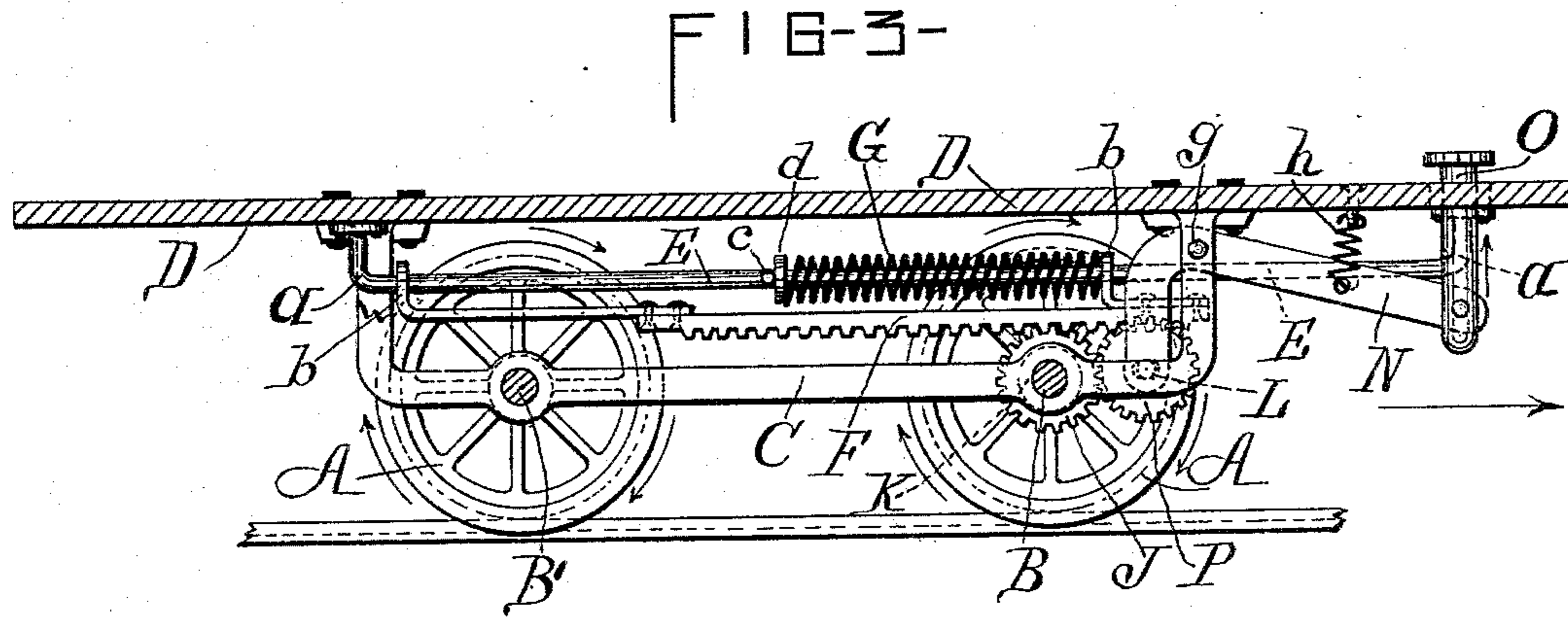
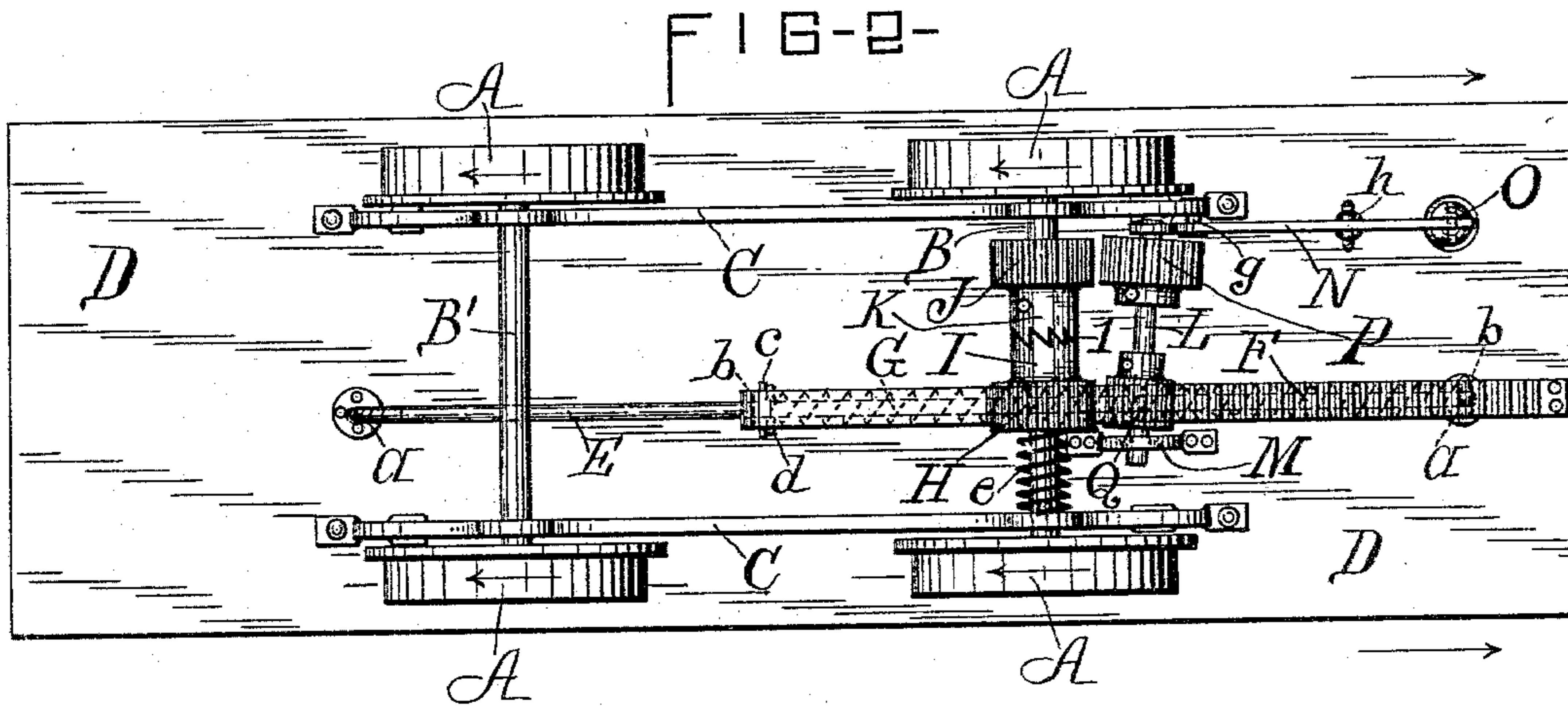
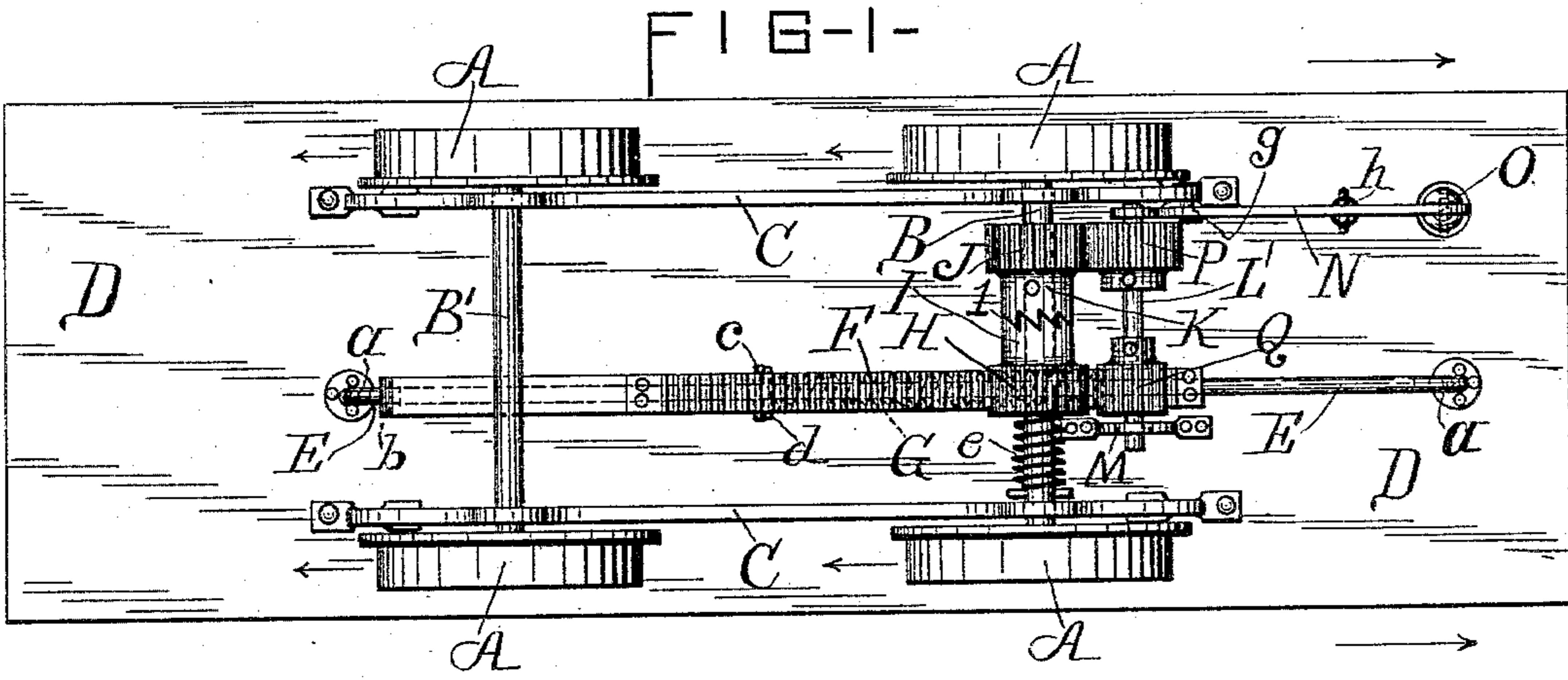


(No Model.)

S. B. FYLER.  
COMBINED CAR STARTER AND BRAKE.

No. 401,340.

Patented Apr. 16, 1889.



Witnesses—  
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# UNITED STATES PATENT OFFICE.

SILAS B. FYLER, OF EAST SYRACUSE, NEW YORK.

## COMBINED CAR STARTER AND BRAKE.

SPECIFICATION forming part of Letters Patent No. 401,340, dated April 16, 1889.

Application filed January 12, 1889. Serial No. 296,132. (No model.)

*To all whom it may concern:*

Be it known that I, SILAS B. FYLER, of East Syracuse, county of Onondaga, in the State of New York, a citizen of the United States, have invented certain new and useful Improvements in Combined Car Starters and Brakes, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a bottom plan view showing the position of parts when acting as a brake; Fig. 2, a like view showing position of the parts subsequent to the starting of the car; and Fig. 3, a side elevation with two wheels removed, showing parts in same position as illustrated in Fig. 1.

Similar letters and figures of reference indicate corresponding parts throughout the several views.

The object of this invention is the construction of a combined car starter and brake that is adapted to propel a car forward a short distance from the power derived or stored up in the braking of same—that is, operated by the car-driver (or brakeman) by the pressure or non-pressure of his foot (or hand) upon a manipulating-rod, and which mechanism may readily be attached to the running-gear or bottom of a car or other road vehicle, and which is comparatively inexpensive of manufacture, and at the same time being of durable construction and reliable and efficient to operate.

It consists of the several novel features of construction and operation hereinafter described, and which are specifically enumerated in the several clauses of claim hereunto annexed.

It is constructed as follows: A A are the car-wheels, rigidly secured to the axles B B' in any ordinary manner, said axles being journaled in any preferred bearings, although represented in the drawings, by way of illustration, as journaled in a double metallic carrying-frame, C, secured to the bottom D of the car. Longitudinally with and to one side of the center of the car's bottom I secure thereto and pendent therefrom the elongated carrying-rod E, having angular extremities or stops *a a*.

F is a horizontal rack-bar lying beneath the

rod E and suspended therefrom at its ends by means of supporting-bars terminating with vertical projections or arms *b b*, provided with apertures, through which passes the carrying-rod E, said apertures being of sufficient diameter to permit of the free travel of the vertical arms or hangers *b b* (and connected rack-bar) on the aforesaid rod.

*c* is a pin or stop inserted in the rod E at about the location shown, which holds in position a collar or buffer, *d*, and extending therefrom to the forward arm or hanger, *b*, of the rack-bar I encircle the aforesaid rod E with a strong, powerful, and heavy coiled spring, G, as shown, and being non-compressed.

The lower or rack face of the horizontal rack-bar F meshes in a pinion, H, mounted loosely on the axle B and terminating at one side in the serrated sleeve I, formed integral therewith, and at the opposite side of the aforesaid pinion I secure a coiled spring, *e*, upon the axle and held in position by a pin, *f*, whereby a yielding pressure is obtained against the aforesaid pinion.

J is a corresponding pinion, located near the opposite end of the axle B and keyed thereto, and terminating at the side adjacent to the pinion H in a serrated sleeve portion, K, the serrated edge of which engages with the serrations on the sleeve I of the loose pinion H, the two parts combined forming a ratchet-clutch, *l*.

L represents a shaft, journaled at one end in a bearing, M, attached to the bottom of the car and at its opposite end in the vertical extremity of the angular operating-bar N, said bar being pivoted to the car by suitable means, or directly to a frame, C, thereof, as at *g*, and thence extending longitudinally forward and pivotally secured to a vertically-disposed manipulating-rod, O, passing through the car bottom or platform.

*h* is a spring, one end being secured to the bottom of the car and the other to the operating-bar N.

Upon the shaft L, adjacent to the bar N, I secure a pinion, P, and at the opposite end a smaller pinion, Q, adapted to mesh in the rack-face of the rack-bar F. At either point, when the shaft L is journaled, the aperture

is sufficiently enlarged or elongated to permit of a certain degree of lateral movement of the aforesaid shaft.

My device is operated as follows: The car being in motion and a stoppage thereof being desired, I depress and keep depressed (preferably by the pressure of my foot) the manipulating-rod O, causing the forward pivoted end of the operating-bar N to drop, thus throwing its vertical inner extremity with the shaft L and pinion P (and pinion Q) inward and upward, said pinion thus meshing in the pinion J on the forward axle, B, and impelling the rotation of the shaft L, with its smaller pinion, Q, which pinion, meshing with the rack-face of the rack-bar F, instantly propels the said bar rearwardly until the tight compression of the propulsion-spring G, by the inward movement of the rack-bar, in conjunction with the passage of the rack-face past the axis of the pinion Q, effectually brakes the forward car-wheels, and thus brings the car to a positive stop.

During the aforescribed operation the loose pinion H is rotated upon its axle by the rearward travel of the engaging rack-bar, the serrated sleeve K of the keyed pinion J rotating and slipping past the serrated edge of the sleeve I of the yieldingly-held loose pinion H.

To start the car, I release my weight from the rod O, whereby, by means of the spring h, the forward elongated portion of the lever L flies upward and the inner vertical portion thereof outward and forward, thus releasing the pinion P from engagement with the pinion J and the pinion Q from engagement with the rack-face of the rack-bar F, whereupon the coiled propulsion-spring G (the compression against it being now removed) immediately expands itself, propelling the rack-bar forward, the rack-face of which meshing in the pinion H causes that and its integral serrated sleeve I to rapidly revolve, which in turn, by the positive engagement of its serrations with the serrations of the adjacent sleeve K of the pinion J, compels that and the axle B and connected carrying-wheels A to rotate during the travel of the spring-propelled rack-bar from its rearward position to the forward limit of its movement, and thus insuring the rotation of the car-wheels sufficiently to give the car a good start.

Upon street-cars, where the horses are alternately changed from one end of a car to the opposite end, I simply duplicate and reverse the within-described arrangement of parts.

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

1. In a combined car starter and brake, a horizontally - disposed rack - bar movably

mounted on a carrying-rod attached to the car-bottom and adapted to longitudinal movement thereon, a recoil-spring upon said rod, a pinion loosely mounted on the car-axle and meshing in the rack-face of the rack-bar, a keyed pinion upon the opposite end of the car-axle, said respective pinions having an integral serrated sleeve portion adapted to engage one with the other and forming a ratchet-clutch, a shaft journaled at one end in a bearing upon the car and its opposite end in a movable operating-bar pivoted at its rear portion to the car and at its front end to a vertical manipulating-rod, a pinion keyed to one end of the aforesaid shaft adapted to be thrown into and out of engagement with the keyed pinion on the car-axle, and a pinion keyed to the opposite end of the shaft and adapted to be thrown into and out of engagement with the rack-face of the horizontal rack-bar, all combined and operating together substantially as described, and for the purposes specified.

2. In a combined car starter and brake, a horizontal carrying-rod with vertical hangers connected to the car-bottom, a recoil-spring coiled upon said rod part way of its length, a horizontal rack-bar having cogs on its lower face suspended at either end from the carrying-rod by vertical hangers adapted to move longitudinally thereon, carrying the rack-bar forward or rearward longitudinally, a fixed collar on the carrying-rod abutting against the recoil-spring, a loose pinion upon the car-axle adapted to engage with the lower or rack face of the rack-bar, and a keyed pinion at the opposite end of the aforesaid axle, each of said pinions having a sleeve portion serrated at its end, the two combined forming a ratchet-clutch and adapted to be held in engagement one with the other by a coiled spring upon the car-axle bearing against the loose pinion, a supplemental shaft journaled at one end in a stationary hanger and at the other in an angular operating-bar pivotally connected to the car, a keyed pinion upon the supplemental shaft adjacent to the operating-bar, adapted by the movement of said bar to be thrown in and out of engagement with the keyed pinion on the car-axle, and a keyed pinion at the opposite end of said shaft adapted to be thrown in and out of engagement with the under rack-face of the horizontal rack-bar, all combined and operating together substantially as described and shown.

In witness whereof I have hereunto set my hand this 14th day of December, 1888.

SILAS B. FYLER. [L. S.]

In presence of—

WM. C. RAYMOND,  
HENRY RIES.