June 11, 1929. H. W. KIRCHNER 1,716,588

TRANSPORTATION SYSTEM

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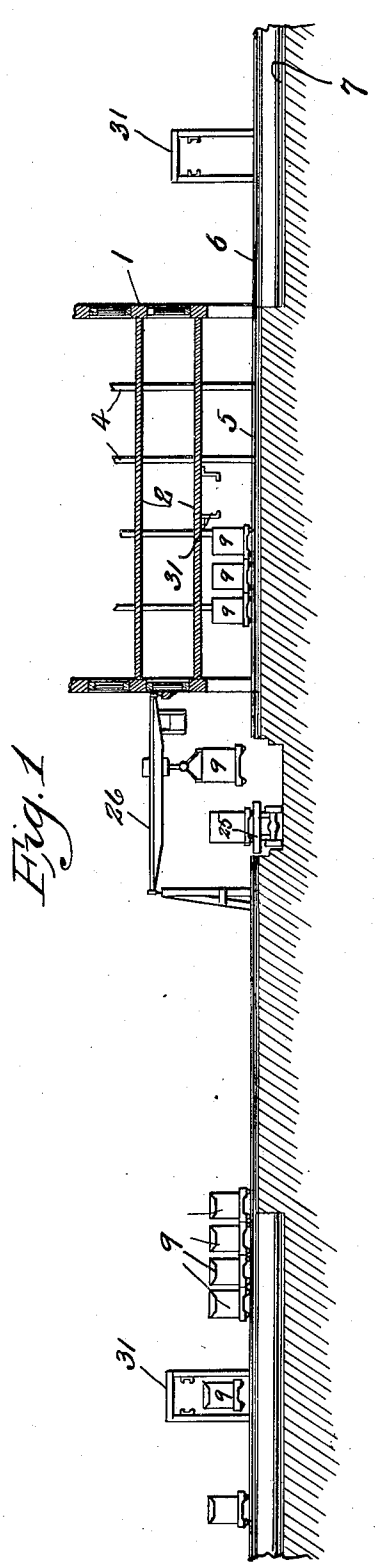


Fig. 1

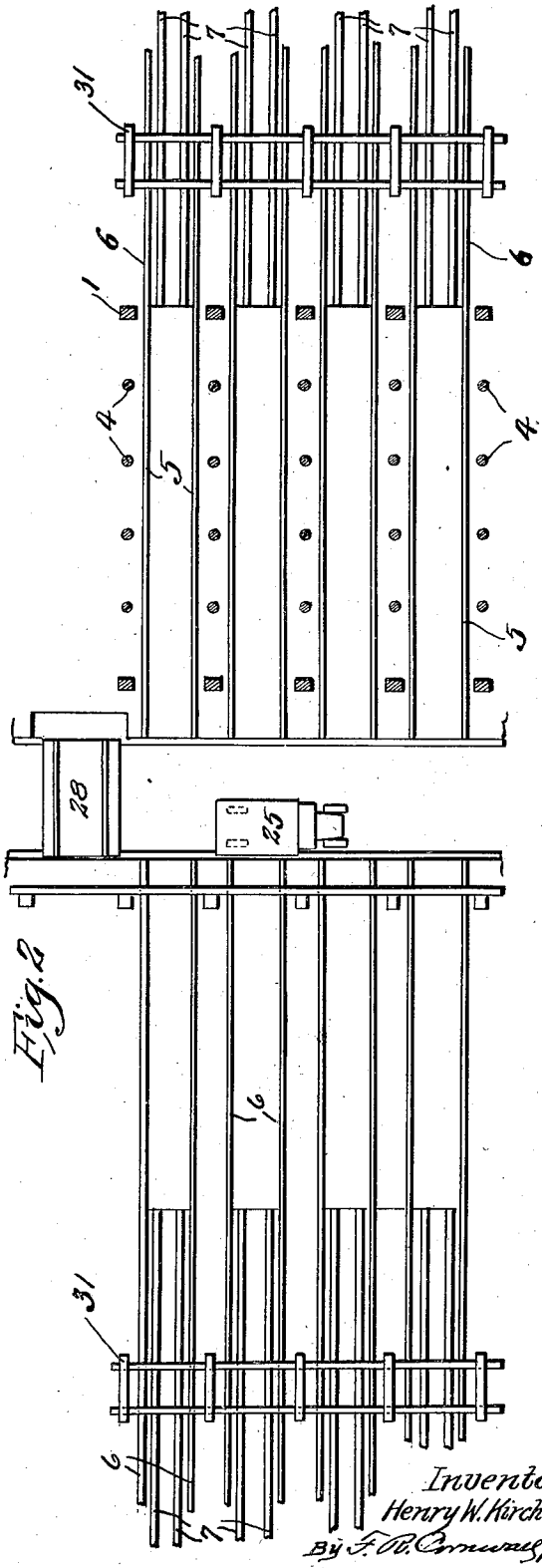


Fig. 2

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TRANSPORTATION SYSTEM

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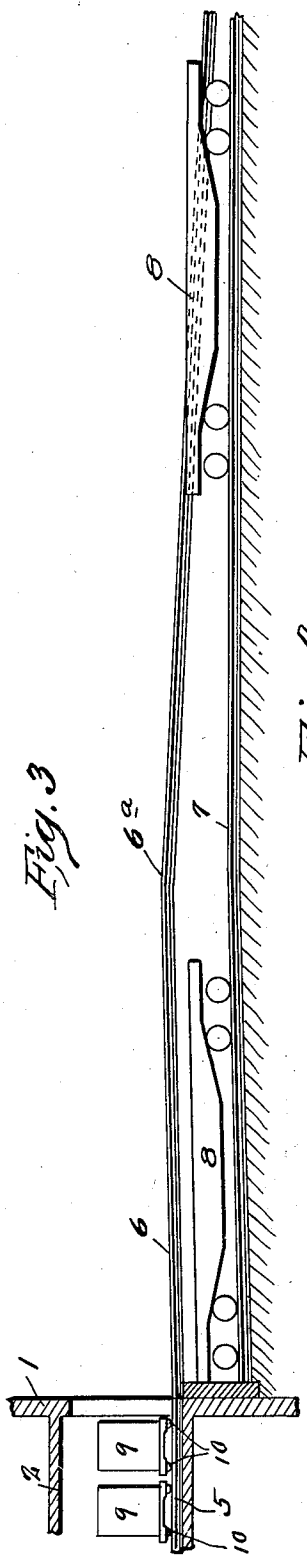


Fig. 3

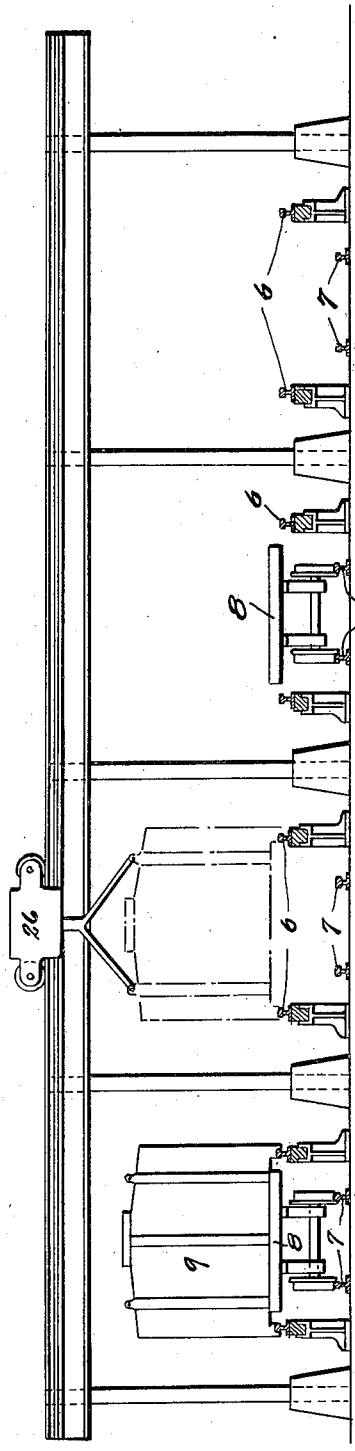


Fig. 4

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Fig. 5

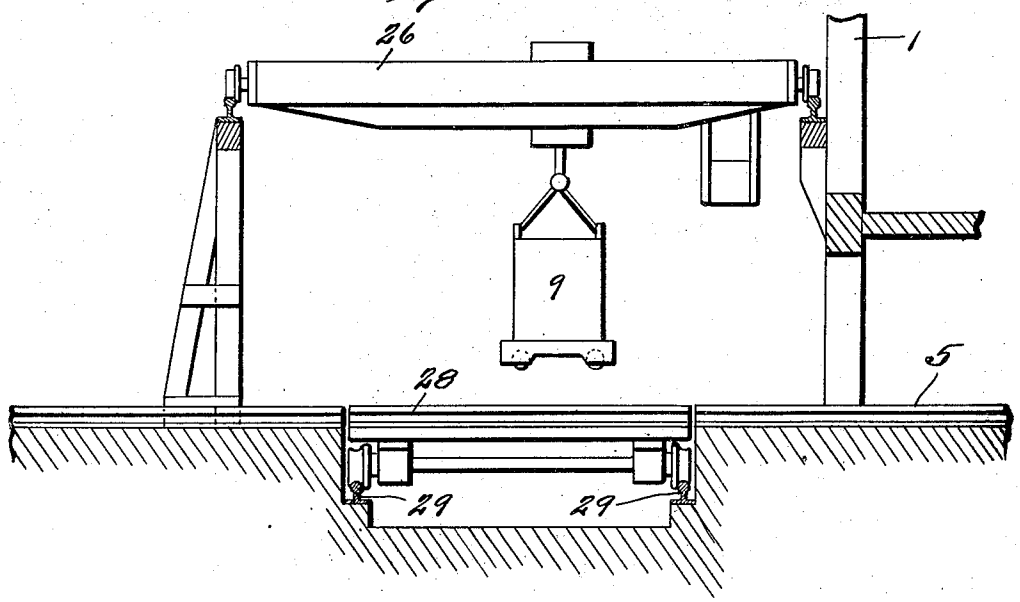
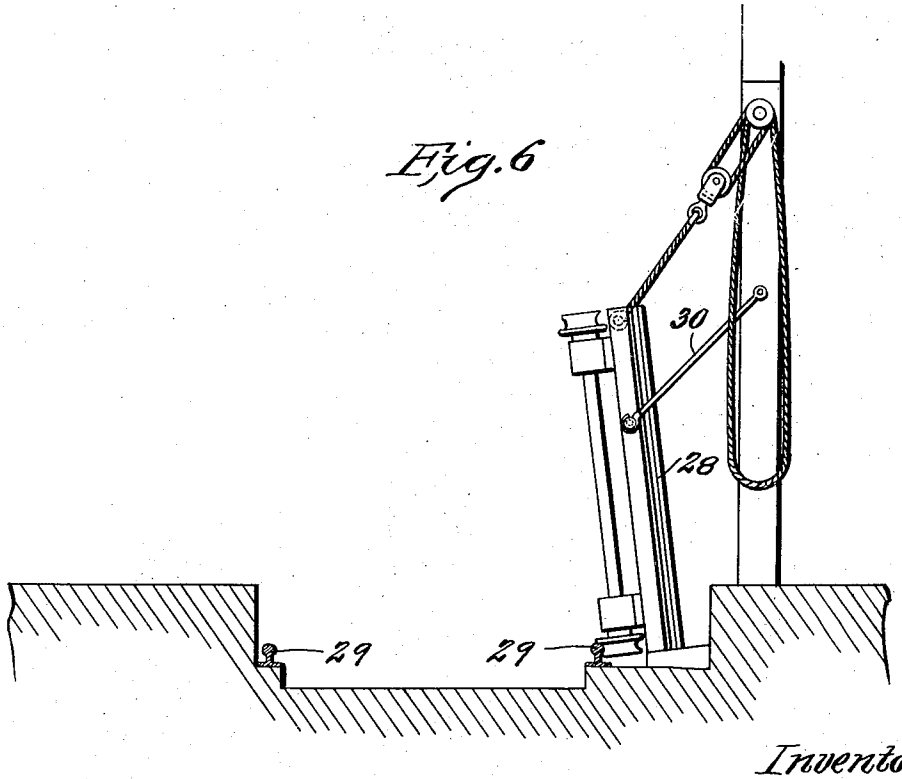


Fig. 6



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TRANSPORTATION SYSTEM

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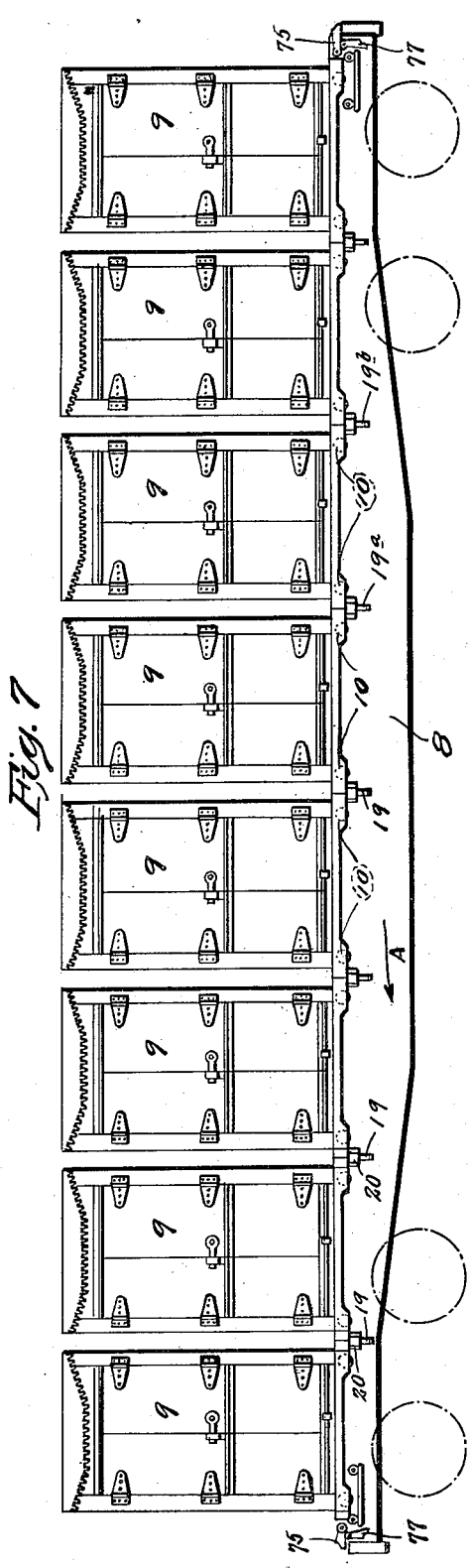


Fig. 7

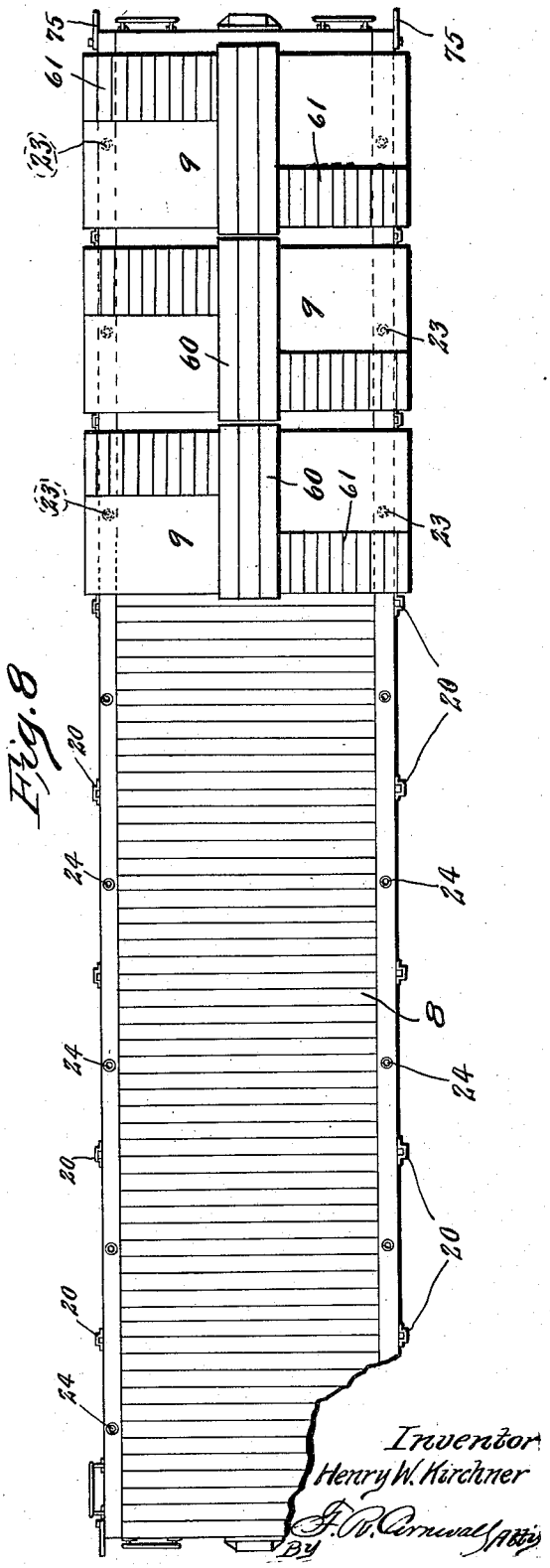


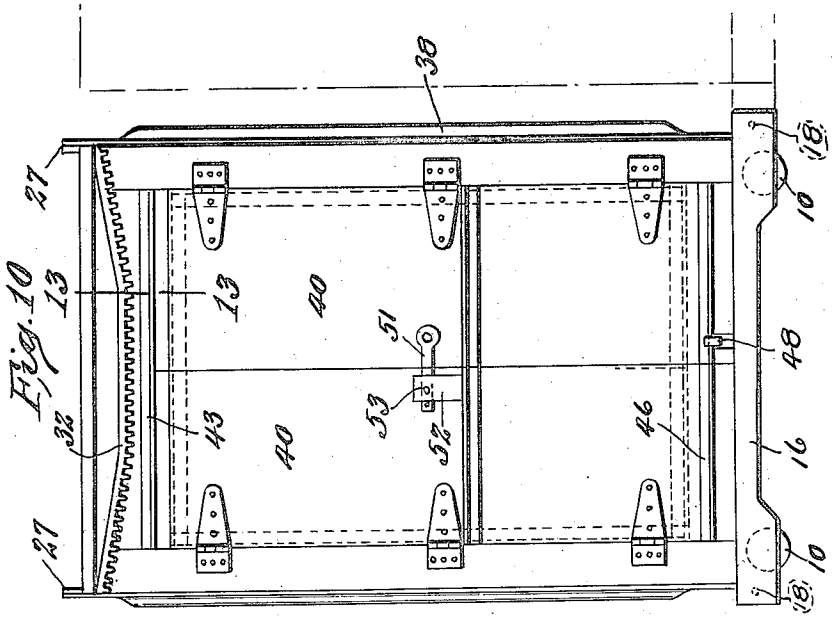
Fig. 8

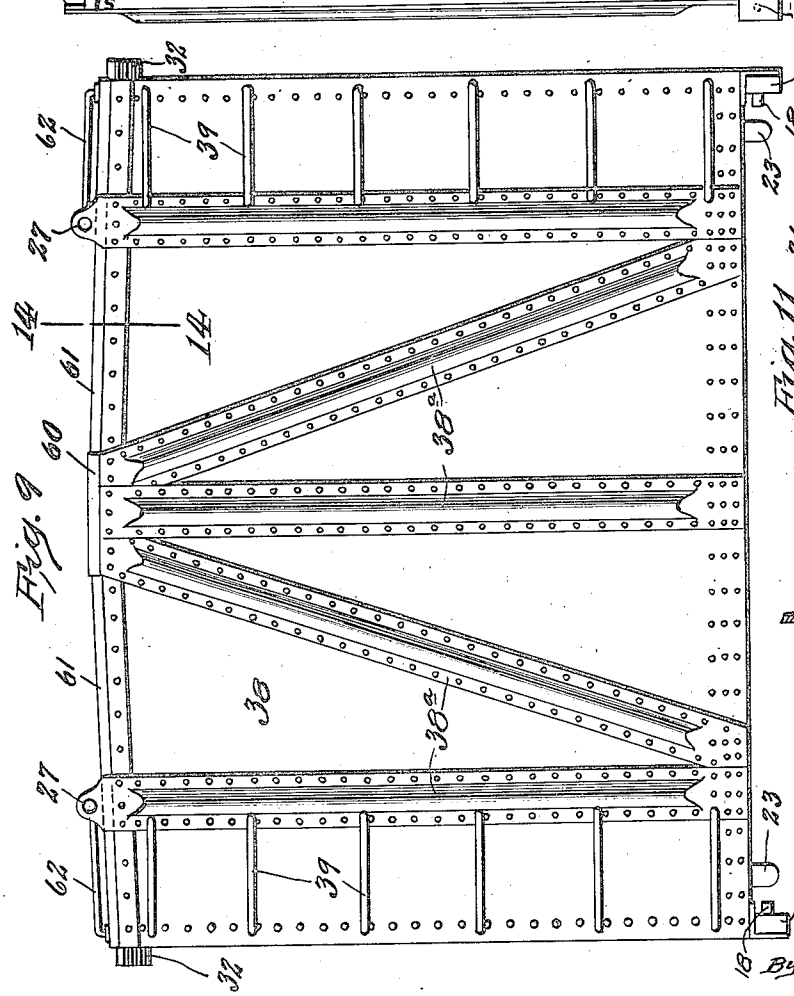
Inventor
Henry W. Kirchner
By

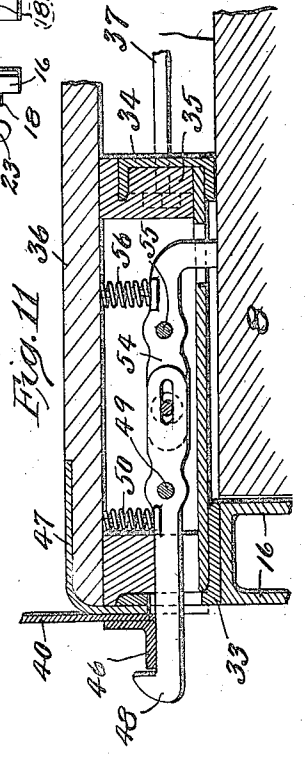
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TRANSPORTATION SYSTEM

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Inventor
Henry W. Kirchner

By [illegible]

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Fig. 12

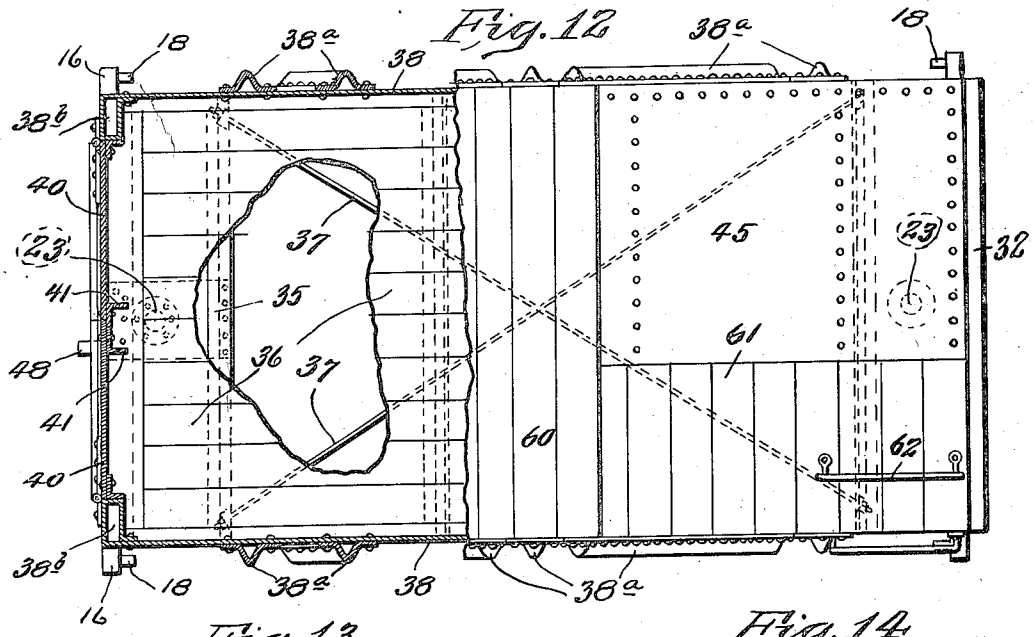


Fig. 13

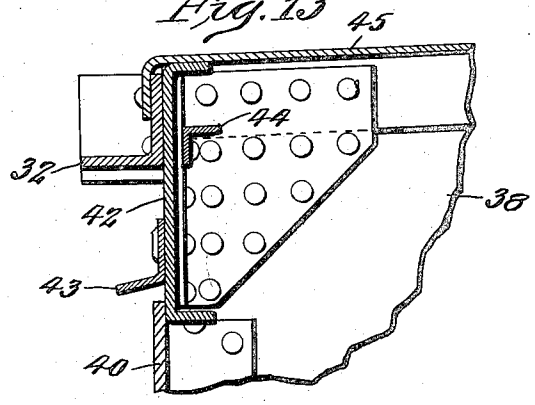


Fig. 14

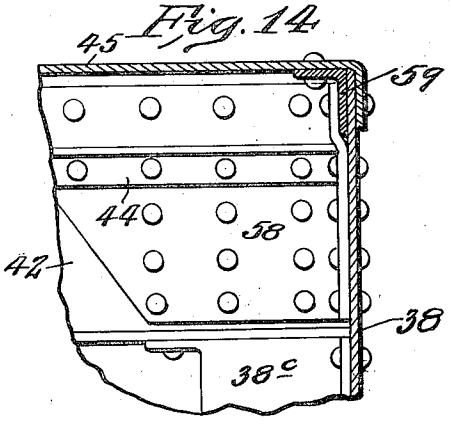


Fig. 15

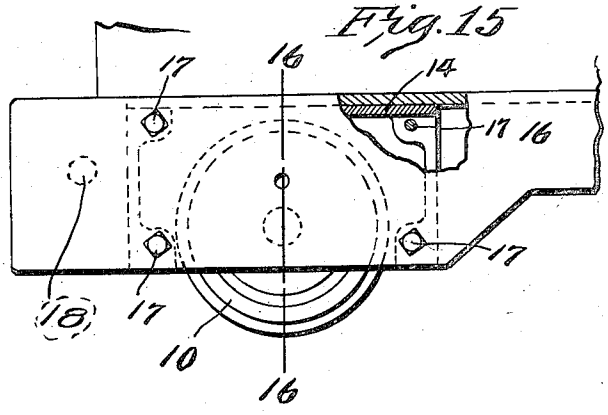
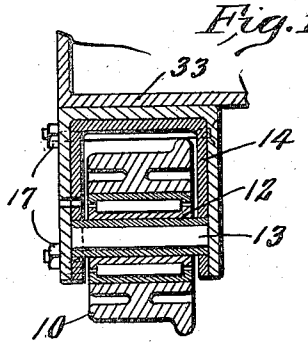


Fig. 16



Inventor
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Fig. 17

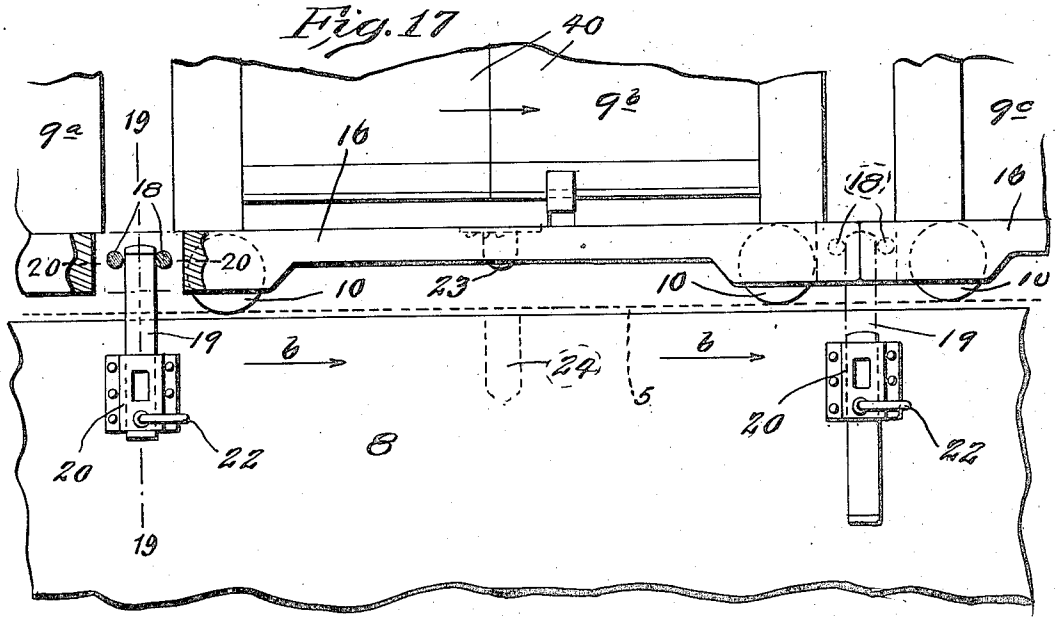


Fig. 18

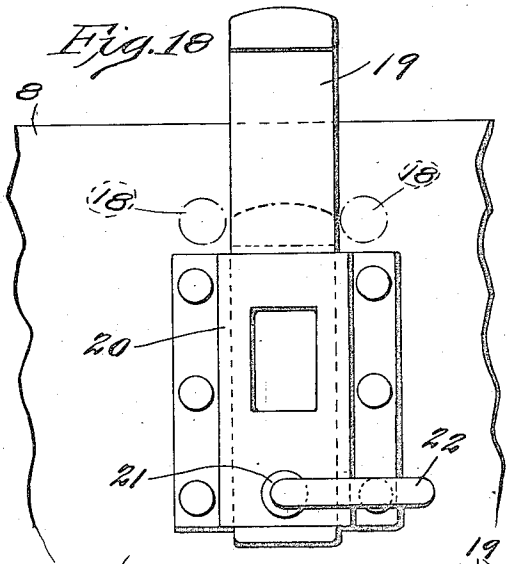


Fig. 19

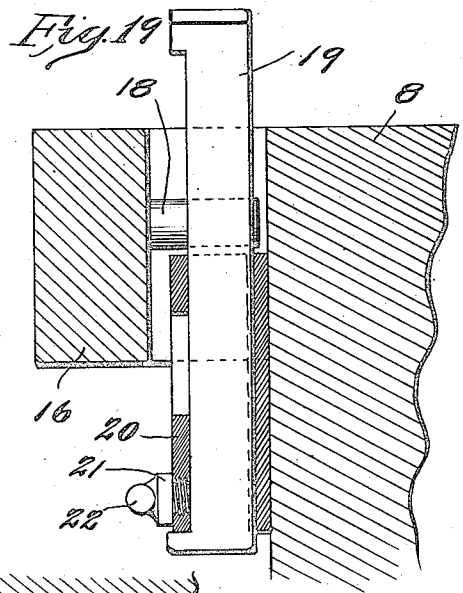
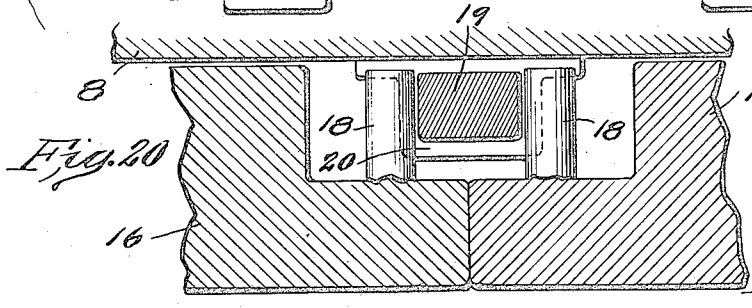


Fig. 20



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Fig. 21

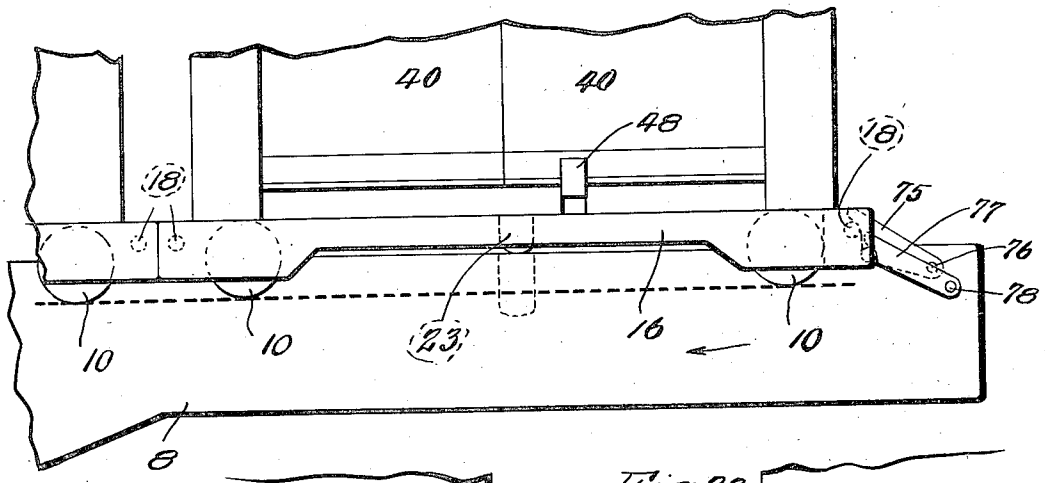


Fig. 22

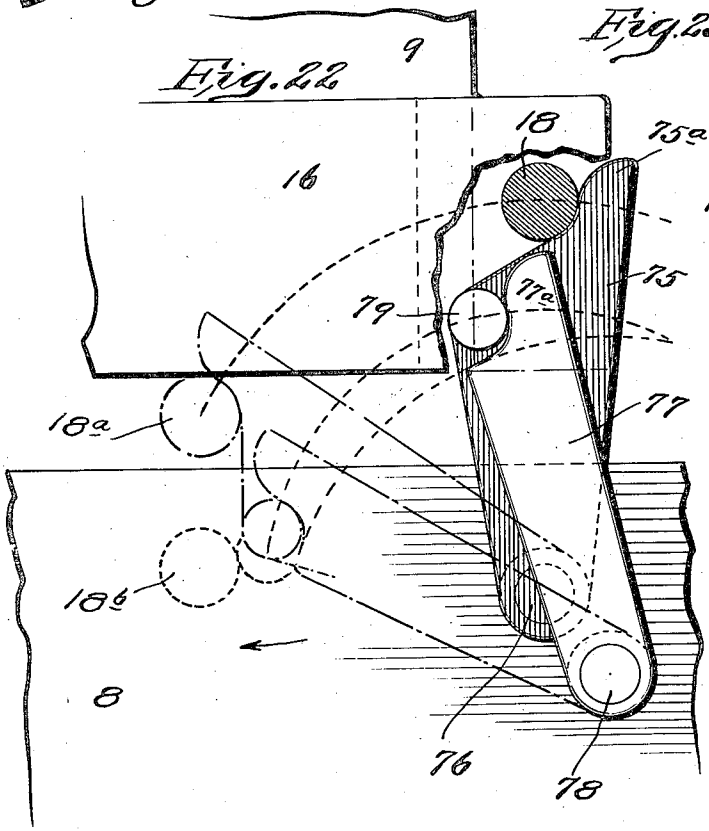
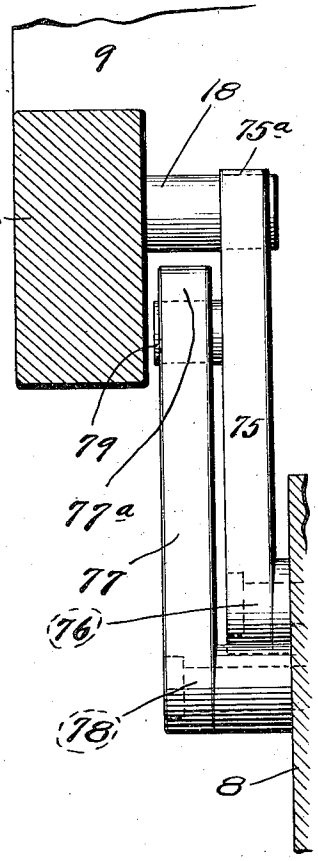


Fig. 23



Inventor
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By G. R. Cornwall Atty.

Patented June 11, 1929. 1,716,588

UNITED STATES PATENT OFFICE.

HENRY W. KIRCHNER, OF ST. LOUIS, MISSOURI.

TRANSPORTATION SYSTEM.

Application filed May 16, 1922. Serial No. 561,404.

This invention relates to a new and useful improvement in transportation systems and contemplates a transferring freight station for handling freight in unit containers. This transferring station involves a novel means for loading and unloading the containers and transferring them from one carrier to another, or from one type of carrier to another type of carrier, such as from a railroad car to a motor truck, and vice versa.

It is, of course, obvious that the transfer might be from car to barge, steamship or other types of carriers. In my improved transportation system, the freight in whatever forms of lading, might be first loaded into containers of different sizes and types, such, for instance, as the containers disclosed in my United States Patents, No. 885,162, granted April 21, 1908, No. 1,349,209, granted August 10, 1920, and No. 1,360,412, granted November 30, 1920, or such other forms of containers as could be employed in connection with the several types of carriers used.

It is one of the objects of my present invention to load and unload the freight containers onto or from a moving railroad car, thereby facilitating such operation and by placing the containers onto the ramp track, as in unloading them from a railroad car, enabling said containers to be transported each on its own wheels into a warehouse or transferred to another track or tracks to be loaded onto a motor truck or onto another railroad car, or barge, as desired.

In order to facilitate the transfer of the containers from track to track, cranes or transfer tables, or both, may be employed. Preferably, I avoid the use of turntables and consequently do not employ any tracks for the container running transversely through the warehouse. The tracks for the railroad carriers terminate in blind sidings or slips between ramp tracks, which ramp tracks by being in alignment with the wheels of the containers will gradually lift the containers away from their carriers, during which lifting operation, the containers are moved by the carriers until they pass over a hump in the ramp tracks, after which they may run into the warehouse by their own gravity or by manual operation onto aligned ramp warehouse tracks.

Figure 1 is a vertical sectional view showing a portion of my improved transportation system.

Figure 2 is a plan view of the parts shown in Figure 1.

Figure 3 is a vertical sectional view showing another portion of my improved system.

Figure 4 is an elevational view of one of the overhead cranes used in connection with my improved system.

Figure 5 is an end elevational view of said overhead crane showing its relation to a transfer platform.

Figure 6 is a detail view showing the transfer platform raised to an inoperative position.

Figure 7 is a side elevational view of a car equipped with my improved unit freight containers.

Figure 8 is a top plan view of said car showing freight containers in position thereon.

Figure 9 is a side elevational view of one of my improved freight containers.

Figure 10 is an end elevational view of the same.

Figure 11 is a detail sectional view showing a form of door locking mechanism used in connection with said containers.

Figure 12 is a top plan view partly in horizontal section of said container.

Figure 13 is a vertical sectional view on line 13—13 of Figure 10.

Figure 14 is a vertical sectional view through the upper corner on line 14—14 of Figure 9.

Figure 15 is a side elevation of one end of a container, partly in section, illustrating the mounting for one of the rollers under the container.

Figure 16 is a vertical sectional view on line 16—16 of Figure 15.

Figure 17 is a side elevational view

through a part of a car showing the relation thereof to the containers on a ramp track.

Figure 18 is a side elevational view of one of the vertically movable container loading and unloading devices.

Figure 19 is a vertical section on line 19—19 of Figure 17, the post being shown in elevation.

Figure 20 is a horizontal section on line 20—20 of Figure 17.

Figure 21 is a side elevational view of a carrier and another form of loading and unloading mechanism.

Figure 22 is an enlarged view of a portion of the same; and

Figure 23 is an edge view of the structure shown in Figure 22.

In the drawings, I have shown in Figures 1 and 2, a condensed arrangement of my improved system in which 1 indicates the walls of a warehouse, 2 the floors thereof and 4 the posts or floor supports. This warehouse is traversed by tracks 5, these tracks extending beyond the warehouse on one or both sides in the form of ramp tracks 6. These ramp tracks, as shown in Figure 4, are elevated above the surface tracks 7 upon which latter run the wheels of a railroad carrier 8 preferably in the form of a flat car, as diagrammatically illustrated in Figure 3. The ramp tracks 6 are inclined to form a hump 6^a, the purpose of the outer inclined track being to enable the freight containers to be lifted from their carriers, after which said freight containers may move by their own gravity down the inner inclined portion of the track nearest the warehouse, or said freight containers may be operated by hand over the hump and into the warehouse.

9 indicate the containers which are provided with wheels 10 at their four corners. These wheels are preferably roller bearing, as shown in Figure 16, and in order to facilitate the assembling of the parts, each wheel with its roller race is arranged upon a sleeve 12 through which passes an axle 13. The ends of this axle are mounted in an inverted U-shaped wheel casing 14 which is secured in position in and near the ends of a body supporting channel-shaped underframe member 16 by means of bolts 17. There are two of these channel shaped members 16, one under each side or end of the container 9, and when the container is loaded onto a flat car (see Figs. 4, 7 and 8), the channels 16 straddle the platform of the car and lie along each edge thereof. In this position of the container on the platform, the wheels 10 do not support the container. The body of the container is supported directly by the platform of the car between the channel members 16.

Assuming that a car is loaded with containers, as shown in Figure 7, and said car with its containers is backed into a slip, by which term I indicate a railroad track and associated ramp track, it is obvious that as the container wheels 10 strike the inclined ramp tracks, said wheels 10, by rolling up the inclined ramp tracks, will lift the container from the platform of the car and will move the container along the ramp tracks towards the warehouse as long as there is an operable engagement between the container and the moving carrier or car platform. Thus, the wheels 10 of each container successively engage the inclined ramp tracks and said containers will be successively lifted from the car platform and moved along the ramp tracks towards the warehouse.

The means for maintaining the engagement between the containers and the carrier is best seen in Figures 17 to 20, inclusive, wherein it will be observed that there is a pin or abutment 18 arranged between the vertical walls of each channel 16 near the ends of the latter. 19 indicate vertically movable engaging and propelling blocks or posts mounted in stake pockets 20 secured to the side edges of the car platform. 21 indicates a clamping screw having a handle 22 on its outer end, said screw passing through a threaded opening in the stake pocket and engaging the post 19 to hold said post in its elevated or depressed position, as the case may be. Assuming, for the moment, that the carrier is loaded with containers, as shown in Figure 7, and that it is desired to unload the containers onto a ramp track, as just above mentioned, the posts 19 may be elevated between pins 18 of adjacent containers, as shown by solid lines in Figure 18, or the posts may be left depressed, as shown in dotted lines in Figure 18, in which depressed position the heads of the posts lie between the pins 18 and merely serve as limit stops to prevent longitudinal shifting of the containers on the platform. For purposes of present explanation, we will assume that the car shown in Figure 7 is being backed into a slip in the direction of the arrow A and that it is desired to unload onto the companion ramp tracks the first five containers 9 mounted on said car. It is only necessary now to raise the posts 19^a (see Fig. 7) and lock said posts in their elevated position. As wheels 10 of the first container, the one at the left hand end of Figure 7, roll upon the inclined ramp tracks, the first container will be lifted above the platform of the car, then the second container will engage the ramp tracks and likewise be lifted from the platform of the car. As each container is successively lifted from the platform of the car, its first movement disengages the pin 18 from the depressed posts 19, after which the engagement between the elevated containers and the car platform is terminated and the elevated containers will be moved along the ramp tracks by those containers which have not yet been elevated or, if all the containers

are elevated, by raised posts 19ª. When the container is on the car platform, posts 19 will prevent shifting movement of the container when the post is elevated or depressed. Additional anti-shifting means are provided by dowel pins 23 mounted on the bottom of the containers and receivable in recesses 24 in the car platform. These dowel pins are preferably arranged midway between the wheels 10 and on each side of the container as shown in Figure 12. Whenever the container is elevated by the ramp tracks, pins 23 are raised from out of recesses 24.

These dowel pins do not constitute supporting legs or feet for the containers, and hence are of such length that when the containers are rolled over surface tracks, said dowels do not interfere with such movement.

As stated before, the post 19ª (Fig. 7) is lifted and locked in its lifted position so that when the dowel 23 leaves its pocket in the car platform, the elevated posts 19ª will continue to act as propelling means to move the containers over the ramp tracks. The posts 19ᵇ, in Figure 7, may be left depressed, if desired. Whenever a container is lifted by the ramp tracks to a height in which its dowels 23 will clear the edges of the platform pockets, the containers may be propelled by hand over the hump in the ramp tracks and started down the incline, whereby they will run by gravity into the warehouse.

The ends of the channels 16 preferably project beyond the side walls of the containers, so as to form buffers, as shown in Figure 17, and these buffers permit independent vertical movement between different containers without disturbing the relation of the pins 18 on said different containers relative to each other, hence in loading or reloading a container on a car platform, the posts 19 serve as limit stops to center the containers relative to the car platform.

In this loading operation, the reverse order of engagement of parts is resorted to. Assuming the containers to be on the ramp tracks, as shown in Figure 17, and it is desired to load one or more of said containers onto a car platform 8, the posts 19 could be raised, as shown by full lines at the left and by dotted lines at the right, in said figure, and assuming that it was desired to leave the container 9ª on the ramp tracks and to load containers 9ᵇ and 9ᶜ onto the car platform, some means, such as a chock or stopping block, might be employed to hold the containers 9ª stationary. This would be desirable because of the inclination of the ramp tracks at this point. The car platform 8 is now moved in the direction of the arrow *b*, and the posts 19 engaging the pins 18 will move the containers 9ᵇ and 9ᶜ, etc., up to the required number to be loaded onto the platform 8, down the incline until the channels 16 straddle the platform and the dowels 23 enter their pockets 24. The posts can be left in their elevated position, if desired. The posts 19 may be lowered and depressed so that their heads will lie below the level of the platform when the car is used as an ordinary flat car, or said posts may be raised for holding freight on the platform when said freight is too large to be packed in containers, such as telephone poles, threshing machines and the like. In this latter use, the posts 19 serve as disappearing stakes on an ordinary flat car.

The posts 19, above referred to, are desirable in positioning any number of containers on a car up to its full capacity and of course said posts can handle car load lots either in the loading or unloading operations; but as is evident from what has been explained heretofore, these posts must be individually adjusted and locked in their adjusted position, either elevated or depressed, as the case may be. In Figures 7 and 21 to 23, I have shown an auxiliary or supplemental loading and unloading mechanism designed particularly for handling car load lots and possibly less than car load lots, if conditions are favorable, and which loading and unloading devices are automatic in certain of their operations. I have before referred to the pins 18 arranged within the ends of the channels 16, and the loading and unloading devices, now about to be described, are intended to co-operate with pins. In practice, I prefer to arrange these levers at the four corners of the car and use them as a substitute for the posts 19 which would otherwise occur at these points. 75 indicates a main lever having a toe portion 75ª at its extremity, said lever being pivoted to the side edge of the platform at 76. 77 indicates a supplemental lever having a toe portion 77ª at its free end and pivoted below and preferably to one side of the pivotal point of connection of the lever 75. As these levers have different pivots, the arcs of movements of their outer ends will diverge or converge as the levers are swung on their pivots. The toe portion 77ª co-operates with the pin 79 carried by the lever 75. In unloading and loading the containers, the lever 75 is folded over so as to engage the pin 18, as shown at the right in Figure 21. The backing lever 77 is likewise folded over so as to engage the pin 79 on lever 75. Normally, the parts occupy the position shown in Figure 7. As the carrier 8 moves in the direction of the arrow in Figure 21, the rollers 11 will ride up the inclined ramp tracks lifting the channels 16 out of engagement with the posts 19 and raising the dowels 23 out of their pockets 24. The engagement between the pins 18 on the rearmost carrier with the

lever 75 continues during this operation until the lever 75 reaches the full-line position shown in Figure 22 in which position the backing lever 77 swinging about a different pivot (78) positively engages pin 79 and so prevents further movement of the lever 75 and the toe of lever 75 continues to move the train of containers along the ramp tracks until said toes 75ª pass under their pins 18. Immediately that the lever 75 is released, it, and its associate backing lever 77, falls by gravity to the dotted line position shown in Figure 22 in readiness for another operation. In loading the train of containers onto a flat car, the reverse operation is gone through. Assuming that the parts are in full-line position shown in Figure 22, and the platform 8 is moving in the direction of the arrow and that the inclination of the ramp tracks, not shown, is opposite to that contemplated in the unloading operation, as described with reference to Figure 21, the lever 75 is raised and the backing lever 77 is also lifted so that as the car moves, leftwardly, in this instance, the toe 75ª will engage the pin 18 and move the train of containers 9 along with the carrier 8. As the containers 9 approach the platform of the carrier 8, the pin 18 descends, but as the impelling force is the toe 75ª, lever 75 will move forwardly or leftwardly toward the dotted line position, as shown in Figure 22, until the pin 18 occupies its intermediate position as shown by the dotted circle 18ª at which time the dowel 23 is in proper position to enter its pocket and will enter its pocket as the containers move further along the downwardly inclined ramp tracks until the pin occupies its ultimate position shown by the dotted circle 18ᵇ. By using this type of loading and unloading mechanism, it will be observed that it is not necessary to spot and group the containers on the ramp tracks so that they will occupy a definite relation to the posts 19. On the contrary, the requisite number of containers to be loaded onto a car can be picked up to form a train, which train will gradually be moved into position where the centering dowels can enter their pockets. Hence a slight displacement of these dowels in the final movement of seating the containers onto the platform will be corrected by the dowels themselves.

It will be observed in this type of loading mechanism that the rocking of the lever 75 will cause the containers to move slightly faster than their impelling power, this being the result of the downward movement of the containers on the inclined ramp tracks occasioned by the weight of the containers and the engagement between the noses 75ª and pins 18. These noses can not swing backwardly because of the backing levers 77. They are free to move forwardly and as the pins 18 travel downwardly on the inclined plane, the levers 75 will maintain engagement therewith until the dowels are in position to be seated in their pockets after which the dowel engagement between the carrier and the container will eventuate in the final seating and centering of the container on its platform.

The length of the ramp tracks, their inclination, and the height of the elevation of the hump depends upon the will of the designer, and the number of cars it is desired to handle in each slip. The inclination of the ramp tracks should not be so great as to prevent the containers from being manually pushed up the incline and over the hump or restrain their movement by hand power. The inclined ramps are merely to faciliate the handling of the containers rather than to accelerate their movement.

As the containers are successively unloaded onto the ramp tracks, they may be moved into the warehouse and loaded directly onto a motor truck, indicated at 25, (see Figs 1 and 2) and for this purpose I prefer to provide a pit or depressed runway arranged along one side of the warehouse so that the containers may be run from the ramp tracks directly onto the platform of the motor truck. Any suitable means may be employed for holding the container on the platform of the motor truck, such as removable stakes, not shown. In the event that it is necessary to lift a container from the ramp tracks for the purpose of loading it onto a motor truck or conveying it across the pit, I may employ a traveling crane whose framework is indicated at 26 (Fig. 1), said crane being of the usual construction and having lifting apparatus designed to engage in ears 27 arranged at the corners of the container (see Figs. 9 and 10); or, if containers unloaded onto the ramp tracks at the left of the warehouse (shown in Figs 1 and 2) are intended to be transferred into the warehouse or onto ramp tracks at the right side of the warehouse, I may use an ordinary transfer table 28 (see Figs 2, 5, and 6). This transfer table is preferably hand propelled and operates on tracks 29 arranged on each side of the motor truck pit and in practice is preferably used at night when the motor trucks are not receiving or delivering freight. For this purpose, I may tilt that transfer table 28 to a vertical position at one side of the pit, as shown by the cable apparatus in Figure 6, and sustain the same in its tilted position by means of a hooked rod 30.

Transfer table 28 can be employed to bridge the pit and enable a container on one side of the pit to be propelled across onto another track in alignment therewith, or,

after a container, or containers, are placed on the transfer table, the transfer table may be moved opposite another track or tracks so that the containers may be placed at some different or remote point in the system.

In Figures 1 and 2 I illustrate diagrammatically an elevated track 31 which serves as a roadway for a crane which is illustrated in my copending application Serial Number 572,891 which engages and raises the containers by means of cog wheels which engage the container cogs 32. (See Figure 10.) This crane arrangement enables the containers to be transferred from one ramp track to another without the use of transfer table 28 and thereby permits uninterrupted loading or unloading of motor trucks 25.

The type of container which I prefer to use in connection with my present system is shown in Figures 9 to 16, inclusive, and has heretofore been generally designated by the reference numeral 9. By referring to these figures it will be observed that the channels 16 are preferably secured to angles 33, which angles together with cross channels 34 constitute floor supporting beams to which are secured furring strips 35. 36 is the floor decking. 37 indicate diagonal brace rods, (shown in Fig. 12) which are used to stiffen and add rigidity to the floor structure. The side walls of the container, indicated at 38, are preferably made of sheet metal reinforced on their outer sides by ribbed posts and diagonally disposed braces 38a. The posts nearest the corner preferably extend above the roof of the container and terminate in the lifting ears 27 before referred to. 39 are the ladder handles. 40 are hinged door sections arranged at one end of the container, these door sections being reinforced by angle bars 41 at their marginal edges. The angles at the meeting edges of the two door panels are so disposed as to form a rabbeted joint (as shown in Fig. 12) while the upper edges of the panels close against a flange fascia plate or lintel 42 (see Fig. 13). This lintel is provided with a watershed 43 to protect the upper edges of the door panels in their closed position. This lintel also forms a support for the cog rack 32 heretofore described, and, in order to reinforce the lintel, an angle 44 is preferably arranged inside of the container through which the rivets which secured the cog rack 32 in position also pass. The roof sheet 45 is flanged down over the cog rack and serves as an additional tying means for said rack in addition to preventing the entrance of the water and dirt into the interior of the container. The lower edges of the door panels are reinforced by externally arranged angles 46 (see Figs. 10 and 11) and the panels 40 close against a metal threshold plate 47. As it is desirable to lock panels 40 when they are in position on a carrier, such as a railroad car, I preferably use a form of automatic locking means, shown in Fig. 11. This locking means consists of a hooked lever 48 pivoted on a rod 49 which is attached to the underside of the container, the outer end of said lever 48 being normally pressed downwardly by means of a spring 50. When the container is supported upon its wheels 10, the hook 48 is depressed out of locking position, as when the container is on the ramp tracks or in the warehouse, and in order to hold the doors closed under these conditions, I may provide the usual form of locking bolt 51 and keeper 52 (see Fig. 10), both of which may be sealed by a wire passing through openings 53 therein. The inner end of lever 48 is connected by a slot and pin connection to a lever 54 pivoted on a rod 55 also attached to the under frame of the container and whose bent inner end is normally held downwardly by means of a spring 56 (see Fig. 11).

When a container is loaded onto the platform of the car, as indicated at 8, (Fig. 11) the inner end of lever 54 contacting with platform 8 will raise the outer end of lever 48 into engagement with the angle 46 of the overlapping door panel, and thus the doors giving access to the container are locked in their closed position when on the car platform, this locking means being independent of the bolt and keeper sealed lock above mentioned, and only being operable to release or permit the doors to be opened when the container is lifted from the car platform. Thus, in transit it is impossible to gain access to the container except by removing the container from its supporting platform.

By referring to Figure 12, it will be seen that the ends of the side panels 38 of the container are refolded upon themselves to form hollow corner posts 38b to which the hinged leaves of the door panels are connected. This construction is economical and strong, as it saves the fabrication of separate parts and the use of numerous rivets.

In Figure 14, I have shown an arrangement contemplating a corner post construction indicated at 38c similar to the post construction 38b heretofore described. The end of the container opposite the one having the door openings is preferably closed by a solid plate 38 which may have its upper corner reinforced by a connection plate 58, the roof sheet 45 being bent over the plate 38 and secured thereto by means of rivets which pass through reinforcing angles 59 on the upper edge of the connection plate 58.

60 indicates running boards arranged on top of the containers and 61 are platform boards on the container which extend to

diagonally opposite corners (see Fig. 8) and have a handhold 62 opposite the ladder rings or handles 39 before referred to.

What I claim is:

1. In a transportation system comprising ramp tracks, surface tracks between said ramp tracks and inclined relative thereto, a wheeled carrier on said surface tracks, a plurality of wheeled containers on said carriers, and selective operable vertically movable devices on said carrier for engaging each of said containers.

2. In a transportation system comprising ramp tracks, surface tracks between said ramp tracks, and inclined relative thereto, a wheeled carrier on said surface tracks, a plurality of wheeled containers on said carriers, and selective operable vertically movable devices on said carrier for engaging either end of each of said containers.

3. A transportation system comprising ramp tracks, railroad tracks between said ramp tracks, a carrier operable upon said railroad tracks, wheeled containers on said carrier and operable upon said ramp tracks to be raised from or lowered on said carrier thereby, and vertically operable means co-operating between said carrier and said containers whereby a selected number of containers may be loaded upon or raised from said carrier.

4. A transportation system comprising ramp tracks, railroad tracks below and between said ramp tracks, a carrier on a railroad track, wheeled containers on said carrier abutting each other, and vertically adjustable posts on said carrier for engaging said containers without affecting their relative position.

5. A transportation system comprising ramp tracks, railroad tracks, a hump on said ramp tracks, a carrier operable upon said railroad tracks, containers on said carrier provided with wheels operable upon said ramp tracks, and means co-operating between said carrier and said containers whereby a selected number of containers may be moved by said carrier onto or from said humped ramp tracks.

6. The combination of a carrier, a container, and inverted U-shaped underframe members on each side of said container and adapted to straddle said carrier and to project beyond the ends of the body of the container.

7. The combination of a carrier, a container, inverted U-shaped underframe members on each side of said container and adapted to straddle said carrier, and wheels mounted within and extending below said underframe members.

8. A railway car container having a side wall bent at each end to form a rectangular corner post.

9. In combination, a carrier, a container having a door and adapted to be raised from and lowered onto said carrier, a lock for said door, and lock operating means automatically actuated when said container is on said carrier.

10. In a container having a door and adapted to be supported on a carrier, a lock for said door, and means automatically operating said lock to release said door when said container is removed from a carrier.

11. The combination of a carrier having vertically walled pockets near its side edges, and a container having a plurality of cylindrical dowels provided with lower centering ends adapted to co-operate with said pockets, and downwardly projecting members on each end of said container straddling said carrier.

12. The combination with a container, of an inverted U-shaped underframe member therefor, a wheel casing arranged within said member, and a wheel mounted in said casing.

13. A wheeled container having a door, a door lock, and means automatically moving said lock to functioning position when said container is lowered upon a carrier.

14. In a container having a door and supporting wheels, and an underframe adapted to be supported independently of said wheels, a lock for said door, and means for automatically moving said lock to a released position when said container is supported by said wheels.

15. A container having a plurality of elements by which it may be supported, a door for said container, a lock for said door, and means causing said lock to function when said container is supported on certain of said elements and causing it to be moved to nonfunctioning position when supported on other of said elements.

16. A box-like container having one of its walls reinforced by an element provided with cog teeth.

17. A box-like container having one of its walls reinforced along its upper edge by a flanged member provided with downwardly facing cog teeth.

18. A container having a door, a lintel plate over said door, and a cog rack on said lintel parallel with and outside of said door.

19. A container having metallic side walls, floor supports, a wooden floor, and a metal threshold plate at one edge of said floor adjacent to an opening in said container.

20. A container having vertically disposed posts and a door opening, doors hinged to said posts, flanged floor supports, furring strips secured to said flanged floor supports, a wooden flooring secured to said furring strips, and a metal threshold plate on said wooden flooring adjacent to said door opening.

21. The combination of a carrier, wheeled

containers adapted to be supported thereby, and a plurality of vertically adjustable posts at spaced intervals on said carrier to engage opposite ends of said containers.

22. The combination with a carrier, of a plurality of vertically adjustable posts mounted on the sides thereof, and means operable from the side of said carrier for holding said posts in adjusted position.

23. The combination with a carrier, of a plurality of vertically adjustable container engaging devices supported at the edges thereof, means for holding said devices at different heights, and wheeled containers having abutments for co-operating with said vertically adjustable loading and unloading devices.

In testimony whereof I hereunto affix my signature this 10th day of May, 1922.

HENRY W. KIRCHNER.