F. C. GREENE & C. G. PALMER.

CONTINUOUS CAR DUMPING MECHANISM.

APPLICATION FILED SEPT. 6, 1907.

976,169. Patented Nov. 22, 1910.

3 SHEETS-SHEET 1.

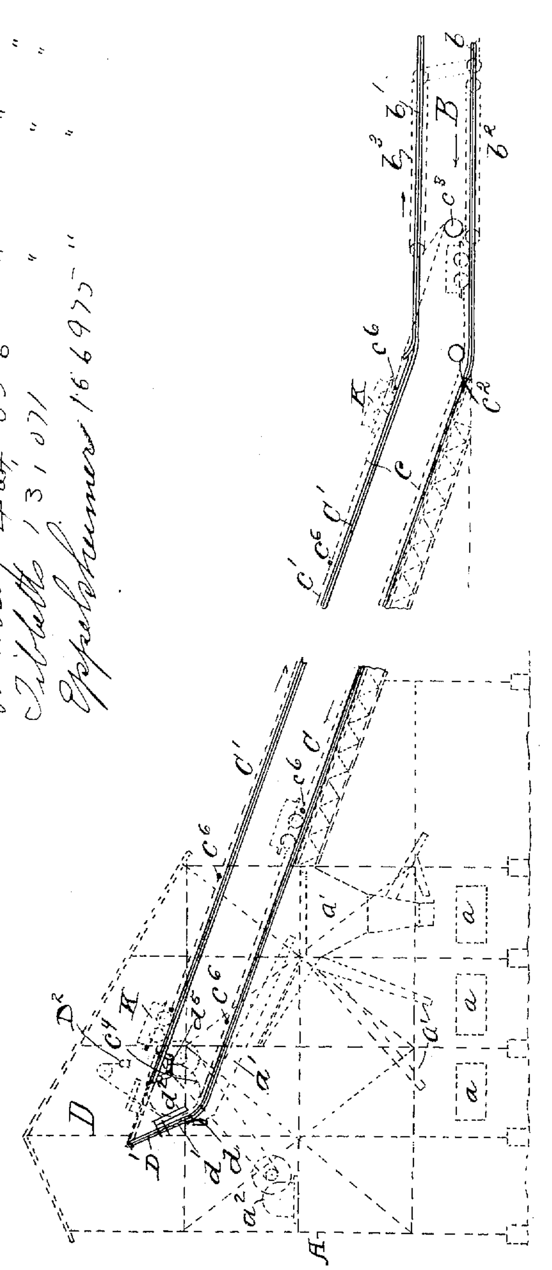

Fig. 1

Witnesses:

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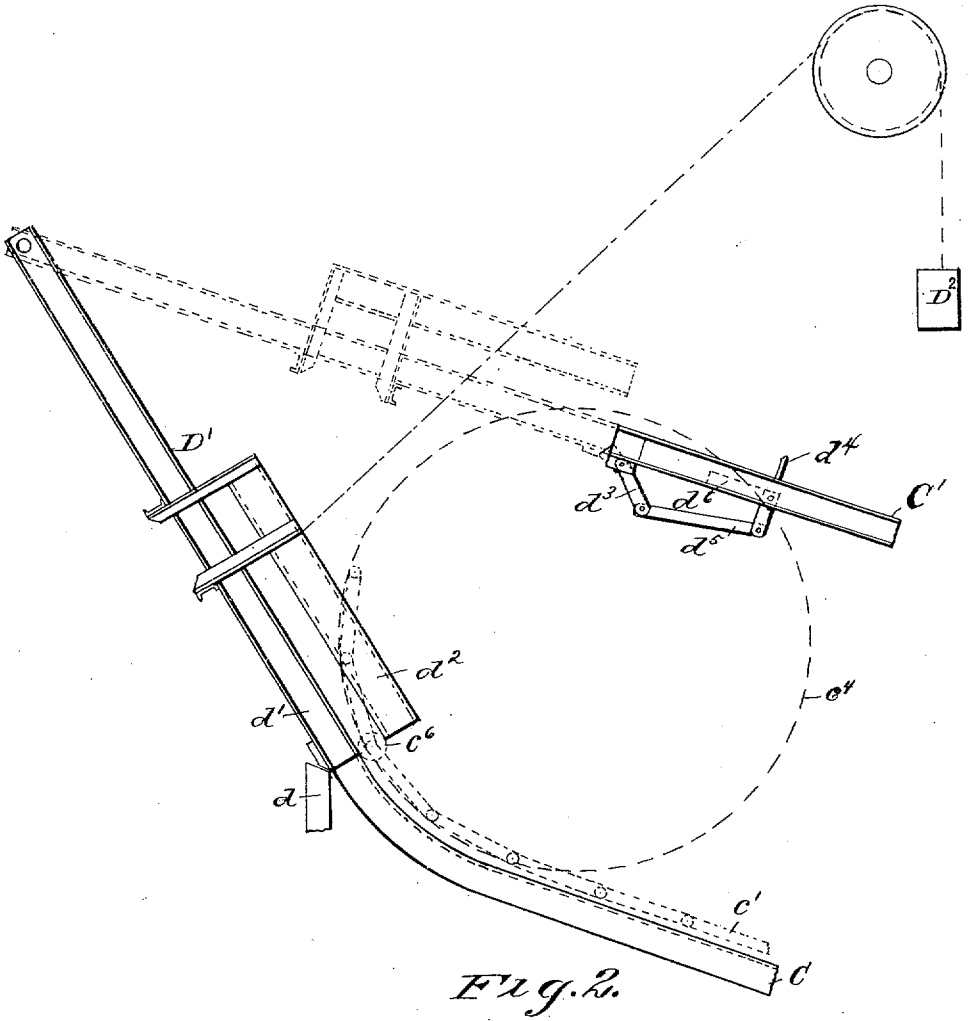

Fig. 2.

Witnesses

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3 SHEETS—SHEET 3.

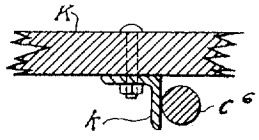

Fig 5

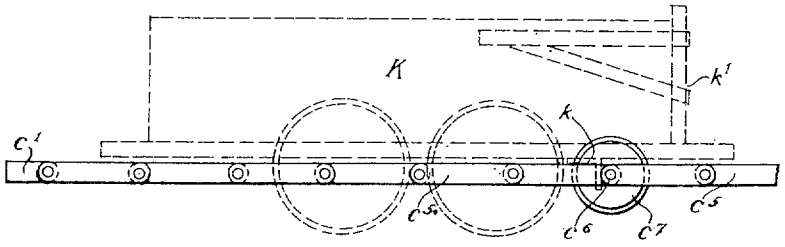

Fig 3

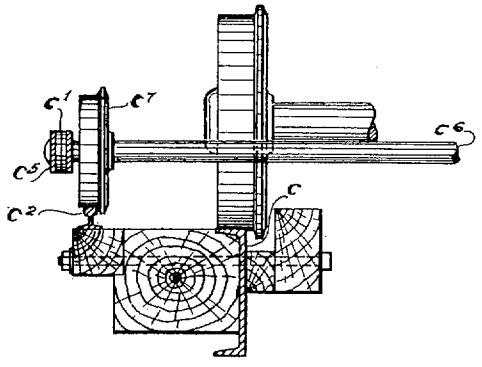

Fig 4

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CONTINUOUS CAR-DUMPING MECHANISM.

976,169. Specification of Letters Patent. Patented Nov. 22, 1910.

Original application filed January 19, 1906, Serial No. 296,764. Divided and this application filed September 6, 1907. Serial No. 391,565.

To all whom it may concern:

Be it known that we, FRANK C. GREENE and CHARLES G. PALMER, both citizens of the United States, residents of Cleveland and East Cleveland, respectively, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Continuous Car-Dumping Mechanism, of which the following is a specification, the principle of the invention being herein explained and the best mode in which we have contemplated applying that principle, so as to distinguish it from other inventions.

Our present invention relates to mechanism for handling cars and particularly to mechanism for handling mine cars in the tipples of coal mines. The principle of operation therein exemplified may be advantageously employed in divers connections where the object sought is the quick and automatic dumping or emptying of material from cars.

To the accomplishment of this object our invention consists of means hereinafter fully described and particularly set forth in the claims. Such claims, however, it should be here remarked will be found drawn to but one specific form of our invention, the invention being more broadly and generically claimed in another co-pending application, Serial No. 296,764, filed January 19, 1906, out of which the present application has been divided.

The annexed drawings and the following description set forth in detail the specific form or embodiment of the invention here involved, said disclosed means constituting, as has just been stated, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—Figure 1 represents the tipple of a coal mine shown in dotted outline with the specific form of our improved car handling mechanism here in question installed therein; Fig. 2 represents the car transferring and dumping device forming a part of such car handling mechanism; Figs. 3 and 4 are detail views of an endless cable that is employed both to move cars to and from the transferring device, and to actuate the latter; and Fig. 5 represents in detail the means provided for connecting the car to such cable.

In said figures, the tipple structure is designated by A and in addition to including the car handling mechanism about to be described provides space for railway cars or else bins into which the coal is to be discharged, together with suitable screens and chutes a' to separate the coal into its various grades and to properly divert each grade into the receptacle set apart for it. Leading from a feeding station B, where the cars are received from the mine and to which they are returned on the way back to the mine, we provide upwardly inclined tracks C C′ at the upper end of which is the dumping station D. The feeding station B includes two superposed, level, track sections b and b', the lower of which is designed to receive the loaded cars as they come from the mine, the upper of which is designed to return such cars to the mine after they have been emptied. Ordinarily both these tracks will be brought to the same level before reaching the entry way of the mine and there merged into one, but illustration and description of such switching connections, forming as they do no part of the present invention, are omitted as immaterial. The lower inclined track C, which we shall term the car delivery track, is continuous with the lower track b of the feeding station B, and the upper inclined track C′ is similarly continuous with the upper track b' of such feeding station. The cars are moved upon the level track sections of the feeding stations by any suitable means such as endless cables b^2 b^3 actuated to move in the proper directions and adapted to periodically engage a car. Movement of the cars up car delivery track C and down car discharge track C′ is in the first case effected and in the last case controlled by means of another endless cable c shown in part in Fig. 2. The construction of such cable c may be varied to suit varying conditions, one preferred form being illustrated in Figs. 3 and 4, and as there shown, consisting of two parallel chains c' made up of solid elongated links and connected at intervals by transversely disposed bars or rods c^6. Upon the ends of the latter are mounted flanged wheels c^7 that are adapted to travel on supplementary rails C^2 running alongside the rails of each of tracks C and C′. Cable c passes around suitably disposed sheaves or sprocket wheels c^2 c^3 at the lower ends of the tracks and around a single large

sprocket wheel c^4 at the upper ends thereof, the diameter of such large sprocket wheel c^4 being substantially equal to the distance between the two tracks at that point. Such cable is designed to be driven in the directions indicated by the arrows by a motor a^2 or equivalent means connected with large sprocket wheel c^4 as shown.

Cable c is provided at intervals with means adapted to engage the cars K to move them up the car delivery track and to hold them in check in going down the car discharge track. The form taken by these engaging means will depend upon the character and construction of the cable, such means in the present instance consisting simply of the bars c^6 that connect the two parallel chains composing the cable. Each car is provided with a downwardly projecting lug k on its under side, so disposed as to be engaged by the bars in question, respectively, as they are carried along by the cable. Such specific cable construction and car engaging means likewise are fully claimed in our copending application above referred to.

Dumping of the loaded car, which is moved up delivery track C by means of cable c in the manner just set forth, is effected at the dumping station D at the upper end of such track; and simultaneously with the dumping operation the car is transferred from the lower car delivery track to the upper car discharge track preparatory to its return to the feeding station B and thence to the mine. The form of mechanism here shown by which such dumping and simultaneous transfer of a car is accomplished is illustrated in detail in Fig. 2, from an inspection of which it will be seen to comprise a frame D′ pivotally mounted on an axis transversely disposed relatively to tracks C and C′. A counterweight D^2 is provided in connection with such frame but should not be so heavy as to overbalance it; accordingly it will normally occupy the position indicated in full lines in aforesaid figure, being retained in such position by a stop d. As shown, the frame in such normal position is inclined at an angle of about 60 degrees from the horizontal, the exact degree of inclination, however, being immaterial so long as it is sufficient to cause a car when similarly inclined to readily discharge its contents. When in such normal position, the lower free end of the frame D′ is designed to register with the upper end of car delivery track C which is curved upwardly to meet it, thus avoiding a sharp turn in the track. The portion d' of frame D′ that registers thus with the end of the track C is provided with rails or equivalent means adapted to form a continuation of the rails of such a track so that a car may pass readily off the track and on to the frame. The same endless cable that is utilized to move the cars along the track C is designed to be also employed to urge them off the track onto frame D′. To this end the large sheave c^4 around which the cable passes is located substantially as indicated in Fig. 2 with reference to the upper curved end of the track C and the lower portion of the frame D′, whereby the cable is maintained practically parallel with both. Cable c in addition to being adapted to engage, as stated, a car and move the same along the track C is adapted to engage the free end of the oscillatory frame D′ as it is carried transversely across the same in passing around sheave c^4. This in the case in hand is accomplished by simply providing the frame with arms d^2 disposed as to be engaged by the wheels c^7 that normally travel on supplementary rails c^2. The effect of such engagement it will be seen is to carry the whole frame upwardly, with the car previously deposited thereon, until it rests in the position indicated in dotted outline in the figure just referred to. In this position the free end of the frame registers with the upper end of the car discharge track C′ and as the cable passes across the upper side of the sheave and thence along the track it disengages the oscillatory track section of frame D′ leaving the same free to swing back again to its normal position. Means are provided, however, whereby the frame is retained in register with the track C′ long enough to allow the car borne by the frame to pass off on the latter. Such means comprise a latch d^3 positioned by means of a weighted arm d^6 to automatically engage the end of the frame as it swings upwardly. As the car after leaving the frame passes along track C′ it engages a trip arm d^4 properly connected with latch d^3 by a bar d^5 to thereupon swing the latter out of engagement with the frame. The return of the frame to the lower normal position in which it rests against stop d is, of course, controlled by the counterweight previously described.

The dumping of the car is effected incidentally to its transfer from track C to track C′ by simply opening the end gate k' thereof. Such opening of the end gate and consequent dumping of the car may be effected manually or automatically by mechanical means which do not appear in this specification or form a part of our present invention. It should occur, however, a little before the car reaches the oscillatory frame D′ and before such frame has been engaged by the cable c in order that the car may be entirely emptied before being raised to the upper track. The interval between successive cars on the lower track of the car haul should be gaged so as to permit such cars to arrive one after the other at the upper end of the car delivery track C just a little after the frame D′ resumes its normal position.

Other modes of applying the principle

of our invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

We therefore particularly point out and distinctly claim as our invention:—

1. In mechanism of the class described, the combination of an endless cable, a carrier member adapted to be conveyed thereby, and an oscillatory transfer device adapted to receive said carrier member from one portion of said cable and place the same on another portion thereof, said cable being connected to operate said transfer device.

2. In mechanism of the class described, the combination of an endless cable, a carrier member adapted to be conveyed thereby, and an oscillatory transfer device adapted to receive said carrier member from one portion of said cable and place the same on another portion thereof, said cable being connected to periodically operate said transfer device.

3. In mechanism of the class described, the combination of a sheave, a cable passing around the same, a carrier member adapted to be conveyed by said cable, and an oscillatory transfer device adapted to receive said carrier member from the portion of said cable on one side of said sheave and to place the same on the portion of said cable on the other side thereof.

4. In mechanism of the class described, the combination of a vertically disposed sheave, a cable passing around the same, a carrier member adapted to be conveyed by said cable, and an oscillatory transfer device adapted to receive said carrier member from the portion of said cable on one side of said sheave and place the same, same side up, on the portion of said cable on the other side of said sheave.

5. In mechanism of the class described, the combination of a vertically disposed sheave, a cable passing around the same, a carrier member adapted to be conveyed by said cable, and an oscillatory transfer device adapted in its lower position to receive said carrier member from the portion of said cable on the lower side of said sheave, and in its upper position to place said member, same side up, on the portion of said cable on the upper side of said sheave, said cable being adapted to periodically actuate said transfer device.

6. The combination with a car-haul including an endless cable and cars movable thereby; of an oscillatory transfer device, apart from said car-haul, adapted to receive a car from one portion of said cable and to place the same on another portion thereof, said cable being connected to operate said transfer device.

7. The combination with a car-haul including an endless cable and cars movable thereby; of an oscillatory transfer device, apart from said car-haul, adapted to receive a car from one portion of said cable and to place the same on another portion thereof, said cable being connected to periodically operate said transfer device.

8. The combination with a car-haul including superposed tracks, an endless cable passing along the same, and cars movable on said tracks by said cable; of an oscillatory device, apart from said car-haul, adapted to receive a car from one of said tracks and to place the same on the other, said cable being adapted to actuate said transfer device.

9. The combination of two tracks, oscillatory car-transferring means adapted to register with each of said tracks, and means adapted to periodically actuate said transferring means to register with said tracks alternately.

10. The combination of two tracks, car-transferring means normally registering with one of said tracks, and means adapted to periodically actuate said transferring means to register with the other of said tracks.

11. The combination of two tracks, car-transferring means normally registering with one of said tracks, and a cable adapted to periodically engage and actuate said transferring means to register with the other of said tracks.

12. The combination of two superposed tracks, car-transferring means normally registering with one of said tracks, and a cable adapted to move a car upon said tracks and to periodically engage and actuate said transferring means to register with the other of said tracks.

13. The combination of two superposed tracks, car-transferring means normally registering with the lower of said tracks, and a cable adapted to periodically engage and actuate said transferring means to register with the upper of said tracks.

14. In car-handling mechanism, the combination of two tracks; a movable car-transferring member adapted in its normal position to register with one of said tracks and in another position to register with the other thereof; and an endless cable passing along said tracks and adjacent to said member, such cable being adapted to move a car off said first track onto said member when in its normal position and to thereupon engage said member and move the same into its other position.

15. In car-handling mechanism, the combination of two tracks; an oscillatory car-transferring member adapted to register with each of said tracks; and a cable passing along said tracks and adapted to periodically engage and actuate said member.

16. In car-handling mechanism, the combination of two tracks; an oscillatory car-transferring member adapted to register with each of said tracks; and an endless cable passing along such tracks and adjacent to said member, such cable being adapted to move cars upon said tracks and to periodically engage and actuate said member.

17. In car-handling mechanism, the combination of two superposed tracks; an oscillatory car-transferring member adapted to register with each of said tracks; and an endless cable passing along such tracks and adjacent to said member, such cable being adapted to move cars upon said tracks and to periodically engage and actuate said member.

18. The combination of two superposed tracks; an oscillatory car-transferring member normally registering with one of said tracks and adapted to register with the other thereof; and an endless cable passing along said tracks and transversely of the free end of said member, said cable being adapted to move a car on said tracks and to periodically engage said member and move the same into register with such second track.

19. In car-handling mechanism, the combination of two tracks; an oscillatory car-transferring member adapted in its normal position to register with one of said tracks and in another position to register with the other thereof; and an endless cable passing along said tracks and transversely of the free end of said member, said cable being adapted to move a car off said first track onto said member when in its normal position and to thereupon engage said member and move the same into its other position.

20. The combination of a car-delivery track; a car-discharge track above said delivery track; a car-transferring member oscillatory about a transversely disposed axis and normally registering with respect to said tracks, said member normally registering with said delivery track and inclining upwardly therefrom, said member also being adapted to register with said discharge track; and an endless cable adapted to move a car off said delivery track onto said member and thereupon to engage said member and raise the same into register with said discharge track.

21. In car-handling mechanism, the combination of two similarly inclined superposed tracks, of a track-section oscillatory about an axis located above the level of the upper of said tracks, said track-section normally registering with the lower of said tracks but being adapted to register with the upper thereof also.

22. In car-handling mechanism, the combination of two similarly inclined superposed tracks, of a track-section oscillatory about an axis located above the level of the upper of said tracks, said track-section normally registering with the lower of said tracks, and a cable adapted to periodically engage said track-section and raise the same into register with the upper of said tracks.

23. In car-handling mechanism, the combination with two similarly inclined superposed tracks, of a track-section oscillatory about an axis located above the level of the upper of said tracks, said track-section normally registering with the lower of said tracks, and an endless cable passing along said tracks and transversely of the free end of said track-section, said cable being adapted to move a car on said tracks and to periodically engage said track-section and raise the same from its normal position into register with the upper of said tracks.

24. In car-handling mechanism, the combination with two similarly inclined superposed tracks, of a track-section oscillatory about an axis located above the level of the upper of said tracks, said track-section normally registering with the lower of said tracks, and an endless cable passing along said tracks and transversely of the free end of said track-section, said cable being adapted to move a car off said lower track onto said track-section when in its normal position and thereupon to engage the latter and raise the same into register with the upper of said tracks.

25. In car-handling mechanism, the combination with two similarly inclined superposed tracks, of a track-section oscillatory about an axis located above the level of the upper of said tracks, said track-section normally registering with the lower of said tracks, and a continuously moving endless cable passing upwardly along the lower of said tracks, transversely of the free end of said track-section, and downwardly along the upper of said tracks, said cable being adapted to move a car off said lower track onto said track-section when in its normal position and thereupon to engage the latter and raise the same into register with the upper of said tracks.

Signed by FRANK C. GREENE, this 19th day of July 1907.

FRANK C. GREENE.

Attested by—
O. V. GREENE,
JNO. F. OBERLIN.

Signed by CHARLES G. PALMER, this 16th day of August, 1907.

CHARLES G. PALMER.

Attested by—
HENRY DIAL,
JNO. F. OBERLIN.