

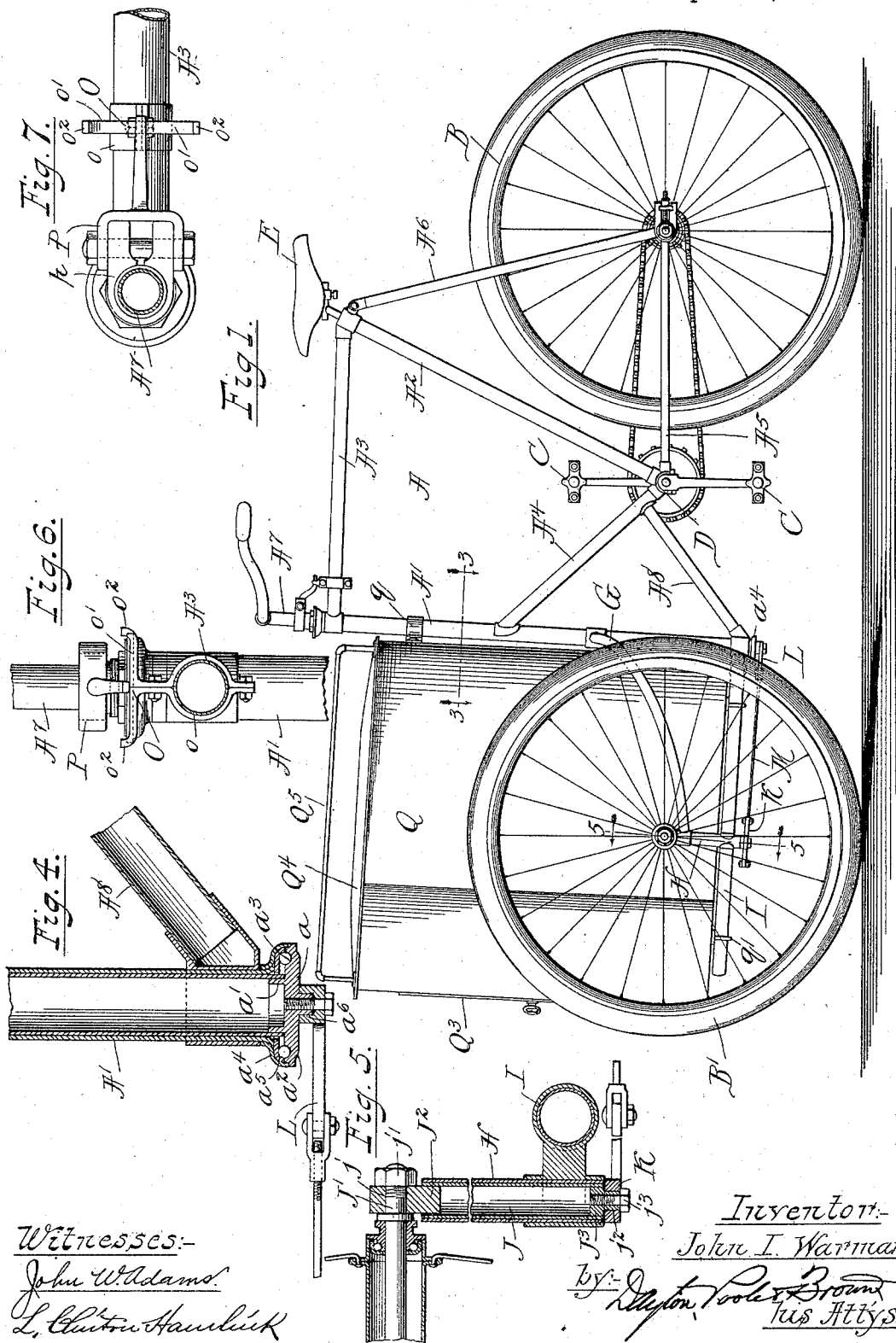
(No Model.)

3 Sheets—Sheet 1.

J. I. WARMAN.
CARRIER VELOCIPEDE.

No. 580,587.

Patented Apr. 13, 1897.



Witnesses:-

John W. Adams.

L. Clinton Hamrick

Inventor:-

John I. Warman

by: Dayton, Pooler & Brown
his Attys.

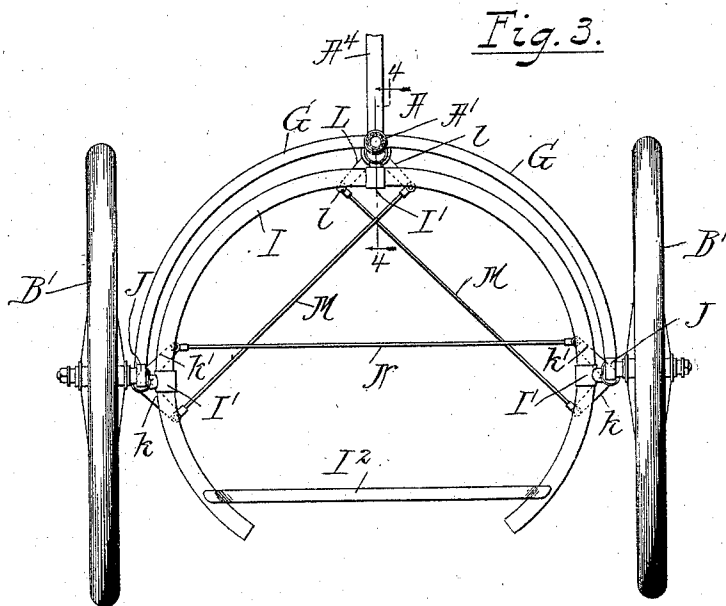
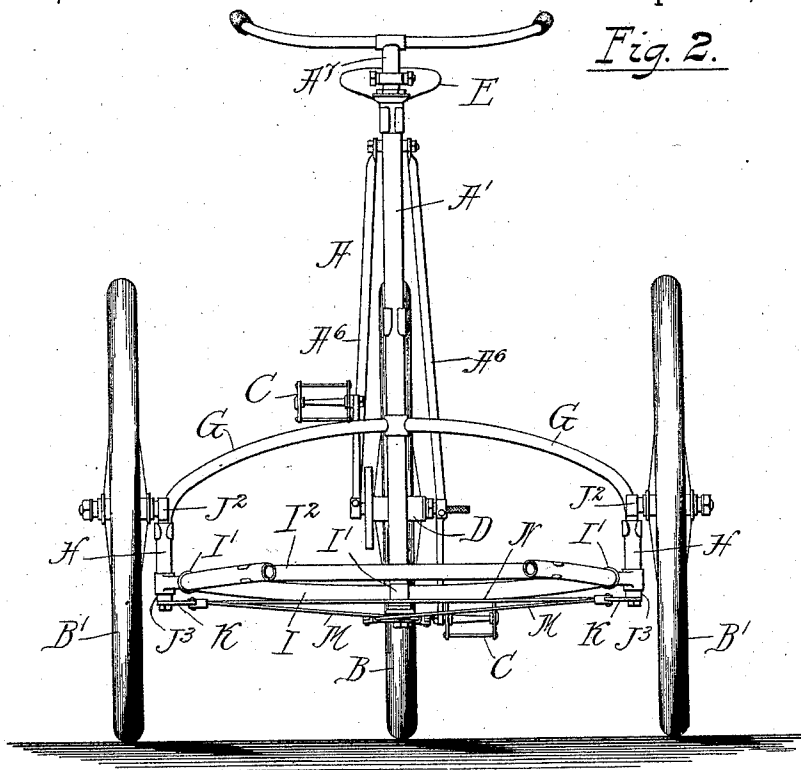
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CARRIER VELOCIPEDÉ.

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Patented Apr. 13, 1897. .



Witnesses:-

John W. Adams.
L. Clinton Hamrick

Inventor:-

John I. Watman

by: Dwight Pooles Ground
Two Flty's

(No Model.)

3 Sheets—Sheet 3.

J. I. WARMAN.
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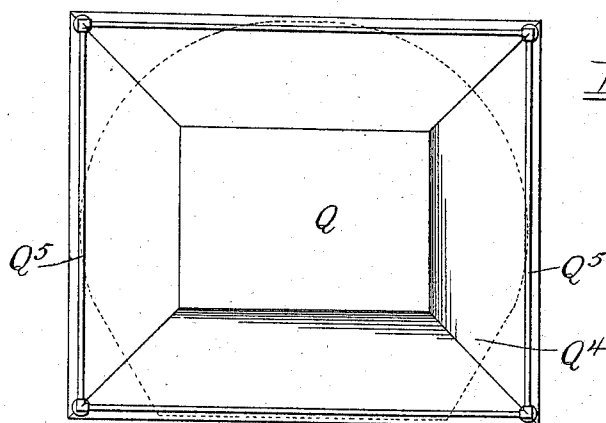


Fig. 8.

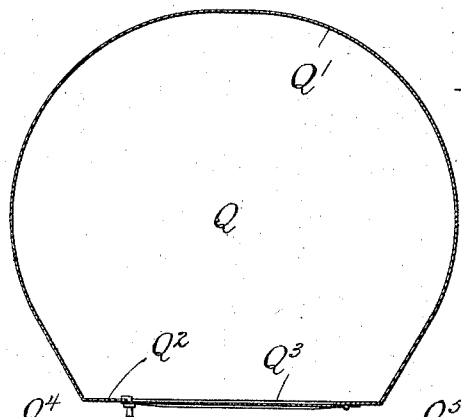


Fig. 9.

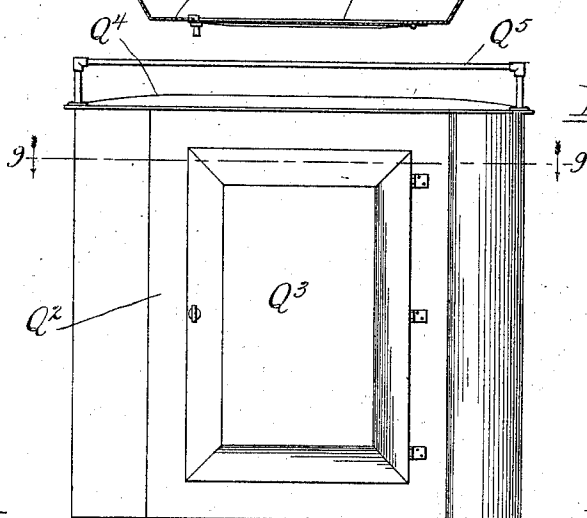


Fig. 10.

Witnesses:
John W. Adams.
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Inventor:
John I. Warman
by: Dayton P. Coles & Son
his Attys

UNITED STATES PATENT OFFICE.

JOHN I. WARMAN, OF CHICAGO, ILLINOIS.

CARRIER-VELOCIPEDÉ.

SPECIFICATION forming part of Letters Patent No. 580,587, dated April 13, 1897.

Application filed October 30, 1895. Serial No. 567,359. (No model.)

To all whom it may concern:

Be it known that I, JOHN I. WARMAN, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Carrier-Velocipedes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in velocipedes, and refers more particularly to an improved carrier-velocipede having two supporting-wheels at the front laterally separated to some distance and provided with a supporting-frame arranged between said two front wheels, whereon a receptacle for commodities will normally be secured, but which may be used for other purposes, as, for instance, an additional seat, or an invalid's chair may be secured thereon.

The object of the invention is to provide a practical and improved construction in vehicles of the class described especially designed for carriers and in which the objects conveyed are at all times directly under the eye of the operator propelling the vehicle; and the invention consists in the matters herein-after referred to, and more particularly pointed out in the appended claims.

The invention will be readily understood, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a front end elevation of the same, the box being removed. Fig. 3 is a top plan view of the front portion of the vehicle with the box removed, the front steering-head being shown in horizontal section, taken on line 3 3 of Fig. 1. Fig. 4 is an axial section of the lower end of the steering-head and connected parts. Fig. 5 is a central vertical sectional view taken on line 5 5 of Fig. 1. Fig. 6 is a detail of an attachment applied to the upper part of the steering-head for limiting the oscillation of the steering-head spindle in each direction, the upper horizontal member of the machine-frame being shown in transverse vertical section. Fig. 7 is a plan view of the parts shown

in Fig. 6. Fig. 8 is a top plan view of a box shown in Fig. 1 removed from the vehicle. Fig. 9 is a horizontal sectional view of the same, taken on line 9 9 of Fig. 10. Fig. 10 is a front elevation of the same.

As shown in said drawings, A designates, as a whole, the frame of the machine, comprising a front steering-head standard A¹, seat-standard A², upper and lower connecting-bars A³ A⁴, respectively, and horizontal and upright pairs of parallel bars A⁵ A⁶ and A⁶ A⁶, respectively, forming the rear fork of the machine, the said parts being constructed and arranged approximately like the ordinary diamond frame now commonly employed in the construction of "safety-bicycles," the principal feature of difference in the general construction of the main frame being that the steering-head standard A¹ is arranged to stand vertical or nearly so and the lower front connecting member correspondingly shortened. The crank-pedals C C are mounted within a crank-carrier D, secured at the lower angle of the diamond frame and connected with the rear driving-wheel B, which is mounted within the said rear fork by means of sprocket-and-chain connections, also similar to those of a safety-bicycle of ordinary construction. The operator's saddle E and steering-handles F are also of common construction and connected with the seat-standard A² and steering-head spindle A⁷ in the usual manner, and need not therefore be more particularly described.

In a machine embodying my invention the two front wheels B' B' are arranged at the front of the machine parallel with each other and at some distance apart, and between said wheels is arranged a horizontal frame which, as hereinbefore stated, is specially designed to support a box or receptacle for carrying packages and the like, but which may be used to support a seat upon which may be carried one or more persons in addition to the operator, who rides the rearsaddle-seat. To this end, therefore, the front steering-head standard A¹ is extended downward to a point somewhat below the level of the wheel-hubs and is made rigid with the diamond frame by means of a brace-bar A⁸, connected with its lower end and extending upwardly and rear-

wardly therefrom to the lower member A^4 of the diamond frame, to which it is connected at a point near the crank-carrier D.

G G designate circular bars connected rigidly with the standard A' at a point somewhat above the level of the front-wheel hubs and arranged to extend oppositely from said standard in laterally and forwardly curved and obliquely downward directions, said circle-bars together constituting approximately a half-circle. At its forward end each bar G carries a short vertical standard H.

I designates a circular carrying bar or frame formed on a radius less than that of the circle-bars G G and arranged concentrically within said circle-bars, but in a lower horizontal plane, as clearly seen in Figs. 1 and 2. The carrying-bar I is securely connected with the lower ends of the vertical standards H H and steering-head standard A' by means of suitable embracing-clips or T-shaped unions $I' I'$, and is preferably constructed to form approximately three-quarters of a circle, the interrupted part of which is at the front side.

I^2 designates a vertical tubular cross-bar arranged to extend transversely between and connect the front ends of the frame I. When thus arranged, said bar I obviously forms a brace which acts to hold the short standards H H rigidly in vertical positions, and at the same time affords a platform-frame upon which any desired object may be carried.

The vertical standards H H are tubular, and within them are mounted suitable spindles J J, of such length as to extend entirely through the said standards and each provided at its upper end with a rigidly-secured wheel-spindle J' , arranged to extend at right angles thereto and adapted to receive the hub of the wheel B' thereon. The details of construction of said spindles J and the wheels which are mounted thereon are immaterial in the broad scope of the invention; but as a preferred construction and in order to save weight the vertical spindles J J are made tubular and provided at each end with solid sections $J^2 J^3$, which are brazed or otherwise secured therein. The end section J^2 is in the present instance apertured transversely, as at j , to receive the end of the spindle J' , which latter is screw-threaded and secured thereon by means of a nut j' . The lower end J^3 of such spindle is provided with a squared portion j^2 , upon which is mounted a bell-crank lever K, the arms $k k'$ of which are of equal length and extend horizontally at right angles to each other. The upper surface of the body of the bell-crank lever at the juncture of the arms forms a bearing-shoulder which rotates in bearing with the lower end of the standard and thus transmits the weight of the front part of the machine to the wheel, said bell-crank lever being secured upon the squared end section j^2 by means of a screw-bolt j^3 , tapped into said end section, as shown clearly in Fig. 5.

The steering-head spindle A^8 is extended

down through the tubular front standard A' and is provided at its lower end with an end cap a , provided with an internal flange a' , which is brazed or otherwise secured within the end of the spindle, and a radially-extending portion a^2 , provided in its upper surface with the lower half of an annular ball-race a^3 , the outer periphery of said part a^2 being arranged to fit within a bell-shaped flange a^4 , formed upon the lower end of the standard A' and forming the upper half of said ball-race a^3 . Preferably, and as herein shown, a bearing ring or washer a^5 is seated within the bell-shaped flange a^4 , which forms the bearing-surface upon which the upper sides of the roller-balls bear.

The cap a is provided centrally upon its lower side with a squared nipple or boss a^6 , upon which is mounted a third bell-crank lever L, constructed and arranged like the levers K K. Said bell-crank levers K K and L are interconnected, so as to maintain the wheels B' B' at all times parallel with each other and at the same time afford means for steering the vehicle as follows: From each forward arm k of the bell-crank levers K a rod or connecting-link M extends rearwardly and diagonally across to the arm l of the bell-crank lever L, which is on the opposite side of the machine, thus bringing said rods M M into crossed relation, while a third connecting rod or link N extends transversely across and connects the two rearmost arms $k' k'$ of the levers K K. Obviously when thus connected the turning of the handle-bar spindle in either direction will operate to turn the wheels B' B' in the same direction, but will maintain them both parallel with each other.

As an additional feature of improvement, which may or may not be used in connection with a tricycle embodying my invention, and which is also equally well adapted for use in bicycles or other velocipedes, I provide a device adapted to limit the oscillation of the handle-bar spindle about its vertical axis in each direction, and to thereby limit the extent to which the front wheels may oscillate upon their vertical axes. Said device may be constructed as follows: O designates a Y-shaped yoke provided at its lower end with a ring-clamp o , whereby it may be clamped rigidly upon the upper horizontal bar A^3 of the machine a short distance in the rear of the handle-bar spindle. The arms $o' o'$ of the yoke are arranged to extend oppositely in horizontal alinement with each other and are each provided with upturned end portions $o^2 o^2$.

P designates an arm, also provided with a ring-clamp p , whereby it may be rigidly secured to the handle-bar at a point immediately above the upper end of the front standard A' , said arm being arranged to extend rearwardly and being curved downwardly at its end, so as to lie between the upper ends of the yoke-arms. Said arm will be so adjusted as to stand in a central position between the yoke-arms when the front and rear

wheels are in parallel relation, and obviously the upturned ends o^2 o^2 will limit the sweep of the arm P in each direction and thus prevent the front wheels from being turned too far. It will be obvious that the details of construction of this attachment may be varied, as well also as its location upon the steering-spindle, it being evident that the device could be applied to the lower end of the steering-spindle shown in the present instance without the exercise of invention.

Next describing a box specially designed to fit upon the supporting-frame of the velocipede, Q designates the box as a whole, having a generally cylindric form, flattened at the front side, as indicated by Q' Q², sectional Fig. 9, said box being conveniently, and as herein shown, made of sheet metal. The diameter of the box is slightly greater than that of the circular frame I, so that it may rest securely thereon while its height may be varied as desired. A hinged door Q³ is provided in the flattened front side of the case, and in order that the top Q⁴ may shed water the latter is made slightly convex or bulging.

In order that additional packages may be carried upon the top of the case, a low railing Q⁵ is extended around the same, said top being preferably, and as shown, made rectangular and the corners thereof arranged to extend over the sides of the box. The box is conveniently secured in position upon the supporting-frame by means of clips q q', attached thereto and which embrace the front standard and supporting-frame, respectively.

A tricycle constructed in accordance with my invention possesses many and important advantages over those constructed as heretofore common. The arrangement whereby two of the wheels are located at the front of the machine and each arranged to oscillate upon a separate axis located in close proximity to the hub of the wheel has the advantage of maintaining the base of the machine always of practically the same width regardless of the direction the wheels be turned, thus preventing the vehicle from being easily overturned and at the same time rendering it less apt to be thrown from its path by one or the other of its wheels coming in contact with an obstruction. Another advantage, due to the fact that the wheels are arranged at the front of the machine, is that the operator can always see just where the said wheels are traveling, and thus by properly guiding the machine can prevent it from encountering many obstructions which it might otherwise strike or from overturning by turning around a corner too rapidly or when riding it along a side-lining place. The general construction of the machine is, moreover, as a whole an exceedingly practical one, combining as it does many of the most desirable features of a bicycle-frame constructed in the most approved form with those of a tricycle adapted to carry commodities or a plurality of persons.

It will be obvious that the details of construction may be varied to some extent without departing from the spirit of the invention or without involving more than ordinary mechanical skill. I do not therefore wish to be limited to the precise details shown herein, except as made the subject of specific claims. For instance, the construction of the rear part of the vehicle might be modified to conform substantially to the construction of an ordinary tricycle, thus making the vehicle a four-wheeled machine.

I claim as my invention—

1. A carrier-velocipede comprising a main frame supporting a centrally-located steering-head spindle and vertically-arranged oscillatory wheel-supporting spindles mounted thereon at laterally opposite and separated points, said several spindles being located in equilateral triangular relation to each other and each provided with a bell-crank lever rigidly connected therewith, a connecting-rod extending from each arm of the steering-head-spindle bell-crank to one arm of each bell-crank of the wheel-supporting spindles, and a third connecting-rod, connecting the other two arms of the wheel-supporting-spindle bell-cranks, said rods being each arranged to cross the other two, substantially as set forth.

2. A carrier-velocipede comprising a main frame embracing a rear wheel-fork, a front steering-head standard, and two divergent forwardly-extending front arms, each carrying at its forward end a vertically-arranged oscillatory spindle, a supporting-wheel mounted within said rear fork, and supporting-wheels connected with each of said vertical spindles, bell-crank levers mounted upon each of said vertical spindles, a handle-bar spindle extending downwardly through the front steering-head standard and provided at its lower end with a bell-crank lever, and a connecting-rod extending from each arm of said last-mentioned bell-crank lever to one of the arms of each bell-crank lever of the vertical spindles, and a third connecting-rod extending between the other two arms of said vertical spindle bell-crank levers, said connecting-rods being arranged in crossed relation, as shown, whereby said front wheels are maintained parallel with each other and oscillatory motion may be communicated to said vertical spindles from the handle-bar spindle, substantially as described.

3. A carrier-velocipede comprising a main frame embracing a centrally-arranged rear wheel-fork, a front steering-head standard, and two divergent forwardly-extending curved front arms each carrying at its forward end a vertically-arranged tubular standard, oscillatory spindles arranged within said tubular standards, a supporting-wheel mounted within said rear fork, and supporting-wheels connected with the upper end of each of said vertical spindles at the outer sides thereof, a circular horizontal supporting-frame arranged

concentrically within said divergent arms and connected rigidly with the lower ends of said tubular standards and with the steering-head standard, bell-crank levers mounted upon the lower end of each of vertical spindles, a handle-bar spindle extending downward through the front steering-head standard and provided at its lower end with a bell-crank lever, and a connecting-rod extending from each of said last-mentioned bell-crank levers to one of the arms on each bell-crank lever of the vertical spindles, and a third connecting-rod extending between the other two arms of said vertical spindle bell-crank levers, handle-bars mounted upon the upper end of the handle-bar spindle, a seat mounted upon said main frame in rear of the handle-bars, crank-pedals mounted in the lower part of the main frame, and sprocket-and-chain connections connecting said crank-pedals with the rear wheel, substantially as set forth.

4. A carrier-velocipede comprising a main frame embracing a centrally-arranged rear wheel-fork, a front steering-head standard, and two divergent forwardly - extending curved front arms each carrying at its forward end a vertically-arranged tubular standard, oscillatory spindles arranged within said tubular standards, a supporting-wheel mounted within said rear fork, and supporting-wheels connected with the upper end of each of said vertical spindles at the outer sides thereof, a circular horizontal supporting-frame arranged concentrically within said divergent arms and connected rigidly with the lower ends of said tubular standards and with the steering-head standard at a point below the point of junction of the divergent arms with the latter, bell-crank levers mounted upon the lower end of each of the vertical

spindles, a handle - bar spindle extending downward through the front steering-head standard and provided at its lower end with a bell-crank lever, and a connecting-rod extending from each of said last - mentioned bell-crank levers to one of the arms of each bell-crank lever of the vertical spindles, and a third connecting-rod extending between the other two arms of said vertical spindle bell-crank levers, handle-bars mounted upon the upper end of handle-bar spindle, a seat mounted upon said main frame in the rear of the handle-bars, crank - pedals mounted in the lower part of the main frame, and sprocket-and-chain connections connecting said crank-pedals with the rear wheel, substantially as set forth.

5. A carrier-velocipede comprising a main diamond frame provided at its front lower angle with divergent forwardly - extending arms and at its rear with a wheel-fork, a supporting-wheel mounted within said rear fork, a supporting-wheel pivotally connected with each of said divergent arms, a commodity-receptacle supported between said arms, means for oscillating said front wheels upon their pivots for steering the vehicle, an operator's seat mounted upon the upper part of the diamond frame, pedals mounted in the lower part thereof, and operative connections connecting said pedals with the rear wheel, substantially as set forth.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 26th day of October, A. D. 1895.

JOHN I. WARMAN.

Witnesses:

ALBERT H. GRAVES,
WILLIAM L. HALL.