

(No Model.)

J. W. BALLARD.
HAND CAR.

No. 462,389.

Patented Nov. 3, 1891.

FIG - 1 -

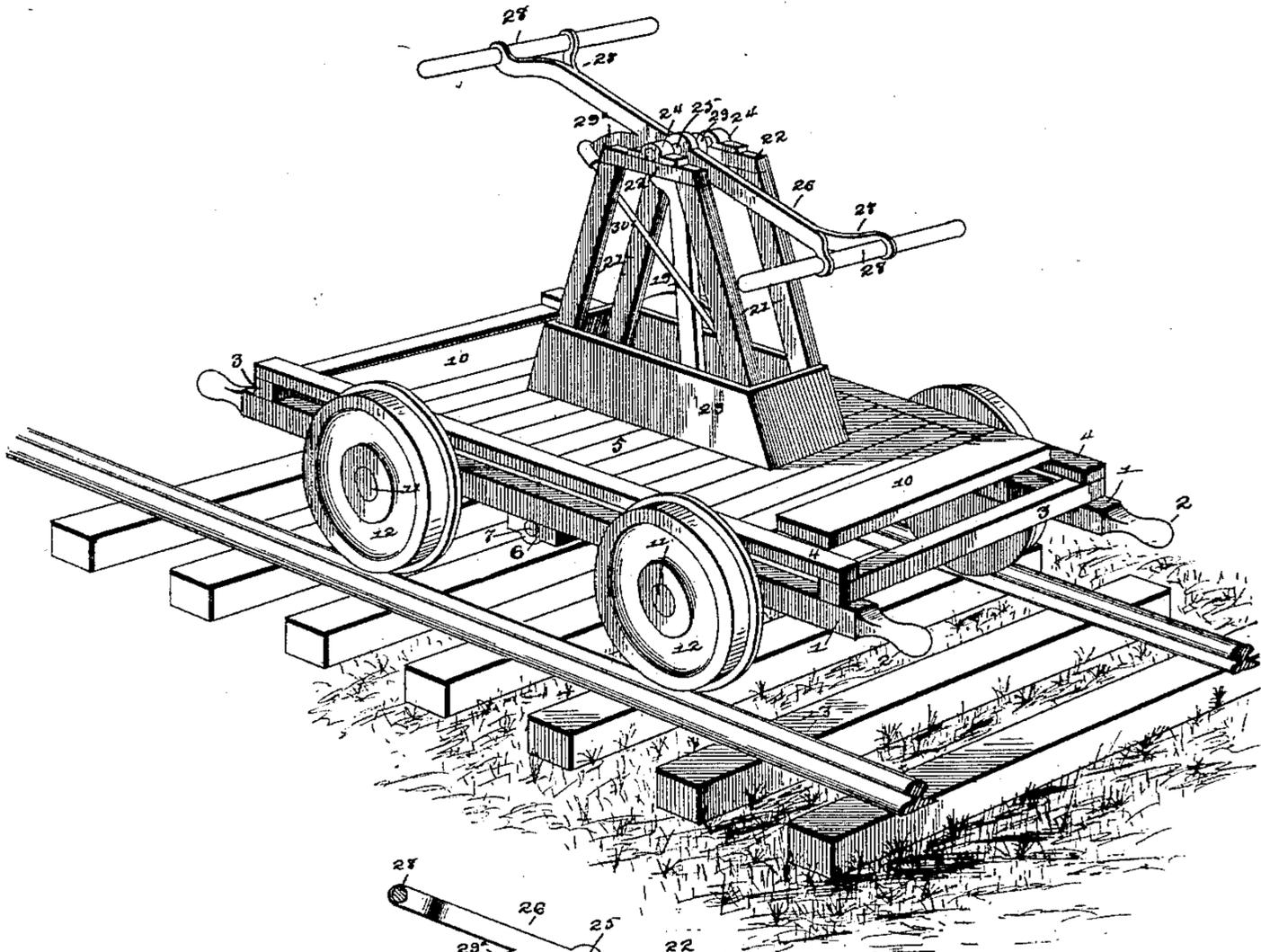


FIG - 2 -

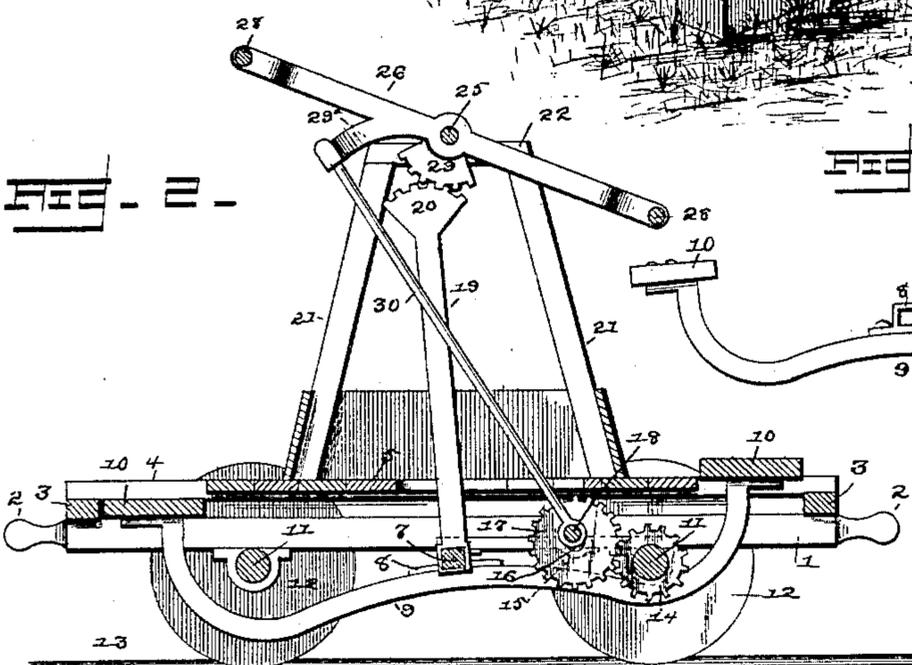
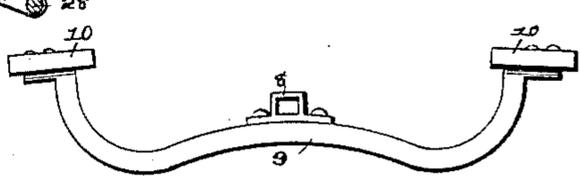


FIG - 3 -



Witnesses:

E. S. Swally Jr.
W. Swally

By his Attorneys,

James W. Ballard.
C. A. Snow & Co.

Inventor

UNITED STATES PATENT OFFICE.

JAMES W. BALLARD, OF TOLEDO, IOWA, ASSIGNOR OF ONE-HALF TO
WILLIAM F. JOHNSTON, OF SAME PLACE.

HAND-CAR.

SPECIFICATION forming part of Letters Patent No. 462,389, dated November 3, 1891.

Application filed June 17, 1891. Serial No. 396,586. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. BALLARD, a citizen of the United States, residing at Toledo, in the county of Tama and State of Iowa, have invented a new and useful Hand-Car, of which the following is a specification.

This invention relates to improvements in hand-cars, the objects in view being to provide a hand-car of cheap and simple construction adapted to be readily operated and to utilize the weight of the operators as well as the power exerted by them.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a perspective of a hand-car constructed in accordance with my invention. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a detail view of one of the longitudinal levers carrying the foot-platform.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates the opposite parallel side bars of the car-frame, which terminate in reduced handles 2 and are connected at their front and rear ends by transverse beams 3, said beams in turn being connected by the longitudinal beams 4. From points near each end of the frame-work a flooring 5 extends to the center thereof. Bearings 6 are located upon the under sides of the side bars 1, and in the same is mounted for movement the reduced ends of a central main rock-shaft 7, said rock-shaft being square between its ends. By means of keepers 8 said rock-shaft has secured thereto near its opposite ends a pair of longitudinally-disposed levers 9, the extremities of which are upwardly curved and are connected by transversely-disposed platforms 10, located near the ends of the frame-work. In the side bars 1 are journaled the axles 11, upon which are mounted for rotation the flanged wheel 12, designed to move upon the track 13 in the usual manner. The rear or drive axle is provided with a small gear 14. In bearings 15, located between the rock-shaft 7 and the rear drive-axle 11, there

is journaled a shaft 16, carrying a large gear 17, the teeth of which engage the small gear 14, as shown. The shaft 16 is provided with a cranked portion 18, for a purpose hereinafter apparent.

19 designates a rock-arm, which rises rigidly from the center of the rock-shaft 7 and terminates at its upper end in a toothed segmental head 20. Standards 21, connected by cross-bars 22, are located at opposite sides of the rock-arm 19 and constitute the framework of a housing 23 for the same.

In bearings 24, formed in the cross-bar 22, an upper rock-shaft 25 is journaled, and upon the same a lever 26 is mounted, said lever extending equal distances beyond each side of the rock-shaft, and is bifurcated, as at 27, for connection with handles 28. A toothed segment 29 is mounted on the shaft 25 and is adapted to lock with the same, the teeth of the segment engaging with the teeth 20 of the rock-arm 19. A short inclined arm 29^a extends from the lever 26, and the same is connected by a pitman 30 with the cranked portion 18 of the shaft 16, whereby motion is imparted from the lever 26 to the shaft, and from thence by means of the gear 17 to the small gear 14, and it being fast with the drive-shaft operates the latter.

This completes the construction of the hand-car, and the operation of the same may be briefly stated as follows: The operators being in position, one upon each of the platforms and grasping the handles over the same, it will be seen that as one operator is drawing down upon the handle and therefore lifting a portion of his weight upon the platform, the opposite operator is pushing up upon the opposite handle and bearing down upon his platform, so that the first operator relieving his platform from a portion of his weight does not have to be lifted by the opposite or second operator, and vice versa, each operator removing a portion of his own weight when his platform is rising and utilizing both his weight and strength for depressing his platform and raising his handle. It will thus be seen that I greatly increase the propulsion without increasing the power necessary to op-

erate the car, in that I utilize both the strength and weight of each operator and only at such times as required, and that alternately.

Having described my invention, what I claim is—

1. In a hand-car, the combination, with the frame-work, its wheels, &c., of a rock-shaft, rocking levers rigidly mounted in the shaft and terminating in platforms, a segment mounted on the shaft, a superimposed rock-shaft, a segment thereon, and a hand-lever, a crank-shaft, a gear-wheel thereon, a gear on one of the axles, and a pitman connecting the hand-lever with the crank-shaft, substantially as specified.

2. In a hand-car, the combination, with the truck-frame and its axles, of a rock-shaft journaled in the frame, rock-arms extending at opposite sides of and rigid with the shaft and terminating at their ends in platforms, the oscillating rock-arm extending from the shaft, a superimposed hand-lever centrally fulcrumed, connections between the fulcrum of the same and rock-arm, an arm extending from the lever, a diagonally-disposed rod connected to said arm and extending to the opposite side of the rock-shaft, and power-conveying devices connecting the same with the drive-shaft of the car, substantially as specified.

3. In a hand-car, the combination, with the frame-work, the axles and wheels, the small gear in one of the axles, the crank-shaft journaled in the frame-work, and the gear mounted on the crank-shaft and engaging the small gear, of the rock-shaft 7, journaled in bearings in the side bars of the frame-work, the longitudinal levers 9, the keepers 8, connecting the same with the rock-shaft, the rock-arm 19, extending from the rock-shaft and terminating in a toothed sector 20, the platforms 10, connecting the levers at their ends, the housing 23, the rock-shaft 25, journaled in the housing, the toothed sector 29, mounted on the rock-shaft 25 and engaging the teeth of the sector 20, the hand-lever 26, mounted upon the rock-shaft 25 and having the handles 28, the arm 29^a, extending from the lever 26, and the connecting-rod 30 between the arm and crank-shaft, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JAMES W. BALLARD.

Witnesses:

O. B. CLULLY,
C. W. JOHNSTON.