No. 616,021. Patented Dec. 13, 1898.

T. E. J. SCHAIBLY.

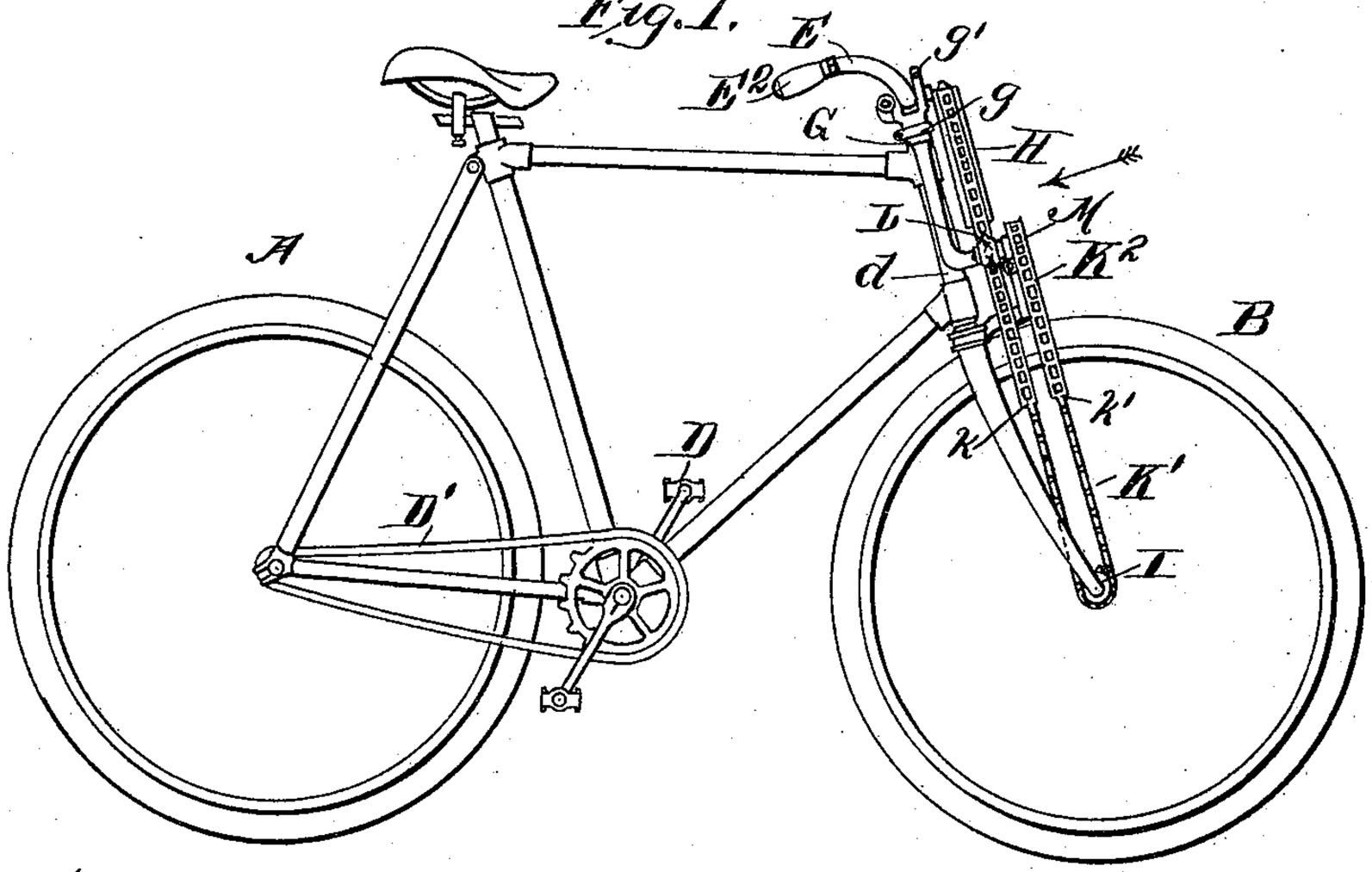
CHAIN PROPELLED VEHICLE.

(Application filed Dec. 5, 1896.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



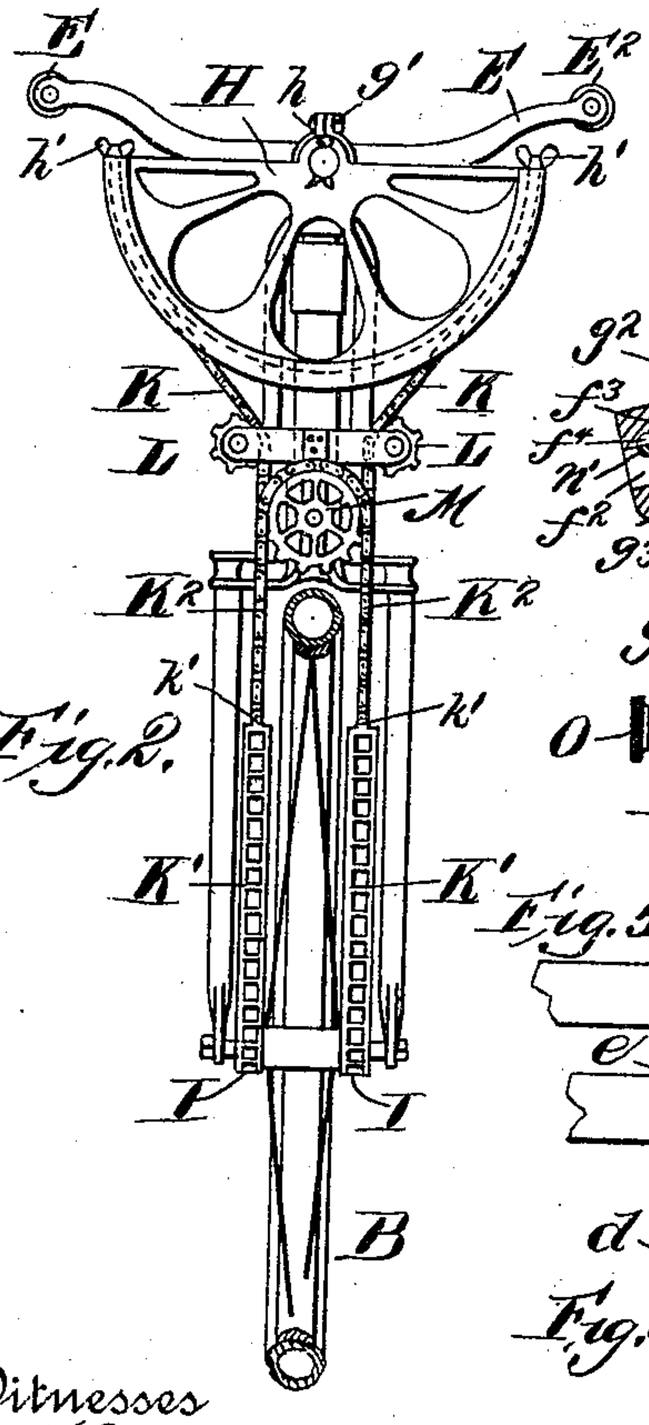


Fig. 2.

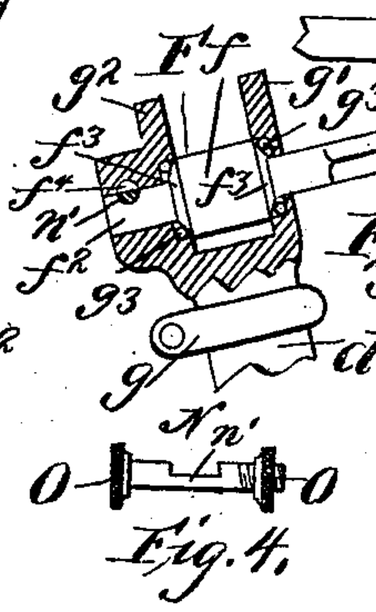


Fig. 3.

Fig. 4.

Fig. 5

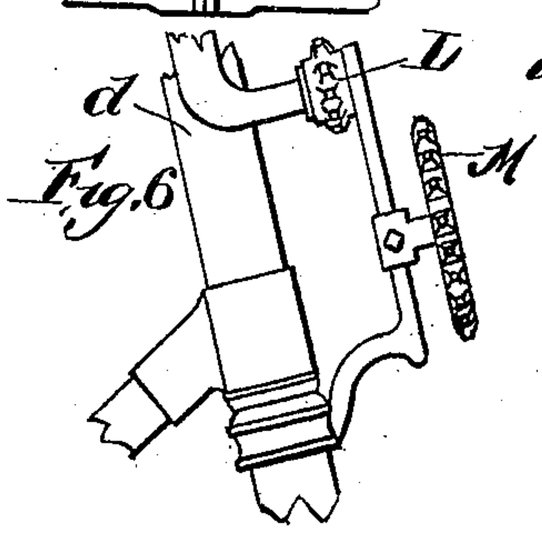


Fig. 6

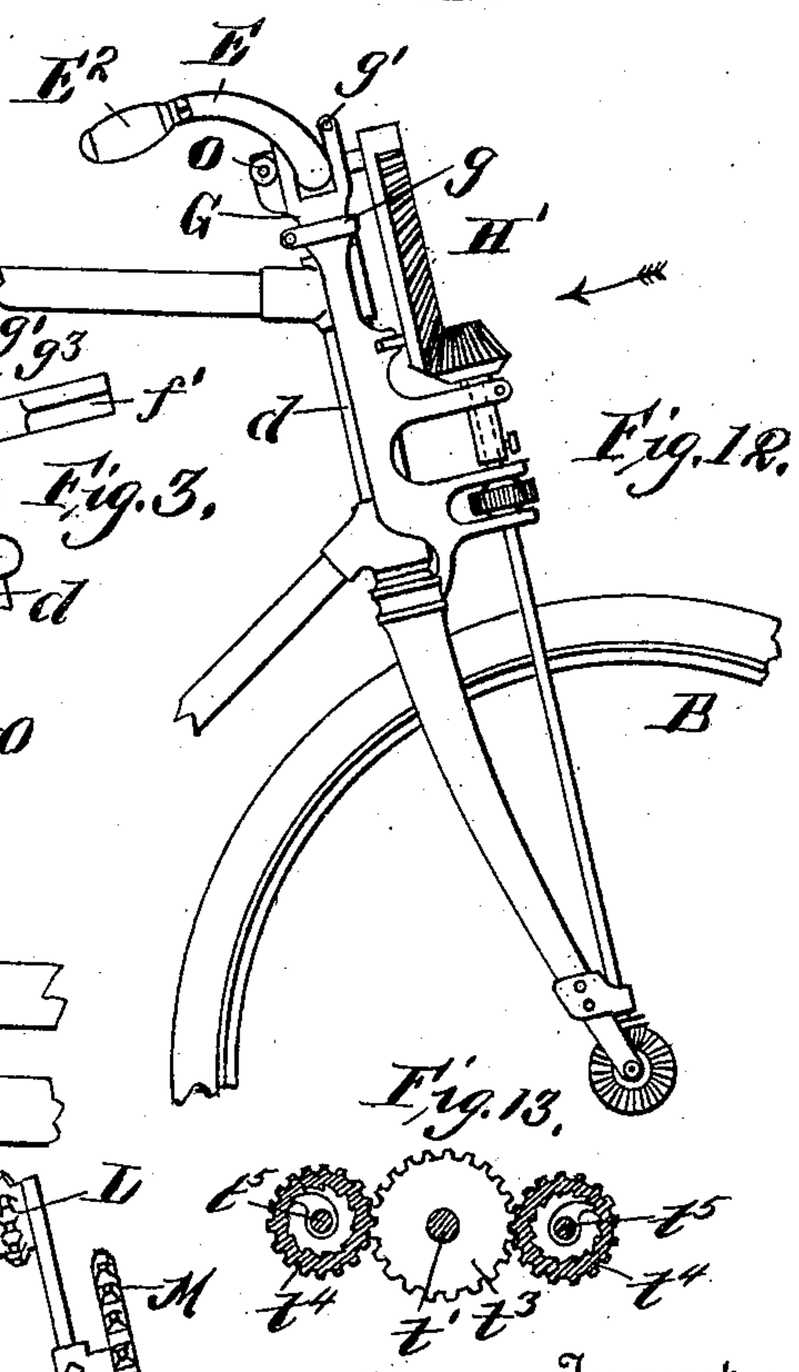


Fig. 12.

Fig. 13.

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2 Sheets—Sheet 2.

Fig. 7

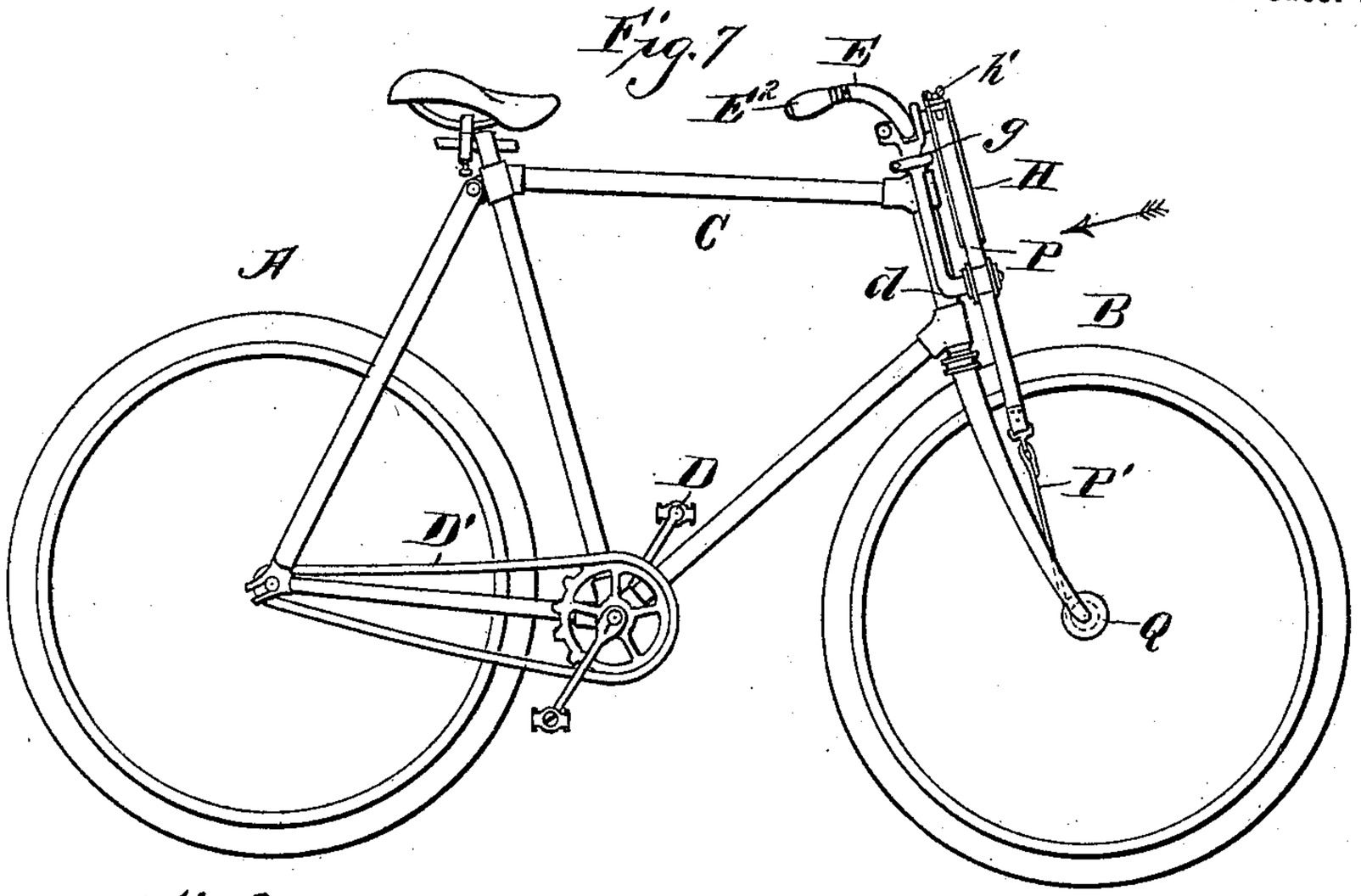


Fig. 8.

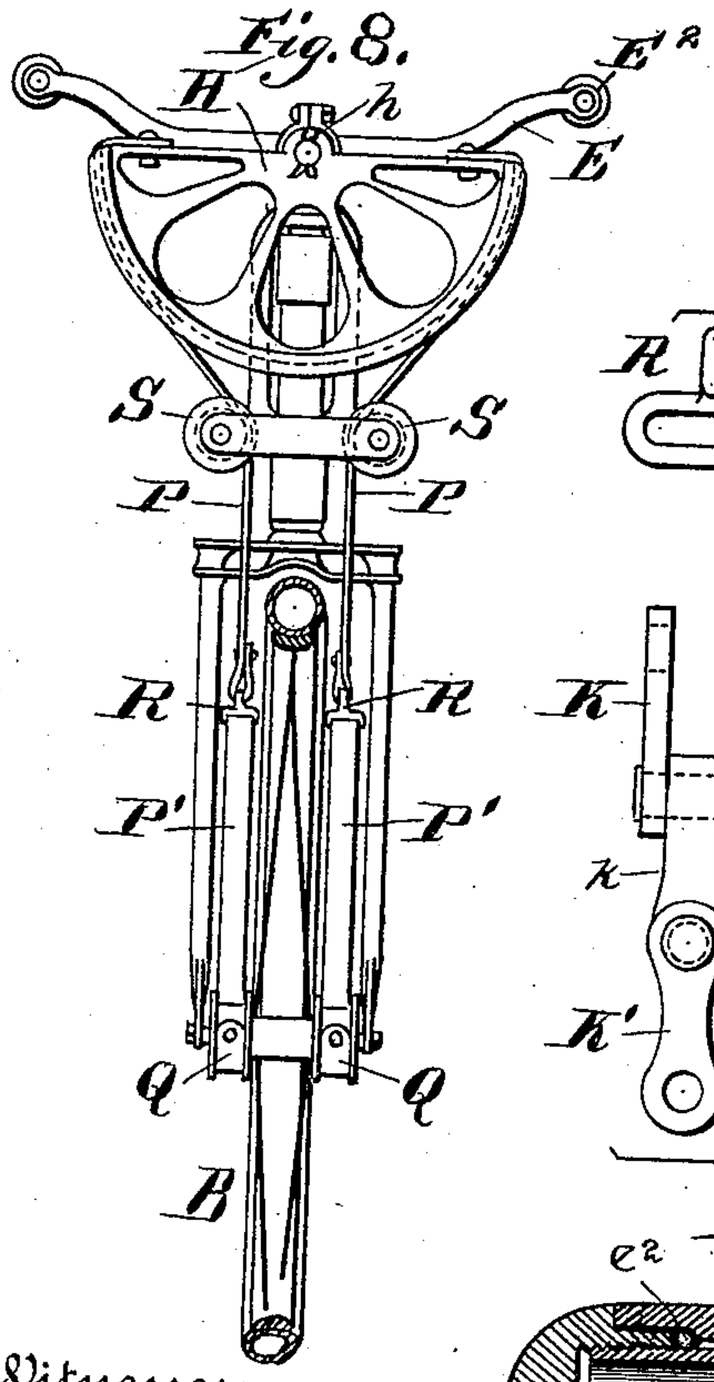
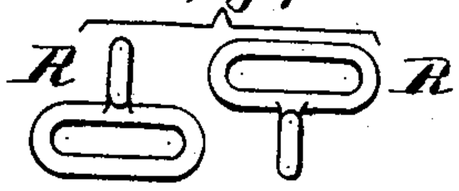


Fig. 9.



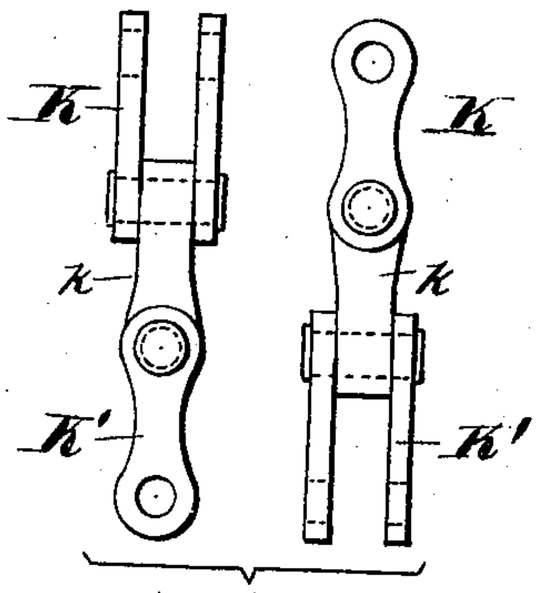


Fig. 10

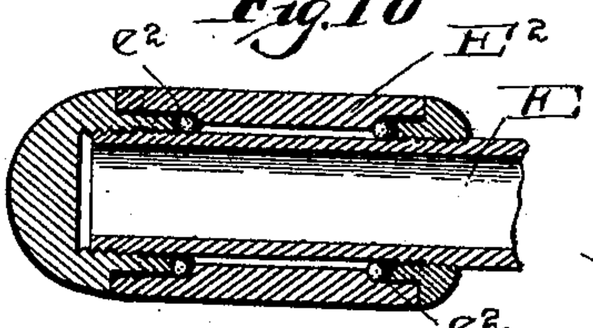
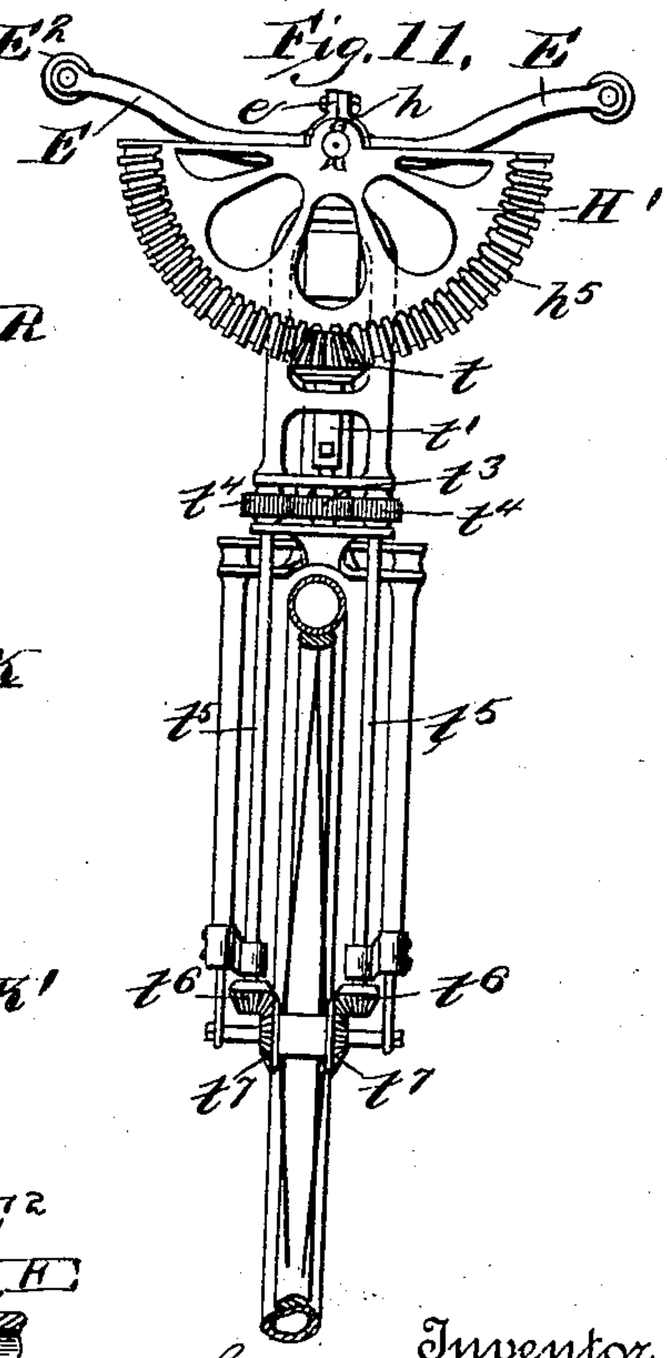


Fig. 14.

Fig. 11.



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UNITED STATES PATENT OFFICE.

THEOBALD E. J. SCHAIBLY, OF NEW YORK, N. Y.

CHAIN-PROPELLED VEHICLE.

SPECIFICATION forming part of Letters Patent No. 616,021, dated December 13, 1898.

Application filed December 5, 1896. Serial No. 614,596. (No model.)

To all whom it may concern:

Be it known that I, THEOBALD E. J. SCHAIBLY, a citizen of the United States, residing at New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Chain-Propelled Vehicles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Figure 1 is a side elevation of a bicycle having my improvements applied thereto. Fig. 2 is a front elevation thereof. Figs. 3 to 6 are detail views. Fig. 7 is a side elevation showing a slightly-modified construction. Fig. 8 is an elevation of the construction in Fig. 7. Figs. 9 and 10 are detail views. Fig. 11 is a front elevation of another modification. Fig. 12 is a side view of the construction shown in Fig. 11. Fig. 13 is a detail view of a portion of the last-said modified construction; and Fig. 14 is a detail sectional view, on an enlarged scale, of one of the hand pieces or grips.

In the drawings, A designates the rear wheel of a bicycle; B, the front wheel; C, the intermediate main frame, and D D′ the driving devices for propelling the bicycle in the ordinary manner.

All of the above-described parts may be of the ordinary construction, as the improvements which particularly characterize the present invention are applicable to any of the forms of bicycles now commonly in use.

The object of the present improvements is to provide means by which the rider can when he desires bring into action devices for driving the front wheel B to assist the ordinary foot-propelled driving devices at D D′ or to propel the vehicle independent of any action of the devices for driving the rear wheel A.

The auxiliary driving devices above referred to are adapted to be actuated from the handle-bars of the machine, which bars are supported in such manner as to be free to rock about a central support to drive the front wheel B, and also are provided with means for locking the handle-bars against movement except in the ordinary manner for guiding the front wheel.

In the embodiment of my invention herein illustrated the handle-bars E are provided with a central coupling-piece *e*, adapted to be clamped about a shaft F, journaled in suitable bearings on the rotatable supporting-frame of the front wheel B. The front plate *g′* may be provided with a vertical slot and have its upper bifurcated portion connected by a suitable bolt, as indicated in Figs. 1, 2, 3, 8, and 11. This will enable the shaft F to be readily inserted into its bearings. The bearings referred to are formed in the opposite walls of the upper bifurcated portion of a post G, adapted to have its lower end inserted in the front tubular frame-bar *d* and into a socket formed in the upper end of the support for the front wheel, which is arranged in said frame-bar. A clamp-ring *g* may be employed to firmly secure said bracket or bifurcated post-piece G to the said front-wheel support.

The shaft F is formed with the enlarged central portion *f* of a length equal to the distance between the front and rear plates g' g^2 of the bracket-piece G and with the reduced end sections f' f^2, which project through suitable apertures in said plates g' g^2. The central larger portion *f* of said shaft is connected with the reduced ends by tapering portions f^3, the outer surfaces of which are grooved slightly, corresponding grooves being formed in the inner faces of the said plates g' g^2 about the apertures therein, and within said alined grooves are fitted a series of antifriction-balls g^3.

The forwardly-projecting end of the shaft F is squared, and on said squared end *f* is secured the hub of a semicircular disk or half-wheel H, a cotter pin or key *h* being preferably employed to insure that the said disk and shaft F will not be disengaged. The disk or half-wheel H is connected with ratchet sprocket-wheels I I′, mounted on the axle of the front wheel B by a series of chain-sections, forming a continuous chain extending from one side of said disk around both of said driving-sprockets and to the other side of the disk. The end sections K of the chain are connected to adjusting-screws *h′*, carried by the disk H, and extend from said screws through grooves formed in the curved edge of the disk downwardly. At their lower ends said chain-sections K are provided with clamps *k*, which are also connected with the

sprocket-chain sections K′, that engage with the sprockets I I′ on the front wheel. Said clamps *k* are of such form and construction as to hold the sections of chain K K′ in proper position relative to both the sprockets I I′ and the driving-disk H, which, it will be noticed, is mounted on an axis extending across the axis of the sprockets referred to. Chain deflecting and guiding wheels L are supported in suitable bearings mounted on the front-wheel frame to cause the chains K to travel parallel to the frame-tube *d* from a point slightly below the lowest point of the disk H. The chain-sections K′ are in turn connected by clamps *k′*, similar to those at *k*, to a section K^2, which extends over an adjusting-wheel M. This latter wheel is mounted or supported on and adapted to be adjusted vertically of the front-frame tube *d* and secured in position at the desired height to maintain the driving-chain properly taut. By this construction I am able to adjust the said driving-chain, as the handle-supporting bracket G is adjusted vertically to suit the rider, and by such construction I am also enabled to vary the tension on the driving-chain without adjustment of either the handle-bars or driving devices actuated thereby or the wheel B. In this particular my invention is distinguishable from prior constructions with which I am acquainted for adjusting or varying the tension of driving-chains of chain-propelled vehicles. In such earlier constructions it has been necessary in order to vary the tension of the driving-chains to bodily move either the power devices or the driven wheel relatively to the frame of the machine; but, as seen above, my construction provides for a vertical adjustment of the handle-bars to suit the convenience of the rider, yet it does not require any adjustment of either the handle-bar or wheel B to vary the tension of the driving-chain.

The operation of the parts above described will be readily understood. By vibrating the handles vertically and rocking the shaft F in its bearings motion will be communicated to the sprockets I I′, and thereby the front wheel B will be revolved and the vehicle propelled.

When it is desired to employ the driving devices at D D′ only, the shaft F and handle-bars connected therewith can be locked against movement except with the rotary support of the front wheel by the following means: In the rearwardly-extending reduced end portion f^2 of the said shaft F is formed a transverse-extending groove f^4. N designates a lock-shaft which is journaled in suitable bearings on the rear plate *g′*. A hand-wheel O is mounted on each end of the said shaft N, by which it can be rotated, and the body portion of said shaft is cut away, as at *n*, to provide a reduced portion *n′*, adapted to take into the groove f^4, formed in the shaft F. By turning the shaft N until the reduced portion *n′* thereof lies above the groove f^4 the shaft F will be free to rock in its bearings; but by turning the shaft N farther the said portion *n′* thereof will take into the said groove f^4 and prevent any movement of the shaft F. When the parts are in this last-described position, the handle-bars will be capable of use in the ordinary manner only—namely, for guiding and directing the course of the machine.

In Fig. 7 I have illustrated a slightly-modified form of auxiliary propelling devices. In this form I employ straps P P′ on each side of the front-frame bar *d*, the straps P′ being connected with ratchet-wheels Q on the axle of the front wheel B and the straps P being connected with those at P′ by means of clamps R, similar to those hereinbefore described. In this construction I employ smooth-surfaced or peripherally-grooved guide-wheels S instead of sprocket-wheels, as before described.

By examining the drawings it will be seen that the handles E^2 at the ends of the handle-bar are not rigidly connected with the body of the bar, but have antifriction-balls e^2 interposed between them and said bar.

Instead of the more or less flexible driving devices hereinbefore described I may employ the form of auxiliary driving devices illustrated in Figs. 11 to 13. In this construction I employ a disk H′, provided with a series of teeth h^5, which mesh with a bevel-pinion *t*, mounted at the upper end of a short vertical shaft *t′*, journaled in bearings supported from the front-wheel frame. At its lower end this shaft *t′* is provided with a gear t^3, which meshes with two ratchet-controlled pinions t^4. The last-said pinions are carried by parallel shafts t^5, which at their lower ends carry bevel-pinions t^6, which mesh with bevel-gears t^7 on the front-wheel axle.

The manner of operating all of the forms of driving devices described and shown is similar to that described, and the handle-bars are constructed and adapted to be secured in position in the same manner in each construction.

While I have above described and have illustrated my improvements as applied to a bicycle, it will be seen that they can be advantageously applied to tricycles and other similar forms of vehicles, as well as to that type herein shown and described.

What I claim is—

1. The combination of the main frame, the rear wheel, the front wheel, the rotatable support for the front wheel, driving-sprockets mounted on the front-wheel axle on opposite sides of said wheel, a rock-shaft journaled in bearings connected with the rotatable support for the front wheel, a vertically-adjustable sprocket, a driving sprocket-chain connected at its ends with the rock-shaft and engaging with the sprockets on the front-wheel axle and with said vertically-adjustable sprocket, substantially as set forth.

2. The combination of a main frame, a rear wheel, a front wheel, a rotatable support for the front wheel, driving-sprockets secured on

the front-wheel axle, on opposite sides of said wheel, a rock-shaft, a sprocket-chain connected with said shaft engaging with both said sprockets, a chain-adjusting sprocket engaging said chain at points between said driving-sprockets, and means for rocking said rock-shaft, substantially as set forth.

3. The combination of the main frame, the rear wheel, the front wheel, the rotatable support for the front wheel, the foot-controlled devices for driving the vehicle, the driving-sprockets on the axle of the front wheel, the rock-shaft journaled in bearings on the front-wheel support, the handle-bars connected with said shaft, a sprocket-chain connected at its ends with said shaft and engaging with the sprockets on the front-wheel axle, a chain-adjusting sprocket engaging with said chain, and means for holding the rock-shaft stationary, substantially as set forth.

4. The combination with the frame, the rear wheel, the front wheel, and the rotatable support for the front wheel, of foot-controlled propelling devices, the handle-bars, the rocking support for said handle-bars mounted on the front-wheel support, propelling devices connected to said rocking support and adapted to be actuated by the handle-bars, and a rotatable, horizontally-arranged locking-shaft, N, extending transversely of a projection on said rocking support and having a portion, n', adapted to engage with said support to rigidly connect the same and the handle-bars to the front-wheel support, substantially as set forth.

5. The combination with the frame, the rear wheel, the front wheel, and the rotatable support for the front wheel, of foot-controlled devices, the rock-shaft, F, mounted in bearings in the front-wheel support, and having the rearwardly-extending projection, f^2, provided in its periphery with a transverse groove, f^4, propelling devices connected with said rock-shaft, the handle-bars secured to said shaft to actuate the same and the propelling devices connected therewith, and a lock-shaft, N, journaled in bearings on the front-wheel support, in rear of the handle-bars and having at an intermediate portion of its length a reduced portion adapted to enter the groove, f^4, aforesaid, substantially as set forth.

6. The combination with the main frame, a rear wheel, a front steering-wheel and a rotary support for the steering-wheel, of driving-wheels mounted on the steering-wheel axle, a rock-shaft mounted on the rotary support for the steering-wheel above and on a line transverse to the axis of said wheel, the handle-bars connected with and adapted to rock said shaft, a power-segment, H, secured to said shaft, flexible connections between said segment and each of the driving-wheels, consisting of two sections connected together and one attached to the said segment and the other arranged to actuate one of the driving-wheels on the front axle; substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

THEOBALD E. J. SCHAIBLY.

Witnesses:
ANTHONY GEISLER,
ALONZO GAUBERT.