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PATENTED MAY 5, 1908.

G. M. BENNETT.
UNLOADING AND TRANSFERRING APPARATUS.

APPLICATION FILED JAN. 14, 1907.

2 SHEETS—SHEET 1.

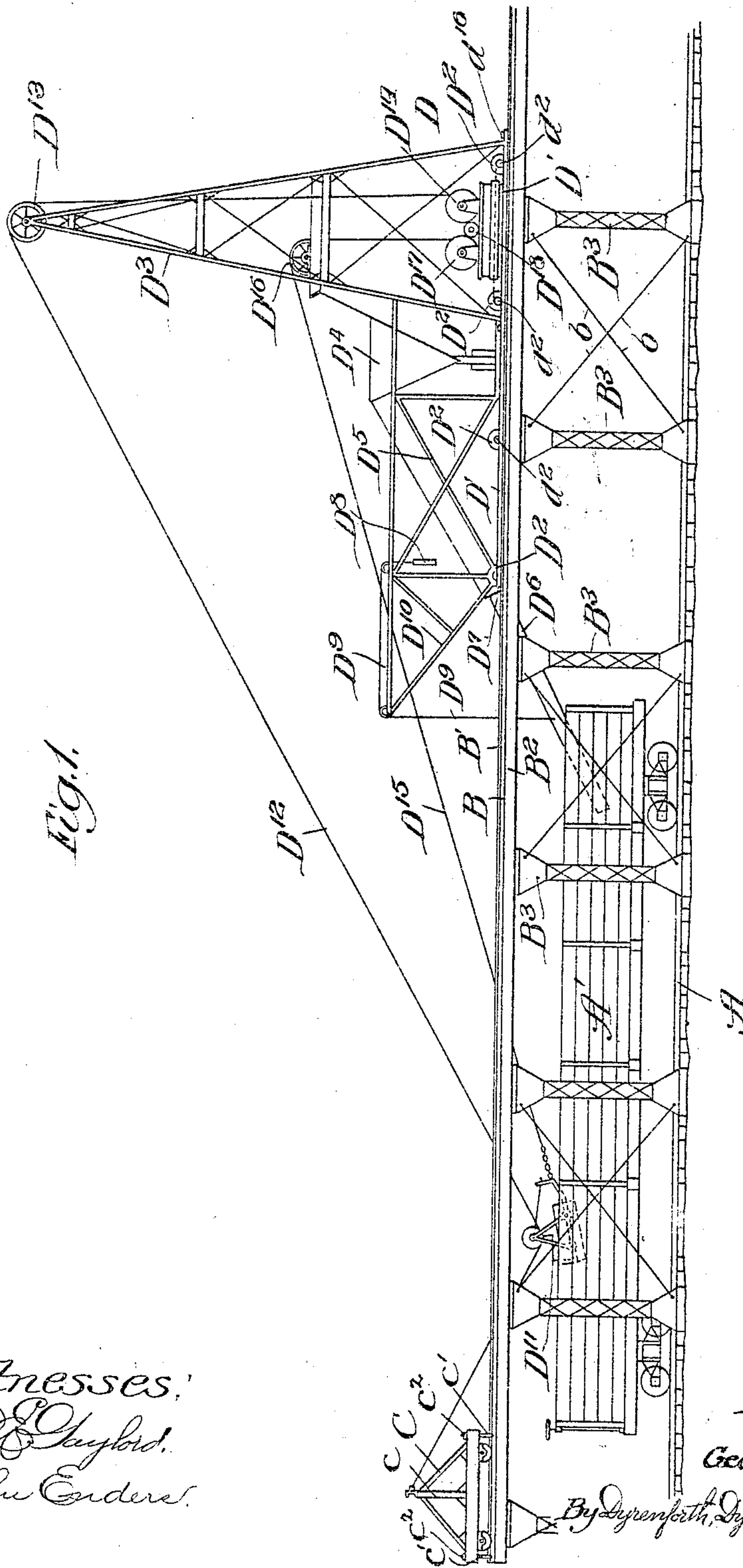


Fig. 1.

Witnesses:
Chas. C. Gaylord,
John Enders.

Inventor:
George M. Bennett
By Dyrenforth, Dyrenforth & Miller,
Attys.

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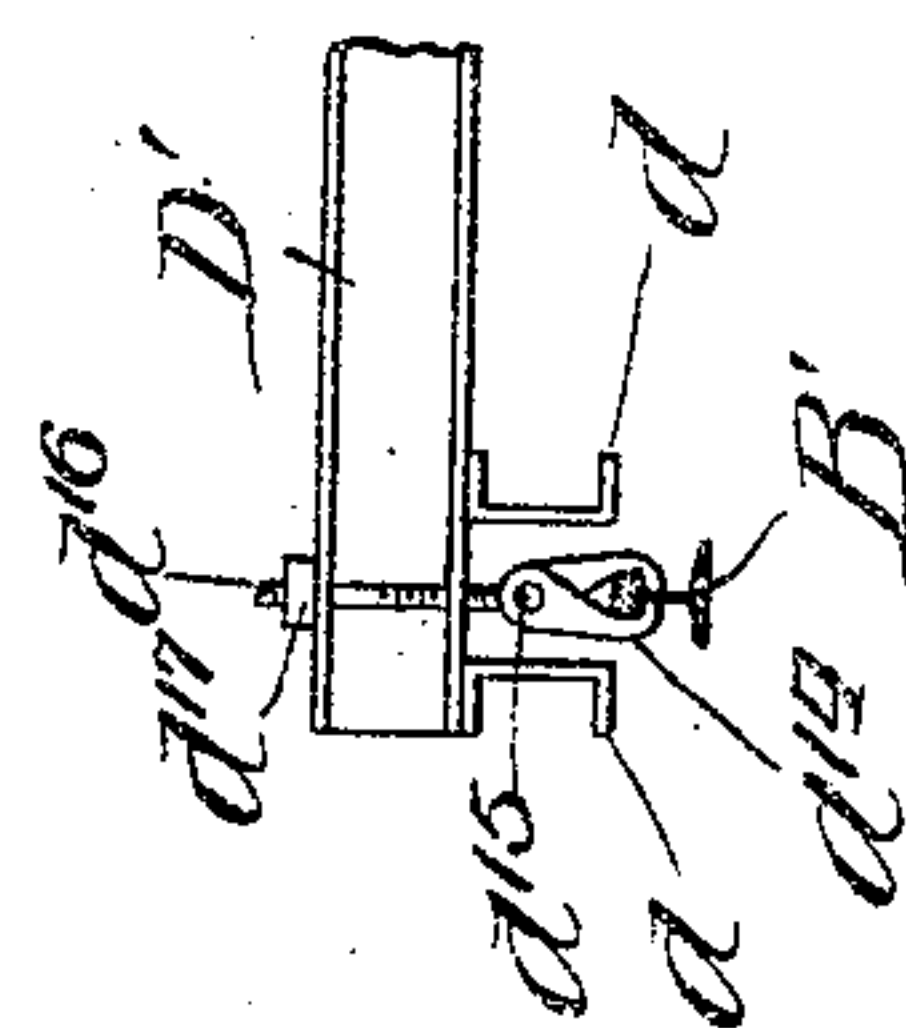
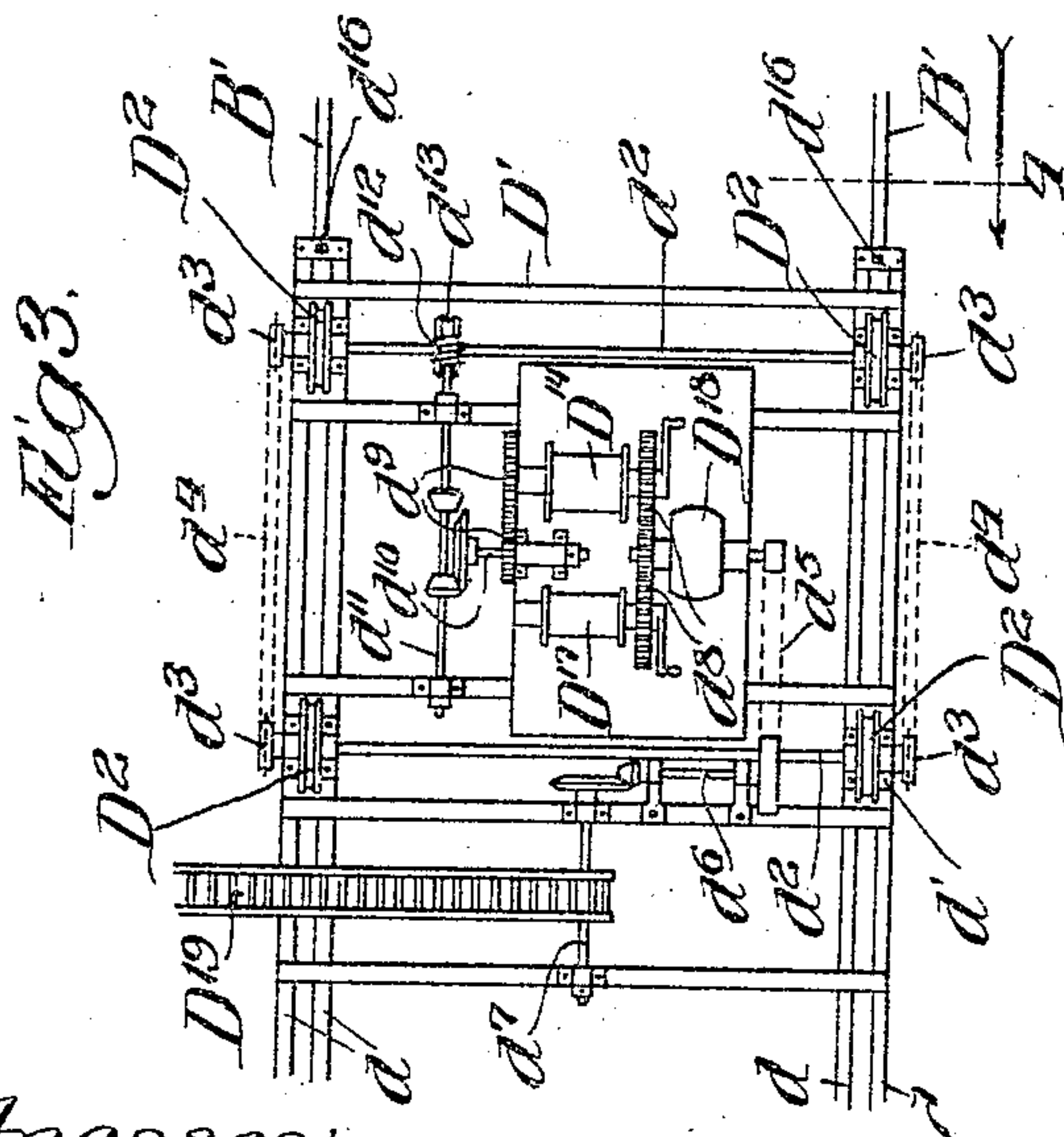
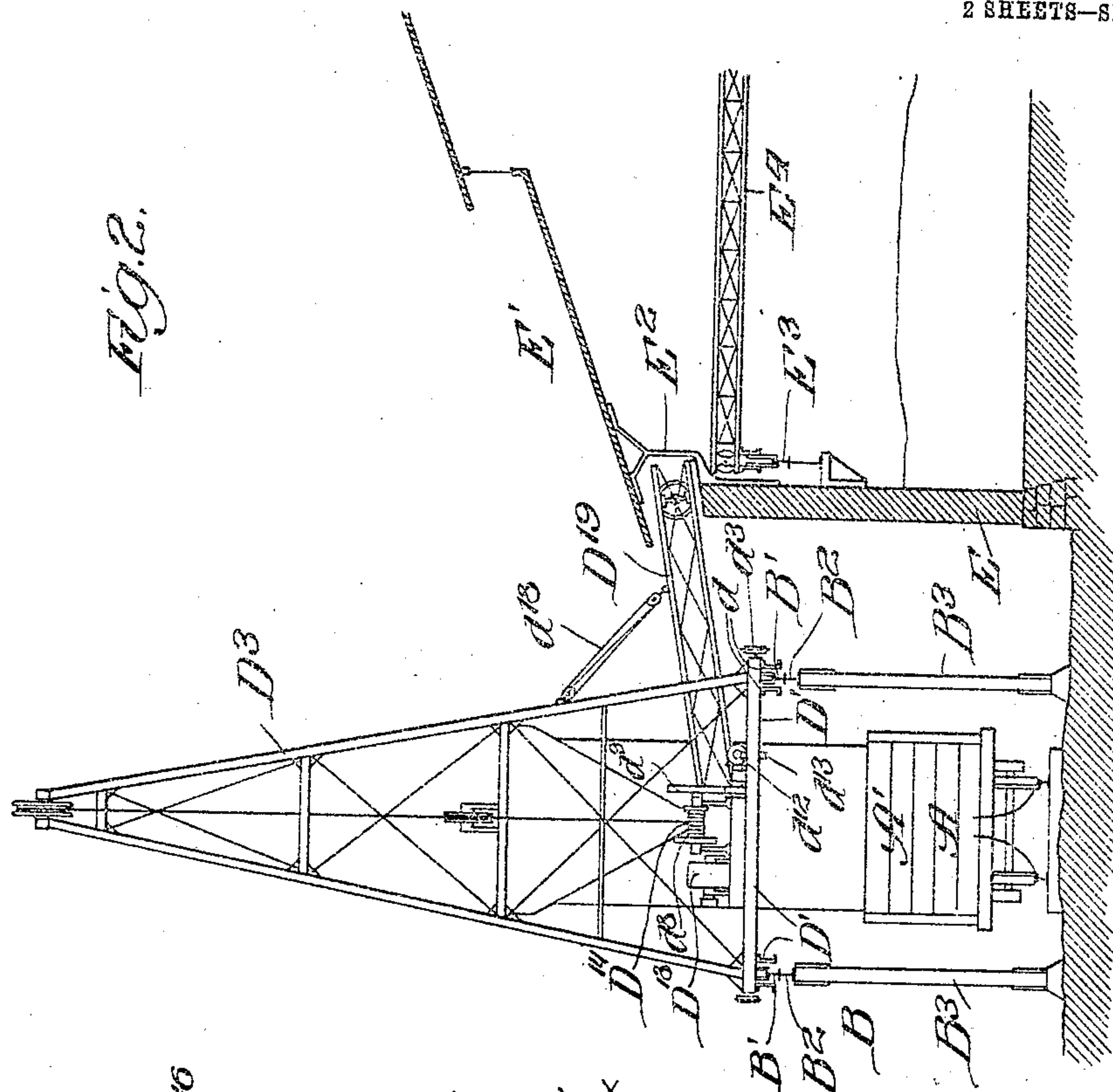
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2 SHEETS—SHEET 2.



Witnesses:
Edw. Gaylord,
John Enders.

Inventor,
George M. Bennett,
By Dypenforth, Dypenforth, Lee & Miles,
Att'ys.

UNITED STATES PATENT OFFICE.

GEORGE M. BENNETT, OF KENOSHA, WISCONSIN.

UNLOADING AND TRANSFERRING APPARATUS.

No. 886,468.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed January 14, 1907. Serial No. 352,154.

To all whom it may concern:

Be it known that I, GEORGE M. BENNETT, a subject of the King of Great Britain, residing at Kenosha, in the county of Kenosha and State of Wisconsin, have invented a new and useful Improvement in Unloading and Transferring Apparatus, of which the following is a specification.

My invention relates particularly to apparatus for unloading material in bulk, such as coal, from cars and transferring the same to any desired point, such as a hopper for stokers, a bin, or a shed.

My primary object is to provide simple and readily operated apparatus for the purpose indicated having high capacity and capable of being employed for unloading a train of cars without the necessity of moving the train of cars, for which purpose an engine is frequently not available.

In the preferred construction of the improved apparatus, there are employed a lower track upon which the train of loaded cars is to stand, two independently supported elevated track-rails flanking and embracing the lower track, a transferring-car mounted on the elevated track, a lateral conveyer mounted on the transferring-car, a shovel adapted to transfer the material from the loaded car to the transferring-car, a shovel-supporting cable and a shovel-actuating cable, and a small car or adjustable cable-support mounted on the elevated track and with which the shovel-supporting cable is connected, whereby the shovel-supporting cable is extended over the cars of the train, thus enabling the shovel to travel to and from any car, as desired.

The improved apparatus is illustrated in the accompanying drawings, in which,—

Figure 1 represents a side elevational view of the main portion of the apparatus; Fig. 2, a sectional view at right angles to the view shown in Fig. 1 and showing, also, a broken sectional view of a storage building equipped with a conveyer adapted to receive the material from the lateral conveyer of the transferring-car; Fig. 3, a broken plan view showing mechanism mounted on the transferring-car; and Fig. 4, a broken section showing a rail-gripping device employed to prevent dislodgment or tipping of the transferring-car and the cable-supporting or anchoring car.

In the drawings, A represents a lower

common gage rail-road adapted to support loaded cars A¹ (one shown); B, an elevated abnormally broad gage rail-road comprising independently supported elevated track-rails B¹, supported on I-beams B² carried by separate rows of pillars B³ rising from the ground on opposite sides of the track A; C, a cable-anchoring car mounted on the broad gage elevated road B; D, a transferring-car mounted on the broad gage elevated road and comprising a frame D¹ fitted with wheels D², and a standard or mast D³ rising from the rear portion of said frame; D⁴, a hopper supported on said frame and to which leads an upwardly and rearwardly inclined chute D⁵ having a swinging lower section D⁶ supported by a pivot D⁷ and by counter-weights D⁸ attached to cables D⁹ passing over rollers carried by trusses D¹⁰ of the frame; D¹¹, a shovel supported on a cable D¹², one end of which is connected with the cable anchoring-car C and the other end of which passes over a wheel or pulley D¹³ at the upper end of the mast D³ and thence to a winding-drum D¹⁴; D¹⁵, a draw-cable connected with the bail of the shovel and passing over a pulley D¹⁶ supported on the intermediate portion of the mast and thence to a winding-drum D¹⁷; D¹⁸, a motor mounted on the frame D¹ at the base of the mast D³, and geared to said drums; D¹⁹, a lateral conveyer supported on the frame of the transferring-car and projecting over and some distance beyond one of the elevated track-rails, the lateral conveyer being operatively connected with the shaft of the motor; E, a shed or storage building having a roof E¹ supported on brackets E² carried by the upper portions of the vertical walls (one shown) of the building; E³ a track (one rail shown) within the building and extending parallel with the elevated track B; and E⁴ a traveling conveyer mounted on the track E³ and adapted to receive material from the lateral conveyer D¹⁹, whose outer or free end projects over the adjacent vertical wall of the building, as shown in Fig. 2.

The track A for the loaded cars may be of the usual construction of a railroad track.

As stated, the track-rails of the elevated track B are independently supported, so as not to interfere with the operation of the shovel in transferring the coal from the loaded cars to the hopper D⁴, whence it is discharged upon the lateral conveyer D¹⁹.

The columns B^3 which support the track-rails are preferably joined together in pairs by means of tie-rods b , as shown in Fig. 1.

The cable-anchoring car C may constitute
5 a small truck fitted with a short mast c with which the shovel-supporting cable is connected. The frame of the truck is equipped with rail-gripping devices c^1 which may be adjusted by means of nuts c^2 , according to
10 the details shown in Fig. 4.

The transferring-car D may be of simple or elaborate construction, according to desire. The frame D^1 may be of skeleton construction, and preferably has as a part thereof
15 longitudinal channel bars d (shown in Figs. 3 and 4) with which are connected the bearings d^1 for the transverse shafts d^2 upon which the traction-wheels D^2 of the transferring-car are secured. Two of the shafts
20 d^2 are located on opposite sides of the motor D^{18} , as shown in Fig. 3, and are equipped at the ends with sprocket-wheels d^3 which are connected by sprocket-chains d^4 . The shaft of the motor D^{18} is connected by a belt d^5
25 with a transverse shaft d^6 which is joined by bevel gears to a longitudinal shaft d^7 , constituting the driving shaft of the endless belt of the lateral conveyer D^{19} . The motor shaft is connected by gears d^8 with the shafts of the
30 drums D^{14} , D^{17} , and the drums are controlled by suitable clutches (not shown). The shaft of the drum D^{14} is connected by gears d^9 with a stub shaft d^{10} which serves to operate a longitudinally extending shaft d^{11} which is
35 equipped with a worm d^{12} serving to actuate a worm wheel d^{13} on one of the shafts d^2 . By this mechanism, the transferring-car may be propelled upon the elevated track B in either direction, at will, it being understood that
40 suitable controlling means (not shown) is employed for regulating the movement of the transferring-car. When the transferring-car is at rest, the worm-gear mechanism serves as a lock for the transferring-car,
45 tending to prevent the car from moving on its track. The frame D^1 of the transferring-car is equipped, as shown in Fig. 4, with grappling hooks d^{14} which engage the heads or top flanges of the track-rails B^1 , serving
50 to prevent the transferring-car from tipping with relation to the track. Each pair of hooks is joined by a pivot d^{15} to a threaded bolt d^{16} which extends loosely through a vertical wall in the frame member and is
55 equipped with a nut d^{17} , which may be adjusted to draw the hooks upwardly with relation to the track-rail, whereby the transferring-car may be more firmly anchored upon the track, if desired. The gripping
60 devices c^1 of the cable-anchoring car C are of the same construction.

The mast D^3 may be of any suitable construction. It preferably is built up in the form of a skeleton pyramidal tower. The
65 hopper D^4 has its lower end located directly

over the lower end of the lateral conveyer D^{19} , and, if desired, a trap door or other device (not shown) may be employed for controlling the discharge of the coal from the
70 hopper upon the lateral conveyer. The pivoted chute-section D^5 is so counter-balanced that it may be raised or lowered readily at will. The shovel D^{11} may be of any well-known construction. By proper manipulation of the cables D^{12} , D^{15} in a manner now
75 well understood, the shovel will automatically dump its contents into the hopper D^4 when the ridge at the junction of the chute D^5 and the hopper is reached. The shovel-supporting cable D^{12} , in the arrangement
80 shown, passes under a sheave with which the shovel is equipped and has one end attached to the anchoring-car C. However, the supporting-cable may be connected with the shovel and with the anchoring-car in any de-
85 sired manner.

The manner of controlling the operation of the drums D^{14} , D^{17} is now well understood in the art. The lateral conveyer is adjustably
90 connected with the frame of the transferring-car by a tackle d^{18} , as shown in Fig. 2, so that the outer end of the conveyer may be raised or lowered at will. The conveyer itself may be of any suitable type, and any suitable
95 means (not shown) for controlling its operation may be employed.

The storage room E may be of any suitable construction. The brackets E^2 are so constructed as to afford the necessary space
100 to permit movement of the lateral conveyer D^{19} when the transferring-car is moved upon its track. Any suitable means for moving the conveyer E^4 to keep it in alinement with the lateral conveyer D^{19} may be employed.

The operation of the improved apparatus
105 will be readily understood from the foregoing description. The train of cars to be unloaded is located upon the track A, and the unloading and transferring apparatus mounted on the elevated track B is so arranged
110 with reference to the car or cars, as to enable the shovel to descend to any car which may be selected. The motor D^{18} is then set in operation and the lateral conveyer D^{19} is thereby actuated. The operator then con-
115 trols the operation of the drums D^{14} , D^{17} to permit the shovel to descend into a car, the cable D^{12} being slackened for this purpose, and the cable D^{15} being then wound up to draw the shovel, causing it to become filled and
120 then travel through the chute D^5 to the hopper, where the material is automatically dumped into the hopper and fed therefrom upon the lateral conveyer. The lateral conveyer delivers the coal to the interior con-
125 veyer E^4 , by means of which the coal is distributed within the storage building. When one portion of the building is filled, the apparatus mounted on the elevated track is moved to a new position, and the interior
130

conveyer E⁴ is moved into alinement with the lateral conveyer D¹⁹, when the operation may be resumed. The cable anchoring-car C may be moved by any suitable means (not shown), after first loosening the grappling devices c¹. The transferring-car may be moved upon its track at will by connecting the motor D¹⁸ with the traction mechanism of the car. Any reasonable number of cars may be unloaded without the necessity of moving the apparatus mounted on the elevated track by employing cables D¹², D¹⁵ of sufficient length.

The foregoing detailed description has been given for clearness of understanding only and no undue limitation is to be understood therefrom.

What I regard as new, and desire to secure by Letters Patent is,—

1. In apparatus of the character set forth, the combination of an elevated track comprising independent supports separated by a space adapted to receive between them the cars to be unloaded, and unloading and transferring-mechanism mounted upon said track, comprising a transferring car equipped with a lateral conveyer, and means for transferring material from a transportation car to said lateral conveyer.

2. In apparatus of the character set forth, the combination of independent elevated supports separated by a space adapted to receive a transportation car, an unloading and transferring mechanism mounted on said elevated supports comprising a transferring-car equipped with a lateral conveyer, cable-anchoring means located at a distance from the transferring car, a shovel-supporting cable connected with said cable-anchoring means and with the transferring car, and a draw-cable connected with the shovel and with the transferring-car, whereby the shovel may be lowered between said independent supports into the transportation car, filled and then withdrawn from the transportation car to deliver the material upon said lateral conveyer.

3. In apparatus of the character set forth, the combination of a pair of independently supported elevated track-rails, a cable-anchoring car mounted upon said rails, a transferring-car mounted on said rails and equipped with a lateral conveyer, a shovel-supporting cable connected with the cable-anchoring-car and with the transferring car, a shovel suspended from said cable, and a draw-cable connected with the shovel and the transferring-car, for the purpose set forth.

4. In apparatus of the character set forth, the combination of independently supported track-rails, an intermediate track on a lower plane adapted to receive transportation cars thereon, and unloading and transferring mechanism mounted on said rails, compris-

ing cable-anchoring means, a transferring-car equipped with a lateral conveyer, a shovel-supporting cable connected with the cable-anchoring means and with the transferring-car, a shovel suspended from said cable, a draw-cable connected with said shovel and with the transferring-car, and means for actuating said cables.

5. In apparatus of the character set forth, the combination of an elevated track comprising independently supported track-rails, an intermediate track located at a lower plane, and unloading and transferring mechanism mounted on said first-named track comprising a cable-anchoring car and means for fixedly securing said car at a desired point on the elevated track, a transferring-car means for securing said car at a desired point on the elevated track, a lateral conveyer carried by the transferring-car, a shovel-supporting cable, a shovel suspended therefrom, and a draw-cable, for the purpose set forth.

6. In apparatus of the character set forth, the combination of an elevated track comprising independently supported elevated track-rails, a lower intermediate track, cable-anchoring means, a transferring-car mounted on the elevated track and equipped with a lateral conveyer and with a hopper located above said conveyer, a chute leading to said hopper and having a movable section adapted to swing downwardly between the elevated track-rails, a shovel-supporting cable connected with said cable-anchoring means and with the transferring-car, a shovel suspended therefrom, and a draw-cable connected with the shovel and with the transferring-car, said shovel adapted to be drawn through said chute and discharge its contents into the said hopper, for the purpose set forth.

7. In apparatus of the character set forth, the combination of a track, cable-anchoring means, a shovel-supporting cable connected therewith, a draw-cable connected with said shovel, and a transferring-car having traction wheels mounted upon said track, winding-drums mounted on the transferring-car and connected with said cables, and a motor mounted on the transferring-car and geared to said drums and to a traction wheel, for the purpose set forth.

8. In apparatus of the character set forth, the combination of a track, cable-anchoring means, a shovel-supporting cable connected therewith, a shovel suspended from said cable, a draw-cable connected with the shovel, and a transferring-car mounted on said track comprising a frame equipped with traction-wheels, winding-drums connected with said cables, a motor geared to said winding-drums, worm-gear mechanism connecting the motor with the traction wheels, and a lateral conveyer connected with the motor.

9. In apparatus of the character described, the combination of a track having flanged

track-rails, cable-anchoring means, a shovel-supporting cable connected therewith, a shovel suspended from said cable, a draw-cable connected with the shovel, and a transferring-car comprising a frame equipped with wheels resting upon said track, grappling devices connected with said frame and engaging the flanged rails of the track, winding-drums mounted on said frame and connected with said cables, a motor serving to actuate said winding-drums, and a lateral conveyer connected with and actuated by said motor.

10. In apparatus of the character set forth, the combination of an elevated track compris-

ing independently supported track-rails, a lower intermediate track, a transferring-car mounted on said elevated track and equipped with a lateral conveyer, a building having a lateral opening through which the end of said lateral conveyer projects, and an adjustable conveyer within said building adapted to be brought into alinement with said lateral conveyer, for the purpose set forth. 15 20

GEORGE M. BENNETT.

In the presence of—

L. HEISLAR,

C. W. WASHBURNE.