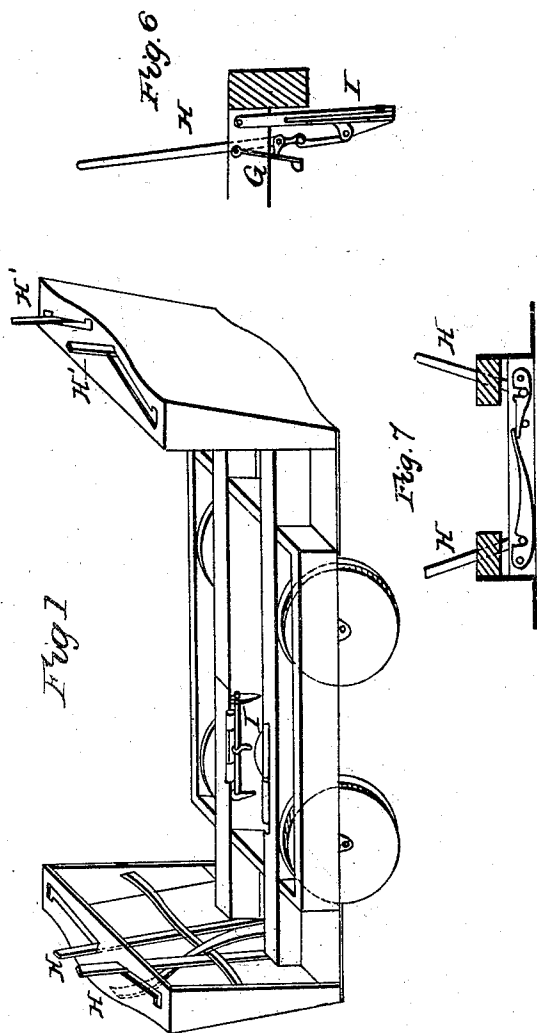


J. S. WOOD.

Car Brake and Starter.

No. 80,695.

Patented Aug. 4, 1868.



*J. H. Sprague*  
*Charles F. Bellum*

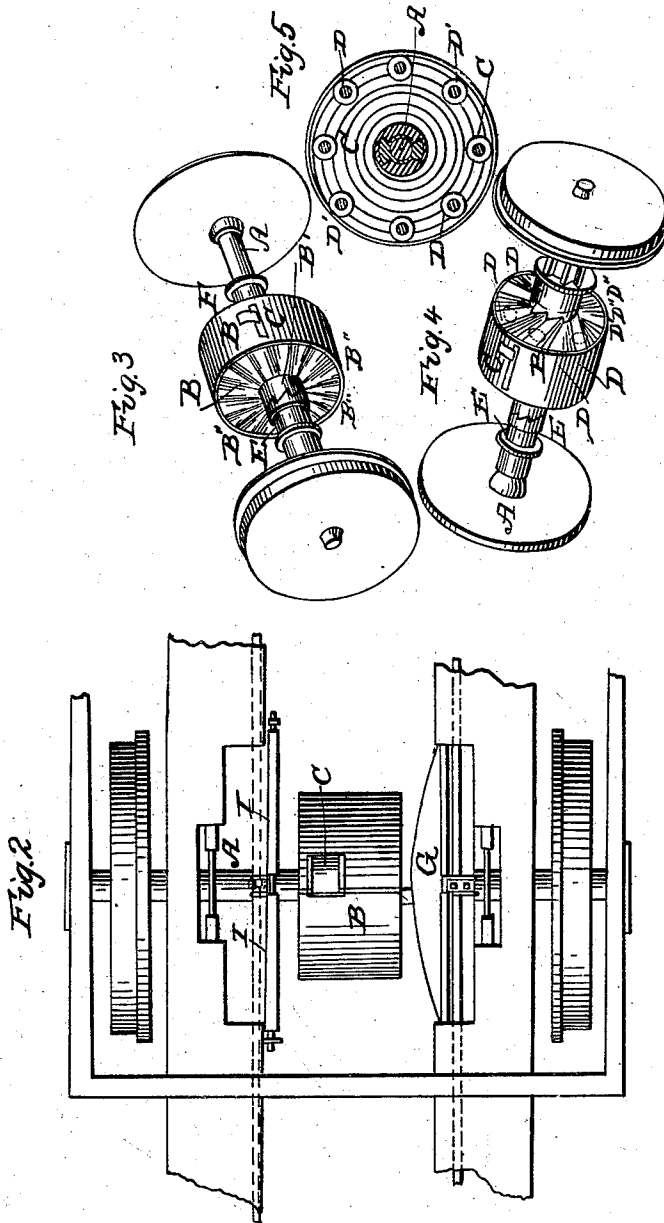
*J. H. Wood*  
*by D. M. Marple*  
*his atty -*

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Witnesses

*W. Sprague*  
*Chas. F. Clausen*

Inventor  
*John S. Wood*

*By*  
*D. P. Hollaway*  
*his Atty*

# United States Patent Office.

JOHN S. WOOD, OF LANSING, MICHIGAN.

Letters Patent No. 80,695, dated August 4, 1868.

## IMPROVED CAR-BRAKE AND STARTER.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN S. WOOD, of Lansing, in the county of Ingham, and State of Michigan, have invented a new and useful Improvement in Devices for Retaining Power; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a perspective view of the truck of a street-railway car, on which the application of my improvement is illustrated.

Figure 2 is a plan of the axle and retaining-mechanism.

Figure 3 is a perspective view, showing one end of the cylinder.

Figure 4 is a similar view, showing the other end.

Figure 5 is a vertical transverse section of the spring.

Figure 6 is a side elevation of the operating-lever, and

Figure 7 a similar elevation, showing the detaching-device.

The same letters are employed in all the figures in the designation of the same parts.

This invention consists in the arrangement of a device for accumulating the power expended by machinery in stopping when in motion, and retaining it and making it available in overcoming the *vis inertiae* in starting.

I have illustrated the principle of my device in its application to the axle of a street-railway car, but it is equally available in any case of shafting for driving any kind of machinery.

A is the axle of the car, or may be understood to represent any other shaft-driving machinery.

B is a metallic cylindrical case, open at one end, and attached by radial arms, B<sup>2</sup>, at the other end, to a hub, B<sup>1</sup>, through which the axle passes. The axle may revolve freely within the hub. The latter is notched at the end to receive the corresponding teeth of the clutch E, which slides longitudinally upon a sleeve attached to the axle, and having longitudinal ribs fitting into grooves on the inner clutch, which permits the longitudinal motion of the clutch, but prevents its turning on the axle.

The open end of the cylinder is closed by a wheel, D, with radial arms carrying friction-wheels D'. The hub of this wheel is also serrated on the edge to receive the teeth of the clutch E. Within the cylinder are spiral springs, C, attached in duplicate sets to the sleeve of the wheel D, and externally to the cylindrical case.

The edges of the radial arms are formed to receive a tooth on the flanges G, which are hinged to the frame of the car-body, and are actuated, in engaging or disengaging the arms, by the same combination of levers that actuate the clutches, the levers being so arranged, as shown in fig. 6, that the same movement that engages the clutch with the teeth on the hub, disengages the tooth which holds the radial arms, or *vice versa*.

This operating-mechanism is connected by a system of rods and levers with the levers H H.

The clutches E and F have flanges, E' and F', which are fitted into grooves in the flanges I I, which are also attached to the frame of the car, and allow the flanges on the clutches to play up and down in the grooves with the jolting of the car.

The levers H H are connected with the two flanges I and G, so that, as already explained, when one acts on the clutch to disengage it, the tooth on the other is detached from the radial arms, or *vice versa*.

The operation of the mechanism is as follows:

Suppose the car to be moving forward, the levers being so arranged that the mechanism is not in action. When it is desired to stop the car, the right-hand lever H is thrown to the right. This will cause the clutch F to engage the teeth on the hub of the wheel D, and cause it to revolve with the axle, thereby causing the spiral spring to wind from the centre around the sleeve, and thus gradually stop the car by offering a constantly-increasing resistance to the revolution of the wheel.

As soon as the car is stopped, the right-hand lever should be shifted to the left. This will engage the flanges G in the radial arms again, and allow the shaft to turn within the cylinder.

When it is desired to start again, throw the left-hand lever to the left, and as this disengages the catch on

the arms B<sup>2</sup> and engages the clutch E, the cylinder will be revolved by the spring driving the wheel forward with the same power that was expended in stopping it.

At the end of the route, the car being driven in the opposite direction, the levers on the other end are to be operated in like manner, and the same effect will be produced, only that in this case the spring will be wound up by the revolution of the cylinder from the outside.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the cylinder B, wheel D, and clutches E and F, and flanges G, when constructed and arranged substantially as described.

2. The combination of the levers H, flanges G, and clutches E and F, when so arranged that as the flanges are disengaged from the arm, the clutch on the same side will be engaged with the teeth on the hub, substantially as set forth.

3. The combination of the cylinder B and wheel D with the flanges G, when, respectively, so constructed that a projection from the flanges may be made to engage the arms B<sup>2</sup> or D', and prevent the revolution of the wheel or cylinder, substantially as and for the purpose set forth.

JOHN S. WOOD.

Witnesses:

E. B. WOOD,

FRANK GODFREY.