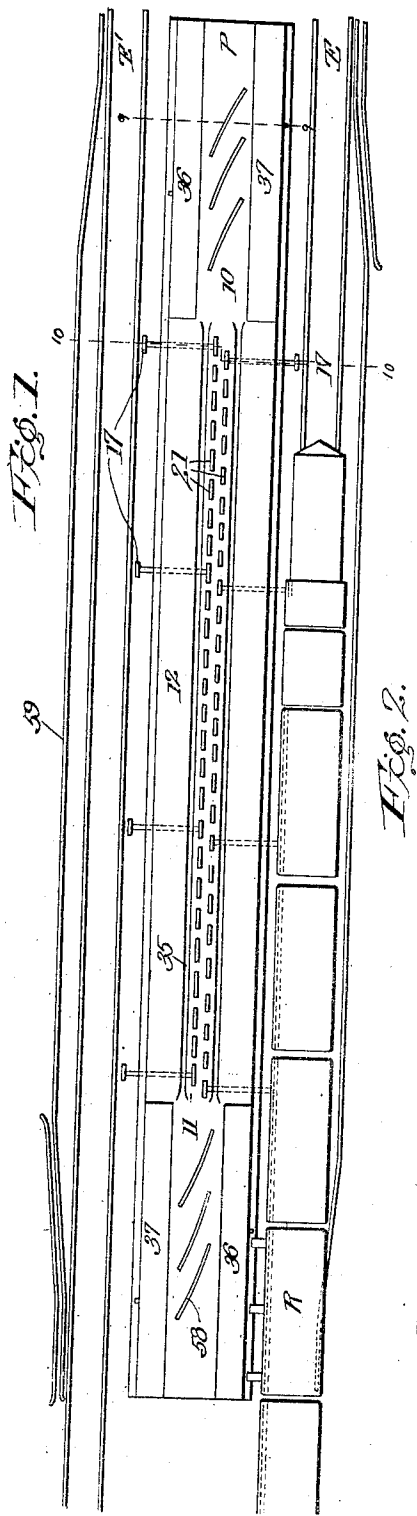
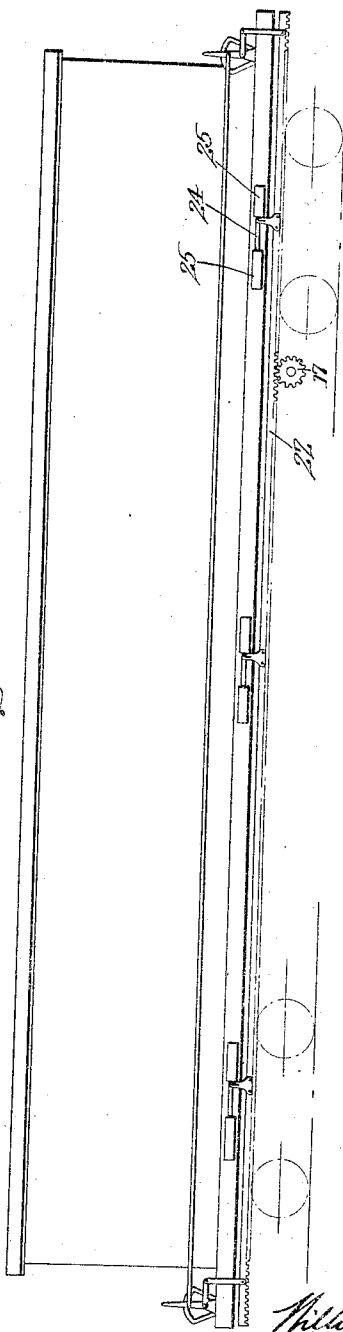
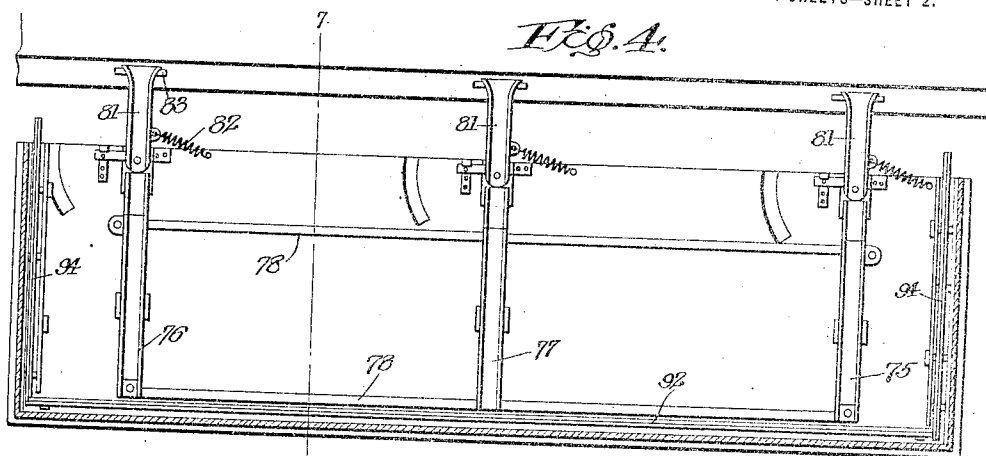
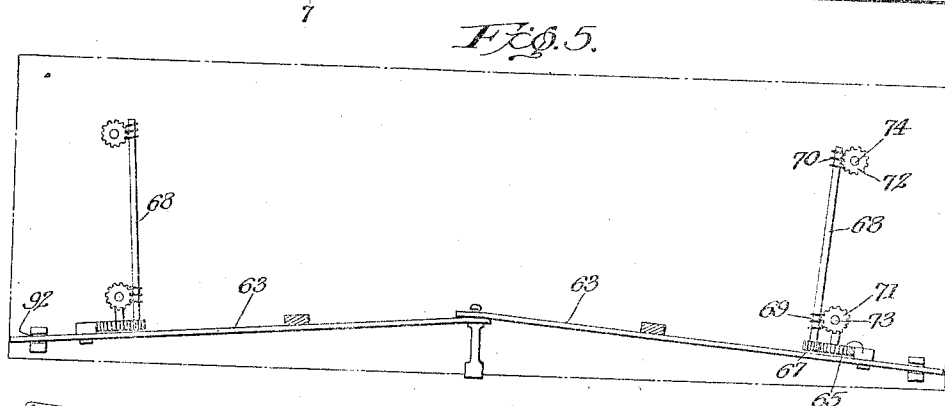
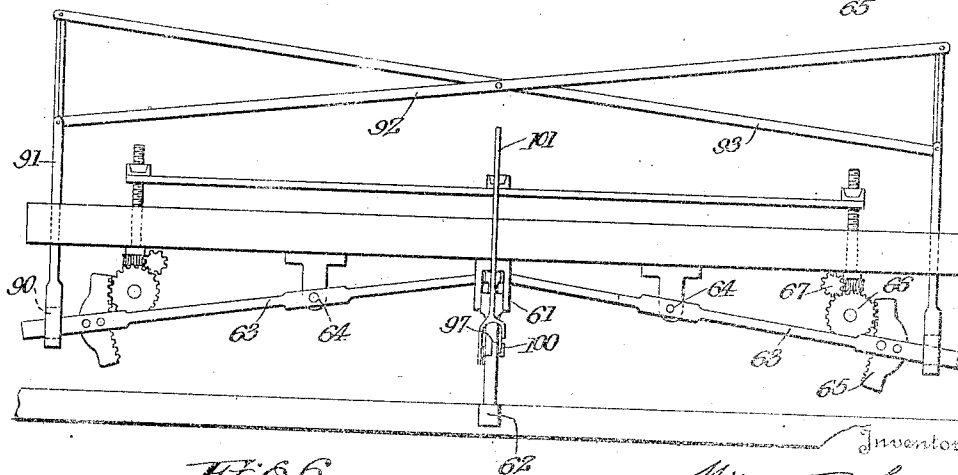


Inventor
 William P. Lamar
 By *Foster Furman Watson & Co.*
 Attorney



Inventor
 William P. Lamar

By *John Herman Watson* *For*
 Attorney

PASSENGER AND FREIGHT TRANSFER SYSTEM.

Patented June 28, 1921.

4 SHEETS—SHEET 3.

Fig. 8. A side view of the mechanical assembly. It shows a central shaft with various components mounted on it. On the left, there is a gear (16) and a series of adjustment screws (17) with washers (18) and springs (19). A bracket (20) is also shown. On the right, there is another gear (16) and a series of adjustment screws (17) with washers (18) and springs (19). A bracket (20) is also shown. The entire assembly is mounted on a base (21).

Fig. 8.

Fr. C. H.

Fig. 7.

Fig. 6.

Fr. 8. 75.

Inventor

William P. Lamar

62
Foster Freeman Watson & Co

Attorney

Fig. 12.

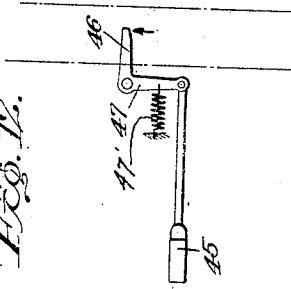


Fig. 9.

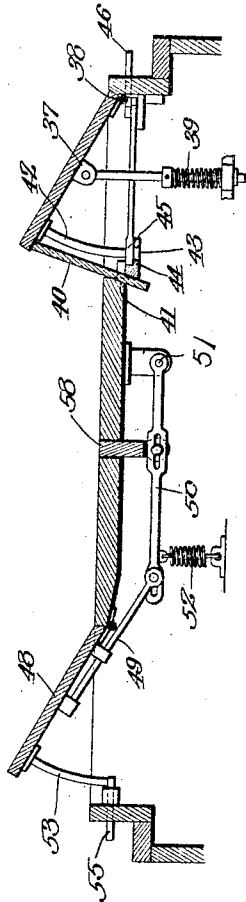


Fig. 10.

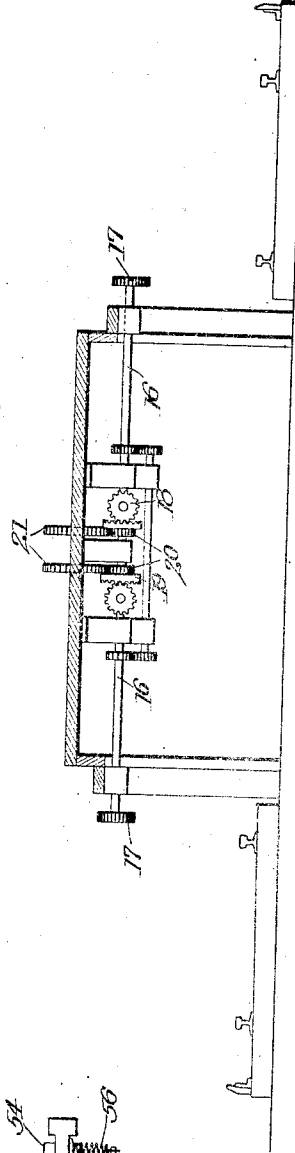
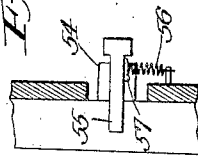


Fig. 11.



Inventor
 William P. Lamar
 By *Foster Truman Watson* Clerk
 Attorney

UNITED STATES PATENT OFFICE.

WILLIAM P. LAMAR, OF ATLANTA, GEORGIA.

PASSENGER AND FREIGHT TRANSFER SYSTEM.

1,383,220.

Specification of Letters Patent. Patented June 28, 1921.

Application filed February 25, 1918, Serial No. 219,089. Renewed April 12, 1921. Serial No. 460,660.

To all whom it may concern:

Be it known that I, WILLIAM P. LAMAR, a citizen of the United States, and residing at Atlanta, Fulton county, State of Georgia, have invented certain new and useful Improvements in Passenger and Freight Transfer Systems, of which the following is a specification.

This invention relates to devices used in transferring passengers and freight at railroad stations to or from moving railroad trains or other vehicles moving in fixed paths thereby avoiding stops and shortening the time of travel between terminal points and reducing the amount of rolling stock necessary to handle a certain amount of traffic. The present invention is an improvement upon the transfer devices disclosed in two applications previously filed by me, Number 136,496, filed December 12, 1916, now patent #1,313,091, issued Aug. 12, 1919, and Number 181,885, filed July 20, 1917, in which I disclose an apparatus by means of which a moving train discharges from a special reception car, a transfer car loaded with passengers or freight, upon one end of a station platform, and takes from the other end of the platform a second transfer car loaded with passengers or freight, drawing the same into the previously emptied reception car.

The object of this invention is to improve and simplify the mechanism for performing these functions which is described in the above mentioned applications, and to attain the same results with novel mechanism comprising a smaller number of parts and the parts being of more simple construction.

The invention will be fully disclosed in the following description taken in connection with the accompanying drawings in which—

Figure 1 is a plan view of a station platform between two railway tracks, showing the relative position of a train and the platform when a transfer car is about to be discharged on to the platform;

Fig. 2 is a side elevation of one of the cars of the train, showing portions of the special apparatus attached thereto;

Fig. 3 is an end view of the transfer car;

Fig. 4 is a top plan view of the reception car, the roof being removed;

Fig. 5 is a plan view of a portion of the

mechanism located beneath the floor of the reception car;

Fig. 6 is a side elevation of the reception car showing the mechanism for actuating the transfer car;

Fig. 7 is a section along the line 7—7 of Fig. 4;

Fig. 8 is a plan view of a portion of the mechanism located beneath the station platform;

Fig. 9 is a section along the line 9—9 of Fig. 1;

Fig. 10 is a section along the line 10—10 of Fig. 1;

Figs. 11, 12, 13, 14, 15 and 16 are details.

The platform P is located between two railroad tracks E and E' and is adapted to receive transfer cars from trains passing on either track and to allow a transfer car to be picked up by a train going in either direction. This platform P is of a length and width determined largely by the size and weight of the cars to be transferred and its necessary dimensions will suggest themselves when these factors are known.

The mechanism for accelerating and retarding the transfer car upon the platform and the mechanism for loading and discharging the transfer car into and out of the reception car are separate and distinct and will be described separately.

The platform P comprises three principal portions, the end portions 10 and 11 upon which the transfer car first passes after being discharged and from which it is taken when being drawn into a reception car, and the longer central portion 12 which is the portion upon which the transfer car is accelerated and retarded. It will be understood of course that the transfer car is traveling at the same speed as the train when being taken on and put off, and that accelerating means is needed upon the platform to impart this velocity to a transfer car starting from rest and to retard and stop a transfer car suddenly placed upon the platform by the moving train.

This accelerating and retarding means comprises a series of gears or cogs extending longitudinally of the platform and so arranged that they are actuated at different speeds by a passing train. When two railroad tracks are used, two series of gears are necessary, one on each side of the longitudinal center line of the platform and actuated

from opposite sides. In Fig. 8 is shown an enlarged plan view of a short section of this gear mechanism.

Upon each side of the longitudinal center line of the platform and underneath the floor are a number of longitudinally arranged shafts 13, preferably four in number placed end to end and geared through bevel gears 14, 15, to counter shafts 16 respectively. These counter shafts 16 have large gear wheels 17 secured upon their outer ends, the gears 17 being vertically arranged parallel and close to the railroad tracks so that they may be engaged and rotated by racks secured to the underside of the railroad cars as they pass.

Upon each shaft is secured a series of gears 18 which mesh with crown gears 19 integral with or rigidly secured to gears 20 which in turn mesh with larger gears 21 arranged to project upward through slots in the platform and to be engaged by a suitable rack on the underside of the transfer car. The gears 18 and the gears 21 are uniform in diameter but the crown gears 19 and the gears 20 vary in diameter and are so designed that when the four shafts 13 are being uniformly rotated by a passing train the gears 21 are rotating at different speeds, the center gear or gears rotating very slowly and the end gears at high speed while each of the intermediate gears rotates at a speed depending upon its position in the line, that is, each succeeding gear rotates at a higher rate of speed as the end of the line of gears is approached, giving a uniform acceleration to a transfer car leaving the center of the platform and traveling toward one end and a uniform retardation to a car approaching the center from the other end.

The two rows of cogs 21 are arranged to rotate simultaneously when either gear 17 is rotated by a passing train, the longitudinal shafts on which they are mounted being operatively connected by suitable gearing, as shown in Figs. 8 and 10. This gearing is so arranged that the cogs 21 rotate in the same direction, one gear 17 turning idly when the other is engaged by a rack 22.

A long rack for engaging and actuating the cogs 17 is shown at 22 in Fig. 2 and racks secured to the underside of a transfer car and adapted to be engaged by the double row of cogs 21 are shown at 23 in Fig. 3. These racks 23 are slightly shorter than the tangential distance between two of the cogs 21 so that they will never engage more than one at a time in each row. The rack 22 is hung by suitable brackets from rods 24 connecting pistons in the pneumatic cylinders 25 secured to the car body. This allows a certain amount of "give" when the teeth of the rack first engage the teeth of the cogs 17 and prevents breaking of the teeth. Simple mechanism is also provided for rais-

ing the rack 22 in case it is desired to pass a station, as is shown in Fig. 2, the suspending brackets having a pin and slot connection with rods 24, to allow such a movement.

The transfer car T, as shown in Fig. 3, may be either a passenger or freight car and may be inclosed or not, as desired. I have shown it to be a mere flat car mounted upon four caster wheels 25 and having substantial iron hooks 26 at its ends which are adapted to be grasped by suitable mechanism hereinafter to be more fully described upon a passing receiving car. These hooks 26 are not rigidly fastened to the ends of the car T, but slide through tubular members 27, the movement thereof being limited by suitable stops 28 thereon coöperating with stops 29 upon a car body. The hooks are normally extended by means of a pinion 30 meshing with teeth 31 on the hooks, the pinion 30 being actuated by a suitable leaf spring 31 within a recess in the end of the transfer car. Pneumatic bumpers 32 are placed on the front of the car body to absorb the shock of impact of the same against the side of the receiving car when the transfer car has just been taken on to the latter. To the rear end of the transfer car is secured a downwardly extending bar 33 having a horizontal portion 34 which operates the extensible bridging members attached to the receiving car, hereinafter to be more fully described when the transfer car is passing into or out of the receiving car.

The end portions 10 and 11 of platform P are constructed in a similar manner with the operative parts reversed, however, due to the fact that they are at opposite ends of the platform and are constructed to receive transfer cars from different sides of the platform. In Fig. 1 I have shown a train passing the platform having a reception car R opposite the platform end 11 and about to discharge the transfer car thereupon. In order that the caster wheels of the transfer car be suitably guided so as to remain upon the receiving platform and to accurately strike the grooves 35 extending down the central portion 12, I have provided depressible portions 36 and 37, hereinafter called depressible guards, which serve to trap the transfer car upon the receiving platform after it has been released by the reception car and to guide it in its proper path. In Fig. 9 I have shown a cross sectional view of the platform 11 showing these depressible guards and will now describe their construction and operation in detail.

The guard 36 comprises a portion 37 of the platform hinged at its outer edge at 38 and held normally in an inclined position by a suitable spring 39. Hinged to the inner and upper edge is a member 40 which extends downwardly and is guided in a slot 41 when the depressible guard moves upwardly

or downwardly. This member 40 constitutes when the car is upon the platform a guide or embankment against which the caster wheels of the reception car bear and which prevents the same from rolling toward the front edge of the platform. A curved bar 42 rigidly secured to the underside of the flat portion 37 is adapted to pass when the guard is depressed through a hole 43 in a member 44 strongly braced from the ground or foundation. This bar 42 constitutes a support for the depressible guard when locked in the position shown in Fig. 9 by a bolt or latch 45 which is positioned between the lower end of the bar and the member 44 thus preventing the bar from passing through the hole 43. This latch is only operated to release the guard and render it depressible when a certain portion of the passing reception car strikes the protruding end 46 of the bell crank lever 47, as a suitable spring 47' acting on this bell crank lever tends at all times to keep the bolt or latch 45 in its locking position whereby the guard 36 is locked.

A portion of the other side of the platform 11 constitutes a second depressible guard 48 for confining the motion of the transfer car in this direction and this guard 48 is also locked in its inclined position, except at the instant when a transfer car is being drawn from the platform 11 on to a train passing along the track adjacent the guard 48. Rigidly secured to the underside of the portion 48 is a rod 49 having a pin and slot connection at its lower end with a substantially horizontal rod 50 pivoted to the underside of the platform at 51. A tension spring 52 pulls downwardly upon the bar 50 and therefore maintains the portion 48 in its upwardly tilted position.

Locking means for supporting the depressible guard in its upwardly tilted position is also provided and this means comprises a curved bar 53 having its lower end adapted to bear against the inwardly extending end of a rotatable latch 54 having a portion 55 extending outwardly into the path of a portion of the mechanism of the reception car. A spring 56 normally holds this latch in its locking position, and stop 57 limits the rotation thereof. When the outer end 55 is struck by the mechanism on the reception car, the latch is swung until its rear portion 55 disengages the lower end of the bar 53 and the guard may then be depressed, which depression is affected at this instant by the transfer car which is then being drawn over it and into the reception car.

The bar 50 has also a pin and slot connection with depressible guide rails 58 and it is obvious that as the guard 48 is depressed the bar 50 will be raised and the guide rails 58, the tops of which are normally flush with the top surface of the plat-

form, will be raised. There are three of these guide rails 58, as clearly shown in Fig. 1, and when in their raised positions they are adapted to be engaged by the outer three-caster wheels of the transfer car T, 70 and are materially useful in assisting the mechanism of the reception car in effecting the transfer.

It is of course obvious that the weight of the depressible guards and guide rails 58 may be such that instead of single latches holding them in their locked positions, a series of latches may be required and a series of bars 50 provided for raising and lowering the guide rails. The number of such latches and bars, however, is a matter of design, and may be altered to suit circumstances, provided, however, that they are operated simultaneously at the proper moment.

The mechanism on the reception car for manipulating the transfer car will now be described. In Fig. 4 I have shown a plan view of the reception car, and in Figs. 5, 6 and 7 I have shown mechanism located beneath the floor of the reception car and which is adapted to be actuated to manipulate the transfer car when a certain member engages an auxiliary rail 59 spiked to the ties of the trackway. These guide rails 59 are curved at their end portions opposite portions 10 and 11 of the platform and are substantially straight in the middle. A bell crank lever 60 is pivoted to a bracket 61 rigidly secured to the underside of the reception car midway of its length and this lever 60 has a roll 62 at its lower end adapted to bear against the beveled face of the guide rail 59 when the train is passing a station. Pivotally secured to the upper end of lever 60 are the ends of two similarly constructed rods 63 pivoted to the car bottom at 64 and extending approximately to the opposite ends respectively thereof. Near the outer ends of these rods 63 are bolted heavy rack members 65, which engage gears 66 respectively secured to the car body and each of these gears 66 meshes with a smaller gear 67 secured to a transverse rod 68 extending across the car body length of the floor thereof. Each of these rods 68 has two worms 69 and 70 thereon, the threads being right and left hand, and engaging horizontally arranged gear wheels 71, 72. These gear wheels 71 and 72 are rotatable horizontally, but prevented from vertical movement by any suitable means, not shown, and are rigidly mounted upon upright threaded bolts 73 and 74, respectively, which extend upwardly through the bottom of the car and pass through threaded openings in the opposite ends or tiltable channels 75 and 76, which are pivoted at their middle points to brackets secured to the car floor, as clearly shown in Figs. 4 and 7.

It can be seen then that as the upper end

of the lever 60 moves vertically, due to its lower end moving when engaged by the curved rail 59, the rods 63 will be rotated to some extent about their pivotal points 64, thus tilting the channel members 75 in one direction or the other through the intervening gears just described, depending upon the direction in which the lower end of said lever 60 moves.

Since the transfer cars are provided with three pairs of caster wheels, a third channel is provided in the reception car to receive the middle pair of such wheels, and this third channel which is indicated at 77 in Fig. 4, is rigidly secured to and operates with the end channels 75 and 76 by suitable cross bars 78, so that the channels tilt as a unit. Hinged to the forward end of each of the channels and with their outer ends slidably resting on blocks 79 are short channel portions 80 which insure a smooth trackway for the caster wheels of the transfer car between the tiltable portions and the swinging bridging members 81. These swinging bridging members are pivoted respectively to the blocks 79, secured to the car floor, and are normally held in extended position by strong tension springs 82. The outer ends of the bridging members are flared to more easily receive the caster wheels of the transfer car, and beneath the outer ends are located substantial rollers 83 for supporting the same upon ledges 84 formed in the edges on the sides of the platform so that the bridging members are amply strong enough to bear the weight of the transfer car when it is passing to or fro over them.

Each bridging member has adjacent its pivotal points a laterally extending bar 85 rigidly secured thereto, and these bars 85 are provided near their outer ends with vertically upwardly extending pins 86 which lie in the path of the horizontal portion 34 of the downwardly projecting member 33 secured to the rear end of the transfer car. It can be seen that when the transfer car has passed over the bridging members and is almost entirely within the reception car that the portion 34 will engage with the pin 86 and tend to rotate the bridging members on their pivots and to fold them back along the car. In order to prevent any accidental movement of the bridging members when extended, I have provided spring catches 87, as clearly shown in Fig. 13, which have recesses in their upper portions adapted to fit around and engage the lower faces of the members 85, and to prevent their movement in either direction. The outer ends of the spring catches 87 are upwardly turned and have inclined portions 88 which are also in the path-way of the member 34, and as the transfer car passes into the reception car this member 34 will first strike the inclined

end portion 88 of the spring catch 87 depressing the same thereby and freeing the bar 85 from the restraining shoulder 89 so that when the member 34 strikes the pin 86, which it does almost instantly after striking the inclined portion 88, the bridging members will be unlocked and may be swung as before explained alongside the car to be out of the way of obstructions along the track. The bridging members are maintained in this folded position until the time arrives for the transfer car to be discharged, since the member 34 remains in continual engagement with the pin 86. When, however, the transfer car begins to pass out of the reception car as for instance at the next station, the member 34 releases the pin 86 and the strong springs 82 immediately extend the bridging members and the spring catch 87 again locks them in their extended position.

The outer ends of the rods 63 pass through slots 90 in upright vertically slidable rods 91 extending through the bottom of the car. The slots 90 are of such length that the ends of the rods 63 work in them with considerable lost motion and are not immediately actuated when the rods first begin to operate. The upper ends of these rods 91 are connected pivotally to cross bars 92 and 93 which in turn are pivoted to the inner ends or lazy tong devices 94 similar to the ones fully described in my copending applications. These lazy tong devices are secured to the ends of the car and have hooks 95 at their outer ends which are adapted to engage the hooks 26 of the transfer car to manipulate the same. It can be seen that as the uprights 91 are raised and lowered, the cross bars 92 and 93 which are pivoted together at their central points will be operated scissors fashion to actuate in turn the lazy tong devices, an upward movement of the uprights 91 resulting in an extension of the lazy tong devices, and a downward movement in a contraction thereof.

As it is obvious that in the operation of my transfer device it will be desirable to pass certain station platforms without taking on or discharging a transfer car, I have provided a selective mechanism for rendering the mechanism of the reception car inoperative whenever desirable. The downwardly extending arm of the lever 60 is hinged, as clearly shown in Figs. 15 and 16, and means is provided for drawing the lower end of the lever 60 upwardly in a plane parallel with the axis of the car so that it will not engage the curved trackway 59. This vertical arm is hinged midway of its length as at 96, a joint between the sections being indicated by the line 97. The side of the lower portion is slotted and a tongue 98 extends through this slot, the tongue being rigid with the upper portion

of the lever arm. The tongue 98 is in turn slotted vertically as at 99, the slot extending upwardly and being adapted to receive therein a flat member rigidly secured to the lower end of one fork of a member 101 extending upwardly through the car floor and adapted to be actuated from the top of the car or one end thereof. A second fork of the selective rod 101 extends downwardly upon the other side of the lever 60 and is connected to the lower portion thereof at 102 with a pin and slot connection. It can be seen that the member 101 is drawn upwardly and the locking portion 100 will be first withdrawn from the slot 99, and that then the other fork of the rod 101 will rotate the lower end of the member 60 about its hinge 96 into a substantially horizontal position in which the roller will not engage the guide rail 59. When the rod 101 is lowered the lower end of the lever 60 will assume a vertical position due to its own weight or because of the action of a suitable spring and immediately after the locking plate 100 will enter the slot 99 and the two parts of the depending arm will be rigid and ready to withstand the strains necessary in the operation of the mechanism.

From the foregoing detailed description of the apparatus its mode of operation will be apparent and a brief description of its general operation will now be given. A train approaching the platform from either direction and desiring to effect the transfer will lower the long rack bars beneath the cars so that they will engage the cog wheel 17 located at the side of the track opposite the platform. The selective mechanism upon the reception car will also be operative so that the down hanging lever will engage the curved rails secured to the trackway. When the reception car is passing the end of the platform this lever will engage the curved rail and the tiltable supporting channels upon which the transfer car is located will be tipped after which the lazy tongs devices will begin to thrust the transfer car forth from the reception car, the bridging members being extended by this movement and a tilting guard on the near side of the platform being unlocked by the bridging members.

As the lazy tongs complete their extensions the wheels of the transfer car will pass from the bridging members on to the platform depressing the tilting guard which immediately springs upwardly after the transfer car has completely passed over it and prevents the same from escaping from the platform as described before. After being released by the lazy tongs devices the transfer car is retarded by the retarding gears, which cease to rotate when the transfer car has reached the center of the platform due to the fact that the train has

passed the gears 17 which are toward the receiving end of the platform.

Meanwhile a transfer car located originally upon the center of the platform has been accelerated by the cogs and the lazy tongs devices engage hooks on the ends of the transfer car and draw the latter into the reception car when the opposite end of the platform has been reached. In this operation the guide rails located at the ends of the platform and normally flush with its upper surface are brought into operation to assist the lazy tongs, and the transfer car depresses the second tilting guard, which has previously been released by the bridging members unlatching the same.

It is obvious that many changes may be made in the design and proportions of the mechanism disclosed in the drawings and specification and I do not wish to be limited to the exact form shown and described, the broad nature of the invention being indicated by the scope of the appended claims.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. In a transfer system of the class described, a trackway, a car adapted to be transferred to a vehicle moving along said trackway, means for accelerating said car, and means for transferring said car to said vehicle, said means including a curved rail member, and a member adapted to engage the same, one of said members being secured to said trackway and the other being secured to said vehicle.

2. In a transfer system of the class described, a trackway, a car adapted to be transferred to a vehicle moving along said trackway, means for accelerating said car, and means for transferring said car to said vehicle, said means including a curved guide rail rigidly secured to said trackway, and a lever pivotally secured to said vehicle and projecting downwardly and adapted to engage said guide rail.

3. In a transfer system of the class described, a trackway, a car adapted to be transferred to a vehicle moving along said trackway, means for accelerating said car, means for transferring said car to said vehicle, said means including a guide rail rigidly secured to said trackway parallel to the path of said vehicle and having curved ends, and a lever pivotally secured to said vehicle and projecting downwardly and adapted to engage said guide rail when the vehicle moves along said trackway.

4. In a transfer system of the class described, a trackway, a car adapted to be transferred to a vehicle moving along said trackway, means for accelerating said car, and means for transferring said car to said vehicle, said means including a guide rail rigidly secured to said trackway and having

a curved portion, a bell crank lever pivotally secured to said vehicle and having a downwardly projecting arm adapted to slidably engage said guide rail as the vehicle passes along the trackway and to be rocked on its pivot when engaging said curved portion.

5. In a transfer system of the class described, a trackway, a car adapted to be transferred to a vehicle passing along said trackway, means for accelerating said car, and means for transferring said car to said vehicle, said means comprising two lazy tong devices secured to said vehicle and adapted to be extended therefrom to engage said car, a bell crank lever pivotally secured to said vehicle and having a downwardly extending arm, a guide rail having a curved portion rigidly secured to said trackway, the downwardly extending arm of said bell crank lever being adapted to engage and be rocked by said guide rail as the vehicle moves past the same, and mechanism operatively connecting said lever and said tongs whereby the latter will be operated by the former.

6. In a transfer system of the class described, a trackway, a car adapted to be transferred to a vehicle moving along said trackway, means for accelerating said car, and means for transferring said car to said vehicle, said means including a curved rail rigidly secured to said trackway, a downwardly hanging lever pivoted to said vehicle and adapted to engage and be rocked by said guide rail as the vehicle moves along said trackway, lazy tong devices secured to said vehicle, and substantially horizontal levers pivoted to said vehicle and said downwardly hanging lever and operatively connected to said lazy tongs, whereby the lazy tongs are actuated when said downwardly hanging lever is rocked.

7. In a transfer system of the class described, a trackway parallel to a station platform, a vehicle adapted to move along said trackway, a car adapted to be transferred from said vehicle to said platform and vice versa, a curved guide rail secured to said trackway opposite the platform, a

member pivoted to said vehicle and adapted to engage and be rocked by said guide rail as the vehicle passes the platform, mechanism operatively connected to and actuated by said member for effecting the transfer and mechanism on said platform and actuated by the passing vehicle for accelerating and retarding said car.

8. In a transfer device of the class described, two parallel trackways, a train adapted to move along one of said trackways, a reception car in said train, a transfer car upon the other of said trackways, means adapted to be actuated by the train for accelerating said transfer car to the speed of the train, bridging members pivotally secured to said reception car and adapted to be extended toward the other trackway, means on said reception car for engaging said transfer car and drawing the same into said reception car, and a curved guide rail secured adjacent one of said trackways and lying in the path of travel of said last mentioned means whereby said means is actuated to draw the transfer car into the reception car.

9. In a transfer device of the class described, a trackway, a platform parallel thereto, a train adapted to pass along said trackway and having a reception car, a transfer car in said reception car, means for transferring said transfer car from said reception car to said platform while the train is in motion, and depressible guards on said platform for guiding said transfer car.

10. In a transfer device of the class described, a trackway, a platform parallel thereto, a train adapted to pass along said trackway and having a reception car, a transfer car in said reception car, means for transferring said transfer car from said reception car to said platform while the train is in motion, depressible guards on said platform, and means for locking said guards in guarding position when the transfer car has been placed on said platform for guiding the transfer car.

In testimony whereof I affix my signature.

WILLIAM P. LAMAR.