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PATENTED JULY 3, 1906.

R. P. MATHEWS & C. H. LISTER.

GRAVITY FREIGHT CARRIER.

APPLICATION FILED DEC. 19, 1904.

3 SHEETS—SHEET 1.

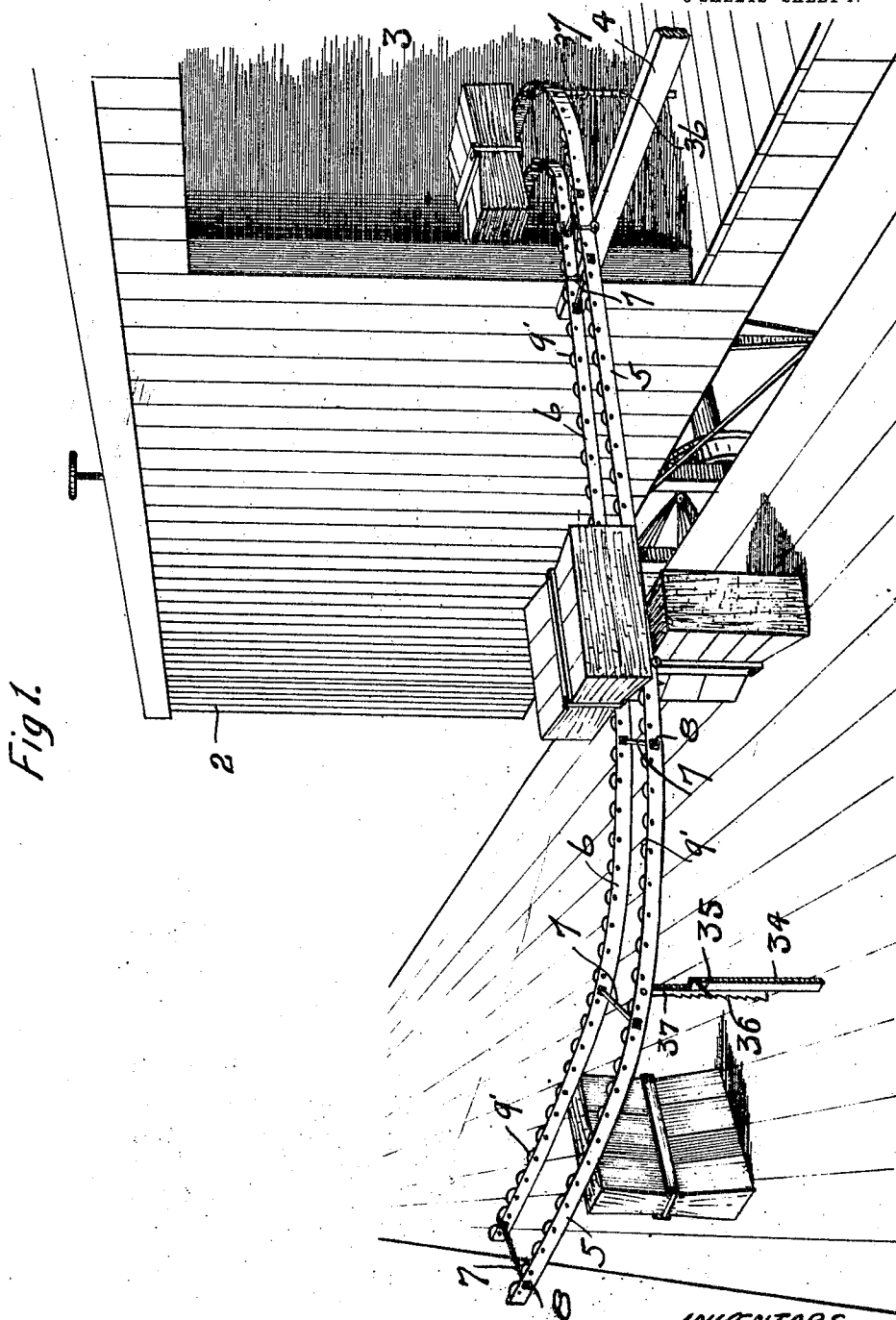


Fig. 1.

WITNESSES
C. M. Waldron
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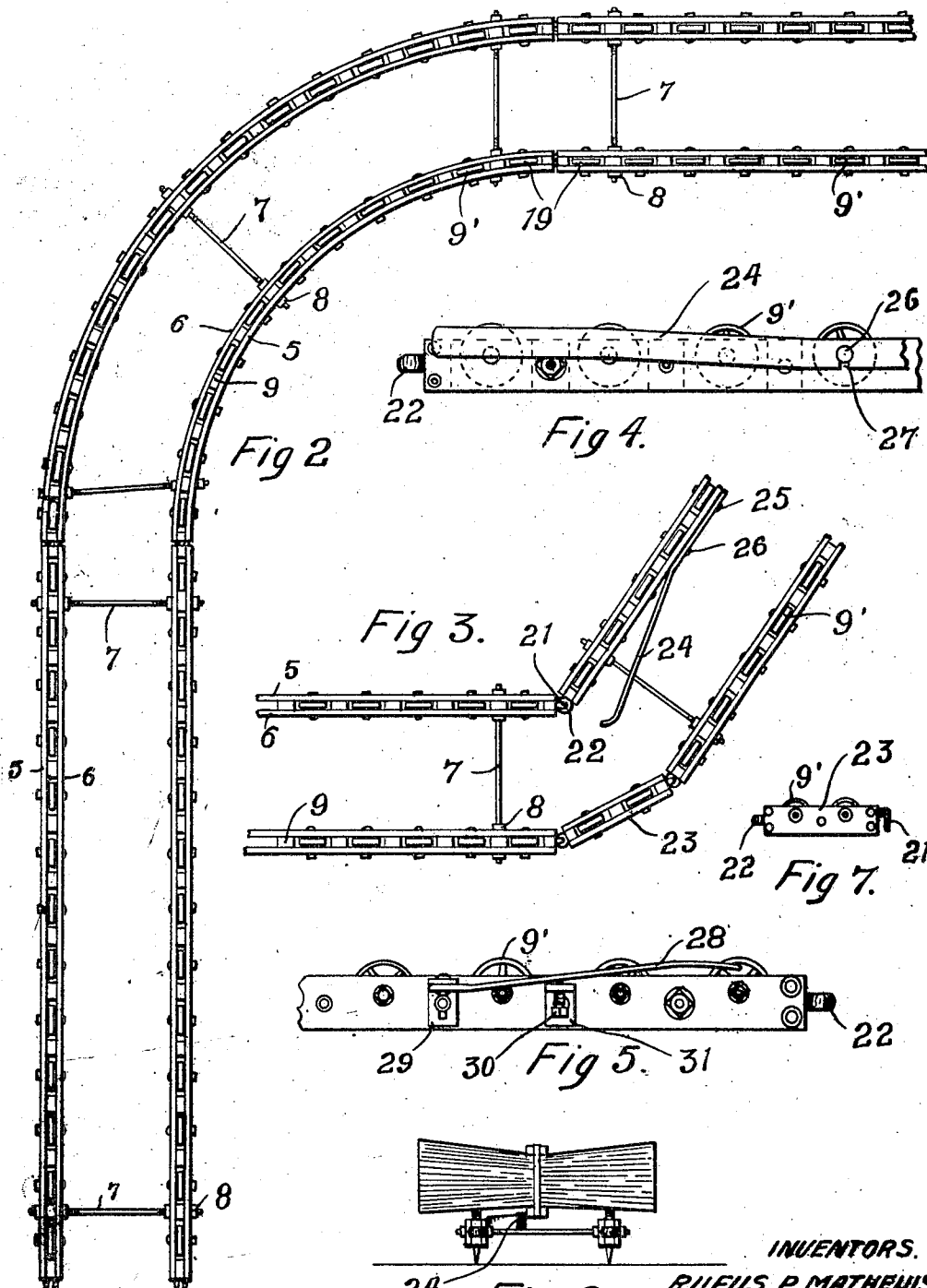
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3 SHEETS—SHEET 2.



WITNESSES.
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24 Fig 6.

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3 SHEETS—SHEET 3.

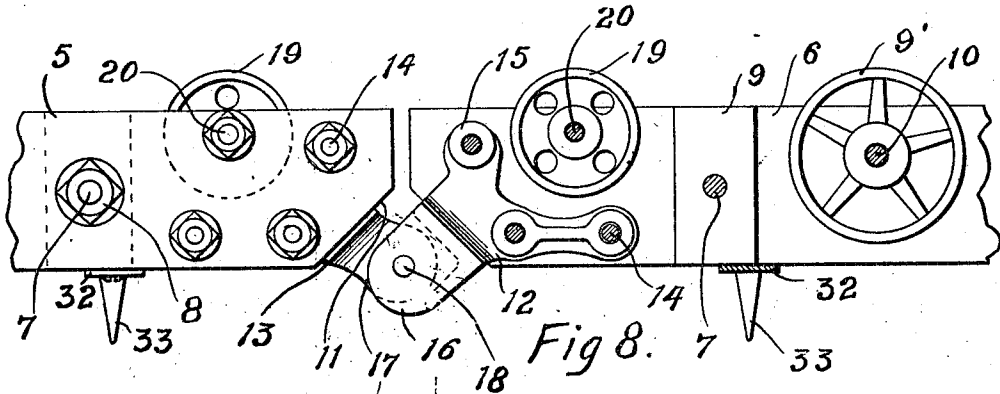
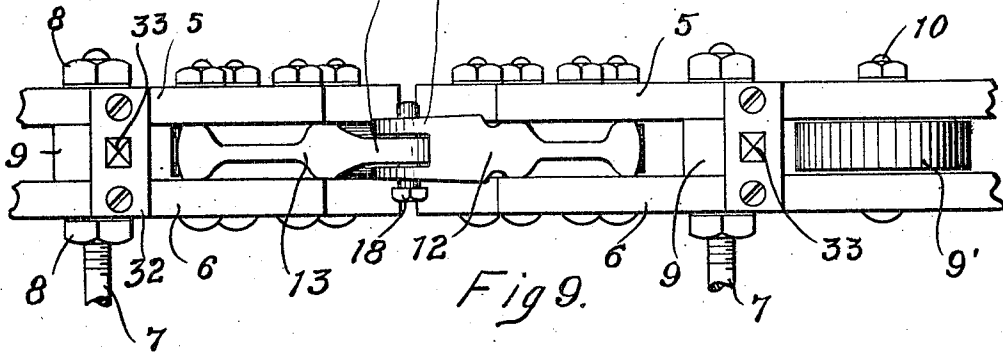
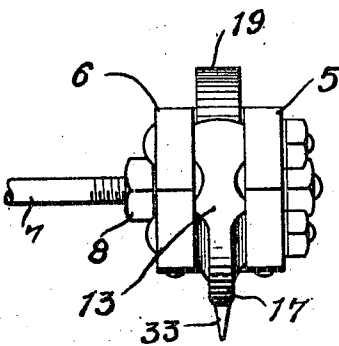


Fig 10.

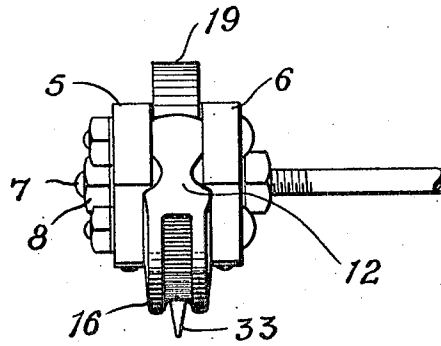


Fig 11.

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RUFUS P. MATHEWS AND CHARLES H. LISTER, OF ST. PAUL, MINNESOTA.

GRAVITY FREIGHT-CARRIER.

No. 824,943.

Specification of Letters Patent.

Patented July 3, 1908.

Application filed December 19, 1904. Serial No. 237,418.

To all whom it may concern:

Be it known that we, RUFUS P. MATHEWS and CHARLES H. LISTER, of St. Paul, Ramsey county, Minnesota, have invented certain new and useful Improvements in Gravity Freight-Carriers, of which the following is a specification.

Our invention relates to carriers used in unloading or loading freight or transferring it from one car to another; and the primary objects of the invention are, first, to provide a carrier that is portable, being made up of independent separable sections that can be easily separated and moved from place to place; second, to provide a carrier that is strong and durable, being capable of withstanding the wear and rough usage to which an article of this kind would be subject; third, to provide a carrier that is of simple and economical construction that can be manufactured and sold for a comparatively low price.

The invention consists generally in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a perspective view illustrating our gravity-carrier in use. Fig. 2 is a plan view of the carrier used generally for merchandise. Fig. 3 is a plan view of a portion of the carrier adapted particularly for transporting shingles in bunches. Fig. 4 is a sectional view showing a side elevation of the retarding device provided at the curve of the carrier. Fig. 5 is a side view of a portion of the shingle-carrier, illustrating the retarding device employed with general merchandise that is usually shipped in boxes. Fig. 6 is a transverse section illustrating the shingle-retarding device in action. Fig. 7 is a detail of the coupling employed at the curve of the shingle-carrier. Fig. 8 is a sectional view of a portion of the carrier, showing the form of hinge or coupling employed between the sections of the carrier. Fig. 9 is a plan view of the same, and Figs. 10 and 11 are end views.

In the drawings, Fig. 1, we have illustrated the carrier in use for unloading a car of shingles, one man being stationed within the car to place the bundles on the carrier and the other in the warehouse or platform or other place where the bundles are to be

stored to receive them from the carrier. The car, which we designate by the figure 2, is of ordinary construction, having a doorway 3, wherein the carrier is supported in any suitable way, as by a cross-bar 4. The shingle-carrier, which we will describe in detail first, is composed of bars 5 and 6, arranged in pairs on each side of the carrier and connected at intervals by cross-rods 7, that are threaded at each end to receive the lock-nuts 8, which bind the bars of each pair together and hold them firmly in parallel relation with one another. Blocks 9, arranged at intervals between the bars of each pair, prevent them from being drawn together sufficiently to clamp the antifriction-wheels and prevent their free revolution. 9' represents a series of idle wheels, preferably of metal, supported upon pins 10 and arranged to revolve freely between the bars, projecting a sufficient distance above the same to engage the article of merchandise passing over the carrier and prevent it from contacting with the rails. There may be any desired number of these wheels, as may be found necessary from experience in using the carrier, and we have found those of metal best suited for the purpose on account of their greater durability. The sections of the carrier may be of any suitable length, and to unite them at the ends we prefer to provide coupling devices, which we will now proceed to describe in detail.

The abutting ends of the bars or rails are beveled on the under side, as indicated at 11 in Fig. 8, and castings 12 and 13 are secured, respectively, between the ends of the bars of each section by bolts 14, suitable hubs 15 being provided on each casting to form a long bearing-surface on the bolts and prevent lateral movement of the castings between the bars. The casting 12 has a fork 16, that projects beyond the beveled portion of the bars, and is adapted to receive the end 17 of the casting 13, that is held in place in the fork by a pivot-pin 18. The castings are so adjusted that when fastened together sufficient space will be provided between the abutting ends of the pairs of bars to allow a slight vertical oscillating movement and permit the carrier to adjust itself to its supports and yield slightly, if necessary, when the load passes over it. The shape of the castings 12 and 13 prevents the use of the wheels 9 near the ends of the

bars, and we therefore provide smaller wheels 19 at this point, that project the same distance above the upper edges of the bars, but whose supports 20 are nearer the top of the bars than those of the other wheels, as indicated in Fig. 8. This arrangement allows us to provide the same interval between the wheels at the ends of the section as prevails at all other points on the carrier, and consequently the load will move uniformly and there will be no danger of a packing becoming lodged or dropping down between any of the wheels of the carrier. The coupling-castings arranged between the bars will be firmly held on both sides, and any strain thereon will be equally distributed between the side rails, and all danger of splitting them or breaking the castings will be reduced to a minimum. Lateral movement of the bars will also be prevented, and there will be no danger of one section of the carrier moving sidewise out of alinement with the contiguous section.

In moving bunches of shingles out of or into a car it is necessary to make a nearly right-angle turn in the carrier as it passes through the car-door. We therefore provide a hook 21 in the end of some of the sections to enter an eye 22 in the end of the contiguous section on the inner side of the carrier. On the outer side hooks and eyes corresponding to those described are provided, and in addition a short section 23, having a hook and eye in its ends, is provided to complete the carrier on the outer side of the curve. To guide a bunch of shingles around this curve, we provide a retarding device consisting of a strap 24, secured at one end to one of the side bars of the carrier by a bolt 25 and vertically adjustable thereon by means of a bolt 26, that passes through the slot 27 in said strap. This strap, as shown in Fig. 3, is bent inwardly toward the middle of the space between the side rails of the carrier, and its free end is adjusted to engage the under band or stick on the bunch of shingles and retard the inner end of the bunch while the outer end is carried by the momentum around the outer side of the curve and directed onto the section beyond. The strap 24 will yield under the pressure of the bunch of shingles sufficiently to allow the bunch to pass, but holds it back long enough for the outer end of the bunch to pass safely around the curve. In handling other merchandise, such as boxes of soap and the like, it is desirable to provide some means to engage and retard the inner end of the box. We therefore provide a flat spring 28, secured to a bracket 29, that is adjustably mounted on the outside of one of the inner rails of the carrier, as indicated in Figs. 3 and 5. The free end of the spring 28 extends parallel with the rail of the carrier and is rendered adjustable vertically by means of a set-screw 30, mounted in a bracket

31. The end of this spring engaging the box as it travels down over the carrier holds back one end while the other is making the curve. These retarding devices enable us to change the direction of travel of the merchandise at any point and discharge it from one car and into another without the necessity of having an attendant at the curves to prevent the merchandise from passing off the carrier at that point.

At intervals on the under side of the rails we provide plates 32, having brads or sharpened pins 33, that dig into the support of the carrier and prevent it from slipping out of place thereon. Ordinarily the carrier will be supported, as shown in Fig. 1, by bunches of shingles placed on one end or edge at intervals, and on the outer side of the curves we may provide a jack device consisting of a standard 34, carrying a link 35, that engages teeth 36 on a bar 37, whose upper end engages one of the rails. By raising or lowering this jack the rail and bearing-wheels on one side can be elevated or depressed slightly to aid the merchandise in rounding a curve.

In Fig. 2 is shown the gravity-carrier that is usually employed for handling general merchandise. In this carrier the curve is not so abrupt as the one shown in Fig. 3, and the retarding device may be omitted, the essential feature being the arrangement of the carrier-wheels on the outside of the curve so that their faces will be at right angles to the radii of the arc of the curve. When the wheels are arranged in this way, the packages of merchandise will pass over them and round the curve without danger of running off and without requiring the attention of an attendant.

The sections of the carrier shown in Fig. 2 are in other respects substantially the same as those described, being constructed in a similar way and having similar couplings at their abutting ends.

We have described a portable carrier in this application, but do not wish to confine ourselves entirely to the use of the invention in such a form alone and in connection with a freight-car, as it is capable of permanent application in mills, factories, and warehouses.

While we have illustrated the invention as used in connection with a car and in a portable form, yet it is obvious that it may be permanently installed in a factory, warehouse, mill, or other structure and used otherwise than for loading and unloading cars.

We claim as our invention—

1. A portable gravity-carrier comprising separable sections, each section having side rails composed of bars arranged in pairs with a space between them, and narrow-faced idle wheels having their hubs supported between the rails of each pair, the upper portion of said wheels projecting above the top of said

rails and supporting the packages moving by gravity between the pairs of bars, means connecting the pairs or rails at intervals, and suitable couplings connecting the abutting ends of the sections.

2. A portable gravity-carrier comprising separable sections, each section consisting of side rails composed of bars arranged in pairs with a space between the rails of each pair, antifriction-wheels having their hubs supported in bearings between the rails of each pair, the upper portions of said wheels projecting above the upper edges of the side rails, blocks separating the rails of each pair and said wheels, rods connecting the pairs of rails at intervals, and suitable couplings pivotally connecting the abutting ends of the sections.

3. A portable gravity-carrier comprising separable sections provided with antifriction-wheels that project above the top of said sections, and said sections being provided with castings pivotally connecting their abutting ends, one casting having a depending forked end to receive a depending tongue on the casting of the abutting section, substantially as described.

4. In a gravity freight-carrier, the combination, with two contiguous sections having abutting ends, the rails of said sections being composed of bars arranged in pairs and having their lower abutting corners beveled, castings secured between the pairs of bars of the respective sections and depending past said beveled corners, the castings of one section being forked wherein tongues provided on the sections are pivoted, substantially as described.

5. In a gravity freight-carrier, a section comprising side rails composed of parallel bars with spaces between them, castings provided at the ends of said section between said bars, antifriction-wheels mounted at intervals between said bars the wheels at the ends of said bars near said castings being of less diameter than the others and supported near the upper edges of the bars, substantially as described.

6. A gravity freight-carrier comprising rails having antifriction-wheels mounted thereon at intervals, a curve provided in said carrier and a retarding device arranged to engage the packages passing around said curve.

7. In a gravity-carrier, the combination, with two contiguous sections having abutting ends the rails of said sections being composed of bars arranged in pairs, castings secured between the bars of each pair of the respective sections and depending below the bottom of said rails and the castings of one section being forked wherein tongues provided on the castings of the other section are pivoted, substantially as described.

8. A gravity freight-carrier provided with

a curve in combination with an adjustable retarding device arranged on said curve, for the purpose specified.

9. A gravity-carrier comprising sections having coupling devices at their ends and a retarding device mounted on one of said sections and arranged to project into the path of the package passing thereover, substantially as described.

10. A gravity-carrier comprising sections having side rails composed of bars arranged in pairs with a space between them, blocks separating the bars of each pair, rods passing through said bars and blocks and connecting one pair with another, and antifriction-wheels arranged between the bars of each pair and projecting above the top thereof, substantially as described.

11. In a gravity-carrier, a curved section having side rails, narrow-faced idle wheels arranged between the bars of each pair and projecting above the same, and said wheels revolving in planes that intersect at right angles the radii of a circle whose arc coincides with the curve of said section, the wheels of the inner rail alternating substantially in position with the corresponding wheels of the outer rail.

12. The combination, in a gravity carrier with straight sections, of a curved section uniting two straight sections arranged substantially at right angles to one another, said curved section having side rails and a series of antifriction-wheels mounted therein and projecting above said rails, the wheels of the inner rail alternating substantially in position with the corresponding wheels of the outer rail, and all of said wheels revolving in planes that intersect at right angles substantially the radii of a circle whose arc coincides with the curve of said section, substantially as described.

13. The combination, with a gravity freight-carrier provided with a curved section, of a retarding device arranged to engage the under side of the packages passing over said curved section.

14. A gravity-carrier composed of separable sections having side rails and antifriction-wheels projecting above said rails and having their hubs supported in said rails below their upper edges, and separable couplings connecting the contiguous ends of said sections said couplings consisting of castings secured to the ends of said sections and having depending pivotally-connected forks and tongues.

15. A gravity-carrier comprising a series of portable sections having a coupling means at their ends, and each section comprising side rails and narrow-faced idle wheels journaled therein, the bearings of said wheels being below the upper edges of said rails and the peripheries or bearing-surfaces of said wheels being above said upper edges, and the wheels

of each rail being sufficiently near together to prevent packages moving by gravity there-
over from dropping down between them and
contacting with said rails, substantially as
described.

16. A gravity-carrier having side rails
composed of bars arranged in pairs with
spaces between them, and narrow-faced anti-
friction-wheels having their hubs journaled
in said rails, the upper portion of said wheels
projecting above the tops of said rails and
supporting the packages moving by gravity
thereover, blocks separating the rails of each
pair, and rods connecting the pairs of rails at
intervals, substantially as described.

17. A gravity-carrier having side rails
composed of bars arranged in pairs with
spaces between them, and narrow-faced anti-
friction-wheels having their hubs supported
between the rails of each pair, the upper por-
tion of said wheels projecting above the tops
of said rails and supporting the packages
moving by gravity thereover, and the wheels

of each rail being sufficiently near together to prevent the articles thereon from dropping
between said wheels and contacting with said
rails, substantially as described.

18. A gravity-carrier comprising a series of
sections having a coupling means at their
ends, and each section comprising side rails
and narrow-faced idle wheels journaled there-
in, the peripheries or bearing-surface of said
wheels being above said rails, and the wheels
of each rail being sufficiently near together to
prevent packages moving by gravity there-
over from dropping down between them and
contacting with said rails, substantially as
described.

In witness whereof we have hereunto set
our hands this 12th day of December, 1904.

RUFUS P. MATHEWS.
CHARLES H. LISTER.

Witnesses:

RICHARD PAUL,
C. MACNAMARA.