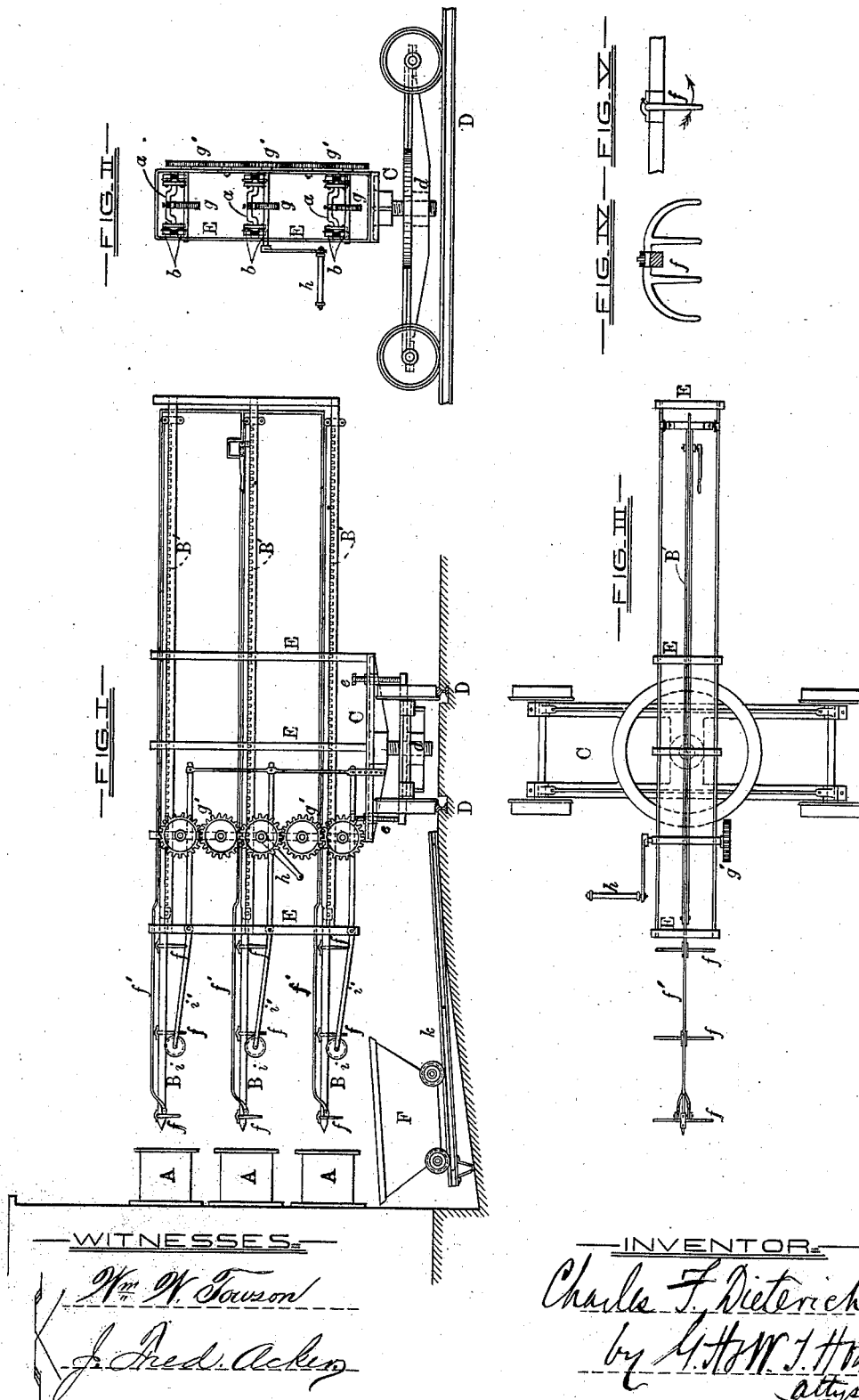
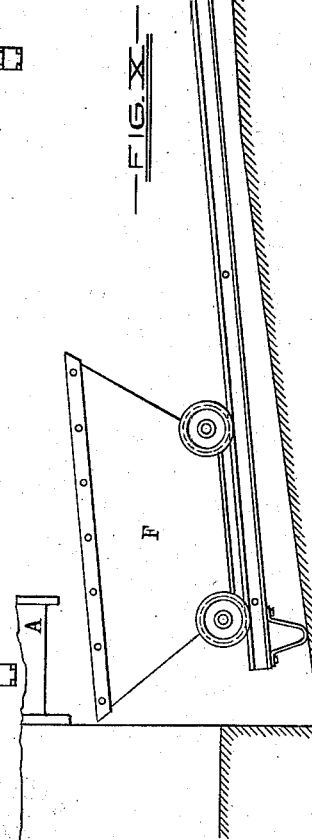
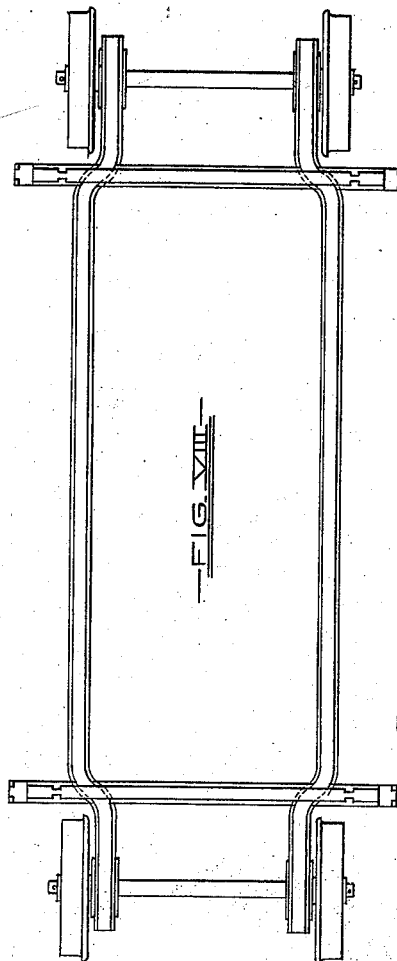
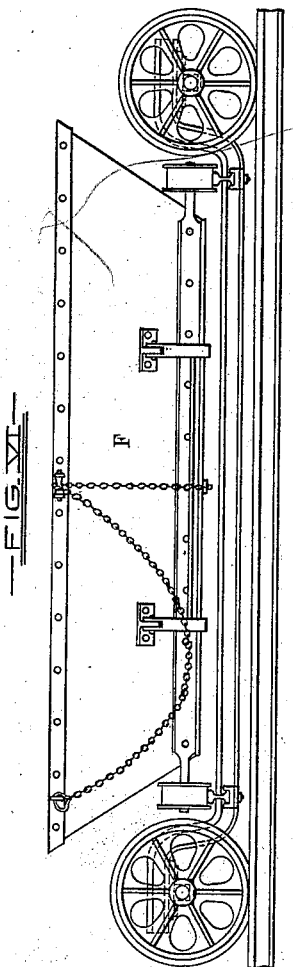
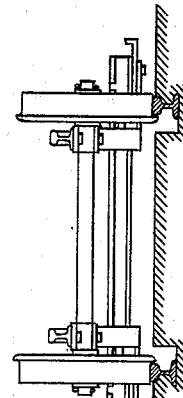
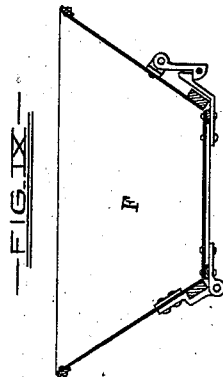
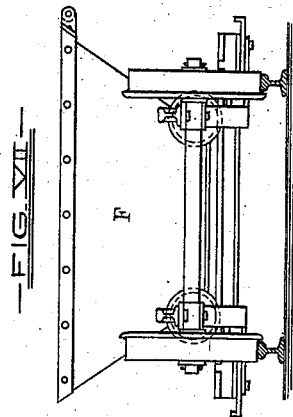


C. F. DIETERICH.
Apparatus for Removing Coke from Gas-Retorts.
No. 217,272.
Patented July 8, 1879.



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WITNESSES.
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UNITED STATES PATENT OFFICE.

CHARLES F. DIETERICH, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN APPARATUS FOR REMOVING COKE FROM GAS-RETORTS.

Specification forming part of Letters Patent No. **217,272**, dated July 8, 1879; application filed September 2, 1878.

To all whom it may concern:

Be it known that I, CHARLES F. DIETERICH, of the city of Baltimore and State of Maryland, have invented certain Improvements in Apparatus for Removing Coke from Gas-Retorts, of which the following is a specification; and I do hereby declare that in the same is contained a full, clear, and exact description of my said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to an apparatus for removing coke from gas-retorts, specially designed for use in connection with an apparatus for charging gas-retorts patented to me on the 11th day of September, 1877.

This invention consists, first, in mounting a series of extensible rakes in a frame having a central screw-pivot, which works in a nut or bearing forming part of a wheeled car, whereby when the car bearing the rakes is wheeled to the front of the retorts upon a track suitably situated the rakes may be adjusted by means of the screw-pivot to the requisite height, and by other suitable means projected into and withdrawn from the retorts, for the purpose of removing the coke therefrom.

The invention consists, secondly, in means whereby the prongs of the rakes may be swung or raised, for the purpose of facilitating their passage to the farther ends of the retorts and lowered, so as to catch the coke when said rakes are to be withdrawn, and also in the specific means employed for effecting the projection and retraction of the rakes.

Lastly, the invention consists in means whereby the rakes may be adjusted in height independently of the supporting frame-work thereof, all as hereinafter particularly described.

In the description of the invention which follows, reference is made to the accompanying drawings, forming a part hereof, and in which Figures 1 and 2 are exterior elevations of the apparatus as seen from different points of view. Fig. 3 is a plan or top view of the invention. Figs. 4 and 5 are views of parts of the improvement on an enlarged scale. Figs. 6, 7, 8, 9, and 10 are views, on an enlarged scale, of a car for carrying coke removed from the retorts to the coke yard or shed, and

which is shown on a reduced scale in Fig. 1 of the drawings.

Similar letters of reference indicate similar parts in all the views.

A A represent the outer ends of the retorts from which coke is to be removed. B B are rakes, either pivoted or secured rigidly to horizontally-moving toothed bars or racks B', supported by a wheeled car or truck, C, upon a track, D. The rakes are guided in their horizontal movement by means of cross-heads *a* and guides *b*, the latter forming a part of a frame-work, E, elevated upon the truck C. The said frame-work is adjustable in height through the medium of a central screw secured to and projecting downwardly from the same, and a threaded nut, *d*, forming a part of or secured to the body of the car or truck. Supplemental screws or bolts *e* serve to steady the frame-work and the parts of the apparatus attached thereto when the same are adjusted in height. The rakes B are fitted with swinging prongs *f*, operated by means of rods *f'*, connected thereto and leading to some part of the frame-work E, having suitable mechanism for moving them severally or jointly. Scrapers having a swinging movement may, however, be substituted for the prongs *f*, if desired, without affecting the nature of the invention. The prongs *f* have suitable stops (shown in Figs. 4 and 5) to limit their swinging motion to one direction, (shown by the arrow, Fig. 5,) to prevent any strain sustained by the said prongs while in use being transmitted to the rods or to the devices whereby they are operated. The projection and retraction of the rakes are effected by means of toothed wheels *g*, which engage with the racks, and a combined movement of the rakes is obtained by connecting the shafts carrying the toothed wheels *g* by means of other toothed wheels, *g'*, which engage with each other. A crank, *h*, attached to one of the said shafts, is used to operate the entire system of gearing described. Other mechanism, such as chain-heads and endless chains, may be employed to operate the shafts, if desired.

The rakes B are made adjustable in height to a limited extent independently of the devices before described by pivoting them to the racks B', and by resting them upon rollers

i, situated at the outer ends of levers *i'*, elevated and depressed by suitable mechanism.

The coke-hopper *F*, hereinbefore alluded to, and which forms no part of the present improvements, it being merely shown to illustrate more fully the operation of removing coke from the retorts, is, when in use, placed upon a removable track, *k*, extending from the main track to underneath the projecting ends of the retorts. The preferred construction of the said coke-hopper is shown in detail in Figs. 6 to 10, inclusive, of the drawings.

The operation of removing coke from the retorts by means of the present invention is as follows: The removable track is first put in position, and the hopper placed thereon and located as shown in Fig. 1 of the drawings. The coke-removing apparatus is then brought opposite the retorts, and the rakes, after their adjustment in height, turned so as to be in a position for entering the same. The retorts are next opened, and the rakes, with their prongs elevated, forced therein, after which the prongs are lowered and the rakes withdrawn, carrying with them the coke. By using a series of prongs or rake-heads, distributed over the length of the rakes, as shown, the bed of coke, in its removal from the retort, is divided into sections, each one of which is drawn forward by a single head or set of prongs. This arrangement prevents the coke from piling, as would be the case if the entire body were removed by a single rake-head or other analogous device.

I do not claim, broadly, mounting a rake upon a wheeled frame in a manner permitting

said rake to be raised or lowered to the plane of the retort; neither do I make a claim, broadly, to a rake-head adapted to be raised and depressed; but,

Having thus described my invention, what I claim as new, and wish to secure by Letters Patent of the United States, is—

1. The frame-work *E*, carrying the extensible rakes *B B*, in combination with the wheeled car or truck *C*, and the central screw-pivot for adjusting the frame in height and permitting it to turn upon the truck, substantially as and for the purposes herein specified.

2. The toothed racks *B'*, rakes *B*, prongs or scrapers *f*, and rods *f'*, with attendant mechanism for swinging said prongs or scrapers, combined with the supporting-frame *E* and gearing *g g'*, for effecting the projection and retraction of said racks, rakes, and their adjuncts, substantially as set forth.

3. In combination with the rakes *B*, the rollers *i* and levers *i'*, the said levers being connected at their outer or free ends by means of a bar, whereby the said rakes may be adjusted in height independently of the frame-work *E*, substantially as and for the purpose herein described.

In testimony whereof I have hereunto subscribed my name this 23d day of July, in the year of our Lord 1878.

CHARLES F. DIETERICH.

Witnesses:

WM. T. HOWARD,
THOS. MURDOCH.