(No Model.)

D. LIPPY & I. E. FINFROCK.

DRIVING GEAR FOR BICYCLES.

No. 528,954. Patented Nov. 13, 1894.

Fig. 1.

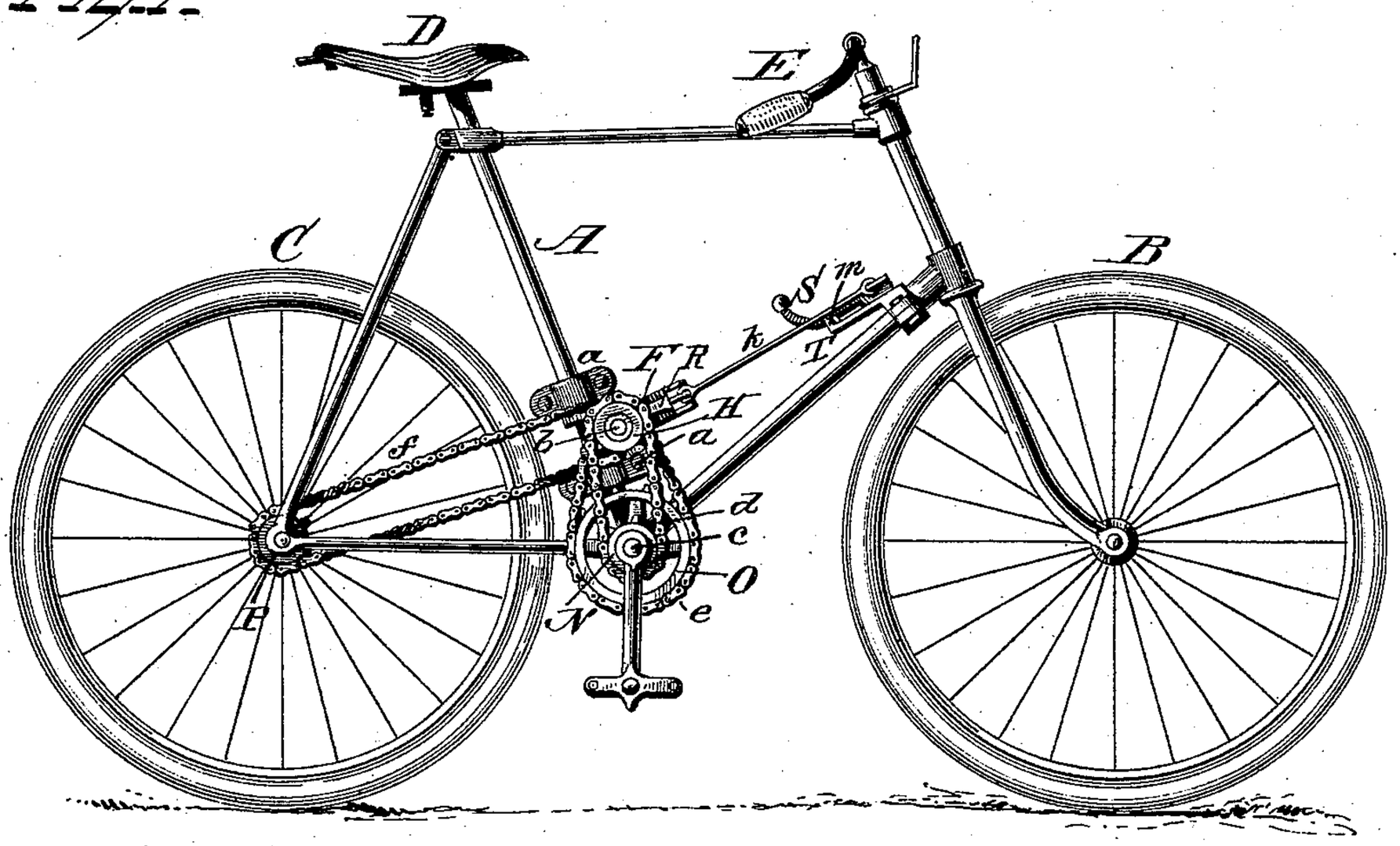


Fig. 2.

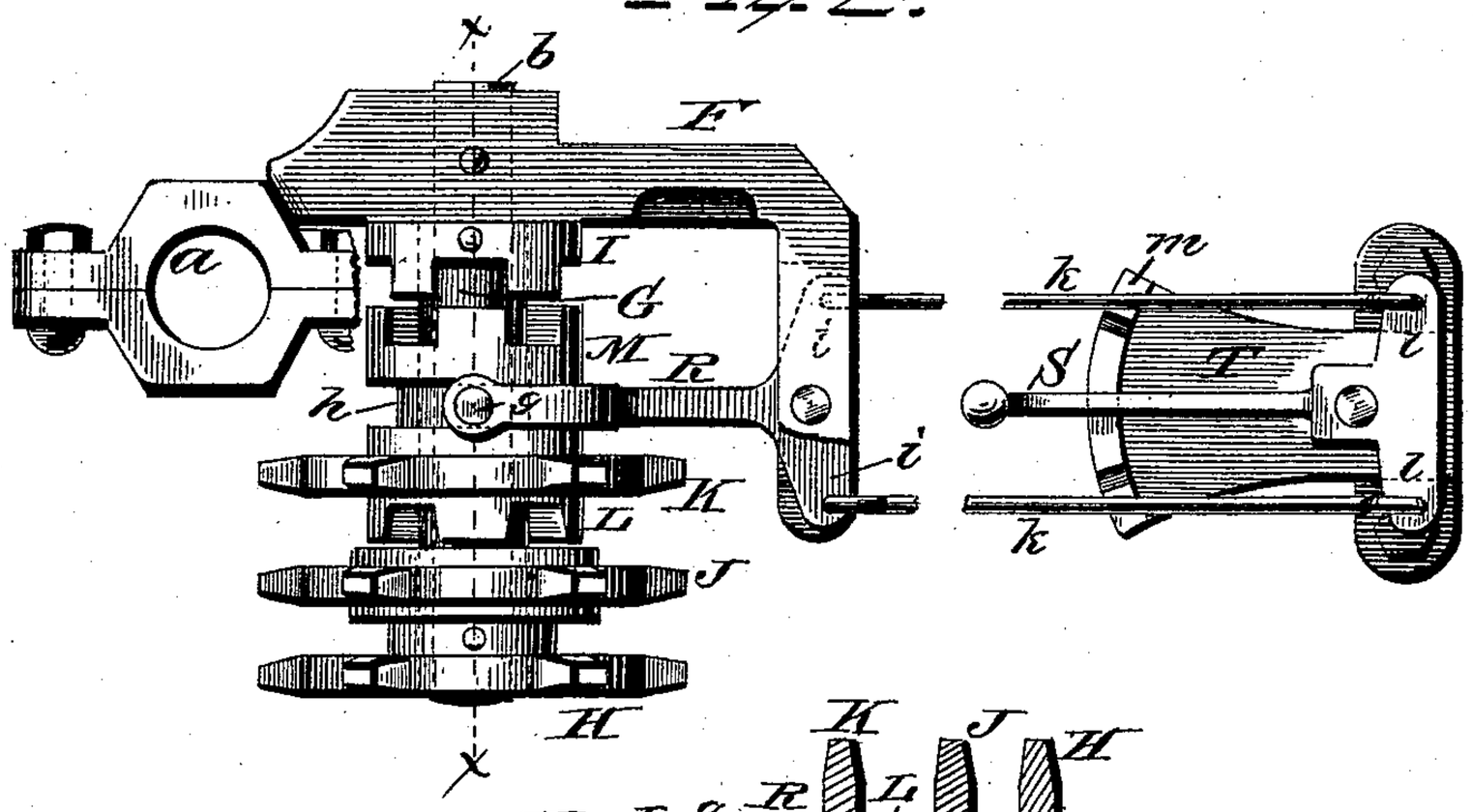
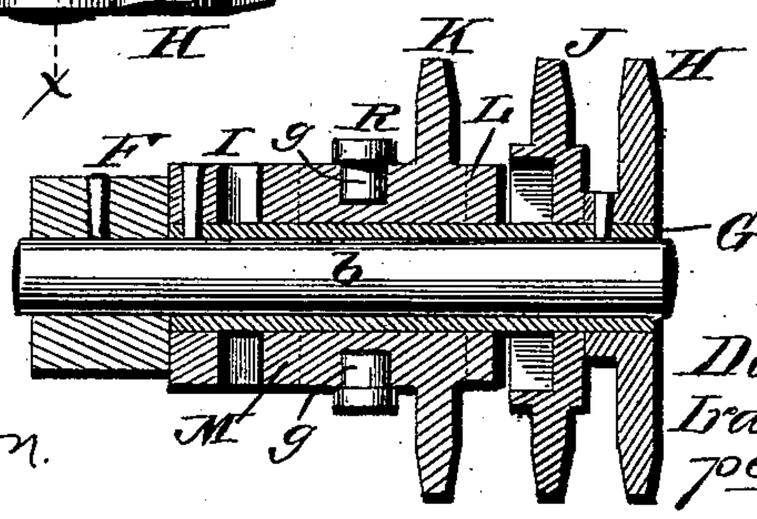


Fig. 3.



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UNITED STATES PATENT OFFICE.

DAVID LIPPY AND IRA ELMER FINFROCK, OF MANSFIELD, OHIO.

DRIVING-GEAR FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 528,954, dated November 13, 1894.

Application filed June 26, 1894. Serial No. 515,740. (No model.)

To all whom it may concern:

Be it known that we, DAVID LIPPY and IRA ELMER FINFROCK, citizens of the United States, residing at Mansfield, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in Driving-Gear for Bicycles; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

The present invention has relation to that class of differential speed mechanism for bicycles in which provision is made for changing the speed and power of the machine to adapt it to the nature or character of the road over which the machine is propelled without the necessity of the rider dismounting and also to enable the pedal shaft to be disconnected with the gearing when it is desired to use the machine in "coasting" on a down grade.

It is the purpose and object of the invention to improve this differential speed mechanism whereby both lightness, strength and durability are secured and the mechanism rendered simple in its construction and easily operated by the rider without dismounting and while the machine is in motion, which objects are attained by the mechanism substantially as shown in the drawings and hereinafter described and claimed.

Figure 1 of the drawings represents a side view of a bicycle with our improved differential speed mechanism applied thereto. Fig. 2 represents a plan view of the mechanism on an enlarged scale also the means employed for operating the clutches; Fig. 3 a detail sectional view taken on line *x x* of Fig. 2.

In the accompanying drawings A represents the frame of the machine which may be of any of the usual forms, and B C represent the front and rear wheels respectively, said frame having the usual saddle D which is supported by the frame in the ordinary manner, and connected to said frame is the handle-bar E. All these parts are of the usual construction and common with this class of bicycles and form no part of the invention.

A suitable bracket F is connected to the frame of the machine by means of sectional clamping collars *a* or by any other means found best adapted to the purpose. This bracket has connected to it a stationary shaft *b* upon which is mounted a sleeve G adapted to revolve upon the shaft, said sleeve having a sprocket-wheel H and a clutch-collar I upon the respective ends thereof and which are keyed to the sleeve or otherwise rigidly connected thereto so that they will revolve with the sleeve. A sprocket-wheel J is loosely mounted upon the sleeve G as is also the sprocket-wheel K, which latter wheel is provided with clutches L M upon its respective sides and adapted to engage respectively with the sprocket-wheel J and the clutch-collar I. The sprocket-wheel H connects with a sprocket wheel N upon the pedal-shaft *c* through the medium of a sprocket-chain *d*, and the sprocket-wheel J connects with the large sprocket-wheel O upon the pedal-shaft, by means of the sprocket-chain *e*. The sprocket-wheel K which is provided with the clutches, connects with the sprocket-wheel P upon the hub of the rear bicycle-wheel by means of the sprocket-chain *f*. The shifting of the sprocket-wheel K with its clutches is operated by a forked lever R which has studs or pins *g* to engage with a circumferential groove *h* in the rear of the clutch M, or connecting therewith in any other preferred and well known manner. This forked lever R has lateral extending arms *i* to which are connected rods *k*, said rods at their opposite ends being connected to similar arms *l* upon a shifting-lever S, which lever is pivoted to a bracket T secured to the frame of the machine.

The bracket T is connected to the frame of the machine by any suitable means and at such position that the shifting-lever S will be in convenient reach of the rider, said bracket having a notched segmental flange *m* with which the shifting-lever engages to hold said lever in its adjusted position when moved to the right or left in operating the clutches.

The variable speed and power may be regulated by the shifting of the clutch for engagement with the clutch-collar to lock the sprocket-wheel K to the revolving sleeve G or to the sprocket wheel J, and when the clutches are in the position shown in Figs. 2 and 3 the pedal-shaft will be disconnected with the

speed mechanism and remain stationary while "coasting" on the down grade. Any suitable form of clutches, clutch-collar, and means for admitting engagement with the sprocket-wheel, as found most practical.

Having now fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

In a driving-gear for bicycles, a suitable bracket adapted for attachment to the bicycle-frame, a shaft keyed to the bracket, a sleeve adapted to rotate upon the shaft, a clutch collar and sprocket-wheel keyed to the respective ends of the sleeve, a slidable sprocket-wheel upon the sleeve and having clutches upon its sides and means for operating them, a sprocket-wheel loosely mounted upon the sleeve and connecting with the large sprocket-wheel upon the pedal-shaft by means of a sprocket-chain, and sprocket-chains connecting the sprocket-wheels upon the sleeve with the sprocket-wheels upon the pedal-shaft and rear bicycle wheel respectively, substantially as and for the purpose set forth.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

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Witnesses:
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