

J. S. DENNY.

ROAD WAGON.

No. 303,499.

Patented Aug. 12, 1884.

Fig 1.

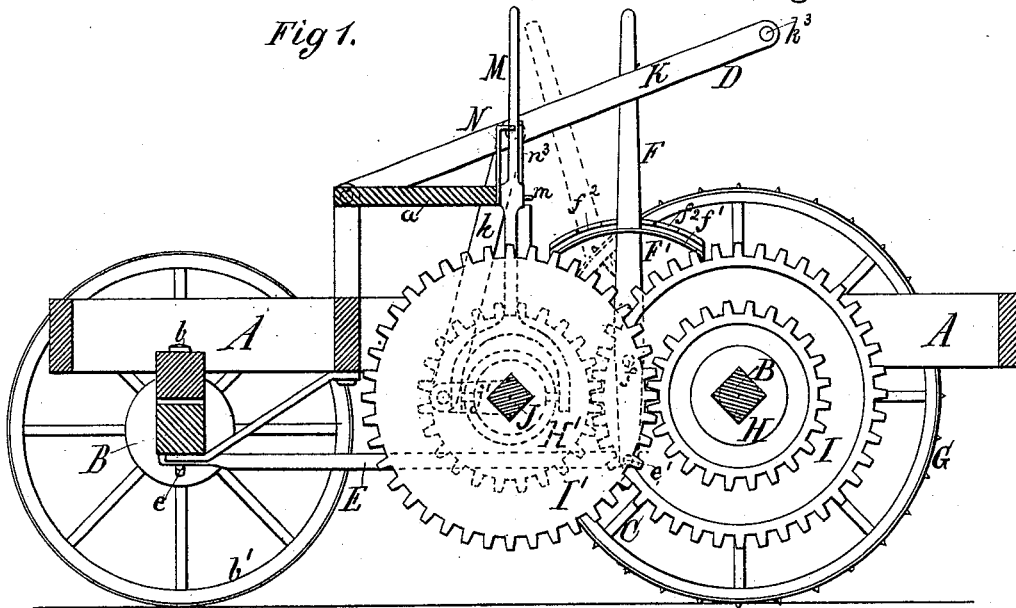
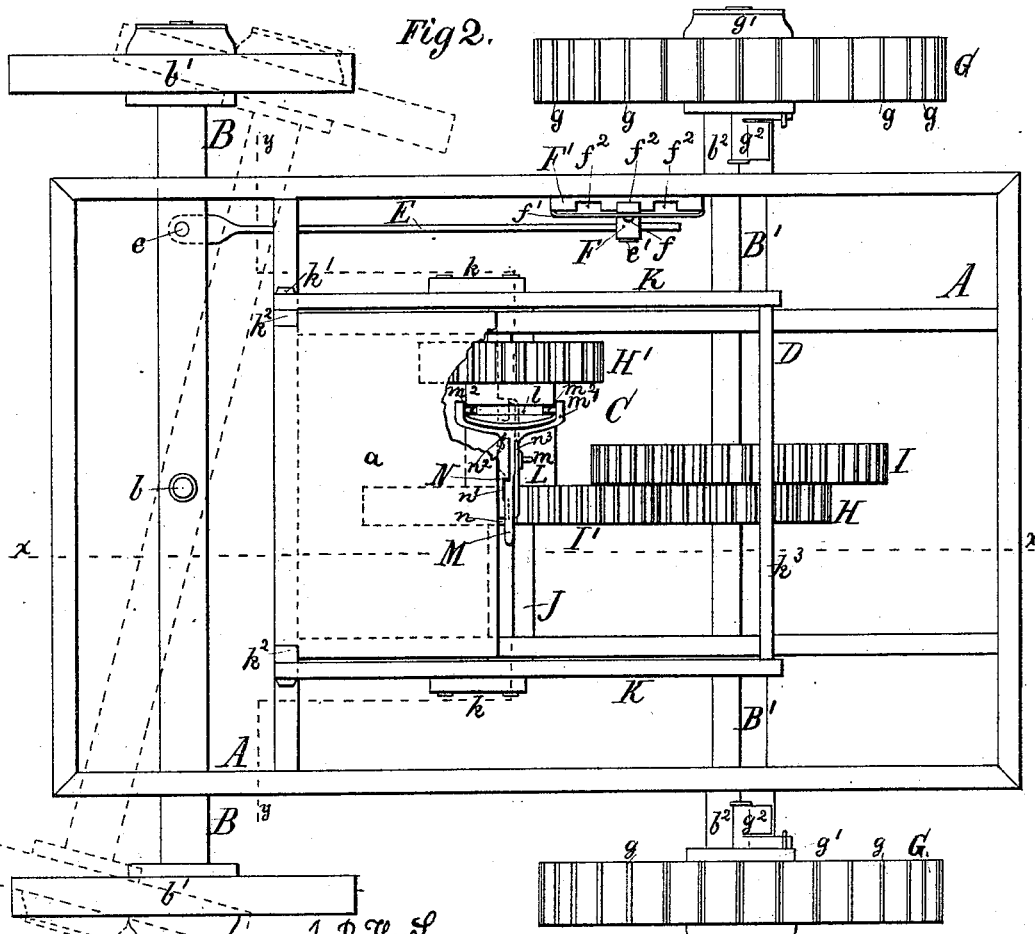


Fig 2.



Witnesses: J. P. Threlkeld, Robert K. Newell. Inventor: John S. Denny, by his atty, John W. L. Saurer.

(No Model.)

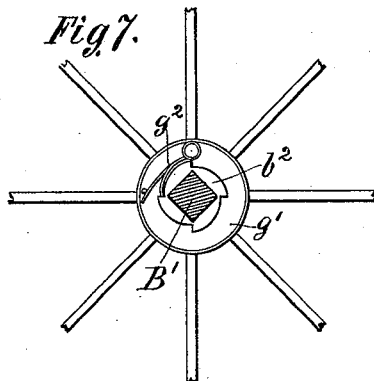
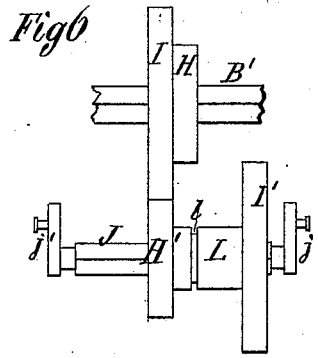
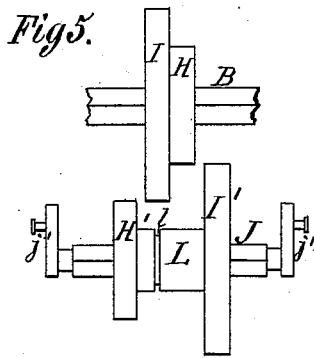
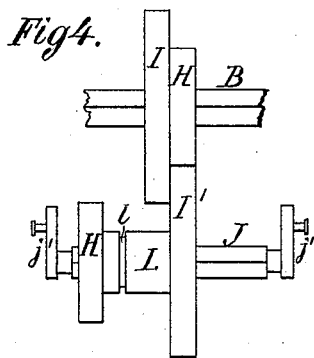
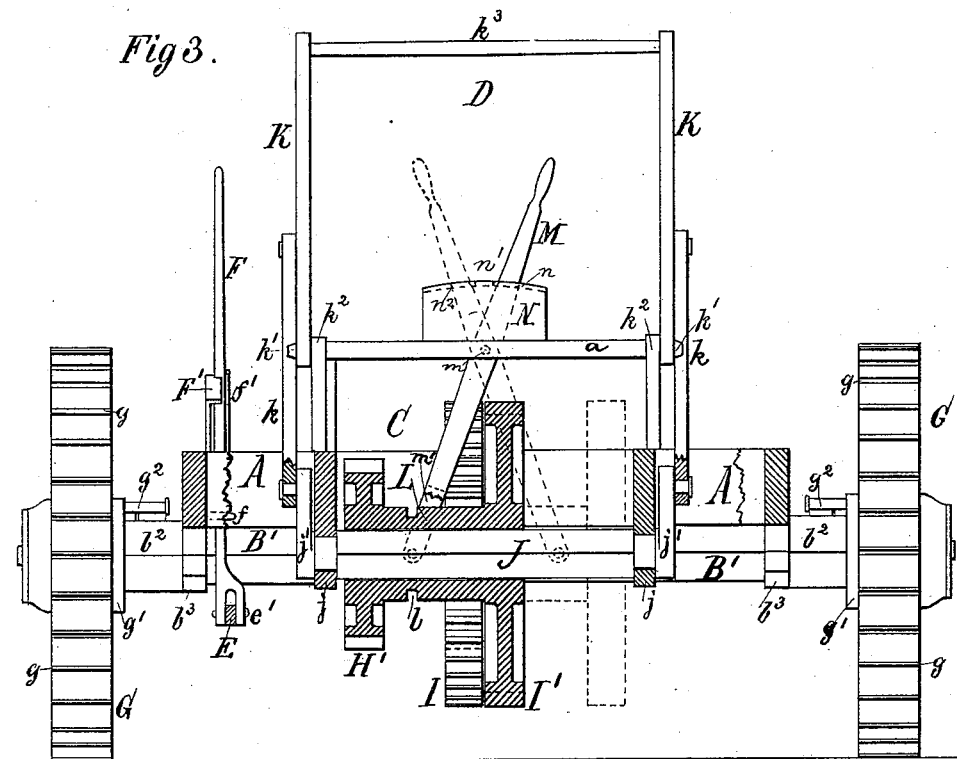
2 Sheets—Sheet 2.

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Witnesses:

J. P. Theo. Lang.  
Robert H. Hurdick.

Inventor:

John S. Denny  
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# UNITED STATES PATENT OFFICE.

JOHN S. DENNY, OF CAMPBELLSBURG, INDIANA.

## ROAD-WAGON.

SPECIFICATION forming part of Letters Patent No. 303,499, dated August 12, 1884.

Application filed March 20, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN S. DENNY, a citizen of the United States, residing at Campbellsburg, in the county of Washington and State of Indiana, have invented a new and useful Road-Wagon, of which, in connection with the annexed drawings, the following is a specification.

My invention relates to road-wagons operated by hand; and it consists, first, in a four-wheeled wagon having a rear driving-axle shaft and rear traction-wheels; second, in a four-wheeled wagon having adjustable means for changing the speed of the rear traction-wheels; and, third, in a four-wheeled wagon having adjustable means for horizontally swinging the front axle in order to guide the wagon in curves, and means for automatic adjustment of the traction-wheels upon their driving-axle while the wagon is running along curves.

In the accompanying drawings, Figure 1 is a vertical longitudinal section in the line  $x x$  of Fig. 2. Fig. 2 is a top view of the wagon, a portion being broken away to expose parts below. Fig. 3 is a vertical transverse section in the line  $y y$  of Fig. 2. Figs. 4, 5, 6 are three diagrams representing three different positions of the intermediate driving-gear, as will be hereinafter described. Fig. 7 is a cross-section of the driving-axle and an elevation of a portion of one of the traction-wheels, and the connection between the same and said wheel.

A in the drawings represents a suitable oblong wagon-frame; B B', front and rear axles; C, driving and speeding mechanism comprising numerous parts hereinafter specifically designated by letters of reference, and D a hand-lever frame for operating the wagon.

The front axle, B, swings on a king-bolt,  $b$ , of the frame A, and is provided with two wagon-wheels,  $b'$ , of ordinary construction. A connecting-rod, E, pivoted at  $e$  to the axle B, and at  $e'$  to the end of a vertical hand-lever, F, serves to keep the said axle in the desired position, which may be either that shown in full black lines or in dotted lines, and which dotted position may be the reverse of that shown.

The lever F is pivoted at  $f$  to the frame A, and is held in any position, either vertical or

inclined, by means of a notched sector, F', on the frame A, and is prevented from leaving the notch it should occupy by a bail-spring,  $f'$ , in front of it, which spring is suitably fastened to the frame A. The number of notches  $f''$  in the sector F is optional, but should not be less than three, one for the straight, and the other two for the right or left curved movements of the wagon. The rear wheels, G, are provided with traction projections or ribs  $g$ , and they are loosely fitted to the cylindrical journal ends of the driving-axle B'. The hubs  $g'$  of the wheels are provided with spring-pawls  $g''$ , which are engaged with ratchets  $b''$  on the axle B', and thereby the wheels can be driven forward, but not backward, and thus one wheel may revolve forward faster than the other in turning curves, and much of the friction between the wheels and the ground experienced from permanently-fastened wheels is avoided. The axle B' of the wagon revolves in suitable bearings,  $b''$ , below the frame A, and is provided with two toothed wheels, H I, of unequal diameters, and which alternately receive motion from two other similar wheels, H' I', fitted loosely on a square shaft, J, having crank-arms on its ends. The shaft J is suitably hung in bearings  $j$ , below the frame A, and its crank-arms  $j'$  are operated by means of connecting-rods  $k$  and hand-levers K, the hand-levers K being pivoted at  $k'$  to standards  $k''$  on the frame A, and connected by a round bar,  $k^3$ , to which the operator applies his hands. The wheels H' I' are fastened to or formed with a sleeve, L, which loosely fits the square shaft J, and is moved along it by means of a hand-lever, M. This hand-lever is suitably pivoted at  $m$  to a cross-bar,  $a$ , of the frame A, and is provided with a forked head,  $m'$ , having horizontal pins  $m''$ , which latter are placed in an annular groove,  $l$ , in the sleeve L. The lever M is held steady in notches  $n'$   $n''$  of a sector, N, on the cross-bar  $a$ , and is prevented from incidentally leaving the notch it should occupy, by means of a bail-spring,  $n^3$ , in front of it, which spring may be fastened to the cross-bar  $a$ .

In the described driving and speeding mechanism designated by C, the wheels H' I' may be moved to and retained in three different

positions, as represented by the diagram, Figs. 4, 5, 6. Thus, according to Fig. 4, the wagon is moved at a high speed. In Fig. 5 the wheels are shown disconnected in order that the wagon may run without impediment and without unnecessary wear of the operating mechanism, and in Fig. 6 the wheels are so geared as to produce a low speed of the wagon. The first position will be suitable for travel on level roads, where high speed can be used with comparatively little power. The second position will suit travel on a slight downwardly-inclined road, where the wagon may be allowed to run without being operated by hand, and danger of becoming unmanageable. The third position, in which the operation of the wagon is accomplished with less power, is suited for ascending hills. Both the first and third positions of the geared wheels H I H' I' will also be serviceable for the purpose of checking the speed of the wagon in its descent on steep roads.

The placing of the traction-wheels G on the rear portion of the wagon is important, for in ascending hills the entire weight of the operator and the greater part of the weight of the wagon rest upon the said traction-wheels, and thus produce a firm bite of the wheels upon the surface of the road, and thus insure and facilitate the propulsion of the wagon.

I am aware of Patents Nos. 93,915, 87,769, and 256,120; but none of these show the body-frame adapted for four wheels, nor the combination, with such frame and four wheels, of the controlling and speed-changing mechanism. Therefore, while I do not claim anything shown in said patents,

What I do claim, and desire to secure by Letters Patent, is—

1. The four-wheeled wagon comprising, in combination, the four wheels *b b' G G*, the axles *B B'*, the body-frame *A*, having auxiliary supporting parts, the hand-lever frame *D*, consisting of parts *K K k*, the shaft *J*, having crank-arms, the connecting-rods *k*, the sliding gear-wheels *H' I'*, of unequal diameters, and connected by a sleeve, *L*, the hand-lever *M*, the sector *N*, and the toothed wheels *H I*, of unequal diameters, substantially as and for the purpose described.

2. The four-wheeled wagon comprising, in combination, axles *B B'*, four wheels, *b b' G G*, two of which are ribbed and fastened by ratchets and pawls, the body-frame *A*, having auxiliary supporting parts, the operating crank-shaft *J*, having sliding wheels *H' I'*, connected by sleeve *L*, the wheels *H I*, the hand-operating lever-frame *D*, having parts *K K k*, sector *N*, the connecting-rod *E*, hand-lever *F*, and notched sector *F'*, substantially as described.

3. The four-wheeled wagon comprising, in combination, the body-frame *A*, four wheels, *b b' G G*, two axles, *B B'*, fixed wheels *H I*, coupled sliding wheels *H' I'*, hand-operating lever-frame *D*, and the hand-operating crank-shaft *J*, substantially as described.

4. The four-wheeled wagon comprising, in combination, the body-frame *A*, the hand-operating lever-frame *D*, the speed-changing mechanism *C*, rear axle, *B'*, having ratchets *b'*, and loose traction-wheels *G*, having pawls *g'*, and the front horizontally-swinging axle, *B*, having two wheels, *b b'*, substantially as described.

JOHN S. DENNY.

Witnesses:

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FLORENCE HILES.