

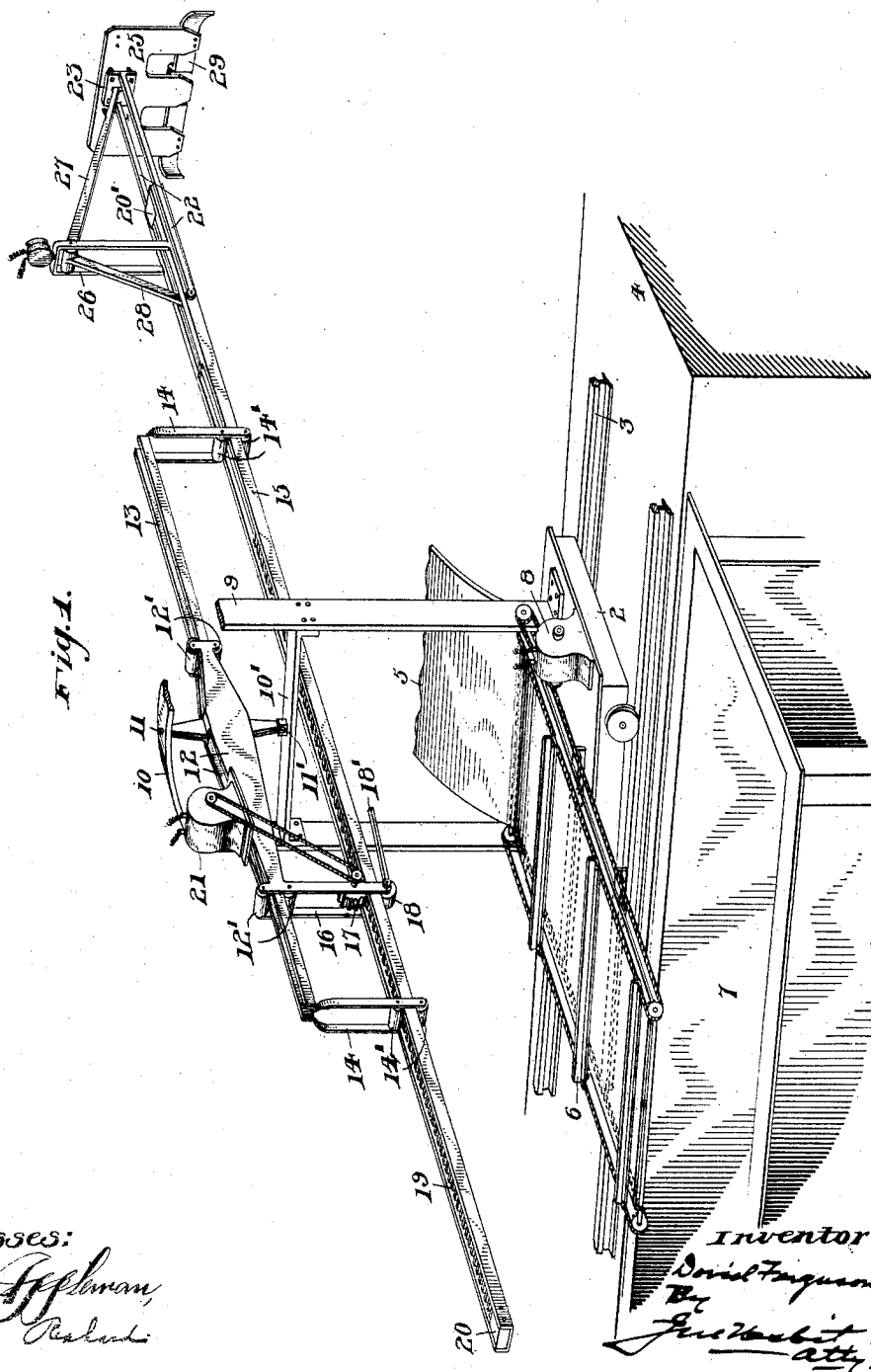
No. 883,705.

PATENTED APR. 7, 1908..

D. FERGUSON.
COKE DRAWER.

APPLICATION FILED SEPT. 19, 1907.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 2.

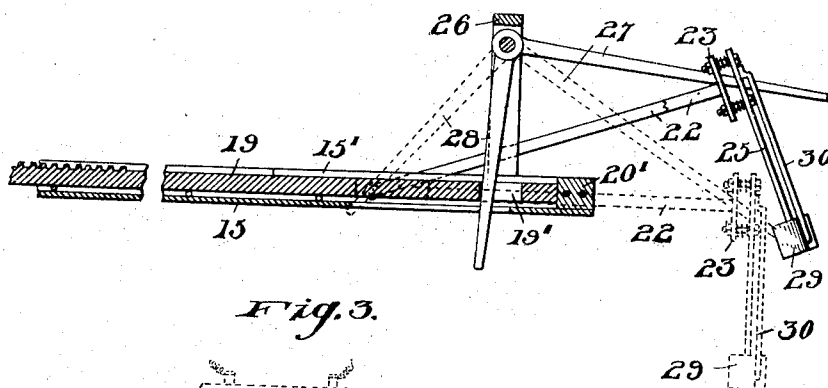


Fig. 3.

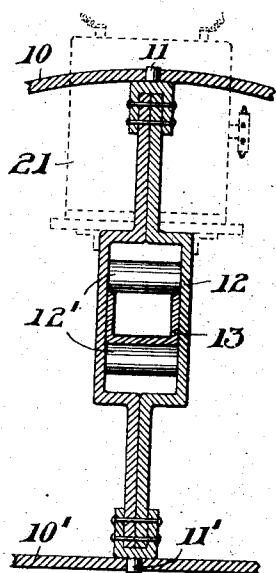


Fig. 4.

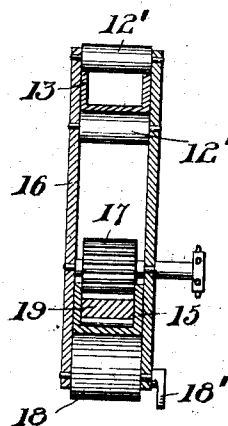


Fig. 6.

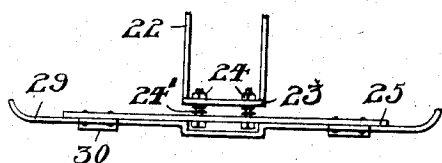
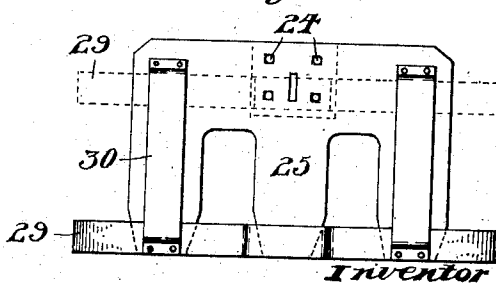


Fig. 5.



witnesses:

J. C. Hoffman,
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Inventor

David Ferguson
By J. C. Hoffman
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UNITED STATES PATENT OFFICE.

DAVID FERGUSON, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-FOURTH TO OLIVER G. FERGUSON AND ONE-FOURTH TO WILLIAM J. EBKEN, OF PITTSBURG, PENNSYLVANIA.

COKE-DRAWER.

No. 883,705.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed September 19, 1907. Serial No. 393,604.

To all whom it may concern:

Be it known that I, DAVID FERGUSON, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Coke-Drawers, of which the following is a specification.

This invention relates to certain improvements in coke drawing apparatus for which Letters Patent were granted me August 26th, 1902, No. 707,686, and December 8th, 1903, No. 746,055.

One object is to provide improved mechanism for moving the rake vertically on the rake-carrying bar; also to provide an improved flexible mounting for the rake.

A further purpose is to improve and render more efficient the supporting frame for the rake-operating bar, and to provide improved means for manipulating the bar.

With these and other objects in view, the invention consists in the novel features of construction, and in the combination of parts, hereinafter fully described and claimed and illustrated by the accompanying drawings, wherein—

Figure 1 is a perspective view of the improved apparatus. Fig. 2 is a detail view of the fork-raising and lowering mechanism. Fig. 3 is a vertical cross-sectional view of the supporting frame, taken through the vertical bearings or trunnions. Fig. 4 is a sectional detail view of the rack-bar and driving pinion. Figs. 5 and 6 are detail views of the fork.

Referring to the drawings, 2 designates a truck mounted on rails 3, the latter laid on ledge 4 extending in front of a gang of coke ovens. The coke is withdrawn from the oven over an apron 5 onto endless conveyer 6 supported by truck 2, and adapted to deliver the coke as to a railroad car 7. The conveyer may be driven by an electric motor 8.

Raised from truck 2 is the arched upright 9, having the top cross member 10 and the lower cross bar 10', and trunnioned at 11 and 11' to swing horizontally therebetween is the frame for supporting and manipulating the coke drawing fork. This frame is in two parts, one part consisting of parallel plates 12 to which trunnions 11 and 11' are secured, and the other part consisting of channel bar 13 movable longitudinally between plates 12,

with rollers 12' at opposite ends of the latter to facilitate such movement.

Depending from the opposite ends of bar 13 are the stirrup-like hangers 14, each having separated rollers 14' forming a passage for the rake-carrying channel bar 15. Also depending from the outer ends of plates 12 is the similar hanger frame 16, in which is journaled the driving pinion 17 and the eccentric brake-roller 18, having operating lever 18', with bar 15 extending between said pinion and roller. Movable longitudinally within channel bar 15 is rack bar 19, with which pinion 17 meshes, channel 15 having the end blocks 20 and 20' for limiting such movement. Pinion 17 may be driven by an electric motor 21 mounted on and adapted to turn with plates 12.

Pivoted to swing vertically on the forward end of channel 15 are arms 22, carrying head 23 at their outer ends, and projecting therefrom are bolts 24 upon which is movably mounted the depending coke-drawing rake 25, with springs 24' on the bolts for opposing movement of the rake thereon. With the rake thus mounted, it has a certain amount of flexibility which facilitates its engagement with the coke.

26 are uprights on channel 15; and fulcrumed therebetween is a lever having the forwardly extending arm 27 which projects loosely through openings in head 23 and rake 25, and the downwardly and rearwardly extending arm 28 which is loosely entered in slot 19' of rack bar 19. The lever thus sustains the weight of the vertically swinging rake, and to prevent the rack bar from being raised by the upward pull of the lever, channel 15 is formed with the overhanging flanges 15'.

In operation, rack bar 19 is moved forward in channel 15 by the driving pinion 17, raising the rake from the position of Fig. 1 to the full line position of Fig. 2, when it may be entered in the oven over the coke, the horizontally swinging frame being turned as required for locating the rake. When in this forward position the rack bar engages block 20' and further movement of pinion 17 operates to move forward channel bar 15, the amount of such movement being determined by the necessary inward movement of

the rake. After being moved inward the rake is lowered into the position seen in Fig. 1 and in engagement with the coke, this being accomplished by a backward movement of rack bar 19, which engages its outer end with channel block 20, whereupon the rack bar and bar 15 move outward together, withdrawing the rake and the coke therewith. Frame part 13 is adapted to move inward and outward with bar 15—though to a less extent—and support the latter in its opposite projected positions. The two swinging frame-parts may be made rigid with bar 15 by turning up eccentric brake roller 18, thereby clamping the bar between said roller and rollers 14', such rigidity being desirable at times when turning the frame horizontally.

Rake 25 is preferably provided with scraper 29 which moves vertically in keepers 30, thus permitting it to raise and not interfere with the rake tines entering the coke, but which is free to drop and engage the oven floor for scraping the coke therefrom.

I claim:—

1. In a coke drawer, the combination of a bar, a rake secured to the bar and movable vertically, a rake-moving lever carried by the bar, and lever-operating means.

2. In a coke drawer, the combination of a bar, a rake secured to the bar and movable vertically, a vertically swinging two-arm lever mounted on the bar with one arm engaging the rake, and lever-operating means engaging the other arm.

3. In a coke drawer, the combination of a bar, a rake secured to the bar and movable vertically, a lever-support raised from the bar, a vertically swinging two-arm lever fulcrumed in the support with one end in engagement with the rake, and a lever-operating device movable longitudinally of the bar and in engagement with the other arm of the lever.

4. In a coke drawer, the combination of a bar, a rake secured thereto and movable vertically, a vertically swinging two-arm lever carried by the bar with one arm in engagement with the rake, and a lever-actuating bar movable longitudinally of the first mentioned bar and in operative engagement with the other arm of said lever.

5. In a coke drawer, the combination of a channel bar, a rake secured thereto and movable vertically, a rack bar within and movable longitudinally of the channel with means for operating the rack bar, and an operative connection between the rack bar and rake for raising and lowering the latter.

6. In a coke drawer, the combination of a bar, a rake secured thereto and movable vertically, a two-arm lever carried by the bar, with one arm in engagement with the rake, a rack bar movable longitudinally of the first mentioned bar with means for moving the rack bar, the latter having an opening adja-

cent its front end which the other arm of the lever engages.

7. In a coke drawer, the combination of a bar, a rake secured thereto and movable vertically, a lever support raised from the bar, a two-arm lever fulcrumed in the support with one arm movable through an opening in the rake, and lever operating means movable longitudinally of the bar and engaging the other arm of the lever.

8. In a coke drawer, the combination of a laterally extending rake-carrying bar, a rake mounted to move vertically at the outer end of said bar, a bar movable longitudinally of the rake-carrying bar with means for actuating said movable bar, and an operative connection between the bar and rake for raising and lowering the latter.

9. In a coke drawer, the combination of a laterally extending rake-carrying bar, a rake secured to said bar and movable vertically, a rack bar movable longitudinally of the rake-carrying bar with means for operating the rack bar, and an operative connection between the rack bar and rake for raising and lowering the latter.

10. In a coke drawer, the combination of a rake-carrying device having a vertically disposed supporting head at its forward end, a vertically disposed rake at one face of the head, means loosely securing the rake to the head, and springs for opposing movement of the rake with relation to the head.

11. In a coke drawer, the combination of a rake-carrying device having a supporting head at its forward end, bolts projecting from the front of the head, a rake movable on the bolts, and springs on the bolts between the head and rake for opposing movement of the latter.

12. In a coke drawer, the combination of a supporting frame, a rake-carrying bar movable therein, a rake movable vertically on the bar, a rack bar movable longitudinally of the first mentioned bar and operatively connected to the rake for moving it vertically, and a driving pinion for the rack bar mounted in said frame.

13. In a coke drawer, the combination of a supporting frame, a rake-carrying bar movable therein, a rake movable vertically on the bar, a rack bar having limited forward and backward movement on the bar and connected to the rake for moving it vertically, and driving means for the rack bar carried by the frame.

14. In a coke drawer, a supporting frame consisting of two laterally extended parts—one part having a passage-way for the longitudinal movement of the other part, a rake-carrying bar, a rake, and supports for the bar depending from both frame parts and in which the bar is movable.

15. In a coke drawer, a supporting frame consisting of two laterally extended parts,

one part sustaining the other and having a
passage-way in which the other part moves
longitudinally, a rake-carrying bar, a rake,
supports for the bar depending from both
5 frame parts and in which the bar is movable,
and means for rigidly connecting the bar and
frame parts.

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

DAVID FERGUSON.

Witnesses:

J. M. NESBIT,

JNO. J. FITZGERALD.