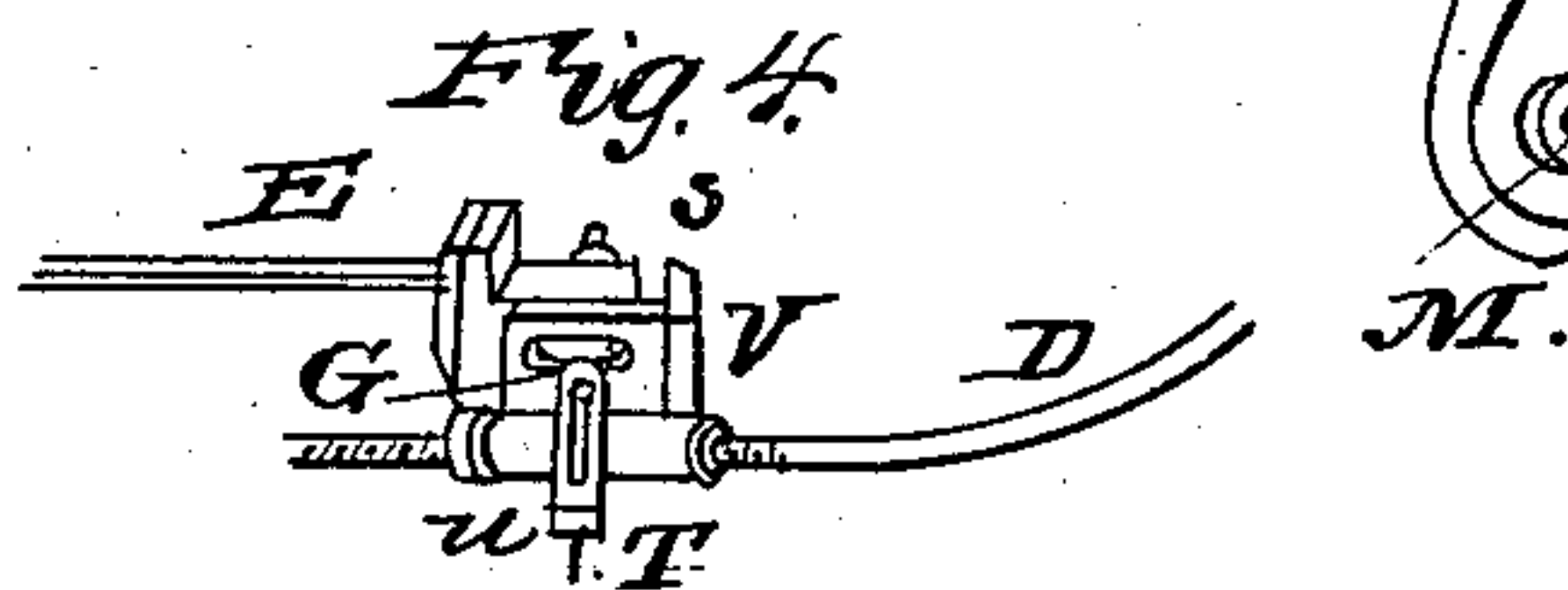
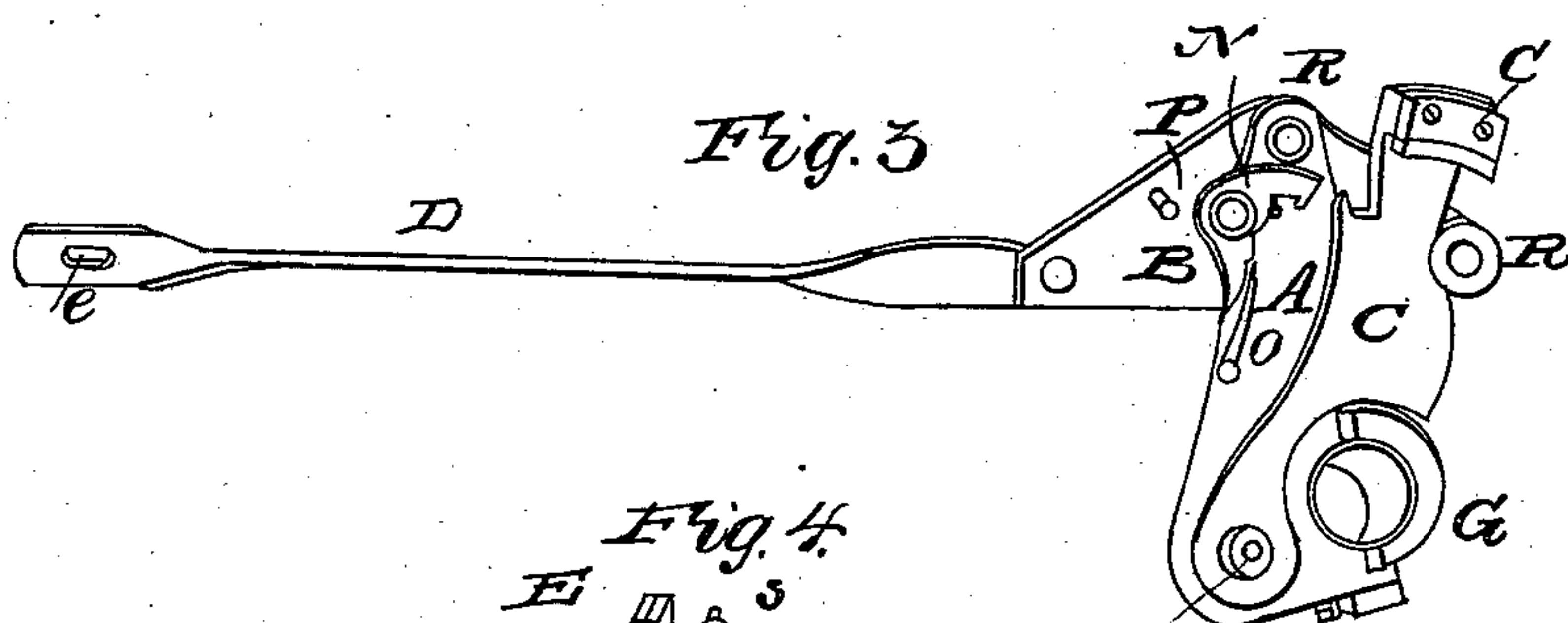
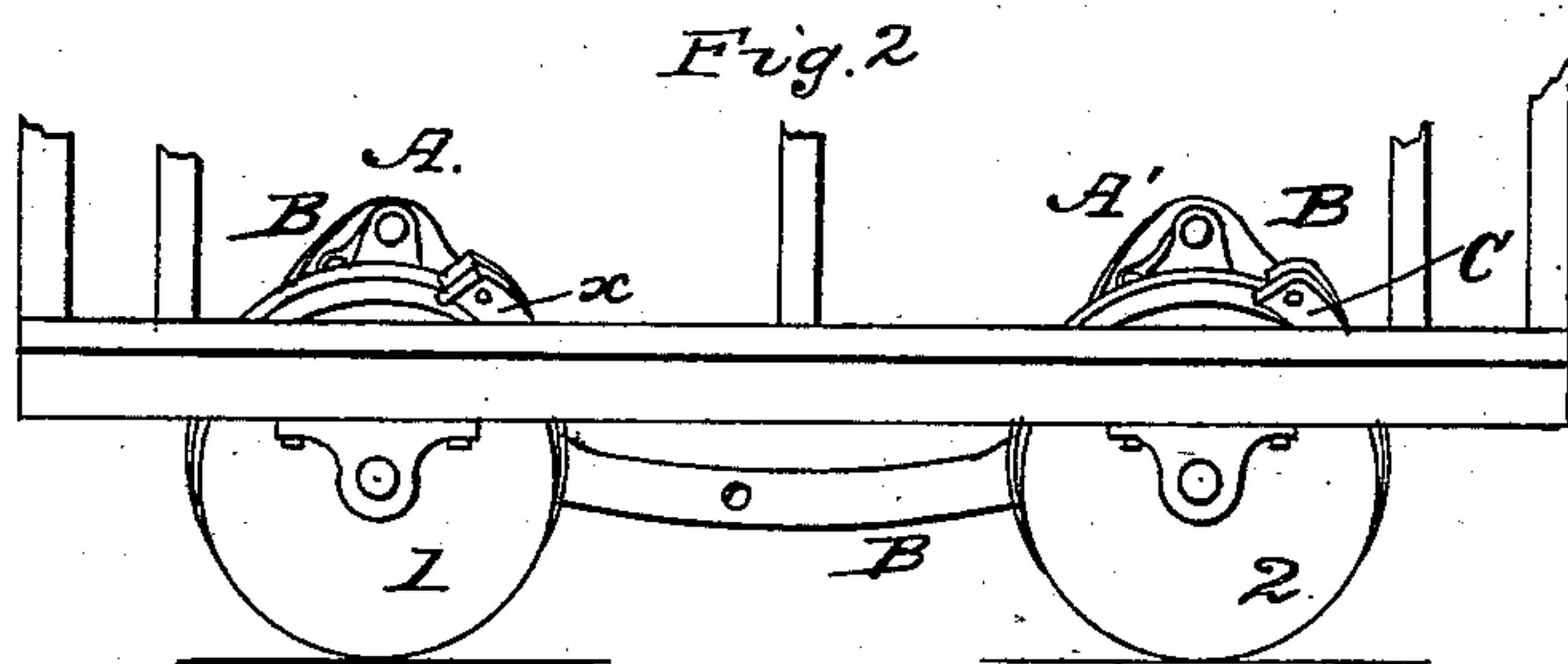
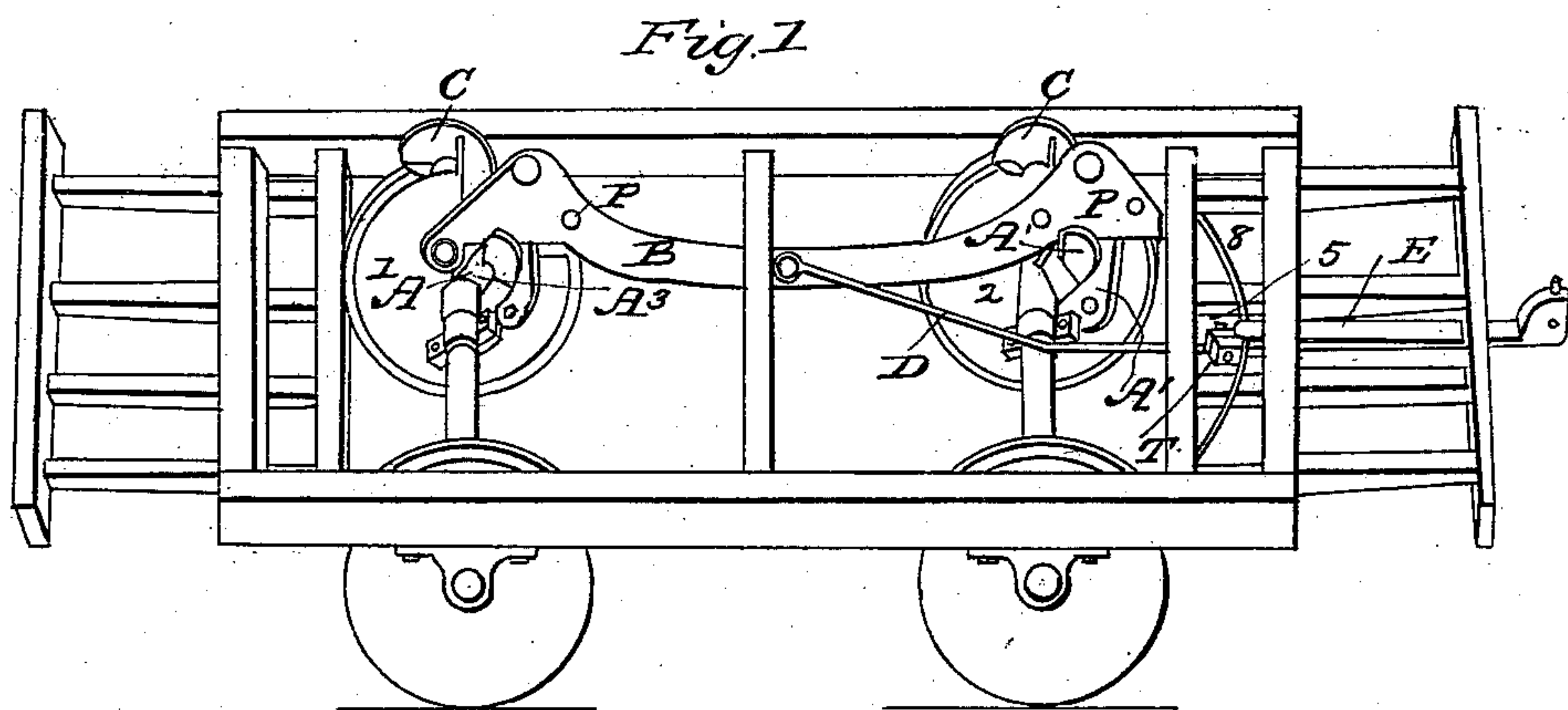


WOODWARD & MILLETT.

Car Starter.

No. 82,671.

Patented Sept. 29, 1868.



WITNESSES
James P. McLean
W. N. Arnold.

INVENTORS
Erastus Woodward
Joseph S. Millett

United States Patent Office.

ERASTUS WOODWARD AND JOSEPH S. MILLETT, OF CHARLESTOWN, MASSACHUSETTS.

Letters Patent No. 82,671, dated September 29, 1868.

IMPROVED STARTING-APPARATUS FOR RAILROAD-CARS.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that we, ERASTUS WOODWARD and JOSEPH S. MILLETT, of the city of Charlestown, in the county of Middlesex, and State of Massachusetts, have invented certain new and useful Improvements in Apparatus for Starting Railroad-Cars or other Carriages; and we hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, which are lettered to correspond with and form a part of this specification.

To enable the public to understand the nature of our invention, and those who are skilled in the mechanic arts to construct and operate the same, we will describe it as follows, to wit:

Figure 1 is a perspective drawing of our apparatus attached to a railroad-car.

Figure 2 is the opposite side of the same, as shown at A B C.

Figure 3 is a perspective drawing of our starter detached from the car, and is a part of a large working model now in successful operation.

A is a plate or lever, that forms a part of the box, G, which circumscribes the axle, and is connected, by a pin, R, to the parallel vibrating bar B, that connects two apparatuses, to produce the desired pressure upon the upper surface of the outer periphery of the front and back wheels of a railroad-car or other carriage, to assist in starting the same by means of the shoe-clamp and lever C, which are operated, at any desired angle, by the combined action of the box-plate, A, parallel connecting-rod or plate, B, and anti-friction roller R, the whole being operated by the bar D, which is connected to the draught-bar E, as shown at figs. 1 and 4.

The bar D has an elongated hole or slit at *e*, more clearly shown at fig. 4, which also shows a transverse pin, S, working in the slit *e'*. This pin has a vertical trip-spring, T, the lower end of which is secured to the head V. This pin assists in tripping the shoe without concussion.

N, fig. 4, is a spring-dog or pawl, that holds the shoe clear of the wheel when the horses begin to draw.

O is a spring.

P is a pin that trips the pawl N.

By the above apparatus we are enabled to bring the tractive force upon the upper surface of the bearing of the wheel, at or near the top thereof, thereby increasing the tractive power at the vertical centre of the wheel, and moving forward with the same in a horizontal line, thereby assisting the movement of the car or carriage in the proper direction.

The advantage of our arrangement over the different modes of starting railroad or other cars is, we obtain the greatest amount of leverage, and apply the same at the proper point upon the top of the wheel, to assist in starting the vehicle without the use of cog-gearing, and without the usual concussion attending the use of such inventions.

Therefore, what we claim as new and useful, and desire to secure by Letters Patent of the United States, is—

The horizontal bar B, levers A and C, and anti-friction roller R, combined with the other described parts, all constructed, arranged, and operating in the manner and for the purpose set forth.

In testimony whereof, we hereunto subscribe our names in the presence of two witnesses.

ERASTUS WOODWARD.
JOSEPH S. MILLETT.

Witnesses:

JAMES P. McLEAN,
W. M. ARNOLD.