

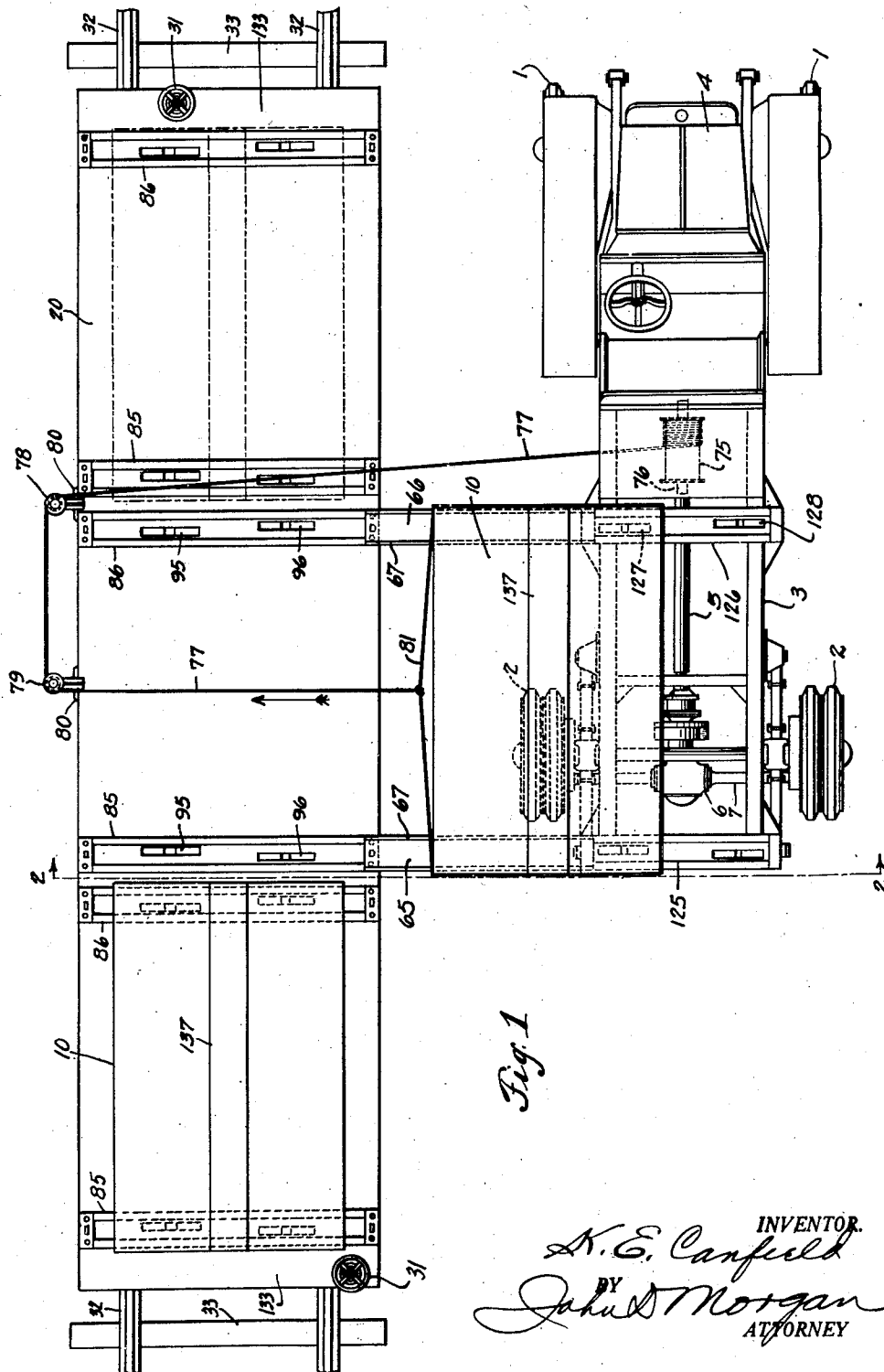
Aug. 8, 1933.

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1,921,605

MEANS FOR HANDLING AND TRANSPORTING FREIGHT

Original Filed Nov. 12, 1928 5 Sheets-Sheet 1



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MEANS FOR HANDLING AND TRANSPORTING FREIGHT

Original Filed Nov. 12, 1928 5 Sheets-Sheet 2

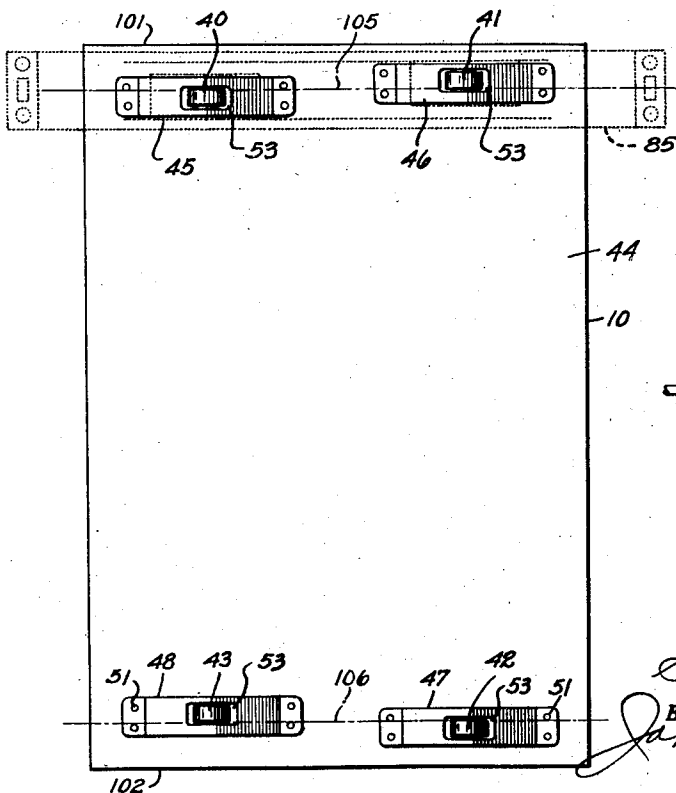


Fig. 4

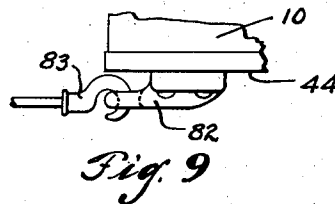


Fig. 9

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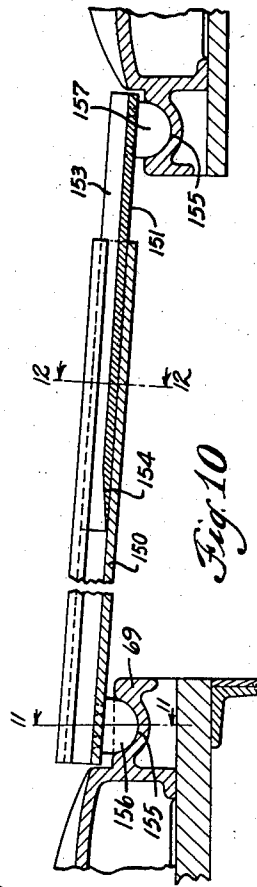
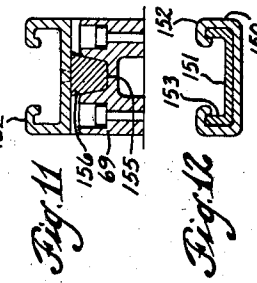
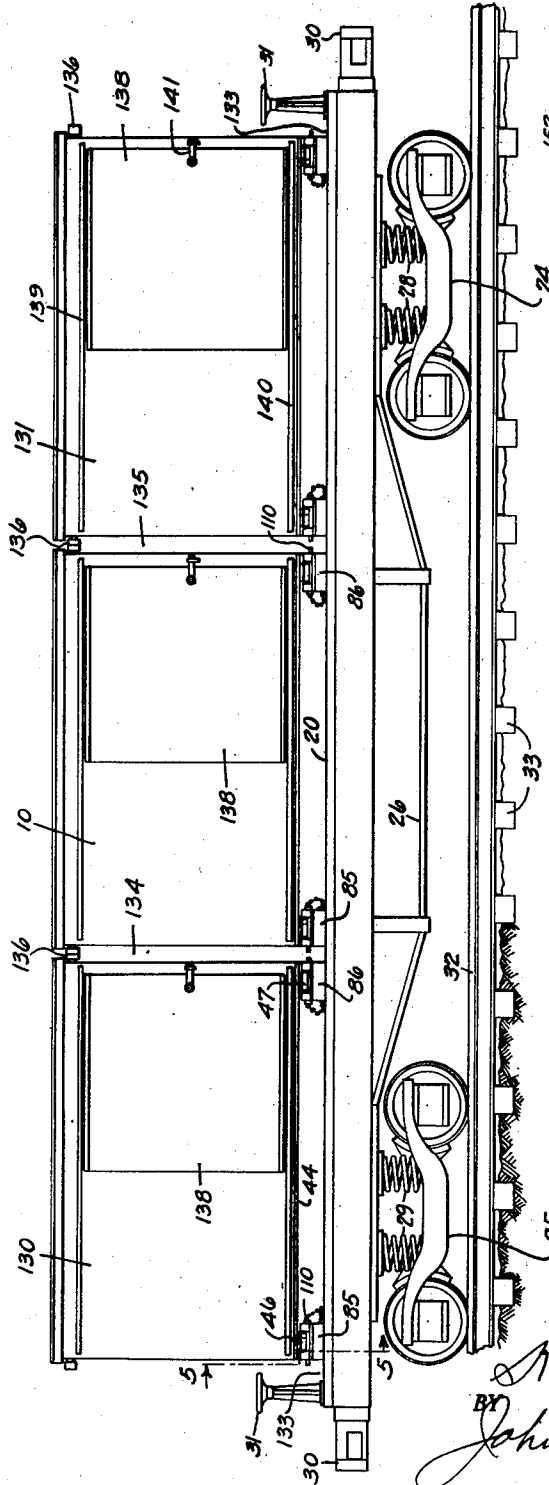
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MEANS FOR HANDLING AND TRANSPORTING FREIGHT

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Fig. 3



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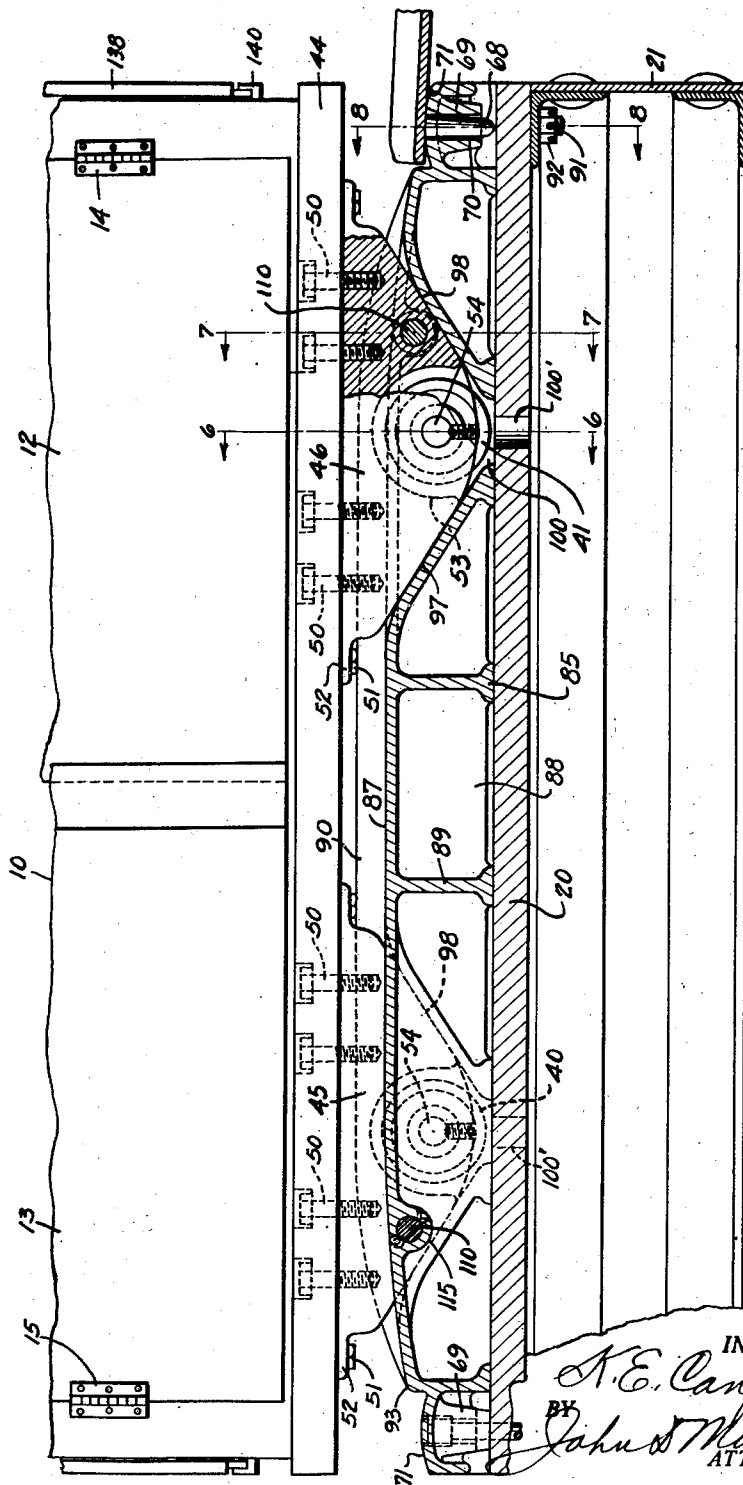
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1,921,605

MEANS FOR HANDLING AND TRANSPORTING FREIGHT

Original Filed Nov. 12, 1928 5 Sheets-Sheet 4

Fig. 5



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MEANS FOR HANDLING AND TRANSPORTING FREIGHT

Original Filed Nov. 12, 1928 5 Sheets-Sheet 5

Fig. 6

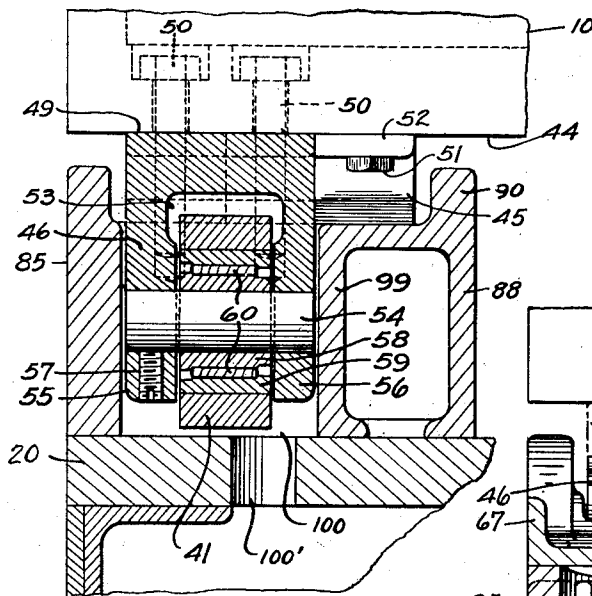


Fig. 8

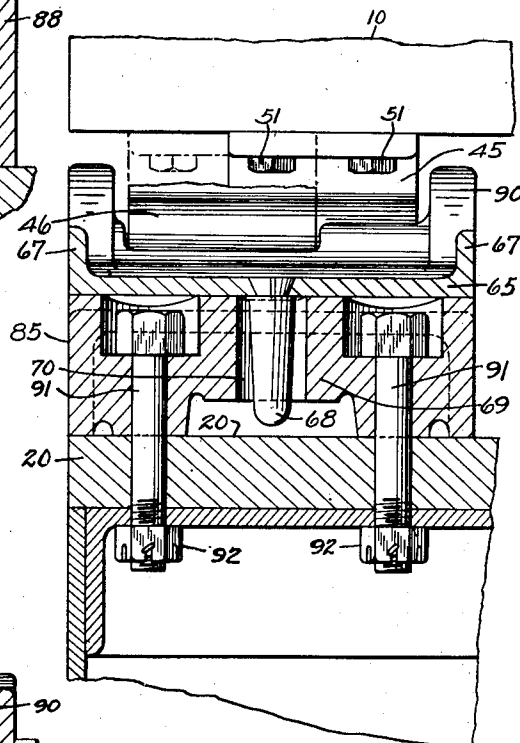
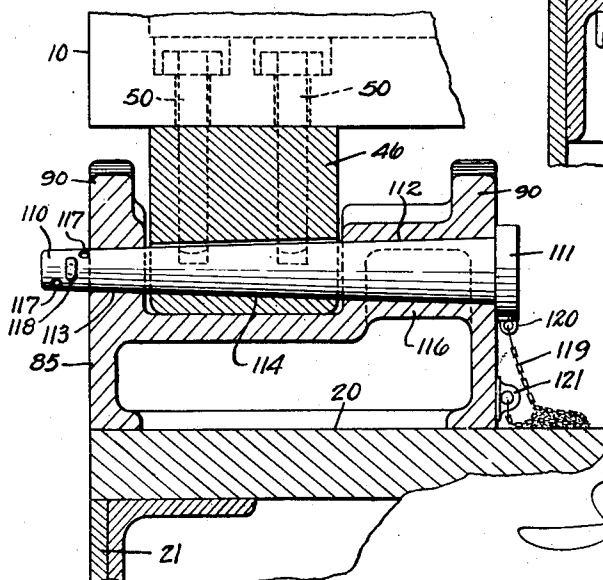


Fig. 7



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UNITED STATES PATENT OFFICE

1,921,605

MEANS FOR HANDLING AND TRANSPORT-
ING FREIGHT

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Application November 12, 1928, Serial No. 318,813
Renewed June 18, 1932

6 Claims. (Cl. 214—38)

The invention relates to a novel and useful method, apparatus and mechanism for handling and transporting freight and more particularly to such an apparatus and mechanism adapted to provide a simple and efficient means for effecting mutual transfers of cargo-containing units between railway freight cars and other freight-carrying vehicles.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, construction, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to hereinafter and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

Of the drawings:—

Fig. 1 is a plan view of an apparatus illustrating a preferred embodiment of the invention;

Fig. 2 is a transverse vertical section taken along line 2—2 of Fig. 1;

Fig. 3 is a side elevation of the flat car and containers shown in Fig. 1, as taken from the left of Fig. 1;

Fig. 4 is a plan view of the bottom of a container, looking from beneath, and illustrating the relation of the container rollers to the retaining tracks;

Fig. 5 is an enlarged detailed transverse vertical section of the mechanism shown in the left-hand portion of Fig. 2, parts being shown in elevation;

Fig. 6 is a detailed enlargement of a transverse vertical section looking to the left along line 6—6 of Fig. 5;

Fig. 7 is a detailed enlargement of a transverse vertical section looking to the left along line 7—7 of Fig. 5;

Fig. 8 is a detailed enlargement of a transverse vertical section looking to the left along line 8—8 of Fig. 5;

Fig. 9 is a fragmentary and enlarged detail of a modification of the means for attaching a cable to the container;

Fig. 10 is a longitudinal vertical section of a modified form of the connecting transfer tracks;

Fig. 11 is a transverse vertical section taken on line 11—11 of Fig. 10; and

Fig. 12 is a similar view of the line 12—12 of Fig. 10.

The invention is directed to providing a simple and practical method and apparatus for

handling freight, in either car-load or less than car-load lots, by destination without the present degree of combination with other destinations of line shipment.

The invention is also directed to providing a standard cargo-containing unit which is adapted to cooperate with different vehicles and different types of vehicles, said unit being interchangeable with other standard units and transferable from one vehicle to another. The invention is further directed to providing means for readily transferring loaded container units from one vehicle, such as a flat car, automotive truck, steamship, lighter, airship or horse-drawn vehicle, to any other vehicle, or to a station or warehouse platform, or other supporting or transporting unit, without necessitating bodily lifting of the unit with cranes or other mechanism, and for rigidly but detachably anchoring the unit container to a vehicle to permit transportation of the container on the vehicle as an integral part thereof.

By the invention, a unit cargo container normally comprising the cargo-containing box or casing of an automotive truck, van, trailer or other road vehicle is detachably mounted on the said vehicle for easy removal and direct transfer with its contained cargo to the top of a railway flat car where it is rigidly and detachably anchored to form a unitary portion of the railway car. The flat car is adapted to receive and retain a plurality of such containers, preferably disposed longitudinally of the car and together forming a composite freight car having separately loaded and separately removable containers.

The container is adapted to be transferred from one vehicle to the other without being bodily lifted, being preferably equipped with rollers or wheels for moving the container in a direct path across a connecting support from one vehicle to the other. The vehicles are provided with retaining devices for receiving and detachably anchoring the container whereby it will form an integral transporting unit with the vehicle to which transferred, the present preferred embodiment of the invention providing the vehicles with sets of track-ways to cooperate with the rollers on the container, the track-ways having retaining recesses for receiving the rollers and supporting the container independently of the rollers, and having further removable fastening means for preventing movement of the container relative to the vehicle during travel.

While the invention as above described is particularly adapted to facilitate the direct transfer of a container from a truck or other vehicle to a flat car, the invention is equally adapted to permit removal of a container from

a truck to a warehouse for intermediate storage, the container to be later loaded onto a flat car or other receiving vehicle. Furthermore, while the container is described as being removable from a truck to a flat car or warehouse, it will be understood that the principles of the invention may be realized in transferring containers from any vehicle or support to another, as from one truck or railway car to another, from a warehouse to a truck, from a dock to a ship, and in a number of other obvious and useful applications. However, for simplicity of description and as illustrative of a preferred embodiment of the invention, the invention will hereinafter be described as applied to cargo transfers and carrying between an automotive truck and a railway flat car, although it will be understood that this embodiment and nomenclature are illustrated and exemplary of the invention, but are not restrictive thereof.

Other features of the invention will be first set forth in connection with the following detailed description, but it will be understood that the foregoing general description and the following detailed description as well are exemplary and explanatory of the invention but are not restrictive thereof.

Referring now in detail to the embodiment of the invention, illustrated by way of example in the accompanying drawings, the invention is shown as applied to the transfer of a cargo container from an automotive truck to a railway flat car. As embodied, an automotive truck or van of any known or common type is shown, having front wheels 1, rear wheels 2 and any suitable form of truck chassis 3, the driving mechanism comprising the motor 4, propeller shaft 5 and any suitable type of transmission mechanism, as shown comprising a worm gear transmission having a housing 6, and adapted to drive the rear axle shaft 7.

In accordance with the invention, a unit cargo container is provided, as embodied comprising the box-like structure 10, as shown in dotted lines in Fig. 2 adapted to normally form an integral part of the truck and act as the cargo-containing portion thereof. The container is preferably substantially similar to the bodies at present in use on the ordinary freight-transporting van or truck and is provided with a top or roof portion 11 and preferably with a pair of hinged doors 12 and 13 adapted to form the rear closure for the container when mounted on the truck body, the doors preferably opening from the rear center line outwardly, being hinged at 14 and 15 to the sides of the container. The doors are preferably of a size to comprise substantially the whole of the rear end of the container and may be securely fastened together by any suitable locking means 16. By means of the doors, the container may be rapidly and easily loaded and unloaded while on the truck.

The railway car to which the container is adapted to be transferred and secured, as embodied, comprises an ordinary or standard railway flat car arranged in parallel juxtaposed relation to the truck and having a flat deck surface 20 supported on longitudinally-disposed channel members 21 and 22. The described deck structure of the flat car is mounted on the trucks 24 and 25 by means of the usual truss structure 26, resiliently supported upon the trucks by springs 28 and 29. The flat car may have the usual coupling devices 30 and brake-operating devices 31 at either end thereof. As

shown, the car is mounted on the usual standard gauge trackway comprising rails 32 supported by ties 33.

The invention provides means for transferring the container to and from the automotive truck or other vehicle. As embodied the container is provided with a plurality of supporting wheels or rollers 40, 41, 42 and 43, preferably disposed substantially at the four corners of the bottom 44 of the container. The rollers are preferably supported for free rotation, whereby the container may be moved laterally in a broadside direction, that is, in a direction perpendicular to its length, the rollers being suspended from the bottom 44 of the container by wedge-shaped blocks or shoes 45, 46, 47 and 48; said shoes having a flat horizontal upper face 49 secured to the bottom 44 of the container by countersunk cap bolts 50, and in addition by bolts 51 which extend upwardly through suitable flanged lip portions 52 on the shoes and are suitably fastened to the container bottom. The shoes may be of any suitable material and preferably of cast or mild steel for resisting possible shocks and wear to which they may be subjected.

As embodied, the rollers 41 etc. are supported by the shoes to rotate freely therein. Referring to the structure of roller 41 and shoe 46 as constituting an exemplary embodiment of this structure, to which that of the other shoes and rollers is substantially identical, the shoe is tapered downwardly and inwardly from both ends to form a substantially triangular member. The roller is adapted to project slightly below the lowest point of the shoe, while being substantially encased by the shoe, the interior of which is cut away at 53 to form a substantially cylindrical housing for the roller. The roller 41 is supported for rotation about trunnion shaft 54 which is loosely journaled in the lateral depending portions 55 and 56 of the shoe 46. The trunnion shaft may be securely held against rotation in its journal seats by means of a set screw 57, screw-threaded upwardly in member 55 to bear against the trunnion shaft 54. The roller is preferably provided with roller bearings for permitting free rotation about the trunnion shaft, comprising a bushing 58 forming a close fit about the shaft 54, a bearing ring 59 which is tightly fitted to the inner surface of the cylindrical roller 41 to rotate therewith, and intermediate rollers 60.

The above-described roller assembly provides for an easy dismounting and servicing of the rollers. Upon loosening of the set screw 57, the trunnion shaft 54 can be forced out of its journaled seat in the members 55 and 56 through the bushing 59 and the roller thus easily taken apart, serviced, and as easily replaced.

Connecting and supporting means are provided, cooperating with the rollers on the container for effecting transfer of the container from the truck to the flat car and vice versa. As embodied, a pair of tracks 65 and 66, of a width somewhat greater than double the width of a shoe, and having lateral upwardly extending flanges 67 on both sides thereof, are adapted to form a connecting trackway or bridge between the truck and the flat car deck, whereby the container may be progressed on its rollers across the space between the two vehicles. The tracks 65 and 66 are preferably adapted for limited angular movement at either end, whereby the tracks may properly connect the car and truck when the vehicles are at various levels.

As embodied, each track is provided at either end with a pin member 68 which is adapted to cooperate with an apertured supporting member 69 suitably secured at the edge of the truck or flat car, as the case may be. The pin 68 is preferably tapered and less in diameter than the aperture throughout its extent to permit a rocking movement of the pin in the aperture 70. The upper surface 71 of the support 69 is also rounded, to admit of angular movement of the track.

While the hereinbefore described supporting and connecting mechanism comprises the present preferred embodiment of the invention, many other equivalent structures may be employed for the same purpose. For instance, a ball and socket joint or other angularly movable connection may be provided in lieu of the pin and slot joint described.

In certain cases it may be desirable to provide the apparatus with connecting tracks which are extensible in length in order to accommodate the apparatus to situations where it is not possible to establish a uniform space between the vehicles. On the other hand, the connecting trackways may sometimes be dispensed with or intermediately supported, as, for instance, when the vehicles are spaced apart by an intervening platform or the like. It will be understood, however, that in all cases an apparatus is provided whereby the container may be moved directly from one vehicle to the other without requiring bodily lifting of the container, and without necessitating any movement thereof except a simple lateral displacement in substantially a straight line.

A preferred modification of the vehicle-connecting tracks is shown in Figs. 10, 11 and 12. As embodied, the track is extensible in length, being composed of the separate lengths 150 and 151, which are adapted for telescopic sliding to permit shortening and lengthening of the connecting bridge or trackway. As shown in Fig. 12, length 150 is adapted to surround and support track 151, having its flanged sides 152 curved inwardly and then downwardly to form supporting sheaves for the side flanges 153 of the interiorly disposed track 151. The inner end of track 151 is beveled or tapered as at 154, whereby the junction between the surfaces of the tracks is smoothed out to prevent jarring of the rollers and containers.

A modified form of connecting joint between the bridge tracks and the vehicle tracks is shown in Figs. 10 and 11. As embodied, the supporting member 69 is provided with a curved recess or socket 155, having downwardly and inwardly inclined side edges 156. Cooperating curved members 157 project from the bottom ends of the tracks and are adapted to fit loosely in the corresponding sockets 155, having their sides tapered to conform to the recess. By virtue of this arrangement, the connecting trackways can be used when the vehicles are at considerably different levels and at varying distances apart.

Any suitable mechanism may be employed for moving the container from one vehicle to the other. In the form shown, the truck is provided with a cable drum 75 mounted on a stub shaft 76 projecting from the forward seat structure of the truck and having a cable or rope 77 adapted to be passed around suitable directing pulleys or sheaves 78 and 79 and thereafter fastened to the container. The pulleys 78 and 79 may be suitably positioned on the side of the

flat car by means of detachable clamping brackets 80. As shown in Figs. 1 and 2, the cable may be attached to the container by passing a loop 81 therearound, or, preferably, as shown in the modified form of Fig. 9, the container may be provided with one or more eyes 82, with which hooks 83, attached to the cable, are adapted to cooperate. The cable drum 75 may be driven from the motor of the truck, suitable driving and clutching mechanism (not shown) for effecting said driving connection forming a part of the truck equipment.

In accordance with the invention, means are provided for receiving and retaining the container on the flat car, whereby the container becomes an integral part of the composite railway transporting unit. In the present embodiment, the deck of the flat car is provided with a pair of receiving and supporting tracks 85 and 86 disposed transversely of the flat car deck in parallel relation and spaced apart a distance substantially equal to that of the length of a container. As shown in Fig. 5, each track comprises a fairly heavy metal casting having substantially flat upper surfaces 87 and side members 88. The track may be provided with a plurality of strengthening and supporting ribs 89, the surface of the track preferably lying from six inches to a foot above the flat car deck, although it will be understood that these distances are merely descriptive and in no wise restrictive of the invention. The side members 88 of the tracks preferably extend an appreciable distance above the upper surface 87 to form side flanges 90. The trackways are preferably securely, but detachably fastened to the flat car deck 20. For this purpose the trackways are apertured at their ends to receive bolts 91, which extend through a deck 20, and channel members 21 and are made fast by lock nuts 92.

It will be noted that, in the embodiment shown, the outer ends of the tracks 85 and 86 are provided with a shoulder portion 93, which serves as an abutment for the connecting ends of tracks 65 and 66, the rounded surface 71 and supporting member 69 for said tracks 65 and 66 being cast as an integral end portion of the tracks 85 and 86. As a result of this construction, a smooth connecting pathway for the rollers is formed at the junction of the bridge tracks 65 and 66 and the retaining tracks 85 and 86.

Referring now to the mechanism for retaining the container on the flat car in a travelling position, the retaining tracks 85 and 86 are provided with a plurality of recessed or depressed portions for receiving and holding the shoes and rollers of the container in a secure and substantially rigid relation to the flat car. Referring to the embodiment shown and particularly to Figs. 2, 5 and 6, the track 85 is provided with two substantially V-shaped depressed or recessed portions 95 and 96, formed by the track-surface 87 being depressed to form inclined surfaces 97 and 98, the size and shape of the depressions being such as to conform substantially to the outlines of the shoe members 46 etc. of the container, whereby the shoe member 46, for instance, is adapted to rest with practically its entire inclined surfaces or faces supported by and in contact with the depressed surfaces 97 and 98, as clearly shown in Fig. 5. Furthermore, the width of the depression, considered in a direction longitudinally of the flat car, and as shown in Fig. 6, is slightly greater than that of the thickness of the shoe 46, whereby the shoe is

adapted to drop easily into the depression and be held securely therein.

It will be clear that when the shoe 46 has moved into the depression 96, the inclined faces 97 and 98 of the depression bear against and support the shoe by a firm wedge-like contact throughout substantially the entire extent of the inclined faces of the shoe. The shoe, and consequently the container, are thus firmly and practically rigidly held from cross-wise sliding or motion relative to the retaining track, while the wall member 88 and the interior wall member 99, formed in the trackway adjacent the depression, serve to prevent any movement of the shoe and the container longitudinally of the flat car.

The supporting and shoe-retaining recesses on the retaining tracks are also adapted to support the shoes and container independently of the transferring rollers, whereby the weight of the container is not transmitted through the rollers when the container is secured for travelling position on the flat part. As embodied, the lower ends of the members 97 and 98 of the recess are spaced apart and bear against the floor 20 of the flat car so as to provide a clear space 100 below the centre of the shoe and the axis of the roller 41. As hereinbefore explained the lowermost portion of the shoe 46 is curved or flattened, whereby the roller 41 projects downwardly for a short distance below said lowermost portion of the shoe. As a result, the flattened lowermost portion of the shoe does not contact with the faces 97 and 98 of the depression and the roller 41 is likewise supported above the surfaces 97 and 98 and the deck 20, to hang freely in the space 100. A drainage and servicing hole 100' may be provided in the deck 20, at the bottom of the depressions to prevent the collection of water therein.

The invention provides a novel and extremely practicable mechanism for permitting the container to move across the flat car surface whereby the different rollers and shoes on the bottom of the container will automatically move into their respective corresponding recesses when the container is in the desired position transversely of the flat car, said mechanism automatically serving to prevent any roller or shoe from dropping into an intermediate depression in the retaining tracks before the container has reached said correct transverse position. As embodied, the shoes and rollers on either end of the container bottom are mounted to be slightly out of alinement with each other in a direction parallel to an end of the container. As will be clear from Fig. 4, the shoes 45 and 48 on the left-hand side of the container are spaced in from the ends 101 and 102 of the container a distance somewhat greater than the corresponding spacing of shoes 46 and 47.

Furthermore, as shown in Figs. 4 and 6, the recesses 53 of the respective shoes 45 and 48 are slightly eccentric to the central line of the shoes, whereby the rollers 40 and 43 are supported farther away from the edges 101 and 102 respectively than would be the case if said rollers were hung in the centre of their respective shoes. It will be further noted that the converse is true of the rollers 41 and 42, said rollers being hung relatively nearer the edges 101 and 102.

Referring to Fig. 4 it will be clear that rollers 40 and 41, as a result of the above-described mounting, are adapted to travel in parallel,

non-overlapping paths, roller 40 travelling in a path entirely on the inside of a line 105 and roller 41 in a path entirely on the outside of said line 105. The same is true of the paths of travel of rollers 42 and 43, with respect to line 106.

To cooperate with the staggered roller mounting described, the recesses 95 and 96 in the retaining tracks 85 and 86 are correspondingly located in parallel non-alinement, the recesses 95, on the far or left-hand side of the flat car being spaced in from the outer edges of the tracks to cooperate with the more closely spaced rollers 40 and 43 and their respective shoes, and the recesses 96 being spaced near the outer edges of their trackways to receive and cooperate with the more widely separated rollers 41 and 42 and the shoes 46 and 47.

It will be clear from the description and drawings that when the container is moved along the tracks 85 and 86 to rest on the flat car the forward or left-hand rollers 40 and 43 will travel along the surface 87 of the tracks and entirely avoid the parallel depression 96. Upon reaching a median position across the flat car, the forward rollers 40 and 43 will reach the depressions 95 and start to roll down the inclined surfaces 98. At the same time, the rear or righthand rollers 41 and 42 will come to their corresponding outlying recesses 96 and also roll down surfaces 98 therein.

Due, however, to the wide angle of incline of the recesses and shoes, the inclined faces of all the shoes will very soon contact with the inclined surfaces 97 and 98 and the shoes will slide or be eased into the recesses with practically no jolting or jarring to the container. As hereinbefore described, as soon as the shoes become seated in their corresponding recesses, the rollers will hang free above the deck of the flat car and no bearing force will be transmitted through the rollers. Furthermore, the shoes will be securely held from horizontal displacement either longitudinally or laterally of the flat car.

In addition to the hereinbefore described mechanism for rigidly retaining the container on the flat car, the invention provides means for securely and detachably anchoring the container to the flat car, particularly for the purpose of preventing vertical movement of the container and lurching or swaying of the container due to possible sliding or rocking of the shoes in their recesses. A preferred form of such means is shown in Figs. 5 and 7, wherein a tapered pin 110 having a head 111 is adapted to securely hold the shoe 46 to the trackway 85, the pin being adapted to pass through conforming tapered apertures 112, 113 and 114 in the solid portions 88 of the trackway 85 and the solid shoe 46 respectively. It will be clear that the pin is adapted to pass through the shoe 46 to one side of the roller cavity 53 in the shoe whereby the pin has a practically entire all-metal housing formed by the tapered apertures in the track and shoe.

The track may be further provided with thickened portions 115 and 116 for forming additional strengthening material about the pin. The pin is adapted to be locked in fastening position, having a plurality of transverse holes 117 longitudinally spaced apart near the smaller end of the pin and adapted to receive a cotter pin 118, the spacing of the holes 117 making the pin 110 adaptable for various thicknesses

of track and shoe, so as to always provide a tight fit. The pin 110 may be permanently attached to its cooperating track 85 by means of a chain 119 secured to the pin head 111 at 120 and to the track at 121. It will be understood that each of the four cooperating recesses and shoes is provided with a corresponding locking pin 110 as shown in Fig. 3.

Referring now to the mechanism for retaining and securing the container to the automotive truck or other vehicle whereby the container forms an integral unitary portion of said vehicle, it may be stated for briefness of description that the container-retaining and securing mechanism on the truck or other vehicle is preferably and usually a substantial counterpart of that already described for retaining and securing the container on the flat car. Briefly, the automotive truck may be provided with a pair of retaining tracks 125 and 126, mounted cross-wise of the truck chassis and corresponding in all essential particulars to the hereinbefore-described tracks 85 and 86 on the flat car. Said tracks 125 and 126 are provided with retaining recesses 127 and 128 comprising the equivalents of recesses 95 and 96 and adapted to receive and retain the container shoes and rollers in the manner already described.

Said tracks 125 and 126 may be further provided with locking pins and with recesses 127 and 128, corresponding to the pins and recesses on the flat car. Usually and preferably the tracks 125 and 126 will comprise a permanent portion of the truck chassis, being thus adapted to receive and retain any unit container which may be transferred to the truck from the flat car or other container-retaining vehicle or support, although it will be understood that said tracks 125 and 126 may also be temporarily and detachably mounted on the truck for the purposes stated.

It will be understood from the foregoing that the container is adapted for rapid any easy transfer from a truck to a flat car or vice versa, to be secured on the flat car or truck as a unitary cargo-containing portion thereof. To transfer the loaded container from the truck to the flat car, it is only necessary to lay the tracks 65 and 66 between the two vehicles, apply the motivating cable 77 to the container, withdraw the locking pins and the cable 77 will easily pull the shoes out of the recesses 127 and 128 and the container will roll across the connecting 65 and 66 and into the receiving recesses 95 and 96, where the locking pins 110 may be driven in and fastened to the shoes, the cable unfastened and the container will be ready for transportation as a unit of the freight car. The space between the top 20 of the flat car and the bottom 44 of the container, which is usually about one foot in depth, permits easy access to the pins 110, whereby a workman may readily attach and detach the container shoes to the retaining tracks.

Although as described in the present preferred embodiment of the invention, the containers are preferably mounted on retaining tracks or the like, said tracks being usually detachably secured to the receiving flat car or other vehicles, it will be understood that the invention is not limited to the structure shown and described. For instance, the tracks may be entirely disposed with, and recesses or other receiving and retaining means provided on the flat car deck itself, and a number of other ob-

vious modifications may be provided in lieu of the preferred structure shown and described.

Referring now to the general layout of the flat car, whereby a composite freight car is obtained, consisting of a plurality of separately loaded and mounted container units, as embodied the flat car is provided with a plurality of sets of retaining and securing tracks 85 and 86. As will be clear from Figs. 1 and 3, the flat car is adapted to receive and retain three container units 130 and 131, disposed longitudinally of the flat car. As applied to the standard length flat car at present in use in ordinary railroad practice, the box-like unit which forms a truck container of substantially standard dimensions, is adapted to take up approximately one third of the flat car length. Hence the three containers placed end to end on the car make up in effect a three unit box-car, while providing sufficient brake-operating space 133 at either end of the flat car and permitting plenty of clearance at 134 and 135 between adjacent containers.

Each container is preferably provided with bumpers 136 at either end near the top thereof, preferably extending across the entire end of the container and being composed of a resilient metal band similar to an automobile bumper. Said bumpers 136 are adapted to cooperate with corresponding bumpers on the adjacent containers to facilitate guiding of the container on and off the flat car and to prevent damage due to a possible rocking of the containers against each other during transferring of the containers and during travel on the car.

The tops or roofs 11 of the containers are preferably slightly sloping for shedding water and are provided with a central footboard 137 extending longitudinally of the container whereby the brakemen may walk along the top of the composite freight car and step from one car to another just as is done at present with the ordinary railway box cars.

In accordance with one feature of the invention, the containers are provided with means whereby they may be readily unloaded while remaining on the flat car without necessitating removal of the container therefrom, the unloading being carried on in the same manner as that of an ordinary box car. As embodied, each container has a side door 138 on each side, the doors being mounted on rails 139 and 140, whereby the doors may be slid open in a manner similar to the ordinary box car door. The doors on each side preferably open from the same end of the container, so that when they are both open a clear opening extends straight across the container through both walls. The door is preferably of a width comprising substantially one-half of the container length, whereby the container may be rapidly unloaded from the flat car entirely independently of the other containers. The doors 138 may be latched or otherwise held in closed position as indicated at 141.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:—

1. A mechanism for handling and transporting freight including in combination a vehicle,

- a cargo container equipped with rollers, tracks on the vehicle for cooperating with the rollers to permit moving the container on and off the vehicle, the tracks having recessed portions for receiving the rollers and supporting same out of contact with the vehicle and members on the container for engaging the tracks to support the weight of the container independently of the rollers, and means cooperating with said recessed portions for detachably anchoring the container to the vehicle.
2. A mechanism for handling and transporting freight including in combination a vehicle, a cargo container having supporting shoes with rollers for rolling the container on and off the vehicle, recessed members on the vehicle for receiving the shoes and rollers, the shoes being adapted to cooperate with the recessed members to prevent non-vertical movement of the container.
3. A mechanism for handling and transporting freight including in combination a vehicle, a cargo container having supporting shoes with rollers for rolling the container on and off the vehicle, recessed members on the vehicle for receiving the shoes and rollers, the shoes being adapted to cooperate with the recessed members to prevent non-vertical movement of the container relative to the vehicle, and additional means for preventing relative vertical movement of the container.
4. A mechanism for handling and transporting freight including in combination a vehicle, a cargo container equipped with a plurality of rollers, a corresponding plurality of recesses on the vehicle for receiving the rollers and rigidly retaining the container on the vehicle, means for guiding a given roller only to the recess corresponding to said roller, a second vehicle having recesses arranged in the same relation with respect to the container rollers as those on the first vehicle, and means for rolling the container from one vehicle to the other.
5. A mechanism for handling and transporting freight including in combination a vehicle, a cargo container equipped with a plurality of rollers, a corresponding plurality of recesses on the vehicle for receiving the rollers and rigidly retaining the container on the vehicle, said recesses and rollers being arranged in staggered relation whereby a given roller is prevented from entering any but its corresponding recess.
6. A mechanism for handling and transporting freight including in combination a vehicle, a cargo container, means for moving the container across the vehicle to rest thereon, and a plurality of non-aligned retaining devices on the container and vehicle whereby the container can be moved across the vehicle into position for transportation with the retaining devices coacting to hold the container on the vehicle, a second vehicle having retaining devices thereon in the same relation to those on the container as the devices on the first vehicle, and means for transferring the container from one vehicle to the other.

KENDALL E. CANFIELD. 110

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