

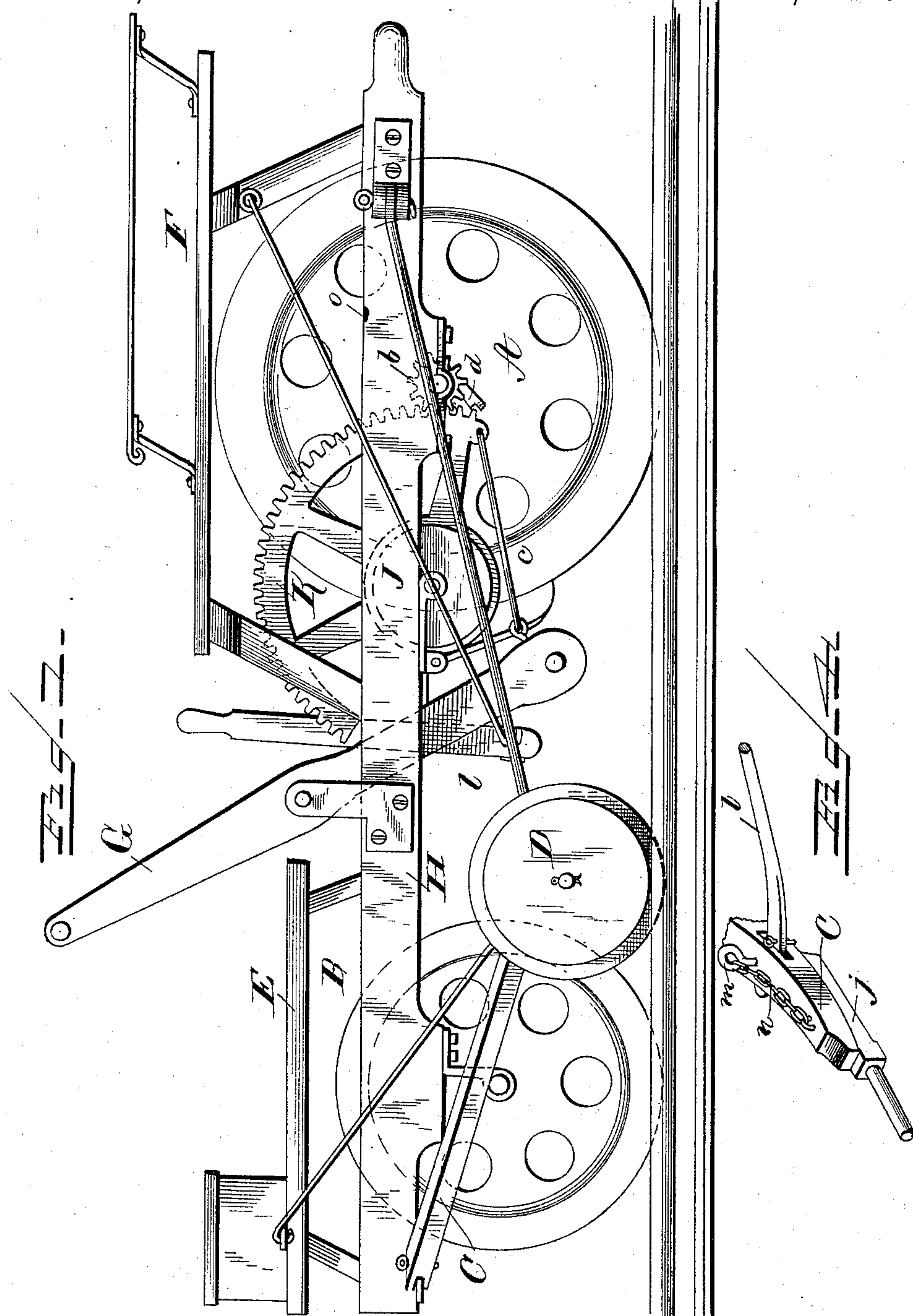
(No Model.)

2 Sheets—Sheet 1.

E. CHAMBERLAIN.
HAND CAR.

No. 468,611.

Patented Feb. 9, 1892.



WITNESSES

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W. M. Sterling

INVENTOR

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By S. M. Sinsabaugh
Attorney

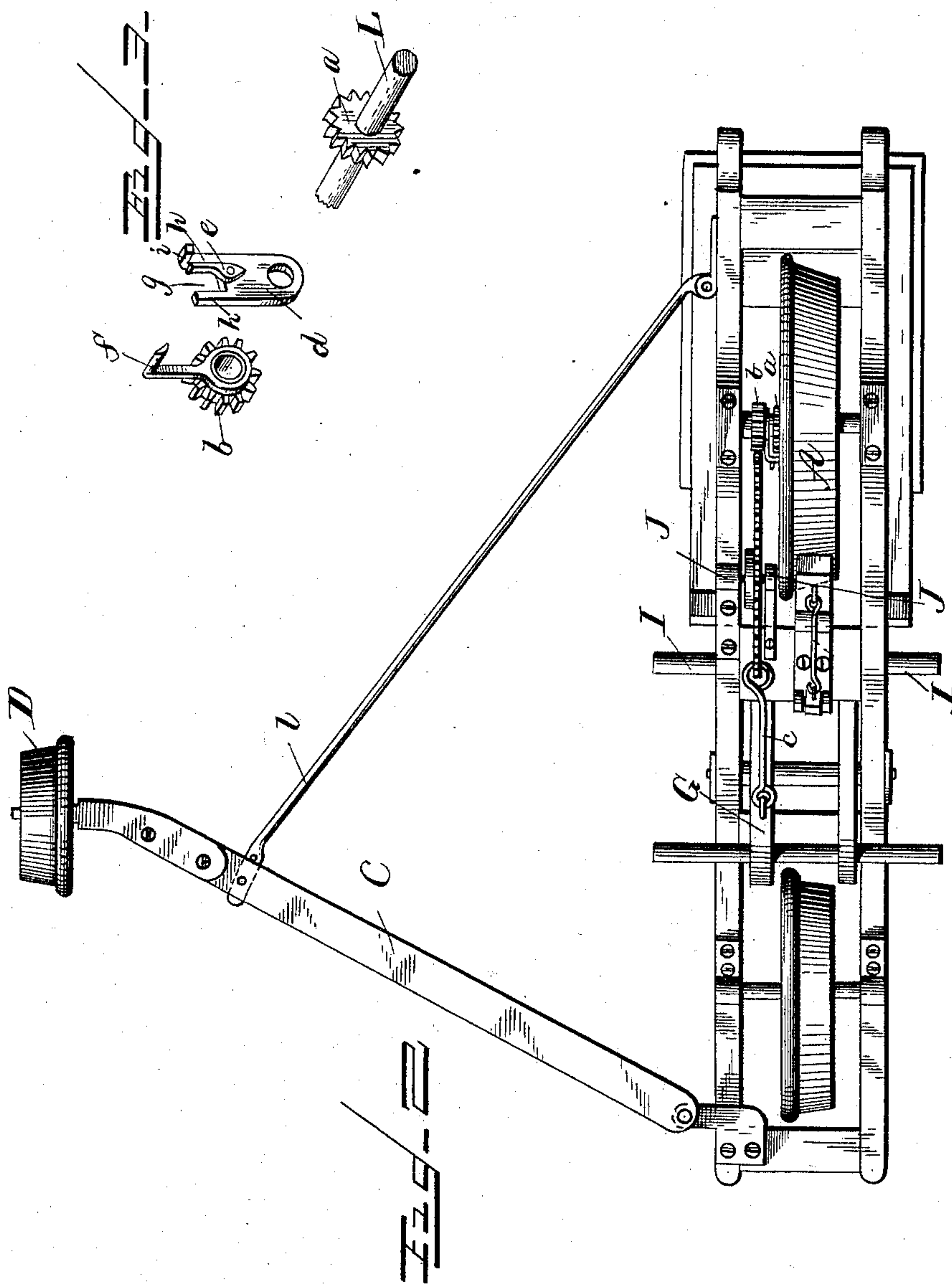
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UNITED STATES PATENT OFFICE.

EDGAR CHAMBERLAIN, OF CENTRALIA, MISSOURI, ASSIGNOR OF ONE-HALF
TO G. M. LEASE, OF SAME PLACE.

HAND-CAR.

SPECIFICATION forming part of Letters Patent No. 468,611, dated February 9, 1892.

Application filed April 27, 1891. Serial No. 390,627. (No model.)

To all whom it may concern:

Be it known that I, EDGAR CHAMBERLAIN, a citizen of the United States, and a resident of Centralia, in the county of Boone and State of Missouri, have invented new and useful Improvements in Railway Hand-Cars; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in hand-cars for use on railroads.

As the development of speed is a matter of great importance in railway hand-cars, it has been my object to provide such propelling appliances of simple construction as will transmit the power applied to the hand-lever direct to the driving-wheel without the loss incident to the friction of several gear-wheels or other intricate gearings, and at the same time to provide for taking advantage of the momentum of the car to produce great speed, and, further, it has been my object to provide increased facilities for adjusting and folding in the reaches or the frame carrying the third wheel in a folding car.

The invention consists in connecting the hand-car-propelling lever to a segment-rack, which segment-rack engages a pinion-wheel on the axis of the driving-wheel, the said pinion being provided with a suitable clutch mechanism, which will cause the pinion to lock with the driving-wheel when the segment is drawn down.

The invention further consists in certain other novel features in the construction and arrangement of parts, all as hereinafter described.

Referring to the accompanying drawings, Figure 1 is a view in side elevation of my improved hand-car. Fig. 2 is a bottom or plan view of the car. Fig. 3 is a perspective view showing in detail the pinion-wheel and clutch mechanism. Fig. 4 is a perspective view of a portion of the folding frame, showing the manner of connecting the arms.

The construction of car to which my im-

provements are preferably applied is such as is shown in the illustration, having a main driving-wheel A, acted on by the propelling appliances, and the body B of the car practically moving on one track, though having an extension-frame C, provided with a small wheel D, which gives support to the car by the wheel D, engaging the other track and running thereon. The car is provided with suitable platforms E and F, on which the operator can sit while propelling the car.

The propelling-lever G is located in substantially upright position about centrally of the car, and, being fulcrumed near its center on the side frames H of the car, has an oscillating movement back and forth. This hand or propelling lever G is constructed in the form of a frame and provided with the handle-bar I, similar to those used on other cars.

To one side of the driving-wheel A is secured in suitable bearings J a segment-rack K. The segment-rack is so located with reference to the driving-wheel that its periphery extends to within a short distance of the axle of the driving-wheel. The axle of the wheel A is made to turn with the wheel, and upon this axle rigidly secured is a ratchet-wheel *a*, and also loosely mounted thereon a pinion-wheel *b*, which, by means of a clutch mechanism acting on the ratchet-wheel *a*, is locked onto the axle when the said pinion *b* is turned in a forward direction or turned by the downward movement of the segment-rack; but when the pinion is turned in a backward direction it will be loose upon the axle and allow the segment-rack to be brought to an elevated or raised position, as will more fully hereinafter appear.

Connecting with the lower portion of the propelling-lever G is a rod *c*, flexibly secured thereto at one end and flexibly connecting at its other end with the segment-rack at its lower extremity. The propelling-lever G, thus connected with the segment-rack K, imparts thereto an oscillating movement, and by this means the power applied to the lever is transmitted directly to the driving-wheel, the pinion-wheel *b*, and clutch mechanism being for all practical purposes a part of the wheel A. Thus it is that by such propelling

mechanism there is a direct application of power and no unnecessary loss of power due to complex and intricate gearing.

The construction and operation of the several parts of the clutch mechanism will be seen by reference to Fig. 3, in which they are shown separated, but in their proper relation to each other, as when on the axle L of the driving-wheel. As before stated, the wheel A is rigidly secured to the axle L, so that any mechanism made rigid with the axle has practically the same effect as though it were a part of the driving-wheel. This feature forms an important point in my propelling mechanism, as the power applied to the segment-rack is transmitted directly to the driving-wheel. The axle L is provided with the ratchet-wheel *a*, made rigid thereon, and between this ratchet-wheel *a* and the pinion-wheel *b* is a metal bifurcated plate *d*, which serves to support and carry the pawl *e*. The pinion-wheel *b* is provided with an angle-arm *f*, a portion of which extends into the slot *g*, formed by the arms *h* of the bifurcated plate *d* and works therein, engaging the arm *i* of the pawl when the pinion-wheel is turned in a forward direction, thus locking the pinion upon the axle by the pawl engaging the ratchet-wheel. It will also be seen that by the revolution of the pinion-wheel in a backward direction, as will be the case when the segment is being brought into its raised position, the arm *f* will release its pressure on the arm *i* of the pawl by being thrown against the opposite arm *h* of the bifurcated plate and allow the pawl to get free of the ratchet-wheel. One of the arms *h* of the pawl-carrying plate *d* is bent over to form a stop for the arm *i* of the pawl and serves substantially the same function as the arm *f*. It will be understood that the plate *d* as well as the pinion is made to turn on the axle L; but by the action of the arm *f* upon the pawl *e*, which only occurs when the pinion is being turned in a forward direction, both pinion and plate *d* are locked to the axle and only turn therewith.

It will be observed by the mechanism herein described that while the propelling power is applied direct to the driving-wheel, yet the turning of the driving-wheel is not retarded by the friction of the propelling mechanism, as would be the case if so geared as to be set in motion by the running of the car. These appliances remain at rest at any point without affecting the running of the car or decreasing the momentum. On the other hand, the devices especially permit the application of any degree of power to the driving-wheel when the same is turning with great rapidity, thus taking advantage of the momentum in

such a way as to increase the speed of the car very greatly.

The frame for carrying the small wheel D to give a running support to the car consists of the main arm C, provided with the axle *j* and the stay-frame *l*. These two portions of the frame are hinged to the body of the car and are adapted to be detached the one from the other and folded in at the side of the car. The main arm C near its end is mortised to allow the end of the arm *l* to enter and be held therein by the pin *m*, which is inserted through the arms C and *l* when the openings formed therein for that purpose register one with the other. Owing to the weight of the wheel D, it is necessary that when the arm C is folded in there should be a suitable support therefor, and for this purpose I provide a chain on the end of the arm C, which is made fast thereto, and connect therewith the pin *m*. By means of the chained pin *m* and the pin-hole *o*, formed in the side frame of the car, the frame C is supported and the chain and pin made to perform a double function.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a railway hand-car, the hand propelling-lever centrally pivoted in upright position in the car-frame, a segment-rack connected to said hand-lever at its lower end by means of a link connection, a pinion-wheel mounted loosely on the axle of the driving-wheel and gearing with the rack, a ratchet-wheel secured to the driving-wheel or axle, and a clutch device mounted loosely on the axle, but operated by the pinion-wheel to turn with the same and engage the ratchet-wheel, substantially as described.

2. In a device for locking a pinion-wheel on the axle of a wheel, the arm rigidly secured to the pinion-wheel, the bifurcated plate carrying the pawl, and the ratchet-wheel rigidly secured to the axle, substantially as described, whereby the pawl is operated by the arm to engage the ratchet-wheel.

3. In a railway hand-car, the pin *m*, chained to the end of the frame C at a suitable distance from the pin-hole formed therein, in combination with the pin-hole *o* in the side frame of the car, substantially as described, whereby the said pin is made to perform a twofold function.

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

EDGAR CHAMBERLAIN.

Witnesses:

ORSON NICHOLS,
J. T. MITCHELL.