L. G. BODEL, J. MASSE & W. WEBSTER.

VELOCIPEDE.

No. 169,774. Patented Nov. 9, 1875.

Fig. 1.

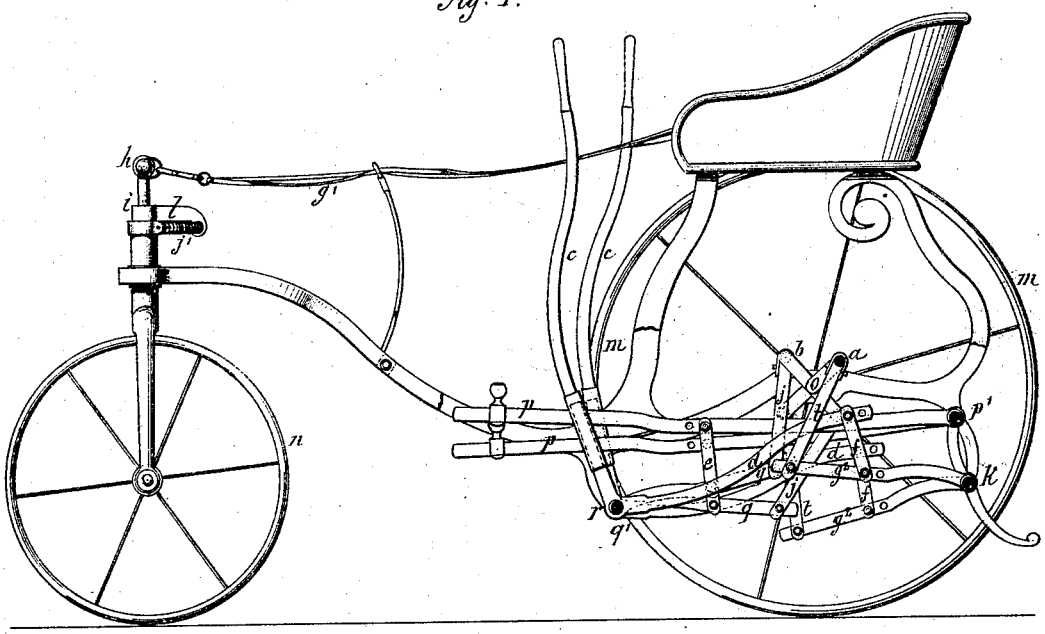
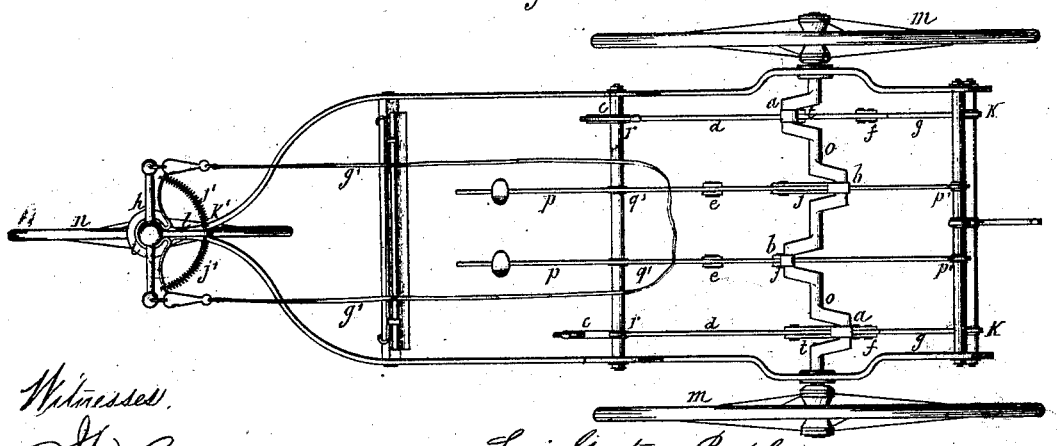


Fig. 2.



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UNITED STATES PATENT OFFICE.

LOUIS G. BODEL, JACQUES MASSE, AND WILLIAM WEBSTER, OF PARIS, FRANCE.

IMPROVEMENT IN VELOCIPEDES.

Specification forming part of Letters Patent No. **169,774**, dated November 9, 1875; application filed July 13, 1875.

To all whom it may concern:

Be it known that we, LOUIS GUSTAVE BODEL, JACQUES MASSE, and WILLIAM WEBSTER, of Paris, France, have invented Improvements in Velocipedes, of which the following is a specification:

The object of this invention is the application of a system of jointed mechanism actuated by pressure from the feet and hands to the propulsion of velocipedes and other similar vehicles.

This mechanism consists in the peculiar arrangement of two levers—one of the second and the other of the third class, which enables the motion of the feet and of the hands to be very greatly reduced, while at the same time communicating motion to the actuating shaft. Our present invention consists also in the method whereby the object is effected, and in improvements with regard to the government of the third wheel, and to the action of the hands to be united with that of the feet in propelling.

We proceed to describe our various improvements with reference to the accompanying drawing, which shows in elevation Figure 1, and in plan Fig. 2, a propelled carriage. The system of jointed mechanism is clearly shown; it is actuated by a person who works at once with his hands and his feet in order to produce the locomotion. It is necessary, therefore, to arrange peculiarly the jointed mechanism intended for the transmission of these two kinds of efforts.

The axis *o* of the driving-wheels *m m* is bent in four places. The four cranks are at right angles, the two outer ones, *a a*, correspond to the hands, and the two inner ones, *b b*, to the feet. These last two cranks receive their motion from the jointed mechanism, which we will describe. The levers with pedals *p p* oscillate at *p' p'* in the rear of the vehicle, and forming-levers of the second class are united by forked arms *e e* to the rock-lever *g g*. The latter, which are levers of the third class, rock or oscillate upon g^1 g^1 upon the front of the vehicle. Their ends are jointed to rods *j j*, which are attached to cranks *b b* of the axle *o*, upon which are keyed the wheels *m m*. In consequence of this action, it will be seen that the comparatively small motion of the feet upon the lever *p p* are increased by the levers of the third class *g g*, and in this manner the rods *j j* describe, with the cranks, a circle of action as large as possible. The two outer cranks *a a* are worked by the hand-levers *c c*, hung at *r*, from which a lever, *d*, extends back, and connected, by a rod, *f*, to a lever, g^2, hung at *k*, and each of these levers g^2 connected to the respective cranks by a rod, *t*.

We proceed now to describe the government of the third wheel. This third wheel is directed by means of two straps or chains, g^1 g^1, attached to the ends of the cross-piece *h* fixed to the top of the vertical rod *i*, under which the third wheel runs. When any action ceases upon the straps or chains g^1 g^1, it is necessary that the third wheel return to its normal position; and this is accomplished by means of two spiral springs, *j' j'*, surrounding a segmental bar, *k'*, and against which there presses either to the right or to the left the end of an arm, *l*, perpendicular to the cross-piece *h*, and drawn with it. The one or the other of the springs is compressed by the deviation of the wheel, recalls the latter to its place as soon as the traction exerted by the straps g^1 g^1 upon the cross-piece *h* ceases. This automatic action facilitates the progress of the vehicle, and augments safety particularly inward with sloping sides.

Having thus described the nature of our invention, and in what manner the same is to be performed, what we claim is—

1. The combination of the treadles *p p*, connected through levers *g g* and rods *e e*, and *j j* to cranks *b b*, on the axle with the hand-levers *c c*, connected through levers g^2 g^2 and rods *f f* and *t t*, with their respective cranks *a a*, on the axle, substantially as described.

2. The combination of the guiding-wheel *n*, forked rod *i*, and arm *h* projecting therefrom, the segmental bar *k'*, and spiral springs *j' j'* thereon, substantially as described.

In testimony whereof we have signed our name to this specification before two subscribing witnesses.

G. L. BODEL.
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Witnesses:
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