(No Model.) 2 Sheets—Sheet 1.

W. W. DE VORE.

VERTICAL ROTARY SWING.

No. 535,362. Patented Mar. 12, 1895.

FIG. 1.

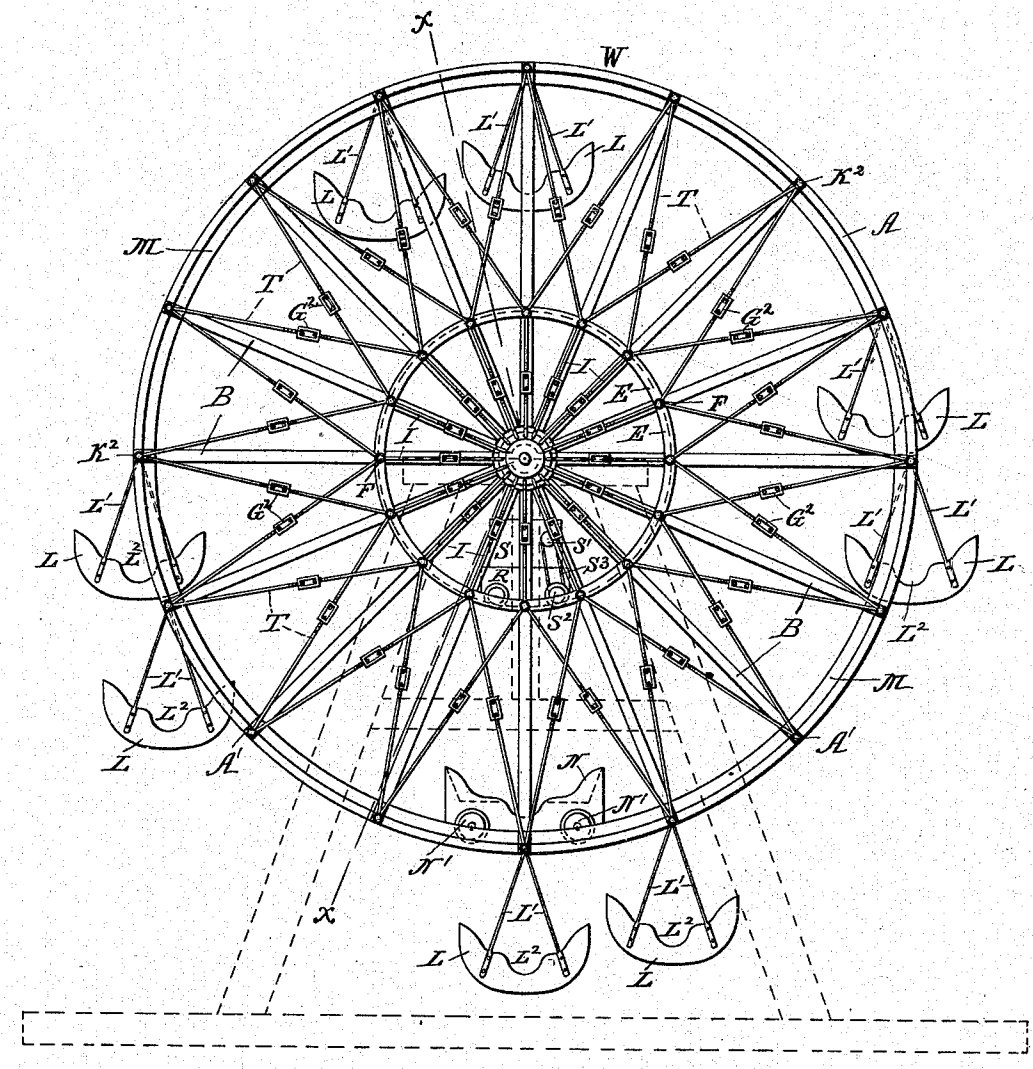
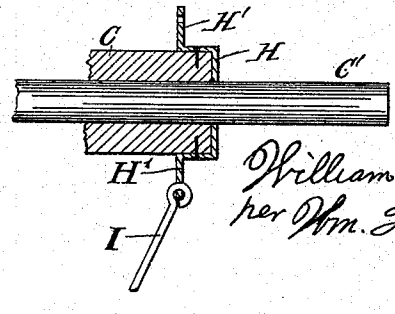


FIG. 5.



Witnesses:

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(No Model.) 2 Sheets—Sheet 2.

W. W. DE VORE.

VERTICAL ROTARY SWING.

No. 535,362. Patented Mar. 12, 1895.

FIG. 2.

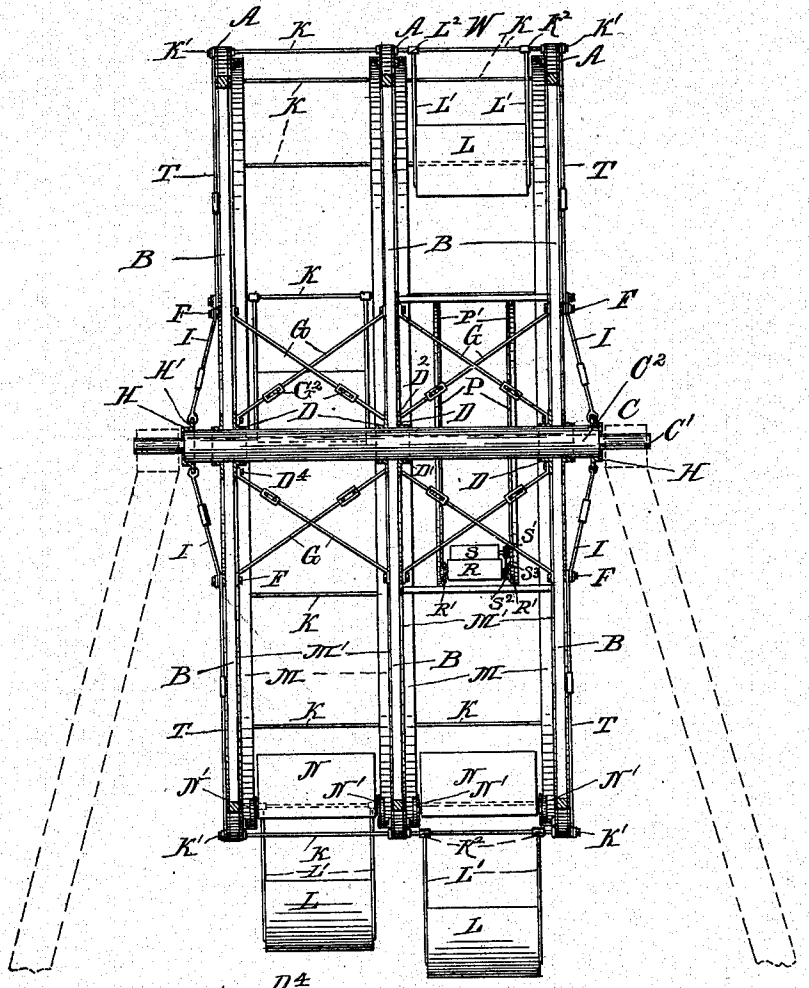


FIG. 3.

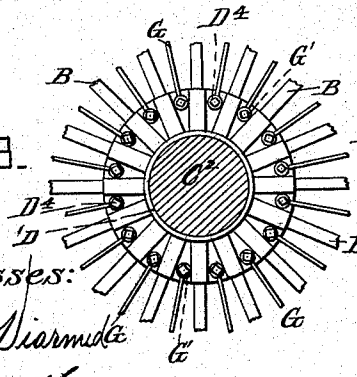
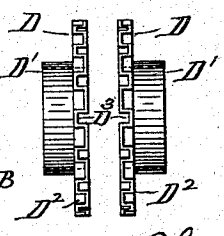


FIG. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM W. DE VORE, OF CINCINNATI, OHIO.

VERTICAL ROTARY SWING.

SPECIFICATION forming part of Letters Patent No. 535,362, dated March 12, 1895.

Application filed November 3, 1892. Serial No. 450,814. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. DE VORE, a citizen of the United States, and a resident of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Vertical Rotary Swings, of which the following is a specification.

The several features of my invention and the various advantages resulting from their use, conjointly or otherwise, will be apparent from the following description and claims.

In the accompanying drawings making a part of this specification, and to which reference is hereby made, Figure 1 is a side elevation of a swing embodying my improvements. Fig. 2 is a transverse section of the same taken at the line *x*, *x*, of Fig. 1. Fig. 3 is an enlarged detail elevation of either side of my improved hub, showing the adjacent portions of the spokes in place. Fig. 4 is an edge elevation of the two complementary parts or halves of said hub. Fig. 5 is an enlarged detail view of the two caps, one of which is located on one end of the axle and the other on the other end thereof.

A is the outer rim or felly of the wheel, and is of metal. It is at intervals provided with sockets A′, each of which receives the outer end of the spoke B. The center or axial part C of the wheel consists of a metallic rod or axle C′ and a wooden portion C^2, through the axial center of which passes the said iron axle C′. Beyond each end of the wooden portion C^2 of the axle the rod C′ projects and these projecting ends of the axle rod C′ constitute journals and respectively rest in bearings supported by a suitable frame, made strong enough to uphold the center. Such a frame is shown by dotted lines in Figs. 1 and 2. Upon this wooden portion C^2 are fitted hubs D. These hubs are made of two corresponding halves, substantially as shown in Fig. 4. The sleeve D′ of the hub is exteriorly provided with a radial flange D^2 which lies at or near the inner edge of the said hub D. This flange is interrupted at intervals by openings for the sockets D^3, which rise from the sleeve D′ and are connected with the flange D^2 substantially as shown. A socket D^3 will accommodate one-half of the width of the spoke. Two halves of the hub are placed face to face upon the axle C, and then with sockets D^3 respectively opposite each other and a spoke B inserted in each of the double sockets formed by two of the sockets D^3, which double socket is shown in Fig. 4. The two halves of the hub are now brought closely together by means of bolts D^4 extending through the adjacent portions of the radial flanges D^2, D^2, and between the successive double sockets, substantially as shown in Fig. 4. By the action of these bolts D^4, the spokes are tightly embraced between the opposing halves of the hub and thereby securely held in place. For the purpose of further strengthening these wheels or discal frames, a metal ring E of considerably less diameter than the rim or felly A and concentric with the axle C, is secured to the spokes preferably by bolts F.

The entire wheel or discal frame I will denominate by the letter W. In so much as these several wheels should be braced laterally, I provide the cross brace G. I make use of the bolts D^4 of the hub as the means for securing the inner end of the brace to the hub, the brace being provided with a suitable eye G′, through which the bolt D^4 passes as well as through the radial flanges of the hub. The other or outer end of each of the braces G is preferably secured by a bolt F to the discal wheel W at the point where the metallic ring E crosses a spoke. The bolt F is utilized for two purposes, namely, for holding the metallic ring in place upon the wheel and securing the brace G to this ring and to the spoke, it being understood that the braces G extend from the hub of one wheel upward and across to the ring E of the adjacent wheel.

In each of the braces G there is a joint or take-up consisting of a right and left hand nut G^2 containing right and left hand screw threads, which will respectively engage corresponding screw threads upon the adjacent parts or sections of the brace. Thus each brace G can be lengthened or shortened in the usual manner, namely, by rotating the nut G^2 in one or the other direction. By these means the adjacent discal frames are not only braced intermediately but can be so adjusted as to be always in radial planes parallel to one another.

On the end of the wooden portion C^2 of the

axle C is fitted a cap H, whose inner or free edge is provided with an outwardly extending flange H′, and to this is bolted or hooked the brace I, the upper end of this brace being secured by bolts F to the wheel W. This wheel to which the brace is bolted is located on axle C at some distance from the cap so that each of the braces I incline somewhat substantially as shown in Fig. 2 of the drawings. Each of the braces I is provided with a nut G^2 and this nut enables the brace I to be lengthened or shortened as desired and thus assists in keeping the discal frame W in a plane at right angles to axle C and also parallel to the plane in which the adjacent wheel is located. Where there are two wheels, each will be provided with a set of braces I as described, but where there are more wheels, then the outer wheels will be provided with these braces, substantially as shown.

At intervals, the rims A of adjacent wheels are connected by rods K, secured firmly in position by nuts K′, one of which is located at each side of the rim. At the outer or peripheral portion of the wheel are suspended at desired and convenient intervals, baskets or boxes L. These boxes L may be provided with any number of seats. In the present instance there are two seats, located at opposite sides of the boxes. An opening L^2 at the center of the boxes allows the passengers easy ingress or egress. The preferred mode of suspending these baskets consists in hanging them by means of rods L′ to the cross rods K, the rods L′ at each side of the basket being at their upper ends united to a sleeve K^2, embracing the rod K.

Within the opposing discal frames is a circular track, preferably consisting of two rails M, provided with an angular flange M′ which latter is bolted to its adjacent discal frame. A car N is supported upon at least four flanged wheels N′, two at each side, each running upon their respective tracks after the manner of the ordinary railroad. The car is provided with seats. In the present illustrative instance, the car contains two such seats, one located at one end and the other at the other end of the car, indicated by dotted lines.

Between the discal frames and nearer to the axial center of the wheel is a second railroad track P, provided with rails P′, on which runs a car R, having flanged wheels R′ running upon their respective adjacent rails P′. In this car R is an organ S, indicated conventionally in the drawings. This organ is operated automatically and the preferred mode of operating it consists in locating upon one of the axles of the wheels R′ a pulley S^3, so connected to one of the rails P′ either directly or intermediately as to rotate with said wheel. The organ is provided with a pulley S′ and rotary motion of pulley S^2 is conveyed to pulley S′ by means of bands S^3. The pulley S^2 is arranged by any suitable mechanism to operate the organ.

In operation, as the vertical rotary swing is turned, the baskets L will hang suspended, substantially as shown in Fig. 1. The car N will at all times, by the force of gravity, keep its place at or near the lower portion of the circular railroad track M on which it runs, and the car R will likewise at the same time, operate the organ.

Of course one or more of the various vehicles may be employed without the others, but I prefer to employ them all in the swing. The swing may be single, or double, or triple, &c. In the present illustrative instance, I have shown the swing to be double and have utilized the central discal frame W as a side for both swings, thereby economizing in the use of an extra discal frame and its obvious mechanical accompaniments. Duplication or triplication of the swing not only increases the number of carriages but adds to the pleasurable emotions of the swing arising from the presence of numbers.

For the purpose of further strengthening the wheel, I provide braces T, which extend from the metallic ring E or a suitable inner support, connected to the spokes, outwardly to the periphery of the wheel to which they are secured, and these braces are preferably provided with means for lengthening and shortening them. In the present illustrative instance, the right and left hand nut G^2 is employed for this purpose, between the adjacent sections of the brace.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. In a rotary swing, composed of parallel wheels W having spokes B, and hub composed of symmetrical halves D each provided with flange D^2 and with sockets D^3 for the reception of the spokes, the cross braces G, provided with means for lengthening and shortening them, one end of each brace being connected to the hub D, D, by bolt D^4, at a point on the flange D^2 between the sockets, substantially as and for the purposes specified.

2. In a rotary swing, composed of parallel wheels W having spokes B, and hub composed of symmetrical halves D each provided with flange D^2 and with sockets D^3 for the reception of the spokes, and the cross braces G, provided with means for lengthening and shortening them, one end of each brace being connected to the hub D, D, by bolt D^4, at a point on the flange D^2 between the sockets, the exterior inclined brace rods I, whose upper ends are fastened to the wheel and whose lower ends are connected to the axle, the rods being provided with means for lengthening and shortening them, substantially as and for the purposes specified.

3. In a rotary swing, the circular railroad P′, located between the wheels W and carrying a car R whose wheels R′ engage the said railroad, an organ S located in the said car, and means substantially as described for enabling the rotation of the swing to operate the organ, substantially as and for the purposes specified.

4. In a rotary swing, the circular railroad P′, located between the wheels W, and carrying a car R whose wheels R′ engage the said railroad, an organ S located in the said car, and means substantially as described intermediate between the organ and the car axles for enabling the rotation of the swing to operate the organ as said swing and wheels revolve, substantially as and for the purposes specified.

5. In a rotary swing, the circular railroad P′, located between the wheels W and carrying a car R whose wheels R′ engage the said railroad, an organ S located in the said car, and pulley S′ connected to the said organ, and pulley S^2 rotated by the wheel R′ and pulley band S^3, substantially as and for the purposes specified.

6. In a rotary swing, the combination of the suspended baskets L, and railroad M and car N and railroad P′ carrying the car R, provided with organ, and means for enabling the rotation of the rotary swing to operate the organ, substantially as and for the purposes specified.

W. W. DE VORE.

Attest:
C. J. McDIARMID,
K. SMITH.