

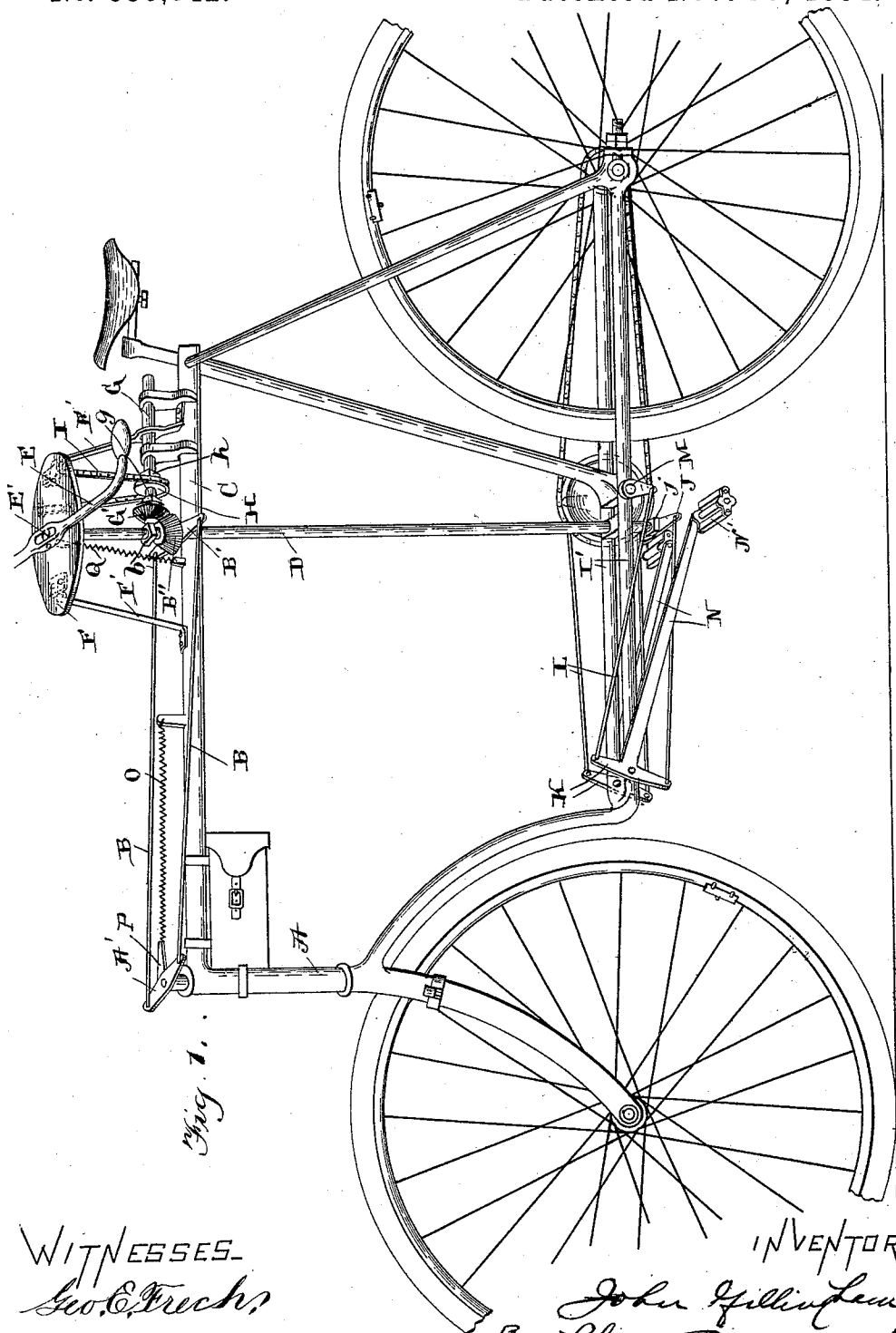
(No Model.)

2 Sheets—Sheet 1.

J. GILLINGHAM.  
BICYCLE.

No. 530,042.

Patented Nov. 27, 1894.



WITNESSES.

Geo. C. French,

James W. Berard.

INVENTOR-

John Gillin Lane -

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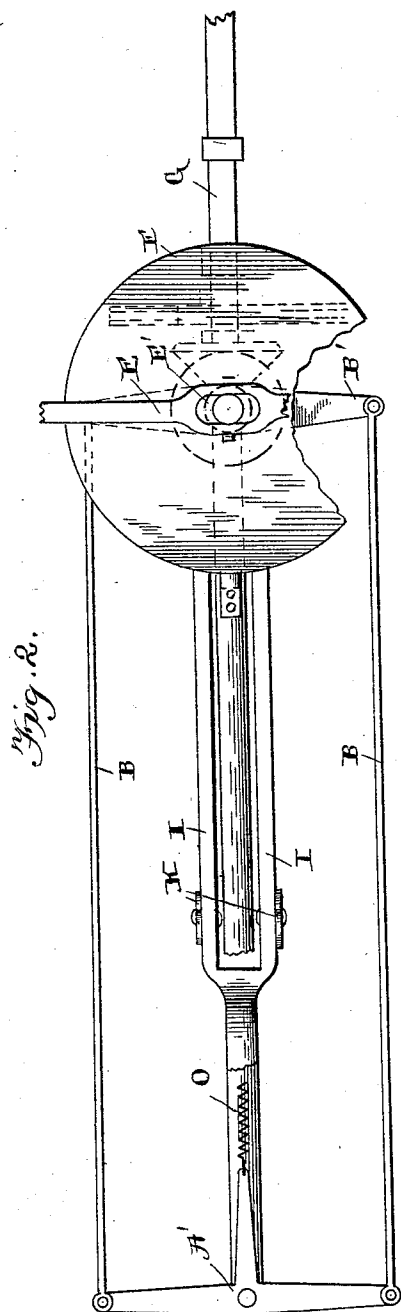
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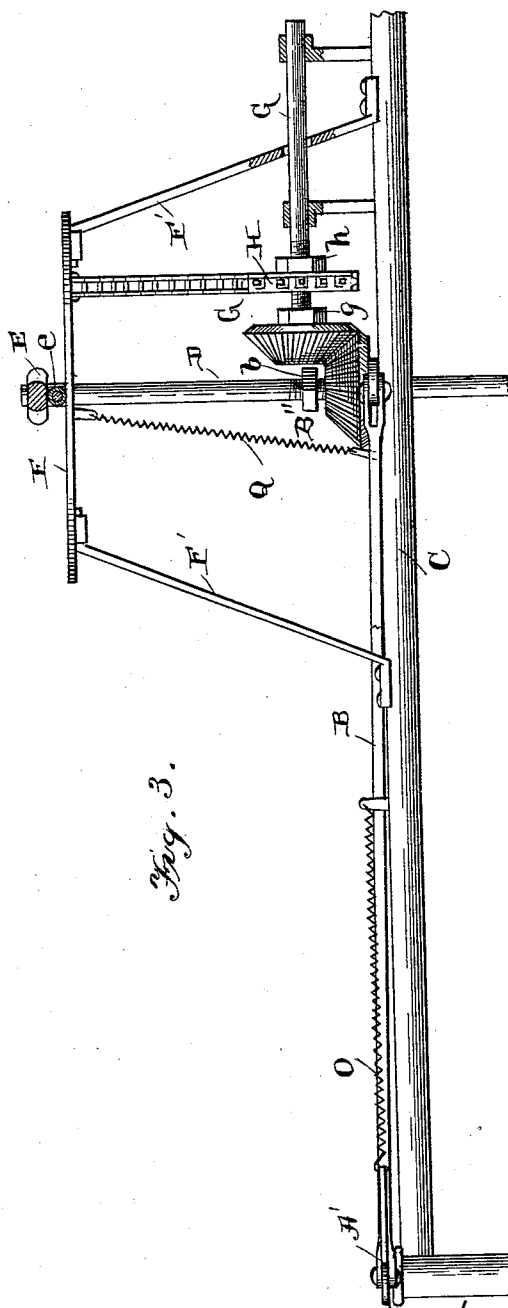
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WITNESSES.  
Geo. C. French,  
James W. Burcutt.



INVENTOR-  
John Spillingham -  
By Lehmann Patterson & Necht attys

# UNITED STATES PATENT OFFICE.

JOHN GILLINGHAM, OF WILMINGTON, DELAWARE, ASSIGNOR OF ONE-THIRD  
TO JAMES DEAKYNE, OF SAME PLACE.

## BICYCLE.

SPECIFICATION forming part of Letters Patent No. 530,042, dated November 27, 1894.

Application filed July 23, 1894. Serial No. 518,403. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN GILLINGHAM, of Wilmington, in the county of New Castle and State of Delaware, have invented certain new and useful Improvements in Bicycles; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improved bicycle; and the object of the same is to provide an improved machine in which if so desired both the propelling and the steering may be accomplished through the medium of the handle bars.

The invention consists in the novel features of construction hereinafter fully described and claimed and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my improved bicycle. Fig. 2 is a plan view. Fig. 3 is a side elevation of the upper portion of the machine shown partly in section.

A designates the steering head of the forward wheel which is projected vertically through the forward end of the frame and which carries at its upper end the T-arm A'. Extended rearward from the extremities of the said T-arm are the rods B which are connected at their opposite ends to the bar B' which is suitably supported to turn on the upper portion C of the machine frame, and supported on the upper side of the bar B' and secured thereto is the bevel pinion B''.

D is the main operating shaft of the machine which is extended vertically through the frame as shown, passing through bar B' and gear B'' the latter however not being permanently secured to the shaft. Upon the upper end of the shaft D are the handle bars E which are connected to said shaft by joint E' which allows the handles a vertical vibratory movement without affecting the shaft but which when vibrated horizontally turn the shaft for the purpose presently to be explained.

F is a platform or disk concentric with shaft D and positioned immediately beneath handle bars E, and the same is loosely secured to the upper end of standards F' in order to

permit of a vertical vibrating motion in a line transverse the length of the machine. Loose connection between the disk and standards is effected by turning inward the upper ends of the standards and engaging them in suitable sockets or bearings in the under side of the disk.

Journalled on portion C of the bicycle frame is the short shaft G having loosely secured to its forward end the bevel gear G' while immediately behind said bevel gear and loose on the shaft is the sprocket wheel H. Sprocket chain I is secured at its ends to the opposite sides of the under surface of disk F and depends around said sprocket wheel as shown so that when the machine is to be guided by moving or tilting vertically the handle bars which gives a corresponding movement to the disk the said movement is effected which as it will be seen operates or rotates the sprocket wheel through the medium of said chain and rotating shaft G turns the bevel gears G' and B'', transmitting the motion in this manner to rods B and from them to the steering head as will be readily understood. Gear G' which is loosely mounted on shaft G is clamped thereto by nut g while the sprocket wheel H is similarly secured to the shaft by nut h. The shaft and both of these parts are made rigid when the machine is to be steered in the manner just described. When however the machine is to be steered by a horizontal turning or reciprocation of the handle bars the nuts g and h are loosened so as to loosen gear G' and sprocket H and at the same time nut b on shaft D immediately above sprocket B'' is lowered thus clamping the sprocket wheel B'' and cross bar B' to the said shaft so that when the latter is turned by the handle bars as before stated the bar B' will be turned and the desired motion communicated to the steering head through the rods B. When the steering is accomplished as last described the disk remains in a fixed position with the handle bars moving concentrically over its top surface and the said bars are provided with rubber friction rollers e on their under sides so as to render the movement of the bars easy over said disk.

The lower portion I' of the machine frame is bifurcated well up toward its forward end and shaft D extends down between the arms

forming the bifurcation and loosely secured to the lower end of said shaft is the cross arm J which is adapted to be securely held to the shaft by nut *j*. The extremities of arm J are  
 5 connected to the lower ends of the levers K which are suitably journaled in the forward end of portion I' of the frame while the upper ends of the said bell crank levers are connected by rods L to the crank of the sprocket  
 10 carrying shaft M and from this shaft the rear wheel of the machine is driven in the usual manner by means of a sprocket chain. The long arms N of the levers are provided with pedals N' for use when the machine is to be  
 15 worked by the feet.

By means of the arrangement herein shown and described it will be understood that with arm J made rigid with shaft D the latter by being vibrated will actuate the levers which  
 20 in turn will keep in motion the sprocket shaft M. Thus the driving of the machine may be effected entirely through the medium of the handle bars, or it may be operated by the same in conjunction with the pedals, or it  
 25 may be propelled by the pedals alone if so desired and when operated as last mentioned the arm J at the lower end of shaft D will be loosened so that said shaft will be entirely free for steering purposes in case it is desired  
 30 to guide the machine by moving horizontally the handle bars.

The steering head A with its T-arm A' is held normally in a fixed position by coil spring O which extends inward from a stud  
 35 T on said arm A' the inner end of said spring being connected to portion C of the frame. In this manner the steering head is so held as to guide the machine normally straight ahead. Depending from the under side of  
 40 the disk is an arm Q which is connected to frame C by spring Q' and in this manner the said disk is held from wobbling and maintained normally in a horizontal position.

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

1. An improved bicycle comprising a propelling mechanism, handle bars adapted to vibrate horizontally for actuating the propelling  
 50 mechanism, a steering mechanism and a

disk pivotally mounted on the frame for operating the steering mechanism, said disk being operated by the handle bars while they are furnishing impetus to the propelling mechanism, substantially as shown and described.

2. An improved bicycle comprising a propelling mechanism, handle bars adapted to vibrate horizontally for the purpose of actuating said propelling mechanism, a steering  
 60 mechanism, a disk pivotally mounted on the frame for operating the steering mechanism and which is arranged immediately beneath the handle bars so as to be tilted by the latter while they are furnishing impetus to the  
 65 propelling mechanism, substantially as shown and described.

3. An improved bicycle comprising the tilting disk, the handle bars for operating it, the chain depending from the tilting disk, the  
 70 sprocket carrying shaft which is actuated by said chain, the steering mechanism and gears interposed between the same and the said shaft for operating it, and a driving mechanism, substantially as shown and described.

4. An improved bicycle comprising a frame, a vertical revoluble shaft in the frame, handle bars adapted to vibrate vertically on the  
 80 upper end of the shaft, standards on the frame, a disk having bearing on the standards and which is adapted to be tilted by the handle bars, a steering mechanism adapted to be operated by the disk when tilted and a driving mechanism actuated by said shaft, substantially as shown and described.

5. An improved bicycle comprising a vertical revoluble shaft, the handle bars for vibrating the same, the cross arm at the lower  
 85 end of the shaft, levers K, long pedal arms N projected therefrom, rods connecting the ends of the cross arms with the said levers K, a sprocket driving shaft, and rods L connecting said levers with the sprocket shaft, substantially as shown and described.

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

JOHN GILLINGHAM.

Witnesses:

CHAS. H. SASSE,

ALFRED S. HURLOCK.