

H. W. KIRCHNER.
FREIGHT CAR.

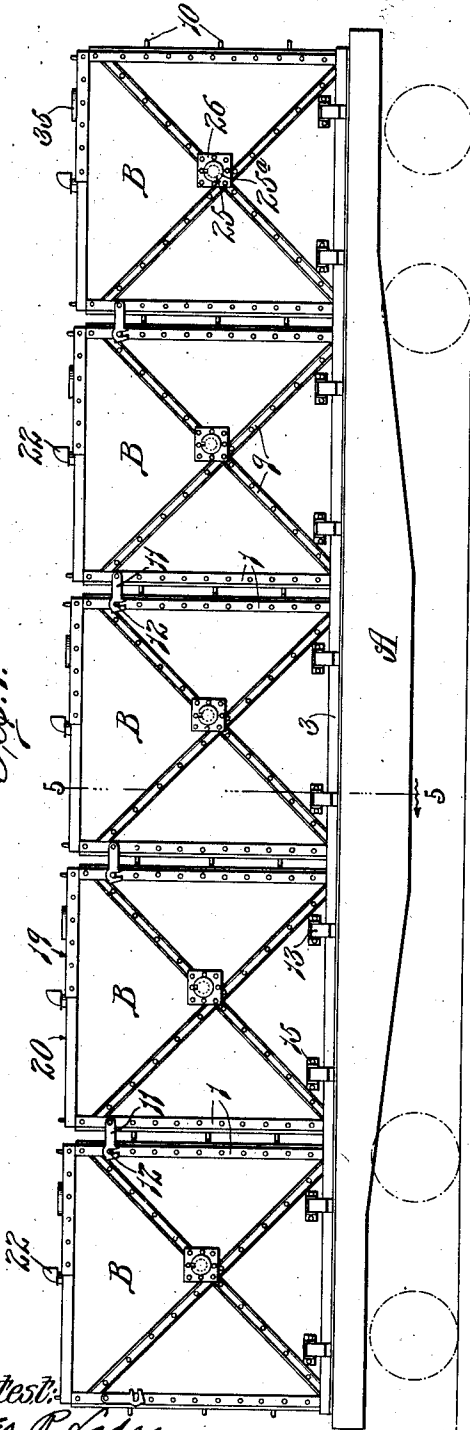
APPLICATION FILED MAR. 17, 1910.

Patented July 11, 1911.

3 SHEETS—SHEET 1.

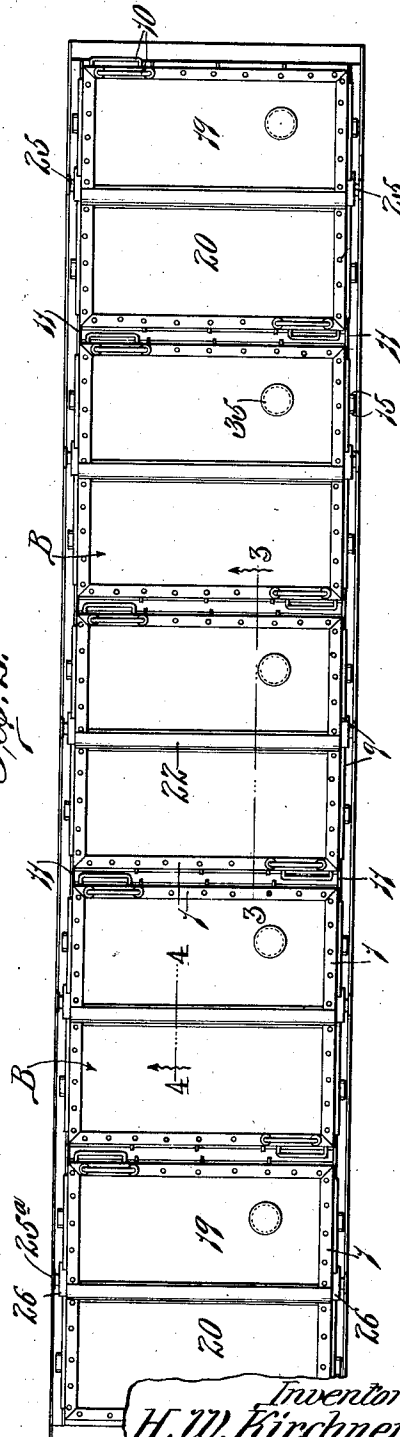
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Fig. 1.



Attest:
Geo. R. [Signature]
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Fig. 2.



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997,300.

Patented July 11, 1911.

3 SHEETS—SHEET 2.

Fig. 3.

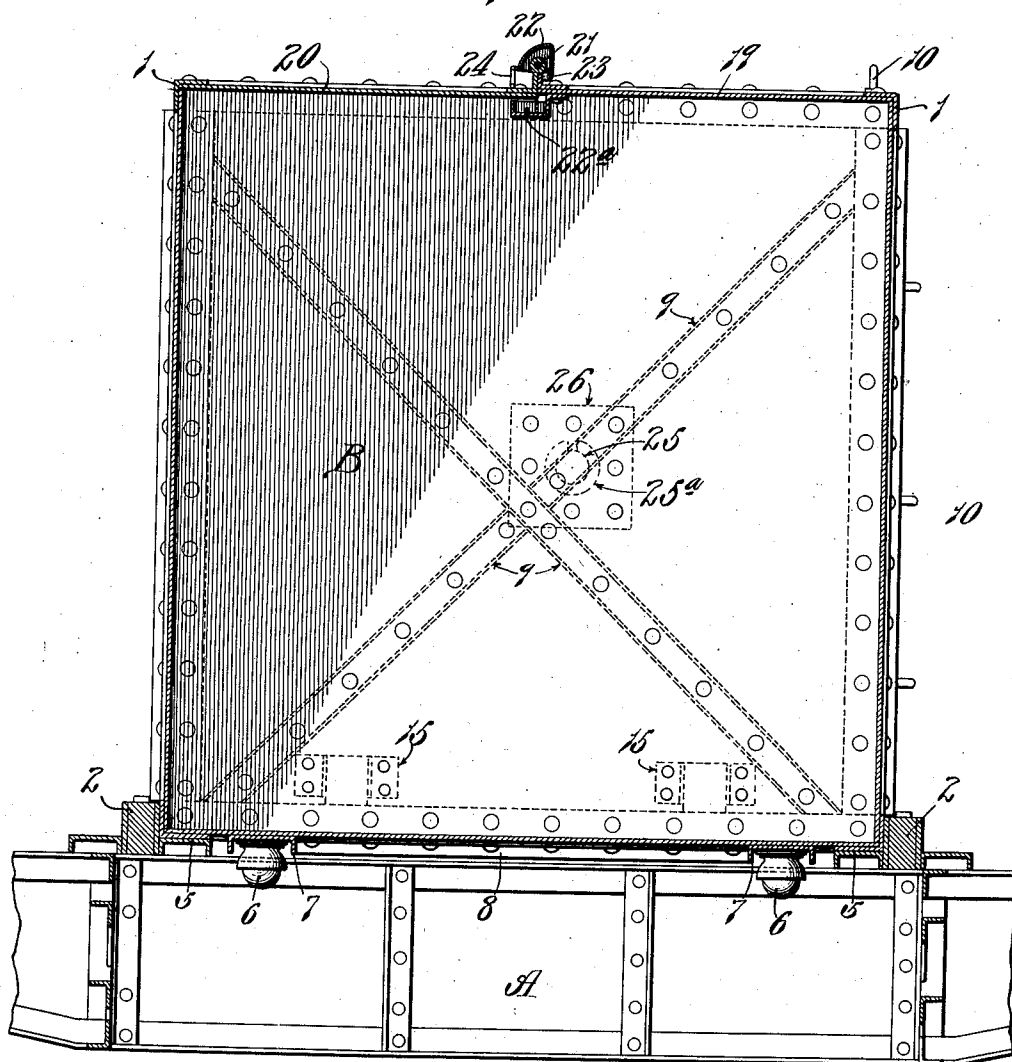
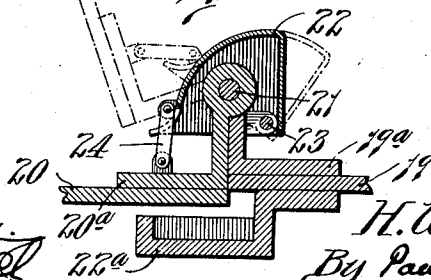


Fig. 4.



Attest:
Geo. R. Anderson
Wells L. Church

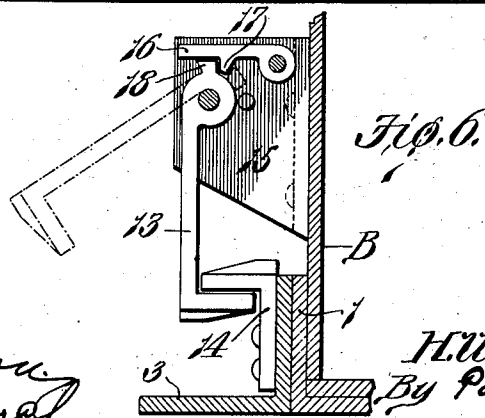
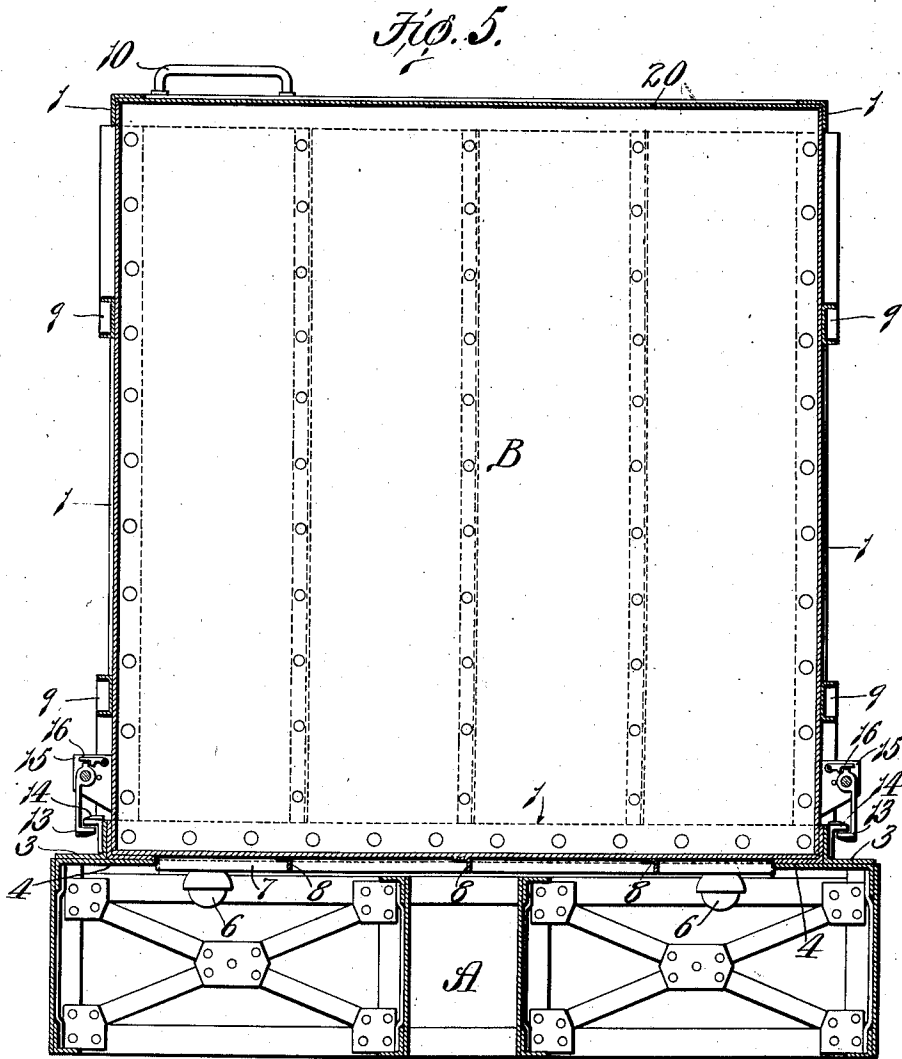
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

HENRY W. KIRCHNER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO RIVER & RAIL TRANSPORTATION COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF OKLAHOMA.

FREIGHT-CAR.

997,300.

Specification of Letters Patent.

Patented July 11, 1911.

Application filed March 17, 1910. Serial No. 549,865.

To all whom it may concern:

Be it known that I, HENRY W. KIRCHNER, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Freight-Cars, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to freight cars, and particularly to freight cars which comprise a plurality of removable and interchangeable units that hold the material which the car transports, said units being adapted to be removed bodily from the underframe on which they are mounted and then conveyed to the warehouse or place where the material is to be stored or discharged.

One object of my present invention is to provide a car of the type referred to which can be used for transporting liquids or dry material; and another object is to provide a car of the type referred to having means of novel construction for locking the units to the underframe.

Other objects and desirable features of my invention will be hereinafter pointed out.

Figure 1 of the drawings is a side elevational view of a car constructed in accordance with my invention; Fig. 2 is a top plan view of said car; Fig. 3 is a longitudinal sectional view taken on approximately the line 3—3 of Fig. 2; Fig. 4 is an enlarged detail sectional view taken on approximately the line 4—4 of Fig. 2, and illustrates the construction of the hood or cover which is arranged over the door hinge of each unit; Fig. 5 is a transverse sectional view taken on approximately the line 5—5 of Fig. 1; and Fig. 6 is an enlarged detail view of one of the locking devices on the units that prevent the units from tilting when they are arranged in operative position on the underframe.

Referring to the drawings which illustrate the preferred form of my invention, A designates the underframe or unit-supporting means of the car, and B designates a plurality of removable and interchangeable units or compartments which are mounted on said underframe. The underframe can be of any preferred design, and while I have herein shown a skeleton underframe that comprises longitudinal sills and

transverse members or transoms, I wish it to be clearly understood that my invention is not limited to such a construction for the unit-supporting means of the car is immaterial so far as my present invention is concerned.

The units B are of uniform shape and size so that they can be interchanged or arranged in different positions on the underframe, or on the underframe of a different car of the same type, and means are provided for locking the units together and also to the underframe. Each of the units B herein shown consists of a rectangular-shaped box formed of metallic plates and commercially-rolled members, preferably angle-bars 1, which lap over the corners of the box so as to produce a strong and rigid compartment that is tight enough to hold liquids or fine granular or powdered materials. The underframe A is provided with a plurality of pockets in which the units are mounted, and in the construction herein shown said pockets are formed by a number of transverse members 2 which are arranged between the units so as to prevent them from shifting longitudinally of the underframe, and a pair of longitudinally-extending members 3, preferably angle-bars, that extend the entire length of the underframe so as to prevent the units from moving transversely, it being understood, of course, that the members 2 and 3 are permanently connected to the underframe. The side sills of the underframe are provided with inwardly projecting horizontal flanges 4, as shown in Fig. 5, on which the units rest, said flanges being arranged in a higher horizontal plane than the top faces of the center sills and cross-bearers of the underframe so that the bottom of each unit will be spaced away from said parts and thus prevent the bottom of the unit from buckling upwardly as might occur if the unit rested directly on the center sills. If desired, the underframe can be provided with transversely extending supports 5 of approximately inverted channel shape in cross section which are arranged parallel to the transverse members 2 of the underframe so as to cooperate with the inwardly projecting flanges 4 of the side sills to form an open frame on which the outer edge portion of the bottom of each unit rests, the top faces

of said transversely extending members 5 being flush with the flanges 4 on the side sills. Each unit is provided with casters or rollers 6 of any preferred design which enable it to be moved easily after it has been removed from the underframe, and in the construction herein shown, said casters are connected to transversely extending channels 7 on the bottom of the unit, as shown clearly in Fig. 3. These channels 7 stiffen the bottom of the unit and prevent it from buckling, and if desired, longitudinal braces 8, preferably angle-bars, can be arranged between the channels 7, the vertical legs of said channels and angle-bars being of less depth than the legs of the channel-shaped supports 5 so as to prevent the central portion of the bottom of the unit from bearing directly on the underframe. The two side walls of each unit are provided with X-shaped braces which preferably consist of a pair of commercially-rolled channels 9 arranged with their legs or flanges projecting outwardly and their webs riveted to the outer faces of said side walls, as shown in Fig. 1. The two other walls of each unit are provided with hand-holds or ladders 10 which assist the trainmen to climb onto the tops of the units. It will, of course, be understood that the hand-holds on the outer walls of the two end units of the car are the only ones that are used, but I have provided both walls of each unit with hand-holds so that any of the units can be arranged at the ends of the car.

The units are locked together by means of latches 11 on one unit which cooperate with pins or projections on an adjacent unit, each unit being provided with a pair of latches 11 and a pair of pins 12 so as to enable the units to be interchanged. These latches 11 are preferably arranged adjacent the upper ends of the units, as shown in Fig. 1, near the upper ends of the X-shaped braces 9, and independent means are provided for preventing the units from tilting or moving upwardly from the underframe of the car. Said means preferably consists of a plurality of pivotally mounted hook-shaped devices 13 on the units which catch underneath cooperating hook-shaped members 14 on the underframe so as to prevent the units from tilting or moving upwardly. Each of the devices 13 is mounted on a pin which is supported by a pair of brackets 15 that project outwardly from the side wall of the unit, and a dog 16, which is also mounted on said brackets, cooperates with the device 13 to lock it in its operative position, as shown in full lines in Fig. 6, and also hold it in an inoperative position, as shown in broken lines in said figure. The dog 16 is provided with a tooth 17 which is so disposed that it lies on one side of a tooth 18 on the device 13 when said device is in engagement with

the catch 14 on the underframe so as to prevent said device from being swung upwardly or moved out of engagement with the catch 14. When the dog 16 is lifted or swung upwardly on its pivot, the tooth 17 thereon will pass out of engagement with the tooth 18 on the device 13 and thus permit said device to be swung upwardly, the dog 16 being thereafter released so that the tooth thereon will engage the tooth on the device 13 and hold it in an inoperative position, as shown in broken lines in Fig. 6. A locking mechanism of this construction comprises few parts and is not liable to get out of order and it is so designed that it can be released easily, even when it is coated with ice for a slight upward blow on the dog 16 releases the device 13 and permits said device to be swung outwardly.

Each of the units is provided with a top wall which consists of a permanent portion 19 and a movable portion or door 20 that is hinged to said permanent portion, said door extending the entire width of the unit. If desired, the top wall of the unit can be provided with a filling opening that is normally closed by a cap 35, thus enabling the unit to be filled without opening the door in the top wall thereof. The hinge which connects the door 20 to the permanent portion 19 of the top wall, consists of two substantially L-shaped members 19^a and 20^a whose vertical legs or flanges are provided with cooperating eyes through which a pintle 21 passes, the horizontal legs or flanges of said members being connected to the door and to the permanent portion 19 of the top wall. A hood 22 is arranged over said hinge so as to prevent water from entering same, and means is provided for moving said hood into an inoperative position away from the hinge when the door is raised, as shown in broken lines in Fig. 4. The hood is pivotally mounted on a shaft or pin 23, and links 24 are fastened to said hood and to the hinge member 20^a on the door so as to cause the hood to move upwardly with the door and thus permit the door to be swung clear over into a position extending parallel to the stationary portion of the top wall. The hood 22 protects the hinge and prevents water from entering same, and the upstanding flanges or legs of the hinge members 19^a and 20^a which carry the pintle of the hinge, permit the door to be swung clear over onto the stationary portion of the top wall of the unit so that it does not obstruct the opening through which the material is introduced into the unit, said flanges or legs being so proportioned that the hood 22 can lie between the door and the permanent portion 19 of the top wall of the unit when the door is open. If desired, a drip trough 22^a can be arranged inside of the unit under the joint between the door 20 and the stationary

portion 19 of the top wall thereof so as to catch any water that leaks through said joint.

A crane or other suitable lifting apparatus 5 is generally used for removing the units from the underframe, and I have therefore provided each unit with a pair of trunnions 25 that are adapted to be engaged by the lifting apparatus, said trunnions having 10 heads 25^a that prevent them from slipping out of the lifting apparatus. The trunnions 25 of each unit project laterally from the side walls of the unit, as shown in Fig. 1, and they are preferably so disposed that the unit 15 can turn automatically into a position to discharge its load while it is supported by the lifting apparatus, the lifting apparatus being provided with means for holding the unit level while it is being removed from the 20 underframe and conveyed to the warehouse or point where the material is to be discharged. Each of the trunnions 25 is connected to a casting 26 that is secured to the side wall of the unit at a point slightly to 25 one side of the center of said side wall so that the trunnion will be eccentrically disposed and thus cause the unit to turn or swing downwardly when the locking mechanism on the lifting apparatus is released. 30 The trunnion castings 26 are provided on their inner faces with grooves and recesses for receiving the flanges and the webs of the X-shaped braces 9 so that said castings will lie tightly against the side walls of the units and thus produce a strong and rigid structure but it will, of course, be understood that the trunnions could be connected to the units in various other ways without departing from the spirit of my invention.

40 A car of the construction above described can be used for conveying liquids or fine granular or powdered materials in view of the fact that the units are water-tight and dust-proof. Consequently such materials 45 can be transported at a low cost as it is not necessary to store them in small packages or containers.

With a car of the construction above described the units can be filled at the plant of 50 the manufacturer or producer, then placed upon one of the underframes of the line or company that operates the cars, and after the car has arrived at its destination, the units can be removed therefrom and conveyed 55 to the warehouse or place where the material is to be stored or discharged. The units are so designed that they can be handled conveniently by a crane or other suitable lifting apparatus and as the units tilt 60 automatically into a position to discharge their loads when the locking devices on the yokes are released, no manual labor is required to empty the units.

The cooperating catches or locking devices 65 on the units and on the underframe

are so placed that it is not necessary to arrange a unit in a certain pocket of the underframe, and as all of the units and underframes of the line are of the same construction, the units will fit in any underframe 70 of the line or system that operates the cars. By constructing a unit from metal plates and commercially rolled members in the manner above described, I produce an inexpensive receptacle that is strong enough to 75 withstand the rough usage to which it is subjected and the units are so securely locked to each other and to the underframe that they will not be liable to become displaced when they are in transit. 80

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A freight car comprising a frame or supporting means, a plurality of units carried by said frame for holding the material 85 being transported, cooperating members on said units and underframe for preventing the units from becoming displaced, and pivotally mounted locking devices which hold 90 said members in engagement with each other.

2. A freight car comprising a frame or supporting means, a plurality of units carried by said frame for holding the material 95 being transported, cooperating members on said units and underframe for preventing the units from moving upwardly, and means for holding said cooperating members either in engagement with each other or out of en- 100 gagement with each other.

3. A freight car, comprising an underframe, a plurality of removable and interchangeable units mounted on said underframe for holding the material being transported, pivotally mounted hook-shaped devices on said units arranged adjacent the 105 lower ends of same, stationary members on the underframe which said devices engage and thus prevent the units from rising or moving upwardly, and pivotally mounted 110 dogs on said units that are adapted to engage said hook-shaped devices and hold them in engagement with said stationary 115 members.

4. A freight car, comprising an underframe, a plurality of removable and interchangeable units mounted on said underframe for holding the material being transported, pivotally mounted hook-shaped devices on said units arranged adjacent the 120 lower ends of same, stationary members on the underframe which said devices engage and thus prevent the units from rising or moving upwardly, pivotally mounted locking 125 dogs on said units arranged above the upper ends of said hook-shaped devices, and cooperating lugs on said dogs and devices that hold said devices either in operative or inoperative positions. 130

5. A freight car, comprising an underframe, a plurality of removable and interchangeable units mounted on said underframe for holding the material being transported, stationary hook-shaped members on the underframe, pivotally mounted hook-shaped devices on the units which are adapted to pass under said stationary members and thus prevent the units from moving upwardly, said devices being adapted to be swung outwardly to release said units, pivotally mounted dogs arranged above said devices, and lugs on the under side of said dogs which are adapted to engage lugs on the upper ends of said devices and thus lock said devices in position.

6. A freight car, comprising an underframe, a plurality of removable and interchangeable units mounted on said underframe for holding the material being transported, means on the underframe for preventing the units from shifting longitudinally or transversely, means for connecting the units together, stationary catches on the underframe, brackets on the side walls of said units provided with side flanges, pivotally mounted catches arranged between said side flanges and adapted to pass under the stationary catches on the underframe, and locking dogs arranged between the side flanges of said brackets and operating to hold said pivotally mounted catches in either operative or inoperative positions.

7. A freight car, comprising an underframe which consists of side sills, center sills and cross-bearers, flanges projecting in-

wardly from the side sills and arranged in a higher horizontal plane than the top faces of the cross-bearers and center sills, inverted channel-shaped members arranged transversely of the underframe and having their top faces flush with said flanges, and a plurality of interchangeable units mounted on said transversely extending members and flanges for holding the material being transported.

8. A freight car, comprising an underframe which consists of side sills, center sills and cross-bearers, flanges projecting inwardly from the side sills and arranged in a higher horizontal plane than the top faces of the cross-bearers and center sills, inverted channel-shaped members arranged transversely of the underframe and having their top faces flush with said flanges, a plurality of interchangeable units mounted on said transversely extending members and flanges for holding the material being transported, angle-bars connected to the flanges on the side sills for preventing the units from shifting transversely of the underframe, and abutments arranged adjacent said transversely extending members for preventing the units from shifting longitudinally.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this fifteenth day of March 1910.

HENRY W. KIRCHNER.

Witnesses:

WELLS L. CHURCH,
GEORGE BAKEWELL.