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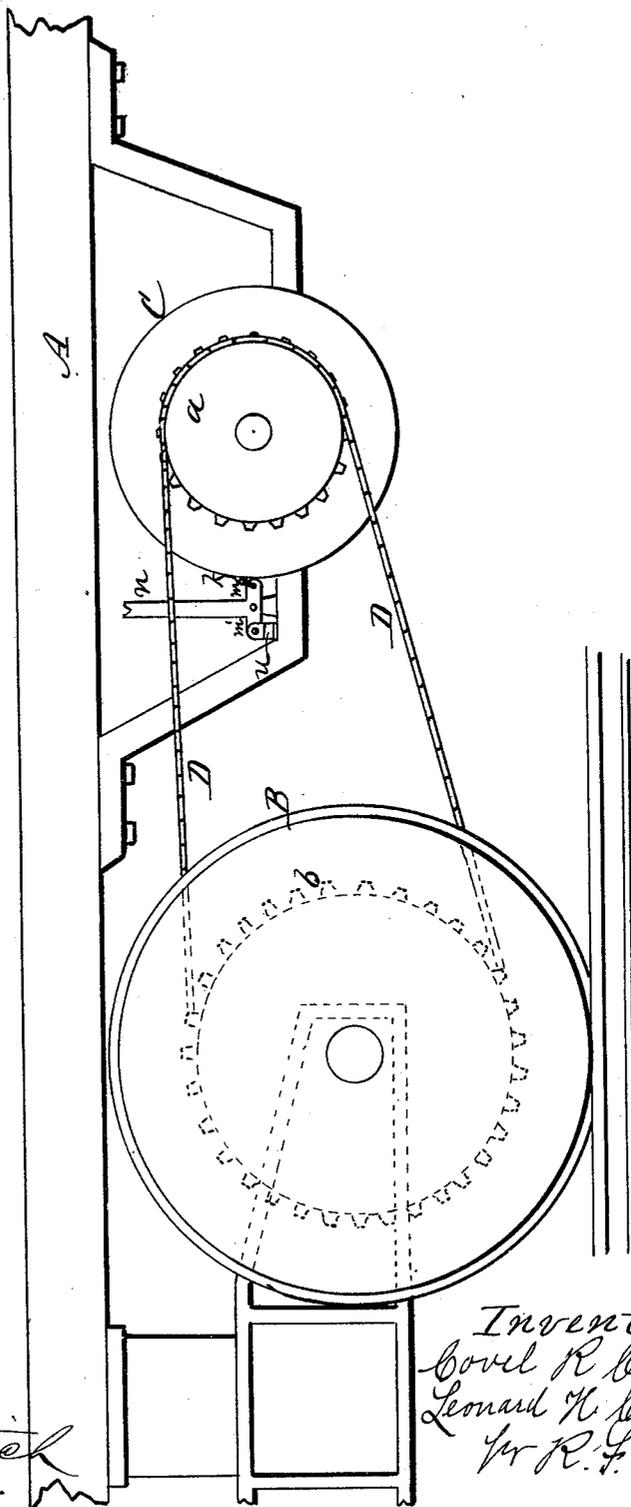
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C. R. & L. H. COWLEY.
MOTOR FOR LAND CARRIAGES.

No. 410,536.

Patented Sept. 3, 1889.

Fig. 1.



Attest.
P. H. Ketchel
John H. Hopkins

Inventors.
Corvel R. Cowley,
Leonard H. Cowley,
Per R. F. Oggood,
Atty

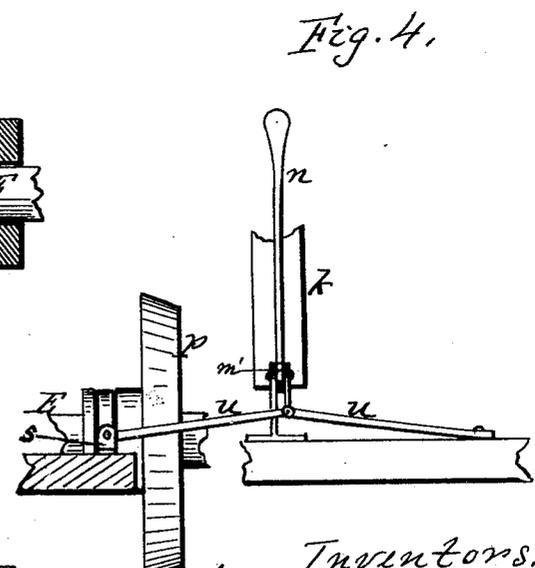
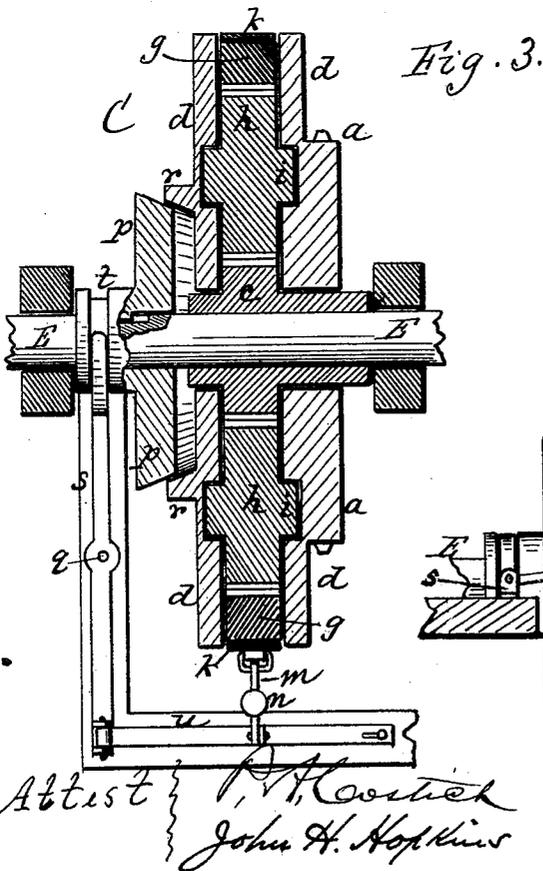
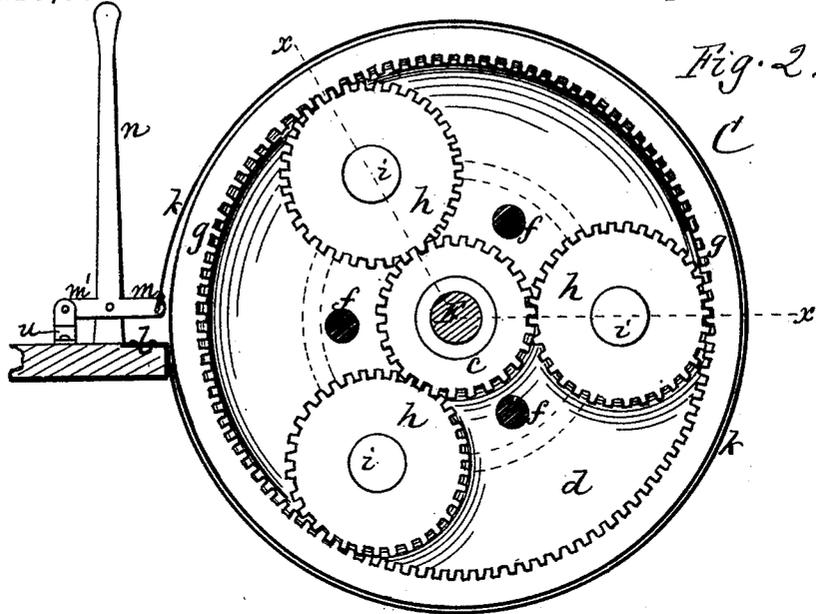
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2 Sheets—Sheet 2.

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MOTOR FOR LAND CARRIAGES.

No. 410,536.

Patented Sept. 3, 1889.



Attest *J. H. Cowley*
John H. Hopkins

Inventors,
Court R. Cowley,
Leonard H. Cowley,
by *R. F. August,*
Atty.

UNITED STATES PATENT OFFICE.

COVEL R. COWLEY, OF WYOMING, AND LEONARD H. COWLEY, OF ROCHESTER,
ASSIGNORS OF ONE-THIRD TO WILLIAM A. SUTHERLAND, OF ROCHESTER,
NEW YORK.

MOTOR FOR LAND-CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 410,536, dated September 3, 1889.

Application filed September 17, 1888. Serial No. 285,589. (No model.)

To all whom it may concern:

Be it known that we, COVEL R. COWLEY, of Wyoming, in the county of Wyoming, State of New York, and LEONARD H. COWLEY, of
5 Rochester, in the county of Monroe, State aforesaid, have invented a certain new and useful Improvement in Motors for Running Land-Carriages, of which the following is a specification.

10 Our improvement relates to motors for running land-carriages of various kinds, such as wagons, street-cars, traction-engines, &c.

The object is to apply greater power in running on upgrades than on level surfaces, and
15 for this purpose we employ a gearing of peculiar kind, as hereinafter described.

In the drawings, Figure 1 is a side elevation of our invention applied to the front end of a car. Fig. 2 is an enlarged side elevation of
20 the gearing with the side plate removed to show the interior construction. Fig. 3 is a cross-section of the gearing in line *xx* of Fig. 2. Fig. 4 is a diagram showing an elevation of the clutch-mechanism for operating the
25 friction-wheel.

A indicates the front end of a car, and B one of the front wheels of same.

C indicates the gearing which constitutes our invention, and D a drive-chain extending
30 from a sprocket-wheel *a* on said gearing to a sprocket-wheel *b* on the axle of the car-wheels, by which the latter are propelled.

Our improvement is as follows:

E is the engine-shaft, driven in any desired
35 way and resting in suitable bearings in the car or carriage frame.

c, Figs. 2 and 3, is a spur-gear keyed fast to the shaft and revolving with it.

d d are two plates or disks mounted on the
40 hub of gear *d* so as to turn freely. These plates are located some distance apart, but are connected together by cross-bolts *f f*, so that they will turn in unison.

g is a cog-ring located between the plates,
45 having an independent rotary movement, and *h h h* are three or more planetary gears engaging on one side with the center gear *c* and on the other with the cog-ring *g*. These planetary gears have journals *iii*, that have their

bearings in the side plates *d d*. The gears 50 are all inclosed and held in position by said side plates.

k is a metallic strap forming a brake, that encircles the outside of the cog-ring *g*. One end of said band is permanently attached to
55 the frame, as shown at *l*, Fig. 2, and the other end is attached to one arm *m* of a rock-lever *n*. By throwing the lever in toward the gearing the band will be clamped on the cog-ring to arrest its motion. 60

p is a friction-wheel arranged to slide forward and back on shaft E, being connected therewith by a spline, so that it receives rotary motion with the shaft. When pressed forward, the rim of this friction-wheel en-
65 gages with a friction-rim *r* on the outside of one of the side plates *d*, and consequently imparts rotary motion to the side plates. When disengaged therefrom, the side plates move
70 free.

s is a clutch-lever pivoted at *q*, its forked front end engaging with the grooved hub *t* of the friction-wheel and its rear end being pivoted to one end of toggle-arms *u u*. The center of the toggle-arms in turn are connected
75 with the arm *m'* of rock-lever *n*. It will be seen that when rock-lever *n* is thrown forward to tighten the band *k* on the cog-ring *g* the friction-rims *p r* will be thrown out of engagement through the action of the toggles *u u*
80 and clutch-lever *s*. Any other suitable shifting arrangement may be used.

The operation is as follows: On level grades, where not much power is required, the clamping-band *k* is released from the cog-ring *g* and
85 the friction-wheel *p* is brought into engagement with the rim *r*, and the whole gearing, including the side plates and sprocket-wheel, revolves bodily with the engine-shaft; but in upgrades, where greater power is required,
90 the band *k* is clamped upon the cog-ring *g*, thereby stopping it, the friction-gears *p r* are disengaged, and the whole gearing is then run by the center gear *c* engaging with the planetary gears *h h h* and the latter with the stationary gear *g*, by which means the power is
95 greatly multiplied, and while a greater motion of the engine or a slower motion of the

car is required the propelling-power is greatly increased.

This invention is applicable to all kinds of land-conveyances which run on wheels—such as wagons, carts, traction-engines, &c.—but is particularly applicable to street-cars where engines or other motors are used in the place of horses.

We do not claim a compensating-gear for transferring the power from one side to the other of the axle or shaft as shown in Patents Nos. 168,955 and 252,044; but,

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a land-carriage, the combination of the engine-shaft, the side plates turning freely thereon, the cog-ring resting loosely between the side plates, the fixed gear on the shaft, the planetary gears having their bearings in the side plates and engaging with the center gear and cog-ring, the brake consisting of a clamping-band resting around the cog-ring and capable of being clamped thereon, and a

friction-gear on the shaft adapted to be engaged with and disengaged from one of the side plates, as shown and described, and for the purpose specified.

2. In a land-carriage, the combination of the engine-shaft, the side plates turning freely thereon, the cog-ring resting loosely between the side plates, the fixed gear on the shaft, the planetary gears engaging with the fixed gear and the cog-ring, the brake-band resting around the cog-ring, the rock-lever for operating the brake-band, the friction-gear on the shaft engaging with a friction-rim on one of the side plates, and a clutch mechanism connecting the rock-lever with the friction-gear, whereby the latter is operated automatically with the brake-band, as shown and described, and for the purpose specified.

COVEL R. COWLEY.
LEONARD H. COWLEY.

Witnesses:

R. F. OSGOOD,
C. F. SMITH.