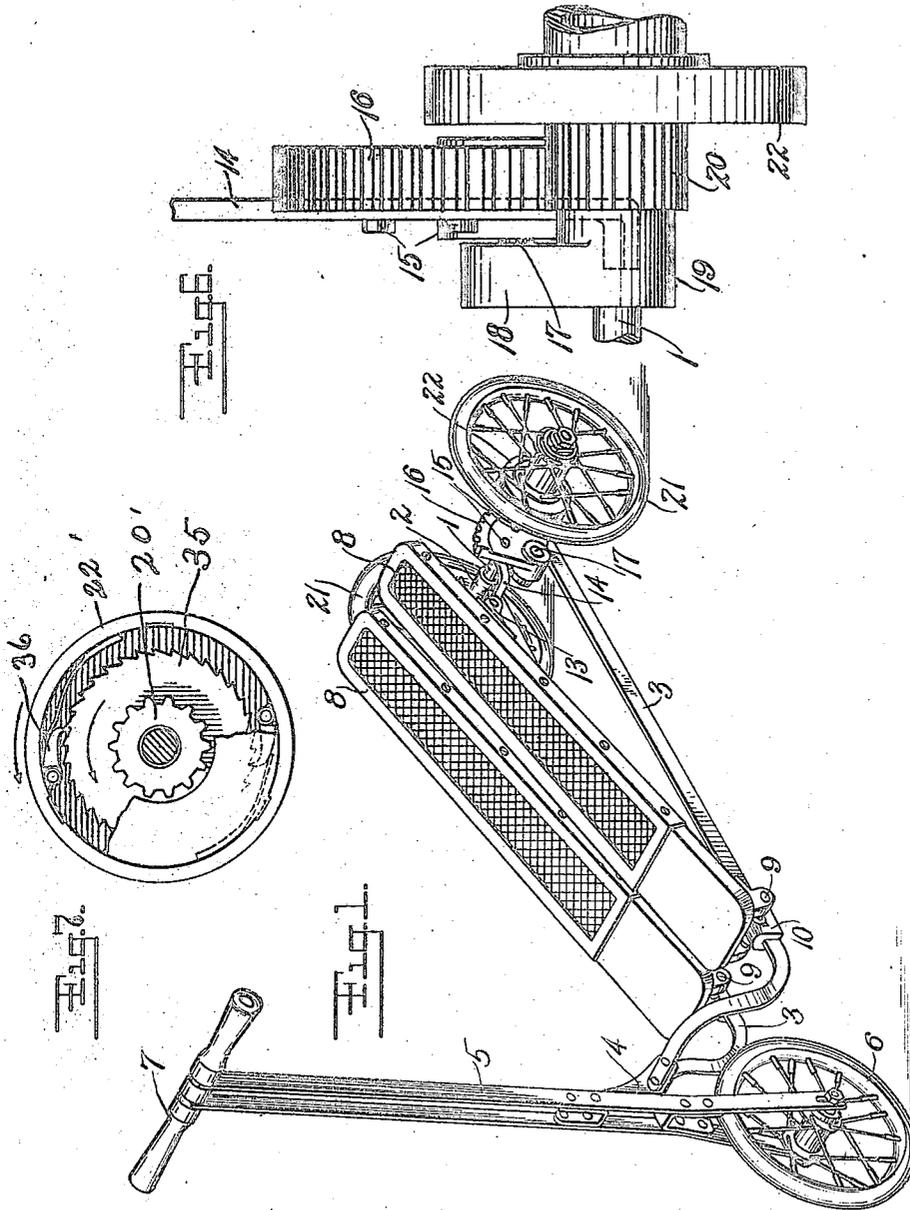


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J. M. BROWN ET AL.
FOOT MOBILE.
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2 SHEETS-SHEET 1



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UNITED STATES PATENT OFFICE.

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FOOT MOBILE.

Application filed April 29, 1918. Serial No. 231,312.

To all whom it may concern:

Be it known that we, JAMES HOYT BROWN and SVAN NORDEN, citizens of the United States, said Brown residing at New York, in the county and State of New York (post-office address, P. O. Box 119, New York, N. Y.), and said Norden residing at Auburn, in the county of Providence, State of Rhode Island (post-office address, 53 Francis Ave., Auburn, R. I.), have invented a new and useful Improvement in Foot Mobiles, of which the following is a specification.

This invention relates to foot mobiles.

The objects of this invention are to improve and simplify the construction of such devices, as well as to increase their efficiency and durability in operation and to decrease the expense attending their manufacture.

With the foregoing and other objects in view which will appear as the description proceeds the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the particular embodiment of invention herein disclosed can be made within the scope of the claims, and as indicated by the variations in said claims, without departing from the spirit of the invention.

In the accompanying drawings forming part of this specification

Figure 1 is a perspective view of the improved foot mobile.

Figure 2 is a side elevation thereof.

Figure 3 is an enlarged side view partly broken away, of the rack, pinion and cam mechanism for operating the drive wheels in one direction.

Figure 4 is a detailed view of the cam chamber.

Figure 5 is a detailed view of one of the cams.

Figure 6 is a view in elevation taken at a right angle to, and illustrating the parts shown in Figure 3.

Figure 7 is a detail view showing a ratchet transmission device.

Like reference numerals indicate corresponding parts in the different views of the drawings.

The foot mobile is constructed with a rear axle 1, which is gripped or clamped by brackets 2, Figure 2, fixed on the rear ends

of forwardly extending frame bars 3—3, which at their forward ends are fixed to the bracket 4. The steering column 5 is pivotally connected in any suitable way, with the bracket 4 and is provided at its lower end with the steering wheel 6 and at its upper end with the steering handle 7.

The foot mobile is provided with a pair of individually operating foot platforms 8—8, each of which is pivotally mounted at 9 on a bracket or saddle 10 fixed on one of the frame bars 3.

The means for normally elevating each platform 8 consists preferably of a coil spring 11, which at its lower end is seated on a block 12 and at its upper end engages the platform 8 to elevate it.

The foot platforms 8 are intended to operate the drive wheels of the foot mobile in a forward direction, and the mechanism by which this result is accomplished will now be described.

Fixed to the under surface of each foot platform 8 adjacent the rear end thereof is a bracket 13 with which is pivotally connected a rack link 14. The rack link 14 at its lower end is fixed by means of the screws 15 shown in Figure 3 to a quadrant shaped rack 16. The axle 17 of the segment shaped rack 16 is pivotally connected by means of the axle link 18 with the rear axle 1, said link 18 being provided with a hub 19 which surrounds the axle 1, as shown in Figure 6. The link 18 holds the rack 16 at a uniform distance from the axle 1 and causes it to move in a circular path part-way down and under the rear axle.

The rack 16 intermeshes with a pinion 20 which is loosely mounted on the rear axle 1, one on each end, and is independent of the hub 19 and rotates independently thereof.

The pinion 20 is designed to operate in a one-way direction the drive wheel 21 which is loosely mounted on axle 1, by means of the mechanism now to be described.

The reference numeral 22 designates a cam chamber which is fixed to the drive wheel 21 and drives the same. Disposed radially in the cam chamber 22 as shown in Figures 3 and 4 is a plurality of cams 23, each of which is of the form shown in Figure 5 and comprises a slightly curved outer face 24, which is offset by means of

the shoulder 25 and is provided with a second shoulder 26 and a reduced inner end 27. The shoulder 26, as shown in Figures 3 and 4, of each cam engages a rear shoulder 28 of the next adjacent cam. The engagement of the shoulders 26 and 28 of the cams serves to lock said cams in a circular ring which can not be broken in an outer direction so long as the cams are arranged in the full series as shown in Figures 3 and 4.

The cam chamber 22, cams 23 and pinion 20 all constitute a one-way mechanism, which serves the function of a drive mechanism.

The operation of the device is as follows. The operator stands on the foot platforms 8 and depresses them alternately or both together or only one of them, as desired. The downward movement of each platform 8 is transmitted through the link 14 to the quadrant shaped rack 16 which being held by the pivot link 18 swings downward and underneath the axle 1, giving several rotations to the pinion 20. When the pressure on the foot platform 8 is released the spring 11 returns it to elevated position. The downward movement of the rack 16 in Figure 3 drives the pinion 20 in the direction shown by the arrows in Figures 3 and 4. The teeth of the pinion engage the inner end 27 of the cams 23 and expand them outward so as to grip the cam chamber 22 and drive the same together with the drive wheel 21. When the rack 16 has reached its downward limit and is restored to its uppermost position by the spring 11, the pinion 20 is rotated in a direction opposite to the arrows, with the result that the teeth of the pinion rock the inner ends 27 of the cams 23, so that the shoulder 26 of the one cam pivots on the shoulder 28 of the next adjacent cam and the outer faces 24 are rocked or contracted inward so as to release their grip on the cam chamber 22.

The foot mobile of the present invention is strong, simple, durable and inexpensive in construction, as well as thoroughly efficient in operation. It is capable of great speed and flexibility in action and can be used for coasting, as well as for driving by the use of one foot or two feet.

It will be obvious that in place of the cam transmission shown in Figures 3 and 4 we may employ a ratchet mechanism such as shown in Figure 7 in which the pinion 20' has fixed thereto a ratchet wheel 35 which is engaged by one or more spring pressed pawls 36 pivoted in the ratchet chamber 22' which is fixed to the drive wheel. When the pinion 20' is rotated in the direction of the arrow the drive wheel is moved with it by the pawls. When the pinion is reversely rotated the ratchet wheel rides under the pawls.

It is necessary to provide means for limit-

ing the upward movement of the pivot link 18 relative to the link 14 and rack 16; otherwise the links 14 and 18 might move to a dead centre. The limiting means employed consists in bending the lower end of the link 14 at a right angle as indicated at 14^a in Figure 3, so as to engage beneath the lower edge of the pivot link 18. The limiting lug 14^a is shown clearly in the dotted lines in Figure 6.

What is claimed as new is

1. A foot mobile comprising an operating member pivoted at one end, a drive wheel, a link pivoted on the axle of the drive wheel and reciprocatory thereon, a connection between said link and the free end of said operating member, and a one-way mechanism interposed between said connection and said drive wheel.

2. A foot mobile having a drive wheel, a reciprocatory link pivoted on the axle of the said wheel, an operating member pivoted at its forward end, a connection between the free end of said operating member and said link, and a one-way mechanism interposed between said connection and said drive wheel.

3. A foot mobile comprising a frame, a foot platform pivoted at one end thereon, a steering wheel, a driving wheel, a one-way mechanism in said drive wheel, a pinion for operating said one-way mechanism and a segmental rack for operating said pinion, said rack being pivotally connected with the axle of the drive wheel and pivotally connected with said foot platform.

4. A foot mobile comprising a frame, a foot platform pivoted thereon, a drive wheel having a cam chamber, a plurality of cams therein, and driving mechanism connected with said foot platform at one end and with said cams at the other end and capable of rocking said cams outward when turned in one direction and inward when turned in the other direction.

5. A foot mobile having a frame, a pivoted foot platform, a drive wheel having connected therewith a cam chamber, a plurality of radially extending cams in said cam chamber, a pinion pivoted on the axle of the drive wheel and engaging between its teeth the inner ends of said cams and capable when relatively turned in one direction of locking said cams and when relatively turned in the other direction of releasing said cams, a segmental rack engaging said pinion, and operated by said foot platform, and a link pivoted on the same axle as said pinion and pivotally connected at its outer end with said rack for holding it in operative relation with said pinion.

6. A foot mobile comprising a rear axle, a pair of frame bars connected with said axle and extending forward, a steering column and wheel pivotally connected with the forward end of said frame bars, a pair

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- of foot platforms pivotally connected with their forward ends to said frame bars, springs interposed between said frame bars and foot platforms for normally elevating
- 5 the same, links pivotally connected with the rear portions of said foot platforms, quadrant shaped racks rigidly connected with said links, rear axle links pivotally connected with said axle and with said racks, drive pinions
- 10 mounted on said rear axle, radially extending cams engaging said drive pinions and locked in a circular ring, whereby relative movement of the pinion in one direction expands the cams and in the other direction
- 15 contracts the cams, a cam chamber surrounding said cams and adapted to be engaged thereby when the cams are expanded, and a drive wheel connected with each of the cam chambers and mounted for rotation on
- 20 said rear axle.
7. A foot mobile having a frame provided with wheels, a foot platform pivoted at one end on said frame, and mechanism pivotally connected with the other end of said foot
- 25 platform and located wholly below the plane thereof for driving one of said wheels, said mechanism consisting of a ring of interlocking cams capable of expanding when relatively rocked one way and of contracting
- 30 when relatively rocked the other way.
8. A foot mobile having a wheeled frame, a foot platform pivoted on said frame, a drive wheel provided with a cam chamber, a plurality of loosely mounted cams therein,
- 35 a pinion engaging the inner ends of said cams and capable when turned in one direction of rocking said cams outward and when turned in the opposite direction of rocking said cams inward, and means connected with said foot platform for operating
- 40 said pinion.
9. A mobile comprising a drive wheel, a link member reciprocatory on the axle of said drive wheel, a pivoted operating member, a connection pivoted at one point to
- 45 said operating member and at another point to said link member, and a one-way mechanism connected with and operated through said connection.
10. A mobile comprising a drive wheel, a
- 50 link member reciprocatory on the axle of said wheel, a foot platform pivoted at its forward end, means for elevating the rear end of said platform, a connection pivoted at one end to the rear of said platform and
- 55 at the other end to said drive member, and a one-way mechanism connected with said drive wheel and operated through said connection.
11. A mobile comprising a drive wheel, a
- 60 link member reciprocatory on the axle of said wheel, a foot platform pivoted at its forward end, means for elevating the rear end of said platform, a connection pivoted at one end to the rear of said platform and at the
- 65 other end to said link member, and a one-way mechanism connected with said drive wheel and operated through said connection, said mechanism including a rack mounted on said connection, a pinion on the axle of
- 70 said wheel, and radially expansible and contractible devices operated by said pinion.

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