

William M. Starr's  
 Impt in Running Gear of Cars.

No. 120,341.

Fig. 1 Patented Oct. 24, 1871.

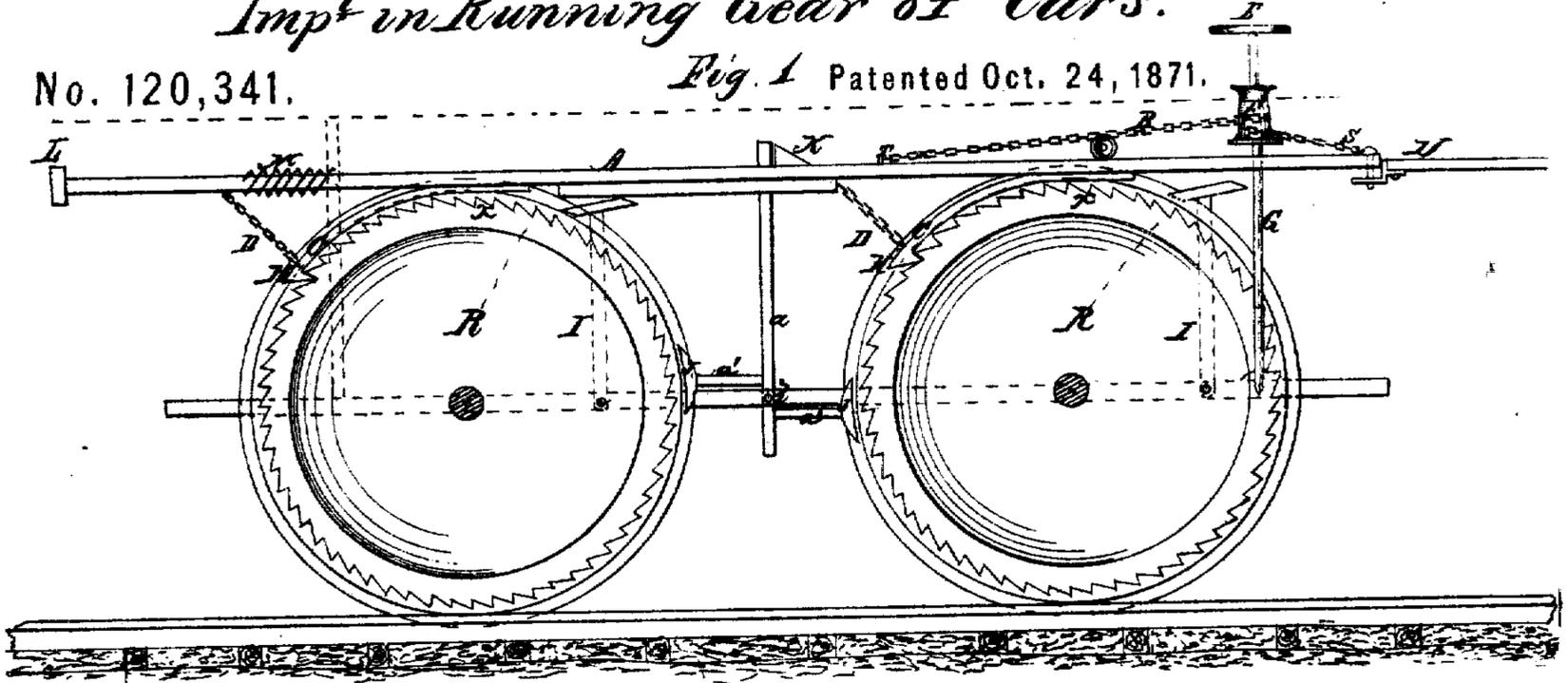


Fig. 2.

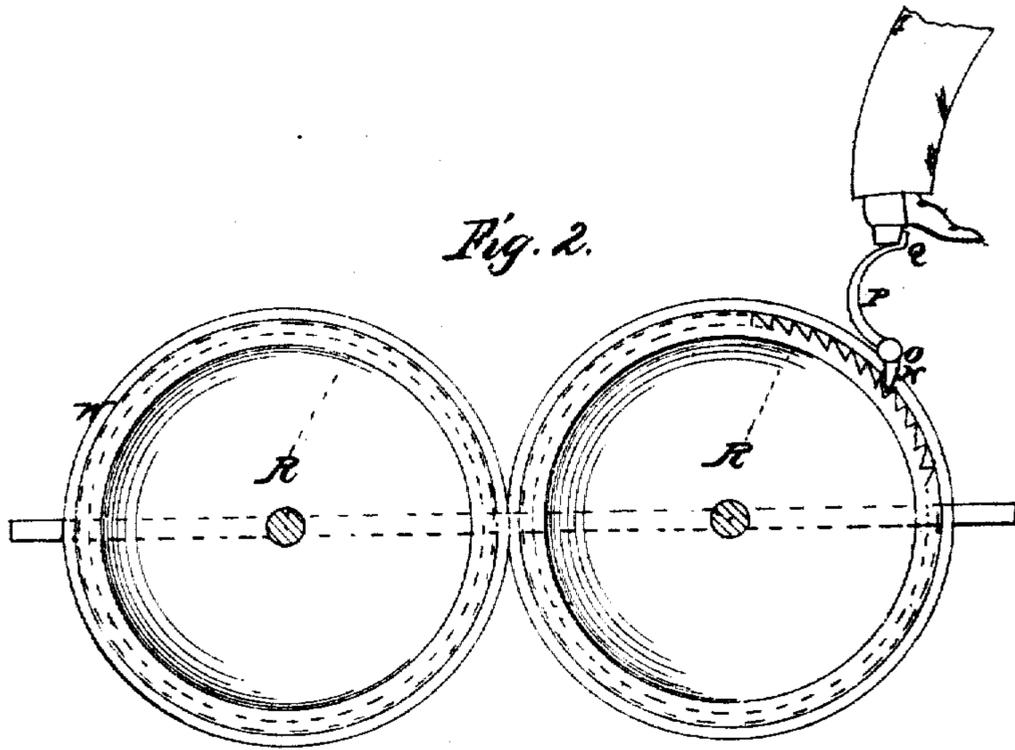
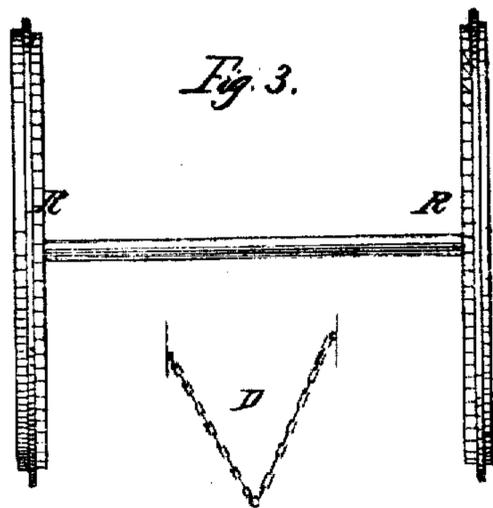


Fig. 3.



Witnesses,  
 James H. Fitzpatrick  
 Edw. H. Brown

Inventor,  
 Wm M Starr

# UNITED STATES PATENT OFFICE.

WILLIAM M. STARR, OF WASHINGTON, DISTRICT OF COLUMBIA ASSIGNOR OF ONE-EIGHTH OF HIS RIGHT TO JOHN A. ROLLINGS AND GEORGE W. WRIGHT, EACH OF SAME PLACE, AND ONE-FOURTH OF HIS RIGHT TO WILLIAM PENN CLARKE, OF DAVENPORT, IOWA.

## IMPROVEMENT IN CAR-BRAKES AND STARTERS.

Specification forming part of Letters Patent No. 120,341, dated October 24, 1871.

*To all whom it may concern:*

Be it known that I, WILLIAM M. STARR, of Washington, county of Washington, District of Columbia, have invented certain new and useful Improvements in Running-Gear for Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification.

Figure 1 is a vertical longitudinal section. Fig. 2 is a side view of the wheels, showing the method of applying the foot-latch or pawl; and Fig. 3 is a front view of the wheels.

The invention relates to that class of running-gear in which the power employed to propel the cars is applied to the periphery of the wheels in order to start the car; and consists in certain new features of construction and arrangement of parts, as will be fully explained.

In the drawing, W are the wheels, each of which is provided on its inner face with a ratcheted ring, R, either cast in one piece with the wheel or rigidly attached thereto. U represents the pole or link by which the draft is applied. A is the draw-bar; in the drawing it is shown running the entire length of the car, and arranged at one side directly above the wheels; but in practice I prefer to locate it in the center of the car and connect it with a frame each side of which shall correspond with the bar A, now shown, in such manner that they shall both move together when actuated by means and for a purpose which I will now describe. E is a hand-wheel keyed to the upper end of a shaft, G, mounted in the framework of the car. F is a drum on shaft G. B is a chain wound once around drum F, and secured to the bar or frame A at S and T. Thus it will be seen that by turning wheel E the bar A may be moved either backward or forward. C C are pawls attached to bar or frame A, their free ends engaging with ratchet-ring R, as at H, Fig. 1. D D are chains or cords connecting the free ends of the pawls with the bar A. a is a brake-lever pivoted to the frame-work at d, and operating friction-shoes J J by means of links or arms a' a'. M is a spiral spring surrounding bar A. P, Fig. 2, is a pawl pivoted at O. The lower end, N, of this pawl engages with the ratchet-ring R on one of the wheels when thrown into action by the driver's foot, as at Q. The devices are in the position which they would ordinarily occupy when the car

had been brought to a stand in going up a hill, the car being held from running backward by the pivoted pawl P. If, now, the horses be started and bar or frame A be drawn forward, the pull will be exerted upon the peripheries of the wheels at the upper side, and the car can be started much more easily than if the power were exerted upon the axles or bearings, as will be readily seen without further explanation. As the bar is moving forward the spring or buffer M comes in contact with a suitable stop on the frame-work, thus lessening the shock or concussion (and consequent strain) which would otherwise be felt when the pawls cease to act upon the wheels. After the car is under motion it will be generally found advisable to move the bar A backward far enough to lift pawls C from the ratchet-wheels, and thus avoid the clicking which would otherwise be caused by the wheels running past said pawls. This can be easily accomplished by means of the hand-wheel E, operating drum F and chain B; and it will be readily seen that if the bar be moved back far enough to cause stop K on said bar to engage with the brake-lever a, the brake can be operated at the will of the driver for stopping the car. Instead of the single pawl P, located at the front of the car, two may be employed, attached to a rock-shaft; and, when preferred, they may be arranged behind the wheels, and operated by a suitable lever and link under the control of the driver.

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

1. In combination with the ratcheted car-wheels, bar A, pawl C, and pawl P, operated by the driver, substantially as set forth.
2. The combination of the ratcheted car-wheels, bar A, pawls C, hand-wheel E, shaft G, drum F, and chain B, substantially as set forth.
3. The combination of the ratcheted wheels, the bar or frame A, pawls C, hand-wheel E, shaft G, drum F, chain B, and the brakes a' a' a'.
4. The combination of the bar A, pawls C, hand-wheel E, shaft G, drum F, chain B, and chains D, substantially as set forth.

WILLIAM M. STARR.

Witnesses:

JAMES F. FITZPATRICK.  
EDM. F. BROWN.