

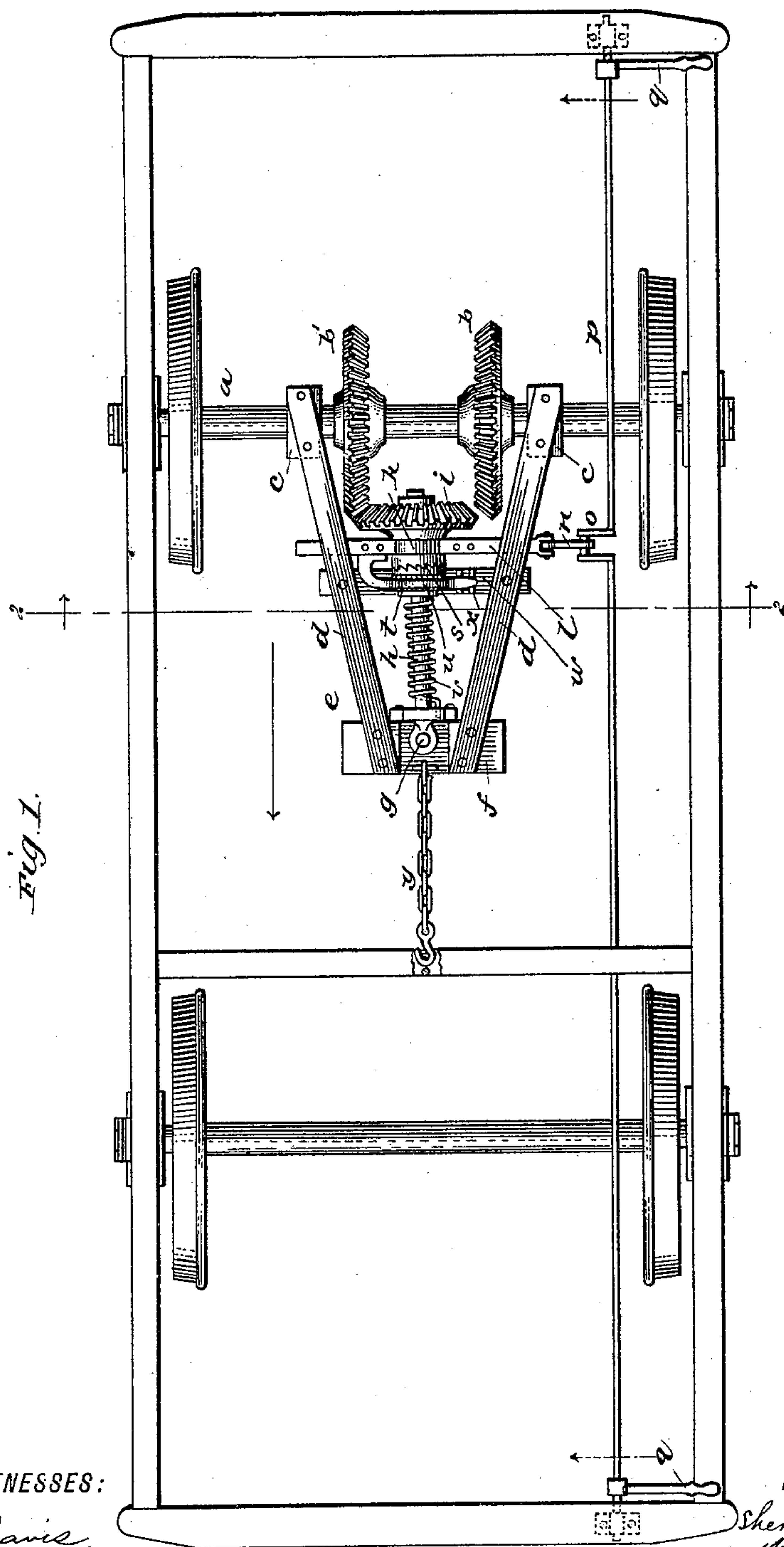
(No Model.)

2 Sheets—Sheet 1.

S. JOH & W. BARLOW.
CAR STARTER AND BRAKE.

No. 466,242.

Patented Dec. 29, 1891.



WITNESSES:

W. R. Davis.
J. C. Gibson

INVENTORS

Sherman Joh and
W. Barlow
BY
Alexander Davis
ATTORNEYS

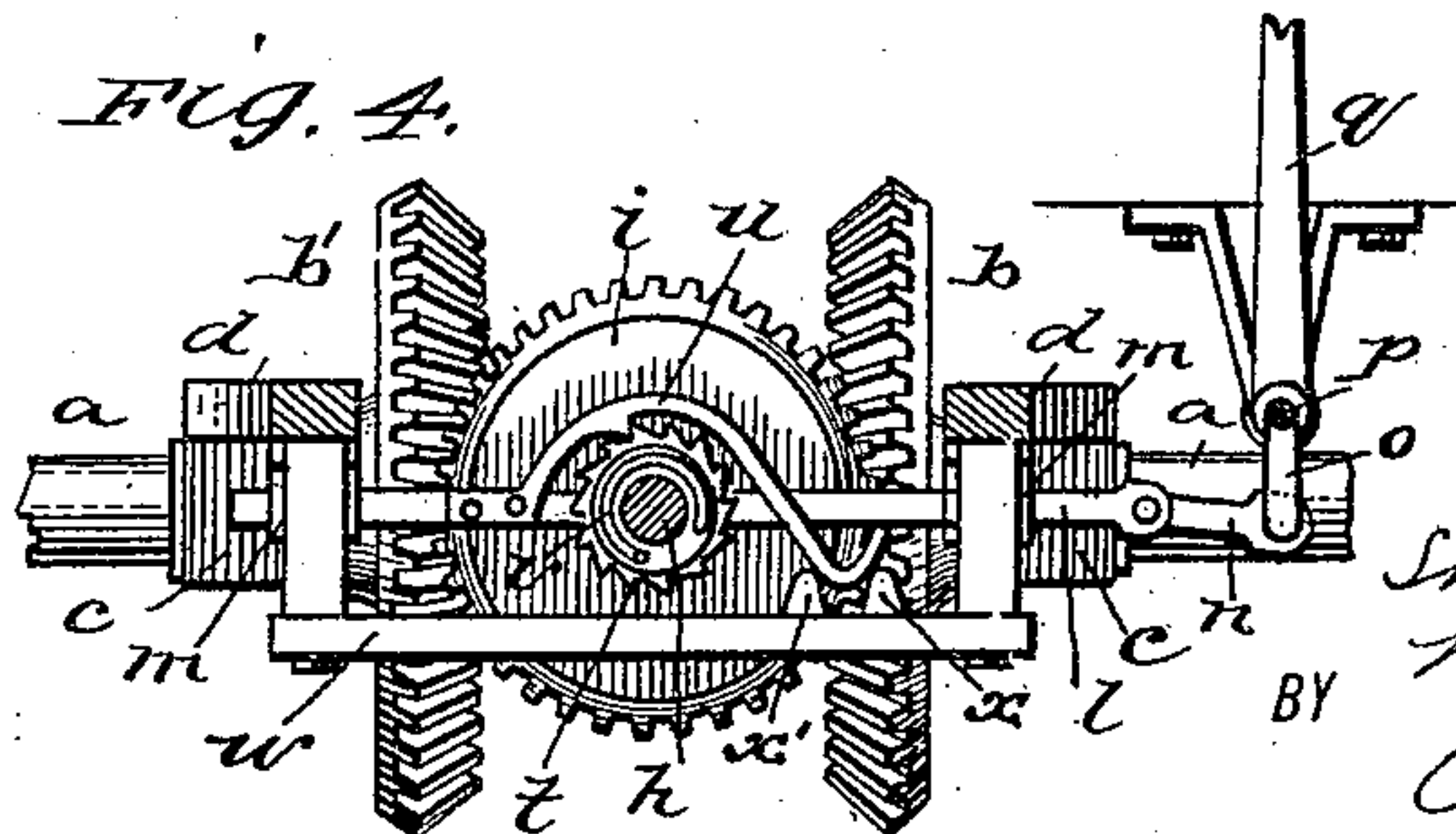
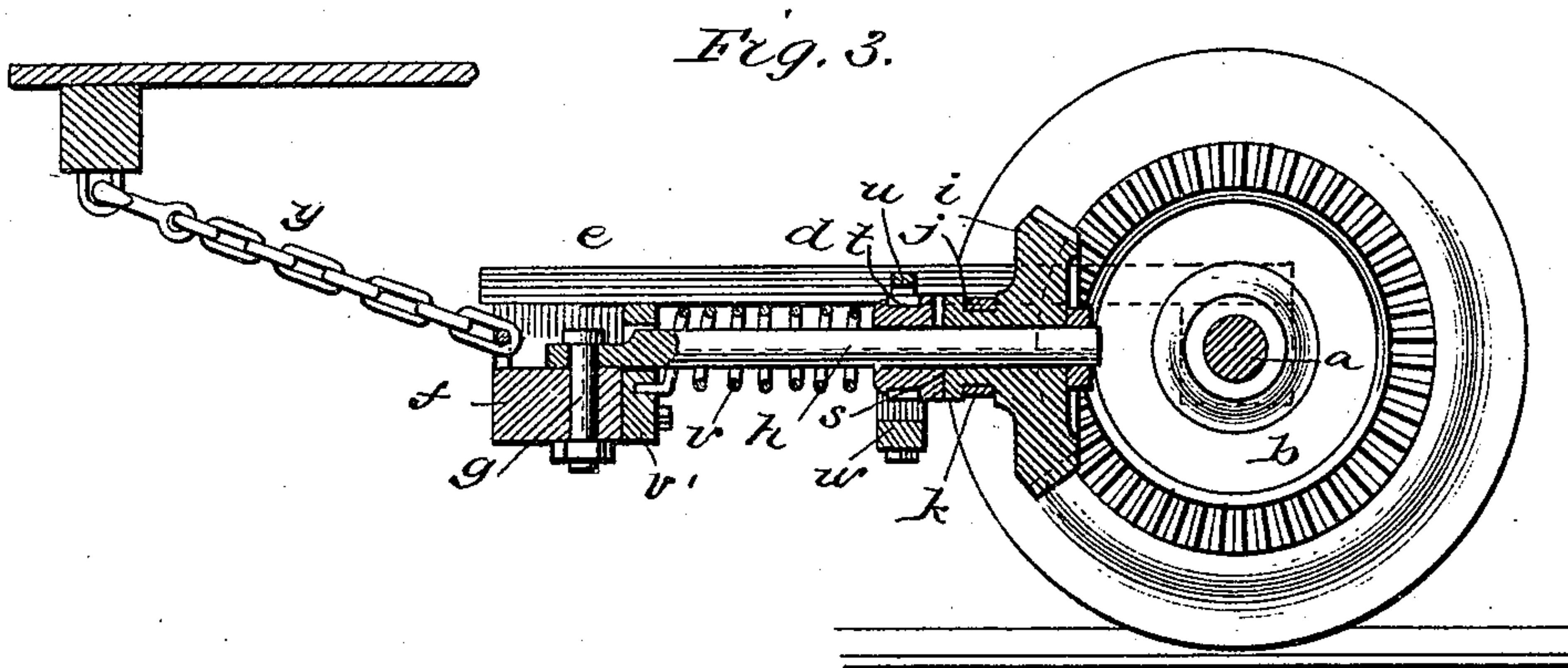
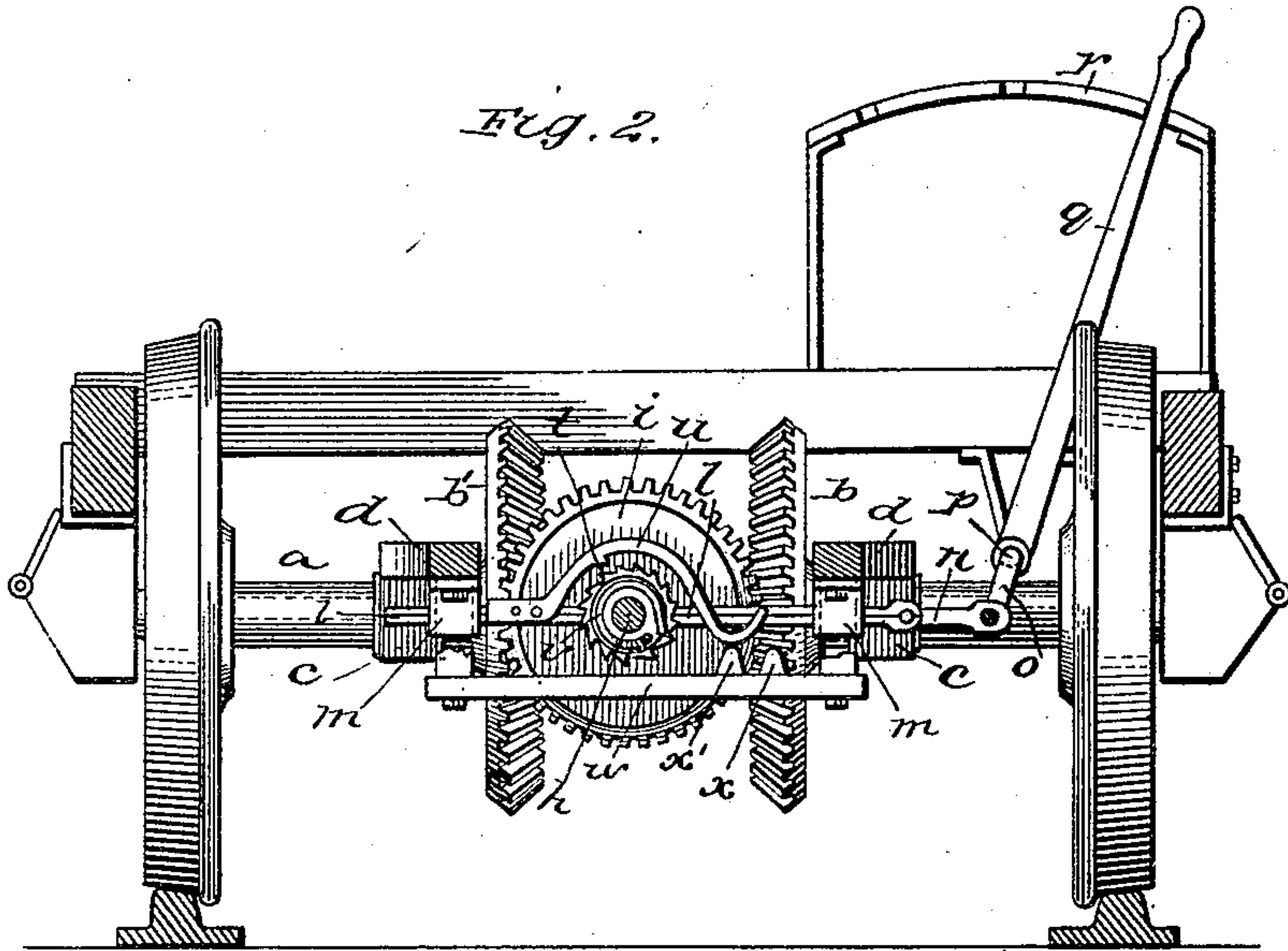
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UNITED STATES PATENT OFFICE.

SHERMAN JOH AND WESLEY BARLOW, OF SIMS, INDIANA.

CAR STARTER AND BRAKE.

SPECIFICATION forming part of Letters Patent No. 466,242, dated December 29, 1891.

Application filed April 18, 1891. Serial No. 389,491. (No model.)

To all whom it may concern:

Be it known that we, SHERMAN JOH and WESLEY BARLOW, citizens of the United States, residing at Sims, in the county of Grant and State of Indiana, have invented certain new and useful Improvements in Car Starters and Brakes, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to that class of devices which are employed to arrest the motion of street-cars and apply the power thus expended to start or assist in starting the cars; and the special object of the present invention is to provide a simple and efficient mechanism for the purposes named, adapted to be operated from either end of a car traveling in either direction, as will be more fully hereinafter described.

20 The further object of the invention is to provide a flexible connection between the car-frame and the mechanism, whereby the disengagement of the gearing by the springing of the car is prevented, as will presently appear.

25 Referring to the drawings, forming part of this specification, Figure 1 is a plan view of a car-frame provided with our improved car-starter adjusted to start the car in the direction indicated by the arrow. Fig. 2 is a cross-sectional view taken on the line 2 2 of Fig. 1. Fig. 3 is a longitudinal sectional view taken on the line 3 3 of Fig. 1. Fig. 4 is an elevation of the mechanism, showing one of its adjustments.

35 Similar letters of reference denote corresponding parts in all the views.

In the construction of our invention shown, which is the preferred construction, we secure to one of the car-axles *a*, a suitable distance apart, two beveled gear-wheels *b b'*. Mounted on the said axle *a*, a suitable distance from the respective gears *b b'*, are two boxes *c c*, to which are secured the respective ends of the diverging side bars *d d* of the horizontal supporting-frame *e*. The side bars *d* extend longitudinally of the car and preferably converge toward its center, and are connected at their converged ends by a cross bar or block *f*, on which is pivoted by a bolt *g* one end of

a horizontal shaft or stub-axle *h*. This stub-axle or shaft extends longitudinally of the car, and its free end extends in between the beveled gears *b b'*, mounted on the axle *a*, and has loosely mounted on it a beveled gear *i*, 55 which is adapted to mesh with either of the beveled gears *b b'*, as may be desired, said beveled gears being of such diameter that when adjusted centrally between the gears *b b'* it will be free from both, and yet, by a very slight adjustment, may be caused to engage either of said gears, as desired. The hub of this beveled gear *i* is formed with an annular groove *j*, which receives and forms a bearing for the yoke *k* on the slide-bar *l*, whereby the 65 free end of the horizontal stub-axle *h* is supported. The said yoke prevents any lateral motion of the beveled gear *i* and also receives the thrust of said gear.

The bar *l* slides in boxes or bearings *m*, secured to the under side of the side bars of the horizontal supporting-frame, and is provided at one of its ends with a bifurcated head or clip, in which is pivoted one end of a connecting-rod *n*. The other end of this connecting-rod is pivoted to a crank *o*, formed on the horizontal rock-shaft *P*, which extends the length of the car, and is provided at each end with an upright hand-lever *Q*, said levers being arranged in a convenient position for operation by the attendant on the platform. By means of the said hand-levers the shaft *P* is rocked, and through the crank and connecting-rod carried by this shaft the gear *i* is adjusted by means of the slide-bar *l* to 85 mesh with either of the beveled gears secured to the car-axle, or to allow them to run free, as desired. A segmental rack *r*, provided with three notches, is supported near the upper end of said levers, said notches engaging and securing the lever in its three adjusted positions, as is evident.

One half of a clutch *s* is formed on the hub of the beveled gear *i*. The other half of said clutch is formed on the adjacent side of a ratchet-wheel *t*, loosely mounted on the stub-axle *h*. The two halves of said clutch are kept in engagement by the pressure of the spring *v*, coiled on the stub-axle, to be presently described. The ratchet-wheel *t* is en- 100

gaged by a spring-pawl *u*, which is secured to the slide-bar *l* and curves up over the ratchet-wheel.

The spring *v*, hereinbefore mentioned, is coiled on the stub-axle, and one of its ends is secured to the ratchet-wheel *t*, while its other end is secured to a block *v'*, secured to the cross-bar *f* of the supporting-frame.

Directly beneath the ratchet-wheel *t* and connecting the side bars of the supporting-frame is a cross-bar *w*, which is provided on its upper side, in a suitable position to be engaged by the downwardly-curved end of the spring-pawl *u*, with two upwardly-projecting rounded teats *x x'*, which are placed a sufficient distance apart to permit the said downwardly-curved end of the spring-pawl to fall between them when the gear *i* is adjusted to its central position, as clearly shown in Fig. 4 of the drawings. The object of this construction is to provide for the automatic tripping of the spring-pawl to cause it to engage the ratchet, thereby preventing by means of the clutch the revolution of the gear *i* while the same is being adjusted from one of the gears *b b'* to the other and while the car is at rest; also, to provide for the automatic releasing of the said ratchet by the spring-pawl, the pawl being forced up by passing over the said teats when the gear *i* is adjusted to engage either of the gears *b b'*, as clearly shown in Fig. 2 of the drawings. The object of the clutch is to cause the gear *i* to revolve with the beveled gear with which it may be engaged when the force of the coiled spring is expended.

One end of a chain *y* is secured to the cross-bar *f* of the supporting-frame. The other end of said chain is secured to the under side of the framing of the car, whereby the supporting-frame is held in a horizontal position, the chain forming a flexible connection between the car-frame and the frame supporting the mechanism. By said construction the disengagement of the beveled gears by the jolting or springing of the car is prevented. Should there be any movement of the supporting-frame, caused by the slacking of the chain, said movement will be in an arc of a circle described from the center of the axle carrying the beveled gears, and, as is manifest, the perfect meshing of either of said gears and the intermediate gear will not be affected in the least.

The operation of our invention is as follows: When it is desired to arrest the motion of a car traveling in the direction indicated by the arrow in Fig. 1, the upright hand-lever at either end of the car is thrown in the direction indicated by dotted arrows until it engages the notch formed in that side of the segmental rack, thereby rocking the long rock-shaft *P* and serving, through the connections already described, to swing the stub-axle laterally on its pivot far enough to bring the gear *i* in engagement with the gear *b*, secured to the car-axle. The spring-pawl se-

cured to the slide-bar will be disengaged from the ratchet-wheel *t* by its curved end coming in contact with and being raised by the projection *x* on the cross-bar of the supporting-frame. The momentum will then operate, through the meshing beveled gears, to coil the spring *v* around the stub-axle. When the said spring is tightly wound, the wheels will be practically locked and the car will be stopped. Now if it is desired that the car remain stationary, the hand-levers are adjusted to vertical positions, as shown in Fig. 4 of the drawings. The gear *i* will then be disengaged from the gear *b* and the curved end of the spring-pawl will have dropped between the teats *x x'*, causing the pawl to engage the ratchet *t*, thereby preventing the uncoiling of the spring. When it is desired to continue in the direction indicated by the arrow in Fig. 1, either of the hand-levers must be thrown in the direction opposite that in which it was thrown to stop the car, which will cause the mechanism to assume the position shown in Figs. 1 and 2 of the drawings, the spring-pawl being released from the ratchet by its end passing over the teat *x'*, thereby permitting the spring on the stub-axle to uncoil and exert its force in starting or assisting in starting the car.

It is manifest that when the car is traveling in the opposite direction to the one indicated the operation of the levers must be reversed.

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

1. In a car starter and brake, the combination of a car-axle having two separated gear-wheels rigidly secured thereto, with a supporting-frame mounted on said axle, a shaft pivoted to said supporting-frame, a gear-wheel loosely mounted on the said shaft, means whereby said gear is adjusted to engage either of said gears secured to the car-axle, and a spring coiled in the stub-axle, whereby the momentum of the car is applied to coil the spring and the power of the spring in turn applied to propel the car, substantially as and for the purpose described.

2. In a car-starter, the combination of a car and a car-axle having two gear-wheels rigidly secured thereto, with a horizontal supporting-frame, a flexible connection between the said frame and the car-body, whereby the disengagement of the gears by the springing of the car is prevented, a shaft carried by said frame, a gear and clutch loosely mounted on the said shaft, a coiled spring on said shaft, a slide-bar supporting the free end of the stub-axle and forming a bearing for the gear on said stub-axle, and means whereby the said slide-bar is moved laterally to effect the adjustment of the gears, substantially as described, and for the purposes specified.

3. In a car-starter, the combination of a car-axle having two beveled gears rigidly secured thereon, with a horizontal supporting-frame

having one of its ends secured on said axle, a flexible connection between the other end and the car-body, a horizontal stub-axle pivoted to said frame, carrying a gear at its other
5 end, adapted to engage either of the gears secured to the car-axle, a slide-bar mounted in a bearing secured to the horizontal supporting-frame, forming a bearing for the gear mounted on said stub axle and a support for
10 the stub-axle, a clutch secured to said gear, a ratchet-wheel on the stub-axle, a clutch on said ratchet engaging the clutch on the gear, a spring-pawl secured to the slide-bar and adapted to automatically engage and release
15 the ratchet, a spring coiled on the stub-axle, having one of its ends secured to the ratchet, its other end secured to the supporting-frame, and means for adjusting the slide-bar, thereby effecting the adjustment of the gear carried

by the stub-axle to engage either of the gears 20 secured to the car-axle, substantially as and for the purposes described.

4. In a car-starter, the combination of a car, a pair of gears on one of its axles, a horizontal frame mounted at one end on said axle, a 25 flexible connection connecting its other end to the car-body, a stub-axle pivoted at one end on said horizontal frame, a gear carried by said axle adapted to engage the gears on the car-axle, and means for adjusting said 30 stub-axle, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

SHERMAN JOH.

WESLEY BARLOW.

Witnesses:

D. S. JONES,

GEO. LOCHRIDGE.