No. 875,685. PATENTED JAN. 7, 1908.

H. H. BIGHOUSE.

FEEDER FOR CAR HAULS, &c.

APPLICATION FILED DEC. 20, 1906.

2 SHEETS—SHEET 1.

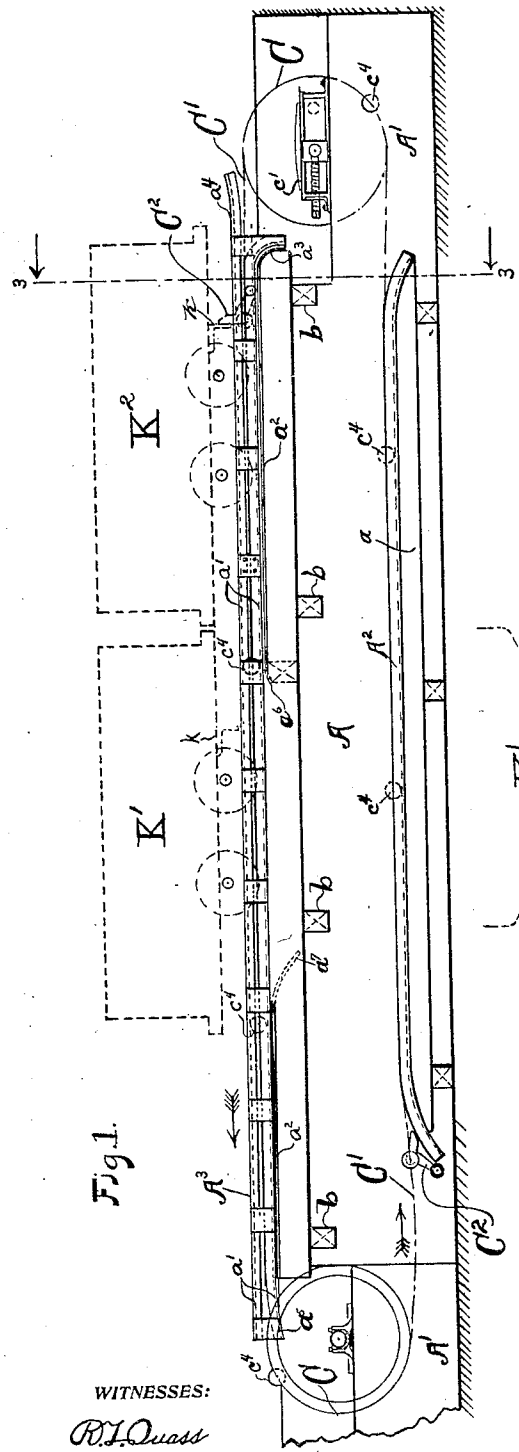


Fig. 1.

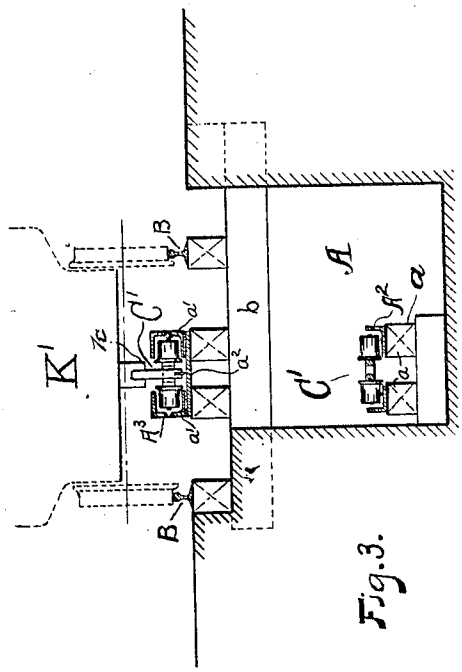


Fig. 3.

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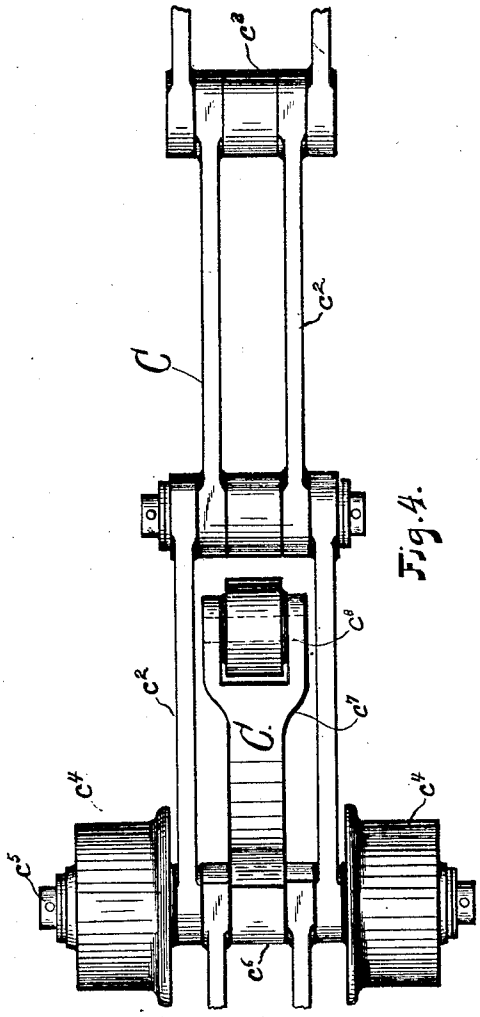


Fig. 4.

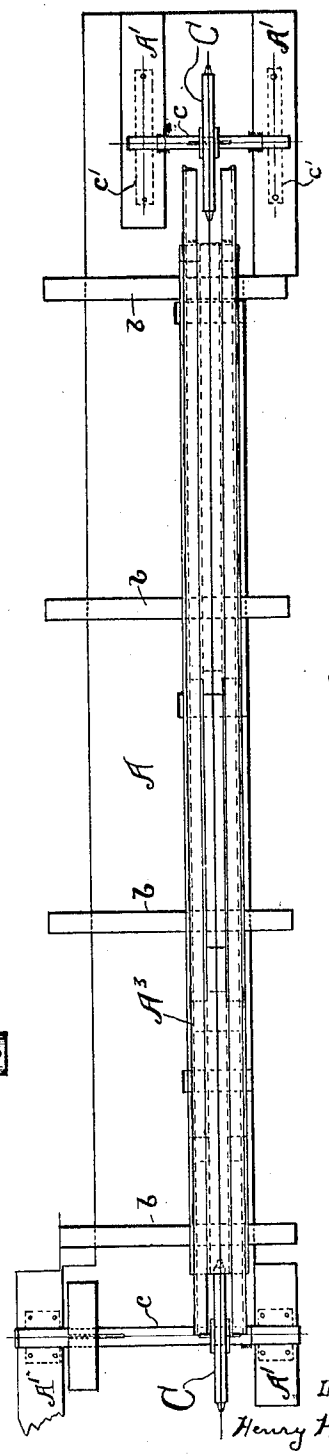


Fig. 2.

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FEEDER FOR CAR-HAULS, &c.

No. 875,685. Specification of Letters Patent. Patented Jan. 7, 1908.

Application filed December 20, 1906. Serial No. 348,716.

To all whom it may concern:

Be it known that I, HENRY H. BIGHOUSE, a citizen of the United States, resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Feeders for Car-Hauls and the Like, of which the following is a specification, the principle of the invention being herein explained, and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My present invention, relating as indicated, to car hauls and the like, has regard more particularly to the perfection of a device for "feeding" the cars onto such haul, it being quite essential as will be later pointed out that such feeding be accomplished in a regular manner and without interruption.

Said invention consists of means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain means embodying the invention, such disclosed means, however, constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings: Figure 1 represents a side elevation of a feeder embodying my several improvements as installed for feeding cars onto a car haul of the regular type; Fig. 2 is a plan view of the same; Fig. 3 is a vertical transverse cross section of such feeder installation taken on the line 3—3 of Fig. 1; and Fig. 4 is a plan view on a larger scale of a detail of a roller chain or car pusher used for driving the cars upon such feeder.

The construction of car hauls, the use of which is quite general in mining operations, should be so well understood as to require no more than passing notice here. Such hauls are used to good advantage in connection with mines, particularly coal mines, where it becomes necessary to move the mine cars for a considerable distance both horizontally and vertically. In place of an elevator and accompanying elevated track structure, an inclined way is substituted, and by means of an endless cable the loaded cars are carried up such incline or are held from racing down the same as the case may be, the empty cars being generally attached to the other lap of the same cable and correspondingly moved or controlled. Obviously this description, which applies more particularly to the portion of the mine structure above the ground, would apply also to the numerous situations where an inclined entry-way is utilized for gaining access to the mine proper. The endless cable, that is used to effect the movement of the cars on the incline on such car haul, is adapted to engage the cars by means of spurs or upwardly projecting arms borne by spaced links of the chain where a chain cable is used, or clamps secured to the cable where a wire rope is employed instead of a chain. In feeding the cars onto the haul at the bottom of the incline, or at the top in certain instances as has been indicated, it is necessary not only that the cars of the train, in which latter form they are brought from the mine, should be separated and fed one by one onto the haul, but their arrival thereon should be accurately timed so that their engagement by the aforesaid spurs or projecting arms of the hauling cable will take place immediately. Heretofore so far as I am aware, this result has been accomplished manually, the train of cars requiring to be shifted about, the cars separated therefrom and thus fed onto the haul with the expenditure of a great amount of labor and frequently of time. It is with the view of performing this operation automatically by mechanical means, that this, my present invention, has been devised.

In the drawings to which reference is now made for the illustration of the following description, I show the feeder apart from any car-haul inasmuch as its relation to such haul in view of the well known character of the latter, supplemented by the foregoing description, should be sufficiently evident. The position of the haul relatively to the feeder, which alone is illustrated, would be immediately to the left of the device as shown in Figs. 1 and 2. In other words, for the purpose of installing my feeding device a section of the continuous track leading from the mine to the haul is appropriated, such section where it here appears being designated by B. Beneath such section there is provided a narrow trench A for the accomodation of the several operative parts of the device. Upon suitable foundations A′ at the respective ends of the trench are supported sprocket wheels or sheaves C; and

passing around these sheaves is a continuous cable or chain C′. In order to regulate the tension of chain C′, the bearings of the shaft, on which the sheave at one end of the trench is mounted, are formed in adjustable take-up boxes c'.

The lower lap of the cable or chain passes along the bottom of the trench, the upper lap along the section of track B that lies over the trench, such track-section being supported on suitable transversely disposed beams or cross-ties b. While the form of the cable, whether wire, rope, or chain, is a matter of indifference, depending upon the nature of the use to which the feeder will be put, it will generally be found that a pintle chain with rollers for supporting the same such as is ordinarily used in similar connections in the car haul proper will prove most satisfactory. It is this form of chain haul that I illustrate in the detail view, Fig. 4. The rollers c^4 on which the chain is designed to be supported when passing along the track and the bottom of the trench are mounted on the pins c^5 whereby the links c^2 of the chain are pivoted together, suitable washers or collars c^3 being used to properly space the adjacent ends of the links upon such pins. To receive such rollers c^4 there is provided in the lower part of the trench, along which, as has been stated, the lower lap of the cable passes, a track or run-way A^2, Figs. 1 and 3. This run-way consists simply of two angle bars A disposed with their angles facing each other and supported on suitable foundations a. The disposition of these angle bars is such that the rollers lie therein respectively as they are carried along with the moving chain. To facilitate the ready reception of the rollers thereon, the respective ends of the bars are bent downwardly as indicated in Fig. 1. The upper lap of the chain is similarly supported in a guide-way A^3 that differs from the lower guide-way merely in the addition of a second angle bar above each of the lower ones whereby in effect a channel way is formed by means of which the rollers c^4 are not merely supported but within which they are securely held against vertical displacement. The object in making such channels of angle bars instead of channel bars in the first place, is to permit the bending of the ends a^3, a^4, and a^5 of the bars in opposite directions at the respective ends of the run-way whereby in spite of any slack in the chain the rollers are sure to be properly guided into the run-way.

In order to engage and move the cars upon track B, chain C′ is provided with one or more dogs or spurs C^2, Fig. 1, the number of such dogs or spurs and the interval between them depending upon the length of the chain and the ratio of such length to that of the car haul and the car spaces of the latter. These dogs or spurs, instead of being formed integral with one of the links of the chain, or of being a portion of a clamp securely fastened onto the cable, where a wire rope is used instead of a chain, are pivotally attached to such cable. The manner of such attachment in the case of the roller chain form of cable here used appears quite clearly in Figs. 1 and 4, particularly the latter. From such figure, it will be seen that one of the washers or collars C^3 is simply replaced by a spur member having two divergent arms c^6 and c^7 at substantially right angles to each other. Such member being freely oscillatory about its pivotal axis, it will be evident that the arms will both normally depend downwardly by force of gravity. The arm, c^7, that in this position extends to the rear with reference to the direction in which the cable is supposed to move, is provided with a small roller c^8 and intermediately of the channel forming the run-way along the track on which the cars are intended to move is a plate a^2 that is adapted to engage such roller-bearing arm c^7 of dog C^2 when the latter is carried along the track. The obvious effect of such engagement is to right the dog and to cause the same to present the other arm, or spur proper, in a substantially vertical fashion, in which position it will be carried along the run-way as far as plate a^2 extends. Plate a^2, however, is discontinuous, comprising two portions at the ends, respectively, of the run-way but leaving intermediately thereof an entirely open space. The ends a^6 and a^7 of the plate abutting on such open space are curved downwardly in order to permit the dog C^2 in the first case to freely resume its normal pendent position and in the second case, to again engage the roller-bearing arm c^7 and thereupon again right the dog for the remainder of this passage along the run-way A^3 and track B.

Having thus described with considerable detail the actual structural features of an approved form of my feeder mechanism, I shall now proceed to describe its manner of operation. It has been already pointed out how that the cars, in conjunction with which such feeder as well as the contiguous car haul is designed to operate, are brought up thereto in trains frequently including a large number of individual cars. Of such a train, two cars K′, K^2 only appear in the drawings Fig. 1; such cars are provided with downwardly depending angles or catches k located in the rear of their trucks whereby they are adapted to be engaged by the dog C^2 when the spur of the latter is properly positioned. The train, then, is brought up to the section B of track lying over the feeder installation so that the forward car K′ of such train will be in a position to be engaged by dog C^2 when it is first righted, upon its rollers entering the run-way A^3. The cars of the train being still connected, the effect of such

engagement will obviously be to pull the entire train forward until the dog, passing over the open space in plate a^2, releases the car and leaves the same standing over such space; the attendant is at this juncture supposed to withdraw the coupling pin or other means whereby such car is connected with the car of the train. The movement of the chain continuing, it will be evident that in due season dog C^2, where but one dog is employed, or the succeeding dog where more than one are used, will repeat the operation just described, thereby moving the train so as to position the second car K^2 thereof over the aforesaid open space and to thus push the disconnected foremost car K′ onto the front third section of track B. The effect now of the dog when righted for the second time, as happens upon its entering the second portion of the run-way that beneath which plate a^2, extends, is to engage such previously uncoupled car and to move the same entirely off the feeder section of track and onto the foot of the car haul proper. Thus the operation will continue as long as there are cars left in the train. The length of cable C′ or of its divisions where there are more than one of the dogs C^2, is so related to the length and disposition of the dogs or the equivalent car-engaging members of the car haul as to cause the successive cars to be discharged upon such haul at just the proper moment to be engaged and borne away thereon. Thus it is seen that this device, which is quite simple in its construction and operation, will automatically and with unvarying accuracy deliver the cars upon the haul. At the same time it keeps advancing gradually, as the foremost cars are detached therefrom, the train of cars that otherwise would require additional motive power and considerable exertion of manual labor to bring up to the feeding station. As it is, but a single attendant is required and his duties are restricted to the simple and easy task of removing the coupling pins of the successive cars as the train is thus intermittently moved forward.

Having thus described my invention in detail, that which I particularly point out and distinctly claim, is:—

1. The combination with a track, of means adapted to move a car along the same, and other means positively coöperative with said first named means to render the same alternatively operative and inoperative.

2. The combination with a track, of means adapted to move a car along the same, and other means positively coöperative with said first named means to render the same alternatively operative and inoperative for successive sections of said track.

3. The combination with a track, of a cable passing along the same and adapted to engage and move a car thereon, and means positively coöperative with said cable to effect such engagement for certain sections of said track only.

4. The combination with a track, of a cable passing along the same and adapted to engage and move a car thereon, and means positively coöperative with said cable to effect such engagement for two separated sections of said track and to break such engagement for the intermediate section.

5. The combination with a track, of a cable passing along the same, a dog borne by said cable, said dog being adapted in one position to engage and move a car on said track, and means adapted to thus operatively position said dog for certain sections of said track only.

6. The combination with a track, of a cable passing along the same, a dog borne by said cable, said dog being adapted in one position to engage and move a car on said track, and means adapted to thus operatively position said dog for two separated sections of said track said dog being inoperative for the intermediate section of track.

7. The combination with a track, of a cable passing along the same, a dog pivotally mounted on said cable, said dog being provided with an arm adapted in one position to engage and move a car upon said track, and a discontinuous run-way adapted to receive said dog pending its passage along said track and to thus operatively position the same.

8. The combination of a track, a cable passing along the same, a dog pivotally mounted on said cable, said dog being provided with two arms, and a discontinuous run-way, the sections of said run-way being adapted to receive and support one arm of said dog pending the passage of the latter therealong and to thereby position the other arm of said dog to engage a car upon said track.

9. The combination of a track; a cable passing along the same and provided with oppositely disposed rollers; a dog pivotally mounted with respect to the same axis as said rollers, said dog being provided with two arms; and a run-way extending along said track, said run-way comprising parallel channel-ways adapted to receive such oppositely disposed rollers, respectively, and a bottom plate joining said channel-ways and adapted to support one arm of said dog pending the passage of the latter therealong and to thereby position the other arm of said dog to engage a car upon said track.

10. The combination of a track; a chain passing along the same and provided with oppositely disposed rollers; a dog pivotally mounted with respect to the same axis as said rollers, said dog being provided with two arms; and a run-way extending along said track, said run-way comprising parallel channel-ways adapted to receive such oppo-

sitely disposed rollers, respectively, and a discontinuous bottom plate joining said channel-ways, the several sections of said bottom plate being adapted to support one arm of said dog pending the passage of the latter therealong and to thereby position the other arm of said dog to engage a car upon said track.

11. The combination of a track; a pintle chain passing along the same and provided with oppositely disposed rollers at one of its joints; a dog pivotally mounted between such rollers on the same axis, said dog being provided with two arms; and a run-way extending along said track, said run-way comprising parallel channel-ways adapted to receive such oppositely disposed rollers, respectively, and two separated bottom plate sections joining said channel ways, such sections being respectively, adapted to support one arm of said dog pending the passage of the latter therealong and to thereby position the other arm of said dog to engage a car upon said track.

12. A feeder for a car-haul comprising a track, spaced car engaging-and-moving means, located contiguously to said track, and means positively coöperative with said first named means adapted to control the operation thereof.

13. A feeder for a car-haul comprising a track, spaced car engaging-and-moving means, located contiguously to said track, and means positively coöperative with said first named means adapted to control the operation thereof, to successively engage and disengage non-adjacent cars upon said track.

14. A feeder and a car-haul comprising a track, spaced car engaging-and-moving means, located contiguously to said track, and means positively coöperative with said first named means adapted to control the operation thereof to successively engage and disengage alternate cars of a train standing upon said track.

Signed by me, this 15th day of December, 1906.

HENRY H. BIGHOUSE.

Attested by—
D. T. DAVIES,
JNO. F. OBERLIN.