

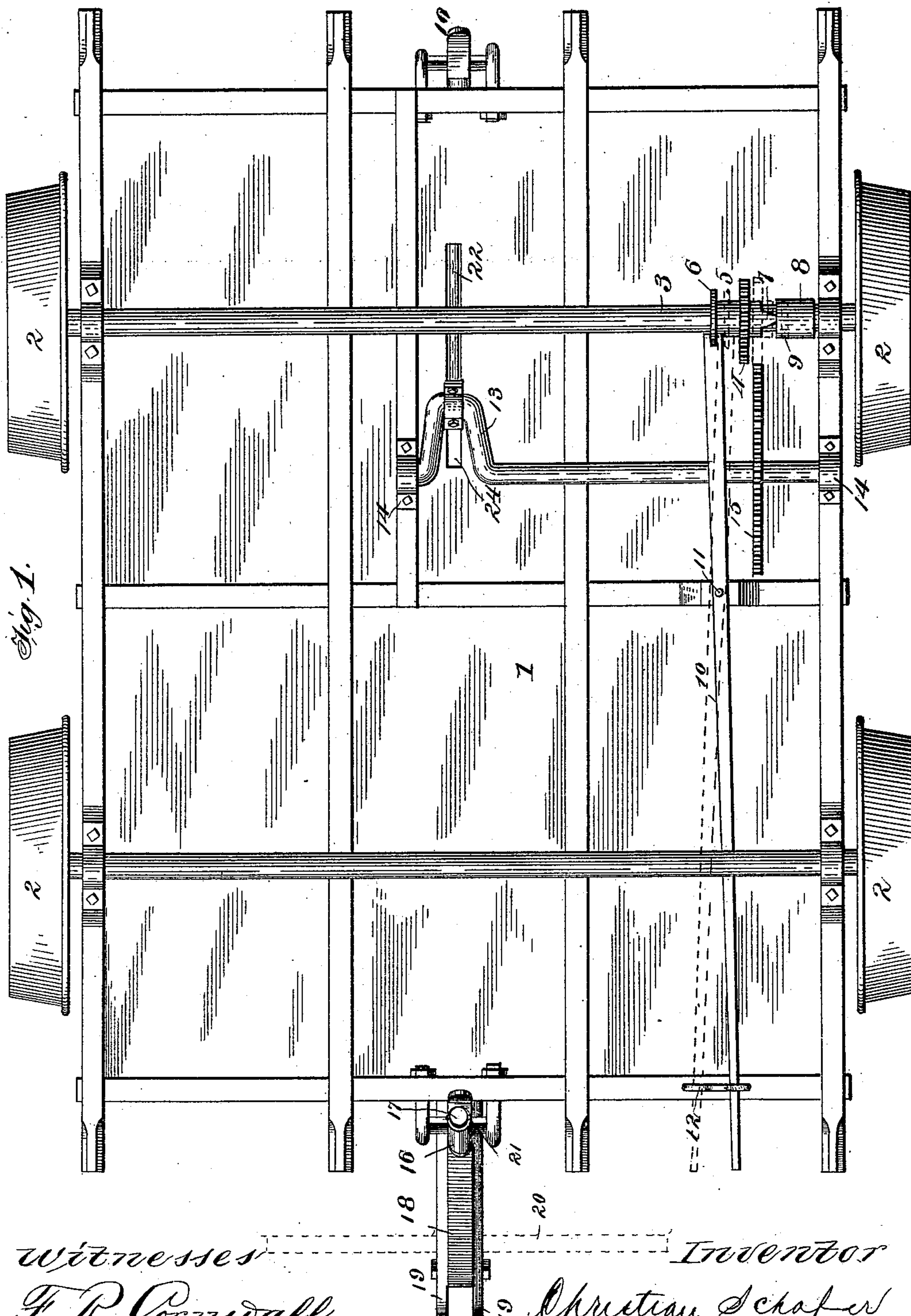
(No Model.)

2 Sheets—Sheet 1.

C. SCHAFER.  
HAND CAR.

No. 471,143.

Patented Mar. 22, 1892.



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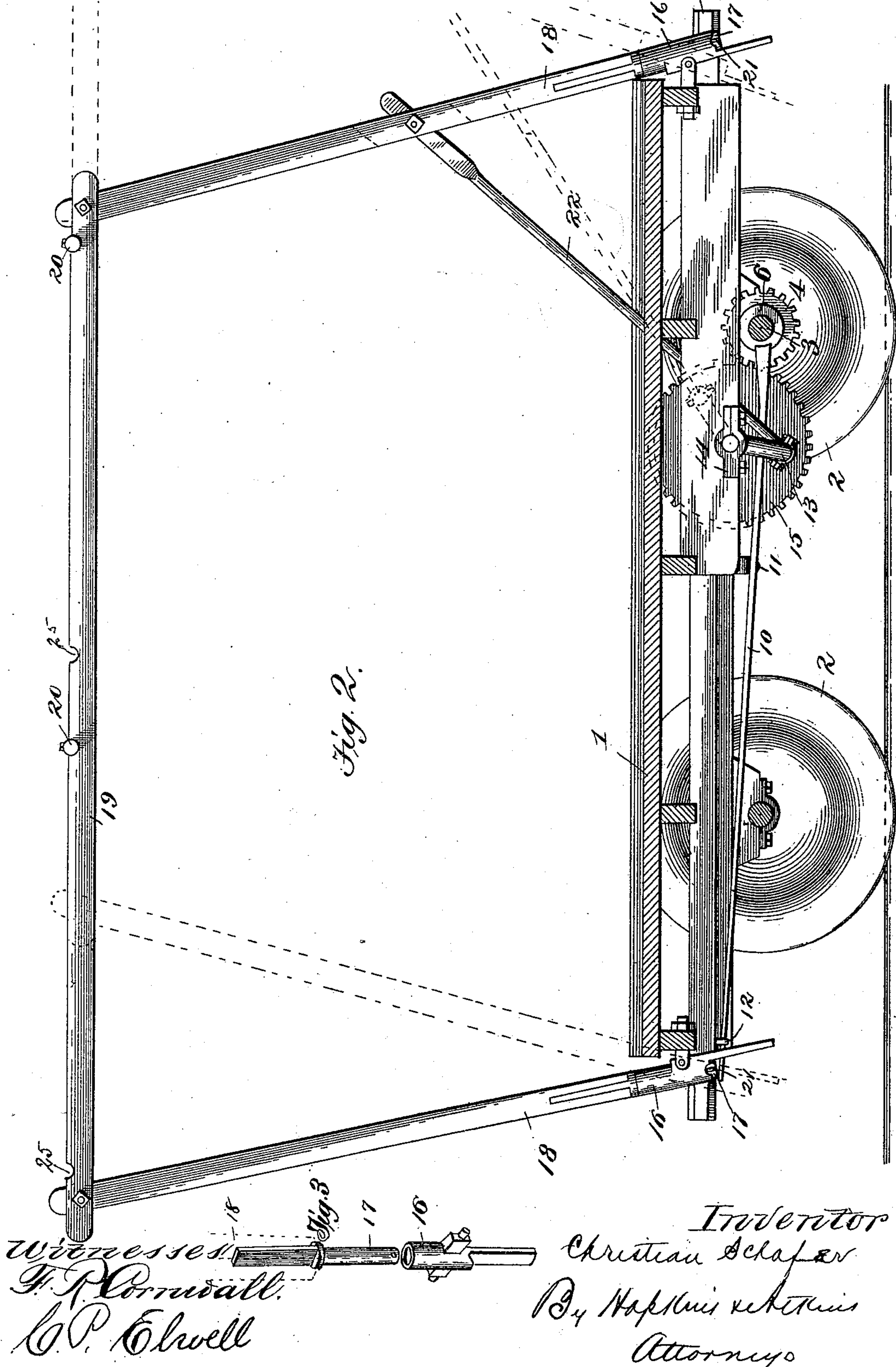
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# UNITED STATES PATENT OFFICE.

CHRISTIAN SCHAFER, OF THREE RIVERS, MICHIGAN.

## HAND-CAR.

SPECIFICATION forming part of Letters Patent No. 471,143, dated March 22, 1892.

Application filed August 17, 1891. Serial No. 402,894. (No model.)

*To all whom it may concern:*

Be it known that I, CHRISTIAN SCHAFER, of Three Rivers, in the county of St. Joseph and State of Michigan, have invented certain new and useful Improvements in Railroad-Cars, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to produce a car that may be readily converted at will into a hand-car—that is, one that is adapted to be propelled by mechanism operated by hand-power on the car—or into a push-car—that is, one which is adapted to be pushed along the track by the aid of poles, for instance.

Another object is to improve the propelling mechanism of a car. A hand-car is ordinarily provided with upright standards in its center carrying a walking-beam or the like that communicates motion to one of the axles. An objection to this kind of car is that the propelling apparatus occupies so much room upon the platform as to leave comparatively little space for freight of any kind. For carrying freight—such, for instance, as tools necessary in track-repairing—the ordinary push-car is desirable; but the permanent nature of the propelling apparatus in ordinary hand-cars prevents their being used as push-cars.

My invention is adapted not only to give increased space upon the platform while the propelling apparatus is in position, but also to provide means for detaching the propelling apparatus at will and using the car as a push-car.

In my invention, also, I apply the power direct to the gear-axle without any intermediate bearings or machinery. This is very desirable in any machine, and especially in one operated by man-power, as each bearing will in time wear, and thus cause lost motion. When the bearings are multiplied, a limited amount of lost motion in each will cause serious lost motion at the end of the propelling-levers. Where the bearings are kept down to the lowest possible number a machine is more durable and, it is evident, may be propelled with greater ease after being used some time.

Another improvement is found in my method of connecting the levers with the operating mechanism, by which I am enabled to substantially dispense with any projection below the line of the wheel-axle. This is a ne-

cessity, because a projection below the line of the axle is liable in removing the car from the track to hit rails or other obstructions, and thus be broken. It is also liable to cause difficulty in removing the car from the track, to such an extent that in case of an approaching train the car may not be gotten off in time, and thus the car be demolished and the train perhaps derailed. By means of the long oscillating beam running lengthwise of the car I can by suitable arrangement thereon adjust the operating-handles at any desired position on same, so that the operator can face in either direction the car is going. This is an advantage in case of storm, because the operators can turn their backs to the attack of the elements.

In the accompanying drawings, Figure 1 is a bottom plan view of a car with my propelling apparatus attached. Fig. 2 is a side elevation of same, partly in section, indicating the motion of the oscillating bars in dotted lines. Fig. 3 is a view of one of the pivoted sockets detached.

Referring to the figures upon the drawings, 1 indicates the platform and frame of a car made in any usual manner. It is provided, as usual, with wheels 2, preferably two pairs. The axle 3 of one pair of wheels is provided with a pinion 4, that is carried on a longitudinally-movable sleeve 5. The sleeve is provided at one end with a flange 6 and at the other end with lugs 7.

8 indicates a collar fixed to the axle 3 and provided with recesses parallel with the axle for the reception of lugs 7. Transverse pins 9, passing through the collar into the axle, form the sides of these recesses. The collar and sleeve thus in effect constitute a clutch when the projections on the sleeve are thrust into the recesses between the collar and the axle. Motion may thus be communicated through the pinion that the sleeve carries to the axle. The pinion may be disconnected from the axle by moving the sleeve in the opposite direction. A lever 10, pivotally connected with the frame at 11, may be made to operate the sleeve. For this purpose the lever is provided at one end with a slot or kerf adapted to fit over the flange 6 and to move the sleeve endwise upon the axle.

12 indicates a lock upon the frame of the



car for the free end of the lever, by which it may be caused to retain the sleeve in the clutched or unclutched position.

13 indicates a crank-shaft, which is carried in suitable bearings 14 upon the frame. Secured to one end of it by a key or otherwise is a gear 15, which meshes with the pinion 4 when that is clutched to the axle 3 for the purpose of communicating motion to the axle. The lowest points of the crank and gear 15 are substantially on line with the lower edges of the axles—that is, they may extend slightly below the pinion 4 of the axle 3, but not so low as to offer obstruction to the removal of the car from the track, as illustrated—or in construction they may be made in exact alignment. That is purely a detail of construction. It is the simple arrangement for applying the power directly that enables me to dispense with the low projections.

16 indicates pivoted sockets carried, preferably, upon opposite ends of the car and adapted to receive corresponding ends 17 of the oscillating bars 18, that are pivotally connected at their upper ends to the cross-bar 19, which carries bolted transversely upon it in niches 25 the adjustable handles 20. For shifting the position of the handles so as to enable an operator to face in either direction while working the car, two or more sets of niches may be employed. The ends 17 of the oscillating bars are adapted to be separately secured in their respective sockets. As a convenient means of separably uniting them a pin 21 may be passed through the end 17, where it is exposed below the socket. This means serves to hold the parts securely together when in use, and may be readily withdrawn when desired.

22 indicates a pitman adapted to communicate rotary motion from one of the oscillating bars (to which it is pinned) to the crank-shaft 13 through the slot 24 in the platform by the movement of the bar.

The operation of the car is as follows: Suppose it is to be used as a hand-car. Having set the pinion 4 in mesh with the gear 15 by means of the lever 10, the operator works the cross-bar 19 backward and forward by means of its handle, and thereby through the pitman 22, that is connected to the oscillating bar and the crank-shaft 13, communicates motion to the axle 3 to propel the car along a track. It will be observed that by the arrangement of the oscillating bars upon the ends of the platform less space is occupied by the propelling mechanism, and a larger proportion of the floor-space is rendered available for carrying purposes. If, however, it is

desired to utilize the entire platform, it is only necessary to separate the oscillating bars from their sockets and the pitman and to throw the pinion 4 out of the gear by means of the clutch mechanism. The pitman 22 may be separated from the crank by unscrewing, for instance, or it may be folded down into the slot 24 out of the way, and the car will then be converted into an ordinary push-car.

What I claim is—

1. In a propelling mechanism of a car, the combination of a longitudinally-movable bar extending lengthwise of the car and supports for it upon the opposite ends of the car, so as to leave the intermediate space unobstructed, substantially as set forth.

2. The combination, with a car, oscillating bars pivotally secured at their lower ends to the car, and a cross-bar pivotally connected with the moving ends of the oscillating bars, of a train of gears adapted to communicate motion to the axle of one pair of wheels of the car, and a pitman operatively connecting one of the oscillating bars with the train of gears, substantially as set forth.

3. In a propelling mechanism for a hand-car, the combination, with a car, of oscillating bars secured, respectively, at their lower ends on opposite ends of the car, and a cross-bar pivotally connecting the upper ends of the oscillating bar, substantially as set forth.

4. The combination, with a car and a train of gears adapted to be clutched and unclutched from the axle of one of the pairs of wheels of the car, of pivotally-connected oscillating bars, pivoted sockets upon opposite ends of the car adapted to separably carry the oscillating bars, and connecting mechanism between the train of gears and one of the oscillating bars, substantially as set forth.

5. The combination, with a car, of separable propelling mechanism, a train of gears operatively connecting said mechanism with the axle of one of the pairs of wheels of the car, and clutch mechanism for throwing the train of gears into or out of gear, substantially as set forth.

6. In car-propelling mechanism, the combination, with a cross-bar adapted to be reciprocated and to impart motion to the car thereby, of adjustable handles thereon, substantially as and for the purpose specified.

In testimony of all which I have hereunto subscribed my name.

CHRISTIAN SCHAFER.

Witnesses.

L. B. PLACE,  
W. J. WILLITS.