No. 842,156. PATENTED JAN. 22, 1907.

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

GRAVITY CARRIER.

APPLICATION FILED NOV. 6, 1905.

2 SHEETS—SHEET 1.

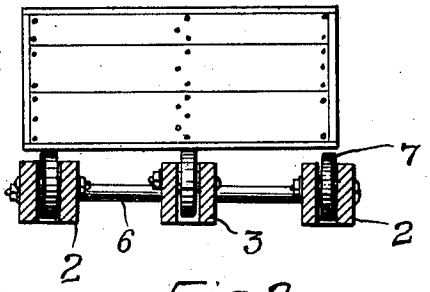


Fig 2.

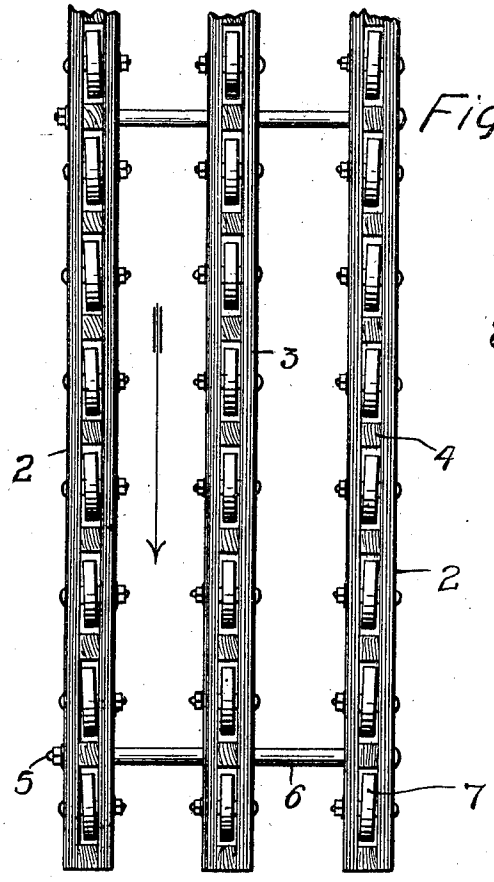


Fig 1.

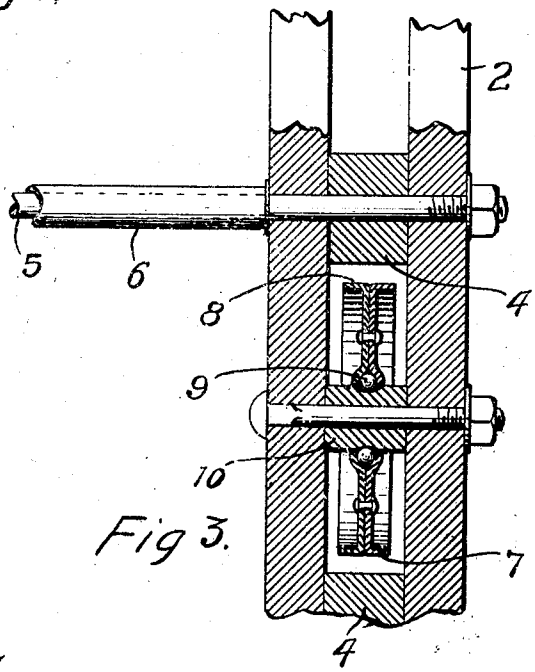


Fig 3.

WITNESSES.

A. M. Walstrom

C. Mannamara

INVENTORS

RUFUS P. MATHEWS.

CHARLES H. LISTER.

BY Paul & Paul

THEIR ATTORNEYS

No. 842,156. PATENTED JAN. 22, 1907.

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

GRAVITY CARRIER.

APPLICATION FILED NOV. 6, 1905.

2 SHEETS—SHEET 2.

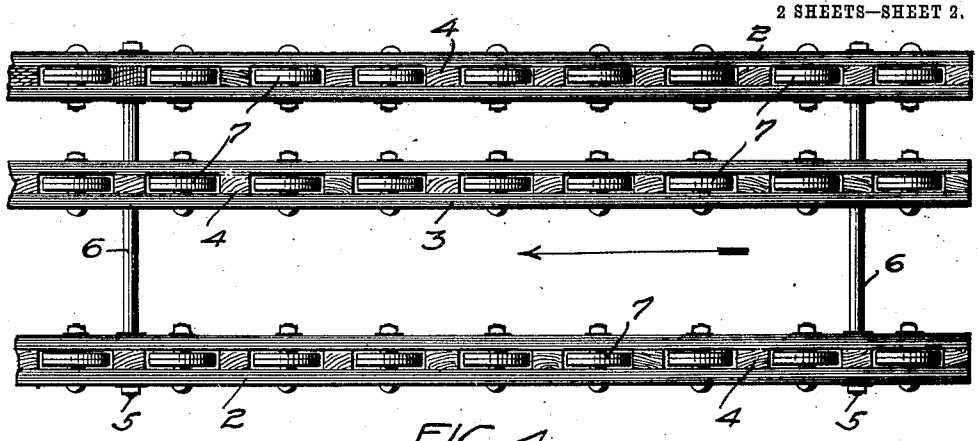


FIG. 4

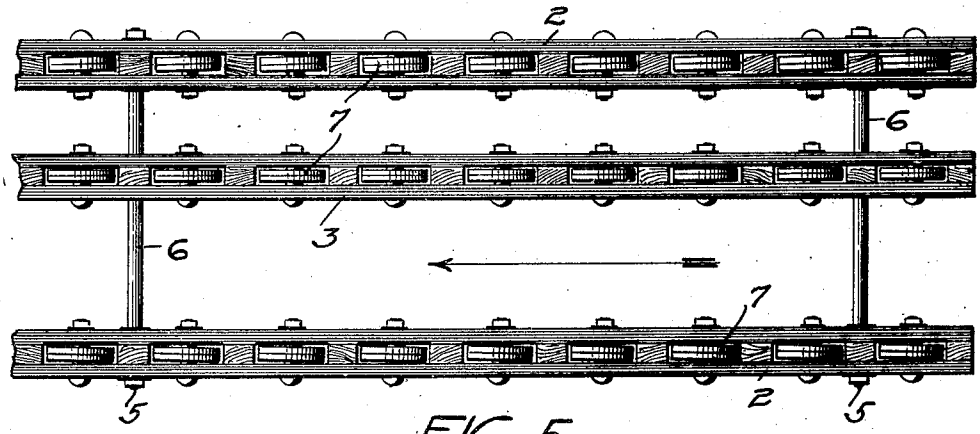


FIG. 5.

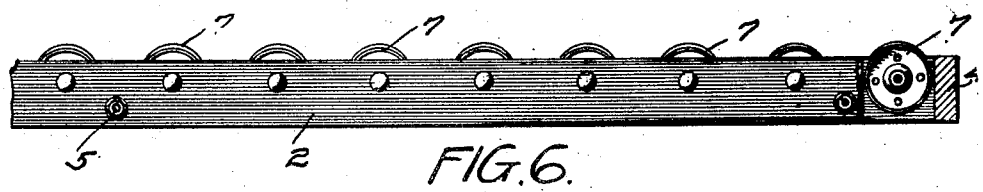
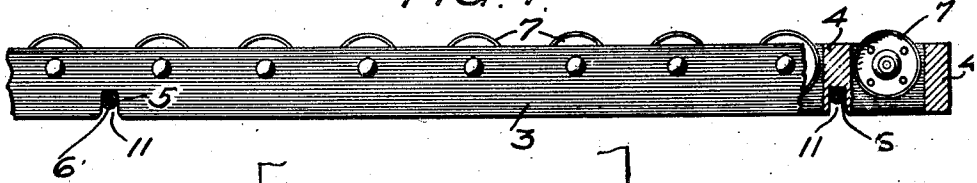


FIG. 6.

FIG. 7.



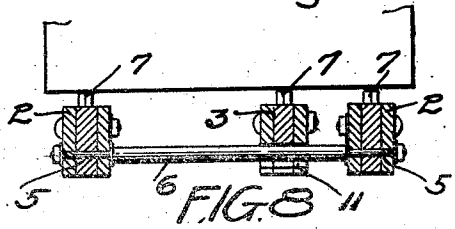


FIG. 8

WITNESSES

M. M. Lucio

C. Marinmark

INVENTORS

RUFUS P. MATHEWS

CHARLES H. LISTER

BY

Paul & Paul

THEIR ATTORNEYS

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. 842,156. Specification of Letters Patent. Patented Jan. 22, 1907.

Application filed November 6, 1905. Serial No. 285,969.

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.

The object of our invention is to provide a carrier for transporting articles of merchandise by gravity without any attention on the part of the operator except at each end of the carrier.

A further object is to provide a carrier of very strong and durable construction made in sections and capable of being easily handled and connected up for use.

A further object is to provide a carrier in which a large percentage of the friction incident to the use of wheels or rollers is eliminated and the device thereby rendered operable on a very low grade.

The invention consists generally in providing a gravity-carrier having a central row of wheels or rollers between two outside rows, the wheels of the outside rows being titled slightly in their bearings to direct the articles passing thereover toward the center of the carrier.

Further, the invention consists in providing a gravity-carrier having side and middle rails, the latter being adjustable toward or from each side to adapt the carrier for use with packages of varying dimensions.

Further, the invention consists in raising the wheels of the center row a little above the level of those on the outside.

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 section of a gravity-carrier. Fig. 2 is a transverse vertical section of the same, showing the position assumed by the package while traveling over the carrier. Fig. 3 is a detail sectional view illustrating the pitch or angle of the wheels of the outer rows with respect to their supports. Fig. 4 is a plan view of a carrier with the middle rail adjustable and the wheels of the side and middle rails in parallel planes. Fig. 5 is a similar view of the carrier with the adjustable middle rail, the wheels of the side rails being tilted or inclined slightly with respect to the plane of the wheels in the middle rail. Fig. 6 is a side elevation partially in section, showing the position of the antifriction-wheels in the rails. Fig. 7 is a similar view showing the manner of mounting the middle rail on its supports, and Fig. 8 is a transverse sectional view showing a package resting upon the antifriction-wheels.

In the drawings, 2 represents the outside rails, and 3 the middle or intermediate rail of the carrier, each consisting of bars arranged in pairs separated by blocks 4 and held in proper parallel relation with one another by rods 5, which pass through all the rails of the carrier from one side to the other. Sleeves 6 are arranged on these rods between the middle and outside rails to prevent them from slipping out of place. When these rods are tightened, the rails will all be held securely together and will form a very strong and durable support for the articles to be transported. Between the bars of each rail we provide antifriction bearing-wheels 7, preferably constructed, as shown in Fig. 3, with a flat bearing-face 8 and ball-bearings 9 on a hub 10.

The wheels of the center rail are mounted squarely therein, with their axes at right angles to the direction of movement of the packages. The hubs of the wheels in the outer rails, however, are tilted slightly, the inner end of each hub being in the rear of its outer end, so that the wheels supported thereon will be inclined slightly toward the center rail, though not as much so as indicated in the drawings, where the tilt or angle of the outer wheels with respect to the inner rail is exaggerated for the purpose of illustrating the invention more clearly. This inclination of the wheels toward the center of the carrier will have the effect of directing the packages toward the center and positively prevent them from working off either side, and if a package is placed near one edge at the receiving end of the carrier it will work toward the center as it moves along thereover and finally before reaching the discharge

end will assume a position substantially central with respect to the three rails. It will not be necessary, therefore, to exercise care in placing the articles on the carrier.

The wheels of the middle row are a little above the level of those at the outside, so that a package will ride on the inside row and but one of the outside ones at a time and will travel either on one side of the center or the other. If it is started on one side and works over the center row a little too far and contacts with the row of wheels on the other side, the inclination of these wheels will tend to direct the package toward the center and the opposite row, and the package may therefore in traveling a long distance over the carrier pass from one side to the other of the center, but will always keep on the carrier and work toward the center row, and this tendency of the package to hug the center of the carrier will continue throughout its length, and there will be no danger of the package working off at the sides, and it will not be necessary for the attendant to give it any attention except to place it on the carrier at the starting-point and remove it at the destination.

In Sheet 2 of the drawings we have shown a modified construction, which consists in providing recesses 11 in the lower edge of the middle rail to receive the cross-bars 6 and prevent the rail from moving lengthwise, but allow it to be slipped along the rod 6, toward either side of the carrier, for the purpose of decreasing the distance between a side and middle rail to adapt the carrier for transporting comparatively small packages.

In Fig. 4 the wheels 7 in the side rails are shown mounted in planes parallel with the plane of the wheels in the middle rail, as in some instances it is not necessary to tilt the outer wheels on their axes to prevent the packages from running off the carrier.

In Fig. 5 the wheels of the side rails are tilted, and in both Figs. 4 and 5 the middle rail is adjusted nearer to one side rail than the other and whenever desired may be entirely removed and the carrier used with the two side rails alone. The carrying-wheels, being mounted in ball-bearings, will revolve very freely, and the friction usually incident to bearings of this kind will be very largely eliminated. The packages placed on the carrier will slide down over the wheels, so easily following the line of least resistance that only a slight drop or inclination will be required for the carrier, and all side rails and guards may be entirely omitted. The low grade on which the carrier is operable renders it more practical from a commercial standpoint, and the elimination of guards or guides renders the apparatus not only more convenient to transport from place to place, but also cheaper to manufacture.

We claim as our invention—

1. A gravity-carrier having outside rails and a middle rail between them, a series of antifriction-wheels mounted in said rails, the wheels of the outside rails being tilted or inclined slightly toward the middle rail, for the purpose specified.

2. A gravity-carrier comprising outside rails and a middle rail between them, antifriction-wheels mounted in said rails, the wheels of the middle rail being above the lever slightly of the wheels of the outer rails, substantially as described.

3. A gravity-carrier comprising side and middle rails and antifriction-wheels mounted therein, the wheels of the side rails being tilted or inclined slightly toward the middle rail, and the wheels of the middle rail being above the level slightly of those on the outside, substantially as described.

4. A gravity-carrier having side and middle rails each composed of parallel bars with spaces between them, and rods connecting the said rails and holding them in parallel relation with one another, antifriction-wheels having bearings in said rails between the pairs of bars respectively, the wheels of the outer rails being tilted or inclined slightly toward the middle rail, for the purpose specified.

5. A gravity-carrier comprising side rails, and rods connecting them, a middle rail having recesses in its lower edge to receive said rods, said middle rail being slidable lengthwise of said rods between said side rails, and a series of narrow-faced antifriction-wheels mounted in said side and middle rails.

6. A gravity-carrier comprising side and middle rails and antifriction bearing-wheels mounted therein, the wheels of said side rails being tilted or inclined slightly in their axes with respect to the wheels of the middle rail, and said middle rail being adjustable toward either side rail, substantially as described.

7. A gravity-carrier having rails and narrow-faced idle wheels mounted therein, said wheels being tilted or inclined on their axes to direct articles passing thereover toward the center of the carrier.

8. A gravity-carrier having rails and narrow-faced antifriction carrying-wheels mounted therein, the bearings of said wheels being below the tops of said rails and the axes of said wheels being tilted or inclined to direct articles passing thereover toward the center of the carrier.

9. A gravity-carrier having side rails and carrying-wheels mounted therein, the wheels of one rail being oppositely applied or inclined on their axes with respect to the corresponding wheels of the other rail, whereby articles passing thereover will be directed toward the center of the carrier.

10. A gravity-carrier having rails and idle

wheels journaled therein, said wheels being tilted or inclined on their axes to direct articles passing thereover toward the center of the carrier, and the wheels of each rail being sufficiently near together to prevent said articles from dropping down between the wheels and contacting with the rails.

In witness whereof we have hereunto set our hands this 26th day of October, 1905.

RUFUS P. MATHEWS.
CHARLES H. LISTER.

Witnesses:
RICHARD PAUL,
C. MACNAMARA.