

(No Model.)

2 Sheets—Sheet 1.

E. I. BRANNAN.  
CIRCLE CYCLE.

No. 589,408.

Patented Sept. 7, 1897.

Fig. 1.

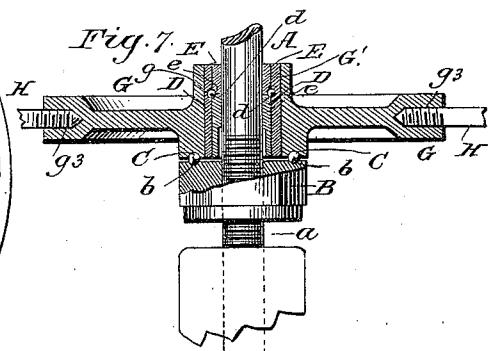
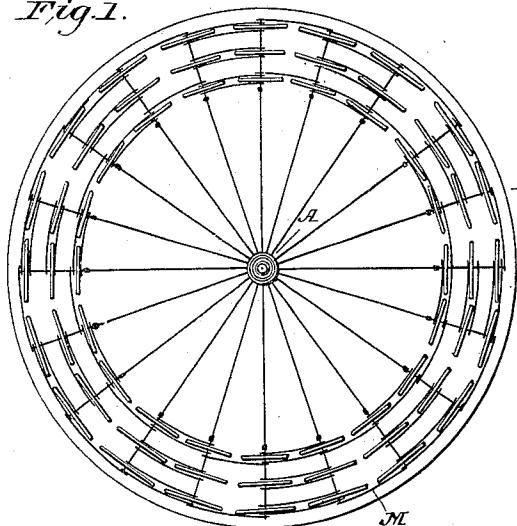


Fig. 23.

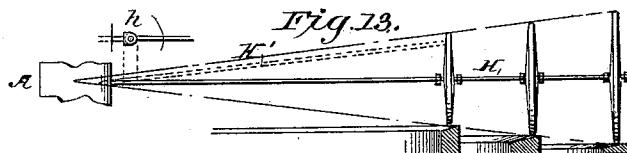
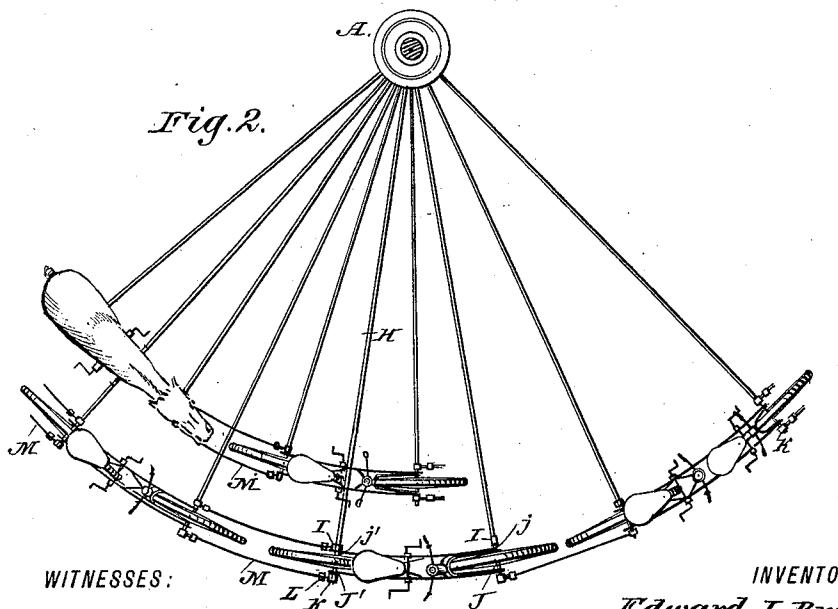


Fig. 2.



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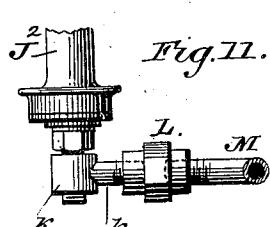
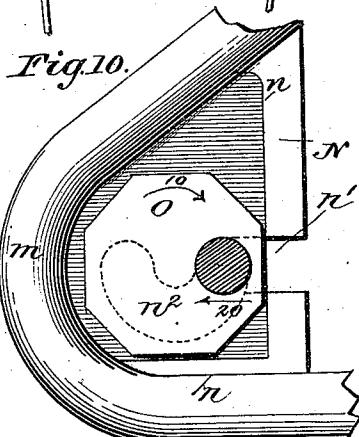
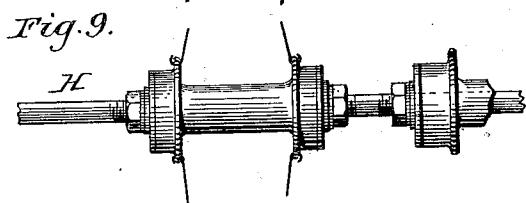
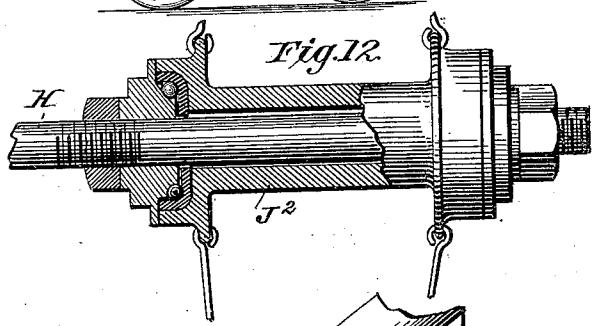
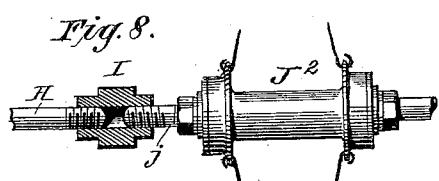
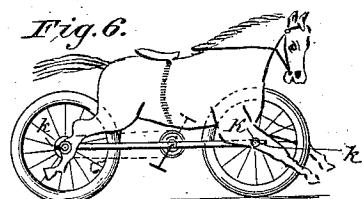
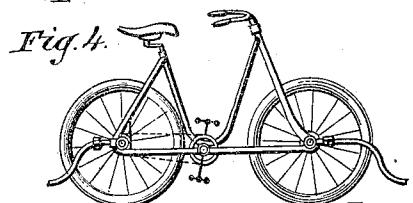
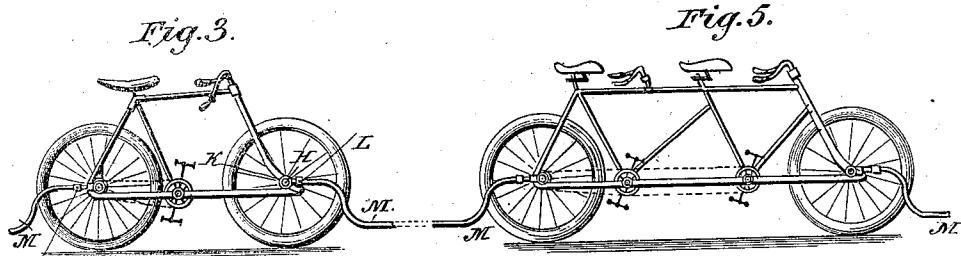
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# UNITED STATES PATENT OFFICE.

EDWARD I. BRANNAN, OF RICHMOND, VIRGINIA.

## CIRCLE-CYCLE.

SPECIFICATION forming part of Letters Patent No. 589,408, dated September 7, 1897.

Application filed June 3, 1896. Serial No. 594,138. (No model.)

To all whom it may concern:

Be it known that I, EDWARD I. BRANNAN, residing at Richmond, in the county of Henrico and State of Virginia, have invented a new and Improved Circle-Cycle, of which the following is a specification.

My invention, which relates to that class of apparatus which includes roundabout-flying horses and the like, more especially refers to improvements on an apparatus patented by me February 5, 1895, No. 533,838.

My present invention primarily has for its object to simplify the construction of my former invention, whereby the same may be economically manufactured and the parts quickly assembled or disconnected when desired.

My invention also has for its object to provide an apparatus of the kind stated having the radiating or connecting arms so arranged that substantially the ordinary straight or drop bicycle-frame can be detachably secured thereto, so that the rider will have the full advantage and benefit of the pleasure and sensation of regular bicycle-riding.

This invention also seeks to provide a simplified means of connecting the several bicycle-frames to link them into a continuous circular framework and also to easily and quickly take up the slack or wear on the drive-chains.

With other objects in view, which will hereinafter appear, my invention consists in the peculiar combination and arrangement of parts, which will be first described in detail and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a diagrammatic plan view of my improved apparatus. Fig. 2 is a plan view of a portion of the apparatus, four sections being shown to illustrate how various forms of bicycle or other carrier frames may be employed. Figs. 3, 4, 5, and 6 are side elevations illustrating, respectively, the application of the gentlemen's, ladies', and tandem wheels, and a carrier or riding frame in the shape of an animal. Fig. 7 is a section of a part of the turn-post and the means of connecting the radial arms. Fig. 8 is a detail view illustrating the manner of connecting the bicycle-wheel axles to the radial arms. Fig. 9 illus-

trates one of the radial arms as forming a continuous member to receive the wheels. Fig. 10 is a detail view illustrating the chain-tightening device. Fig. 11 illustrates the manner of connecting the several frame or carrier sections hereinafter referred to. Fig. 12 is a section of one of the wheel-hubs and shaft. Fig. 13 is a detail side elevation of the apparatus.

My improvement comprises a number of sections which may be in the nature of an ordinary bicycle-frame or a carrier-frame having animal or other shapes, which sections are joined to a central or turn post by means of radial arms.

Referring now to the drawings by letters of reference, A indicates the central or turn post, the construction of which is most clearly shown in Fig. 7, by reference to which it will be seen that such post has a threaded portion a, on which is secured for vertical adjustment a bearing-collar B, the outer face of which may be made non-circular to receive a wrench for turning, while the upper or bearing face is grooved, as at b, to receive bearing-balls C.

Upon the upper end of the post A are fitted bushings D and E, having ball-bearing grooves d and e at their meeting ends to receive the balls F, which are held in place by the bearing-lining G', fixedly secured to the hub g of the turn plate or wheel G, which hub g has a groove g' for the ball-bearings, as shown.

The outer or peripheral edge of the wheel G has a series of threaded sockets g<sup>3</sup>, in which the inner threaded ends of the radial arms or rods H are screwed. These arms H, a pair of which is employed for each section—that is, each bicycle frame or carriage has a pair of such arms connected therewith—are preferably connected by means of union-couplings I with the threaded extensions j' of the shafts J and J' of the front and rear wheels, such shafts having suitable ball-bearing connections with the hubs J<sup>2</sup> of the said wheels, as clearly shown in Fig. 12. While I prefer to connect the said arms H with the wheel-shafts in the manner above described and shown in Fig. 12, it is manifest the union-coupling members may be dispensed with and such arms H made of a suitable length to pass through the hubs of the several wheels, held in the same radial line, as shown in Fig. 9. In

the latter construction suitable stop or adjusting collars are provided to hold the wheels to their desired position on the said arms H.

It will be noticed by reference to the drawings that to each arm H is connected a plurality of bicycle or carrier frames, three being shown, such frames having their wheels of a proportionately-decreased size, the outer wheels having the largest diameter and the inner ones the smallest, the decline being indicated by the broken line in Fig. 13, such arrangement being provided to accommodate different-sized riders and yet provide for uniform rotation of all the wheels at each complete rotation about the turn-post, it being, however, obvious that, if desired, all the wheels in each radial series may be of the same diameter and have a trackway having a uniform horizontal plane.

If desired, a central arm or arms H' (see dotted lines in Fig. 13) may be provided to engage the carrier-frames and incline them inward from the central post, so as to form a suitable stay to prevent the upper parts of the carrier-frame springing outward from centrifugal force.

By connecting the arms H to the turn-post wheel G in the manner shown and providing means whereby such wheel can be set up or down on the post it is obvious that by providing the said arms H with a knuckle-joint h (see Fig. 13) such vertical adjustment of the wheel G will cause the said arms H to assume a horizontal or inclined position and in consequence cause the carrier-frames to incline correspondingly inward to overcome the outward or tangential motion.

Instead of providing the arms with a joint h and making the collar and wheel G vertically movable such parts may be made to remain in a fixed horizontal plane and the arms H made radially adjustable to incline the carrier-frames inward at the top.

The wheels of the several carrier-frames may have the ordinary pneumatic or other yielding tire and made to engage a solid trackway. When such wheels have a solid tire, I prefer to provide a trackway having a yielding bearing-face, as shown in my other patent.

The ends of the shafts of the several wheels in each carriage-frame are threaded and projected to receive the coupling K, which have threaded extensions k to receive the right and left threaded union-couplings L, which also connect with the ends of the tubular drop-frames M, which connect the several wheel-sections, as clearly shown, and form all the corner or wheel sections into a continuous circular wheeled carriage.

As the several bicycle or carrier frames have the ordinary chain and drive-gear mechanism, and as I prefer on account of strength and economy of construction to make the rear portion M of the bicycle-frame in which the rear or drive wheel is journaled of a continuous tubing, bent as shown at m, I provide a

simple chain-tightening means the construction of which is clearly shown in Fig. 10, by reference to which it will be seen that in the crotch of the frame-section M is disposed a supplemental frame member N, which may be brazed or otherwise secured to the tubing, which plate has a flat bearing-face, the front and lower ends of which terminate in a turned-up edge or stop portion n n, which end is also formed with a slotway n' for the insertion of the wheeled shaft, which slot n' merges with a horizontally-disposed curved (preferably semicircular) slot n<sup>2</sup>.

O indicates a tightening-washer, which has a single aperture o disposed eccentrically therein, such washer having a number of flat bearing-faces, such washer in practice being preferably of octagonal shape.

It will be readily understood by reference to Fig. 10 that by turning the washer in the direction indicated by arrow 10 the wheel-shaft will be forced rearward (see arrow 20) in the slot n<sup>2</sup> and held to such position by the edges of the washer engaging the stop portion n n.

While I have not shown it in the drawings, it is manifest that supplemental seats may be supported on the frame portions between the sections, being suitably braced to firmly stay the several sections together, which may be used by inexperienced riders. Furthermore, if desired the horizontal frame-bars R of the bicycle-frames may also be extended forward and connect with the front fork to add rigidity to the framing.

It is manifest that other drive-gear mechanism than chain and gear devices may be used for applying power.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an apparatus as described, the combination with the trackway, and the wheeled carrier-frames, of the turn-post, having a vertically-adjustable turn-plate or wheel and the radial arms connected at the outer ends to the carrier-frames and at the inner to the turn-plate substantially as shown and described.

2. The combination with the trackway and the turn-post, said post having a vertically-adjustable collar, and a turn-plate or wheel held thereon, of the wheeled carrier-frames, having their wheel-shafts extended the radial arms detachably connected at their inner ends to the turn-plate and coupling devices for joining their outer ends with the wheel-shafts all arranged substantially as shown and for the purposes described.

3. In an apparatus as described, the combination with the turn-post, the radial arms and the wheeled carriages, having the outer ends of the wheel-shafts extended and threaded at each side of the wheels, of the drop-frame connections having their ends threaded the coupling devices secured to the projecting ends of the wheel-shafts and disposed

longitudinally of the carrier-frames and the union members for joining the coupling devices with the ends of the connecting-frames all arranged substantially as shown and for the purposes described.

4. In an apparatus as described, the combination with the bicycle-framing, having a slotted bearing member for the rear wheel-axle, said slotted member having a horizontally-disposed curved section, said member having stop portions, of the wheel-axle, and the non-circular washer having its opening arranged eccentric and its edges adapted to engage the stop portions of the frame all arranged substantially as shown and for the purposes described.

5. In an apparatus of the class described, the combination of a turn-post, carrier-frames radial arms connecting the frames

with the post and capable of vertical adjustment on the latter, and the stay-rods extending from the post to the frames and provided at their inner ends with knuckle-joints, substantially as described.

6. In an apparatus of the class described, the combination of the threaded turn-post, the vertically-adjustable collar mounted thereon, the turn-plate supported by the collar, the ball-bearings arranged below the post and the plate and between the latter and the collar, the carrier-frames, and the connections between the same and the plate, substantially as described.

EDWARD I. BRANNAN.

Witnesses:

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J. EDW. LUCKETT.