

937,829.

A. S. B. LITTLE.
RETORT CHARGER.
APPLICATION FILED MAR. 6, 1909.

Patented Oct. 26, 1909.

3 SHEETS—SHEET 1.

FIG. 2.

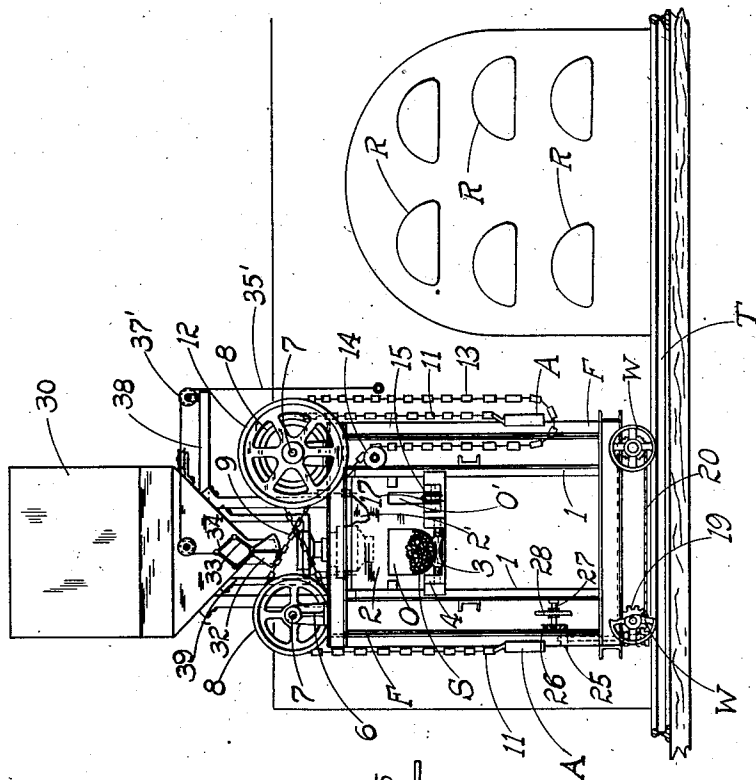
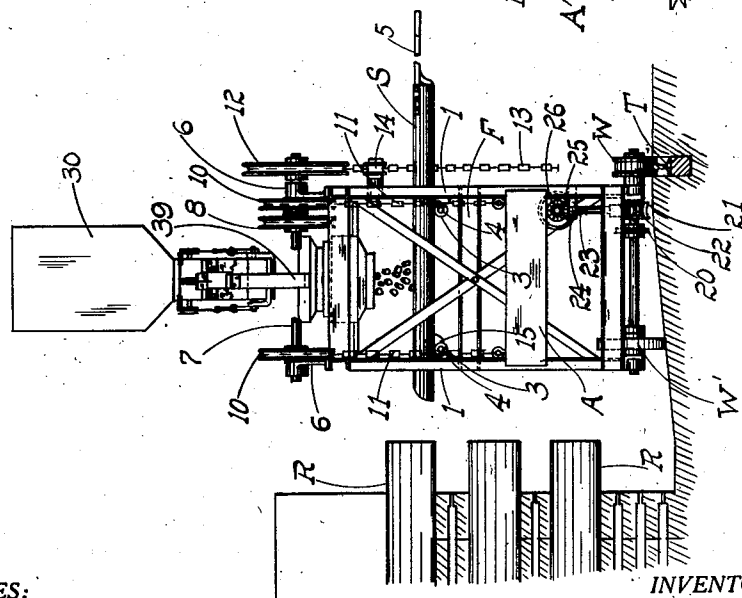


FIG. 1.



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3 SHEETS—SHEET 2.

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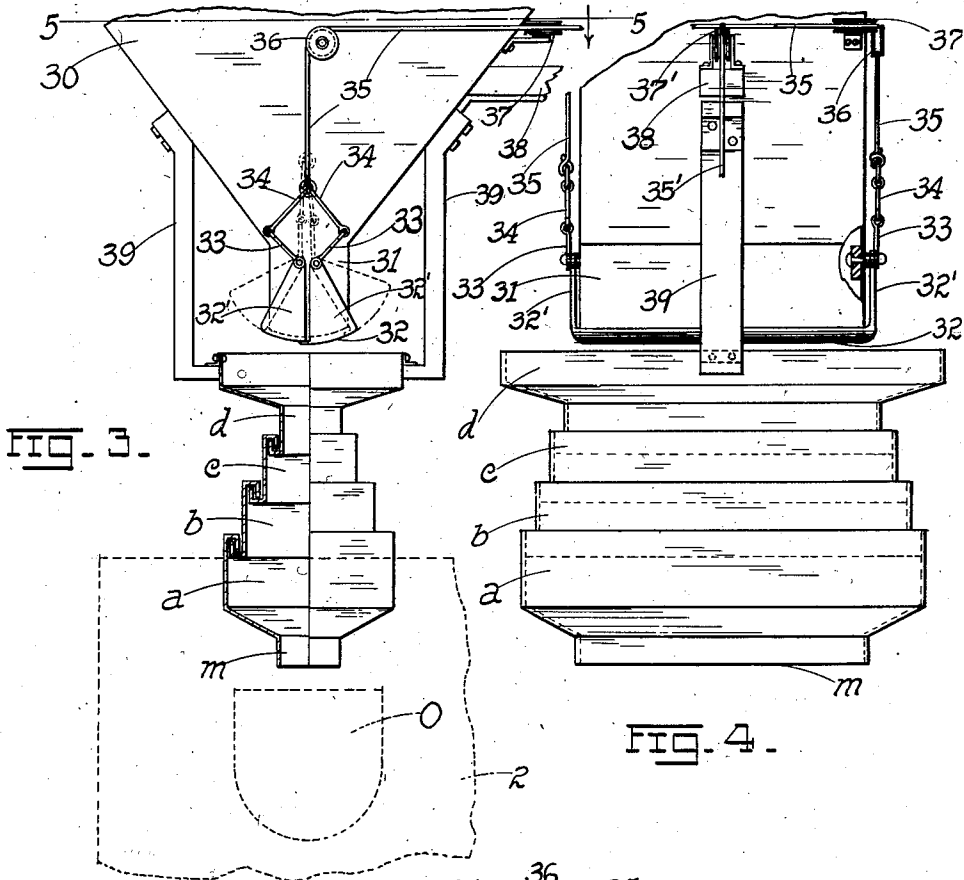
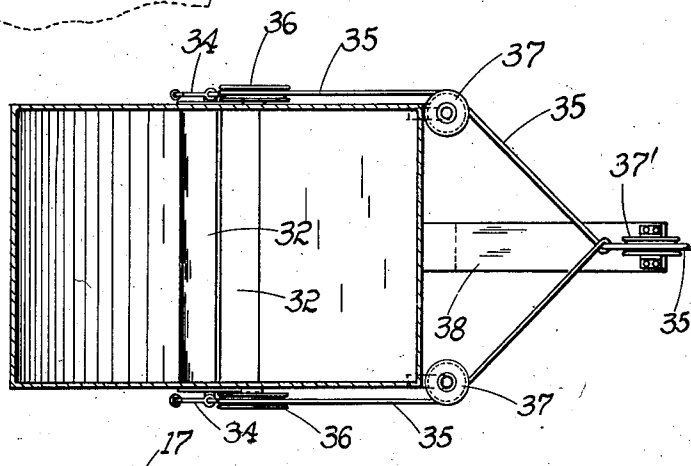


FIG. 3.

FIG. 4.

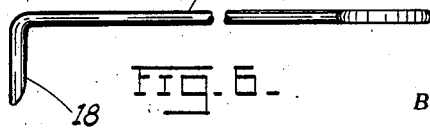
FIG. 5.



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FIG. 6.



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3 SHEETS—SHEET 3.

FIG. 7.

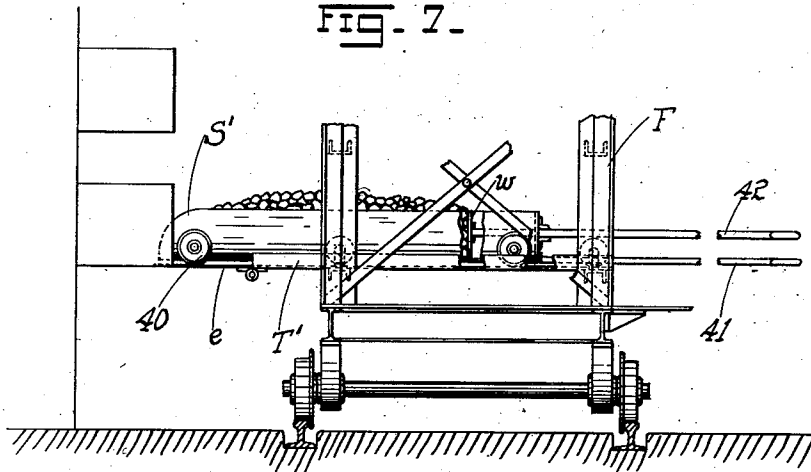
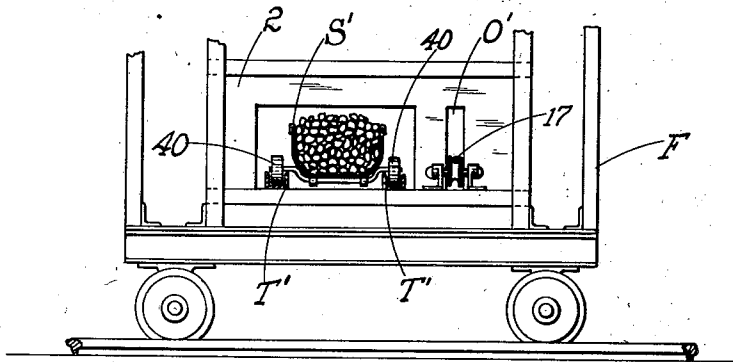


FIG. 8.



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UNITED STATES PATENT OFFICE.

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RETORT-CHARGER.

937,829.

Specification of Letters Patent.

Patented Oct. 26, 1909.

Application filed March 6, 1909. Serial No. 481,714.

To all whom it may concern:

Be it known that I, ARCHIBALD S. B. LITTLE, a subject of the King of Great Britain, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Retort-Chargers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in retort chargers; and it consists in the novel details of construction more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a frame showing one form of my invention applied to a tier of retorts; Fig. 2 is a front elevation thereof; Fig. 3 is an enlarged sectional and elevational detail of the coal hopper with telescopic extension or chute for delivering the coal to the charging scope for any elevation of the latter; Fig. 4 is a view at right angles to Fig. 3; Fig. 5 is a horizontal section on the line 5-5 of Fig. 3; Fig. 6 is a detached view of the rake or bar by which the contents of any retort is discharged; Fig. 7 is a side elevation of a modified form of scoop and clearing bar therefor; and Fig. 8 is an end elevation of Fig. 7, the front wall of the scoop and clearing and charging bars being removed.

The present invention is specially concerned with charging apparatus for horizontal retorts and primarily has for its object to provide a charger which may be operated by hand, and that under perfect control of a single workman.

A further object of the invention is to provide a charger which will insure ample protection to the workman against the heat from the retort; one which may be readily manipulated for charging and discharging; one made readily adjustable to operate in connection with any particular retort at any level from the floor; one providing means for the ready introduction of the charging scoop; one in which the scoop may be filled either by hand, or from a hopper mounted on the charging frame; and one possessing further and other advantages better apparent from a detailed description of the invention which is as follows:

Referring to the drawings, and for the present to Figs. 1 to 6 inclusive, R, R, R, represent three superposed tiers of retorts shown

herein conventionally, in front of which is a track-rail T for the travel of the adjacent wheels W of the truck of a steel frame F, the opposite side of the truck or that adjacent the retorts being provided with plain wheels W' running on the inclined floor in front of the retorts. The frame F is built up in any suitable way, out of various structural members, steel or cast iron or both, the ends of the front and rear walls of the frame being provided with upright angle-bars or guide posts 1, 1, (though of course tees, I-beams or channels might be substituted therefor), between each pair of which are free to reciprocate up and down, the shields or plates 2, 2', the rear plate 2' not being absolutely necessary as such, but might be replaced by a cross-bar of considerably smaller vertical dimensions, but yet of sufficient strength to support the charging scoop to be presently referred to. The plates 2, 2' while serving as shields against the heat radiated from the mouth of the retort while being charged or discharged, at the same time serve as means for supporting the scoop and bar by which the charging and discharging is effected. Formed in each sheet or member 2, 2' is an opening O, having a concave bottom through which the trough-like scoop S may be inserted, the bottoms of the shields being provided with rollers 3, 3, properly located for supporting the scoop so that the latter may freely travel back and forth as it is being inserted and withdrawn during the charging operation. The rollers are mounted on brackets 4, 4, secured to the shields as shown. The scoop is provided at its closed outer end with a long handle or bar 5 for purposes of ready manipulation.

In order to raise or lower the scoop to the level of any tier of retorts provision is made for raising and lowering the reciprocating shields 2, 2' guided in their bearings between the flanges of the uprights 1, 1. This raising and lowering may be accomplished in any mechanical manner, or by any suitable system of gearing, and as an example of a convenient form of adjusting means I provide the following: Mounted in brackets 6, 6 at either end of the frame F, are shafts 7 carrying at their front ends the pulleys 8, 8, over which passes the cross chain 9 whereby rotation is imparted to them simultaneously in opposite directions. At the opposite ends of the shafts 7, and also at the front end ad-

adjacent to the pulleys 8, 8, are pulleys 10, 10, over which pass chains 11, 11, one end of each chain being connected to its adjacent plate 2, 2', the opposite carrying a counter-
 5 weight A to properly balance the plate with which it is identified. At the extreme end of one of the shafts 7 is an operating pulley 12 over which passes an actuating chain 13, one lap thereof bearing on an idler pulley 14
 10 mounted to the frame F on the side of the adjacent upright 1. By drawing on the chain 13 in proper direction, motion will be imparted to the shafts 7 and pulleys 8 to raise or lower the plates 2, 2', as clearly ob-
 15 vious from the drawings. When the plates 2, 2' with their scoop-full of coal are adjusted to bring the bottom of the scoop into proper alinement with the retort, to be charged, the scoop is run into the retort,
 20 given a turn to the right when its contents are deposited into the retort. The scoop is then again filled and run into the retort and given a turn to the left and again its contents deposited in the retort. By first dis-
 25 charging the scoop in one direction and then the other, the charge is distributed evenly on the floor of the retort.

To discharge any retort I make the following provision:—Adjacent to the openings
 30 O in the plates 2, 2' are comparatively narrow openings O', at the bases of which are mounted rollers 15. Over these rollers is passed a discharging bar 17 having a terminal
 35 hook 18 by which the charge is seized at the rear of the retort and dragged out, the bar being given a proper turn to bring the hook or finger behind the charge.

The frame F may be advanced in front of the retorts on the rail T by any approved
 40 form of gearing, or even pushed along by the workman, but I prefer to equip the same with a system of gearing which makes the shifting of the charger in front of the retorts comparatively easy. This propelling
 45 mechanism or gear is as follows, that illustrated being only one example of what is possible. The shafts of the truck-wheels are provided at the front end with sprocket
 50 wheels 19 connected by a chain 20, one of the shafts having mounted thereon a worm-gear 21 which is engaged by a worm-pinion 22 at
 the lower end of a staff 23 mounted in bearing brackets 24, the upper end of the staff
 55 carrying a bevel pinion 25 meshing with a similar pinion 26 on the shaft 27 supported on the frame F. The shaft 27 is provided with a hand wheel 28, which, when turned in
 proper direction imparts the necessary rotation to the gear 21, and hence to the truck-
 60 shafts, thereby causing the frame F to travel in proper direction in front of the series of retorts. The scoop S may be filled by hand or automatically from a hopper 30 mounted
 65 on the frame F. The mouth 31 of the hopper is normally closed by a pair of gravitat-

ing swinging doors or gates 32 hinged at the ends of their terminal wings or arms 32' to the adjacent vertical walls of the mouth 31. From the pivotal pins of the gates extend
 rigid links 33, 33, which in turn are coupled
 70 to the toggle links 34 whose converging ends are secured to a cable 35 passing over a guide-pulley 36 (there being one set of links and a cable on each side of the hopper 30) whence the two cables 35 pass over guide
 75 pulleys 37 and are joined in front and connected to a single cable 35' which passes over a guide-pulley 37' secured to an arm 38 projecting from the face of the hopper. By
 drawing on the cable 35' (Fig. 3) the gates 32 will be swung apart and the coal will be
 80 discharged from the mouth of the hopper into the scoop positioned beneath the same.

In order to make it possible to fill the scoop at any elevation to which it may be
 brought for charging any given retort, I make provision for conducting the coal after
 85 it leaves the hopper mouth 31 through a telescopic chute composed of a series of sections *a, b, c, d*, the last section *d* being secured to the hopper by straps 39, the opposite
 90 ends of the first section *a* being secured to the reciprocating screens or plates 2, 2'. It is obvious that as the plates 2, 2' rise and fall for raising and lowering the scoop supported
 95 thereby for charging a retort at any given height from the floor, the bottom section *a* will rise and fall, and as it rises it will first pick up the section *b*, then *c*, and
 100 as it falls the section last picked up will first settle down or drop into a position of suspension from the section immediately above, the telescopic chute thus contracting
 or expanding according as the scoop is raised or lowered, the scoop always occupying
 105 a position immediately beneath the discharge mouth *m* of the bottom section *a*. So that by simply drawing on the cable 35' the coal may be discharged into the scoop at
 any time and for any position of the scoop. By releasing the cable 35' the gates 32 gravi-
 110 tate to a closed position and the coal is choked off. By turning the hand-wheel 28 in proper direction the frame may be advanced along the rail T in front of any set
 115 of retorts as already explained.

The scoop S is not the only form which may here be employed; and in Figs. 7 and 8 I show a form of scoop S' which is carried
 120 on roller-trucks 40 traveling on rails T', the rear ends of the rails being provided with hinged extensions *e* which may be swung into engagement with the bottom of the retort so as to close the gap between the retort
 and rear of the frame F, whereupon the
 125 scoop S' is rolled into the retort by pushing on the charging-bar 41, projecting from the front wall of the scoop. The latter is provided with a movable wall *w* from which
 extends a clearing bar 42 passing loosely 130

through the front fixed wall of the scoop. After the latter has been run into the retort with its charge, instead of being turned and dumped within the retort (an impossibility with the form of scoop S' as shown) the operator withdraws the scoop by pulling on the bar 41 and pushing on the clearing bar 42. This pushes the movable wall *w* against the charge in the scoop which charge is finally pushed or scraped off the scoop into the retort as the scoop is being withdrawn. Of course the scoop S' can be made of greater capacity than the scoop S, and a single charge is sufficient for a retort, instead of two charges necessary with the scoop S. In other respects the apparatus operates the same as that described in connection with Figs. 1 to 6 inclusive.

Having described my invention what I claim is:

1. A retort charger comprising a frame movable in front of a battery of retorts, vertically reciprocating scoop-carrying shields, mounted on the frame, a coal-hopper on the frame, and a telescopic chute interposed between the hopper and scoop and composed of a series of sections, the terminal members of the series being secured to the shields and hopper respectively.

2. A retort charger comprising a frame movable in front of a battery of retorts, vertically reciprocating shields mounted on the frame and provided with ways for the support of a charging scoop and for movement of the scoop to and from the retort, and means on the frame in coupled relation to

the shields for feeding the scoop with a fuel charge while in any of its adjusted positions.

3. A retort charger comprising a frame movable in front of a battery of retorts, vertically reciprocating scoop-carrying shields mounted on the frame, rollers thereon for the support of the scoop, a coal hopper on the frame, and a telescopic chute interposed between the hopper and scoop and composed of a series of sections, the terminal members of the series being secured to the shields and hopper respectively.

4. A retort charger comprising a frame movable in front of a battery of retorts, vertically adjustable shields mounted on the frame and provided with alining openings for the insertion and support of a charging scoop, a coal hopper mounted on the frame and provided with a gate-controlled discharge mouth, a chute composed of a series of telescopically connected sections the terminal members of the series being secured respectively, to the shields and to the hopper and receiving the coal discharged through the hopper mouth, and conducting it to the scoop for any vertical elevation of the latter, said chute expanding and contracting with the lowering and raising of the shields, respectively.

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

ARCHIBALD S. B. LITTLE.

Witnesses:

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