Nov. 20, 1923. 1,474,531

C. B. KIRSCHBAUM

FOLDABLE VELOCIPEDE

Filed Oct. 16, 1922

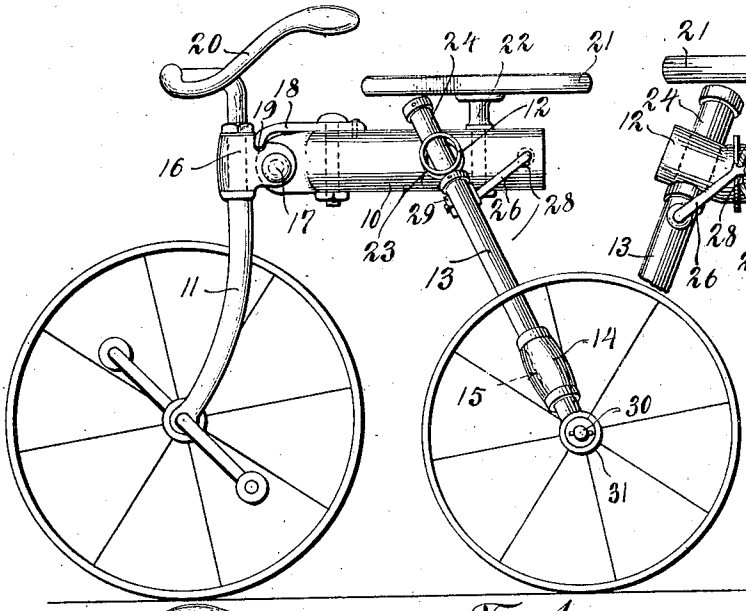


Fig. 1

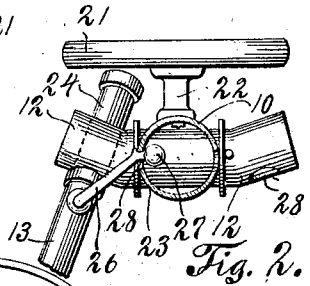


Fig. 2.

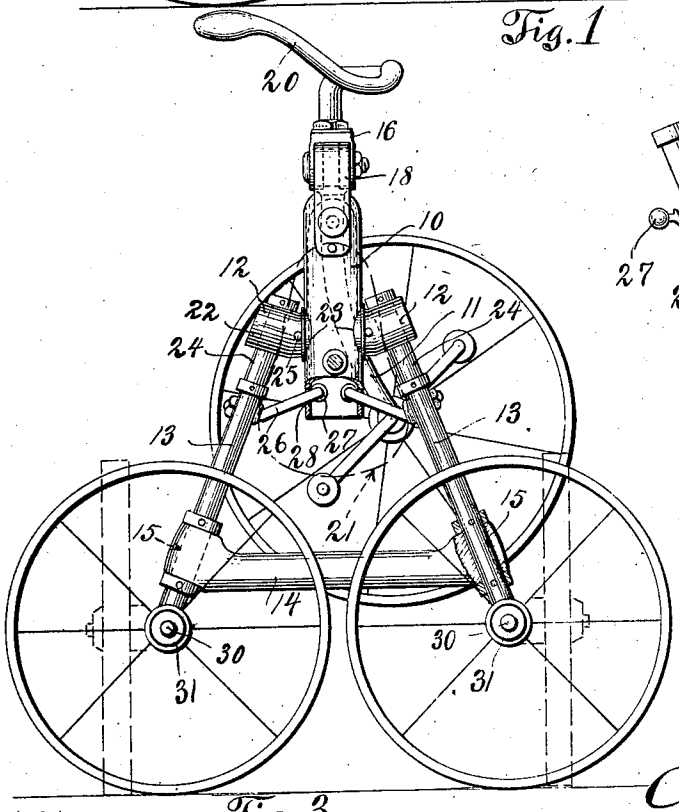


Fig. 3.

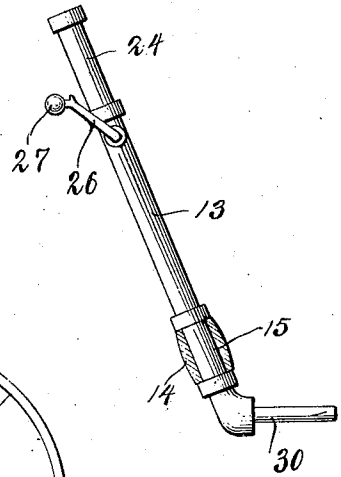


Fig. 4.

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UNITED STATES PATENT OFFICE.

CHARLES B. KIRSCHBAUM, OF BROOKLYN, NEW YORK.

FOLDABLE VELOCIPEDE.

Application filed October 16, 1922. Serial No. 594,716.

To all whom it may concern:

Be it known that I, CHARLES B. KIRSCHBAUM, a citizen of the United States, residing at New York city, borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Foldable Velocipedes, of which the following is a specification.

This invention relates to toy or pleasure vehicles such as tricyles or velocipedes and has particular reference to a device or machine of this character that is calculated to fold or collapse so as to occupy very much less space than when in normal running position.

Among the objects of the invention therefore is to provide a tricycle or velocipede having a frame, the several parts of which are so articulated together as to permit them to be moved relatively so as to occupy practically the same plane.

Another object of the invention is to provide such connections between certain of the wheels and the frame members upon which they are journaled as to enable the wheels to be turned with respect to the frame so as to lie in approximately the same plane, and as a result of a single continuous movement.

A still further object of the invention is to provide a folding velocipede having a frame including relatively movable parts, the rear wheels of the vehicle being journaled on the frame and the construction being such that when certain of the parts of the frame are swung into the plane of other parts thereof said rear wheels will be turned automatically so as to occupy the same plane, a plane coincident with or closely parallel to the then plane of the frame.

With the foregoing and other objects in view the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed or suggested herein, still for the purpose of illustrating a practical embodiment thereof reference is had to the accompanying drawings, in which like reference characters designate the same parts in the several views, and in which—

Figure 1 is a side elevation of a preferred form of the invention in running position.

Fig. 2 is a partial rear elevation of the collapsible or foldable frame.

Fig. 3 is a rear elevation of the device folded and with certain parts in section to better indicate the construction.

Fig. 4 is a detail view of one of the rear standards.

Referring now more specifically to the drawings I indicate a frame comprising a substantially horizontal rib or seat support 10, a front fork 11, a cross head 12, and a pair of rear standards 13. The frame also includes a horizontal brace 14 in which the rear standards are journaled near their lower ends at 15, said brace serving to hold the lower ends of the standards at a predetermined fixed distance apart permanently but with respect to which brace the standards are adapted for rotation around their own axes through about 90°.

The front fork 11 is journaled in a bracket 16 connected through a horizontal pivot 17 with the front end of the rib 10, and the bracket and rib are held in normal operative position by means of any suitable knuckle or catch 18 fixed to the rib and having a nose portion snapped into a notch 19 formed in the bracket. The pivot 17 indicates the point of articulation or joint between the bracket and the rib, and the catch 18 prevents the breaking down of this joint below the normal level of the rib while the device is in operation. The joint however is free to bend or buckle upward, making it possible for the bracket to fold relatively backward or with the fork toward the bottom surface of the rib. This action will result from a lift upward upon the handle bars 20 connected to the top of the front fork.

Any suitable saddle or seat 21 is connected as by means of a stem 22 to the rib 10 and for its usual purpose.

The cross head 12 is shown projected substantially horizontally through a bearing hole 23 formed in the rib 10, and the upper ends of the standards 13 are projected through the ends of the cross head, whereby the ends of the cross head serve as bearings for the upper end portions 24 of said standards. It will thus be seen that while the front portion of the frame is being elevated the rib 10 will swing sufficiently far around the axis of the cross head to come into about the plane of the standards 13. The rib is

shown as made of tubular material, as is also the cross head. The cross head may be prevented from endwise movement along its bearing 23 by any suitable means, such for example as cotter pins 25.

Attached to each of the standards 13 is an arm 26 serving the double purpose of a brace for holding the parts in running position and also as a crank for causing the positive rotation of the standards in their bearings at the ends of the cross head coincident with the folding action and resulting directly from the upward lift on the front end of the frame. The end of each of the arms remote from the standard is connected in any suitable manner with the rear portion of the rib 10, as by means of a headed end 27 engaged into a hole or slot 28 formed in the side of the rib. It follows that when the rear end of the rib swings downward as a result of the upward swing of the front end of the rib, the headed ends 27 of the arms are caused to swing downward, but since the standards to which the arms are fixed at 29 are journaled for rotation in the ends of the cross head, the turning moment of the arms with respect to the axis of the cross head in the rib 10, causes the standards 13 to turn in their bearings around their own axes in the ends of the cross head.

The lower end of each standard carries a horizontal trunnion 30 upon which a rear wheel 31 is journaled and secured by any suitable or conventional means. Hence while the trunnions 30 of the two rear wheels are normally projected outward from each other and with their axes coincident while in running position, the swinging of the standards around toward each other through 90° as in the folding action, will cause the trunnions to swing upward into a parallel relation to each other and thus the two wheels 31 will be brought into about the same plane and parallel to the brace 14. The folding action will be completed simply by swinging the handle bars and front fork 11 through about 90° to the bracket 16, bringing the front wheel close against the front of the rear standards and somewhat elevated above the bottoms of the rear wheels according to the length of the rib 10 between the axis of the cross head and the pivot 17.

I claim:

1. In a foldable vehicle of the class set forth, a seat support, a cross head extending transversely thereof, a pair of rear standards pivoted in said cross head, the seat support being movable around the axis of the cross head into the plane of the standards, connections between the seat support and the standards to cause rotation of the latter coincident with the swinging of the seat support, and wheels journaled upon the standards and movable from parallel planes into approximately the same plane coincident with the turning of the standards around their connections with the cross head.

2. In a foldable frame for vehicles, the combination of a seat support, a cross head journaled transversely therein, a pair of rear standards journaled in the ends of the cross head, the seat support being movable around the axis of the cross head into the plane of the standards, and connections between the seat support and the standards to cause the rotation of the latter in the ends of the cross head while the seat support is swinging as aforesaid.

3. A device as set forth in claim 2 in which the connections between the seat support and the standards comprise a rigid arm connected to each standard and having pivotal engagement in the rear end of the seat support.

4. A device as set forth in claim 2 in which the connections between the seat support and the standards comprise a rigid arm for each standard, said arm having rigid connection at one end with its standard and having headed pivotal connection at its other end with the seat support.

5. A device as set forth in claim 2 in which the cross head is tubular and the upper ends of the standards are slidable along their own axes through the cross head as well as being rotatable therein.

6. In a foldable vehicle, the combination with a rib, a front fork pivoted to the front end of the rib around a horizontal axis and adapted to fold relatively against the bottom portion of the rib, means to prevent the swinging of the front fork beyond a right angular position with the rib, a pair of rear standards having trunnions for rear wheels, the trunnions having the same axis when in running position, and means to connect the rear standards to the rib providing for the movement of the standards into the plane of the rib when folding and causing coincidentally the swinging of the trunnions into parallelism.

In testimony whereof I affix my signature.

CHARLES B. KIRSCHBAUM.