No. 842,155. PATENTED JAN. 22, 1907

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

GRAVITY CARRIER.

APPLICATION FILED MAY 12, 1905.

2 SHEETS—SHEET 1.

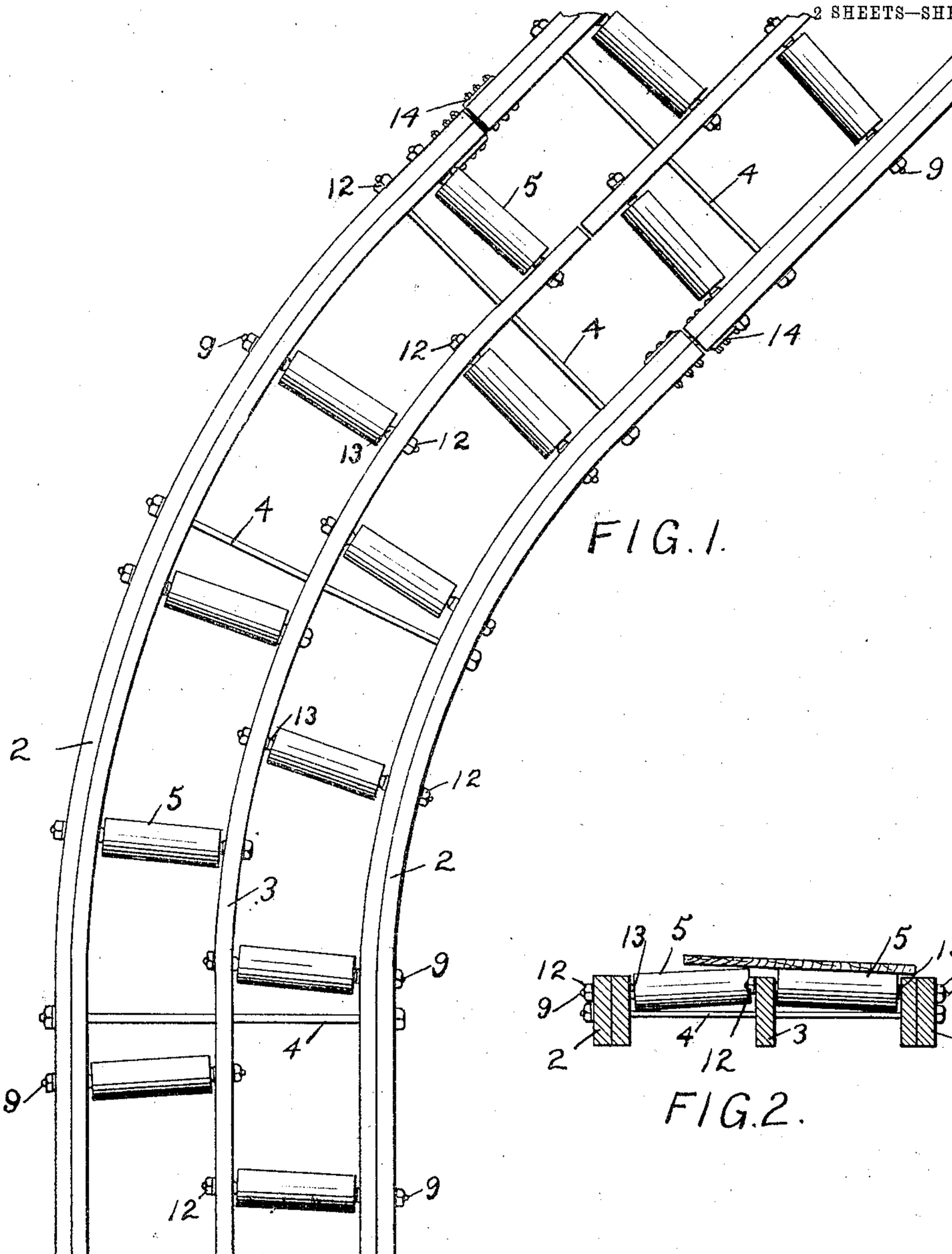

FIG. 1.

FIG. 2.

WITNESSES
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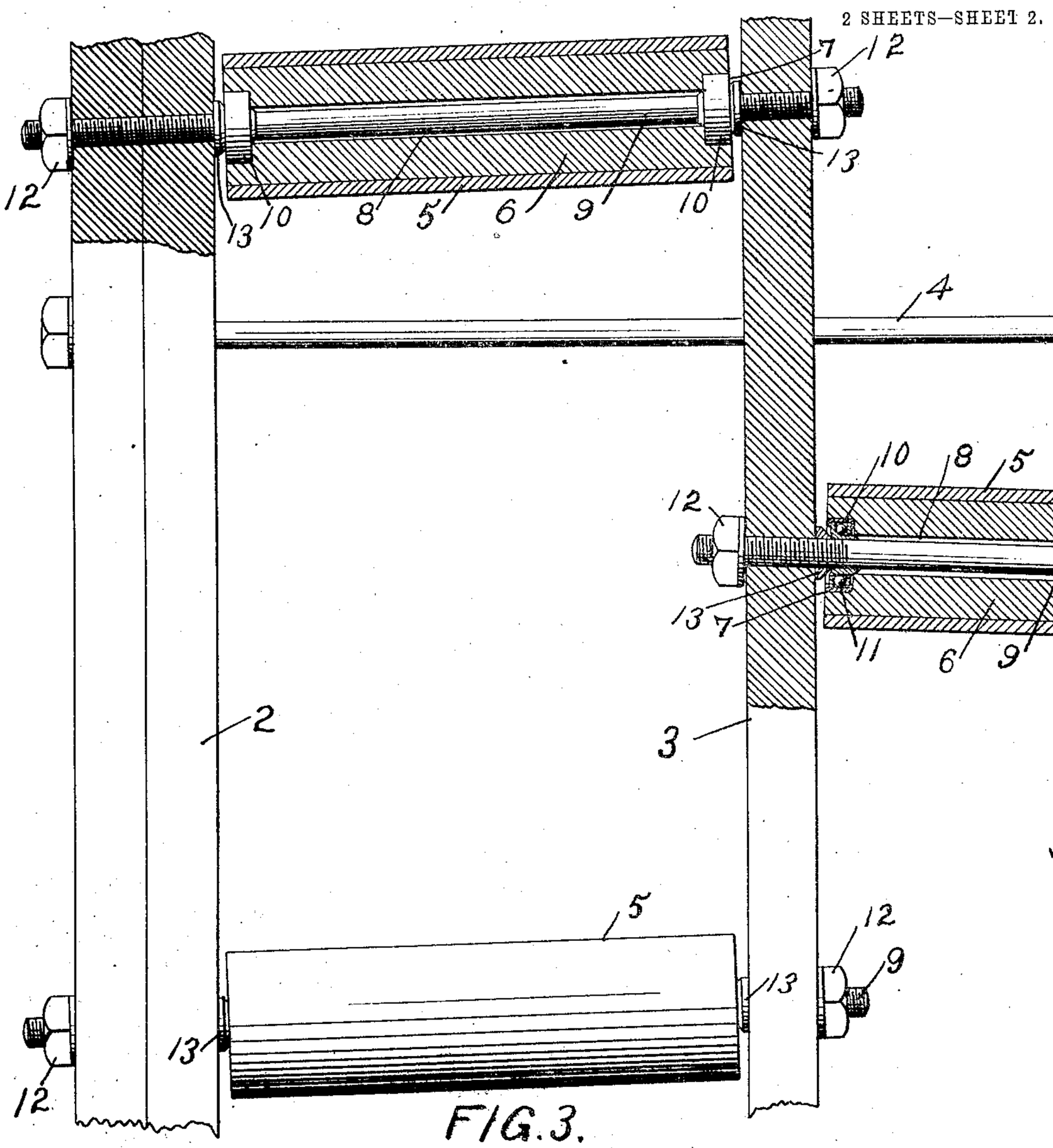

FIG. 3.

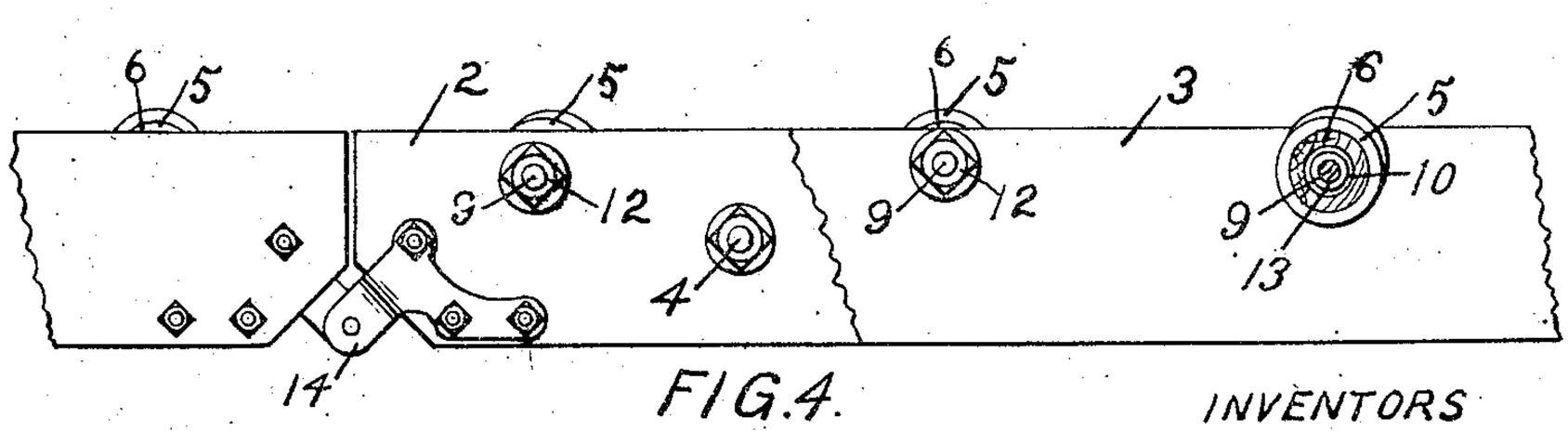

FIG. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

RUFUS P. MATHEWS AND CHARLES H. LISTER, OF ST. PAUL, MINNESOTA, ASSIGNORS TO MATHEWS GRAVITY CARRIER COMPANY, OF ST. PAUL, MINNESOTA, A CORPORATION OF MINNESOTA.

GRAVITY-CARRIER.

No. 842,155. Specification of Letters Patent. Patented Jan. 22, 1907.

Application filed May 12, 1905. Serial No. 260,102.

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-Carriers, of which the following is a specification.

Our invention relates to carriers for transporting merchandise by gravity; and the object of our invention is to provide a carrier designed particularly for transporting lumber, but capable of being adapted with slight modifications to handle brick and other articles.

A further object is to provide a carrier whereon the boards or other articles will travel for a long distance and pass around curves of different degree without danger of sliding off the carrier and without requiring any attention whatever on the part of the operators except at the receiving and discharge end of the carrier.

A further object is to provide a gravity-carrier composed of sections which can be easily moved and are strong and durable and provided with antifriction-rollers that turn freely when engaged by the article passing over them.

The invention consists generally in providing a carrier having side rails and an intermediate or middle rail between them and antifriction-rollers journaled in said rails and having their inner ends higher than their outer ends and obliquely arranged with respect to the supporting-rails.

Further, the invention consists 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 plan view of a portion of a lumber-carrier embodying our invention. Fig. 2 is a transverse sectional view showing the position assumed by a board on the rolls. Fig. 3 is a plan view, partially in section, of a portion of the carrier, illustrating the manner of supporting the rollers in bearings between the rails of the carrier. Fig. 4 is a side elevation of a portion of one of the sections, showing the position of the antifriction-rollers therein and the couplings uniting the abutting ends of the sections.

In the drawings, 2 represents the side rails of a curved section of the carrier, and 3 a middle rail between them and slightly below the level of the side rails, as indicated in Fig. 2. The side rails are preferably composed of two bars bolted or otherwise secured together to stiffen the carrier and lessen its tendency to warp. Rods 4 are provided at intervals, passing through the side and middle rails and binding them securely together. The antifriction-rollers which we prefer to provide in connection with this carrier are made, preferably, of comparatively thin tubing 5, having, preferably, a wooden core 6, the ends of which are flush with the ends of the tubing and have recesses 7 and a central hole 8 to receive a shaft 9. Casings 10, inclosing ball-bearings 11, fit snugly within the recesses 7. The ends of the shaft 9 are threaded and extend through the side and middle rails and are provided with nuts 12 and with adjustable cones 13, that are turned up against the ball-bearings and hold the roller against longitudinal movement on the shaft, but permit it to revolve freely thereon, the hole through the wooden core being sufficiently large to prevent frictional contact of the core with the shaft. The inner end of the shaft is raised slightly above the level of the outer end, as shown in Fig. 2, so that the surface of the roller is inclined downwardly from its inner toward its outer end, and the said shaft and roller are set in the rails obliquely with respect to the plane thereof, as indicated in Fig. 3, and the lumber placed on these rollers will move toward the center of the carrier.

In actual practice the rollers are set at the proper angle with respect to the plane of the rails to insure the travel of the mechanism over the rollers without running off. This angle we have exaggerated in the drawings for the purpose of more clearly illustrating this feature of the invention. The pitch or inclination of the roller from the center toward the sides of the carrier may be varied to obtain the best results. We have found that lumber placed on a carrier of this kind will travel a long distance and pass curves of various lengths and degrees without any

danger of passing off the carrier and with only sufficient drop in the carrier from its receiving to its discharge end to keep the lumber in motion. When a board or other piece of lumber is placed on the rollers on one side of the center of the carrier, it will work toward the inner ends of the rolls as it travels over them, and if it passes the center a sufficient distance to contact with the rolls on the other side it will tilt sufficiently to pass out of contact with the first-named rollers, owing to the pitch or inclination of the carrier on each side of the center. It will thus be immaterial on which side of the carrier the lumber is placed. It will always work toward the center from either side.

The sections of the carrier are joined together at their abutting ends by a coupling device 14, similar to the one shown and described in our pending application for Letters Patent of the United States, Serial No. 237,416, filed December 19, 1904. We have shown the rollers of this carrier alternately arranged on each side of the middle rail at a suitable distance for transporting boards or other pieces of lumber. To adapt the device for transporting brick or articles of merchandise, it is only necessary to set the rollers nearer together, the pitch from their inner toward their outer ends and the angle of their shafts with respect to the rails being substantially the same as described.

We do not in this application wish to confine ourselves to any particular construction of the rollers, as various ways may be devised for manufacturing them, the essential features of the invention being the manner of mounting the rollers obliquely with respect to the rails of the carrier and having their inner ends a little higher than their outer ends and causing the lumber or other articles to work to the center of the carrier in moving from one end to the other.

We claim as our invention—

1. A gravity merchandise-carrier comprising side and middle rails and antifriction idle rollers journaled therein, the journals of the inner ends of said rollers being on a different level than journals of their outer ends, substantially as described.

2. In a gravity-carrier, the combination, with the rails, of antifriction-rollers of substantially the same diameter at each end journaled at the sides of the carrier and near the middle thereof, the inner ends of said rollers being above the level of their outer ends.

3. In a gravity-carrier, the combination, with the side and middle rails, of antifriction-rollers journaled in said rails, the journals of the inner ends of said roffers being higher than the journals of their outer ends, for the purpose specified.

4. In a gravity-carrier, the combination, with the side and middle rails, of antifriction-rollers journaled in said rails alternately upon each side of said middle rail, the inner ends of said rollers being journaled in the rear slightly of their outer ends, for the purpose specified.

5. In a gravity-carrier, the combination, with the side and middle rails, of antifriction idle rollers journaled in said rails, the inner ends of said rollers being in the rear slightly of their outer ends, substantially as described.

6. A gravity-carrier composed of portable separable sections, each section having side and middle rails, antifriction-rollers journaled in said rails upon each side of the middle line of the carrier, the inner ends of said rollers being on a higher level than their outer ends and the bearings of said rollers being set at an angle or obliquely with respect to the plane of said rails whereby the articles passing over said rollers will work toward the center of the carrier, substantially as described.

7. In a gravity-carrier, a series of antifriction-rollers journaled in each side of the carrier and near the middle thereof, the inner ends of said rollers being in the rear slightly of their outer ends and on a different plane.

8. In a gravity-carrier, antifriction idle rollers provided on each side of the middle line of the carrier and having their inner ends journaled near said middle line and their outer ends journaled in the sides of the carrier, and the inner ends of said rollers being in the rear slightly of their outer ends whereby merchandise moving over said rollers will work toward the center of the carrier, substantially as described.

9. In a gravity-carrier, idle-rollers provided on each side of the middle line of the carrier and having their inner ends journaled near said middle line and their outer ends journaled in the sides of the carrier, said rollers being of substantially the same diameter at each end and their inner ends being on a different level than their outer ends, substantially as described.

10. In a gravity-carrier, idle rollers arranged on each side of the middle line of the carrier and having their inner ends journaled near said middle line and their outer ends journaled in the sides of the carrier, said rollers being of substantially the same diameter at each end and their inner ends being on a higher level than their outer ends, substantially as described.

11. In a gravity-carrier, idle rollers provided on each side of the middle line of the carrier and having their inner ends journaled near said middle line and their outer ends journaled in the sides of the carrier, the rollers on one side of said middle line alternating in position with those on the other side and the inner ends of said rollers being in the rear

slightly, of their outer ends, whereby articles moving thereover will work toward the center of the carrier.

12. In a gravity-carrier, idle rollers provided on each side of the middle line of the carrier and having their outer ends journaled at the sides of the carrier, the inner ends of said rollers being in the rear slightly of their outer ends whereby articles moving over said rollers will work toward the center of the carrier.

13. In a gravity-carrier, idle rollers arranged on each side of the middle line of the carrier and having their outer ends journaled at the sides of the carrier, said rollers being of substantially the same diameter at each end and their inner ends being on a higher level than their outer ends.

In witness whereof we have hereunto set our hands this 8th day of May, 1905.

RUFUS P. MATHEWS.
CHARLES H. LISTER.

Witnesses:
RICHARD PAUL,
C. MAONAMARA.