

Nov. 15, 1927.

1,649,598

H. W. KIRCHNER

TRANSPORTATION UNIT

Filed May 10, 1921

3 Sheets-Sheet 1

Fig. 1.

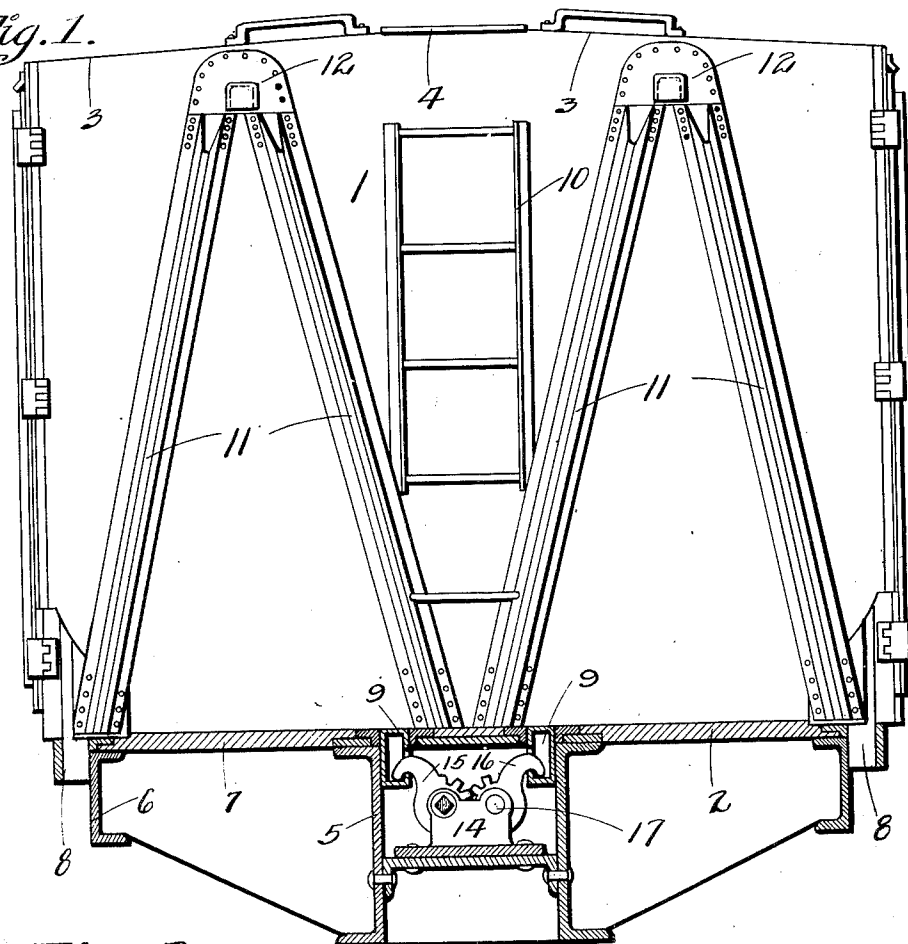
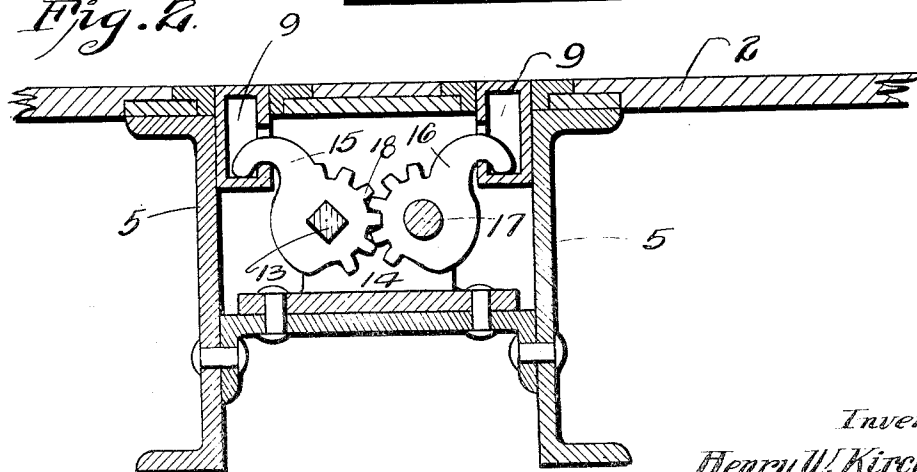


Fig. 2.



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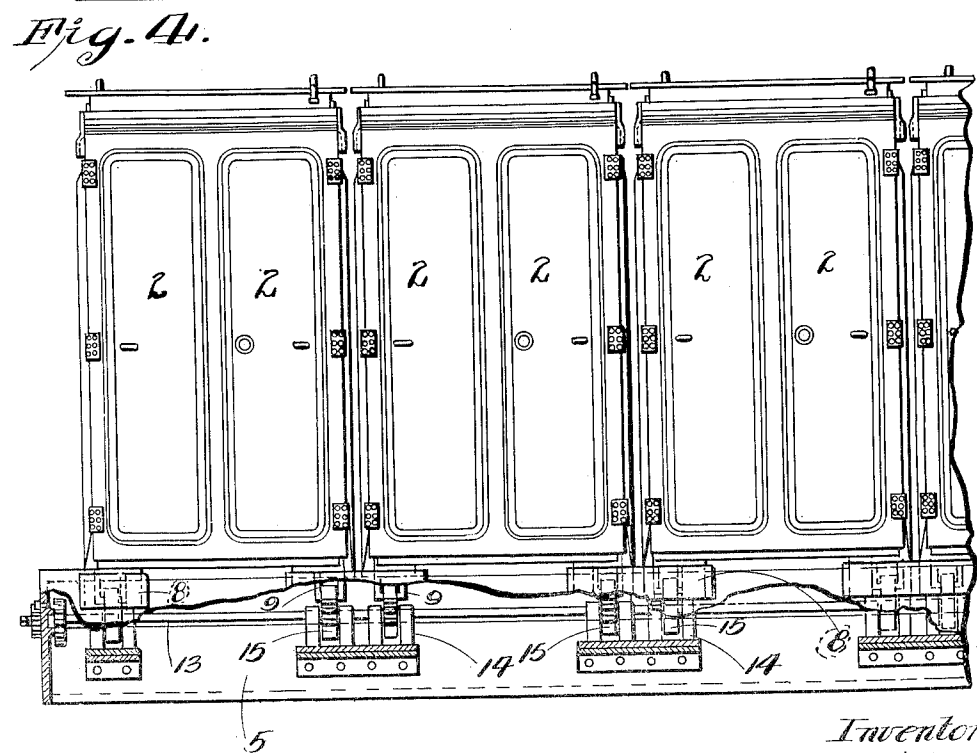
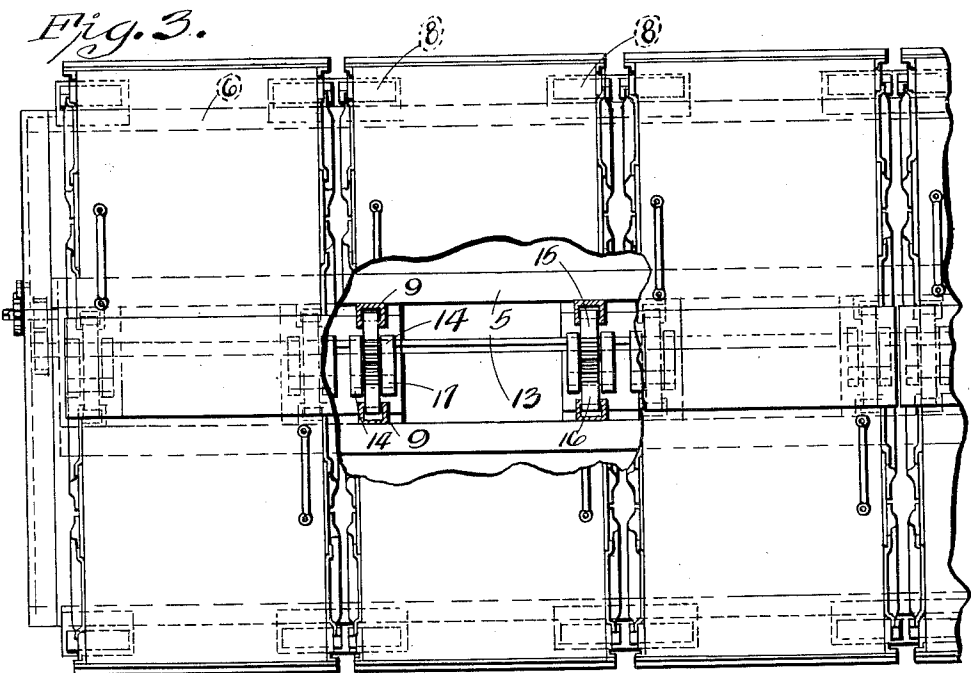
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3 Sheets-Sheet 2



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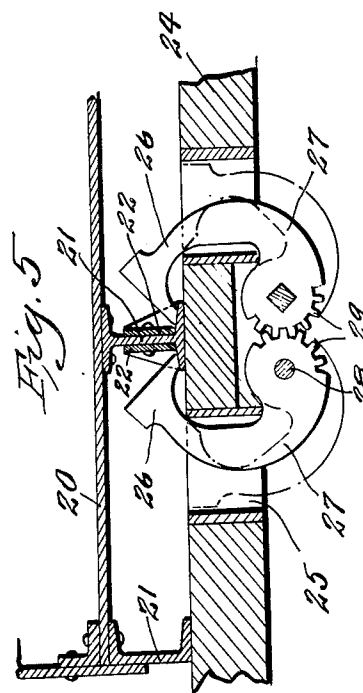
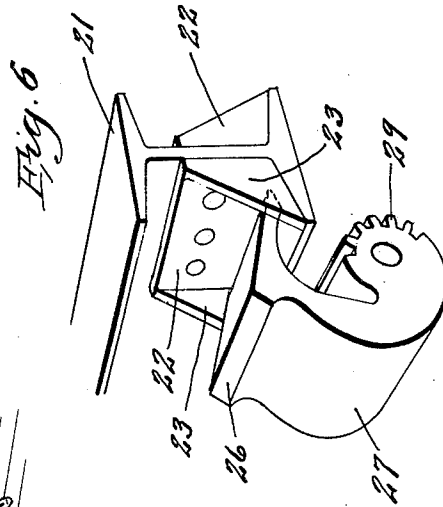
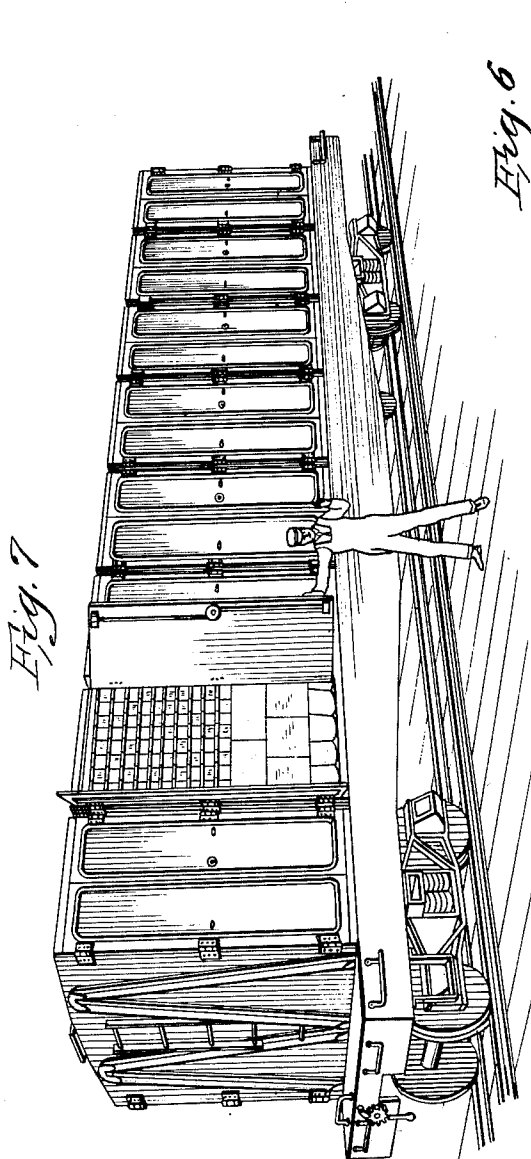
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TRANSPORTATION UNIT

Filed May 10, 1921

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

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

TRANSPORTATION UNIT.

Application filed May 10, 1921. Serial No. 468,397.

My invention relates to transportation systems in which carriers and shipping containers are adapted to be assembled with each other to facilitate the transfer of merchandise from one carrier to another or from warehouse to carrier, and vice versa.

The general idea of the system is shown in prior patents issued to me, for example, Patent Nos. 885,162, dated April 21, 1908, 997,300, dated July 11, 1911, 1,252,810, dated January 8, 1918, 1,349,209 dated August 10, 1920, and 1,360,412, dated November 30, 1920.

One object of my invention is to provide a shipping container which is adapted when mounted on a flat car with similar units to form therewith a box car of approximately standard type.

Another object of my invention is to provide simple efficient means for securing such a container in position upon a flat car or other carrier to prevent tilting or other movement of the container relative to the carrier.

In the drawings which illustrate a selected embodiment of my invention—

Figure 1 is an end view of one of my containers which may be used to form the end of a box car superstructure and which is mounted upon a flat car sectioned in this view to more clearly illustrate the assembly of the container with the flat car.

Figure 2 is an enlarged detail of the container locking mechanism shown in Figure 1.

Figure 3 is a top view of a plurality of containers assembled on a flat car and broken away in part to illustrate the holding mechanism below.

Figure 4 is a side elevation of the containers, shown in Figure 3 and a longitudinal section through the center of the flat car carrier.

Figure 5 is a detail view of a modified form showing a disappearing form of locking device on the carrier.

Figure 6 is a detail view of certain parts shown in Figure 5.

Figure 7 is a perspective of a carrier with several units arranged thereon.

My container comprises a box-like structure adapted to extend across the entire width of a railway car and is provided with doors 2 on at least one side, which are adapted to swing outwardly for loading and un-

loading purposes. The top 3 of the container is anticlinal, or slopes downwardly in either direction from the longitudinal center line to form a water-shedding roof, and a running board section 4 is mounted along the longitudinal center line of the container.

When a plurality of containers are assembled, as shown in Figures 3 and 4, sections 4 combine to form a continuous running board throughout the length of the car.

My container is adapted to be carried on motor trucks, railway cars, barges, etc., but in the accompanying drawings I have shown it only as mounted on a flat car carrier. This flat car is provided with the usual center sills 5, side sills 6, and floor 7. The container is provided with side feet 8 and central feet 9 and the floor 7 of the car has pockets to receive the container feet. At least two of the containers on each flat car carrier are provided with ladders 10 on one face to enable the trainmen to mount to the top of the container. Similar ladders may be applied to one of the doors 2 or, where doors are provided in one side only of the container, to the blank side wall of the container.

To reinforce the end walls of the container I provide ribs 11 of structural or pressed plate section and preferably arranged as shown in Figure 1 in the form of an inverted W in which two of the braces lead from two adjacent feet 8 and 9 diagonally upwards to a common meeting point near the top of the container. Two other braces converge from the other two feet 8 and 9 to a common point near the top of the container spaced from the meeting point of the first pair of braces. Lifting ears 12 are secured to the wall of the car and to braces 11 and form holding means for the hook of a crane or derrick which will be used for transferring the containers from carrier to warehouse, etc.

To hold the container on the carrier, I provide hooks pivoted to the underframe, which are adapted to extend into recesses in feet 9 and engage same to prevent separation of the container from the carrier. The hook mounting and operating mechanism illustrated in Figures 1 to 4 consists of a square shaft 13 journaled on brackets 14 secured to center sills 5 and a plurality of hooks 15 non-rotatably mounted upon shaft 13. The end of shaft 13 will be provided with a ratchet and pawl arrangement whereby an operator

may rotate hook 15 into and out of foot engaging position.

While a single downwardly projecting centrally located container leg and hook therefor will be sufficient to retain the container on the carrier and prevent any free play between them, it is preferred to provide two spaced central legs as shown and to mount hooks 16 on individual floating shafts 17. Rotation of hooks 16 is obtained by providing the adjacent faces of hooks 15 and 16 with intermeshing gear segments 18, whereby operation of the shaft 13 and hooks 15 will positively and simultaneously operate hooks 16 in the opposite direction to function the same way. If the hooks are made the same width as the pockets in feet 9, filling the latter when engaged therewith, the containers will be locked against longitudinal movement on the carrier, as well as against vertical movement.

It will be noted that when the carrier is held down by a single hook centrally located, it will be impossible for the carrier to tilt about any of its edges as a fulcrum.

In Figure 5, I have shown a container whose bottom wall 20 is provided with flanged floor supports 21, the medially located one of which is preferably in the form of an I-beam to which are secured fish plates 22 having laterally extending wings 23 at their ends. Parts 21, 22 and 23 can be made in the form of a single casting, if desired.

24 indicates the floor of the carrier, shown in this instance as a flat car, in which are preferably introduced metal thimbles 25 forming openings in which are located oscillating hook-shaped securing devices for the container having head portions 26 preferably of a size to fill the upper ends of the thimbles 25 and close the openings through said thimble—the heads 26 being flush with the floor of the carrier when in a retracted position, thus providing a solid flat surface. It may be said that the fastening devices "disappear" when retracted. When said fastening devices are projected upwardly into locking position, they will move continuously in one direction until they engage an appropriate keeper member on the container. 27 indicate the shanks of the fastening devices, preferably pivoted on shafts 28 and having intermeshing gear teeth 29 when the fastening devices are employed in pairs.

It is obvious that but one fastening device may be used, but I have shown two of such devices which when projected move towards each other into locking position and engage the keeper between the wings 23 whereby the container is prevented from moving vertically or in any lateral direction. By intermeshing the hooks of a pair of fastening devices, it is possible to operate the meshed pair from a single shaft. It

may thus be said that the companion fastening device is "floating" in that its position is determined by the shaft operated and driving member. When the hooks are raised, they engage the wall of the thimble which constitutes a limit stop, and when the hooks are retracted and lie flush with the floor, the perpendicular face of the head portion engaging a wall of the thimble also constitutes a limit stop and provides a solid support for the head of the hook so that said hook when retracted offers practically a solid floor support. The end of the head portion of the hook which engages the keeper of the container may be shaped or stepped in any appropriate manner, at the will of the designer.

The construction of the container disclosed herein adapts it for hauling material of various kinds, both loose and package. By the use of this system, delays and damage arising from frequent transfer of merchandise from one carrier to another are obviated. The container is designed to provide a maximum amount of strength for its weight and to resist collapsing tendencies when being transferred from one carrier to another. The keeper operating mechanism is simple and efficient.

Other modifications of the container and its assembly on the carrier besides those suggested herein may be made without departing from the spirit of my invention, and I contemplate such changes in the commercial development of my invention.

This present invention is a modification of applications, Serial No. 359,071, filed February 16, 1920, and Serial No. 430,902, filed December 15, 1920.

I claim:

1. A shipping container adapted, when mounted upon a railroad flat car, to form the end and a portion of the sides and antichinal roof of a box car superstructure, said container having a section of a running board extending along the center-line of its top.

2. In combination, a carrier having a floor, a container seated thereon, and interlocking mechanism between said carrier and container located intermediate all of the sides of said carrier and below the floor of the same.

3. In a shipping container, end walls, side walls, braces on said walls, the braces on said end walls being arranged in the form of an inverted W.

4. In a shipping container, a wall, wall braces arranged in an inverted W form, and lifting ears located at the upper meeting points of said braces.

5. In a shipping container, spaced carrier engaging elements on the bottom of the container, braces on the wall of the container leading respectively from said elements to

the top of the container, certain of said braces converging toward each other at their upper ends, and lifting ears on said container adjacent to the upper ends of said

5 converging braces.

6. A shipping container adapted to be removed from a carrier and including a top sloping to either side from its longitudinal center, and a length of running board

10 mounted on the central portion of the top.
7. The combination of a carrier, and a container having engageable locking devices beneath its floor and near its medial line, and engaging locking devices on the carrier

15 for cooperation with said devices.
8. The combination of a carrier and a container having keepers at its extremities and near its medial line, and a locking device on the carrier for engaging only the medial

20 ly arranged keepers.
9. The combination of a carrier and a container arranged thereon and whose lower edges constitute fulcrums in any tilting movement of the container on the carrier, and an interlocking mechanism between the carrier and container located intermediate

25 of all of said fulcrums.
10. In a transportation unit, a carrier, a container mounted thereon, and means for securing said container on said carrier comprising recesses in said container, and hooks pivoted on said carrier which are adapted to swing into and out of said recesses by

30 a continuous movement in one direction, said hooks being arranged in pairs, an operating shaft mounting for one hook of each of said pairs, and gearing between the hooks of each pair.
11. In combination, a carrier, a carrier

40 floor, openings in said floor, a shipping container, parallel feet on said container projecting through said openings, opposed horizontal recesses in said parallel feet, a main shaft journaled in said carrier and extending

45 inwardly from the end thereof, a short shaft journaled in said carrier parallel with said main shaft, individual hooks on said shafts adapted to rotate in opposite directions to engage said recesses, and integral inter-

50 meshed segment gears on said hooks.
12. The combination of a carrier, and a disappearing fastening member mounted thereon and designed to cooperate with a removable container, said fastening member

55 being pivotally mounted to one side of an opening in the carrier whereby when said member is retracted it will engage the side edge of said opening and be firmly supported in position flush with the surface of

60 the carrier.
13. The combination of a container provided with a keeper member, a carrier, and a disappearing fastening means which when projected into operative position will en-

gage said keeper member at the completion 65 of a continuous one-direction movement.

14. The combination of a container provided with a keeper member, a carrier, and oppositely movable fastening means on said carrier for engaging said keeper member. 70

15. The combination of a container having a keeper member, a carrier, oppositely movable fastening means on said carrier, means for positively operating one of said fastening means, and means for operating the 75 other of said fastening means in unison with said first mentioned means.

16. The combination of a container having a keeper member, a carrier having a floor portion, an opening in said floor portion, a fastening means pivotally mounted beneath 80 the floor and designed to close the upper end of said opening, and means also located beneath the floor of the carrier for projecting said fastening means through the opening 85 and into engagement with said keeper member.

17. The combination of a container having a keeper member, a carrier having a floor portion provided with openings, a pair of articulated fastening devices mounted be- 90 neath the floor and designed to be projected above the floor and into engagement with said keeper member.

18. The combination of a container having 95 floor supports one of which constitutes a keeper member, a carrier having a floor portion, openings in said floor portion, thimbles in said openings, and a fastening device operable through said thimbles for engaging 100 said keeper member, said thimbles constituting limiting stops for arresting said fastening device at the extremity of its movement.

19. The combination of a container having 105 a keeper member, a carrier having a floor portion provided with an opening, a fastening device operating through said opening for engaging said keeper member, said fastening device closing the opening when re- 110 tracted, and means for moving said fastening device to and from engaging position with said keeper.

20. The combination of a container having 115 a keeper member, a carrier having a floor portion, a fastening device mounted beneath the floor of the carrier and adapted to be projected through an opening in said floor portion to engage said keeper member, said 120 keeper member being located within the marginal edges of the container whereby when said keeper is engaged by said fastening device the container is locked against vertical and lateral movements.

In testimony whereof I hereunto affix my 125 signature this 6th day of May, 1921.

HENRY W. KIRCHNER.