are held in outwardly-inclined position when swung over upon their hinges, as shown, upon the lowest chute of the series. When turned into such position, the plates 16 serve to receive and deflect into the chutes coal or other material, which is delivered from bins adjacent to which the apparatus is moved to receive its supply or which may be filled in by shoveling. When turned into normal position, as in the two upper chutes of the series, the receiving-plates are clear of and admit of supply to the chute or chutes below them.

The movable frame 13 is keyed or otherwise suitably secured to the lower end of the rod 18 of a piston 19, fitting a fluid-pressure cylinder 20, which is secured upon the top of the adjacent standards of the frame 7, and is supplied below the piston with steam or com-

pressed air through a supply-pipe 21, having a flexible section 22, so as to admit of movement of the supplemental carriage 5, upon which the cylinder 20 and its supporting-frame are mounted. In this instance the upward stroke of the piston is effected by means of steam, which is supplied from a boiler 23, fixed upon the carriage 5, through a main steam-pipe 24, with which the supply-pipe 21, which is governed by a three-way cock 25, communicates. The cock 25 in one position admits steam from the boiler to the cylinder 20, thereby effecting the upward movement of the piston 19 and connected movable frame 13, such movement elevating the adjacent ends of the chutes 8 and tilting the same into the inclined positions shown in dotted lines in Fig. 1, by which the coal in the chutes is discharged therefrom by gravity and charged into the mouths of the adjacent series of inclined retorts 4 and distributed evenly over the bed of the same. After the retorts have been charged, the cock 25 is turned into position to cut off the supply of steam from the cylinder 20 and bring the supply-pipe 21 into communication with an exhaust-pipe 26, thereby effecting the exhaust of the steam by which the upward stroke has been made from the cylinder 20 and allowing the frame 13 and chutes 8 to be returned by gravity to their former positions.

The traverse of the machine upon the rails 3, by which it is brought into proper positions for the chutes to receive their charges of coal and for charging the same into the several benches of retorts, respectively, is effected by means of a suitable motor—in this instance, a steam-engine 27—which is fixed upon the main carriage 1, and is actuated by steam from the boiler, supplied through a pipe 28, connected to the main steam-pipe 24 and governed by a valve 29. The main or crank shaft 30 of the engine 27 has fixed upon it two pulleys 31 32, from which, respectively, open and crossed belts 33 34 pass around pulleys 35 36, mounted loosely on one of the axles 36^a of the carriage 1. A clutch 37, fitted to slide on a longitudinal key or feather on said axle, is adapted to engage with coupling-jaws on either of the axle-pulleys 35 and 36, or to be disengaged from both of said pulleys, and the carriage will thereby be caused to move in either direction during the rotation of the engine by the engagement of the clutch with one or the other of said pulleys, or be allowed to remain stationary in any desired position by the disengagement of the clutch from both.

It will be obvious that, if preferred, a reversing-engine may be employed, in which case its shaft may be connected with the carriage-axle by gearing or belting and one pair of pulleys be dispensed with.

The transverse movement of the supplemental carriage 5 upon the rails 6^a of the main carriage is effected, as may from time to time be necessary, to draw the delivery

ends of the chutes 8 clear of the mouth-pieces and attachments of such retorts, as it may not be desired to charge and to return the supplemental carriage to position proper for charging other retorts of the series by means of gearing through which the rotation of the crank-shaft 30 of the engine is adapted to impart longitudinal movement in either direction to the carriage 5. To this end a counter-shaft 38, upon which is secured a spur-gear 39, meshing with a rack 40, fixed to the bottom of the supplemental carriage 5, is journaled in bearings on the frame of the main carriage 1 at right angles to the rails 6^a. A bevel friction-wheel 41, fixed upon the end of the counter-shaft 38, adjacent to the crank-shaft 30, is adapted to be brought into frictional contact with either of two bevel friction-pinions 42 43, which are fitted upon keys or feathers on the crank-shaft 30, so as to be rotated therewith and be moved longitudinally thereon by a shifting lever in the ordinary manner. The carriage 5 will be moved in one or the other direction on the rails 6^a during the rotation of the crank-shaft by the engagement of one or the other of the pinions 42 43, as the case may be, with the wheel 41, and will remain stationary when both of said pinions are moved out of engagement with said wheel.

In operation the machine is moved along the rails 3 of the retort-house by the engine into proper proximity with a coal-bin, and the several chutes 8 are successively supplied with coal, commencing with the lowest, by swinging their receiving-plates 16 outwardly and feeding the coal thereto. The machine is then moved in front of the retorts which are to be charged, the mouth-pieces of which are opened for the purpose, and, steam being admitted to the cylinder 20, the frame 13 is raised and the chutes are tilted, delivering coal by gravity into the retorts of a bench. Steam being then shut off from the cylinder, the chutes are returned to horizontal position and the machine moved in front of the next bench, where the operation is repeated.

In order to enable the machine to pass by benches which are not to be charged, the supplemental carriage 5 is moved along the rails 6^a sufficiently far to clear the mouth-pieces by bringing the bevel-gear 41 into frictional contact with the proper pinion on the crank-shaft of the engine, and is thereafter returned to position for charging another bench. Where one or more horizontal rows are not to be charged, the corresponding chute is not supplied with coal and is drawn back by hand on its supports, so that when tilted in the upward movements of the frame 13 to deliver coal from the other chutes it will be clear of the mouth-pieces and connections of the retorts which are not to be charged.

While I have illustrated the employment of a steam boiler and engine for the actuation of the tilting and traversing mechanism, the same being conveniently adapted to the

purpose, I do not limit myself to such specific construction of motive-power devices, as compressed air supplied from a reservoir on the main carriage or through flexible connections
5 from a fixed compressor or reservoir may, if desired, be used to operate the pistons of the fluid-pressure cylinder and of the motor which effects the movements of the carriage without departure from the principle and characteristic features of my invention.
10

I am aware that retort-charging machines embodying a main and a supplemental carriage, a motor and mechanism for intermittently imparting movement therefrom to the carriages, and a scoop or charging-channel
15 movable vertically by a hydraulic cylinder, were known in the art prior to my invention; and said elements, as well as, broadly, a machine in which they are combined, I hereby disclaim. I am not, however, aware of any
20 construction in which a series of tilting chutes adapted to the charging of inclined retorts and provided with appliances for receiving a supply of coal and for regulating their degree of transverse movement, as herein described and shown, have been heretofore employed.
25

I claim as my invention and desire to secure by Letters Patent—

30 1. In a retort-charging machine, the combination of a carriage, a frame fixed thereon, a fluid-pressure cylinder secured to the frame and having a piston and rod connected to a frame fitted to move vertically on the fixed

frame, and a series of tilting chutes, each supported adjacent to opposite ends upon the fixed and the movable frames, respectively, substantially as set forth. 35

2. In a retort-charging machine, the combination of a carriage, a frame fixed thereon, 40 a fluid-pressure cylinder secured to the frame and having a piston and rod connected to a frame fitted to move vertically in the fixed frame, a series of tilting chutes, each supported adjacent to opposite ends upon the fixed and the movable frames, respectively, 45 and stops fixed to the chutes in position to abut against their supports and regulate their degree of horizontal traverse thereon, substantially as set forth. 50

3. In a retort-charging machine, the combination of a carriage, a frame fixed thereto, a fluid-pressure cylinder secured to the frame and having a piston and rod connected to a frame fitted to move vertically on the fixed 55 frame, a series of tilting chutes, each supported adjacent to opposite ends upon the fixed and the movable frames, respectively, and receiving-plates hinged to the chutes at their ends adjacent to the movable frames, 60 substantially as set forth.

In testimony whereof I have hereunto set my hand.

JAMES H. WALKER.

Witnesses:

J. SNOWDEN BELL,
J. LINCOLN RALPH.