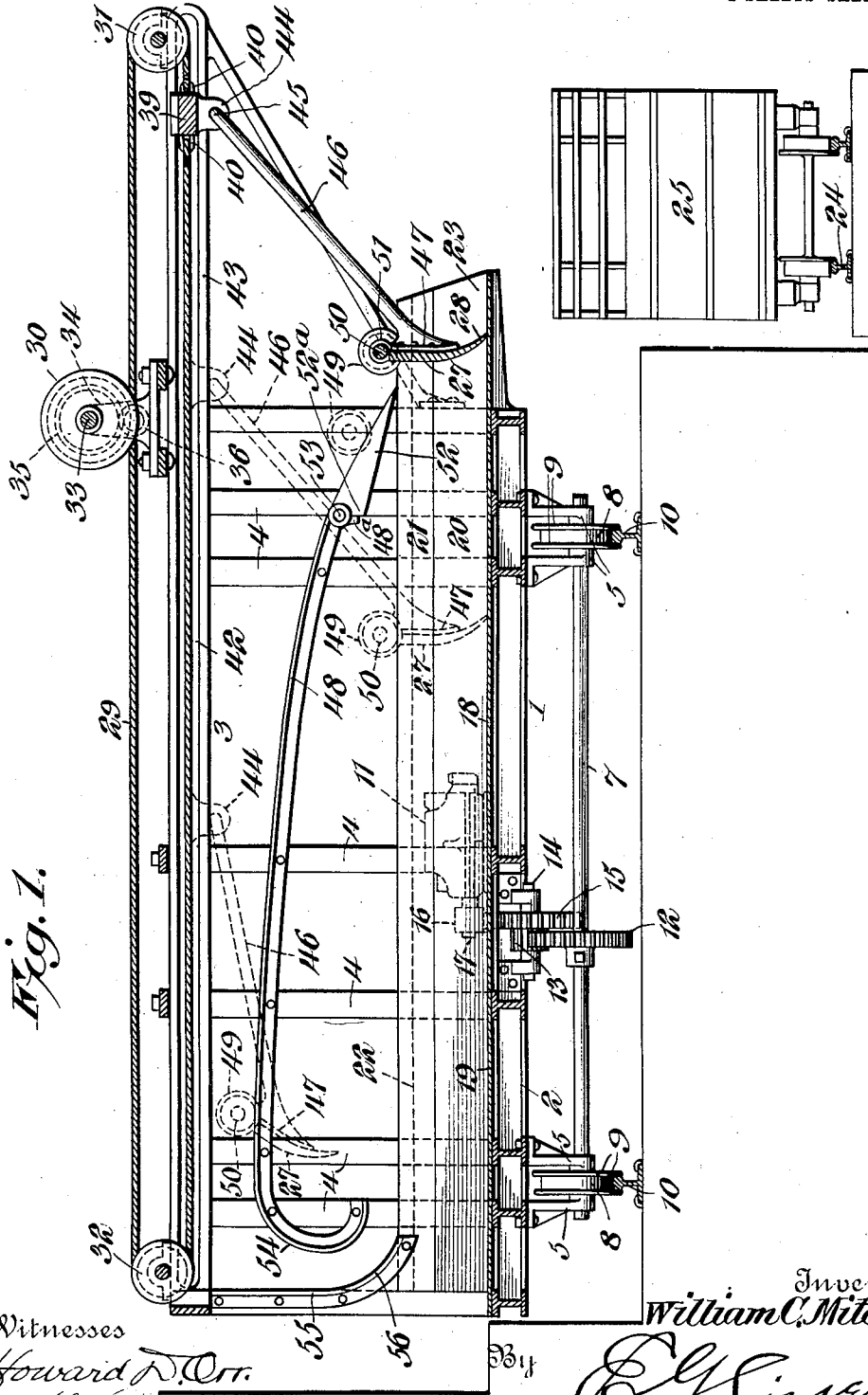


W. C. MITCHELL.
 APPARATUS FOR HANDLING COKE, &c.
 APPLICATION FILED MAR. 31, 1910.

977,119.

Patented Nov. 29, 1910.

2 SHEETS—SHEET 1.



Witnesses
 Howard D. Orr.
 S. W. Day.

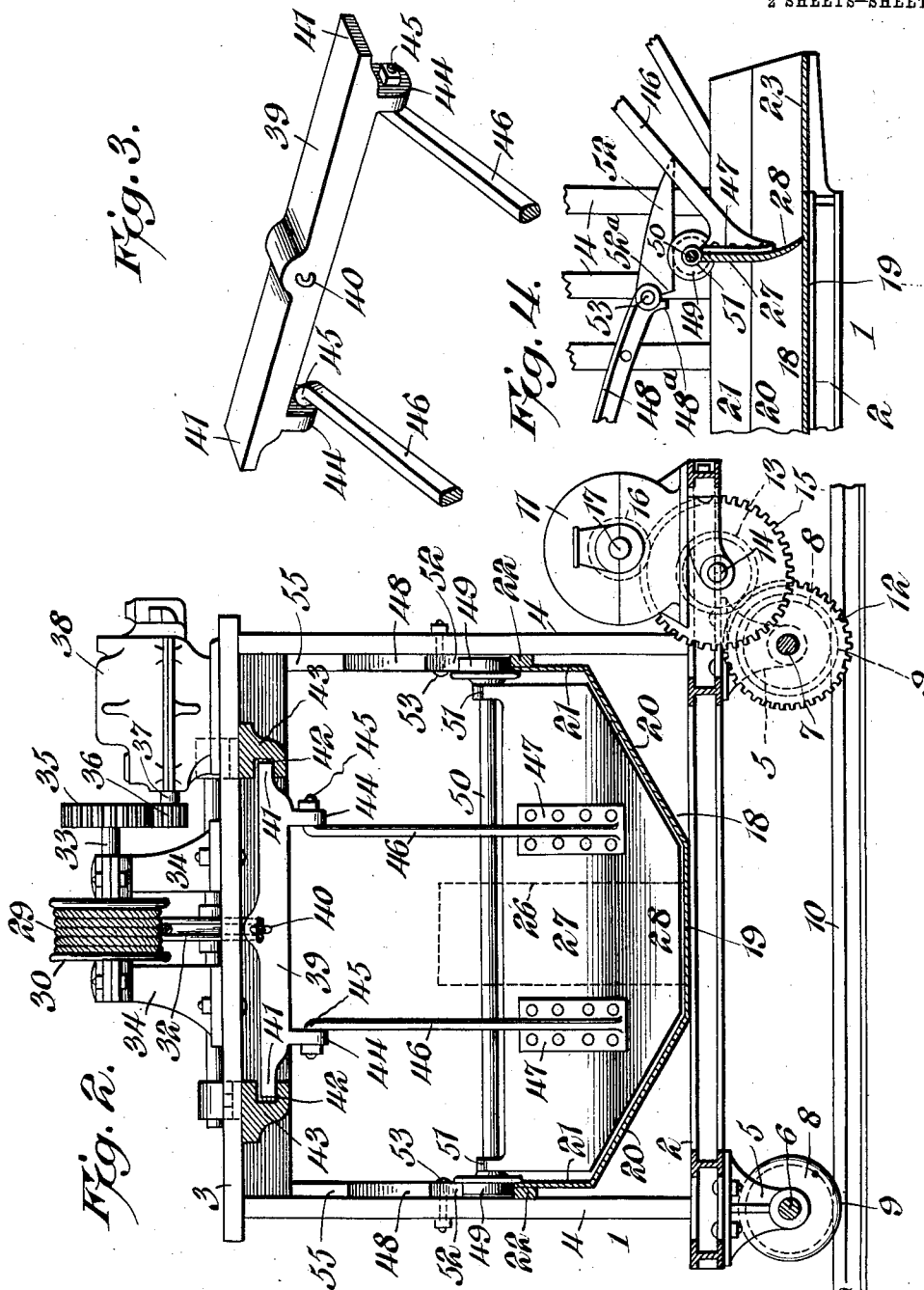
Inventor,
 William C. Mitchell,
 E. G. Siggers.
 Attorney

W. C. MITCHELL.
 APPARATUS FOR HANDLING COKE, &c.
 APPLICATION FILED MAR. 31, 1910.

977,119.

Patented Nov. 29, 1910.

2 SHEETS-SHEET 2.



William C. Mitchell, Inventor,

Witnesses

Howard D. Orr.
 H. F. Remy.

By

C. G. Siggers.

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM CLARK MITCHELL, OF SYDNEY, NOVA SCOTIA, CANADA.

APPARATUS FOR HANDLING COKE, &c.

977,119.

Specification of Letters Patent.

Patented Nov. 29, 1910.

Application filed March 31, 1910. Serial No. 552,704.

To all whom it may concern:

Be it known that I, WILLIAM C. MITCHELL, a citizen of the United States, residing at Sydney, in the Province of Nova Scotia and Dominion of Canada, have invented a new and useful Apparatus for Handling Coke, &c., of which the following is a specification.

The invention relates to an apparatus for handling coke, etc.

The object of the present invention is to provide a simple, efficient and comparatively inexpensive apparatus, designed for handling coke and other loose material, and adapted to be arranged in front of a coke oven to receive the charge of coke therefrom, and capable of enabling such charge to be quickly carried to and deposited in a car, or other receptacle, thereby saving time and expense in the handling of coke, and enabling the furnaces to be recharged in much less time than heretofore.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a longitudinal sectional view of a coke handling apparatus, constructed in accordance with this invention. Fig. 2 is a transverse sectional view. Fig. 3 is a detail perspective view of the cross head of the actuating mechanism. Fig. 4 is a detail sectional view of a portion of the apparatus, showing the scraper passing beneath the movable section of the track.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

In the embodiment of the invention illustrated in the accompanying drawings, the coke handling apparatus comprises in its construction a wheeled frame 1, designed to be constructed of any suitable material and composed of a bottom portion 2, a top portion 3 and supporting posts or uprights 4, located at opposite sides of the frame, which is open at the ends. The bottom portion is preferably constructed of I-beams, and it is equipped with suitable bearings 5

for the reception of axles 6 and 7 of wheels 8. The axles extend longitudinally of the frame, and the wheels are preferably provided at opposite sides with peripheral flanges 9, forming grooves for the reception of the heads of rails 10. The apparatus is shiftable laterally to carry its inner or rear end successively in front of a series of coke ovens. It is actuated in its travel from one coke oven to another by means of a motor 11, mounted upon the frame at one side thereof and connected by a train of gears with the axle 7. The axle 7 preferably carries a large gear 12, which meshes with a pinion 13 of a counter-shaft 14, having a gear wheel 15, keyed or otherwise secured to it and meshing with a pinion 16 of the shaft 17 of the motor 11. The motor may be electric, or any other type, and the gearing for transmitting motion from the motor to the axle 7 may be varied to suit the size and weight of the apparatus and to secure the desired speed.

The wheeled frame carries a platform 18, constructed of heavy sheet metal, such as boiler iron, or other suitable material and preferably arranged in the form of a chute or trough, comprising a central horizontal portion 19, and sides having lower inclined portions 20 and upper vertical portions 21, but the shape of the platform may be varied, as will be readily understood. The upper edges of the sides are preferably secured to horizontal bars 22, interposed between the sides and the posts or uprights 4, as clearly shown in Fig. 2 of the drawings. The front end 23 of the platform extends in advance of the frame and terminates above a track 24 to enable the coke to be discharged into a car 25. The track 24 is on a lower level than the track formed by the rails 10, so that a car may be readily run under the outer or discharge end of the platform.

In practice the charge of coke 26 is delivered onto the platform at the inner portion thereof in an incandescent state by means of a ram (not shown), and the coke is swept or carried along the platform to the front end thereof and discharged into the car 25 by means of a transversely disposed conveying member 27. The cars 25 in practice are constructed of wood and the coke is quenched after being placed in the cars. The transversely disposed coke-conveying member 27 is preferably in the form of a scraper and may be constructed of any suit-

able material, but a rake or other analogous conveying member may be employed, if desired.—The scraper 27 is tapered downwardly to conform to the configuration of the platform, and it has its lower portion 28 inclined downwardly and forwardly and adapted to direct or skid the coke into the car 25 when it reaches the front or outer portion of the platform.

In practice the scraper will rest upon the platform, as indicated in Fig. 1 of the drawings, during its forward or outward movement in order to carry the entire charge of coke to the car 25. In its backward movement it is elevated by the means hereinafter described to arrange it clear of the charge of coke, when the same is being delivered to the apparatus.

The scraper is moved forwardly and rearwardly by over-head actuating mechanism, preferably composed of a rope or cable 29, having its intermediate portion wound around a drum 30 and extending therefrom in opposite directions to terminal guide pulleys 31 and 32, arranged at the front and back of the apparatus, as clearly shown in Fig. 1 of the drawings. The drum 30 is mounted upon a transverse shaft 33, journaled in pedestal bearings 34 and equipped at one end with a gear wheel 35, which meshes with a pinion 36 of the shaft 37 of a motor 38. The pedestal bearings are secured to the top portion 3 of the frame, and the motor, which is also mounted upon the top of the frame, may be electric or of any other type, and it is adapted to rotate the drum for reciprocating a cross head 39 to which the terminals of the rope or cable are secured. The cross head 39, which is disposed transversely of the frame, is provided at the front and rear faces with eyes 40 for the attachment of the terminals of the rope or cable, and the ends 41 of the cross head slide in longitudinal grooves 42 of guide bars 43, located within the frame and secured to the top thereof, as clearly shown in Fig. 2 of the drawings. The guide bars are provided at their inner opposite faces with the said grooves 42, and they support the cross head, which, if desired, may be equipped at its terminals with suitable anti-friction devices to run in the guide-ways or grooves of the guide bars. The cross head is provided adjacent to its ends with depending integral ears 44 for the reception of pivots 45 of arms 46, inclined downwardly and rearwardly and provided at their lower ends with approximately vertical attaching plates 47, which are riveted or otherwise secured to the front face of the scraper 27. The pivots 45 are preferably integral with the upper ends of the arms 46, and they are threaded for the reception of nuts for securing the pivots in the apertures of the ears 44, but any other suitable fastening

means may be employed for this purpose. The front scraper 27 is slightly concave owing to the inclination of the lower portion, and it forms an efficient shovel in removing the material from the platform.

When the cross head is moved forwardly by the actuating mechanism, it pulls or draws the scraper with it and carries the coke to the front end of the platform and discharges the material into the car. On its rearward or return movement, it is elevated above the plane of the material by means of a track consisting of opposite rails 48, preferably constructed of flanged metal and secured to the inner faces of the posts or uprights, which constitute the sides of the frame. The rails 48 incline downwardly and forwardly, and the scraper is equipped at its ends with flanged wheels 49, adapted to run on the rails 48 and secured to the ends of a transverse shaft or axle 50, journaled in suitable bearings 51, secured to the scraper at the ends thereof and projecting above the upper edges of the same. The track is provided at its front with movable rail sections 52, arranged at an inclination and pivotally connected at their rear ends 53 to the front ends of the rails 48. The rail sections 52 are tapered forwardly and extend downwardly from the front ends of the rails 48 to the upper edges of the sides of the platform, and their front ends are normally supported by the bars 22. Suitable shoulders 48^a and 52^a, however, may be provided at the joint or pivotal connection for limiting the downward swing of the pivoted rail sections. This will enable the pivoted rail sections to be arranged clear of the sides of the platform and will obviate the necessity of supporting their front terminals. When the scraper is drawn forwardly, the wheels lift the movable rail sections 52 and pass beneath the same, and the movable rail sections drop back to their normal position as soon as the scraper is carried forwardly beyond them. When the scraper is moved rearwardly, the wheels 49 roll up the inclined movable sections 52 of the track and are directed by the same onto the fixed rails 48, which elevate the scraper to the dotted position shown at the left hand end of Fig. 1 of the drawings. The propelling mechanism is stopped with the scraper in its elevated position so as to be out of the way of the material when the next charge is moved onto the platform. The rear portion 54 of the rails 48 curves downwardly and forwardly, and the frame is equipped with rear rail sections 55, having lower curved portions 56 extending downwardly and forwardly in substantial parallelism with the rear ends of the rails 48, whereby when the scraper is moved rearwardly from the dotted position at the left hand end of Fig. 1, it will descend to the platform being guided

in such movement by the rear portions 54 of the rails 48 and the rail sections 55.

As soon as a charge of coke is delivered to the platform, the propelling mechanism of the scraper is started and the material is immediately conveyed to the front end of the frame and discharged into the car 25, where it may be conveniently quenched. The apparatus is then transferred to the next oven. It will be apparent that only a very short time is required for handling the coke, and in a very few minutes the oven from which the coke was removed may be recharged. In the forward movement of the scraper the side bars 22 may be conveniently utilized as rails for the flanged wheels of the scraper, but by allowing the scraper to rest upon the platform, lower guides may be omitted, it being only necessary to provide means for supporting the scraper at the extreme front end of the platform to prevent the same from dropping, should the lower edge of the scraper be carried slightly beyond the front end of the platform.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. An apparatus for handling coke, etc., including a wheeled frame adapted to be transferred from one coke oven to another and provided with a coke-receiving platform, a conveyer member extending across the platform and arranged to sweep or carry the material along the same and discharge it at one end thereof, and means mounted on the wheeled frame for reciprocating the conveyer member.

2. An apparatus for handling coke, etc., including a wheeled frame adapted to be transferred from one coke oven to another and provided with a coke-receiving platform, a motor mounted on the frame, gearing for transmitting motion from the motor to the wheels of the frame, a conveyer member extending across the platform and arranged to sweep or carry the material along the same and discharge it at one end thereof, and means mounted on the frame for reciprocating the conveyer member.

3. An apparatus for handling coke, etc., including a frame open at its ends and provided with transversely disposed wheels arranged to permit the frame to be moved laterally to transfer it from one coke oven to another, a coke-receiving platform carried by the frame, and means mounted on the frame and movable longitudinally of the platform for carrying or sweeping the coke longitudinally thereof to discharge it at one end of the frame.

4. An apparatus for handling coke, etc., including a frame open at its ends, axles extending longitudinally of the frame and supporting the same and provided with wheels

arranged transversely of the said frame to permit the latter to be moved transversely from one coke oven to another, a coke-receiving platform carried by the frame, and means mounted on the frame and movable longitudinally of the platform for sweeping or carrying the material along the platform and for discharging the material at one end thereof.

5. An apparatus for handling coke, etc., including a frame open at its ends and provided with a coke-receiving platform extending longitudinally of the frame, axles supporting the frame and extending longitudinally thereof and provided with wheels arranged transversely of the frame to permit the same to move laterally from one coke oven to another, a motor mounted on the frame at one side thereof, a train of gears connecting the motor with one of the axles, and means mounted on the frame and movable longitudinally of the platform for sweeping or carrying the coke to and discharging it at one end thereof.

6. An apparatus for handling coke, etc., including a wheeled frame adapted to be transferred from one coke oven to another and provided with a longitudinal trough-shaped platform, and a conveyer member extending across the platform and movable longitudinally thereof to carry the coke to and discharge the same at one end of the platform.

7. An apparatus for handling coke, etc., including a wheeled frame adapted to be transferred from one coke oven to another and provided with a longitudinal trough-shaped platform, a scraper extending across and conforming to the configuration of the platform, and means for moving the scraper longitudinally of the platform to carry the material to and discharge it at one end of the said platform.

8. An apparatus for handling coke, etc., including a frame provided with a trough-shaped platform extending longitudinally of the frame and open at its ends, axles supporting the frame and disposed longitudinally of the platform and provided with transversely disposed wheels to permit the apparatus to be moved laterally from one coke oven to another, a scraper extending across and conforming to the configuration of the platform, and means for reciprocating the scraper longitudinally of the platform to convey the material to and discharge the same at one end of the said platform.

9. An apparatus for handling coke, etc., including a wheeled frame, a trough-shaped platform open at its ends and consisting of a bottom and upwardly extending sides, a conveyer member extending across the platform and conforming to the configuration thereof and having an inclined lower portion extending downwardly and forwardly, and

means for moving the conveyer member longitudinally of the platform to sweep the material therefrom.

10. An apparatus for handling coke, etc., including a wheeled frame movable laterally to transfer it from one coke oven to another, a trough-shaped platform open at its ends and composed of an intermediate horizontal portion, and sides composed of vertical upper portions and inclined lower portions, a transversely disposed downwardly tapered scraper conforming to the configuration of and extending across the trough, and means for moving the scraper longitudinally of the platform for carrying the material to and discharging the same at one end of the said platform.

11. An apparatus for handling coke, etc., comprising a frame provided with a coke-receiving platform, a conveyer member extending across the platform, and means for moving the conveyer member longitudinally of the platform for carrying the material to and discharging it at one end of the same, said means including an over-head carriage movable longitudinally of the platform, an arm extending from the conveyer member to and pivotally connected with the carriage, and means for reciprocating the carriage.

12. An apparatus for handling coke, etc., comprising a frame provided with a coke-receiving platform, a conveyer member extending across the platform, and means for moving the conveyer member longitudinally of the platform for carrying the material to and discharging it at one end of the same, said means including an over-head carriage movable longitudinally of the platform, spaced inclined arms extending forwardly and upwardly from the conveyer member to the carriage, and means for reciprocating the carriage.

13. An apparatus for handling coke, etc., comprising a frame provided with a coke-receiving platform, a conveyer member extending across the platform, and means for moving the conveyer member longitudinally of the platform for carrying the material to and discharging it at one end of the same, said means including an over-head carriage, an inclined arm connecting the conveyer member with the carriage, means for reciprocating the carriage, and guiding means for elevating the conveyer member on the backward movement to clear the material.

14. An apparatus for handling coke, etc., including a frame provided with a coke-receiving platform, a conveyer member extending across the platform, and means for moving the conveyer member longitudinally of the platform for carrying the material to and discharging it at one end of the same, said means including a reciprocating carriage, pivotal connections between the con-

veyer member and the carriage, and guiding means for elevating the conveyer member during the backward movement and for lowering the same at the end of such movement to permit the conveyer member to move forwardly along the platform.

15. An apparatus for handling coke, etc., comprising a frame provided with a coke-receiving platform, a conveyer member extending across the platform, and means for moving the conveyer member longitudinally of the platform for carrying the material to and discharging it at one end of the same, said means including spaced over-head guides, a cross head slightly mounted in the guides, an arm rigidly secured to the conveyer member and pivotally connected with the cross head, and means for elevating the conveyer member during the backward movement thereof to support the same clear of the material.

16. An apparatus for handling coke, etc., comprising a frame provided with a coke-receiving platform, a conveyer member extending across the platform, and means for moving the conveyer member longitudinally of the platform for carrying the material to and discharging it at one end of the same, said means including spaced over-head longitudinal guide bars provided with grooves or ways, a cross head slidable in the grooves or ways, a scraper pivotally connected with the cross head and carried by the same, an inclined track arranged to elevate the scraper during the backward movement thereof and provided with a downwardly extending rear portion, rear rail sections arranged in spaced relation with the rear portion of the said track, and means for reciprocating the cross head.

17. An apparatus for handling coke, etc., including a frame having a coke-receiving platform, a conveyer member extending across the platform, an over-head carriage connected with the conveyer member and adapted to reciprocate the same longitudinally of the platform, a drum, guide pulleys spaced from the drum, a rope or cable wound around the drum and extended in opposite directions therefrom to the guide pulleys and passing around the latter and connected with the carriage, and means for rotating the drum.

18. An apparatus for handling coke, etc., including a frame having a coke-receiving platform, a conveyer member extending across the platform, an over-head carriage connected with the conveyer member and adapted to reciprocate the same longitudinally of the platform, a drum, guide pulleys spaced from the drum, a rope or cable wound around the drum and extended in opposite directions therefrom to the guide pulleys and passing around the latter and connected

with the carriage, a motor mounted on the frame, and gearing for connecting the motor with the drum.

19. An apparatus for handling coke, etc., comprising a wheeled frame, a coke-receiving platform carried by the frame, a conveyer member extending across the frame and provided with bearings, a shaft journaled in the bearings and provided at its ends with wheels, an over-head carriage, an arm pivotally connecting the conveyer member with the carriage, and means including tracks mounted on the frame at the sides thereof and arranged to receive the wheels of the conveyer member for elevating the latter during the backward movement thereof to clear the material.

20. An apparatus for handling coke, etc., comprising a wheeled frame having a coke-receiving platform, a motor mounted on the frame, gearing for imparting motion from the motor to the wheels of the frame, a conveyer member extending across the platform, an over-head carriage connected with the conveyer member, mechanism for reciprocating the carriage including means arranged in the path of the conveyer member for elevating the same during the backward movement thereof.

21. An apparatus for handling coke, etc., comprising a frame provided with a coke re-

ceiving platform, a conveyer member extending across the platform, and means mounted on the frame for moving the conveyer member longitudinally of the platform for carrying the material to and discharging it at one end of the same, said means including guiding means for elevating the conveyer member during the backward movement and for lowering the same at the end of such movement to permit the conveyer member to move forwardly along the platform.

22. An apparatus for handling coke, etc., comprising a frame provided with a coke receiving platform, a conveyer member extending across the platform, and means mounted on the frame for moving the conveyer member longitudinally of the platform for carrying the material to and discharging it at one end of the same, said means including a scraper, an inclined track arranged to elevate the scraper during the backward movement thereof, and means for reciprocating the scraper.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLIAM CLARK MITCHELL.

Witnesses:

JOHN H. SIGGERS,
H. F. RILEY.