

No. 743,612.

PATENTED NOV. 10, 1903.

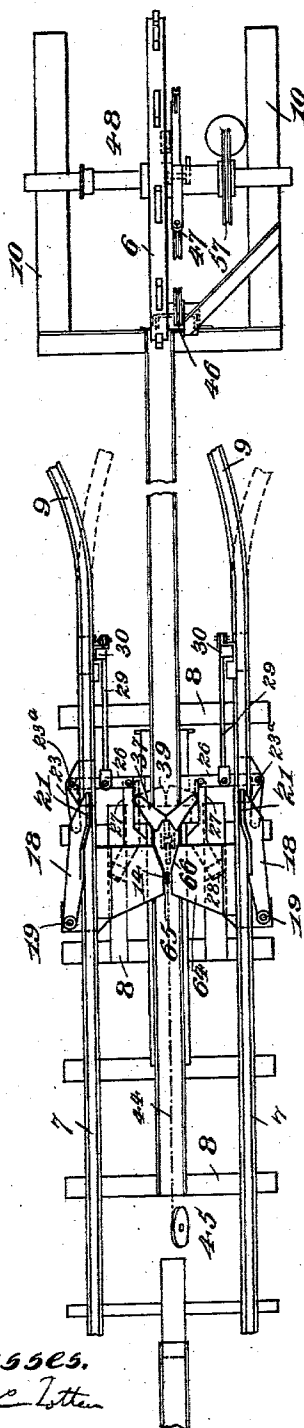
A. M. ACKLIN.
CAR HAUL.

APPLICATION FILED MAR. 20, 1903.

NO MODEL.

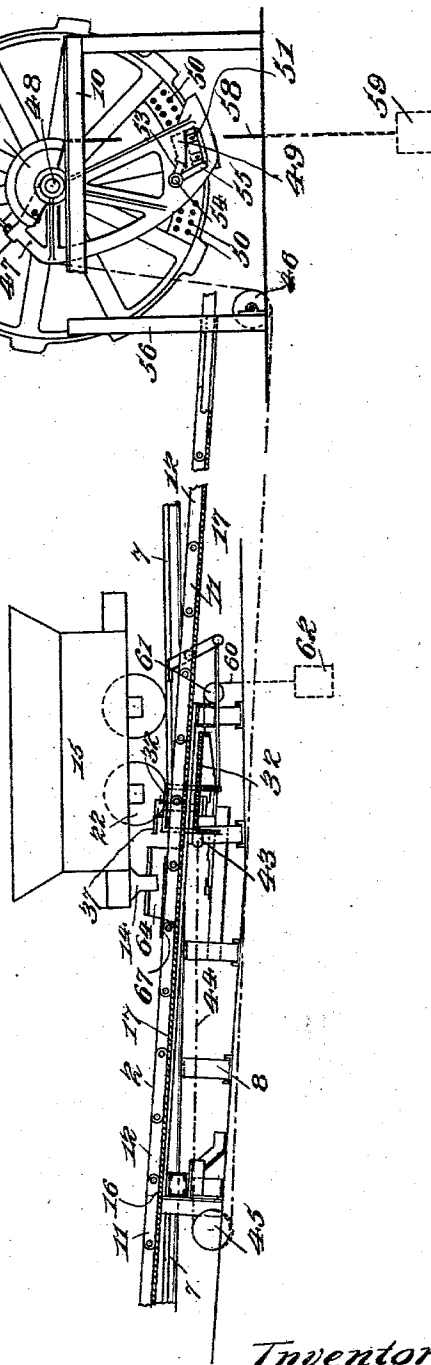
4 SHEETS—SHEET 1.

Fig. 1.



Witnesses.
Robert C. Lott
H. E. Dieterich

Fig. 2.



Inventor:
Alfred M. Acklin
By Kay & Lott
Attorneys.

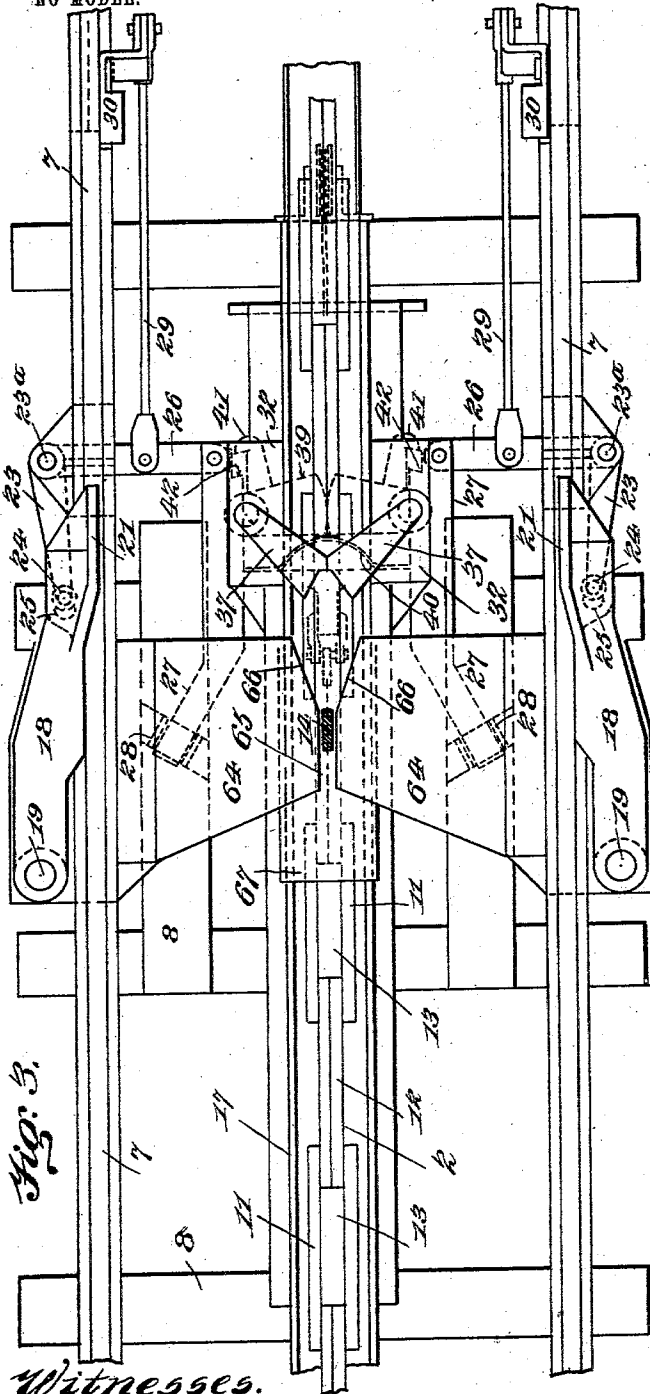
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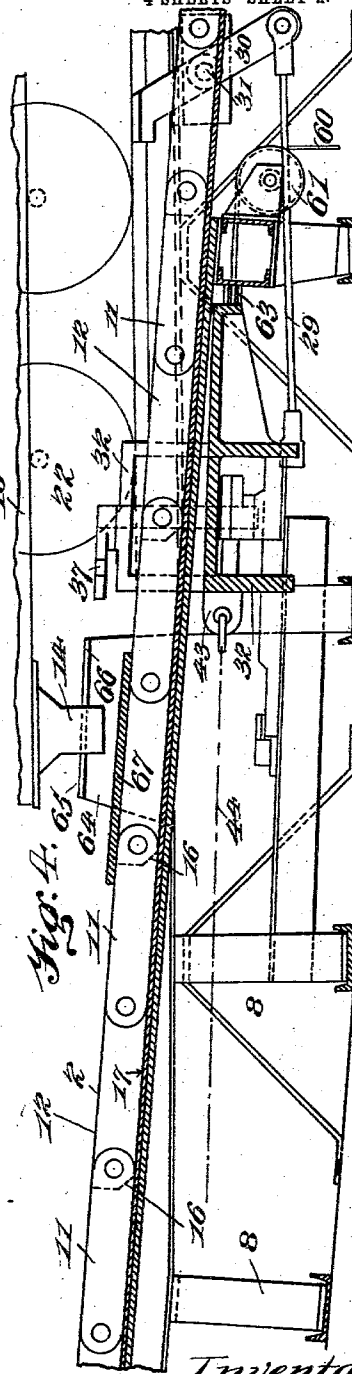
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4 SHEETS—SHEET 2.



Witnesses.

Robert C. Totten
H. J. Dieterich



Inventor.

Alfred M. Acklin
By Kay & Totten
Attorneys.

A. M. ACKLIN.

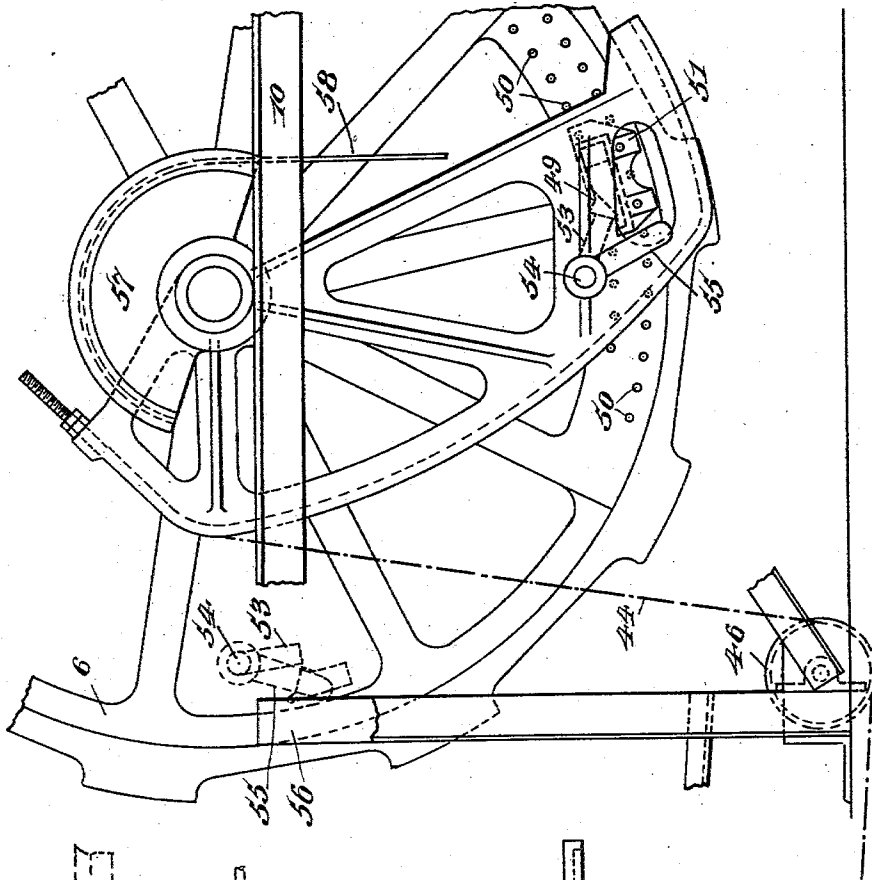
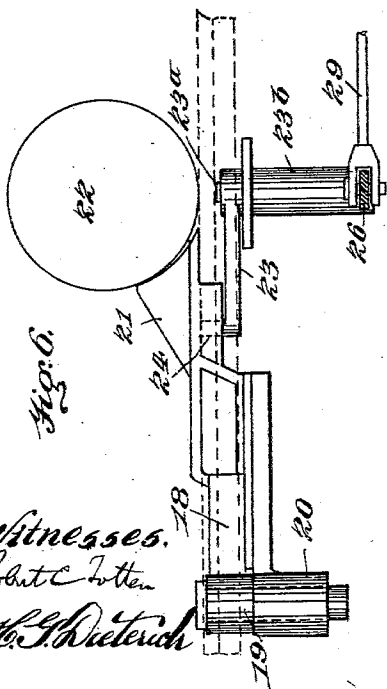
CAR HAUL.

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NO MODEL.

4 SHEETS—SHEET 3.

Fig. 5.



Witnesses.
Robert C. Totten
H. S. Dietrich

Fig. 7.

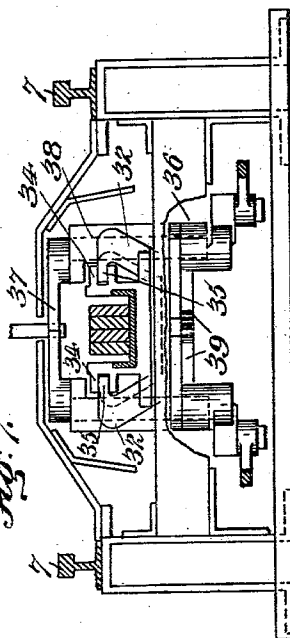
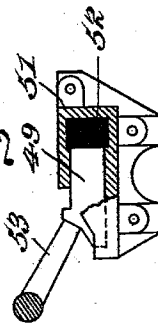


Fig. 8.



Inventor.
A. M. Acklin
By Kay & Totten
Attorneys

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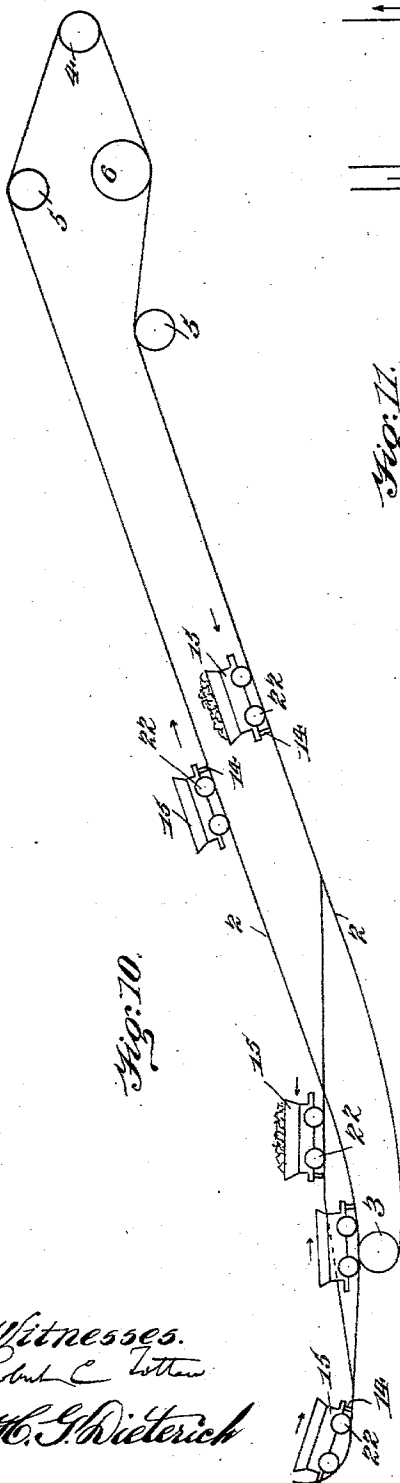
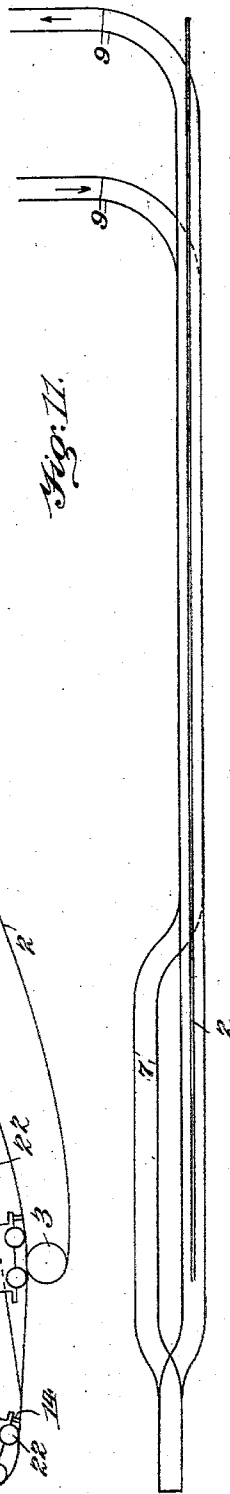
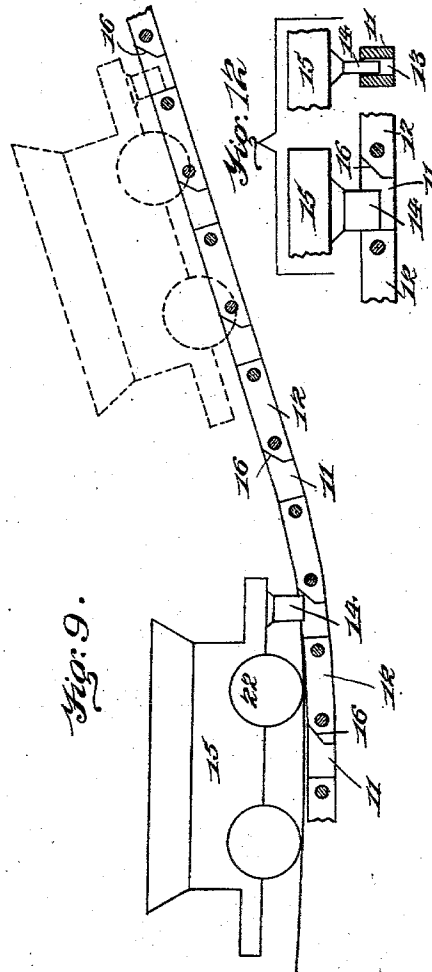
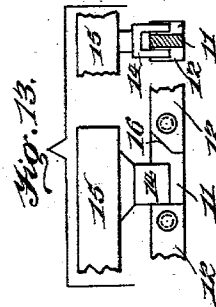
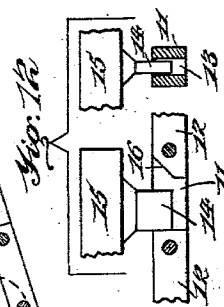
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NO MODEL.

4 SHEETS-SHEET 4.



Witnesses.
Robert C. Lottan
H. G. Rieterich

Inventor.
Alfred M. Acklin
By Kay & Lottan
Attorneys.

UNITED STATES PATENT OFFICE.

ALFRED M. ACKLIN, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HEYL & PATTERSON, OF PITTSBURG, PENNSYLVANIA, A COPARTNERSHIP.

CAR-HAUL.

SPECIFICATION forming part of Letters Patent No. 743,612, dated November 10, 1903.

Application filed March 20, 1903. Serial No. 148,665. (No model.)

To all whom it may concern:

Be it known that I, ALFRED M. ACKLIN, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Car-Hauls; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to car-hauls, and more especially to that class of car-hauls in which an endless chain is employed for carrying the cars in opposite directions.

One of the objects of the present invention is to provide a car-haul having an endless chain free from hooks or projections and yet adapted to engage with the car and carry it along and at the same time provide a simple form of mechanism for moving the car from a standstill to the speed of the moving chain by a gradually-increased speed and at the same time provide for the engagement of the car by the proper link of the chain without the sudden jolting or jarring of the same.

Another object of my invention is to employ the weight of the loaded car in its descent to drive the chain and return the empty cars, and so do away with the cost of construction and maintaining a power plant.

My invention comprises, generally stated, a traveling chain composed of suitable links, the ends of said links being adapted to engage with a suitable projection on the car, whereby the car is carried along at the same speed as the chain, and suitable mechanism for bringing the car into engagement with the chain, all as fully hereinafter set forth.

My invention further consists in an endless chain engaging suitable sprocket-wheels and adapted to carry cars in opposite directions, one portion of said chain having a downgrade, whereby the weight of the loaded car acts to drive said chain.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a plan view of a portion of a car-haul embodying my invention. Fig. 2 is a side view thereof, partly in section. Fig. 3 is an enlarged plan view of the apparatus for bringing the car into engagement with the

chain. Fig. 4 is a longitudinal sectional view of same. Fig. 5 is an enlarged view of a portion of the sprocket-wheel carrying the cam mechanism for advancing the car-moving apparatus. Fig. 6 is an enlarged detail of one of the car-stops. Fig. 7 is a cross-section on the line 7 7, Fig. 3. Fig. 8 is an enlarged detail of the cam-operating dog. Fig. 9 is a view of a portion of the car-haul on the return. Figs. 10 and 11 are diagrammatic views of the car-haul. Figs. 12 and 13 show modified forms of my invention in which the projection on car is bifurcated to fit over the inner links.

Like numerals indicate like parts in each of the figures.

In Letters Patent of the United States No. 694,047, granted to me on the 25th day of February, 1902, I have illustrated and described a car-haul, together with mechanism for taking the cars from a state of rest or slow speed and gradually increasing the speed until it reaches the speed of the chain, when the chain by means of projections thereon engages the car and carries it along. The present invention relates to this same class of car-hauls, one of its principal objects being, as stated above, to dispense with the hooks or projections on the chain.

In the diagrammatic view Fig. 10 the numeral 2 designates the chain passing around the sprocket-wheels 3 4, over the guide sprocket-wheels 5, arranged in any suitable manner to give the desired incline to the chain, so that the descending loaded car by engaging with the chain will drive said chain in the manner fully hereinafter set forth. The numeral 6 designates a large sprocket-wheel which forms part of the mechanism for gradually increasing the speed of the car to that of the chain, as fully hereinafter set forth.

In Fig. 1 the numeral 7 represents a track laid at the proper angle with reference to the chain 2, said track being supported on suitable struts or framework 8. The track 7 is curved, as at 9, to permit the cars to pass onto track 7 without interfering with the framework 10, which supports the large sprocket-wheel 6. The chain 2 runs between the rails of the track 7, and said chain is composed of

the outer links 11 and the inner links 12, connected by suitable bolts. The outer links form the spaces 13, within which the projection 14 on the car 15 enters, so that the ends of the inner links are in contact with said projection in the manner fully hereinafter set forth. The inner links of the chain are beveled at one end, as at 16. The chain 2 is supported within a suitable guide or channel 17, supported upon the framework 8, so that the chain is always held up in position and sagging of same is avoided. Just beyond the curve 9 of the track 7 is the point where the cars come to a standstill before they are brought into engagement with the chain, and at this point the stopping mechanism is located, which consists of the arms 18, pivoted on suitable shafts 19, arranged in bearings 20. The arms 18 are provided with the horns or stops 21, adapted to engage the wheels 22 of the cars as they move onto the track 7. Engaging the arms 18 are bolts 24 on the levers 23, said bolts 24 moving in slots 25 in said arms. The levers 23 have the downwardly-extending shafts 23^a, inclosed by the sleeves 23^b, connected to the arms 26, the opposite end of said arms 26 being connected to the sliding arms 27, moving in guides 28 in the frame. Rods 29 connect the arms 26 with treadle-levers 30, pivoted to the frame at 31, said treadle-levers projecting up in position to be operated on by the wheels 22 of the cars, so that when the front wheels of the car strike the treadle-levers the rods 29 will be drawn back, acting through the arms 26 and levers 23 to bring the horns 21 into position to engage the wheels of the car and stop the further progress of same.

A sliding carriage 32 is mounted on the guide-frame 33, said frame having the guide-ways 34, adapted to receive the inwardly-projecting flanges 35 on said carriage 32. Journaled within bearings 36 in the carriage 32 are the pusher-dogs 37, said pusher-dogs having the shafts 38, extending down through the said bearings. Mounted on the shafts 38, extending down from the pusher-dogs 37, are the gear-segments 39, adapted to mesh with each other, and interposed between said gear-segments and the carriage is the spring 40. Said spring 40, bearing against the segments 39, acts to force the dogs 37 in contact with each other, and as said dogs advance and come in contact with the projection 14 of the car in the manner hereinafter set forth the resistance will act to hold said dogs more closely together and prevent their separation, while on the return of said dogs, if there is a car standing in the rear of same, when the dogs strike the projection 14 on the car on their rear they will be permitted to open and pass said projection, whereupon said spring will immediately act upon said segments to throw the dogs into contact with each other. The gear-segments 39 cause said pusher-dogs to work in unison, so that they are always held in proper relation to each other.

Mounted on the shafts 38 of the pusher-dogs 37 are the hooks 41, adapted to engage the shoulders 42 on the sliding arms 27.

Secured to the lug 43 on the carriage 32 is the cable or chain 44, said chain or cable passing around the diagonally-arranged pulley 45 and thence back and around the guide-pulley 46 and secured to the cam 47 on the shaft 48. The cam 47 is loosely mounted on the shaft 48 and is adapted to be moved by the dog 49 on the perimeter of the sprocket-wheel 6. The perimeter of the sprocket-wheel 6 is provided with a number of openings 50, adapted to receive the bolts for connecting the dog-frame 51 and so that said dog-frame may be adjusted at different positions, according to the movement which it is desired to give to the cam 47. The dog 49 is arranged within the frame 51 so as to be securely held therein, and interposed between said dog and the frame is the buffer 52, formed of rubber or other suitable material, to take up the jar on said dog when it comes in contact with the arm 53, mounted on the cam 47. Mounted on the same shaft 54 is the arm 53, carrying the tripping-arm 55, which is adapted to move in the path of the upright 56 and is so tripped thereby as to throw the arm 53 out of engagement with the dog 49, and thereby release the cam 47 from engagement with the sprocket, as shown in dotted lines, Fig. 5.

The shaft 48 has mounted thereon the segmental pulley 57, to which the cable 58 is secured, the lower end of said cable carrying a weight 59, said weight being adapted to counterbalance the cam 47.

Attached to the rear end of the carriage 32 is the cable 60, passing over the pulley 61 and having the weight 62 attached thereto. Interposed between the carriage 32 and the frame is the buffer 63, formed of rubber or other suitable material and adapted to relieve the shock on the carriage 32 when it is returned to position in the manner hereinafter set forth. Plates 64 extend from both sides of the framework and form a slot 65, the rear portions of the plates 65 being cut away, as at 66, to form a flaring entrance to the slot 65, said slot being adapted to receive the projection 14 on the car as said car is advanced by the carriage in the manner hereinafter set forth.

A dead-plate 67 rests on the guide-frame 34 just beneath the slot 65 and projecting slightly beyond the same, said dead-plate acting as a gate for the projection 14 on the car and acting to prevent said projection from coming in contact with the chain until the car-stops have been withdrawn.

The operation of my improved car-haul is as follows: The loaded car traveling on the track 7 rounds the curve 9 and is brought to a standstill by the stops 21, said stops having been brought into position by the wheels of the car passing over the treadle-levers 30. Meanwhile the chain 2, driven by the cars

already descending, is traveling in the direction of the arrow, Fig. 2, and the large sprocket-wheel 6 is rotated, so that when the dog 49 thereon comes in contact with the arm 53 on the cam 47 said cam will be carried around by said sprocket-wheel. As said cam moves around, the cable 44, attached thereto, is gradually drawn up around same, the action of said cam being to gradually increase the speed at which the cable 44 travels as said cam continues in its movement. This gives a gradually-increased speed to the cable 44 until the speed of the cable has attained the speed of the traveling chain 2. Owing to this gradually-increased speed of the cable 44 the carriage 32, connected thereto, is started at a comparatively low speed, and as the pusher-dogs 37 on said carriage approach the projection 14 on the car the rate of speed of travel of the carriage 32 gradually increases. When the pusher-dogs 37 advance, they pass beneath the cover-plate 64 and engage the projection 14 on the car. As the carriage 32 advances the hooks 41 come into engagement with the shoulders 42 on the sliding arms 27, whereupon the arms 46 are operated to throw the horns 21 out of the way to release the wheels of the car. The wheels having been released and the pusher-dogs having been brought into contact with the projection 14 on the car, upon the further movement of the carriage 32 the pusher-dogs act to push the car along, the speed of said car increasing as the cam 47 reaches its highest point. The incline of the chain 2 and the amount of movement to be imparted to the car in order to bring the projection 14 into position to be engaged by the chain or enter the space between the links at the time that the car has reached the same speed as the chain is so predetermined that when the chain takes hold of the car as both are traveling at the same rate of speed practically no jolt or jar will be given to the car, but the car will move on without any disturbance. The distance the car travels before it is engaged by the chain is regulated by the movement of the cam 47, which in turn is controlled by the position of the dog 49 upon the sprocket 6, and the position of the dog-frame 51 may be changed according to requirement. When the car has been brought into position to be engaged by the chain, the further movement of the carriage 32 is checked, and this is done by the releasing of the cam 47; whose tripping-arm 55 comes in contact with the upright 56 and releases said cam from engagement with the dog 49, whereupon the cam 47 returns to its normal position, while at the same time the carriage 32 is returned to its normal position by means of the weight 62 on the cable 60, said weight acting to take up the slack on the cable 44, so that the return of the carriage 32 is by a continuous steady movement, the buffer 63 acting to relieve any jar on the carriage. Before the return of the carriage 32, however, another car has been

permitted to run onto the track 7, and the wheels of said car will act to operate the treadle-levers 30 and bring the stops 21 into position to engage the wheels of the entering car, so that said car will be in position before the return of the carriage 32. It will therefore be necessary for the pusher-dogs 37 to open to pass the projection 14 of the car which has just come into position, and accordingly said pusher-dogs 37 will separate to pass the said projection 14, and immediately upon having passed said projection the spring 40 will act to throw said pusher-dogs into their normal position, the gear-segments acting to cause said pusher-dogs to work in unison and prevent one working independently of the other. The carriage is then in position to advance and engage the car, as in the manner before stated. A number of the loaded cars may be descending in engagement with the chain, so that the chain is driven thereby and also the sprocket-wheels engaging therewith. The cars are generally arranged to leave the chain at or about the point 70, Fig. 10, where they pass by the track 71 to the dumping-point 72. From the dumping-point 72 the cars pass to the "kick-back" 73, by which they are returned and switched off onto the return-track 74, Fig. 11. The grade of the return-track 74 is sufficient to carry the car into position to be engaged by the ascending portion of the chain. As the cars are empty on their return, there is not the necessity of using mechanism for increasing their speed gradually until they have attained the speed of the chain before engaging therewith, as the same strain is not brought upon the chain in taking up with an empty car as in taking up with a loaded car. As a consequence the empty cars are simply allowed to be taken up by the chain in its travel; but the inner links 12 are beveled, so that on the ascent of the chain these bevel ends are up in such position that the rigid projection 14 on the empty car will strike and ride over the beveled links until the car has been gradually checked to something like the speed of the chain, whereupon the projection 14 passes down within the space between the links, so as to be engaged by the square end of the link. In this manner the empty car is brought into engagement with the chain gradually and instead of taking hold at once with the sudden checking of same.

By my improved car-haul I am enabled to dispense with the use of any projections or hooks of any kind upon the chain, thereby simplifying the construction of the chain as well as giving a stronger construction in that the links of the chain themselves engage with the car, and the chain is permitted to be carried in a plain bottom channel, which is a cheap and simple form of construction to support it and relieve it of the strain, as well as reducing the amount of power required to drive it. The closed channel retains the lubricant in a better manner than where the

open bottom guide for chain-carrying hooks is employed. The car is so gradually advanced until running at the same speed as the chain that all sudden jars or strains are avoided and the movement is continuous and even, it being a very simple matter to adjust the mechanism for bringing the car into position to engage the chain at the proper time, while at the same time the power to drive the chain is furnished by the weight of the loaded cars.

In Fig. 13 I have illustrated a modified form of my invention, in which the projection on the car is bifurcated, so as to fit down over the inner links 81 and engage with the square ends of the outer links 82. In this case the ends of the outer links are beveled, as at 83, to provide for the riding of the projection over the links in the return of the empty cars.

What I claim is—

1. In a car-haul, the combination with a car having a downwardly-extending rigid projection, of an endless traveling chain, the ends of said links being adapted to engage said projection.

2. In a car-haul, the combination with a car having a downwardly-extending rigid projection, of an endless traveling chain having spaces between its links adapted to receive said projection.

3. In a car-haul, the combination with a car having a downwardly-extending rigid projection, of an endless traveling chain composed of inner and outer links adapted to receive said projection in the spaces between the outer links.

4. In a car-haul, the combination with a car having a downwardly-extending rigid projection, of an endless traveling chain, and mechanism adapted to bring said projection into position to engage the ends of the links of said chain.

5. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, and a carriage adapted to engage the car and advance said projection into position to engage the ends of the links of said chain.

6. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection into position to engage the ends of the links of said chain, and mechanism for gradually increasing the speed of said carriage to the speed of said chain.

7. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection into position to engage the ends of the links of said chain, a sprocket-wheel operated by said chain, a cam in the path of said sprocket-wheel, and a cable connected to said carriage and to said cam.

8. In a car-haul, the combination with a car

having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection into position to engage the ends of the links of said chain, a sprocket-wheel operated by said chain, a cam in the path of said sprocket-wheel, means for releasing said cam, and a cable connected to said carriage and said cam.

9. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection into position to engage the ends of the links of said chain, a sprocket-wheel operated by said chain, a rotary cam, a projection on said sprocket-wheel adapted to engage said cam, means for releasing said cam, and a cable connected to said carriage and to said cam.

10. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, a sprocket-wheel operated by said chain, an adjustable dog on said sprocket-wheel, a rotary cam, an arm on said cam engaged by said dog, a tripping-lever, and a cable connected to said carriage and to said cam.

11. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, a sprocket-wheel operated by said chain, a rotary cam in the path of said sprocket-wheel, means for releasing said cam, a cable connected to said carriage and to said cam, and a counterweight for said cam.

12. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, mechanism for moving said carriage, and car-stops adapted to be withdrawn by the movement of said carriage.

13. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, mechanism for moving said carriage, and swinging car-stops adapted to be withdrawn by the movement of the carriage.

14. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, mechanism for moving said carriage, swinging car-stops, slid-

ing arms in the path of said carriage, and connections between said sliding arms and said car-stops.

15. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, mechanism for moving said carriage, swinging car-stops, sliding arms, projections on said carriage adapted to engage said arms, and connections between said arms and said car-stops.

16. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, mechanism for moving said carriage, swinging car-stops, sliding arms, hooked arms on said carriage adapted to engage said sliding arms, and connections between said arms and said car-stops.

17. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage, pusher-dogs on said carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, and mechanism for moving said carriage.

18. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage, pusher-dogs pivotally mounted on said carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, means for holding said dogs in contact with each other on the advance of said carriage, and mechanism for moving said carriage.

19. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage, pusher-dogs pivotally mounted on said carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, gear-segments meshing with each other and connected to said pusher-dogs, means for holding said dogs in contact with each other on the advance of said carriage, and mechanism for moving said carriage.

20. In a car-haul, the combination with a car having a downwardly-extending projection,

of an endless traveling chain, a carriage, pusher-dogs pivotally mounted on said carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, gear-segments meshing with each other and connected to said pusher-dogs, a spring interposed between said carriage and said gear-segments, and mechanism for moving said carriage.

21. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, a guide for said projection above said carriage, and mechanism for moving said carriage.

22. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, a slotted guide-way for said projection above said carriage, and mechanism for moving said carriage.

23. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, guide-plates forming a slot for said projection, and mechanism for moving said carriage.

24. In a car-haul, the combination with a car having a downwardly-extending projection, of an endless traveling chain, a carriage adapted to engage the car and advance said projection on said car into position to engage the ends of the links of said chain, a dead-plate over said chain, and mechanism for moving said carriage.

25. In a car-haul, the combination with a car having a downwardly-extending rigid projection, of an endless chain composed of inner and outer links, the ends of the links opposite those adapted to engage said projection being beveled.

In testimony whereof I, the said ALFRED M. ACKLIN, have hereunto set my hand.

ALFRED M. ACKLIN.

Witnesses:

ROBERT C. TOTTEN,
G. KREMER.