(No Model.)

C. ROBERTS.

HAND CAR.

No. 455,578. Patented July 7, 1891.

Fig. 1

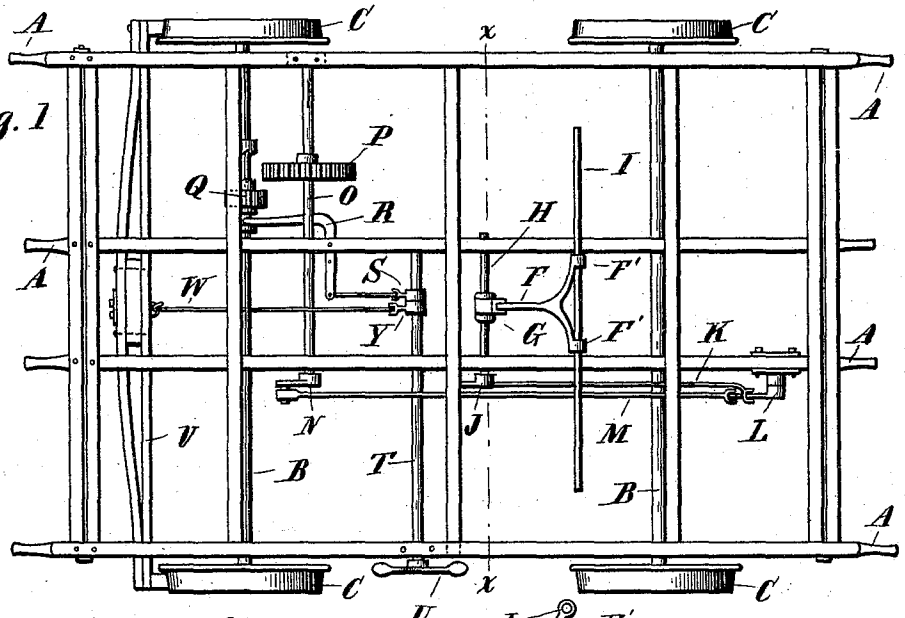


Fig. 2

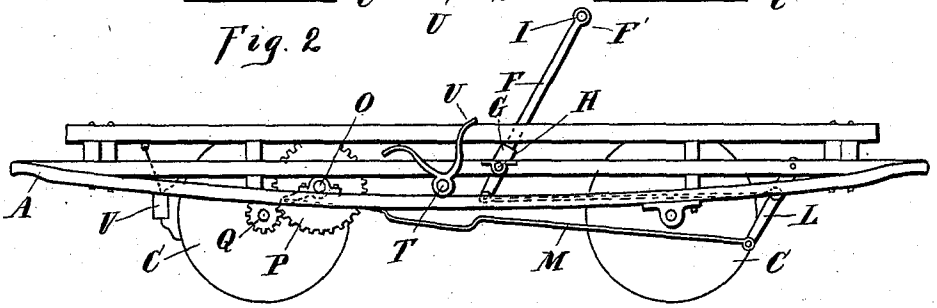
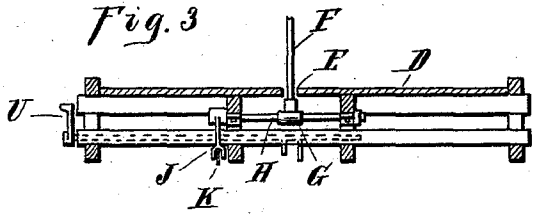


Fig. 3



Witnesses:
P. M. Hulbert
M. B. Dogherty.

Inventor:
Cyrus Roberts
By Thos. S. Sprague & Son
Atty.

UNITED STATES PATENT OFFICE.

CYRUS ROBERTS, OF THREE RIVERS, MICHIGAN.

HAND-CAR.

SPECIFICATION forming part of Letters Patent No. 455,578, dated July 7, 1891.

Application filed August 9, 1890. Serial No. 361,595. (No model.)

To all whom it may concern:

Be it known that I, CYRUS ROBERTS, a citizen of the United States, residing at Three Rivers, in the county of St. Joseph and State of Michigan, have invented certain new and useful Improvements in Hand-Cars, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in railway hand-cars; and the invention has for its particular object to so construct a hand-car that it is equally available for use as a push-car for the transporting of such railway material as is ordinarily required in the maintenance of a road-bed, it being the present practice on railroads to have both kinds of cars—that is, ordinary hand-cars having a propelling mechanism for the quick transportation of the section hands or workmen from and to their place of work or for inspecting the track, and so-called "push-cars," which are unprovided with a propelling mechanism and have to be pushed by hand, and which are required for the transportation of ties, rails, and other material used for the repairing of the track, the ordinary construction of hand-cars not being available for such purpose on account of the propelling mechanism, which in the present constructions obstructs the platform, so that no available space or facility is left for carrying a bulky load, such as ties, rails, &c.

To this end my invention consists in the peculiar arrangement and construction of the propelling mechanism, as will be more fully hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a plan view of my improved hand-car with the platform broken away to expose the propelling mechanism located below. Fig. 2 is a side elevation of my improved hand-car. Fig. 3 is a cross-section on line *x x* in Fig. 1.

The car-body consists of a suitable rectangular frame of proper strength to satisfy the purpose for which the car is intended to be used, and with the usual hand-holds A A, formed at the ends of the longitudinal bars of the frame, to afford facility for lifting the car off the track. The car-body is mounted upon axles B B, journaled near the ends of the car-body and provided with the usual car-wheels C. The platform D extends intact between the sides and ends of the frame, with the exception of a small slot E at or near the center of the platform, and through which the propelling-lever F projects. This lever detachably engages with its lower end into a socket formed in the bracket G, which is secured upon the oscillating drive-shaft H, journaled transversely in suitable bearings secured to the car-body below the platform. The upper end of the oscillating lever F is bifurcated, and the ends of the bifurcations terminate in sleeves F′, in which the transverse handle-bar I is secured.

Instead of a single bar, two handle-bars may be secured parallel with each other by forming double sleeves at the end of the bifurcations of the lever. The oscillating drive-shaft H is provided with an arm J, which is pivotally connected by means of a connecting-rod K with the oscillating lever L, pivotally suspended from the car-body. The lower end of this oscillating lever L is connected by means of a connecting-rod M with a crank N, secured upon the intermediate drive-shaft O. This intermediate drive-shaft is journaled transversely below the car-body in proximity to the car-axle, to which the propelling mechanism is applied, and is provided with the gear-wheel P, and this gear-wheel is adapted to mesh with a clutch-pinion Q on the car-axle. The clutch-pinion Q is adapted to be thrown in and out of engagement with the gear-wheel P by means of the bell-crank lever R, one end of which engages with a movable member of the clutch-pinion and the other end of which is connected in any suitable manner with the arm S on the brake-shaft T, one end of which extends to the side of the car and carries at its free end a foot-lever U in convenient proximity to the operator engaged in propelling the car. This brake-shaft actuates a suitable brake mechanism, such as is shown in the drawings, in which V is the brake-beam suspended from the car-body and carrying the usual brake-shoes and provided with a central connecting-rod W, pivotally connecting it with a suitable arm Y on the brake-shaft, all so arranged that

by suitably depressing the foot-lever U the movement imparted thereby to the brake-shaft T simultaneously applies the brake to the wheels and throws the pinion Q out of gear with the pinion P.

In practice, the parts being constructed and arranged substantially as shown and described, the propelling mechanism operates as follows: The operator or operators in the well-known manner tottle the propelling-lever back and forth the required distance to impart to the crank N, through the intermediate mechanism described, a rotary motion, which revolves the shaft O and carries the motion, through the gear-wheel P and pinion Q, to the axle of the car, thereby propelling the car upon the track. Should it be desired to stop at any place, the operator applies the brake by stepping upon the foot-lever U. This not only stops the further progress of the car, but also throws the pinion Q out of gear with the gear-wheel P, and thus immediately disconnects the propelling-lever from the driven axle, and the operator is at liberty to move that propelling-lever in any position without causing any movement of the car. Should it now happen that the crank N stops at one of its dead-centers in relation to the connecting-rod M, it will be seen that the operator has merely to move the lever F into such a position that the crank N is at or near its quarter in relation to the connecting-rod M before he throws his pinion Q again into gear with the wheel P or permit it to engage with the gear-wheel P. The dead-center is thus immediately overcome without moving the car.

Those in charge of hand-cars are well aware of the annoying frequency with which the crank in the propelling mechanism of the car is liable to stop on its dead-centers, and the delay it causes them to put the propelling mechanism off its dead-centers, which can only be done by pushing the car a little distance on the track. This is all obviated by my construction, and, in fact, it is done automatically with the proper construction of the parts, as it will be seen that the weight of the crank N, connecting-rod M, and oscillating lever L will be sufficient to hold the lever F in an upright position, or nearly so, as soon as the gear-wheel P is out of gear with the clutch-pinion; but if this should not be accomplished by the weight of the parts alone it is hardly any more trouble for the workman to move the lever F into its upright position if it should not automatically do so on stopping or before starting the car. The clutch-pinion Q may be arranged to be automatically thrown into gear again as soon as the brake mechanism is released. Preferably, however, I provide lost motion between the clutch and lever, or withdraw the loose member of the clutch-pinion sufficiently far out of engagement with the gear-wheel P, so that the mere falling away of the brake-beam after releasing the brake-lever will not throw it into engagement, and the re-engagement of the pinion is then brought about by throwing the foot-lever U in the direction opposite to the one in which it is moved for applying the brake. To this end I bring both ends of the foot-lever into position to be stepped on, one end being for applying the brake and the other end for throwing the pinion into gear. Thus the propelling mechanism may be permanently thrown out of gear with the driven axle of the car and the car be used as a push-car, and should the load require it the propelling-lever F may be readily disengaged, and thus the whole top of the platform made available for loading material.

The construction and arrangement of the propelling-levers at once does away with the necessity of any frame above the platform of the car, which in the ordinary construction of hand-cars interferes so much with utilizing the car for transporting material, and by placing it at or near the center of the car the sides and ends of the platform are available for loading and unloading without interfering with the use or operation of the lever, the manner of supporting the handle-bar affording a clear space underneath.

The particular construction of the car-body I intend to make the subject-matter of another patent, and I therefore do not claim it in this patent.

It is obvious that my improvement in relation to obviating the dead-centers in the propelling mechanism may be applied to any hand-car which has a brake mechanism and a propelling mechanism of the character described—that is, one in which the rotary motion is produced through the medium of a crank.

What I claim as my invention is—

1. In a hand-car, a propelling mechanism, a brake mechanism, and a connection between the brake mechanism and propelling mechanism, whereby upon the actuation of the brake mechanism the propelling mechanism is thrown out of gear with the car-axle, substantially as described.

2. In a hand-car, a propelling mechanism having an oscillating propelling-lever and a clutch-pinion on one of the car-axles, a brake mechanism, and a connection between said brake mechanism and the clutch-pinion, substantially as described.

3. In a hand-car, a propelling mechanism consisting of the oscillating drive-shaft H, provided with a propelling-lever, the intermediate drive-shaft O, provided with the crank N, the intermediate propelling mechanism between said crank and the oscillating drive-shaft for converting the oscillating motion of said shaft into a rotary motion, substantially as described, the gear-wheel P on the intermediate drive-shaft, the clutch-pinion Q on one of the car-axles, and the foot-lever U for throwing said clutch-pinion in and out of gear, substantially as described.

4. In a hand-car, the combination, with a

transverse oscillating shaft journaled below the platform thereof, of a vertically-disposed oscillating lever and a detachable connection between the lever and shaft, substantially as described.

5. In a hand-car, the combination, with a platform extending to the sides and ends of the car, of a propelling mechanism having the oscillating drive-shaft H, journaled transversely the car at or near the center of the platform, the bracket G, secured upon the drive-shaft, the oscillating propelling-lever F, detachably secured in a socket of said bracket, the upper ends of said lever being bifurcated and provided with the sleeves F′, and the handle-bar I, transversely secured therein, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CYRUS ROBERTS.

Witnesses:
M. B. O'DOGHERTY,
P. M. HULBERT.