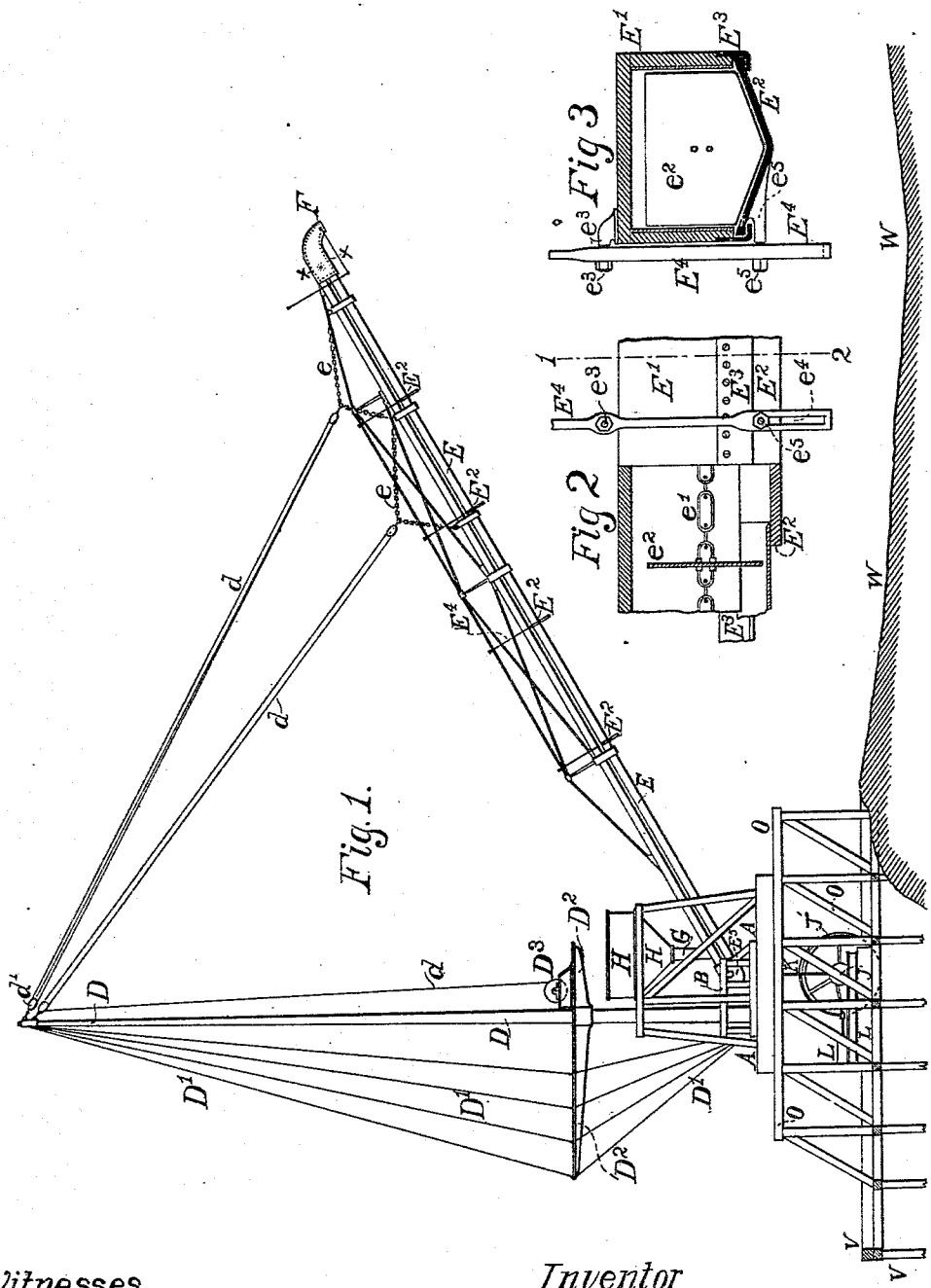
(No Model.) 4 Sheets—Sheet 1.

C. S. SCHENCK.

COAL ELEVATING CRANE.

No. 425,552. Patented Apr. 15, 1890.



Witnesses
John Stalle
Edward Chester Cushing

Inventor
Charles Edward Schenck

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

(No Model.) 4 Sheets—Sheet 2.

C. S. SCHENCK.

COAL ELEVATING CRANE.

No. 425,552. Patented Apr. 15, 1890.

Fig 4

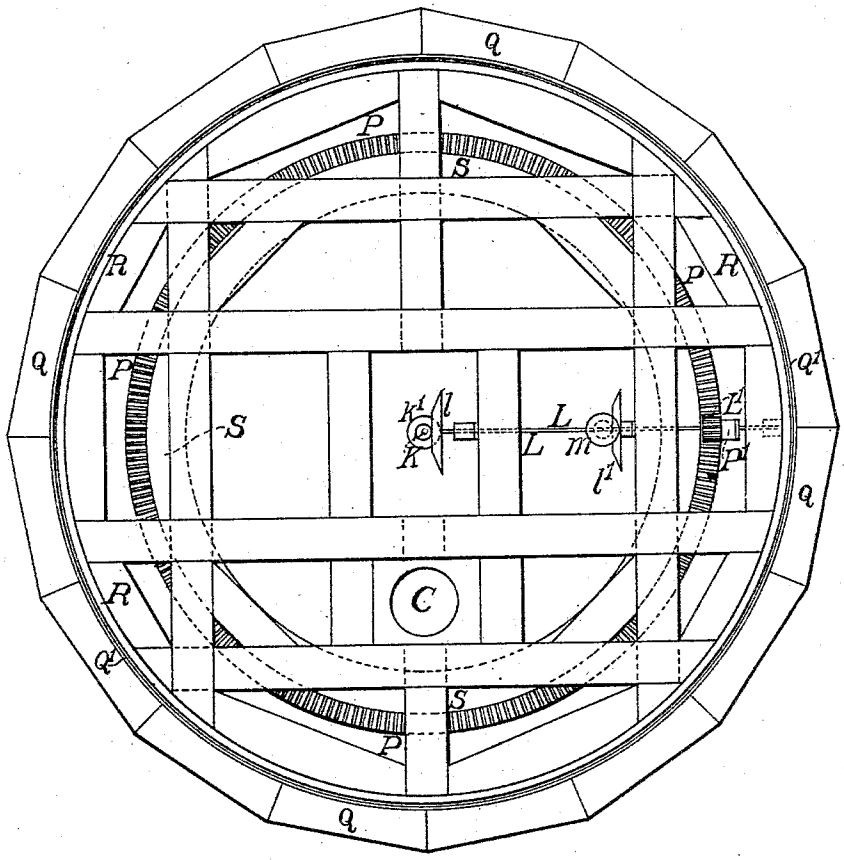
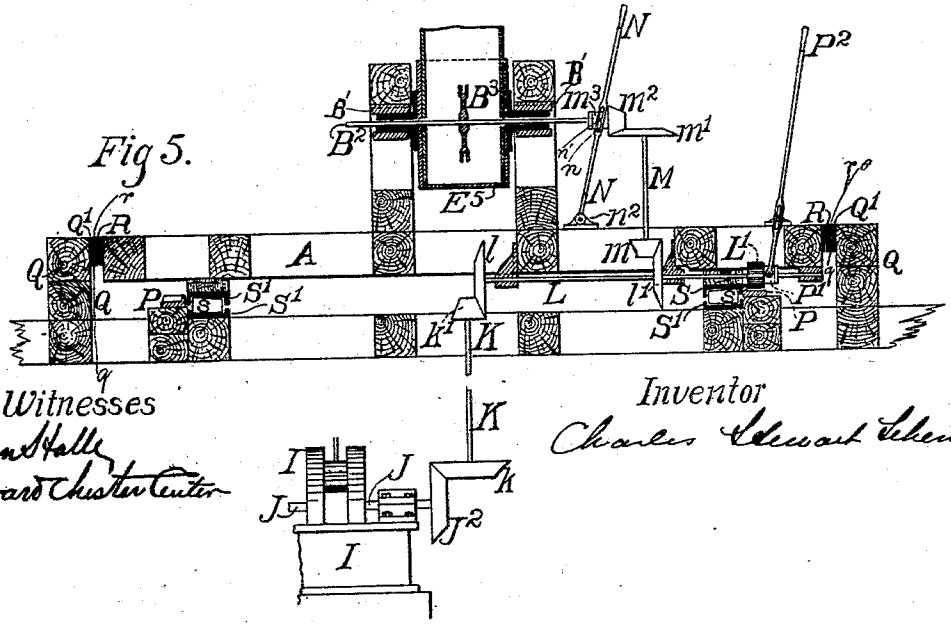


Fig 5.



Witnesses
John Stalle
Edward Chester Cutter

Inventor
Charles Edward Schenck

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

(No Model.) 4 Sheets—Sheet 3.

C. S. SCHENCK.

COAL ELEVATING CRANE.

No. 425,552. Patented Apr. 15, 1890.

Fig 6.

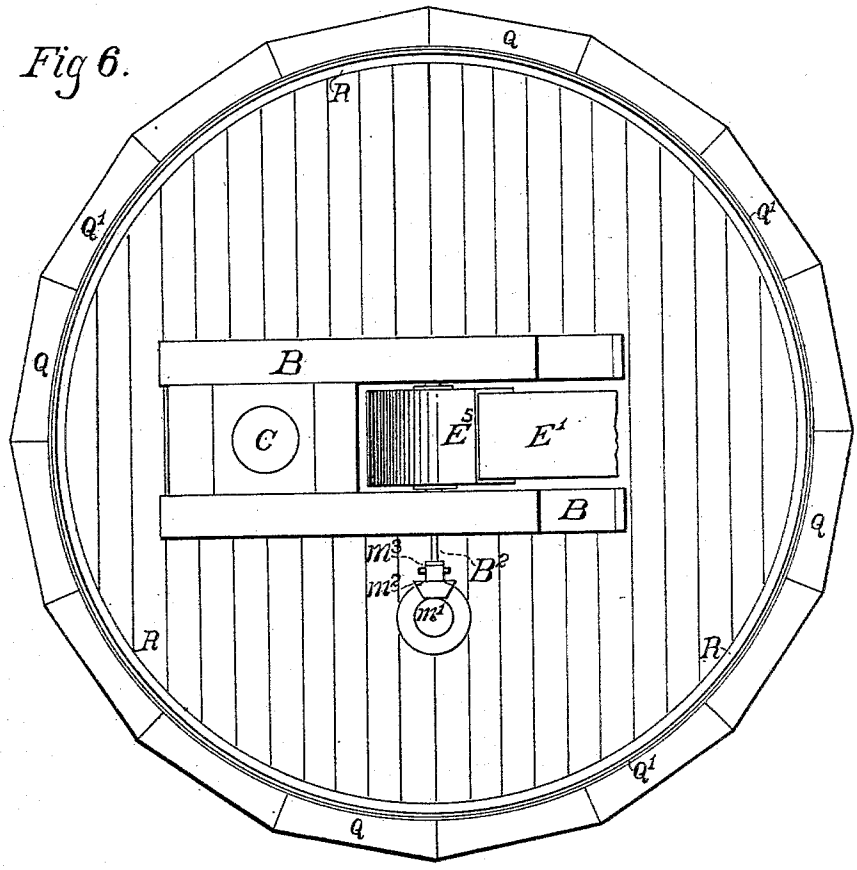
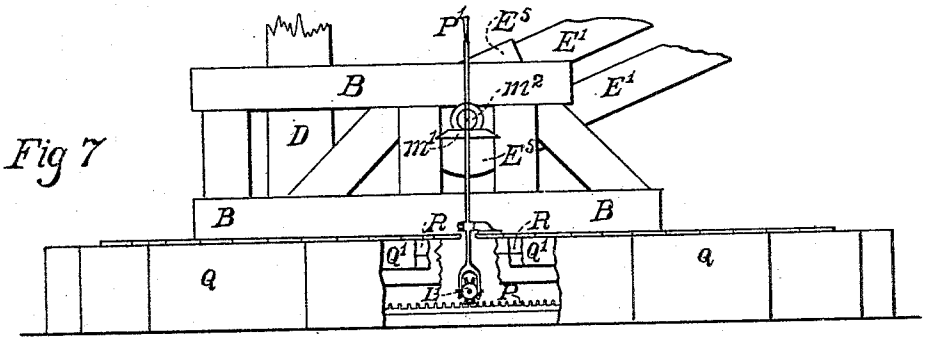


Fig 7



Witnesses
John Stalla
Edward Chester Cutter

Inventor
Charles Edward Schenck

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

(No Model.) 4 Sheets—Sheet 4.

C. S. SCHENCK.

COAL ELEVATING CRANE.

No. 425,552. Patented Apr. 15, 1890.

Fig 8

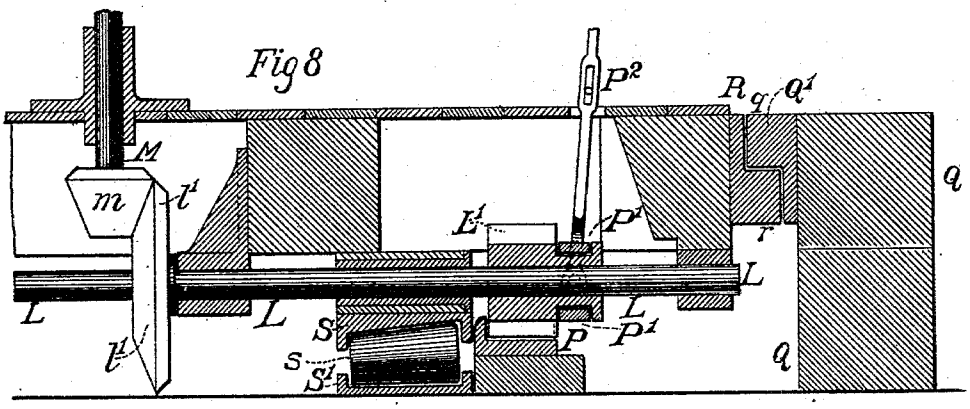


Fig-9-

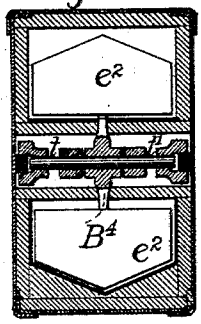


Fig-10-

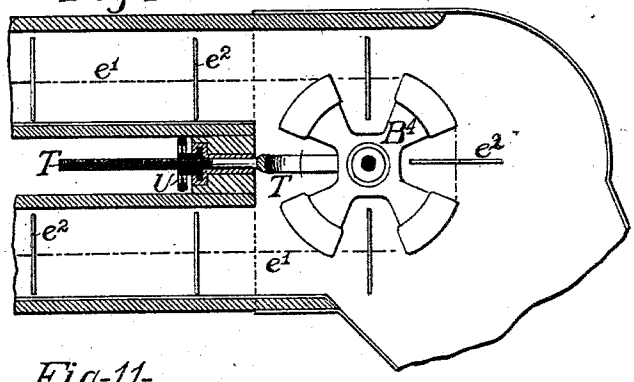


Fig-11-

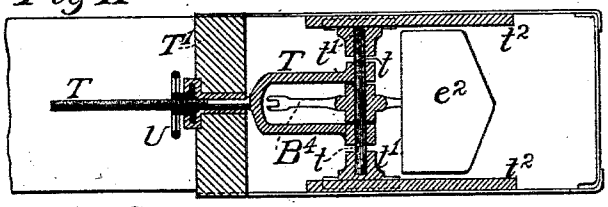


Fig 12

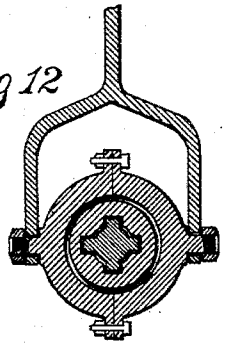
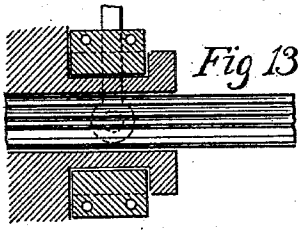


Fig 13



Witnesses

John Hall

Edward Chester Cuter

Inventor.

Charles Edward Schenck

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

UNITED STATES PATENT OFFICE.

CHARLES STEWART SCHENCK, OF NEW YORK, N. Y.

COAL-ELEVATING CRANE.

SPECIFICATION forming part of Letters Patent No. 425,552, dated April 15, 1890.

Application filed July 10, 1889. Serial No. 317,061. (No model.)

To all whom it may concern:

Be it known that I, CHARLES STEWART SCHENCK, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Coal-Elevating Cranes; and I 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.

This invention has for its object to facilitate the transfer of coal by means of a crane from ships, canal-boats, or other sources of supply to a storing-ground. To effect this general object I employ a crane mounted on a turn-table and provided with an upwardly-inclined endless conveyer or elevator and a trough or casing therefor, the latter having gates for opening and closing apertures in its bottom at intervals, the said conveyer or elevator being directed at will to discharge at any point of a circle of large radius.

The novel features of my invention will be hereinafter more particularly described, and set forth in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of the crane embodying my invention, with its turn-table and supporting-frame, the bulk-head, hopper, and storing-ground. Fig. 2 represents a detail plan view of a part or the conveyer and conveyer trough or casing with attached devices. Fig. 3 represents a vertical section through the same. Fig. 4 represents, on an enlarged scale, a plan view of the devices for operating the turn-table with proximate parts. Fig. 5 represents a vertical section taken on a plane parallel to and by the side of shaft B^2, Fig. 6, the shafts and gearing being shown in elevation. Fig. 6 represents a plan view of the turn-table, its guard, the elevator-shoe, a part of the elevator, and the devices for driving the latter and supporting it. Fig. 7 represents a detail side elevation of said devices, the said guard being broken away in part to show sundry details of the tightening devices. Fig. 8 represents a detail sectional view, still further enlarged, taken on a plane parallel to and by the side of shaft L, Fig. 5, through a part of the turn-table frame and devices therein. It is practically a mere enlargement of the right-hand part of Fig. 5. Fig. 9 represents a detail view in cross-section through the discharge-spout of the conveyer on the line $x\,x$, Fig. 1. Fig. 10 represents a part of the same in longitudinal vertical section. Fig. 11 represents the same in longitudinal horizontal section. Figs. 12 and 13 represent additional detail views of the clutch mechanism and shifting devices of the shafts.

In the aforesaid drawings, A designates a turn-table provided with standards B and an opening C. The said standards receive and support bearings B′, which receive hollow trunnions, hereinafter described, in which is journaled a short horizontal shaft B^2, provided with a sprocket-wheel B^3 for engaging and actuating the chains e' of an endless conveyer E. An upright pole D is set into said opening C, and provided with stays D′ and a fixed platform D^2, having on it a windlass or drum D^3. From this windlass a cable d passes to and over a pulley in a block d', hung to the upper end of said upright, and thence obliquely downward to a chain e, attached to the casing E′ of the conveyer. This cable and this chain may be duplicated, as shown. By means of said drum and cable the elevator or conveyer may be raised and lowered as desired, the lower end thereof turning on shaft B^2. The chains e are provided with plates or blades e^2 at right angles to them, which carry the coal upward in the usual way to the discharge-spout F. The coal is supplied to said conveyer near the lowest point thereof by a flexible tube G, descending from a hopper H, into which the coal is poured in unloading the vessels.

In the bottom of the conveyer casing or trough E′ are gates E^2, moving endwise in guides E^3. Each gate closes or opens at will an aperture in the bottom of said trough or casing, and to that end is operated by a lever E^4, pivoted at e^3 to an attachment of said casing, said lever having a longitudinal slot e^4 in its lower part and receiving therein a stud e^5, which extends laterally from said gate. The coal is carried by the upper run of the endless conveyer-chain e and discharged through the spout F; but some particles of coal and coal-dust will return with the lower

run of said elevator-chain, and if not allowed to escape from the elevator-casing will clog the action of said chain. By opening one or more of the gates aforesaid this material is allowed to escape. In some instances, especially in case of a temporary partial obstruction of the spout, a considerable amount of coal may thus return to be dropped by said gates. The said conveyer is driven by a steam-engine or other suitable motor and by a main shaft J, directly connected to said motor. This main shaft carries a fly-wheel J′ and a bevel gear-wheel J^2, the latter driving a similar wheel k on an upright shaft K, carrying another bevel gear-wheel k', which in turn drives a similar wheel l on a horizontal shaft L, carrying another bevel gear-wheel l'. This latter drives yet another bevel gear-wheel m on an upright shaft M, carrying another bevel gear-wheel m', which drives a similar wheel m^2, loose on shaft B^2 aforesaid. The gear-wheels J^2 k k' l l' m m' m^2, hereinbefore mentioned, may be friction gear-wheels, as shown in the drawings, although it will often be preferable to provide them with teeth in view of the heavy work to be done. This wheel m^2 may be locked at will to its shaft in the ordinary manner, so that both will turn together by means of a clutch-pulley m^3, splined on said shaft, as shown in Fig. 12. This clutch is operated in the usual way by a shifting-lever N, which has a longitudinal slot n, receiving a pin n', extending laterally from said clutch-pulley. Said shifting-lever is pivoted at its lower end to a lug n^2 on turn-table A. The main shaft and the first upright shaft are journaled in the supporting-frame O of the structure. Said upright shaft is exactly in line with the center of the turn-table, so that the turning of the latter will not disengage the wheels k' and l. The same motor and main shaft also cause the rotation of the turn-table, the horizontal shaft L being provided with a gear-wheel L′, which meshes with the teeth of a circular rack P, that is fixed on frame O. This wheel L′ is loose on shaft L, except when locked by a clutch-pulley P′ and its shifting-lever P^2. The operation of clutching and unclutching is substantially identical with that already described for shaft B^2. A circular guard-frame Q, fast on supporting frame or platform O, surrounds said turn-table, and is provided on its inner face at the bottom with a metal ring Q′, having a shoulder q, overlapped by a similar shoulder r on a ring R, attached to the outside of said turn-table to prevent the latter from rising out of its proper position. Said turn-table rests, as usual, on conoidal anti-friction rollers s, which are located within a channel formed by two circular corresponding facing-plates S and S′, the former being attached to the turn-table, the latter to the supporting-frame.

The following devices are used for taking up the slack of the endless elevating chain e': At their upper ends these pass over a sprocket-wheel B^4, similar to B^3, but having the bearings t' of its shaft t movable on guides t^2 longitudinally of said elevator. A bifurcated adjusting-rod T takes hold of said shaft on each side of said sprocket-wheel and is guided through a cross-piece T′ of the elevator-casing. Its rear end is screw-threaded to engage a screw-tapped adjusting hand-wheel U, attached to said cross-piece, by turning said hand-wheel. Said rod T may be moved endwise to tighten said chains at pleasure. The lower end of said elevator is provided with the usual boot E^5, which has laterally-extending hollow trunnions that serve as bearings for shaft B^2 aforesaid.

V designates the bulk-head at which vessels lie to discharge into the hopper aforesaid.

W designates the storing-ground on which the coal is deposited by spout F.

The operation of the crane is as follows: The elevator E being properly tightened and the coal supplied steadily through hopper H, the clutches are shifted to engage and the steam-engine or other motor put at work. The gearing hereinbefore described will then cause the turn-table and everything thereon to move in a partial rotation, sweeping the discharge-spout over said storage-ground in a circle of shorter or longer radius, according to the elevation given said spout. At the same time the coal is continuously delivered through it; or the shaft B^2 may be kept out of action by unclutching until the desired point is reached, and the pinion driving the turn-table shifted out of action in the same way. The coal will then be delivered at one point of the storing-ground only as soon as the shaft B^2 is again clutched for operation. By reversing the engine the sweep of the elevator is reversed also. These devices enable me to fill any part or all parts of an extensive storing-ground very neatly, exactly, and quickly to any degree and to arrange different grades and kinds of coal severally with convenience. The gates under the elevator are particularly important in insuring its work without clogging.

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

1. In coal elevating and delivering mechanism, a rotary turn-table and gearing for operating the same, in combination with a crane mounted on and turning with said table, an endless elevator, its closed casing hinged at the lower end to supports on said turn-table for motion in a vertical plane, connections between said crane and said elevator for raising and lowering the upper and outer end thereof, a hopper arranged to discharge into the lower end of said elevator, and a spout on the upper and outer end of said elevator for delivering the coal, substantially as set forth.

2. In combination with a closed casing and an endless elevator traveling therein, guides E^3, attached to the sides of said casing at the bottom thereof, gates E^2, sliding in said guides

longitudinally of said casing, each gate closing an opening in the bottom of the latter and being provided with a lateral arm e^5, levers pivoted on arms e^3 of said elevator-casing, each lever being provided with a slot e^4 in its lower end, which receives the end of the arm e^5 of one of said gates, a hopper for supplying coal to one end of said elevator, a spout for discharging it from the other end thereof, and gearing and actuating devices for driving said elevator, substantially as set forth.

3. In coal elevating and delivering mechanism, the fixed supporting-frame O, in combination with the circular guard-frame Q fast thereon, the metal ring Q′ fast on this guard-frame, the turn-table A, provided with ring R, overlapping a part of ring Q′, the circular facing-plates S and S′, attached, respectively, to the turn-table and the supporting-table and forming a channel between them, conoidal anti-friction rollers *s* in said channel, the fixed annular rack P, the pinion L′, engaging said rack, the shaft L′, journaled in attachments of said turn-table, the main shaft and gearing by which shaft L is driven, an endless elevating-chain and casing carried by said turn-table, sprocket-wheels over which said chain passes, a shaft M and gearing connecting the shaft L aforesaid with the shaft of the lower sprocket-wheel, and clutching devices whereby the main shaft is allowed to operate the turn-table only or the elevating-chain only, or both together, as may be desired.

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

CHARLES STEWART SCHENCK.

Witnesses:
JOHN HALLE,
STEWART COURTNEY SCHENCK.