No. 615,796. Patented Dec. 13, 1898.

T. H. BROSNIHAN.

FOOT PROPELLED VEHICLE.

(Application filed Sept. 14, 1897.)

(No Model.) 3 Sheets—Sheet 1.

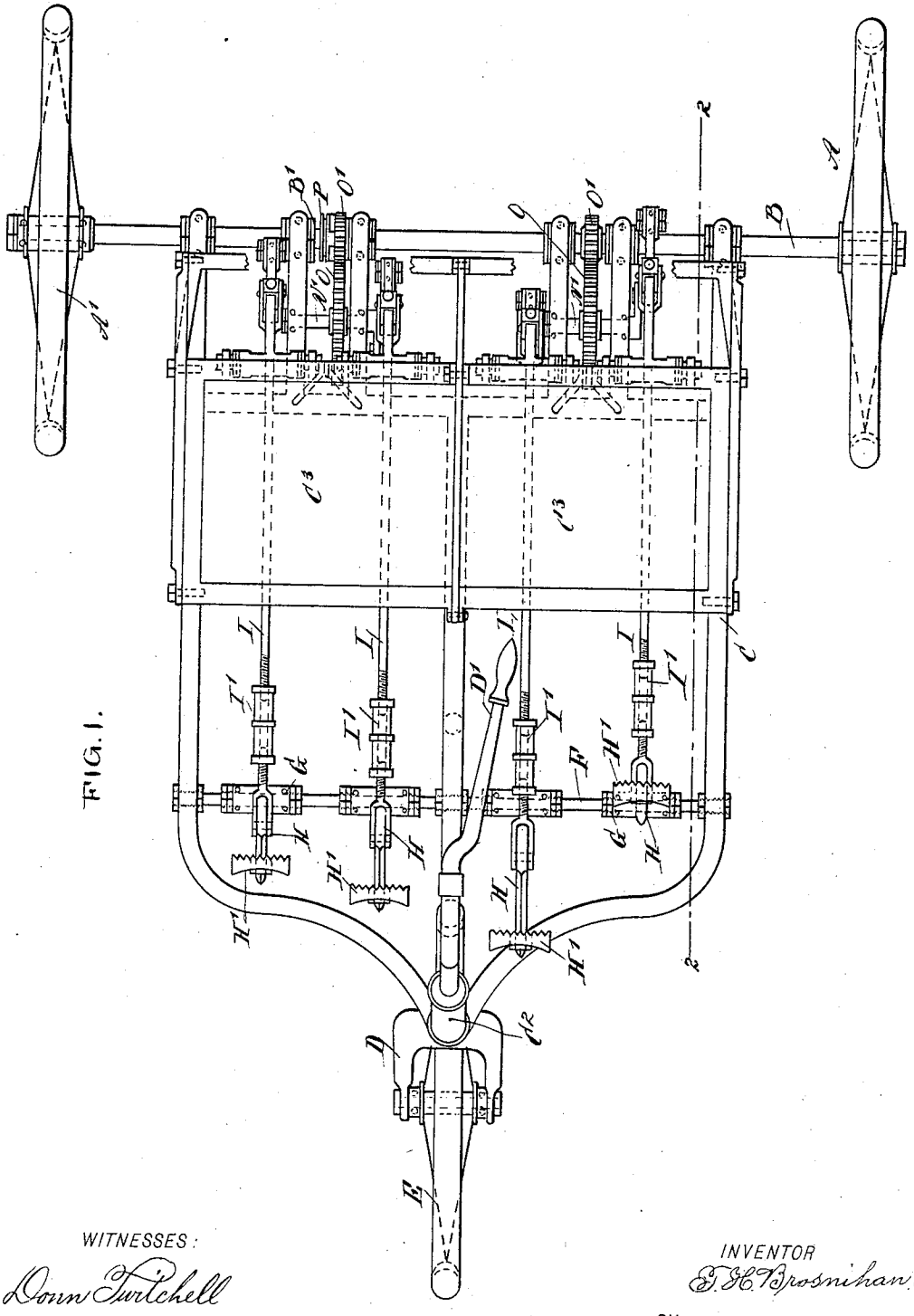

FIG. 1.

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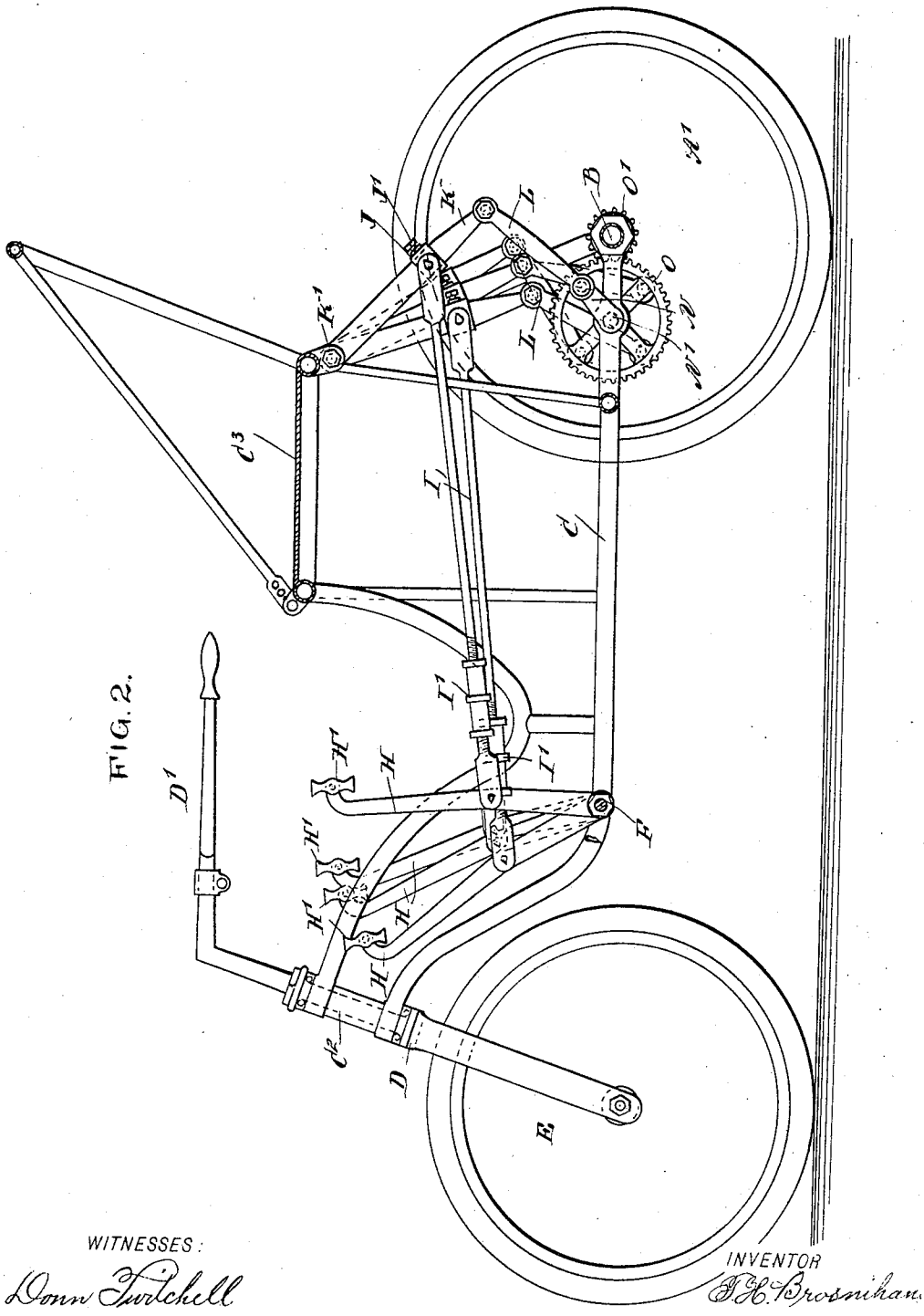

FIG. 2.

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FIG. 3.

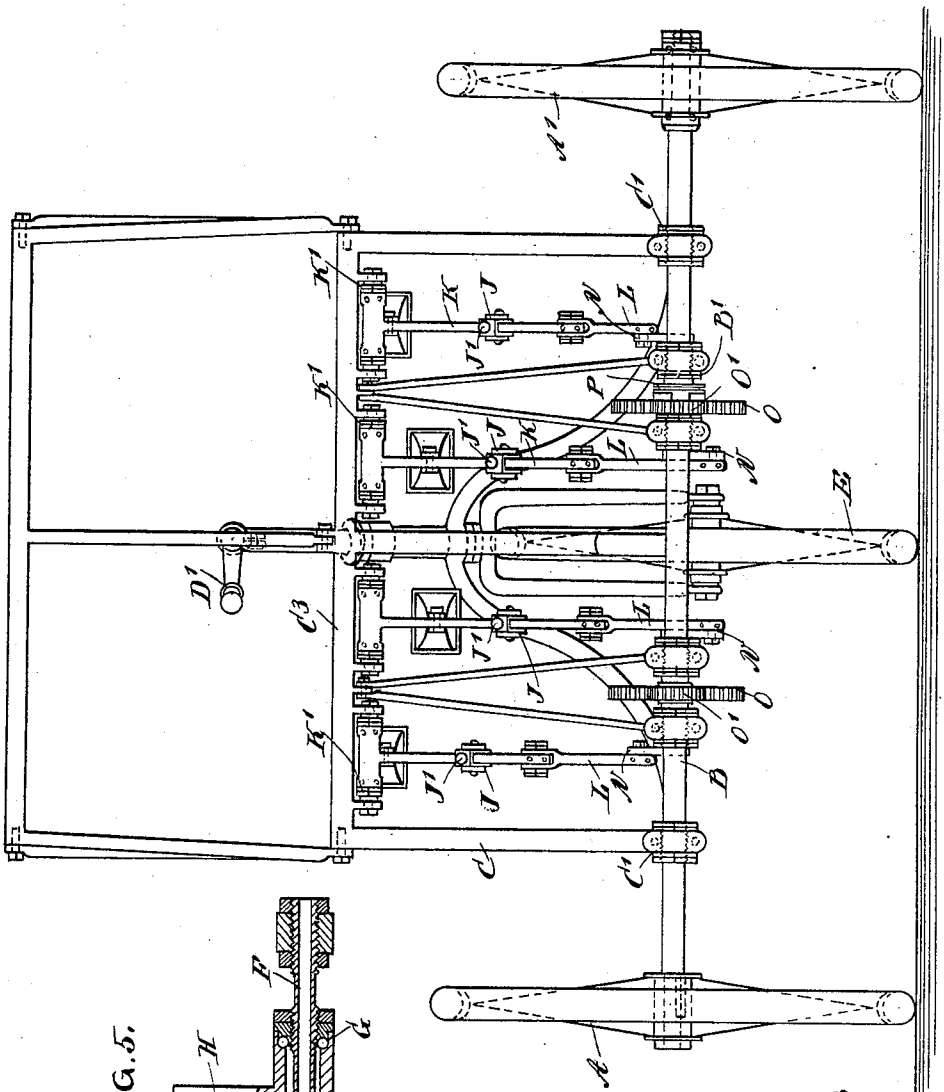


FIG. 5.

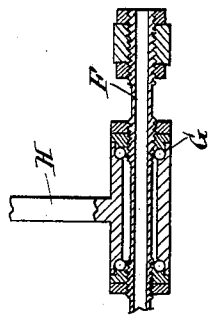


FIG. 4.

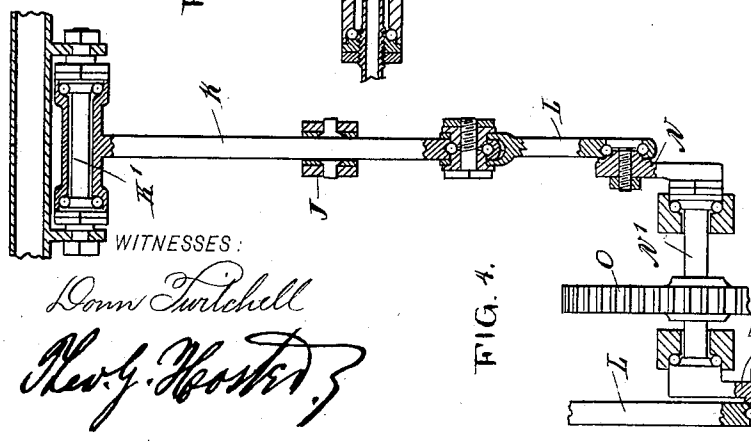
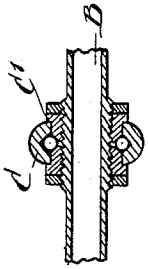


FIG. 6.



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UNITED STATES PATENT OFFICE.

THOMAS H. BROSNIHAN, OF LIVERMORE FALLS, MAINE, ASSIGNOR TO FRANK A. MILLETT AND THOMAS H. BROSNIHAN, OF SAME PLACE.

FOOT-PROPELLED VEHICLE.

SPECIFICATION forming part of Letters Patent No. 615,796, dated December 13, 1898.

Application filed September 14, 1897. Serial No. 651,643. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. BROSNIHAN, of Livermore Falls, in the county of Androscoggin and State of Maine, have invented a new and Improved Foot-Propelled Vehicle, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved foot-propelled vehicle which is simple and durable in construction and arranged to be conveniently and rapidly propelled without much exertion on the part of the occupants of the vehicle.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement. Fig. 2 is a sectional side elevation of the same on the line 2 2 of Fig. 1. Fig. 3 is a rear elevation of the same. Fig. 4 is an enlarged cross-section of part of the driving-gear. Fig. 5 is an enlarged cross-section of the fulcrum for the foot-lever, and Fig. 6 is an enlarged sectional plan view of the ball-bearing between the driving-axle and the frame.

The improved machine is provided with the main wheels A A', of which the former is the driving-wheel and is secured on the axle B, while the other wheel A' is mounted to rotate loosely on the said axle. The latter is journaled in ball-bearings C', held on a frame C, provided with a steering-head C^2, in which is mounted to turn the front fork D, carrying the steering-wheel E.

On the upper end of the front fork D is arranged a rearwardly-extending steering-handle D', adapted to be taken hold of by the operator seated on a seat C^3, carried on the frame C.

As shown in the drawings, the machine is arranged for two persons; but the machine may be constructed for a single occupant or for more than two, if desired.

On the forward part of the frame C is secured a transversely-extending rod F, carrying ball-bearings G for the fulcrum ends of foot-levers H, extending upwardly in front of the seat C^3 and arranged in pairs, one pair to be actuated by the feet of each occupant. The upper free end of each foot-lever is provided with a suitably-constructed pedal H', adapted to be engaged by the feet of the operator, so as to enable the latter to exert a forward pressure against the pedal to impart a swinging motion to the corresponding foot-lever, the levers being so arranged that one moves forward while the other is on the return stroke, as will more clearly appear by the description hereinafter furnished.

Each foot-lever H is connected between its fulcrum end and the pedal H' with a link I, made in sections joined by a turnbuckle I' to adjust the link to the desired length. The links I extend rearwardly under the seat C^3 and pivotally connect with blocks J, adjustably held on arms K and adapted to be secured thereon by set-screws J', as plainly shown in the drawings.

The arms K are fulcrumed at their upper ends on ball-bearings K', supported from the framework below and at the rear end of the seat C^3. (See Fig. 2.) Each arm K is pivotally connected at its lower end with a link L, connected with a crank-arm N, secured on a shaft N', carrying a gear-wheel O, in mesh with a pinion O' on the axle B.

Now by reference to Figs. 1 and 3 it will be seen that one pair of foot-levers (the left pair) is connected by the mechanism described with a shaft N', geared to a pinion O', secured on the axle B, while the other pair of foot-levers (the right pair) is connected by a like mechanism with a shaft N', geared to a pinion O', mounted on a clutch P, adapted to be thrown in mesh with clutch-teeth B' on the axle B, so that this second pair of foot-levers and its connected parts can be connected or disconnected with and from the axle B, as desired.

It is expressly understood that each pair of foot-levers is connected with a single shaft N', and the crank-arms N on the shaft stand in opposite directions to each other, so that the foot-levers in each pair work alternately in opposite directions, as before mentioned.

By reference to Figs. 4 and 5 it will be seen that suitable ball-bearings are employed on

the various bearings, so that the friction of the working parts is reduced to a minimum, and consequently it requires but little exertion on the part of the operator to propel the vehicle forward. It will further be seen that by having the large gear-wheel O meshing in the small pinion O′ a very high speed can be given to the vehicle upon actuating the crank-arms to rotate the said large gear-wheel, as above mentioned.

By adjusting the blocks J on the arms K the same can be brought nearer to or farther from the fulcrum K′ to regulate the throw of the said arms, and consequently that of the foot-levers H, to suit the convenience of the operator working the foot-levers.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent--

1. A three-wheeled vehicle, consisting of a frame, a steering-wheel mounted in the front end of the frame, an axle mounted in the rear end of the frame, wheels on the axle, one of the wheels being fixed and the other loose, a seat on the rear of the frame, crank-shafts in front of the axle and each provided with a gear-wheel, a pinion on the axle and meshing with the gear-wheel of one of the crank-shafts, a clutch on the axle and carrying a pinion meshing with the gear-wheel of the other crank-shaft, arms pivoted at their upper ends to the frame below the rear portion of the seat, links connecting the arms with the said crank-shafts, two pairs of foot-levers pivoted at their lower ends to the forward part of the frame and projecting up in front of the seat, and links connecting the said foot-levers and arms, substantially as herein shown and described.

2. In a three-wheeled vehicle, the combination of a frame, a steering-wheel mounted in the front end of the frame, an axle mounted in the rear end of the frame and provided with a pinion, wheels on the axle, one of the wheels being fixed and the other loose, a seat on the rear part of the frame, a shaft in front of the axle and provided with a crank at each end, a gear-wheel on the crank-shaft and meshing with the pinion of the axle, arms pivoted at their upper ends to the frame below the rear portion of the seat, links connecting the lower ends of the arms with the cranks of the said shaft, foot-levers pivoted at their lower ends to the forward part of the frame and projecting up in front of the seat, and adjustable links having their forward ends pivoted to the foot-levers and their rear ends pivotally and adjustably connected with the said arms, substantially as described.

THOMAS H. BROSNIHAN.

Witnesses:
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W. A. FRENCH.