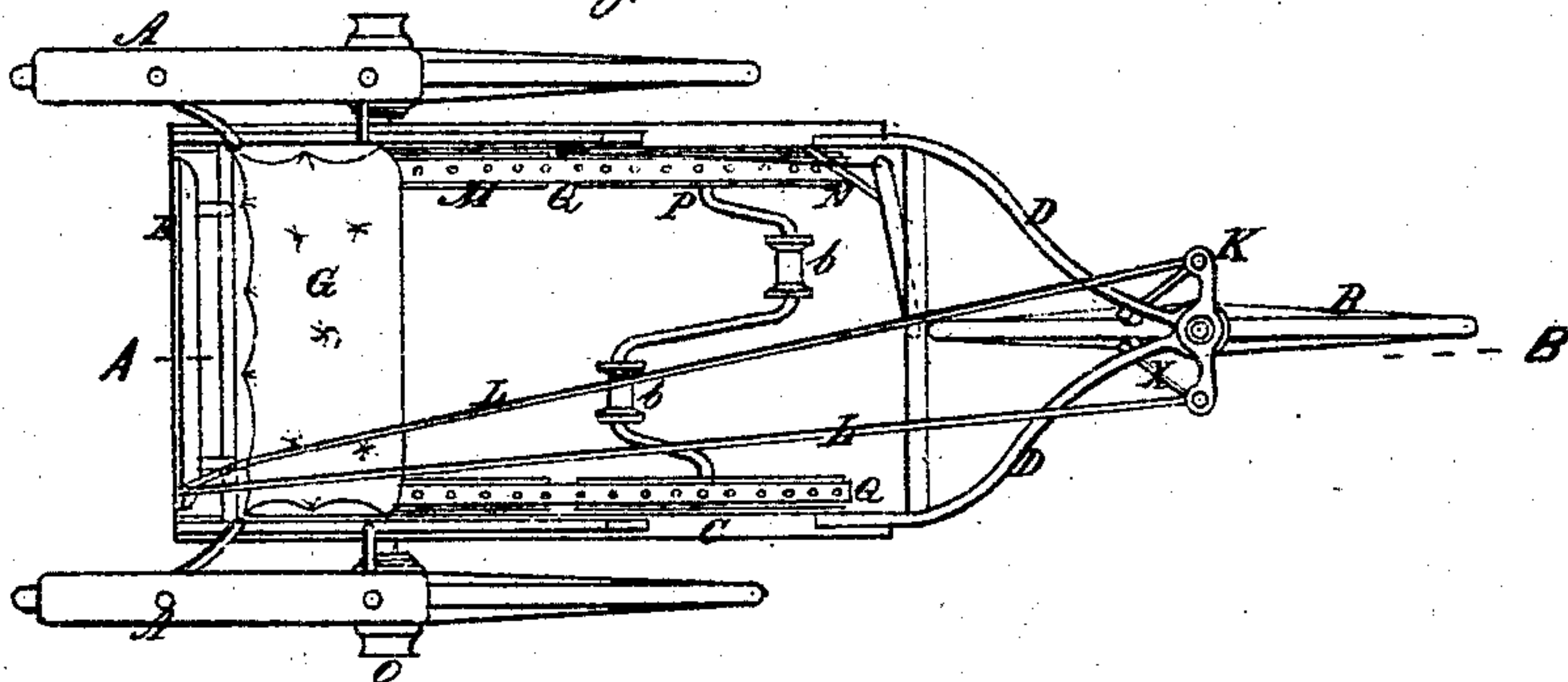


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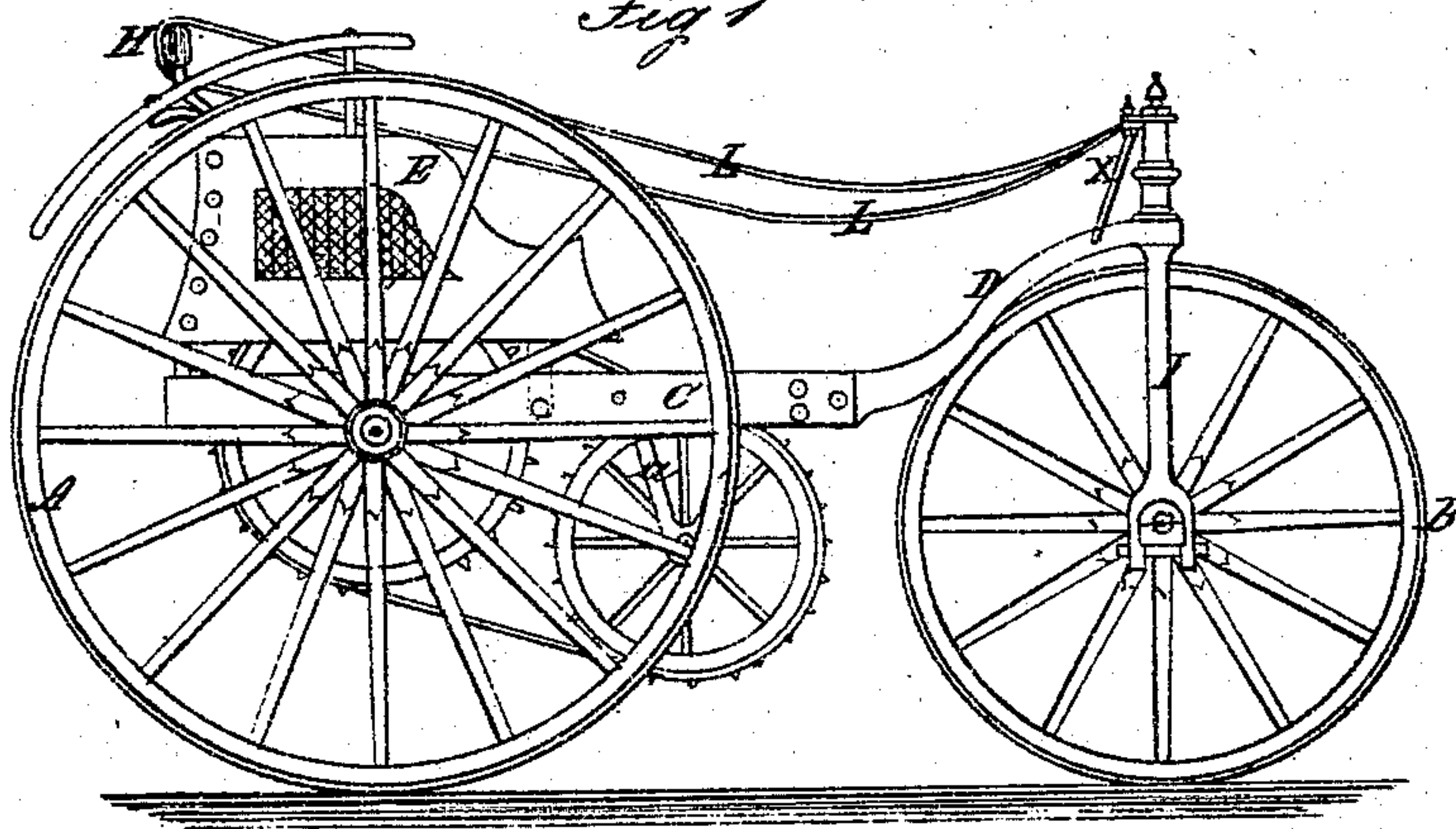
*S. Johnson's Velocipedes.*

*Fig 2*

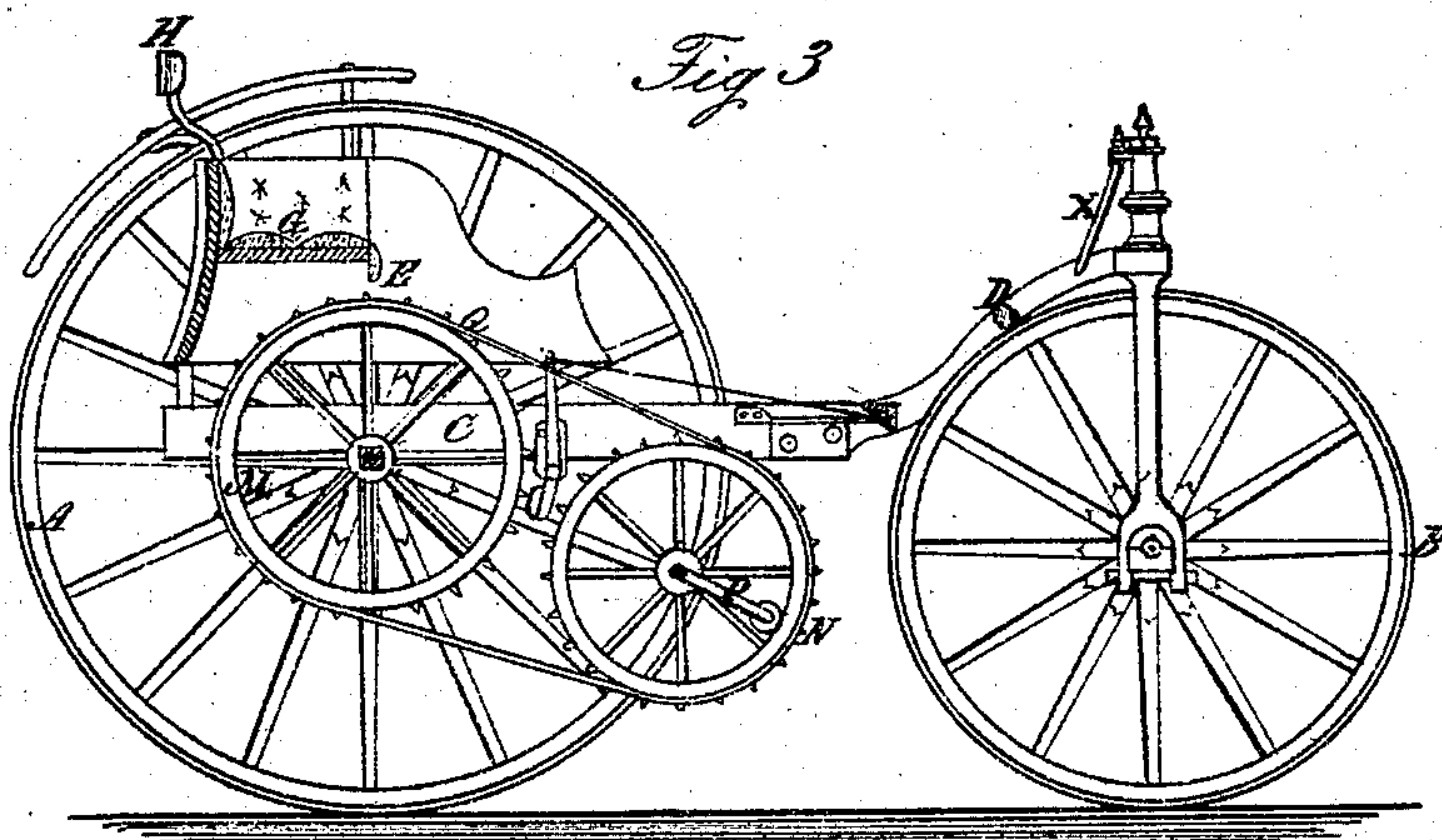
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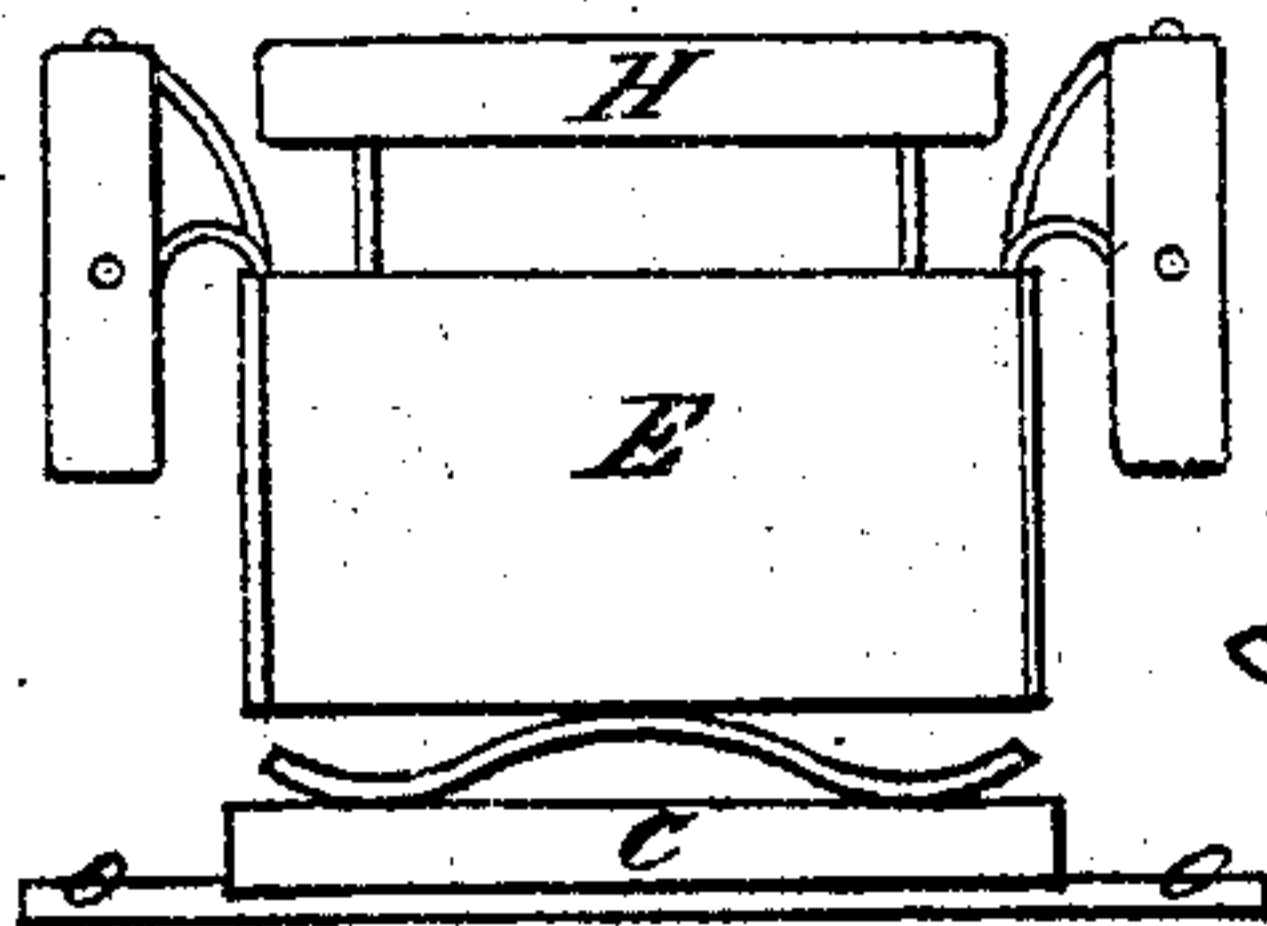
*Fig 1*



*Fig 3*



*Fig 4*



*Inventor:*

*Witnesses:*  
*Parker H. Sweet, Jr.*  
*W. J. Ludlow*

*S. Johnson.*  
*by his Attorney*  
*James L. Norris.*



# UNITED STATES PATENT OFFICE.

SIDNEY JOHNSON, OF WEST CROYDON, ENGLAND.

## IMPROVEMENT IN VELOCIPEDES.

Specification forming part of Letters Patent No. 117,638, dated August 1, 1871.

*To all whom it may concern:*

Be it known that I, SIDNEY JOHNSON, of West Croydon, in the county of Surrey, England, have invented Improvements in Velocipede-Carriages and Vehicles; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation, as follows:

This invention relates to velocipedes used on land and water; and consists in constructing the same in the following manner: First, as regards velocipedes to be used on land, I form the same with three wheels connected to and supporting the body of the carriage, the seat whereof comes over the axle of the two running-wheels, which are made very much larger in diameter than the third or front wheel, which is placed at the front of the body of the carriage and employed to steer or direct the same as required. Within the aforesaid body, and about midway between the axles of the front and back wheels, a two-throw crank-shaft is mounted and revolves in bearings. A pulley or stud-wheel is fixed on each end of the crank-shaft, and other pulleys or stud-wheels are fixed on the axle of the running-wheels within the body of the carriage. Over each pair of these pulleys or stud-wheels an endless band passes, the said band being perforated with holes fitted with eyelets placed at equal distances asunder, and corresponding with the studs or pins on the peripheries of the aforesaid stud-wheel, so that, when rotatory motion is imparted to the aforesaid cranks by the feet of the person seated in the carriage, rotatory motion will be imparted to the running-wheels through the medium of the stud-wheels and perforated bands, thereby propelling the carriage with a velocity equal to the difference between the diameters of the pulleys on the crank-shaft and those on the axle of the running-wheels. For example: Suppose the pulleys on the crank-shaft to be twice the diameter of those on the axle, it follows that one revolution of the crank-shaft will produce the revolutions of the running-wheels, which, if three feet in diameter, would move over nine feet of the ground at each revolution. To steer a velocipede thus constructed I employ reins, the ends whereof are fixed to a lever-bar fixed on the upper end of the forked bar

which carries the steering-wheel, so that the steering may be effected after the manner of driving a horse. I also fix to each end of the aforesaid lever-bar a strong spring of vulcanized India rubber to assist in bringing the steering-wheel straight after it has been moved to the right or left in the act of steering the velocipede. I employ a brake-lever and brake-block suitably placed for retarding or stopping the motion when required. And I would here remark that, if preferred, I employ toothed wheels, instead of the pulleys and bands above described, for propelling the vehicle, and I propose to form or cover the teeth of the said wheels with some material that shall render their movement noiseless. And as regards velocipedes to be used on water, the only difference in their construction from the land velocipede above described consists in substituting paddle-wheels in the place of the running-wheels and an ordinary rudder in lieu of the steering-wheel.

Figure 1 represents a side elevation of my improved velocipede adapted for common roads. Fig. 2 is a top-plan view of Fig. 1. Fig. 3 is a transverse and vertical section through the line A B at Fig. 2; Fig. 4, a back elevation of the body of the carriage showing the weight-spring for giving ease to the rider.

At each of the above figures the same letters of reference are employed to denote corresponding parts.

A A mark the running-wheels, and B the steering-wheel supporting the following parts: C, a framing of wood; and D, an iron fork fixed thereto. The framing A supports the body E of the carriage. G is the seat for the rider, and H a back board or rail for the person's back to rest against. The piece D is connected by a fork-shaped piece, I, to the steering-wheel B, the axle whereof it embraces at each side of the said wheel. The piece I is pivoted in D, and has a lever, K, fixed thereon to which the ends of the reins L are fixed for guiding the steering-wheel in the required direction. M M and N N are pulley-wheels, respectively fixed on the axles O and P; or, instead of using four pulleys, as above described, two pulleys may be used and one band, the pulleys being each fixed on its respective axle in the center of the length of the axle. The wheels A A are fixed on the axle O and move therewith, and the axle P is supported by brack-



ets *a a* fixed to the body of the carriage. The axle P is also formed cranked at *b b*, to which parts the feet of the rider are to be applied for imparting rotatory motion to the wheels A A through the medium of the endless straps or bands Q, which are prevented from slipping by forming eyelet-holes in the said bands, which take over pins or studs around the wheels M M and N N. If desirable, I propose to lock either of the wheels A A on the axle O and disconnect either when going round curves. X are elastic springs for keeping the wheel B in a line with the wheels A.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The crank-foot axle P carrying the pulley-wheel N, arranged in front of the operator's seat upon brackets *a a*, as set forth, in combination with the pulley-wheel M of the axle O, and the

belt Q, the several parts arranged and operating in relation to each other and to the frame and driving-wheels substantially as and for the purpose set forth.

2. The steering mechanism, consisting of the wheel B, pivoted fork I, piece D, lever K and its reacting spring and steering-reins, the several parts constructed and operating as herein shown and described.

3. The velocipede herein shown and described, when the several parts constituting the same are arranged and operate substantially as and for the purpose set forth.

SIDNEY JOHNSON.

Witnesses:

H. A. MALLYON,

T. A. SAUNDERS,

*Both of 85 Gracechurch street, London.*