2 Sheets—Sheet 1.

J. H. NOLAN.

VELOCIPEDE.

No. 193,098. Patented July 17, 1877.

Fig. 1

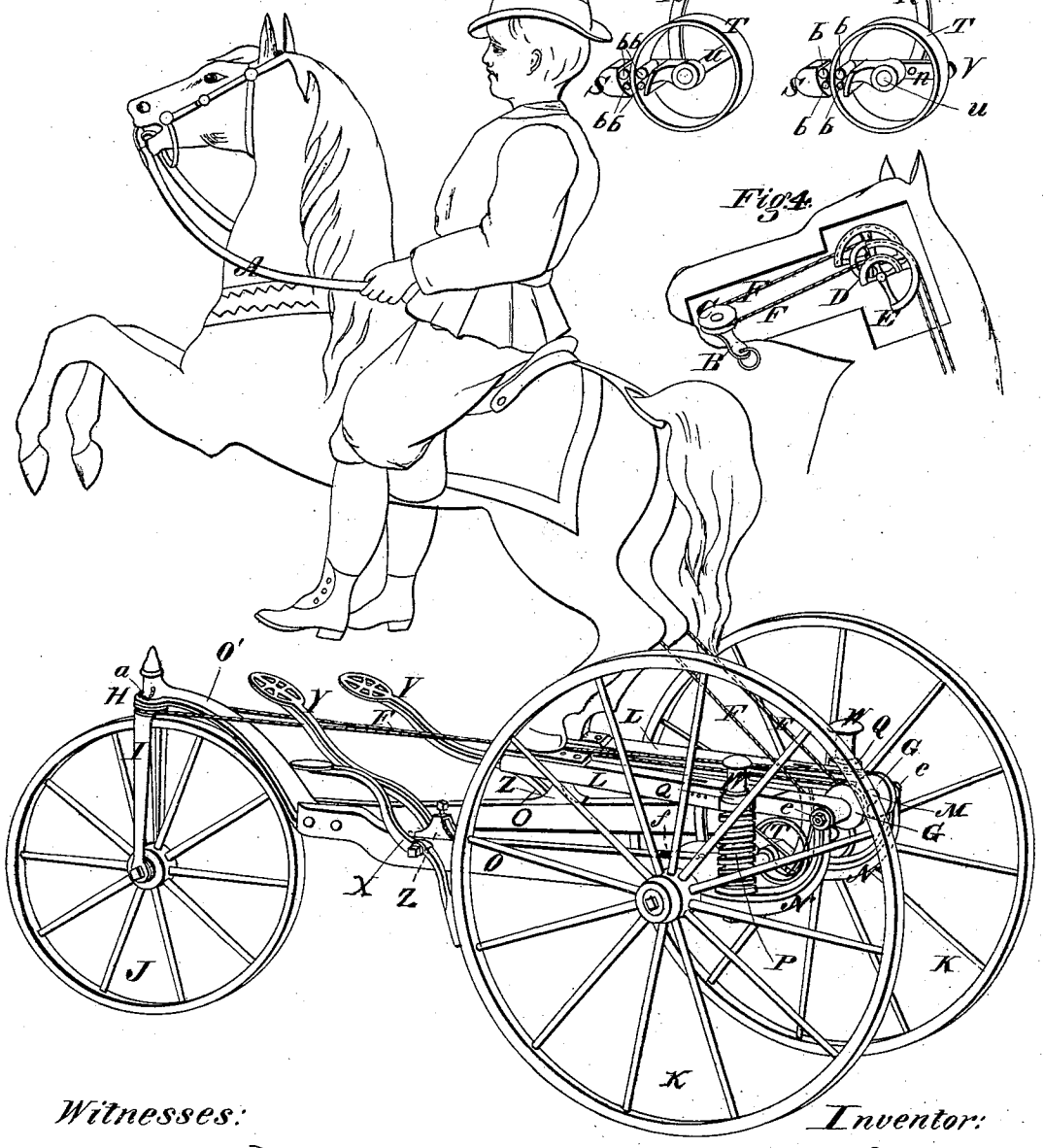


Fig. 2

Fig. 3

Fig. 4

Witnesses:

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William N. Dodge.

Inventor:

J. H. Nolan

By Dodger Son

His Attys.

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2 Sheets—Sheet 2.

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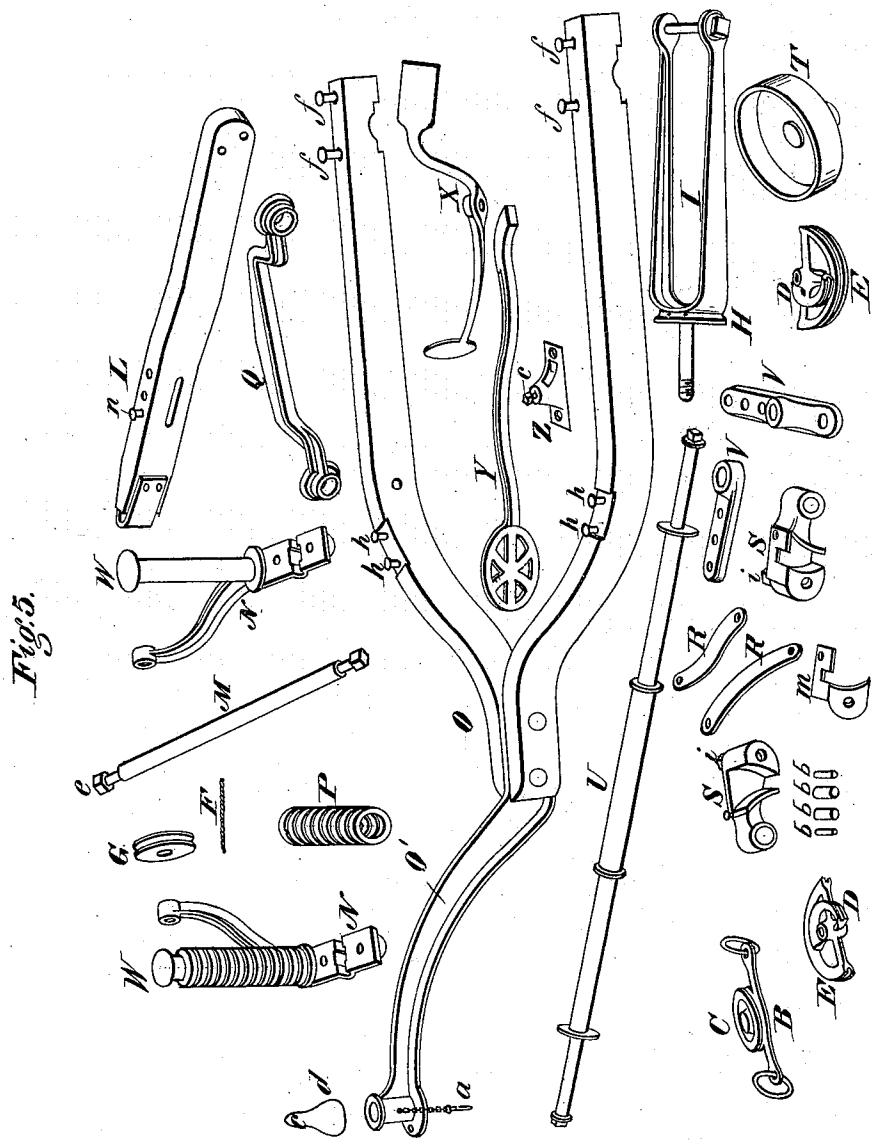


Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN H. NOLAN, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN VELOCIPEDES.

Specification forming part of Letters Patent No. **193,098**, dated July 17, 1877; application filed May 19, 1877.

To all whom it may concern:

Be it known that I, JOHN H. NOLAN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Velocipedes, of which the following is a specification:

My invention relates to that class of velocipedes in which the rotation of the wheels is produced by means of a vertically-moving seat sustained by a spring or springs, and more especially to those in which the seat is formed on the figure of a horse arranged to rock on the frame of the vehicle.

The object of the invention is to simplify and cheapen the construction, improve the action, and render the velocipede readily adjustable for the use of boys of different sizes; and to this end it consists in various details hereinafter described and explained.

Figure 1 represents a perspective view of my velocipede; Figs. 2 and 3, perspective views illustrating the construction of the clutches by which the driving-wheels are rotated; Fig. 4, a view, showing the arrangement of the steering-gear within the head of the horse; Fig. 5, a view, showing the various parts and pieces separated from each other.

In constructing my velocipede I first construct a Y-shaped frame, and sustain the same by two driving-wheels, K, at the rear end, and a swiveled guiding-wheel, J, at the front, as shown in Fig. 1.

As shown in Figs. 1 and 5 the frame consists of two curved bars, O, bolted at their forward ends to a metal goose-neck or reach-bar, O′, the forward end of which latter is provided with a vertical eye or socket to receive the upper end of the forked swivel post I, in which the guiding-wheel is mounted.

The driving-wheels are mounted on, and one or both of them secured rigidly to, the ends of a transverse shaft, U, which latter is seated in notches or bearings in the under sides of the bars O of the frame, and secured therein by the ends of metal arms N, which are fastened to the under side of the frame-bars by bolts. The rear ends of the arms N are curved upward, and provided at their extremities with eyes which sustain the ends of a transverse rod or shaft, M, which latter, in turn, sustains and forms a pivot for two arms, L, which are extended forward and bolted firmly to the hind feet of a model horse, as shown in Fig. 1.

The arms L, to which the horse is attached, rest upon a transverse bar, Q, the ends of which are arranged to slide on vertical rods W, and supported by spiral springs P mounted on said rods, the springs serving to sustain the horse in an elevated or rearing position, except when it is depressed by the weight and motion of the rider, who will sit astride of the back in the same manner as upon a live animal. The rods on which the springs are mounted are secured to the fixed arms N, and are provided on the upper ends with nuts, which admit of the springs being readily replaced by others which are weaker or stronger, as occasion may require.

On the ends of the axle, inside of the frame, I secure firmly two disks or wheels T, and by the sides of the disks two loose clutch-blocks, S, to give them a rotary motion, the clutch-blocks being given a vibratory motion by bolting to their sides arms V, and connecting the latter by links R to the arms L, on which the horse is sustained.

As shown in Figs. 1, 2, 3, and 5, each disk or wheel T is provided on one side with a peripheral rim or flange, and is secured rigidly on the axle, while its driving-clutch is mounted loosely on the axle, and provided in its side with a V-shaped notch or recess, which receives the rim or flange of the disk, and also two steel rollers, *b*, on each side of the same, as clearly represented in Figs. 2 and 3.

As the clutch-blocks S descend, the rollers turn loosely therein, but as they are elevated the rolls ride down in the V-shaped notch and lock the arm or block fast to the flange of the disk or wheel, which is thereby caused to turn with the clutch.

It will be noticed that one of the clutches takes hold in front and the other in rear of the axle, but that both actuating-links are connected to the clutches in rear of the axle, the consequence of which arrangement is that the operating or griping end of one clutch rises as that of the other descends, so that the two clutches act alternately, one during the down-

ward and the other during the upward motion of the horse, thereby imparting a constant and uniform motion to the driving-wheels.

By providing each clutch with the rolls on both sides of the flange of the disk opposite to each other, a double griping-power is secured, and the action of the clutch rendered more certain than it would otherwise be, the danger of springing or breaking the flange avoided, and the clutch prevented from straining upon and wearing the axle.

On opposite sides of the frame I secure, as shown, two rigid foot pieces or rests, Y, in such position that the rider can place his feet upon them as the horse descends, for the double purpose of checking the downward motion and of assisting the upward motion by the power of his legs.

As shown in Figs. 1 and 5, the foot-rests consist of long arms, having their rear ends seated in sockets Z on the frame, and secured by set-screws *c*, the ends which enter the sockets being curved vertically, so that by adjusting them endwise the forward ends may be raised or lowered to suit the length of leg of the rider. One side of the frame is also provided with a brake-lever, X, pivoted at its middle and held out of action by a spiral spring, the forward end of the lever standing in such position that it may be readily operated by one of the feet of the rider.

For the purpose of enabling the rider to steer the velocipede the upper end of the swivel-post I is provided with a pulley, H, which has secured to it a steering cord or wire, F, which is passed backward from opposite sides of the pulley, and crossed and carried downward around two loose pulleys, G, on the rear shaft M, and thence upward through the body of the horse, as shown in Figs. 1 and 4, around pulleys D E in the head of the horse, to a small pulley, C, secured on the middle of the bit B, which is pivoted in the mouth of the horse and provided at its ends with the reins A, so that by drawing one rein or the other the steering-wheel J may be turned to the right or the left as required.

By mounting the pulleys G, around which the steering wire or cords pass, on the axis of motion of the horse I prevent the motion of the latter from affecting the tension or the action of the wires.

In order that a small movement of the bit may give a wide movement to the steering-wheel, the two pairs of pulleys D and E are employed, the former being smaller than the latter. Each pair consists of one large and one small pulley, united and arranged to rotate independently of the other pair. The ends of the cord pass, one over each large wheel, and then over the small wheel to the bit-pulley. A small movement of the cord, acting on the small pulley, causes the large pulley to give the cord beyond it a much greater movement.

In order that the steering-wheel may be locked fast when desired, either to cause the advance of the velocipede in a straight line or in a circle, the front of the frame is provided with a series of holes through which a pin may be inserted into a hole made for the purpose in the upper end of the swivel-post I, this pin being attached to the frame by a chain, so that it cannot be lost.

Having thus described my invention, what I claim is—

1. The combination of the wheeled frame having its rear axle provided with the disks and their operating clutches, the horse pivoted upon the frame and sustained by springs, and devices connecting the horse and the clutches, substantially as shown and described.

2. The foot-rests Y, having their rear ends curved and secured in sockets on the frame, as shown, whereby they are rendered adjustable vertically.

3. In combination with the frame-bars O, having the axle U seated on its under side, the arms N applied as shown, for the double purpose of securing the axle and sustaining the shaft M.

4. In combination with the arms L, having the horse secured to them, the transverse bar Q, mounted on guides W, and supported by the spiral springs P.

5. In combination with the swivel-post I and the steering-cord F extending therefrom to operating devices in the head of the pivoted horse, the guiding-pulleys G for said cord, arranged with their axes coincident with that on which the horse is mounted, as shown, whereby the movements of the horse are prevented from affecting the cord.

6. In combination with the steering-cord F passing through the horse in the manner shown, the pulley C, pivoted bit B, and reins A, substantially as shown.

7. In combination with the steering-cord, the pulleys D E, constructed and arranged as shown.

8. In a velocipede, the combination of the horse mounted on pivoted arms and sustained by springs, the main shaft or axle U, provided with the clutch-arms S and disks T, and the links R, arranged in the manner shown and described, so as to actuate the clutches alternately, one during the upward and the other during the downward movement of the horse.

9. In combination with the flanged wheels T, arranged as shown, the clutch-blocks S, provided with the V-shaped recess to admit the flange of the wheel, and with the rolls *b* bearing against both sides of the flange, as shown.

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