

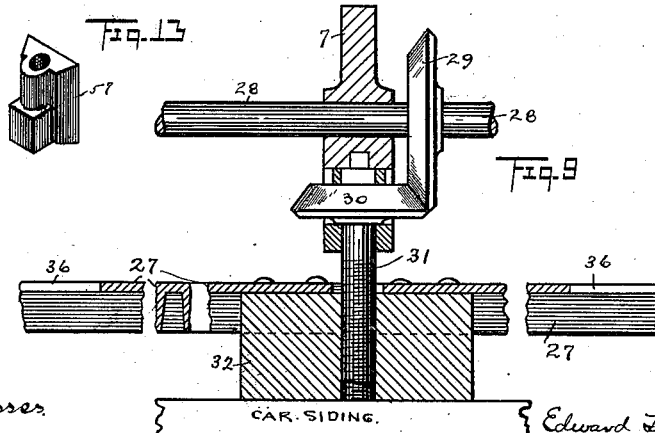
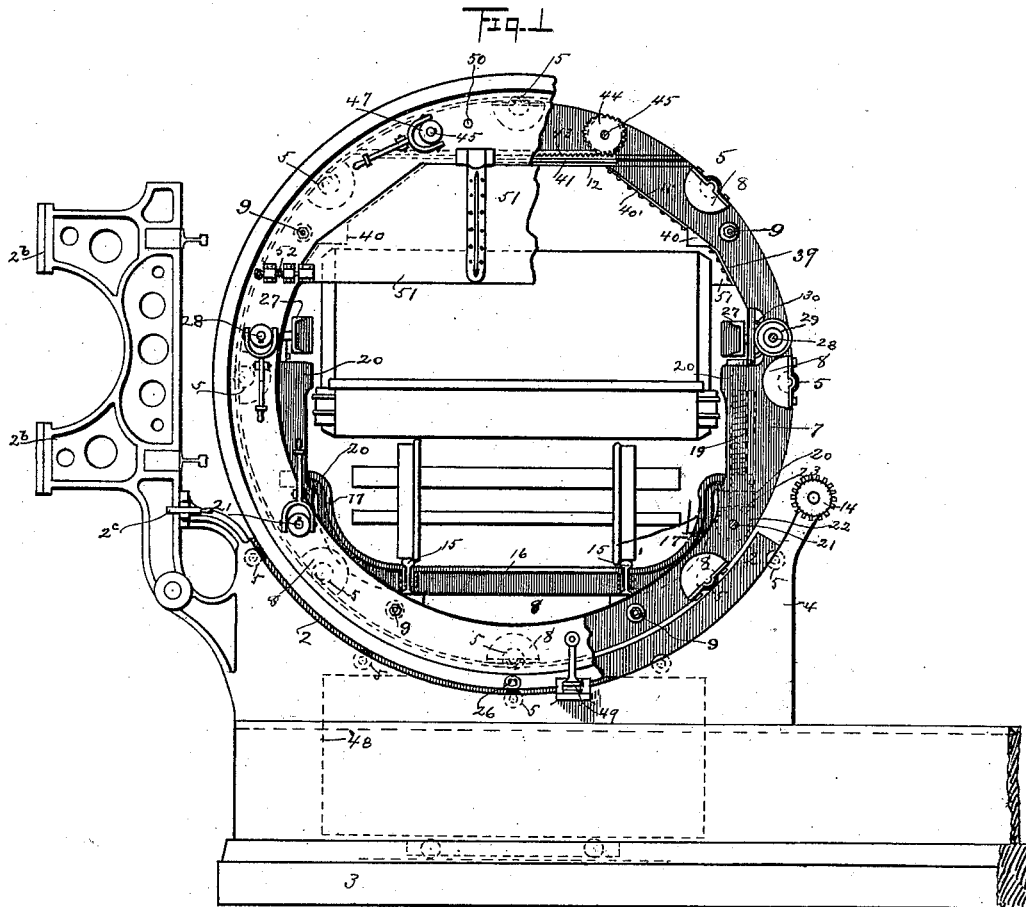
(No Model.)

5 Sheets—Sheet 1.

E. & C. E. LINDSLEY.
TRANSFERRING APPARATUS.

No. 418,525.

Patented Dec. 31, 1889.



Witnesses

N. S. Amstutz
R. B. Moser

Edward Lindsley
Chas. E. Lindsley

By H. F. Fisher Attorney

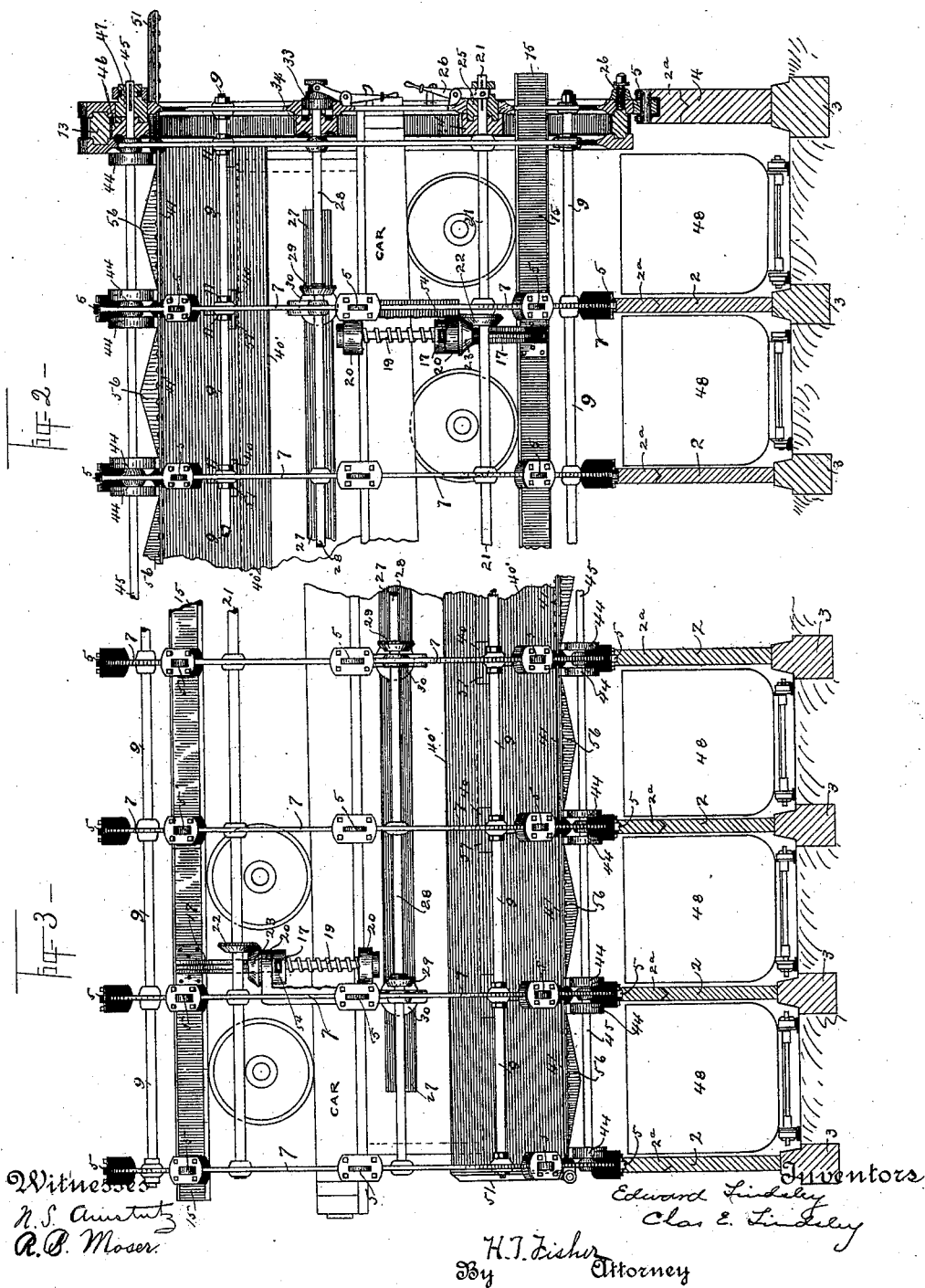
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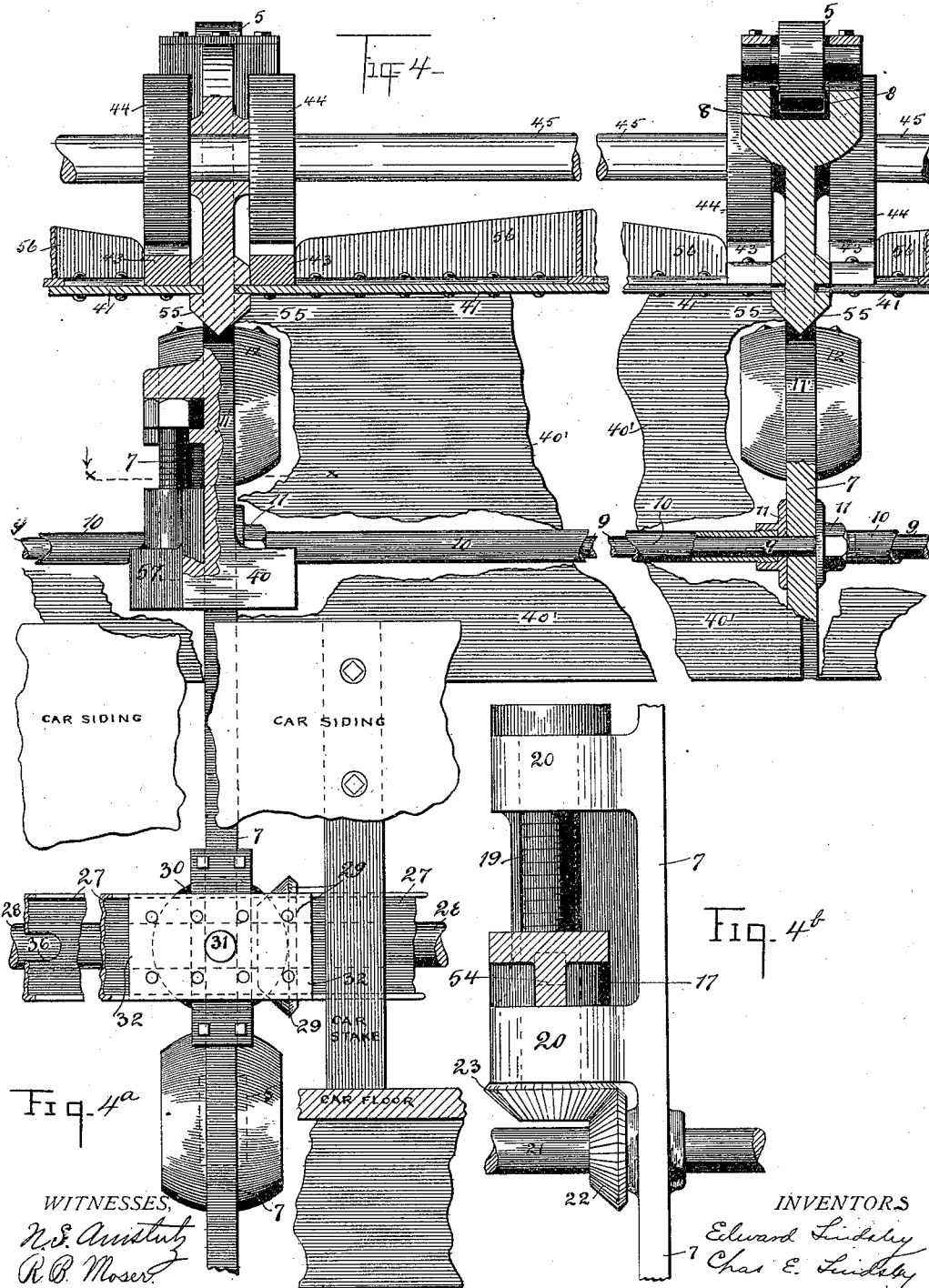
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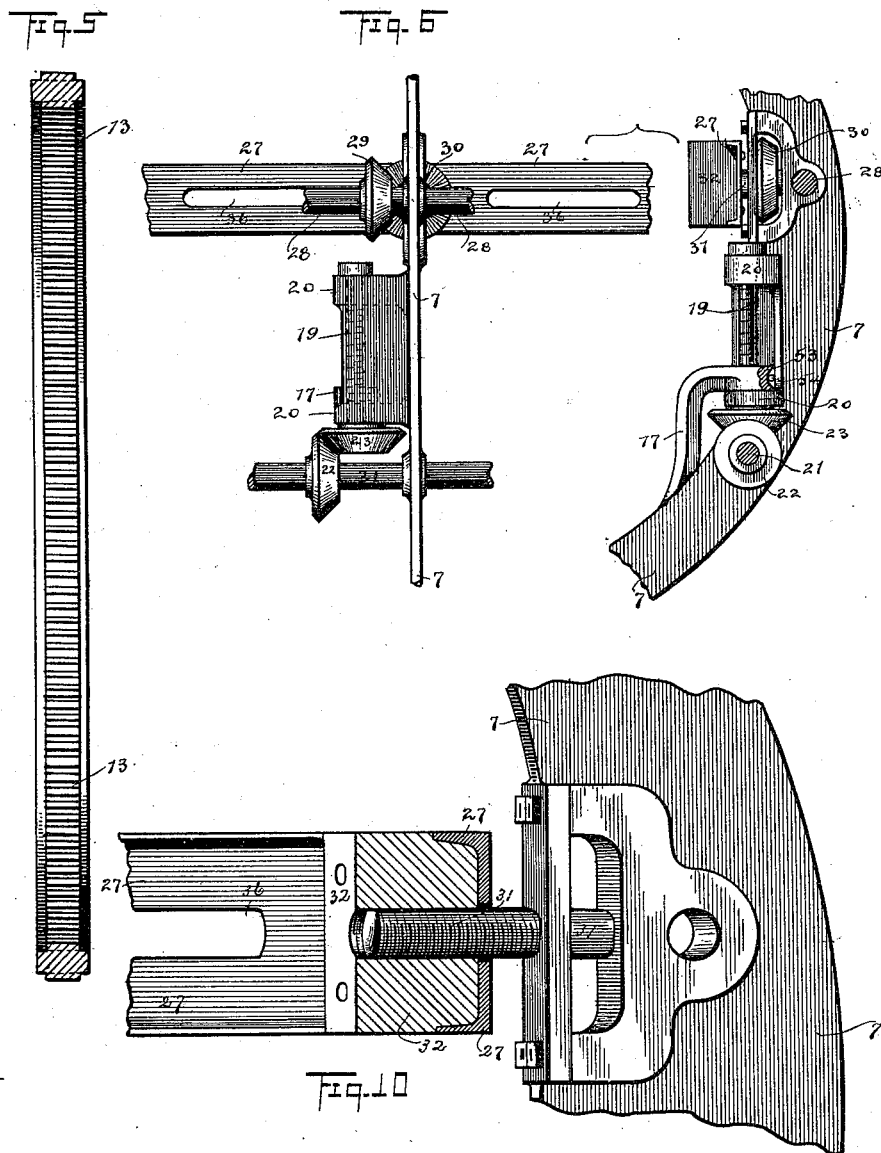
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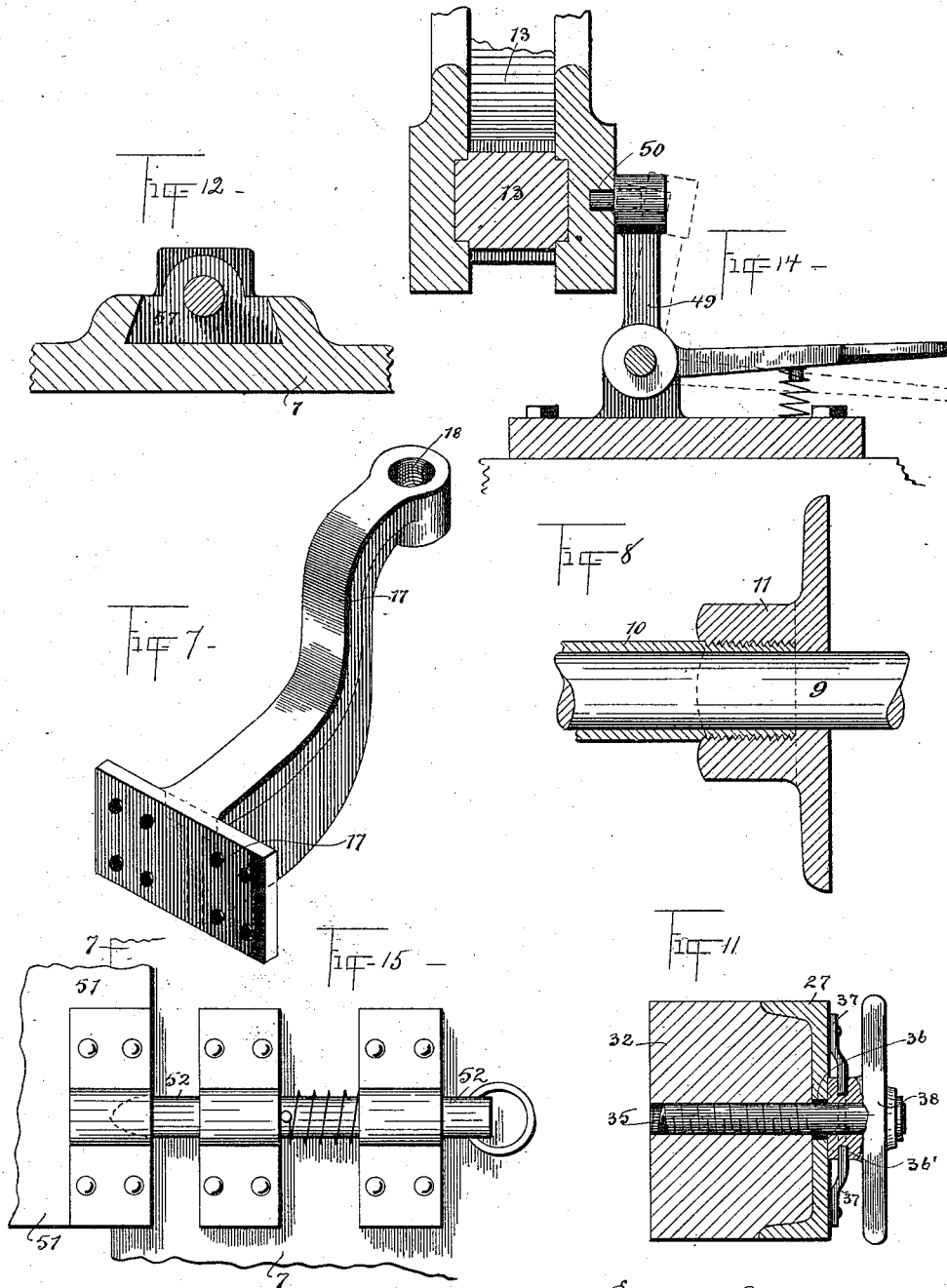
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UNITED STATES PATENT OFFICE.

EDWARD LINDSLEY AND CHARLES E. LINDSLEY, OF CLEVELAND, OHIO.

TRANSFERRING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 418,525, dated December 31, 1889.

Application filed May 13, 1889. Serial No. 310,538. (No model.)

To all whom it may concern:

Be it known that we, EDWARD LINDSLEY and CHARLES E. LINDSLEY, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in a Transferring Apparatus; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to an improved apparatus for unloading coal, iron ore, and other like freight bodily and mechanically from railway-cars; and the object of the invention is to provide means whereby such unloading can be done, particularly of coal, without injuring the coal in the handling thus received, and with ease and facility, as hereinafter explained.

It is well known to persons engaged in the coal business that there are considerable waste and loss incurred in the handling especially of soft coals by the breakage and crumbling that inevitably follow when the coal is unloaded by hand or by dumping onto a chute or platform without provision to hold the coal in bulk and cushion its fall.

We are aware of different styles of apparatus for tilting the car upon its side and of an apparatus for unloading by inverting the car; but all these apparatus are liable to the objection of crumbling and breaking the coal by reason of the loose and unprotected discharge of the coal into a chute or the like, upon which the lumps are free to roll and tumble and are sure to be more or less broken and crushed in the fall, thus producing a large percentage of what is known as "slack coal," which has but little commercial value.

The invention contemplates not only the convenient and speedy discharge of a carload of coal, but the preservation and protection of the coal in the transfer so made, to the end that the condition of the coal will not be materially affected by the change. These objects are attained by providing an apparatus by which the car is bodily inverted, and which has a cover or hood through which the load is discharged in bulk after the inversion has been made, thereby moving the entire

load bodily, at the same time keeping the lumps of coal together and preventing the tumbling of one lump upon another at considerable distances and the consequent crushing and crumbling incident to the old methods of unloading. If several lumps of coal fall a given distance together, they cushion one another and sustain no breakage of consequence, but when dropped individually the same distance may break into innumerable fragments. Hence there is material and valuable advantage in a system which moves the entire load of coal bodily and together from the car into the receptacle or upon the platform provided therefor at the point of delivery.

To these ends the invention consists in a circular rotary crib of suitable length to receive the car and mechanism for elevating all cars to a common level preparatory to inversion and unloading.

The invention further consists in the construction and combinations of parts, as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of our improved apparatus with a portion of the front rib broken away at the right to disclose one of the elevating-screws shown in dotted lines, which is located a short distance in and from the end of the crib. Fig. 2 is a longitudinal sectional elevation of, say, one-third of the crib lengthwise from the front back. Fig. 3 is a similar view of the rear portion of the crib in an inverted position, as when the car is being unloaded. Fig. 4, Sheet 3 of drawings, is an enlarged view, partly in section, of the upper left-hand portion of Fig. 2, showing particularly an edge view of the sliding doors for the hood which come between the ribs, the racks and pinions on the doors, and other features which appear more clearly in other detail views. Fig. 4^a in the lower left-hand corner of the sheet is a sectional view, looking inward, of the channel-bar for clamping the sides of the car (shown in cross-section, Figs. 10 and 11,) and behind the bar a set of gears and shaft by which the said bar is run in and out, as more clearly hereinafter described. Fig. 4^b at the lower right-hand corner of Sheet 2 is a

view, looking from the inside, of a section of a rib of the crib-carrying gear and a screw to elevate and lower the car, the same parts being shown in different views in Figs. 1 and 6.

Fig. 5 is a sectional elevation of the ring-gear in the front of the crib, through which power is applied to the different shafts. Fig. 6 is a side and end elevation of the adjusting or elevating screw, showing a section of the arm and the anti-friction ball in a socket in the end of the same bearing against the housing at the rear. Fig. 7 is a detail of one of the arms for supporting the car, one end of which is connected with the adjusting-screw. Fig. 8 is an enlarged longitudinal section of a section of tie-rod, sleeve, and flanged nut for connecting the several ribs. Fig. 9 is an enlarged view of a set of the bevel-gears used to operate the side clamps for the car-body, with a section of the drive-shaft for said gear and of the rib on which said parts are supported; and Fig. 10 is a detail of a bracket for supporting part of said mechanism with the screw-bolt and a section of nut and the channel-bar for clamping the car-body. Fig. 11 is a section of one of the intermediate clamping-nuts supported in a longitudinal slot in the channel-bar shown in part in the preceding figure. Fig. 12 is a cross-section on line *x x*, Fig. 4, showing the dovetail connection of an intermediate clamp with the rib; and Fig. 13 is a detail of the clamp itself. Fig. 14 shows a section of one of the ribs—say the front rib—with a bolt to lock the crib in any of its rotary positions and against rotation. Fig. 15 shows a section of one of the end doors 51 of the hood and a spring-pressed bolt for locking the door when closed.

The crib is cylindrical in outline, and, as here shown, is supported on a number of independent standards 2, fixed in a suitable base 3 and having such length as will allow the crib to be carried bodily thereon to one side of the track on which it is used, so as to enable a car or train to pass over said track when the crib is shifted to one side out of the way. It will be understood that the rails in the crib form a section, say, of a side track upon which the car is run to be unloaded. When this track is to be used for purposes not connected with this invention, it is necessary that the crib be removed. This is accomplished by sliding or otherwise carrying the crib bodily by any suitable power—as, for example, the power used in turning it to one side of the track, as above indicated. To effect this movement we have shown the standards as extending to the right of the crib, but broken away for want of further room, and having dovetail grooves to match the beveled edges of the sliding sections 2^a, on which the crib rests. The crib in its lateral movements carries the sections 2^a along, which slide on the standards 2. This of course is only one way of effecting this movement and other constructions and ways might be suggested; but the manner of mak-

ing the movement is not material. Then, to replace the section of track carried within the crib, we provide a supplemental or duplicate track-section 2^b, which is shown as hinged to the sliding sections 2^a and adapted to be elevated out of the way when not in use. The supports of this duplicate rail-section are beveled to rest in the grooves of standards 2 and are of such height as to bring said section into the same elevation as the track at either side. A lock 2^c serves to hold the track-section 2^b in raised position.

The several sliding sections 2^a are concave upon their upper edges and form a cradle for the crib, and, except the front section of the series, have each a groove in the concave portion to provide tracks or ways for the rollers or wheels 5. These rollers are journaled in the ribs of the crib at suitable intervals apart, so that two or more of said rollers or wheels will be in working position at the same time and support and distribute the superimposed weight.

The front standard 4 is provided with a series of rollers or wheels 5, upon which the outer section of the front rib is adapted to ride. This change of location in rollers, however, is purely for convenience, and is made to adapt the front rib to receive other elements not common to the other ribs. On the standards and substructure thus provided we place the revoluble or rotary circular crib by means of which the car is handled. This crib, preferably, is of skeleton form, and consists of a series of ribs 7, placed at suitable intervals apart to get the requisite strength and service. The size of the crib is such as to enable a loaded car to be drawn bodily into it without disturbing the load, unless it be to level some of the projecting portions about the side or top. Otherwise the crib is supposed to accommodate a car as usually loaded with coal or iron ore. The several ribs, except the one at the front, are similar in structure, and are made preferably in one piece of cast metal, though, if desired, may be cast in segments suitably united at the ends of the sections to constitute together a circular rib. Each rib has enlargements forming pockets for the accommodation of the rollers or wheels 5 journaled therein and carrying the crib in its rotation. The front rib is substantially like two of the other ribs, united and spaced for intermediate mechanism, and the several ribs are tied together and braced, so as to form a strong and rigid frame-work, by means of sleeved tie-rods 9, extending from end to end of the crib. These tie-rods are provided with sleeves 10—say of gas-pipe—cut in lengths to suit the distance between the ribs and threaded at each end, Fig. 8, to receive the flanged nuts 11. These nuts bear against the sides of the ribs through their wide flanges and have angular heads, so that they may be readily tightened by a wrench. Short sleeves separate the two sections of the front rib, and nuts outside bind

the outer section in position. The several ribs, except the first, are fashioned on their inside something like a hip-roof, having sides 11' above the car converging in nearly straight lines for a distance and then straight across the top, as at 12, so as to adapt the crib at this point as nearly as practicable to the surface of the load and facilitate the unloading when the car is inverted. Otherwise the inner portions of the ribs may be said to be concentric to their periphery. This constitutes the structure of the crib proper, which, with its wheels or rolls, is adapted to be revolved round in either direction upon its supports. Now, to revolve the crib, as well as to communicate power for raising the car, clamping the same, and the like, we place a ring-gear 13 in the space between the two sections of the front rib and outside the longitudinal tie-rod. This ring (shown in section, Figs. 2 and 5) has teeth on its periphery engaged by the power-gear 14, Fig. 1, and on its inside, which mesh with the several power-transmitting pinions journaled loosely on their respective shafts between the sections of the front rib. The gear 13 has ribs at either side, which set in corresponding grooves or guides in the opposite faces of the rib-sections and serve to keep the gear in its proper position, yet fitting loosely enough therein to allow the gear to turn while the crib remains stationary.

The car is supported on rails 15. (Shown here as built in with the tie beams or blocks 16, which lie between the rails and the arms 17 at either side.) The tie blocks and arms are flanged to bolt through the rails, thus forming a rigid structure of these several parts for sustaining the car. Two or more arms 17 are employed on either side, and these arms have threaded openings 18 in their upper ends, which engage screws 19, Fig. 6, secured in lugs 20 on the ribs of the crib. These screws are free to turn in the lugs 20, and have heads at the top above the upper lug to sustain the weight, and below the lower lug, through which the screw is turned, is mounted miter-gear 23. The arm 17 is free to run up and down the full space between the two lugs, which is more than sufficient to give the necessary elevation to the car.

On opposite sides of the crib and running longitudinally through the ribs, which serve as bearings therefor, are the shafts 21, which turn the screws 19 through miter-gear 22 and 23 on the said shaft and the lower ends of the screws, respectively. All the screws on each side are constructed and connected alike, and both shafts 21 are provided with pinions 24, arranged to mesh with the inside of the ring-gear 13. The pinions 24 are loose on their shafts, and clutches 25, splined on the shafts and provided with handles 26, serve to make engagement of these parts and turn the shafts and the screws 19 by power when a car is to be raised or lowered. With this construction the car will remain at any elevation to which

it is carried without special locking mechanism, and can be raised or lowered to any point within range of the lifting-screws.

The ring-gear is free to turn in its guides in the rib unless specially locked so as to turn the crib, and for locking said parts together we employ a set-screw 26, Fig. 2, which passes through the front section of the rib and bears against the side of the ring.

To hold and brace the car laterally, we employ channel-bars 27, running along nearly the full length of the car at either side, and mechanism to press the bars against the car, consisting of shafts 28, having their bearings in the ribs of the crib, and miter-gears 29 30, operated thereby. The gear 29 is fixed on shaft 28 and the gear 30 is fixed on the screw 31, set at right angles to the shaft and carrying a nut 32, connected with the channel-bar. The nut and channel-bar 27 may be run back and forth on the screw 31 by means of the miter-wheels and shafts at either side, according as a car is to be clamped or released, and the shafts 28 are operated by the ring-gear 13 and controlled by pinions 34 and clutch 33, the same as the shafts which elevate the car.

The sides of the car are further supported at intervals, if found necessary, by intermediate block-nuts 32, Figs. 10 and 11, supported by hand-screws 35 in longitudinal slots 36 in the channel-bars 27. These nuts may be set anywhere in their slots and operated by hand after the channel-bars have been clamped against the car-body. The manner of securing the screws 35 on the channel-bar is not material. As here shown, the screw has a grooved hub 36', in which work fastening-plates 37, bolted to the channel-bar, and the hand-wheel 38, for operating the screw, is integral with the fixed hub.

Over the car and extending the full length thereof is the hood 39, secured to the ribs of the crib. This hood has inclined sides 40', which, when the car is raised to its proper elevation for unloading, overhang the sides of the car slightly, and a flat upper portion provided with sliding doors or covers 41. Shoulders 40 on the ribs, just within the eaves of the inclined sides 40', serve as abutting shoulders for the car when raised. The doors 41 slide laterally in grooves in the ribs, and have racks 43, operated by pinions 44, Fig. 4, on shafts 45, running longitudinally through the top of the crib, and provided with pinions 46 at the front, meshing with the inside of ring-gear 13. A clutch 47 and lever at the front of the crib serve to make engagement with the pinions 46.

In operation the car would first be raised by the elevating mechanism above described, then clamped by the side clamps to hold the car immovable, and then the crib and car inverted. The weight of the load will then be transferred to the hood, though the load will not have materially changed position, for the reason that the hood will in practice come

quite close down upon the load, so that the drop in the inversion of the load will be slight in this first movement. Having the car inverted, power is applied to the ring-gear, and the doors 41 are speedily opened to discharge the load to the receptacles beneath. These receptacles in this instance are a number of yard-cars 48, Figs. 2 and 3, on transverse tracks, between the ribs of the crib and coming as near to the inverted load as practicable, so as to reduce the drop or fall of the load to the minimum compatible with the operation of the apparatus. The opening in the hood is of such width that the load may be said to move bodily and together, so that when the doors are opened the dumping occurs instantly. This body movement of the coal, with the short distance it has to fall, operates as a protection against crumbling or crushing, and the coal is transferred to the yard-cars in practically as good a condition as it was in before the transfer. The after handling of course is simple enough and need not be explained here. The labor and loss that need be taken into account attend the removal of the coal from the railway-car, and both are materially economized by our apparatus, as hereinbefore explained. One man can readily and quickly unload a car, and can do so without injuring the coal. The yard-cars are of such capacity that they will together receive the entire load.

It will be observed that all the power is transmitted through the ring-gear to the several longitudinal shafts that turn the crib, raise and lower the car, clamp the car, and operate the doors or shutters, and the means to make engagement with said gear for these several purposes are all disposed at the front of the crib within easy and convenient reach. Of course the power may also be turned on or off at any time in an instant by suitable actuation of the motor.

Other and minor details of the construction are the spring lock or bolt 49, Fig. 14, on the front standard, arranged to engage holes 50 in the face of the front rib, whereby the crib may be locked and held in any position to which it may be turned. In Fig. 15 is shown an enlarged portion of a door 51, which is swung on hinges at the ends of the hood and serves to inclose the ends to prevent the coal or other freight from falling out at that point. This door has a spring-bolt 52 for locking it when closed.

In Fig. 6 the arm is shown as having a socket 53 at its upper inner extremity, in which is an anti-friction roller 54, that bears against a housing behind the elevating-screw. This ball in a measure relieves the lateral strain and pressure on the screw and facilitates the movements of the arm thereon.

The ribs of the crib across the openings in the hood are beveled on either side, as seen at 55, Fig. 4, so as to easily divide the load as it drops through the opening, and the doors

covering the opening are ribbed on the back, as at 56, to give them the requisite strength.

In case the sides of the car are broken or burned out along the edge so that good engagement cannot be made with the abutments under the eaves of the hood, the defect may be remedied by abutting blocks 57, Figs. 12 and 13, adapted to the ribs of the crib by dovetail connection, and adjustable by screw and nut therein.

It will be understood that while the details of construction as shown are fully described herein without statements in each particular case as to other equivalent or modified constructions which might be substituted, it should be understood in each and all such cases that the forms shown may be only one of several which would serve our purpose equally well, and hence the invention should not be regarded as limited by or to such forms of details, but rather as embracing equivalents and modifications which will readily suggest themselves to any skilled mechanic. The invention has to do more with the general principles on which the apparatus is constructed than with the mechanical details through which the invention is expressed and made effective. For example, the rollers for supporting the crib might all be in or on the standards instead of mostly on the crib, or might be wholly dispensed with and the crib constructed to turn and slide in oiled grooves. The construction of the crib is not material so long as it be made suitable for the purpose described with the requisite strength and capacity. For this reason it might be inclosed all around with an opening at the top for discharging the load. Any suitable elevating mechanism might be substituted for the screws, several forms of which might be suggested, as hydraulic pressure; but the construction shown is simple and effective and answers every purpose. Nor is it material that the method shown and described for bolting together and bracing the several ribs of the crib be followed, as other ways of accomplishing the same result by stays and rods are obvious. The same is true of the clamping devices at the sides of the car and other features that have been minutely described, as the roof or hood, which may have its inclined sides so far deflected and extended as to meet in projected lines at an angle within the crib, and the shutters or doors arranged nearly or quite in the same plane as the sides and extending when closed beyond the top edges of the sides to close the opening in the roof or hood.

The platform on which the car is supported has the rails built in as a part thereof, so that the rails may be brought down to a low level and thus economize room in the crib. Otherwise a separate platform might be secured to cross rails or bars carrying the rails. All such changes of course are obvious and within the invention. The supports for the crib

may be separate standards, as shown, built into a common base, or standards laterally braced from one another without the base, or the standards may be dispensed with and any suitable frame-work or support substituted in or on which the crib is held and adapted to rotate or turn to invert the car. However, in any case the compartments or space for the yard-cars beneath the cribs should be preserved, so that these cars can be run back and forth beneath the crib for the purpose specified.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a transferring apparatus, a crib constructed to be rotated axially and a suitable support for the crib, in combination with mechanism to raise the car in the crib, substantially as set forth.

2. In a transferring apparatus, a crib having a circular exterior and a support on which the crib is adapted to turn or rotate axially, with mechanism in the crib for raising and lowering the car, substantially as set forth.

3. In a transferring apparatus, a support having a bearing-surface to conform to the exterior of the crib, in combination with a cylindrical crib on said support, lifting mechanism in the crib for raising and lowering the car, and a hood or roof in the upper portion of the crib, substantially as set forth.

4. In a transferring apparatus, a crib with a substantially circular exterior and open interiorly to receive a loaded car, in combination with supports on which the crib is adapted to turn and lifting devices in the crib on each side thereof for raising the car bodily, substantially as set forth.

5. In a transferring apparatus, a crib constructed to turn axially to invert the car, in combination with a support for the car in the crib and adjusting mechanism connected with said support whereby the car is raised and lowered, substantially as set forth.

6. In a transferring apparatus, a crib provided with mechanism to raise and lower the car, in combination with a roof or hood for the car in the crib having an opening through which the car is unloaded and shutters to close the opening, substantially as set forth.

7. In a transferring apparatus, a crib supported to turn axially, a support for the car in the bottom of the crib, and mechanism connected with each side of the support to raise or lower the car in the crib, with shoulders against which the body of the car abuts when raised, and a hood with shutters over the car, substantially as set forth.

8. In a transferring apparatus, the combination of a crib, elevating mechanism for raising the car, adjustable clamps at the sides of the car, and a hood with adjustable shutters, substantially as set forth.

9. In a transferring apparatus, a stationary support provided with bearings in which the crib is adapted to turn axially, in combination

with a crib resting on said bearings, a device to turn the crib, adjusting mechanism to raise and lower the car, and means to operate said mechanism with a hood over the car, substantially as set forth.

10. In a transferring apparatus, a crib constructed to rotate axially and adapted to receive a car, ring-gear extending around the crib, and a pinion meshing with said gear.

11. In a transferring apparatus, a crib provided with ring-gear free to slide in bearings in the crib, and a lock to engage the gear with the crib, whereby the crib and gear are made to turn together, substantially as set forth.

12. In a transferring apparatus, a crib provided with a support for the car, having mechanism to raise and lower the same, in combination with a gear-wheel supported in bearings in the crib for operating said mechanism, substantially as set forth.

13. In a transferring apparatus, a crib provided with an elevating and lowering support for the car, adjusting mechanism connected with the support at each side of the car, shafts to operate said mechanism, and a gear-wheel to turn the shafts, substantially as set forth.

14. In a transferring apparatus, a crib having a ring-gear in its end free to turn in the bearings therein while the crib is stationary, mechanism to raise and lower the car, and clamps to support the car laterally, with shafts connected with said ring-gear and with the said clamps, and raising and lowering mechanism to operate the same, substantially as set forth.

15. In a transferring apparatus, a crib provided with means to raise the car therein, in combination with a hood or roof in the top of the crib having inclined sides, and an opening between said sides, with adjustable shutters to close the opening, substantially as set forth.

16. In a transferring apparatus, a crib having a divided roof or hood in its top to cover the car and hold the load when the car is inverted, the hood having sliding shutters to close the opening between the sides thereof, in combination with a gear-wheel on the crib, a shaft operated thereby, and mechanism connecting the shaft with the shutters to operate the shutters, substantially as set forth.

17. In a transferring apparatus, a crib provided with a ring-gear supported in bearings in which it is free to turn, and a hood provided with sliding shutters, an adjustable support for the car in the crib, and clamps for the car at the sides of the crib, in combination with shafts having gear meshing with said ring-gear and connections between said shafts, the shutters, adjustable support, and clamps, respectively, substantially as set forth.

18. In a transferring apparatus, a crib formed with a series of circular ribs provided with wheels or rollers at intervals about their periphery, in combination with a concave

support for the crib having grooves in which the wheels or rollers travel, substantially as set forth.

19. In a transferring apparatus, a crib
5 formed with a series of circular ribs having pockets at intervals provided with rollers or wheels, on which the crib is adapted to turn, and braces between the ribs, in combination with a series of fixed standards having grooves
10 for the rollers or wheels, substantially as set forth.

20. In a transferring apparatus, a crib formed with a sectional portion at one end having a ring-gear supported in bearings between said sections, in combination with operating-shafts running longitudinally in the crib and provided with wheels meshing with the said ring-gear, substantially as set forth.

21. In a transferring apparatus, a crib provided with clamps to bear against the sides of the car, screws and nuts to adjust the clamps back and forth, and mechanism to turn the screws, substantially as set forth.

22. In a transferring apparatus, a crib provided with clamps to support the sides of the car, longitudinal shafts in the crib, and miter-gear with screws and nuts to adjust the clamps back and forth, substantially as set forth.

23. In a transferring apparatus, a crib provided with screws at each side adapted to turn in bearings and means to turn the screws, in combination with a support for the car having threaded arms adjustable on said screws, substantially as set forth.

24. In a transferring apparatus, a crib, a support for the car having arms at each side, and screws for raising and lowering the support, substantially as set forth.

25. In a transferring apparatus, a crib provided with a ring-gear and power mechanism to turn the gear, in combination with lifting-support for the car, screws for raising the lifting-support, and gear between said screws and the ring-gear to turn the screws, substantially as set forth.

26. In a transferring apparatus, a rotating crib to carry the car, provided with catches, as holes, at intervals, and a lock to engage said catches and positively hold the crib in any position to which it may be turned, substantially as set forth.

27. In a transferring apparatus, a crib provided with a hood or cover for the car and doors or shutters at the ends of the hood, substantially as set forth.

28. In a transferring apparatus, a crib provided with a series of fixed shoulders forming stops for the car in its raised position and adjustable shoulders to be used in connection with said fixed shoulders, substantially as set forth.

29. In a transferring apparatus, a crib to unload a car, in combination with supports for conveying the crib to one side of the track, substantially as set forth.

30. In a transferring apparatus, supports for the crib extending laterally from the line of the car-track and constructed so that the crib can move back and forth thereon, in combination with a crib on said supports, substantially as set forth.

31. In a transferring apparatus, a series of standards extending laterally from the car-track, a crib carrying sections of railway-rails, and supports for the crib resting on said standards and constructed to be moved back and forth thereon, substantially as set forth.

32. In a transferring apparatus, a crib for unloading a car and a duplicate set of rail-sections movable with said crib, in combination with supports on which said crib and duplicate rail-sections rest, substantially as set forth.

33. In a transferring apparatus, standards for the crib extending to one side of the track on which the crib is operated, in combination with the crib, intermediate supports between the crib and the said standards, and supplemental rail-sections connected with said supports, substantially as set forth.

34. In a transferring apparatus, a crib constructed to receive a car and provided with a hood or cover for the car, in combination with mechanism for bringing the cover and the car together, whereby freight is prevented from escaping about the edge of the car when the car is turned to unload, substantially as set forth.

35. In a transferring apparatus, a crib constructed to be rotated axially and adapted to invert a car and a hood in the crib to cover the car and hold the load when the car is inverted, substantially as set forth.

36. In a transferring apparatus, a crib constructed to be turned axially on suitable supports and adapted to receive a car, a hood to cover the car, provided with an opening through which the car is unloaded, and adjustable stays to bear against the car and hold it while unloading, substantially as set forth.

37. In a transferring apparatus, a crib constructed to be rotated, a support in the crib for a car, shoulders or stops to engage and support the car when inverted, and stays to bear against the sides of the car, substantially as set forth.

38. In a transferring apparatus, a crib formed with a series of ribs, a hood in said crib to cover the car, and shutters between the ribs to close the hood, substantially as set forth.

39. In a transferring apparatus, a crib supported to rotate axially and having a hood provided with an opening through which the car is unloaded, shutters to close said opening, and mechanism to open the shutters when the car is inverted and the load rests on the hood and shutters, substantially as set forth.

40. In a transferring apparatus, a rotating crib having a hood to cover the car, provided

with shutters, teeth on said shutters, and pinions meshing with the teeth to run the shutters in and out, substantially as set forth.

41. In a transferring apparatus, a crib constructed to rotate axially and open at its end, whereby a car may be run into said crib and bodily inverted, in combination with a power-transmitting ring on said crib through or by which said crib is turned, substantially as set forth.

42. In a transferring apparatus, a crib constructed to be turned and adapted to receive and bodily invert a loaded car, in combination with a power-transmitting ring on said crib, separate shafts in said crib, and mechanism

to engage any one of said shafts with the ring and transmit power, substantially as set forth.

43. In a transferring apparatus, a crib for inverting a car provided with a power-transmitting ring, shafts in the crib having wheels to engage the said ring to transmit power, and shifting mechanism whereby one or another of said shafts may be thrown into power connection, substantially as set forth.

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Witnesses:

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