No. 725,095. PATENTED APR. 14, 1903.

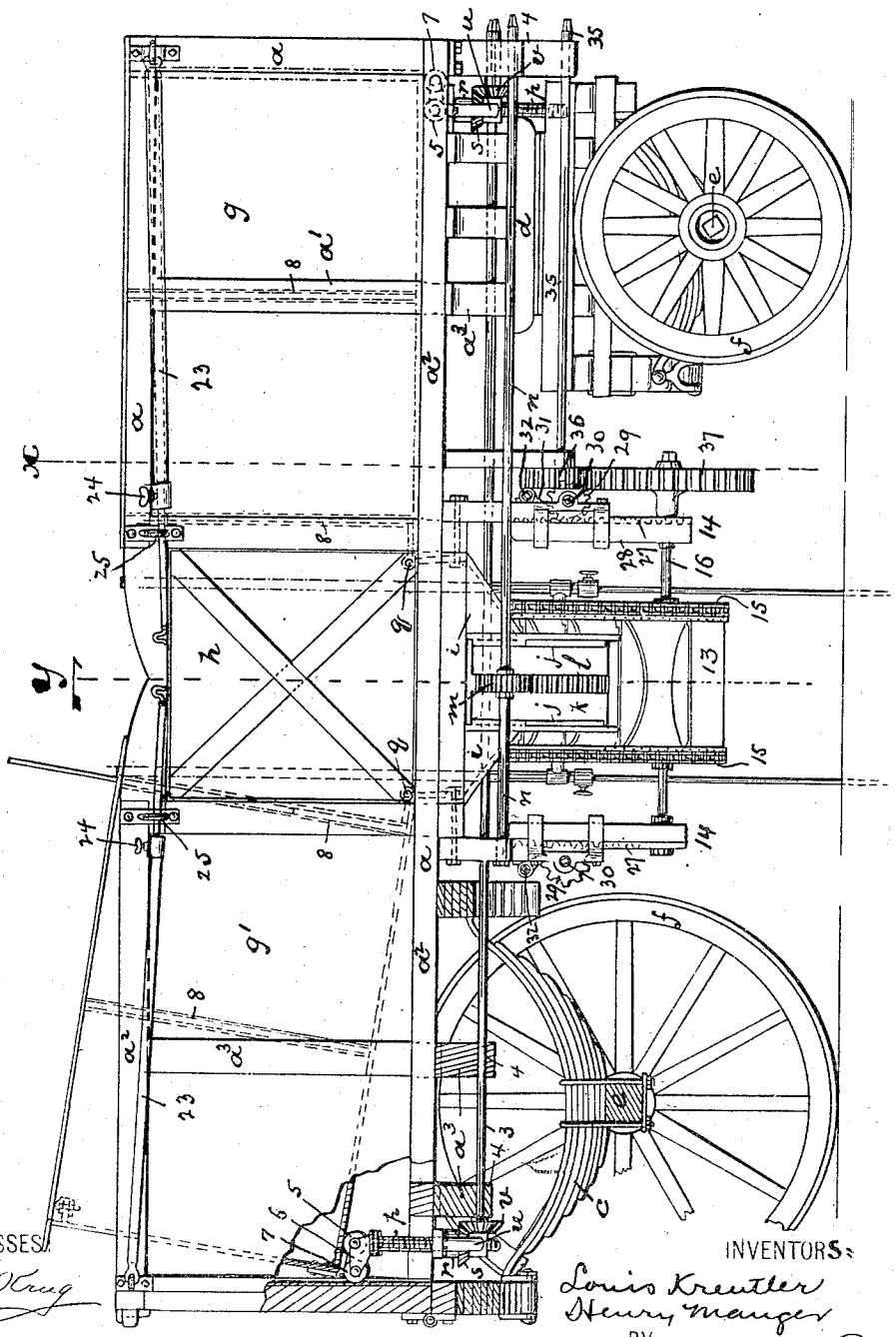
L. KREUTLER & H. MANGER.

COAL WAGON.

APPLICATION FILED JULY 3, 1902.

NO MODEL. 5 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

Henry Craig

Russell M. Everett

INVENTORS:

Louis Kreutler

Henry Manger

BY Drakes & Co

ATTORNEYS.

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NO MODEL. 5 SHEETS—SHEET 2.

Fig. 3.

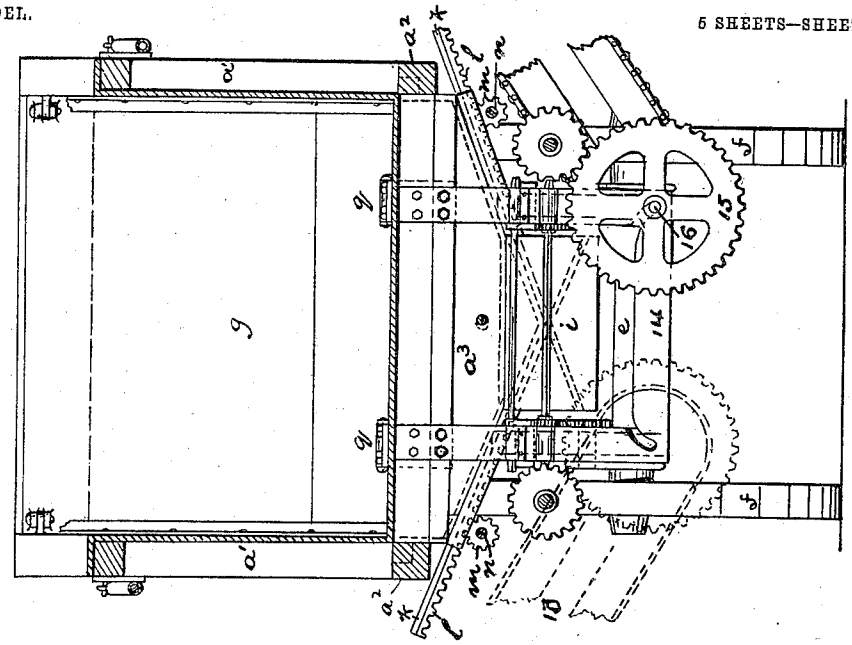
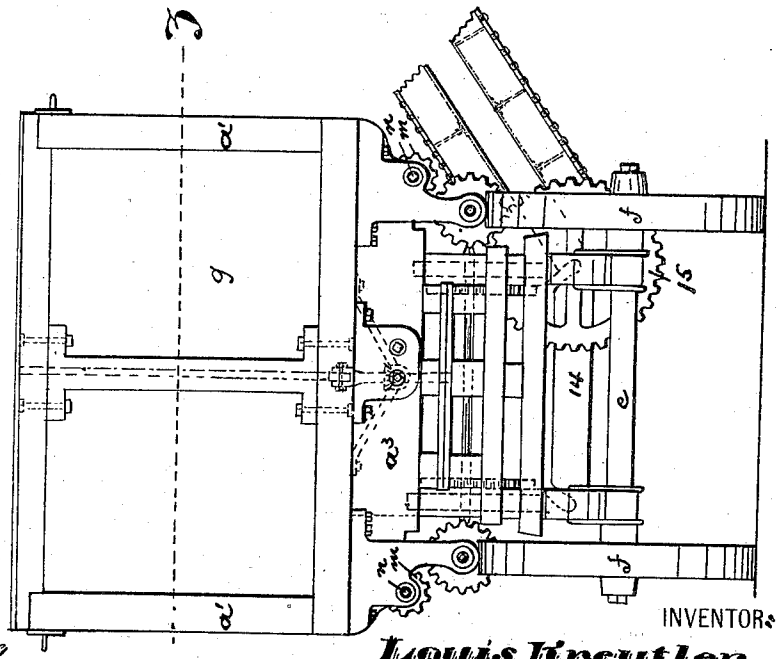


Fig. 2.



WITNESSES:

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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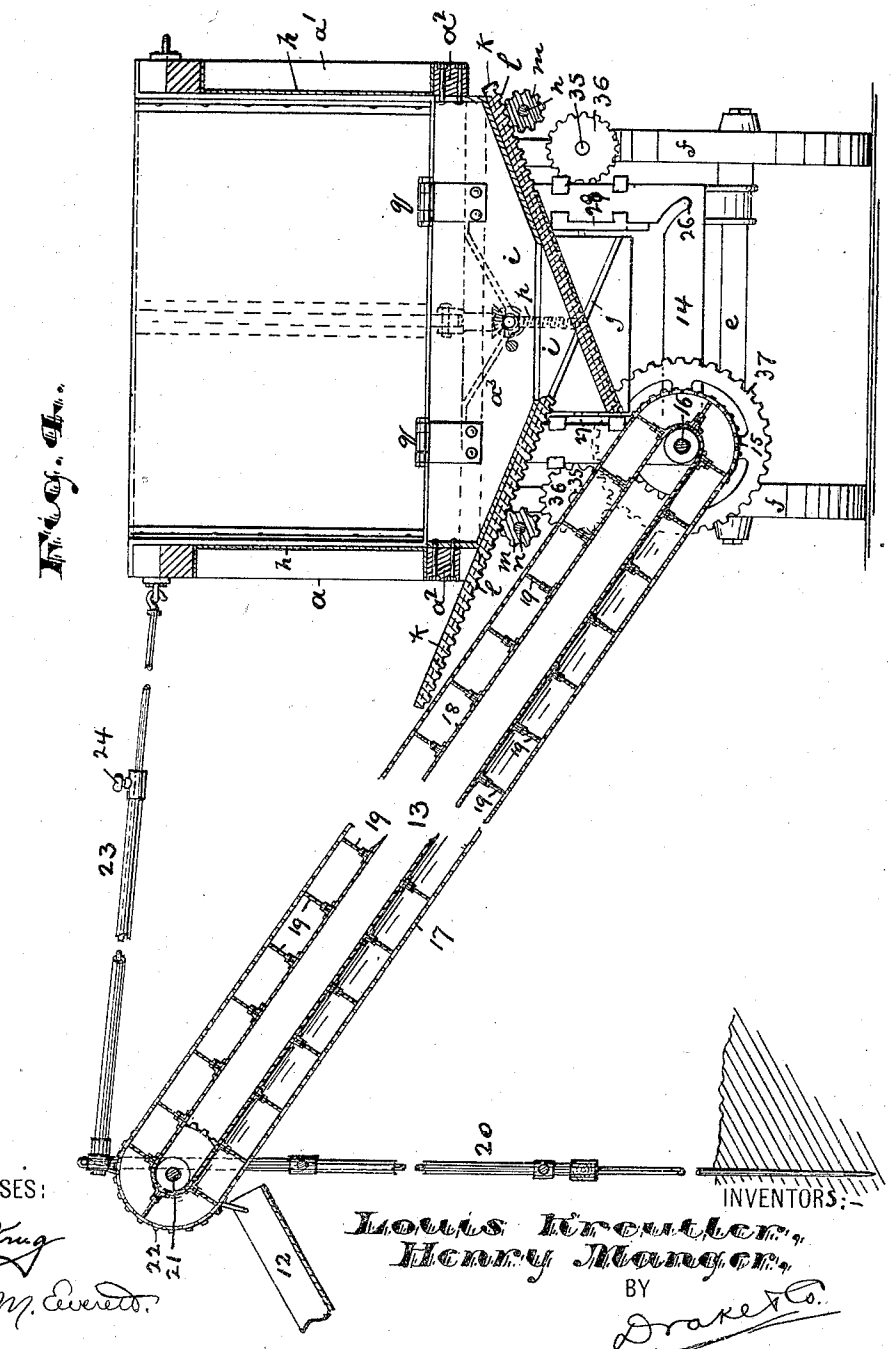
NO MODEL. 5 SHEETS—SHEET 3.

Fig. 4.



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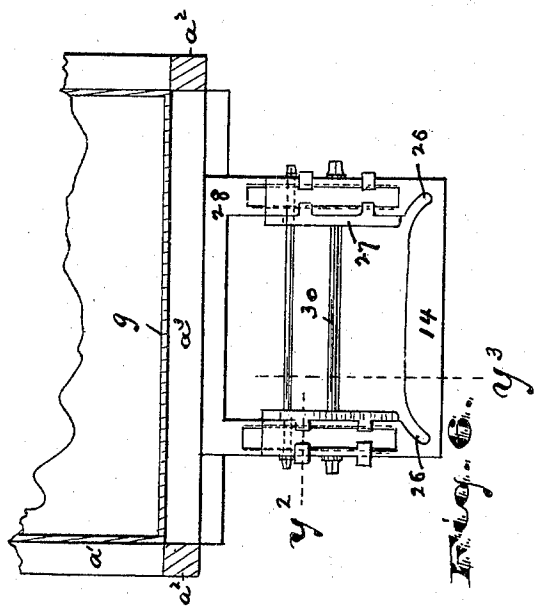

Fig. 6.

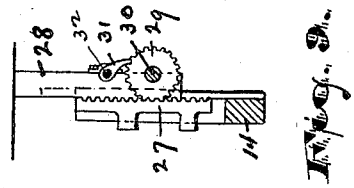

Fig. 9.

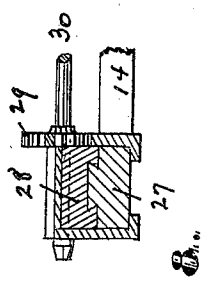

Fig. 8.

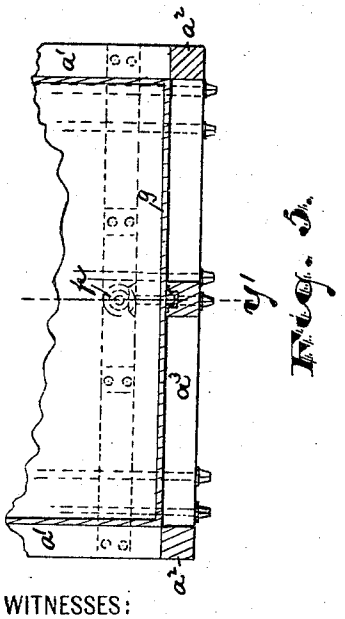

Fig. 5.

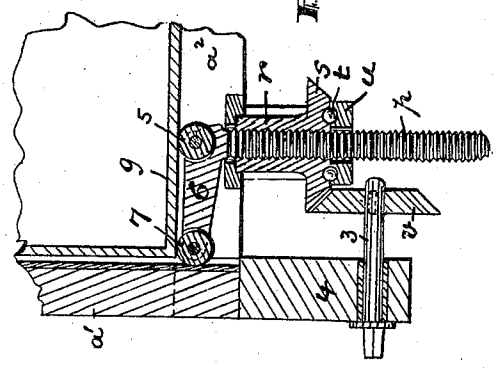

Fig. 7.

WITNESSES:

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NO MODEL. 5 SHEETS—SHEET 5.

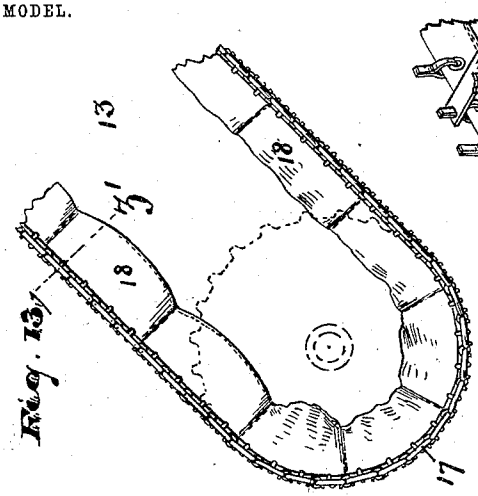

Fig. 13.

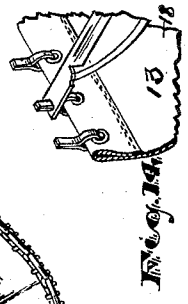

Fig. 14.

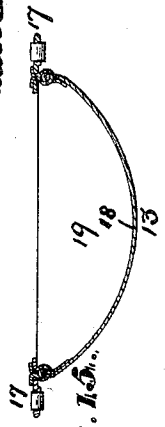

Fig. 15.

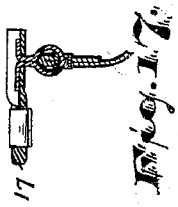

Fig. 17.

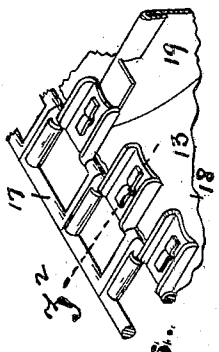

Fig. 16.

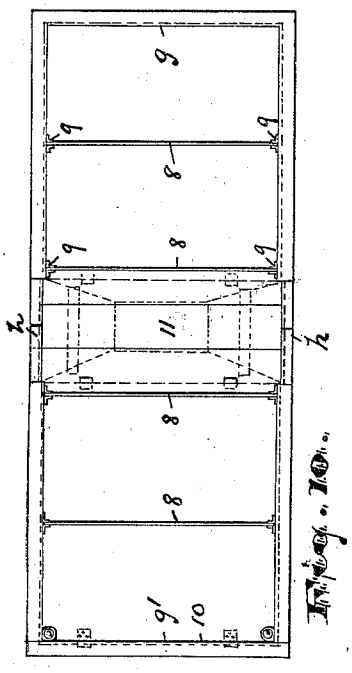

Fig. 10.

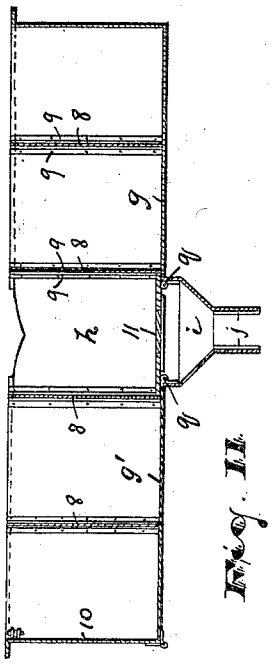

Fig. 11.

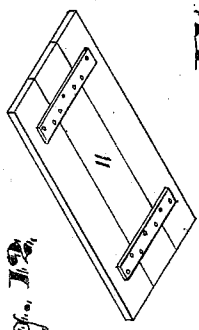

Fig. 12.

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UNITED STATES PATENT OFFICE.

LOUIS KREUTLER AND HENRY MANGER, OF NEWARK, NEW JERSEY.

COAL-WAGON.

SPECIFICATION forming part of Letters Patent No. 725,095, dated April 14, 1903.

Application filed July 3, 1902. Serial No. 114,167. (No model.)

To all whom it may concern:

Be it known that we, LOUIS KREUTLER and HENRY MANGER, citizens of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Coal-Wagons and Portable Coal-Elevators Therefor; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

The objects of this invention are to facilitate the work of emptying coal-wagons and to enable the coal to be dumped with greater facility, ease, and convenience to the cartman; to enable the coal to be transmitted from the wagon over an intermediate space—such, for example, as a lawn—to the bin within the consumer's house with greater ease and without injury to the lawn from walking repeatedly thereover or because of a dropping of the dust; to reduce the cost of building dumping-wagons, and to secure other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved wagon for coal, &c., and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like characters of reference indicate corresponding parts in each of the several figures, Figure 1 is a side elevation of the improved wagon, the parts being partly in longitudinal section to illustrate the construction more perfectly. Fig. 2 is a front elevation of the same. Fig. 3 is a transverse section taken through line x of Fig. 1. Fig. 4 is a transverse section taken through line y of Fig. 1. Fig. 5 is a detail horizontal section taken at line z of Fig. 2. Fig. 6 is a vertical detail showing in elevation a certain bracket in which an elevator-belt shaft has one of its bearings. Fig. 7 is a detail section taken at y' of Fig. 5 on an enlarged scale. Fig. 8 is a detail section on y^2 of Fig. 6, and Fig. 9 is a detail section on y^3 of Fig. 6. Fig. 10 is a plan of the coal-receptacle of the wagon, showing a certain cover at the bottom. Fig. 11 is a longitudinal section of the same. Fig. 12 is a perspective view of said cover. Fig. 13 is a side detail view of the conveying-belt. Fig. 14 is a perspective detail of a portion of the same. Fig. 15 is a section on line z', Fig. 13. Fig. 16 is a detail view of the same, showing the construction of the chain more clearly; and Fig. 17 is a section on line z^2 of Fig. 16.

In said drawings, a indicates the body or frame of the wagon, comprising vertical and longitudinal beams a' a^2, supported on transverse cross-braces a^3, the latter in turn being carried by the springs c, and a fifth-wheel d upon the axles e and wheels f f in any suitable and ordinary manner. The said frame a at the front and rear of the wagon forms guards or receptacles for a pair of dumping-receptacles g g', one stationed at the front and the other at the rear of the wagon. These said receptacles are preferably of sheet iron or steel of suitable strength to carry the coal and are each closed at three sides and at the bottom of the wagon. The receptacles g g' are each open toward the center of the vehicle to permit an out passage of the coal in the dumping operation to the hopper stationed between.

The uprights of the frame nearest the center thereof support sheet-metal sidings h h at the opposite sides of the wagon, which close the frame between the said receptacles g g'. The open inner ends of the said receptacles g g' are adapted to lie between and form close joints therewith, so as to prevent any out passage of coal or dust. At the bottom of the said center part of the frame, between the sidings h h, is a hopper i, said hopper being provided with suitable slideways j, in which are sheet-metal slides or valves k, adapted to close the small end of said hopper to prevent the issue of coal therefrom. Said slide valves or shutters k are of considerable length and are adapted not only to close each one-half of the small end of the hopper, but to serve as a chute to guide or convey the falling coal to one side of the wagon or the other. The slideways at opposite sides of the valve or shutter cross each other, so that the sliding valves or

shutters are adapted to be moved at their lower ends to a point beyond the center of the vehicle toward the vertical plane of the sides of the vehicle, and are thus adapted to guide the coal into a coal-hole at the side of the wagon or into an ordinary chute, by which the coal may be guided through a window or to a bin or other receptacle. The said valves or shutters *k* are each provided with a rack *l* on its under side, adapted to be engaged by a pinion *m*, arranged upon a shaft *n*, extending lengthwise of the vehicle, the said shaft *n* being operable by a removable crank at the front or rear of the vehicle in any suitable manner. When the wagon is full of coal and it is desired to empty the coal at a point directly beneath the vehicle, then both of said slide valves or shutters *k k* are operated by turning the shafts above referred to an equal distance away from the center of the wagon or their meeting-point, so that the coal will simply gravitate directly downward from the opening thus formed. Should, however, we desire to throw the coal to one side or the other side from the vehicle, then we slide one of the valves or shutters downward laterally toward the side of the wagon at which the coal is to be deposited a foot or two beyond the plane of the other shutter and then raise said other shutter a sufficient distance to permit the coal to move outward.

After the coal has emptied itself from the central portion of the vehicle and it is desired to empty the end receptacles *g g'* we raise the forward and rearward ends, respectively, of said receptacles by means of a peculiar elevating-screw *p*, disposed at the ends of the vehicle-frame *a* immediately beneath the forward and rearward ends of said receptacles. The receptacles *g g'* at their inner lower extremities are suitably hinged or pivoted, as at *q*, upon the frame or other bearings in connection therewith and at their upper inner ends are adapted to enter between said sidings *h* at the center part of the coal-receptacle, as indicated in Fig. 1, the tops of the sidings being preferably cut away to permit the top flanges of said receptacles to move without hindrance. The construction of the elevating-screws *p* is shown more clearly in detail in Fig. 7, where said screw *p* is shown seated in a nut *r*, integrally united with a beveled gear-wheel *s*, the said beveled gear-wheel being in turn seated on ball-bearings *t*, having a runway formed in a brace or bracket *u*, attached to or forming a part of the frame of the vehicle. The said beveled gear-wheel *s* is engaged by another gear-wheel *v*, arranged on a crank-shaft 3, suitably seated in bearings 4, formed on or attached to the frame of the vehicle.

At the upper part of the elevating screw-shaft, directly in line with the threaded portion of the screw, is a friction-wheel 5, which bears upon the under side of the coal-receptacle *g*, and extending at right angles to the line of the said threaded portion of the screw is an arm 6, which is provided with another antifriction-wheel 7, which last bears against the front part of the vehicle-frame, as indicated in Figs. 1 and 7. The arm 6 and wheel 7, bearing on the front of the frame, serve as a stay for the screw, so that the inclined under surface of the coal-receptacle will not bend the said threaded portion of the screw, and thus interfere with a proper operation of the parts, as will be understood.

By turning the crank-shaft 3, having the beveled gear-wheel *v*, by means of an ordinary hand-crank, the coal-receptacle *g* is raised or lowered, and when the bottom is sufficiently elevated the inclination effects a free gravitation of the coal remaining therein toward the open end of said receptacle and into the hopper, from whence it passes to the bin, coal-hole, chute, or to the elevating means, as hereinafter described.

It is evident from the above description that the elevating of the ends of the receptacles *g g'* can be performed while the coal is running from the hopper from the center part of the vehicle, and thus we are enabled to materially save time in the dumping of the coal, inasmuch as the central valves or shutters may immediately upon arriving at the point at which the coal is to be dumped be opened to permit the issue of the central coal, and afterward while said central coal is running out the end receptacles of the vehicle may be elevated as described, so that the coal continues without loss of time to issue until the vehicle is empty.

We may, if we so desire, partition the inside of the receptacles, so that the portion immediately over the hopper may form one independent receptacle, to be first emptied, and the end parts partitioned off from said center part may be afterward emptied independently, and thus we are enabled to fill two, three, or more separate and independent orders for coal in one trip. In Figs. 10 and 11 four partitions 8 8 are shown, forming five separate pockets or chambers. Said partitions may be drawn out of their slideways 9 9, fastened to the sides of the receptacles.

We prefer to provide the closed end of the rearward pivoted receptacle with a hinged tail-board 10 and also to provide the rear end of the framework of the vehicle with a corresponding tail-board, and these may be opened in any ordinary manner.

When it is desired to use the vehicle for other than a coal-wagon—for example, should we desire to use the vehicle for carrying lumber or the like or for other articles too long to be packed within the ends of the wagon—then the said rear end may be opened to permit the same to be packed. The center of the frame *a* over the inclined hopper is also preferably provided with a removable bottom 11 for a flooring over the hopper, so that the said hopper may be closed off from the body of the receptacle when the wagon is to be used for carrying brick, ice, or the like.

We prefer to provide the vehicle with con-

nections whereby the coal as it issues from the hopper is taken by a conveyer and elevated, say, fifteen feet, more or less, and then deposited in a chute 12, Fig. 4, by which it is conveyed by gravity or otherwise to a bin or receptacle.

We find in practice that it frequently becomes necessary to furnish coal to houses built upon an elevated embankment, say, ten feet, more or less, back from the street-line, a lawn or grass-plot being commonly interposed between the street and the window through which the coal is to be directed.

By means now commonly provided it becomes necessary to carry the coal in baskets or the like over the lawn to the place of deposit, to the great injury of the lawn and great delay in depositing the load.

By the means we have provided in connection with our vehicle we are enabled to transfer the coal from the vehicle and over the lawn to the window without the delay referred to and with considerable saving of labor. To this end we have connected with the vehicle a chain conveyer and elevator-belt 13, operable by means of a crank in the hand of the driver. The parts are so arranged and constructed that the coal after issuing from the hopper is elevated, as above indicated, to the desired elevation and then deposited on the incline chute 12, Fig. 4, by which it is transferred through the window to the bin. To this end we have attached to the under side of the vehicle-frame a pair of brackets or bearings 14 14 for a pair of sprocket-wheels 15 15, the said sprocket-wheels being arranged upon a shaft 16, which is easily transferable from one side of the vehicle to the opposite side, as will be hereinafter more fully described. On said shaft and wheels 16 15 is arranged the conveying-belt 13 of peculiar construction. Said conveyer-belt consists of a pair of endless chains 17, suitably adapted to intermesh with the sprockets of the sprocket-wheels 15 and be given movement by said sprocket-wheels. To the inner edges of said chains 17 is attached a continuous trough 18, of canvas, the opposite edges of which are fastened to the chain by rivets, sewing, cotter-pins, or fasteners of any other kind. Within the said continuous trough, at a distance of a foot apart, more or less, are sheet-metal partitions 19, which are semicircular or segmental on their under edges, the curvatures of the said partitions conforming to the curvature of the canvas. The ends of the said plates or partitions 19 are fastened upon the chain and move therewith; but we prefer to have the lower edges of the partitions where they engage the canvas free and independent of said canvas, so that there will be no interference when the conveyer turns about the sprocket-wheels.

At a distance from the wagon of, say, about twelve feet is stationed a frame 20, which in the preferred construction is about fifteen feet high, more or less, the said frame, however, being in sections telescopically disposed one in the other, so that the height of the frame may be diminished or increased at pleasure. Near the top of the said frame 20 is arranged a shaft 21, upon which sprocket-wheels 22 are secured, and upon said sprocket-wheels 22 in turn the chain conveyer or belt 13 is arranged. The wagon is provided with braces 23, extending therefrom to the upper part of the said frame 20, so that the said frame and its sprocket-wheels are held firmly in a proper elevated position. The lower end of the said frame or the uprights thereof may be forced into the ground, as indicated in Fig. 4. The conveying-belt 13 is preferably permanently arranged in connection with its frame 20 and is adapted to be suitably connected with the sprocket-wheels of the vehicle. To enable the said chain conveyer to be spread or stretched over the said sprocket-wheels to secure the desired firmness or positiveness of movement, we have arranged the braces 23 in adjustable sections, held together by clamps or set-screws 24. The braces 23 when not in use are arranged on hooks or brackets 25 at their free ends, attached to the side of the wagon, so that the said braces are out of the way, but conveniently at hand for service.

To maintain the shaft 16 upon the vehicle at a proper horizontal position, so that there will be no disposition on the part of the chain conveyer to run off from its sprocket-wheels, the brackets 14 14, above referred to, are made adjustable, as shown in Figs. 6, 8, and 9 more clearly. Should the wagon stand upon a hillside or inclined ground, we raise one end of the said shaft to bring the same to a proper horizontal, and to this end the boxes 26 for the said shafts are preferably disposed upon sliding racks 27, held upon brackets 28 by means of pinions 29, the pinions being in turn operable by a crank-shaft 30 and held from back turning by means of pawls 31, also on a crank-shaft 32, the opposite pawls being released from the pinion by means of a crank, all as will be understood upon reference to Fig. 9.

Preliminary to opening the hopper and permitting the coal to pass out upon the chain conveyer the said bearings 14 for the conveyer-chain are properly adjusted, so that the sprocket-wheel shafts are brought to a proper relation of parallelism, and thus there will be no danger of the belt disengaging the said sprocket-wheels when the coal is in course of transit.

We are aware that various modifications of construction may be employed without departing from the scope of the invention, and we do not wish to be understood as limiting ourselves by the positive descriptive terms hereinbefore employed.

In operating the device upon arriving at an elevated place at which to deposit the coal the elevating and conveying attachments are arranged in connection with the wagon, one of the slides is opened and the other moved

to a position to properly direct the coal to one side into the conveyer, and then the conveyer is operated by means of a crank on the shaft 35, having a pinion 36, engaging a large cog-wheel 37 on the sprocket-wheel shaft 16, so that the coal issuing by gravity from the hopper is conveyed and elevated to the chute 12, from whence it is directed to the cellar of the house or other place of deposit.

Having thus described the invention, what we claim as new is—

1. The improved coal-wagon comprising a wheeled frame and a hopper having oppositely-inclined slides arranged at opposite sides of the vertical center line of the said hopper, either of said slides being adapted to be moved in an inclined direction downward across the said vertical center line, substantially as set forth.

2. The improved coal-wagon, comprising a wheeled frame, hinged coal-receptacles disposed on a level in said frame above that of the hopper, slides each adapted to be moved across the vertical center line of the hopper, means for moving the slides across said center lines and means for turning the receptacles on their hinges to dump the coal therefrom into the hopper and thence to one or other side of the vehicle, substantially as set forth.

3. The combination with a wagon having an exit for the contents of the wagon, of a pair of brackets providing bearings for a shaft, a pair of sprocket-wheels on said shaft, means for turning said shaft and sprocket-wheels, and a separable conveyer-belt, said parts being arranged and adapted to operate substantially as set forth.

4. The combination with the coal-wagon, of a conveyer having conveyer-chains and a continuous flexible trough attached thereto, said conveyer being separable from said wagon, sprocket-wheels on said wagon, supports for the conveyer adapted to be stationed at a distance from the wagon and braces attached to said wagon for holding the tops of said supports in place, said parts being arranged and adapted to operate substantially as set forth.

5. The combination with the telescopic vertical supports, sprocket-wheels carried thereby and braces, of a conveyer-belt, and sprocket-wheels therefor adapted to be carried by the wagon, substantially as set forth.

6. The combination with the wagon having an out-passage opening for the contents of said wagon and means for controlling or preventing the out passage of said contents, of brackets 14, 14, each having open boxes at opposite ends to receive a shaft having a pair of sprocket-wheels thereon, said shaft being transferable from the boxes at one side of the wagon to the boxes at the opposite side at pleasure, substantially as set forth.

7. The combination with the wagon having at out passage at the center of its bottom, and slides for closing said out passage, said slides being adapted to direct the out-passing coal to one side of the wagon or the other, means for operating the slides, brackets each having shaft-bearings at opposite sides of the wagon, a transferable shaft carrying sprocket-wheels, and a conveyer-belt, arranged on said sprocket-wheels and adapted to receive the contents of the wagon from either of said slides, substantially as set forth.

8. The combination with the wagon having a hopper midway of the ends, hinged receptacles adapted to dump the coal into said hopper, slides for closing said hopper, a rack and pinion for operating said slides, brackets having opposite bearings below the slides, a transferable shaft having sprocket-wheels and adapted to engage said bearings and a chain conveyer and frame for supporting the same, said frame being braced to the wagon, substantially as set forth.

9. The combination with the wagon having a hopper, and sidings *h*, *h*, above said hopper, of receptacles on opposite sides of said hopper and open toward said sidings and hopper, means for raising the receptacles and entering the upper parts thereof between the sidings and dumping the contents into the hopper, said receptacles being provided with removable partitions, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 20th day of June, 1902.

LOUIS KREUTLER.
HENRY MANGER.

Witnesses:
CHARLES H. PELL,
C. B. PITNEY.