

W. M. STRATTON & W. E. STRATTON.
Improvement in Car-Starters.

No. 126,993.

Patented May 21, 1872.

Fig. 1.

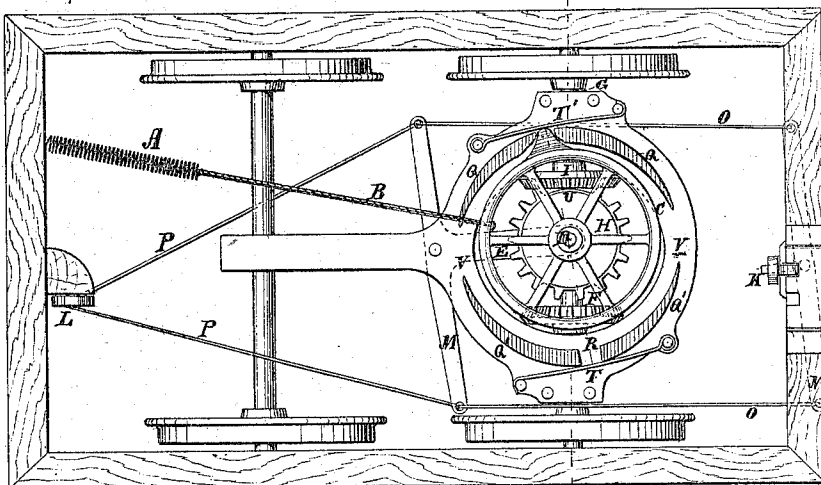


Fig. 2.

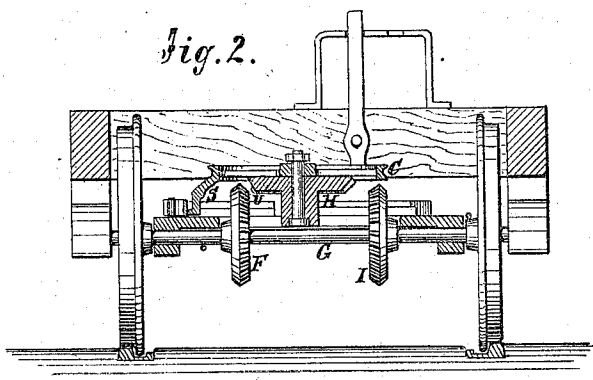


Fig. 3.

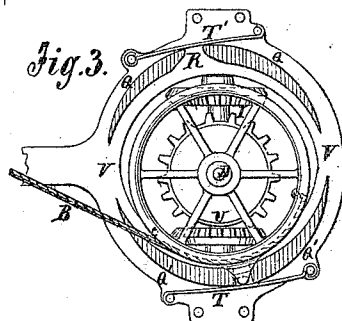


Fig. 5.

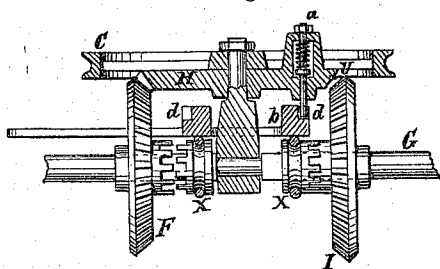
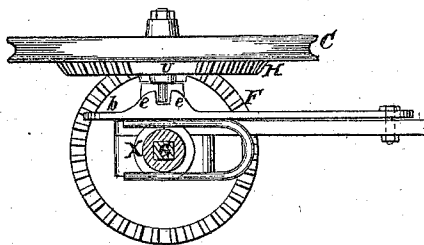


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM M. STRATTON AND WILLIAM E. STRATTON, OF WEST TROY, N. Y.

IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. 126,993, dated May 21, 1872; antedated May 11, 1872.

To all whom it may concern:

Be it known that we, WILLIAM M. STRATTON and WILLIAM E. STRATTON, of West Troy, in the county of Albany and State of New York, have invented a new and Improved Car-Starter; and do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Our invention relates to improvements in apparatus for storing up in a spring or springs the power expended in arresting the motion of the car, to be used in setting it in motion again; and it consists in having the driving-wheel, which is employed to wind up the tension-cord of the spring, made with such devices, and arranged in such manner, that it may be locked and held after being detached from the gearing connected with the axle to wind it up, so that the car may be allowed to run awhile before the power of the spring is applied, thus making the apparatus capable of being set or having the power stored up in the spring while the car is going down a descending grade to be used on an ascending grade, the car running free between the grades. The invention also consists in certain novel devices in connection with said drum for thus detaching, holding, and locking this winding-drum.

Figure 1 is a plan view of the running-gear of a car provided with our improved starting apparatus. Fig. 2 is a cross-section on the line *x x* of Fig. 1. Fig. 3 is a partial plan view. Fig. 4 is a side elevation of the modified arrangement of the locking and holding apparatus for the drum, and Fig. 5 is a sectional elevation of Fig. 4.

Similar letters of reference indicate corresponding parts.

A is the spring, to be extended by stopping the car for storing up the power thus expended. B is a cord or chain of any kind, connecting it to the drum or wheel C on which it is to be wound; the wheel or drum being geared with the axle of the car, and turned for so winding it. This drum or wheel C is in this case mounted on a vertical axis, D, rising up from the vibrating bar E, between the wheel F on the axle G, which is to gear with wheel

H for winding up the cord, and wheel I on said axle, which is to gear with said wheel H for applying the power at starting; said wheel H being attached to the axle of wheel C, and vibrating with the latter between wheels F. Said bar E is vibrated by the brake-levers K L, to which it may be connected by any suitable system of bars and rods; for instance, by the bars M and N and the rods O, in which case the brake-lever K will vibrate transversely of the car, or by the bars M and rods P, in which case the brake-lever L will vibrate in the direction of the longest axis of the car.

We will here state that we may arrange the winding-wheel and the wheel H below the axle as well as above it; and, in fact, we propose to do so in such cars as do not have room above the axle for them; but this arrangement will be essentially the same as here shown, and within the domain of our invention.

The wheel H being shifted, by the brake or shifting levers and their adjuncts, into gear with wheel F, the wheel C will be turned to the right if the car is moving in that direction, or to the left if the car is moving that way, and the cord will be wound on said wheel and the spring extended while stopping the car, as in other apparatus of this character. Then by quickly shifting the wheel H over to wheel I, and gearing therewith before the spring can turn wheel C back again, the power of the spring may be applied to the car to accelerate its forward motion. But it will be observed that, as thus far described, the power of the spring cannot be retained for further use, as it is held against its tendency to recoil only by the wheels connecting it with the car-axle, so that as soon as the car moves forward its power will be expended; and this is the case with all car-starting apparatus heretofore made.

Now, as it is highly desirable to have such control over the spring that its power may be used or not, at the option of the attendant, or as may be demanded by the nature of the case, we propose to introduce locking and holding devices of any kind to catch the wheel after the spring has been extended, and wheel C is disconnected from wheel F to hold it until it may be desirable to set the spring in action; and for this purpose we propose, as one means the tapered curved flanges Q', fronting the

wheel C on the same side that wheel F is, with a notch, R, between them; the arm S on the wheel C, springs T T', and the part U of wheel H, divested of teeth, all being arranged as shown in the drawing, and operating as follows: When the wheels H and C have been turned half a revolution by the wheel F, and the cord sufficiently wound up, the part U of wheel H not having teeth will come around to wheel F at the same moment that the arm comes to the notch R between the flanges Q', the said arm passing outside of one of said flanges at one of the spaces V, according to which way wheel C turns. The wheels H and C will then cease to turn, and the arm S will be forced into the notch R by the spring T fronting said notch, and the wheel C will thus be locked and securely held until such time as the spring is required to act. Then, by a quick movement of the shifting-lever the wheel H will be shifted across to wheel I, and the spring allowed to recoil and expend its power in propelling the car. The wheel H is disconnected at the proper time from the wheel I to prevent winding up the rope the wrong way by the part U coming around to wheel I. To lock the wheel C at this point, so as to stand right for gearing with the wheel F again, the flanges and their spring T' are employed, the said flanges and spring acting in the same manner that the other like flanges and springs do.

This locking and retaining apparatus is adapted to a winding wheel or drum arranged for shifting back and forth between the two wheels on the car-axle, but would not answer in an arrangement in which the wheel is on a fixed support and the shifting is done by means of a clutch, X, as represented in Fig. 5; but for such a case a pin, a, in the wheel C or H, with a spring to force it downward, and a shifting locking-plate, b, with a notch in each end for the pin to fall into after being raised by an incline, c, on said plate in advance of the notch might be used with good results,

the plate being attached to the shifting-clutch, and the notch allowing the pin to escape at one side and free the wheel when the clutch is shifted. For example, in said Fig. 5 the clutch is represented as connected with the wheel I, and the wheel is locked with the notch d on that side, and does not gear with wheel I, because the part U not having teeth being in front of the teeth of said wheel allows it to turn, while wheel F, which does gear with wheel H, is loose on the axle.

Now, if it be desired to clutch wheel F so as to turn wheel H to wind up the spring, the said clutch, being moved toward wheel F, will carry plate b with it away from the pin, thereby releasing wheels C and H. But I do not limit myself to either of these particular arrangements for locking and holding devices, for others may be readily applied that will accomplish the object of my invention as well.

It will be seen that it is essential in either of these arrangements that the wheel H have the part U divested of its teeth for allowing its motion to be stopped at the proper time. The spring A is arranged to push the bar E toward wheel I, to assist in shifting wheel C when stored with power.

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

1. The combination, with the said wheel C, arm S, the flanges Q', and springs T of the flanges Q, and spring T', substantially as specified.

2. A combination of wheels H, F, and I, a spring, and a locking device, substantially as herein described, when said wheel H has a part, U, of its toothed face divested of teeth, substantially as specified.

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Witnesses:

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