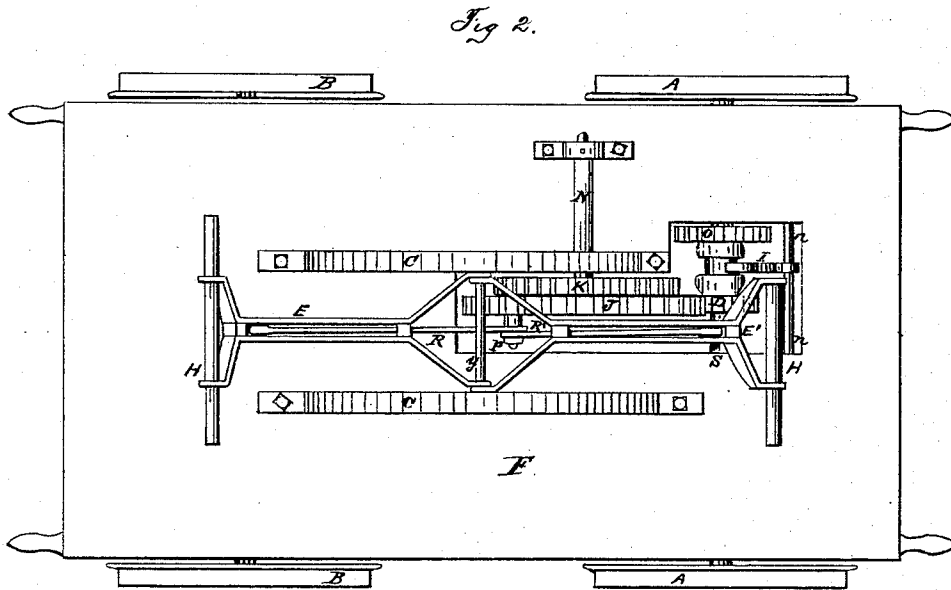
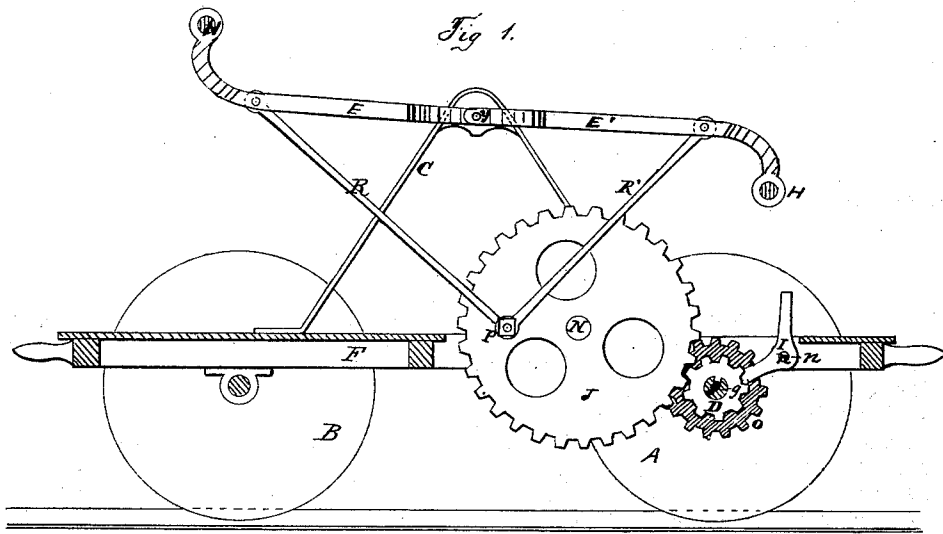


M. CROSSMAN.

Hand-Cars.

No. 156,138.

Patented Oct. 20, 1874.



WITNESSES:

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INVENTOR:

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UNITED STATES PATENT OFFICE.

MONTGOMERY CROSSMAN, OF MARSHALL, MICHIGAN.

IMPROVEMENT IN HAND-CARS.

Specification forming part of Letters Patent No. **156,138**, dated October 20, 1874; application filed September 21, 1874.

To all whom it may concern:

Be it known that I, MONTGOMERY CROSSMAN, of Marshall, in the county of Calhoun and State of Michigan, have invented a new and Improved Railroad Hand-Car; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a sectional side elevation. Fig. 2 is a plan top view.

Hitherto the levers of hand-cars have been connected, by means of suitable rods, with a double-crank axle.

The attendant disadvantages of such arrangement are avoided in my invention, which consists in the construction and arrangement of parts, more particularly in connecting the levers with a single wrist-pin on a toothed wheel fixed on a short shaft arranged in a plane above and in rear of the driving axle of the car; also, in the means for shifting the power from one axle-pinion to another, and thus varying the speed.

In the drawing, F indicates the platform, and A B the wheels, of an ordinary form of hand-car. The forked hand-levers E E' are provided with handles H H, and pivoted on the cross-shaft y, which joins, and has its bearings in, the apexes or top portions of the two inverted V-shaped standards C C. The free end or handle portion of one lever, E', is turned or bent downward, and the other, E, turned upward, as shown in Fig. 1, to adapt them to be conveniently operated. The levers are connected to the wrist-pin P of the large spur-gear J by rods R R'. Said gear J is keyed on the end of a short shaft, N, whose bearings are fixed on the platform F. The smaller concentric spur-gear K is keyed on the same shaft N near the gear J. D and O are pinions, differing in size in the same proportion as gears J K, and formed on or attached to a sleeve, which slides on a feather of the axle S.

This sleeve has a circumferential groove or collar, and is shifted by an elbow-shaped lever, I, which slides on a rod, n. Thus the smaller pinion D may be brought into engagement with the larger gear J when the track is level or grade easy, and the larger pinion O may be engaged with the smaller gear K when the grade is heavy.

The advantages of this arrangement of power-shifting mechanism are sufficiently obvious.

The following are among the advantages which result from the described arrangement of the crank and lever connections of the propelling mechanism: First, the levers E E' are so set and connected with the crank as to overcome the dead-center; second, the force or power is brought directly on the wrist-pin, the connecting-rods R R' being pivoted to the levers at the angle, or near the outer ends thereof, thus greatly relieving the center of the fulcrum-frame of strain; third, the arrangement is such that the crank is twice as long as in the ordinary hand-car, or in others recently patented, (for example, in those of H. L. Brown;) hence, the friction on the wrist-pin and the wear of all the connected parts are correspondingly reduced, and, as is evident, a considerable decrease of the excessive friction in hand-cars is of great importance in that class of vehicles.

What I claim is—

1. The curved levers E E', rods R R', connected to a single wrist-pin, P, the spur-gear J, shaft N, a pinion, D, and axle S, all combined as and for the purpose specified.

2. In a railroad hand-car, the shaft N, provided with toothed wheels K and J, with an axle, S, provided with adjustable pinions O and D, all combined substantially as and for the purpose set forth.

MONTGOMERY CROSSMAN.

Witnesses:

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WATSON B. MEAD.