

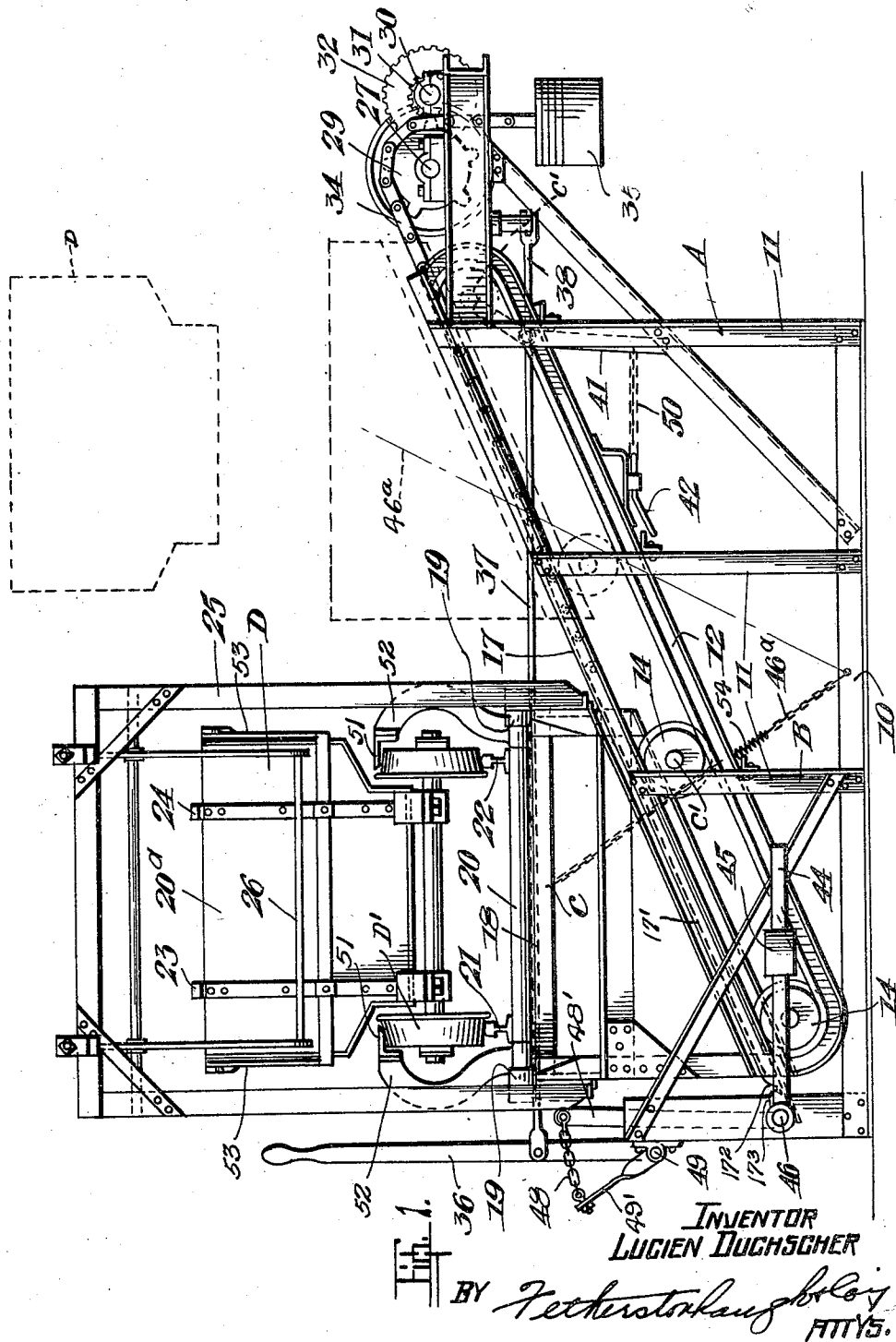
Sept. 28, 1926.

1,601,241

L. DUCHSCHER

DUMP FOR MINE CAR

Filed August 14, 1924 3 Sheets-Sheet 1



Sept. 28, 1926.

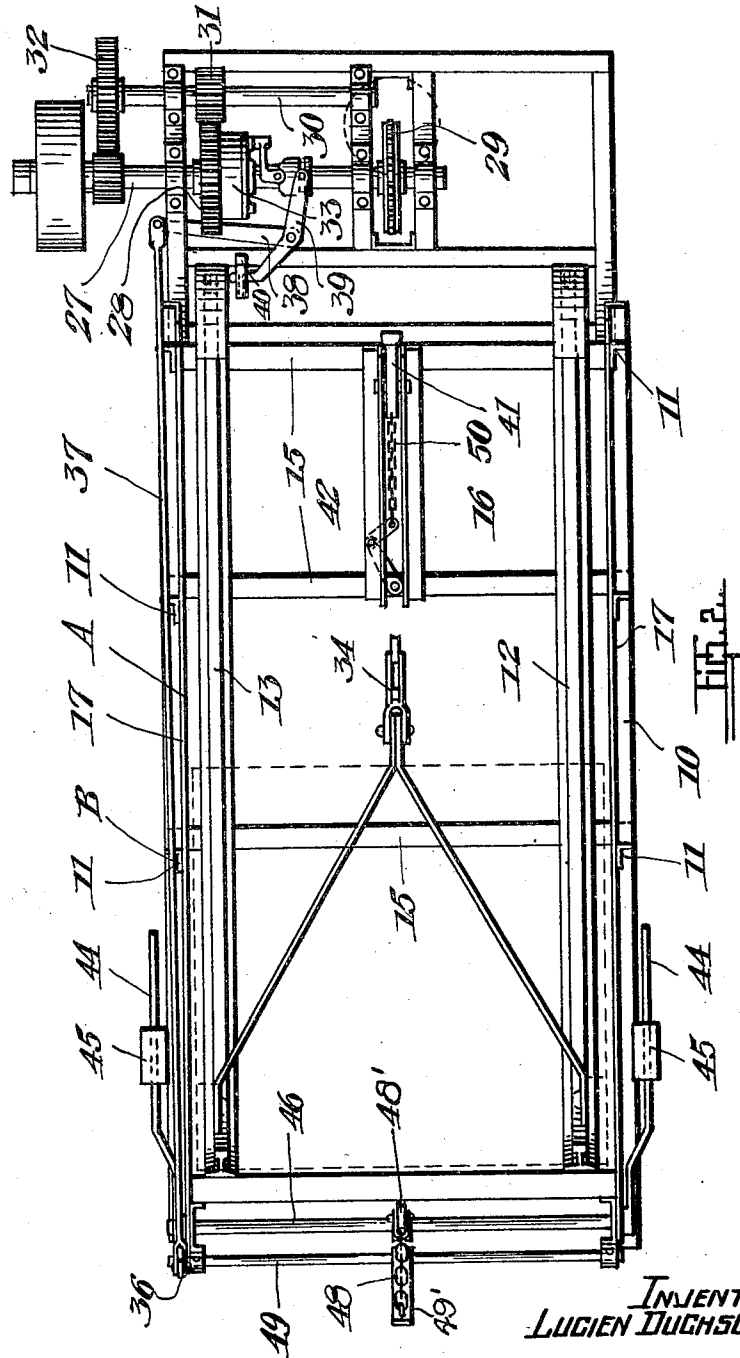
1,601,241

L. DUCHSCHER

DUMP FOR MINE CAR

Filed August 14, 1924

3 Sheets-Sheet 2



INVENTOR
LUCIEN DUCHSCHER

BY *Recherstorff & Co.*
ATTYS.

Sept. 28, 1926.

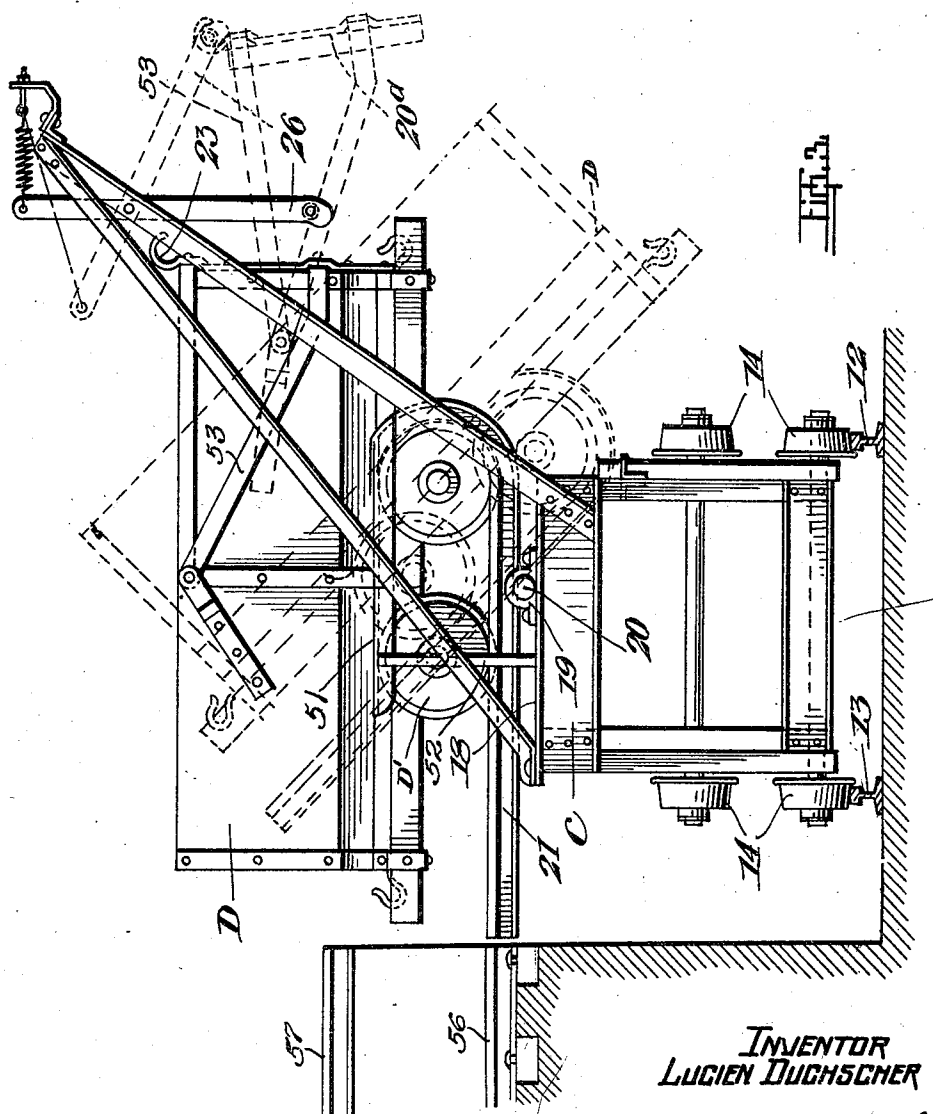
1,601,241

L. DUCHSCHER

DUMP FOR MINE CAR

Filed August 14, 1924

3 Sheets-Sheet 3



INVENTOR
LUCIEN DUCHSCHER

BY *Ketchum & Co.*
ATTYS.

UNITED STATES PATENT OFFICE.

LUCIEN DUCHSCHER, OF CALGARY, ALBERTA, CANADA, ASSIGNOR TO RIVERSIDE IRON WORKS LIMITED, OF CALGARY, CANADA.

DUMP FOR MINE CARS.

Application filed August 14, 1924. Serial No. 732,115.

This invention relates to improvements in dumps, and more particularly to dumps for coal mine cars, and the objects of the invention are to provide an efficient and economically constructed and automatic device of this kind with no complicated parts and which will, in operation, give more satisfactory results than similar devices heretofore in use.

Further objects are to provide a dump in which, after the car is dumped, it is automatically elevated to the return track.

With the foregoing and other objects in view, the invention consists essentially in the combination and arrangement of parts hereinafter more fully described.

Referring now to the drawings, in which like characters of reference indicate corresponding parts in each figure:

Figure 1 is a side elevation.

Figure 2 is a top plan view.

Figure 3 is an end elevation.

A designates the dump as a whole comprising a track-supporting frame B and a tiltable carriage C adapted to carry a loaded car and to travel in the track-carrying frame. The frame B comprises a rectangular steel or iron base 10 on which are mounted a plurality of uprights 11 designed to support the inclined guideways or tracks 12 and 13 in which the wheels 14 of the carriage C are adapted to travel. The frame B is suitably re-enforced by cross-bars 15 and a longitudinally extending bar 16, the whole being designed to form a horizontally extending skeleton supporting frame 17 with inclined tracks thereon on which, as previously mentioned, a carriage C is adapted to travel upwardly and downwardly.

This carriage is of substantially well-known construction and is adapted to support a platform 18 tiltably mounted thereon at 19 by means of a shaft 20 and provided with tracks or rails 21 and 22 of goose-necked formation at their outer ends so that when the car is pushed and the wheels run up against the bent end of the rails the car is past the centre which allows it to tip forward. It should be further noted that the rails 21 and 22 are slightly inclined to the horizontal, the purpose of which will be hereinafter more fully referred to.

The car D is of the usual construction and is provided with a swingingly mounted end

door 20^a on which are the hook members 23 and 24, while on the carriage is mounted an angle iron frame 25 extending outwardly and upwardly in slantwise direction therefrom and provided at its front end with a swingingly mounted trapeze member 26 adapted to engage with the hooks 23 and 24 on the car being dumped and thereby holding the car door while the car is tipped forward in dumping position to allow the ore or other content to run out as more particularly illustrated in Figure 3.

The mechanism for operating the carriage comprises a transversely extending shaft 27 suitably journaled in the head portion of the frame. On this shaft is mounted a gear 28 and also a sprocket 29, while parallel to this driving shaft 27 is the shaft 30 on which is a smaller gear 31 adapted to mesh with the gear 28, and on the other end a larger gear 32 adapted to mesh with the smaller gear on the shaft 27. Also on the shaft 27 is a friction clutch 33 whereby the shaft 27 is driven to in turn operate the sprocket 29 on which is the chain 34 connected at one end to the carriage C and provided with a weight 35 at the other end whereby, on the car being dumped, the carriage is automatically pulled up the inclined tracks, by the operation of the clutch 33. This clutch is operated by means of a lever 36 connected by a lever arm 37 and link 38 to a lever 39 in turn connected to the clutch and having a trip 40 adapted to engage with the carriage C as it reaches the top of the incline to automatically release the clutch. On the carriage going up the inclined tracks it pushes down a lever 41 weighted at its lower end so that as the carriage passes over it the upper end will engage the axle C¹ of the carriage C as indicated in dotted lines Figure 1, thus locking the carriage at the apex of the incline. The inclination of the tracks 21 and 22 previously referred to will cause the car D through gravity to roll off these tracks and on to the mine return tracks 57, and when at a suitable distance from the carriage C, the wheels D¹ will engage and by the weight of the car D, press a lever cable connected to the bell crank 42, causing the lever 41 through the chain 50 to disengage from the axle C¹.

When the carriage C is released, it automatically drops to its normal position as

illustrated in Figure 1. In order however to prevent the carriage from dropping too quickly, brake means are provided in the form of longitudinally extending resilient bar members 17¹, which form part of the supporting frame 17, the end portions of the members 17¹ being cut away as indicated at 17² to permit the arm 17³ to engage therewith.

The arm 17³ as indicated in Figure 1, is fixedly mounted on the shaft 46, which is in turn rotatably mounted on the frame 17.

Securely mounted at the outer extremities of the shaft 46 are the lever arms 44 upon which are adjustably mounted the weight members 45. The outward or inward movement of the weights on the lever arm 44 will increase or decrease the pressure of the arms 17³, thereby automatically regulating braking power applied to the wheels of the carriage C through the members 17¹.

The brake release comprises the lever 36 mounted on the shaft 49. The lever 49¹ is also mounted on the shaft 49, and is connected by the chain 48 to the lever 48¹, which is in turn mounted on the shaft 46. It will thus be observed that as the lever 36 is operated to throw in the clutch 33, pressure is released from the member 17¹ through the operation of the lever 49, chain 48, lever 48¹, and arm 17³.

When the car D comes from the mine loaded, it is pushed on to the rails 21 and 22, the weight of the loaded car being beyond the pivotal point 20 of the rails causes the car to tilt to an angle of approximately 45° as illustrated in dotted lines in Figure 3, the longitudinal members 51 supported by brackets 52 holding the car on the rails of the tiltable platform 18.

As the car tilts, the horizontal member connected to the trapeze member 26 engages the hooks 23 and 24, which are secured to the door 20^a. As the tilting angle increases the door 20^a supported by the pivotally mounted arms 53 suspended by the hook members 23 and 24, is gradually drawn away from the end of the car, until as indicated by dotted lines in Figure 3, the door is held suspended clear of the car, permitting the ore or other content to slide out of the car. The lever 36 is then operated to bring the clutch 33 into operation.

Engagement of the clutch causes the carriage C to travel upward on the inclined tracks 12 and 13. It should be here noted that when the lever 36 is operated, that the car D is still in tilted or in dumped position, then as the carriage travels upward, the chain 46^a secured to the tiltable platform, and the base 10 respectively, and provided intermediately with a coil spring 54, exerts a gradual pull on the raised end of the platform, so that when the carriage C reaches the apex of the inclined trackway, the trip

member 40 has disengaged the clutch 33, and the member 41 is in engagement with the axle C¹. The door 20^a has been closed during the upward travel of the carriage and released from the horizontal bar of the member 26. The slight inclination to the horizontal of the tracks 21 and 22 will cause the car D to roll off the tracks, operating the mechanism previously described, when the carriage C will return to its normal loading position ready for the next operation. It will be seen from the foregoing that the car D is taken from the mine on the lower track 56 and run onto the carriage C, which is normally in the position illustrated in Figure 3. In this position the mine car is automatically dumped. Upon the completion of this operation, the clutch mechanism previously described, is then operated to elevate the carriage C which will upon reaching the apex of the inclined trackway, automatically lock in elevated position, bringing the tracks 21 and 22 of the carriage C into alignment with the upper mine track 57. The car D will then as previously described roll off the tracks 21 and 22 onto the track 57 to be returned to the mine, operating while passing over the track 57, the release which allows the carriage C to return to normal lowered position.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention, within the scope of the claims, constructed without departing from the spirit or scope thereof, it is intended that all matter contained in the accompanying specification and drawings shall be interpreted as illustrative and not in a limiting sense.

What I claim as my invention is:

1. An automatic dump for mining cars comprising, in combination with a suitable track, a car-carrying carriage adapted to travel on said track, means for elevating the carriage on the car being dumped, and means for opening the car door simultaneously with the dumping of the car, means for automatically locking the carriage in an elevated position, and means for replacing the door in the car on the carriage being elevated.

2. In a dump of the character described, the combination of a frame, an inclined track and a tiltable carriage adapted to support a mine car, of a shaft adjacent the track, a sprocket on said shaft, a clutch on said shaft, means for driving said shaft, and lever means for operating said clutch whereby, on the car being dumped, the carriage is elevated, means for simultaneously disengaging the clutch and locking the carriage in elevated position.

3. In a dump of the character described, the combination with an inclined track, a tiltable carriage adapted to travel on said track and to carry a mine car, of lever and

clutch controlled mechanism adapted to elevate the car, and means carried by the car adapted to automatically engage with means carried by the frame to lock the carriage in an elevated position, chain means for limiting the travel of the car in a dumping position, and means for automatically opening and closing the door of the car.

4. The device as described in claim 1 in which the driving shaft is provided with clutch mechanism having a trip member and in which the clutch is also link-connected to a lever member, the lever being designed to be operated by hand, and the trip mechanism being automatically operated by a dog frame on the carriage.

5. In a device of the character described, the combination with tracks, of a tiltably mounted mine-car-carrying carriage adapted to travel upwardly and downwardly on said tracks, mechanism comprising a sprocket-carrying shaft chain-connected to the carriage and weighted at its lower end, and lever means for operating said shaft to elevate the carriage on the car being dumped, and brake means operable by said lever adapted to exert pressure on the wheels on the carriage travelling downwardly.

6. In a dump of the character described, the combination with a tiltable carriage adapted to carry a mine car, of a suitable track for said carriage and mechanism for elevating the carriage on the car being dumped, and means for automatically releas-

ing the operating mechanism to retain the car in an elevated position.

7. In a device as claimed in claim 6, means carried by the carriage adapted to automatically engage with the car door to suspend the door on the car being dumped and means to automatically restore the door of the car on the carriage being elevated.

8. The device as claimed in claim 6 in which brake means are provided to control the downward travel of the carriage, said means being operable simultaneously with the means for lowering the carriage.

9. The dump as claimed in claim 6 in which means are provided for limiting the travel of the car in a dumping position, and for automatically causing the car on the carriage travelling upwardly to assume a horizontal position.

10. A device of the character described, comprising in combination, an inclined frame, trackways mounted on the frame, of a carrying carriage designed to travel upwardly and downwardly on the trackways, means for simultaneously releasing the brake, and operating clutch mechanism to elevate the carriage, and means for automatically locking the carriage in elevated position, carriage releasing means and means for automatically braking the carriage on its downward travel.

In witness whereof I have hereunto set my hand.

LUCIEN DUCHSCHER.