

F. J. FORSYTH.
VELOCIPÈDE.

No. 101,993.

Patented Apr. 19, 1870.

Figure 1—

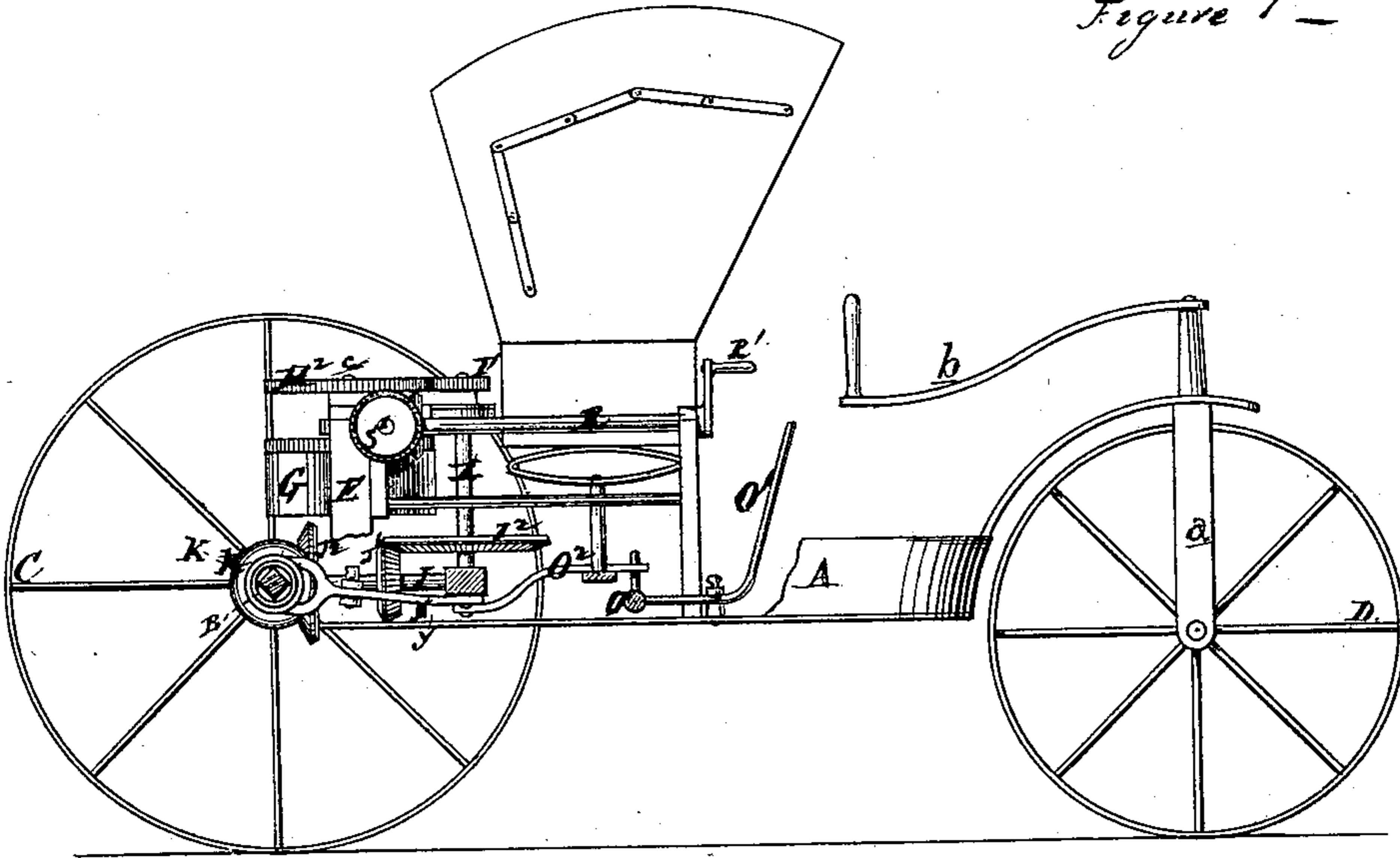
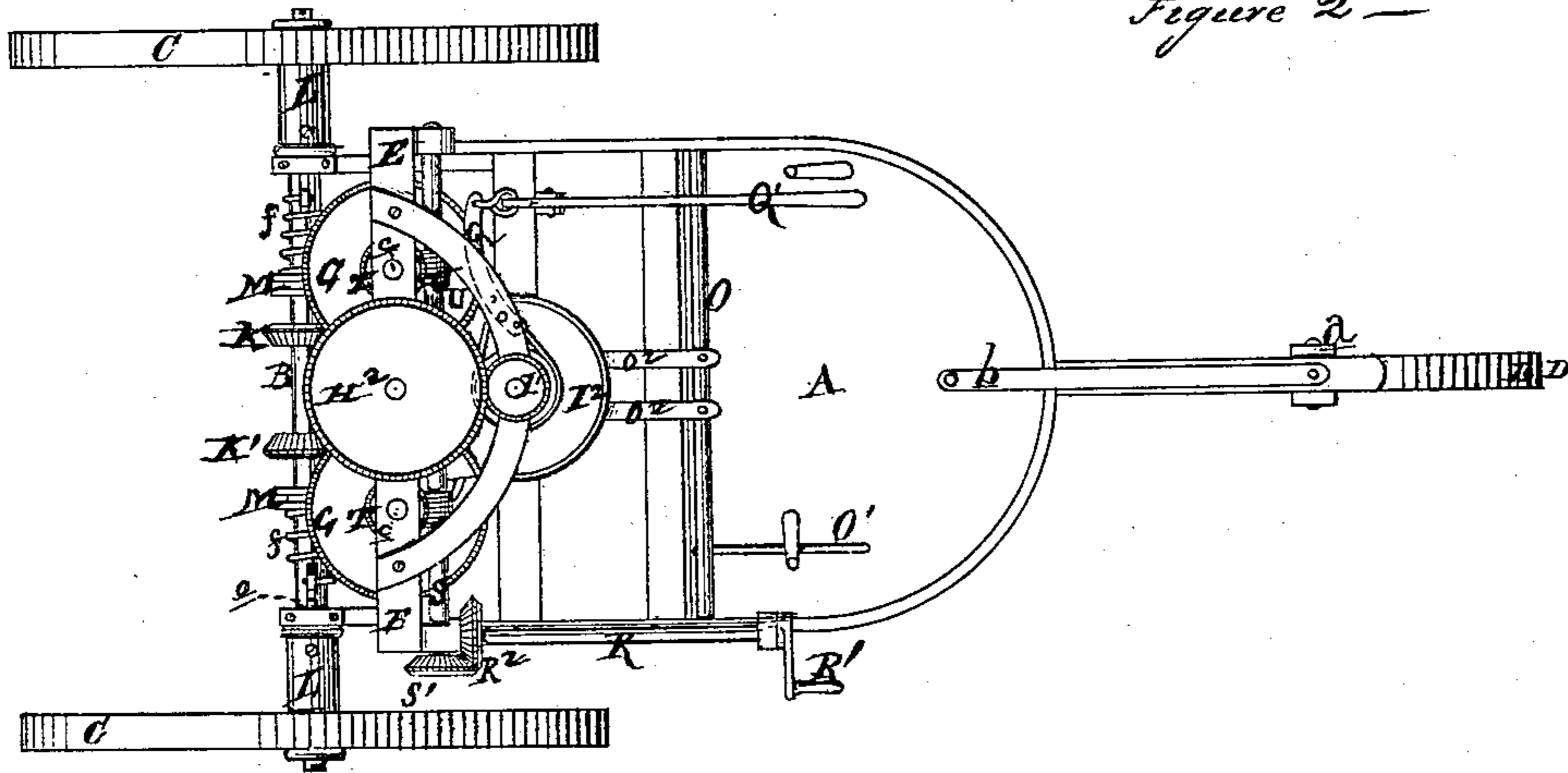


Figure 2—



ATTEST:
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Frederick Everts,

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Figure 3—

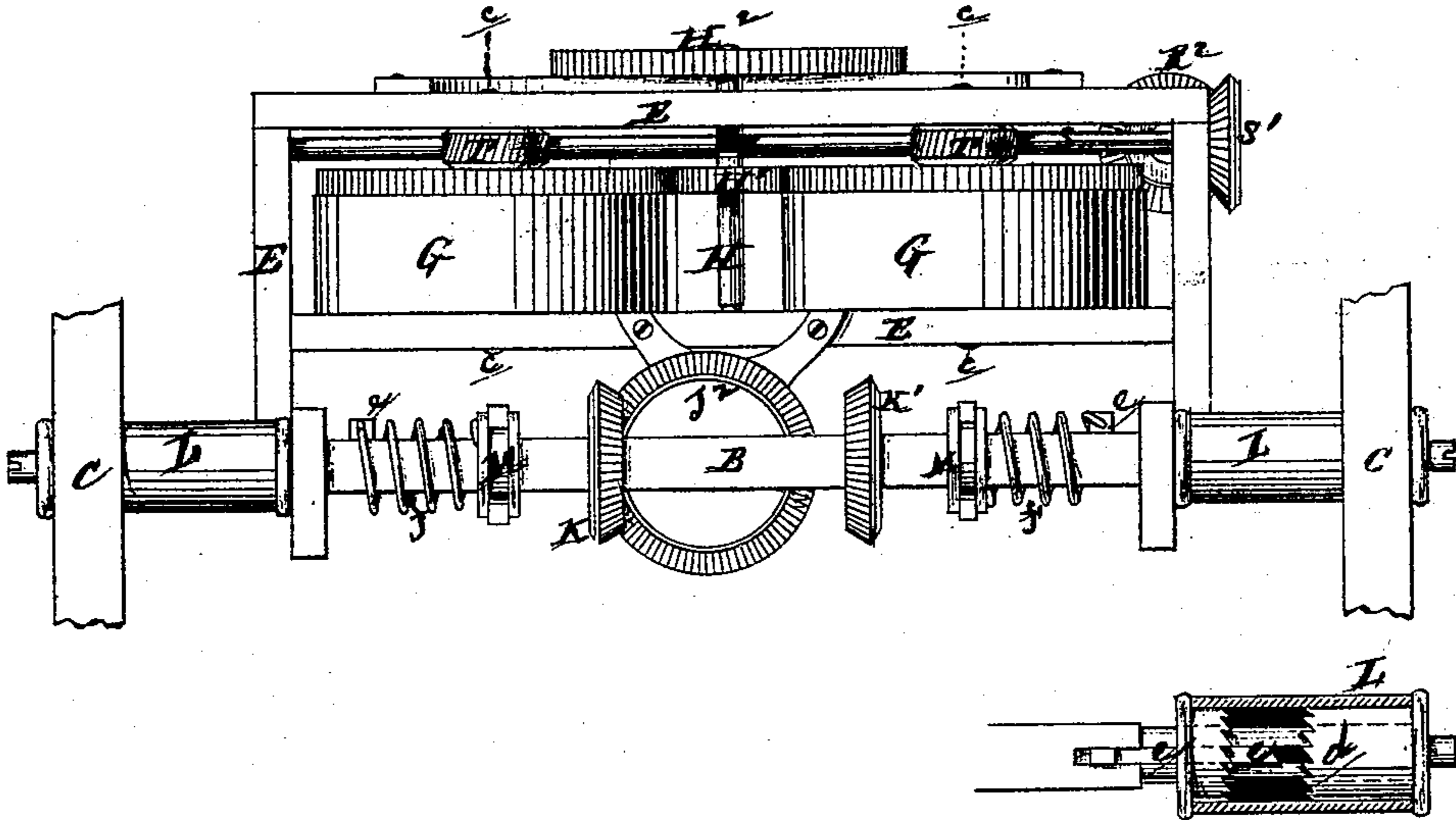


Figure 5—

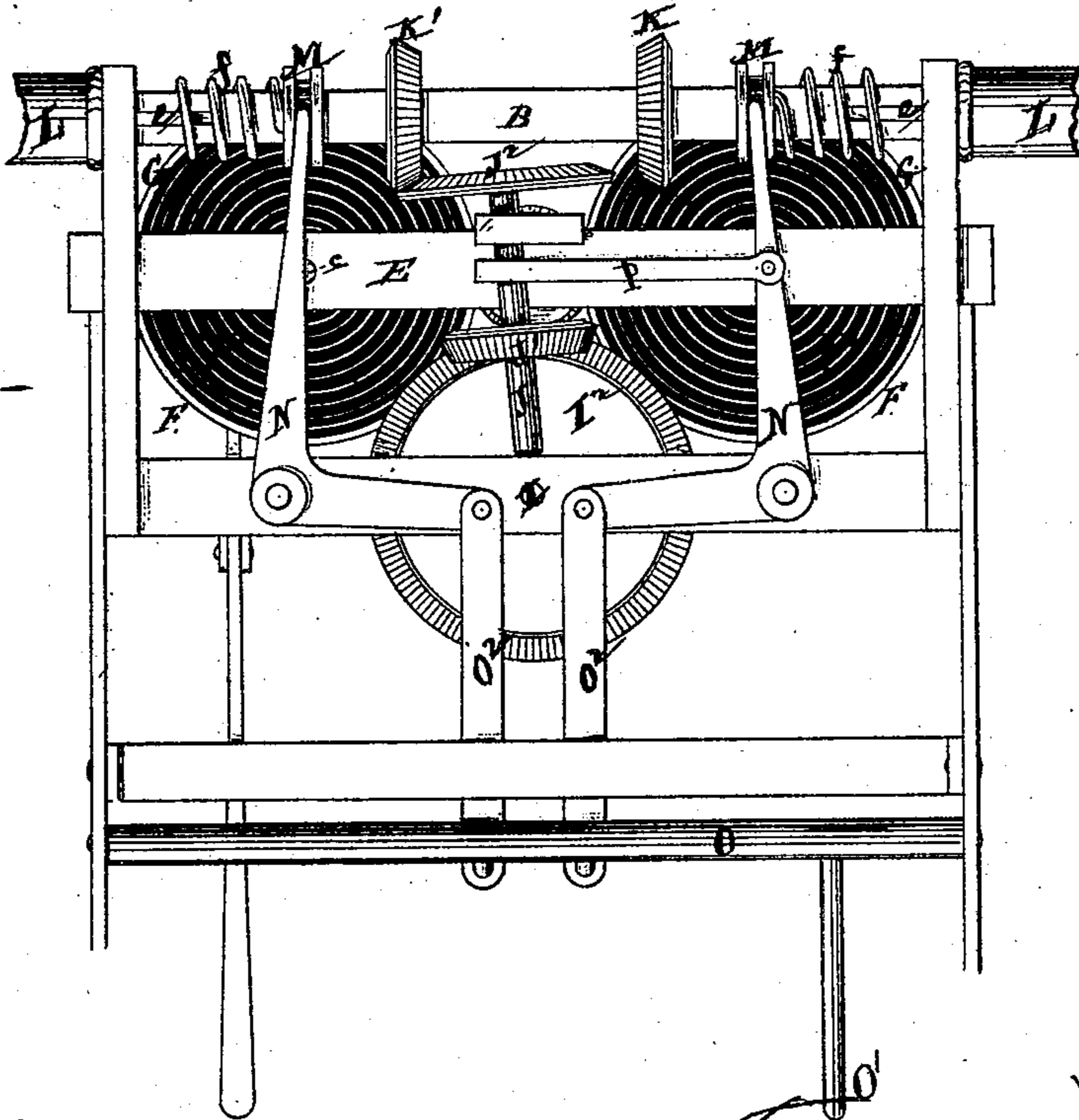


Figure 4—

ATTEST:

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United States Patent Office.

FREDERICK J. FORSYTH, OF BAY CITY, MICHIGAN.

Letters Patent No. 101,993, dated April 19, 1870.

IMPROVEMENT IN VELOCIPEDÉ.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern:

Be it known that I, FREDERICK J. FORSYTH, of Bay City, in the county of Bay and State of Michigan, have invented a new and useful Improvement in Self-propelling Carriages; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, and being a part of this specification, in which—

Figure 1, sheet 1, is a side elevation of my carriage, partially in section;

Figure 2 is a plan of the carriage, with the seat and top removed;

Figure 3, sheet 2, is a rear elevation of the operating gearing;

Figure 4 is a bottom plan of the same, with the caps of the spring-barrels removed; and

Figure 5 is a vertical longitudinal section of one of the hubs.

Similar letters of reference indicate corresponding parts in each figure.

The nature of this invention relates to the construction of a self-propelling carriage, whose motive power is derived from two or more coiled springs, rotating the rear axle through a peculiar system of gearing.

It consists—

First, in the peculiar construction of the hubs of the rear wheels, and arrangement of clutch-boxes therein.

Second, in the mechanism for winding up both springs simultaneously, by the rider, in his seat.

Third, in the peculiar arrangement of the train of gearing for communicating motion to the axle in either direction, such direction being changed at the will of the rider.

Also, in the general arrangement of its various parts, as hereinafter more fully shown and set forth.

In the drawings—

A represents the body of a light carriage, and B an axle journaled in the rear part thereof, and on whose arms rotate the driving-wheels C.

D is a single fore wheel, journaled in the bifurcated ends of the standard *a*, which supports the crane-neck of the carriage-body.

The standard extends up through a hollow post on the crane-neck, and is partially rotated by the tiller *b*, carried back toward the rider's seat, for conveniently governing the course of the vehicle.

E is a frame, erected in the rear part of the carriage-body.

c are spring arbors, journaled in said frame, to which are secured the inner ends of the coiled springs *F*, whose outer ends are secured to the barrels *G* which inclose them, said barrels rotating freely on their arbors, and are provided with a spur-gearing on their

upper edges, which engage with and rotate an upright shaft, *H*, through a pinion, *H*¹.

At the top of the shaft *H* is a spur-wheel, *H*², which communicates motion to a shaft, *I*, through a pinion, *I*¹.

At the lower end of this shaft is a miter-gear, *I*², which gives motion to a horizontal shaft, *J*, through its pinion, *J*¹.

At the rear end of the shaft *J* is a miter-gear, *J*², which gives motion to the axle *B* through one of its pinions, *K* or *K'*, with either of which it may be caused to mesh, the shaft having a lateral movement in its rear box for that purpose.

L are the hubs of the driving-wheels, which are hollow, and have a clutch-box, *d*, within them.

e is a clutch-pin, sliding in a key-way in the axle, its outer end engaging with the clutch-box in the hub, when thrown outward. Otherwise the hub rotates freely on the axle.

The inner end of the clutch-pin is provided with a projecting stud, with which engages a spring, *f*, coiled about the axle, its other end being secured to a clutch-collar, *M*.

These collars are moved to or from the hubs, causing the clutch-pin to engage or release the hubs, by bell-cranks, *N*, operated by a rock-shaft, *O*, lever *O*¹, and links *O*², under the rider's seat, one of the bell-cranks having a lateral link, *P*, connecting it with the shaft *J*. By depressing the lever *O*¹, the pinion *J*² is thrown in gear with the pinion *K* of the axle, at the same time the clutch-pin of the left wheel is caused to engage with its hub, and a forward motion given to the axle from the springs *F* through the train described. The reversing of the motion is effected by throwing up the lever *O*¹, and causing the gear *J* to mesh with the pinion *K'*.

A friction-brake, *Q*, operated by a treadle, *Q*¹, acting on a drum on the vertical shaft *I*, retards the motion of the vehicle when necessary.

To wind up the springs, a shaft, *R*, provided with crank *R*¹, is journaled at the side of the seat. At its rear end is a miter-gear, *R*², which meshes with the pinion *S*¹ of the transverse shaft *S* over the barrels, and rotates said shaft.

On the arbors *c* above the barrels, worm-wheels, *T*, are secured, with which mesh worms *U* on the shaft *S*. By turning the crank *R*¹, both springs are wound up simultaneously by the rider, as often as may be necessary, without leaving his seat. As the speed of each succeeding wheel in the train from the arbor increases, it will readily be seen that, with springs of the proper size and power, a long distance may be traveled without re-winding the springs.

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

1. The construction and arrangement of the frame E, arbors *c*, coiled springs F, geared-barrels G, gears H¹, H², I¹, I², J¹, J², K, and K', shafts H, I, and J, axle B, hubs L provided with clutches, *d*, clutch-pins *e*, springs *f*, clutch-collars M, rock-shaft O, lever O¹, links O², bell-cranks N, and link P, for the propulsion of a vehicle, in the manner set forth, shown, and described.

2. In self-propelling vehicles, the construction and arrangement of the worm-wheels T, worms U, shafts S and R, gears S', and R², and crank R, in combina-

tion with the arbors *c*, in the manner and for the purpose set forth.

3. In combination with the foregoing parts, the body A, wheels C D, standard *d*, and tiller *b*, the whole constructed, arranged, and operating substantially as described.

F. J. FORSYTH.

Witnesses:

H. F. EBERTS,
JAS. I. DAY.