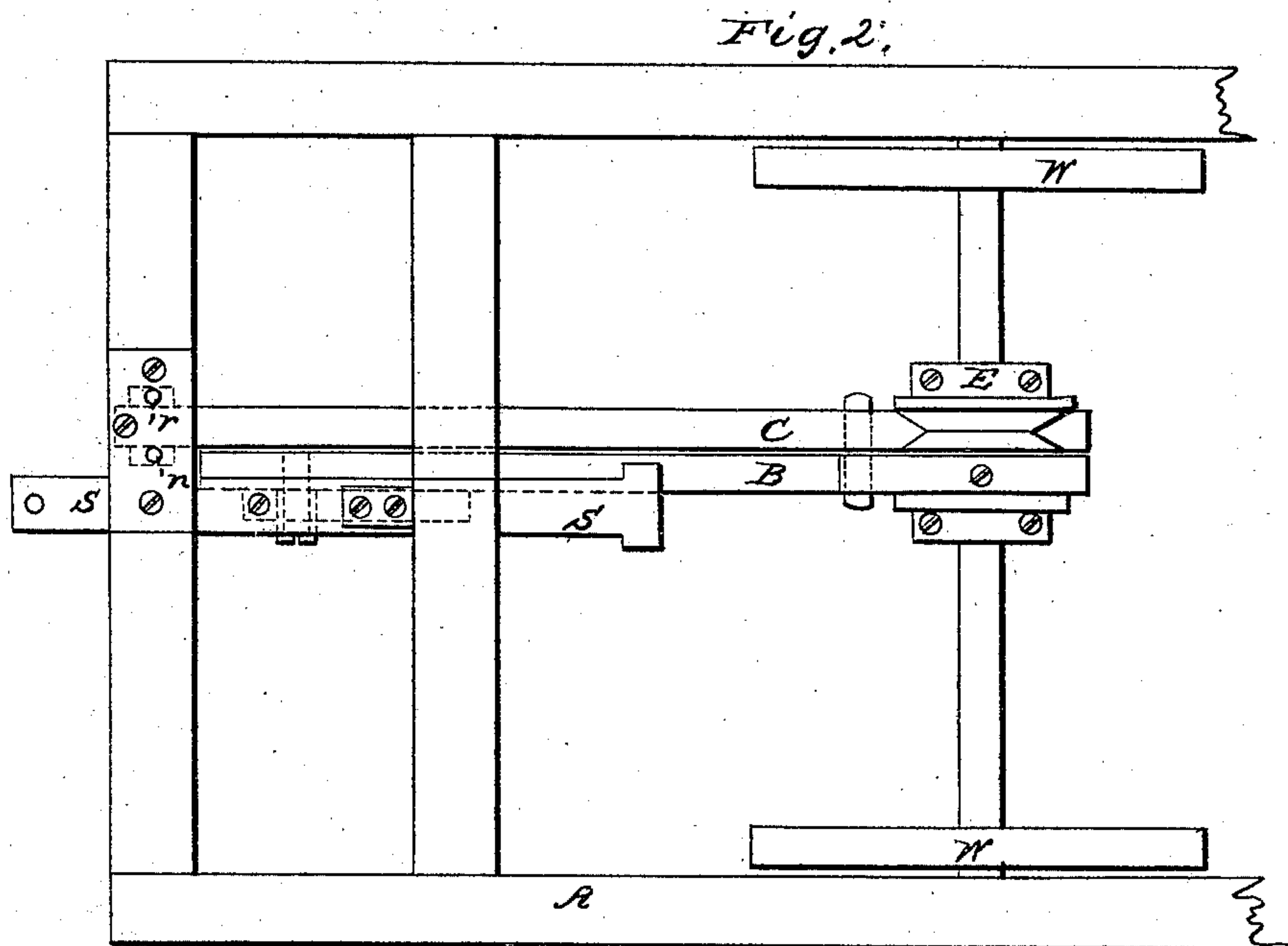
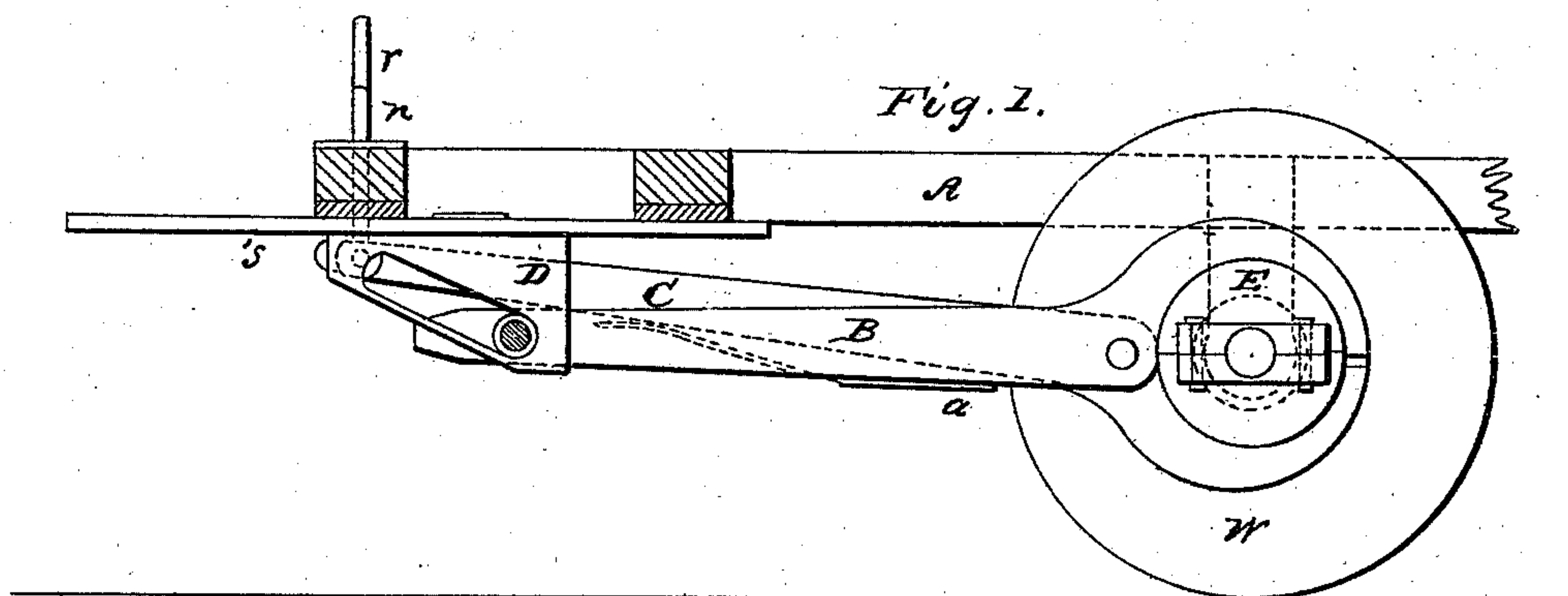


F. ROOT.  
Car Brake.

2 Sheets—Sheet 1.

No. 81,411.

Patented Aug. 25, 1868.



Witnesses:  
*J. E. Haynadin*  
*Chas. F. Fleper.*

Inventor:  
*Franklin Root*

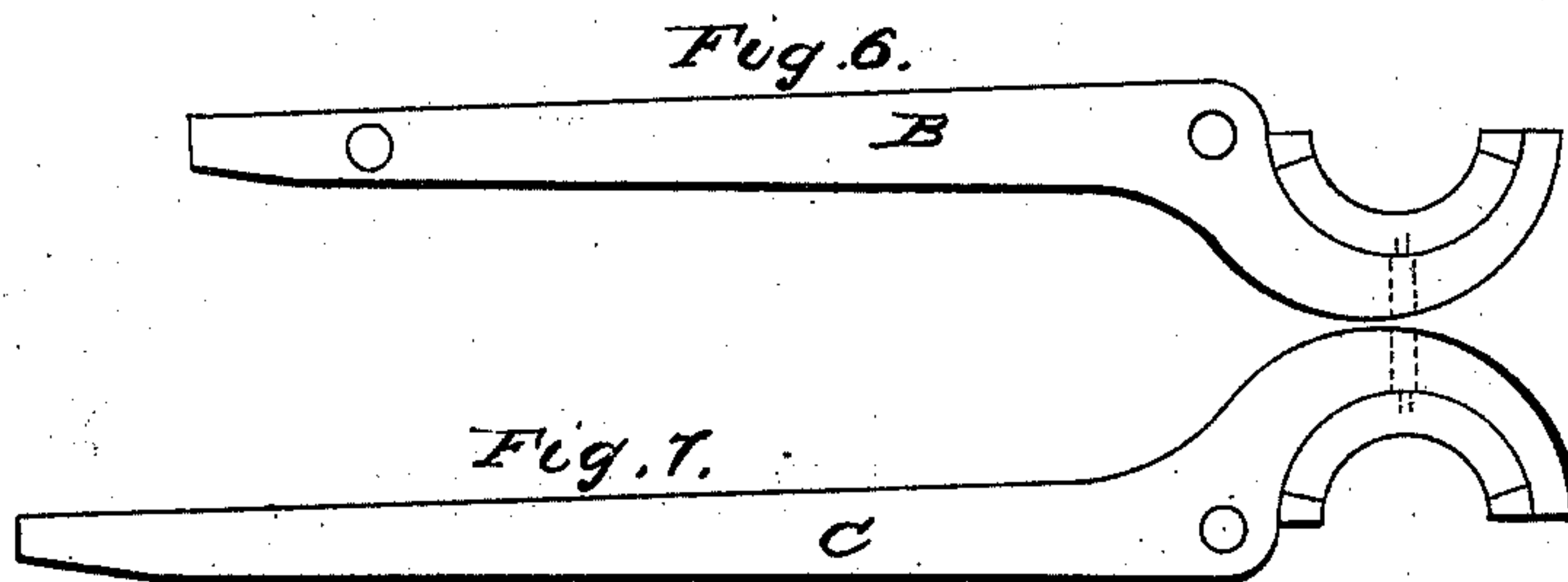
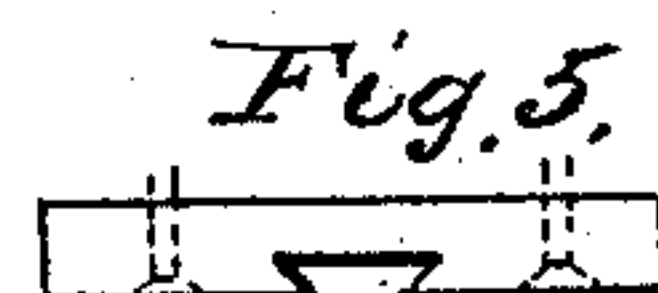
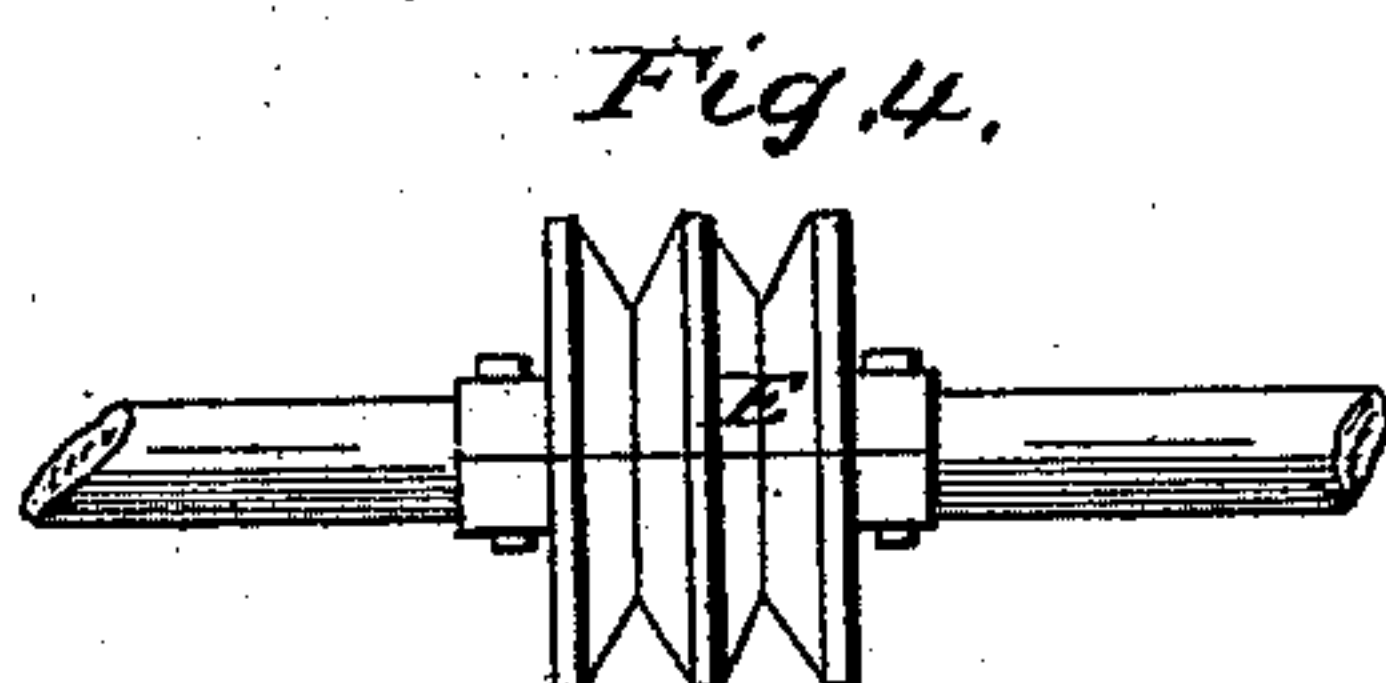
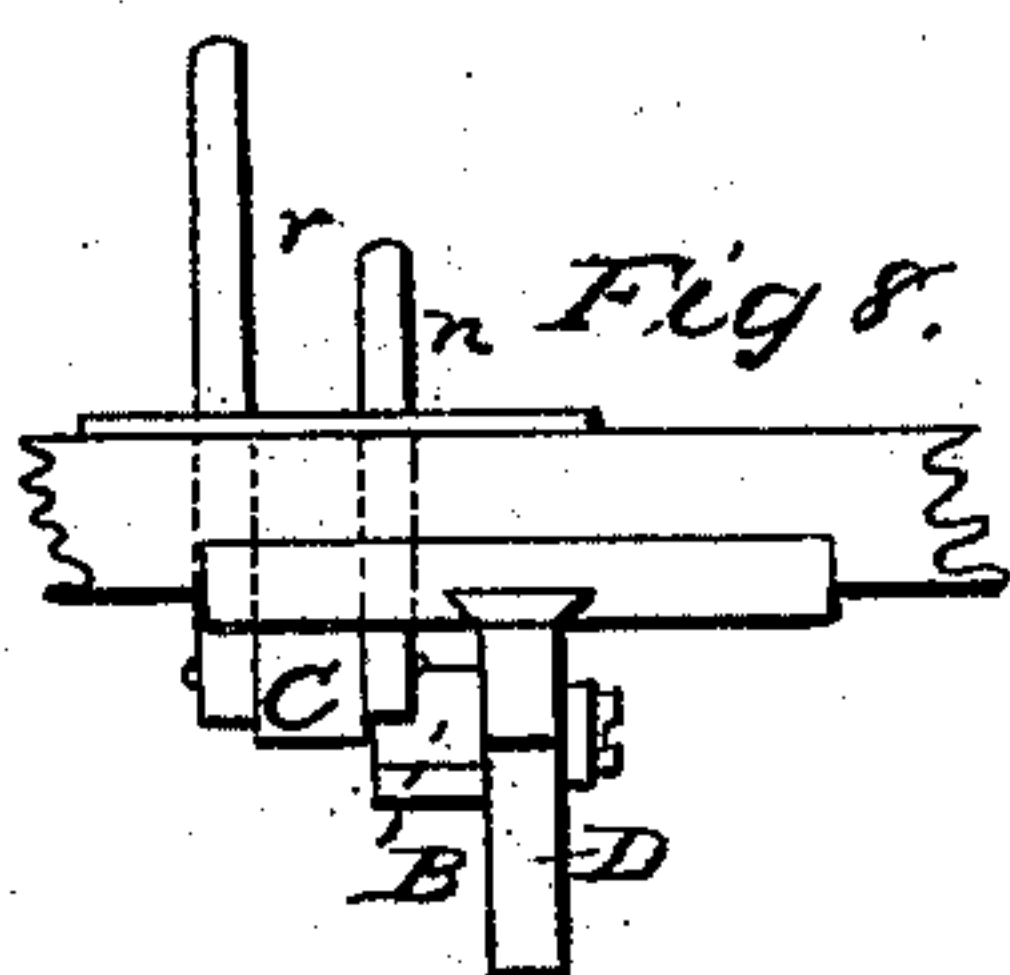
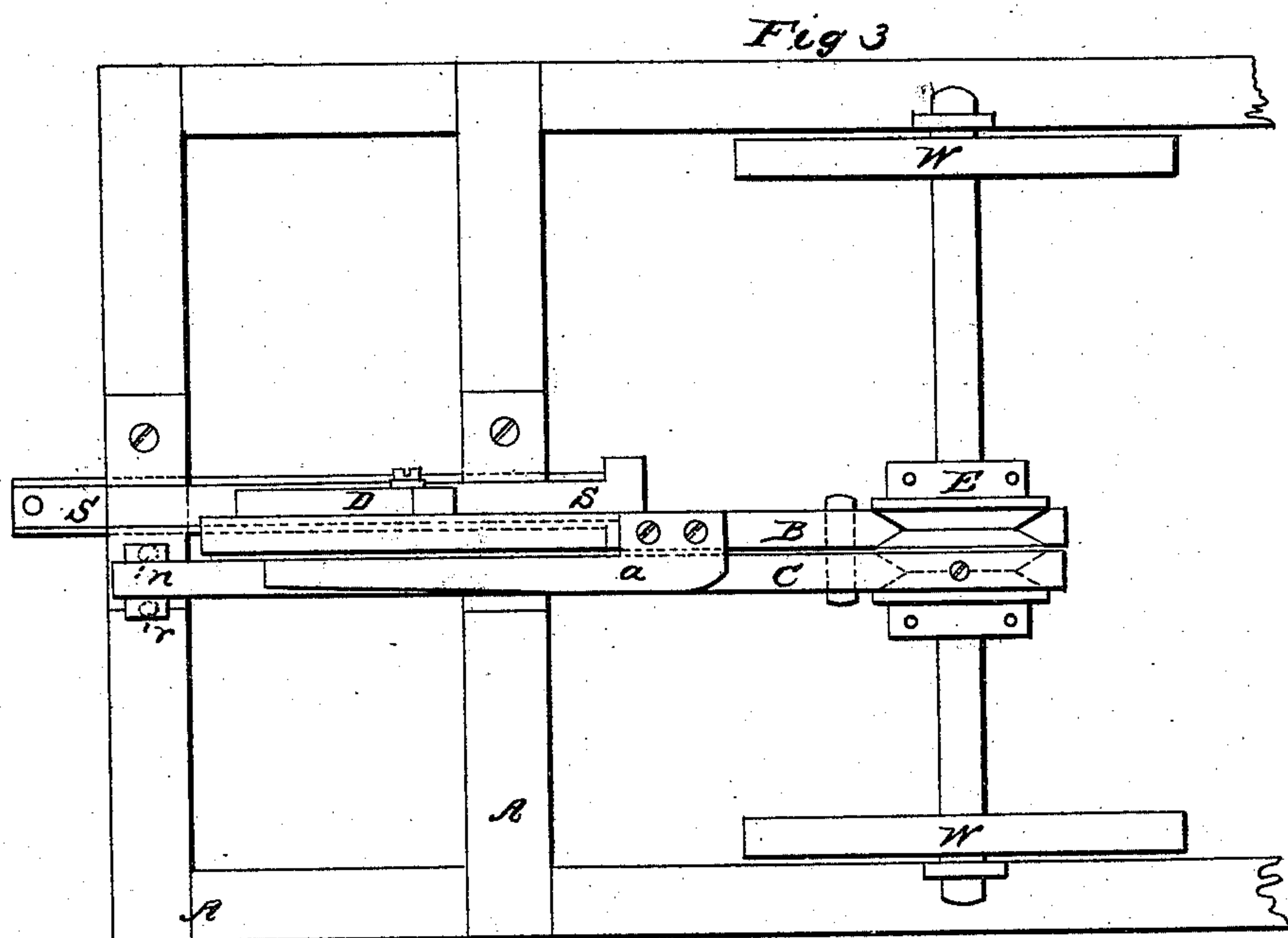
F. ROOT.

2 Sheets—Sheet 2.

Car Brake.

No. 81,411.

Patented Aug. 25, 1868.



Witnesses:

*J. E. Clayradier*  
*Chas. H. Sleeper*

Inventor.

*Franklin Root*



# United States Patent Office.

FRANKLIN ROOT, OF BOSTON, MASSACHUSETTS.

*Letters Patent No. 81,411, dated August 25, 1868.*

## IMPROVED CAR-BRAKE.

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, FRANKLIN ROOT, of Boston, in the county of Suffolk, and State of Massachusetts, have invented certain new and useful Improvements in Car-Brakes; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figures 1, 2, and 3 are views of my said invention, (fig. 3 being a reversed plan,) and

Figures 4, 5, 6, and 7 are details of some portions of the mechanism.

The nature of my invention consists in making a car-brake, which will stop and start a car more effectually and simply than the usual brakes will perform the same work, and which can, at pleasure, be made self-acting. To accomplish this result, I have combined together two lever-brakes, pivoted somewhat in the form of a blacksmith's tongs, the long arms of the levers being operated by the driver, or automatically, as hereinafter set forth, and the short arms clasp sheaves upon the axle.

In the said drawings, A represents the car-body; W, the wheels; B and C, the lever-brakes; D, an inclined plane, attached to the slide S, and connected with the lever-brake B by a pin and friction-roller;  $r$  and  $n$ , pins, extending through the car-frame, and connected with the lever-brake C.  $a$  is a spring, rigidly attached to the lever B, and pressing upon the lever C to keep them apart; E, the sheaves.

This mechanism is operated as a brake for ordinary use, by the driver or brakeman, by pressing down the long pin  $r$  (usually with the foot) with sufficient force to clasp the short arms of the lever-brakes tightly upon the sheaves. On relieving the pin from the pressure, the spring immediately separates the arms, and takes the friction off the sheaves.

When used to start a car, (the sliding inclined plane being in the position shown in fig. 3,) the short pin  $n$  is used to clasp the brakes upon the sheaves, and hold them firmly in that position while the inclined plane is drawn forward by the motive-power. This depresses the long ends of the lever-brakes, forces the wheels to turn sufficiently to overcome the inertia of the car, and relieves the pressure of the brakes when the inclined plane has reached the end of its forward motion. This operation might be performed with the aid of the long pin, but as it is evident that the operator could not always relieve the pressure of the brakes at the instant the inclined plane has ceased to turn the wheels, I use the short pin, which, when properly adjusted, is regular and certain in its operation.

I can further vary the operation of this mechanism by adjusting the lever-brakes by any well-known method of adjustment, so that they will be forced to clasp the sheaves when the momentum of the car is checked, and the inclined plane is forced towards the centre of the car. This might, at times, be of great value on railroads, as it would put the whole series of brakes on a train under the direct control of the engineer.

The sheaves E, I make in two parts, for convenience in putting on the axle and replacing when worn. I also make the friction-surfaces of the sheaves and of the brakes in a V-form, in order to get more extent of surface, and, consequently, power. The shoes are fitted in grooves in the brakes, and are kept from lateral derangement by means of screws through the brakes, projections from which enter the shoe.

I do not claim all lever-brakes clasp sheaves upon an axle, as I am aware that such have previously been used; but

What I do claim as new, and desire to secure by Letters Patent, is—

1. The arrangement of the lever-brakes B and C, pins  $r$  and  $n$ , and sheaves E, substantially as and for the purpose specified.
2. The combination of the sliding inclined plane D with lever-brakes B and C, clasp sheaves upon an axle, when constructed substantially as described, and for the purpose specified.
3. The lever-clutch brakes C and B, with removable shoes, when each shoe clasps one-half the circumference of a sheave, in combination with sheaves having V-shaped grooves into which the shoes fit, when constructed substantially as and for the purpose specified.

Witnesses:

J. E. MAYNADIER,  
CHAS. F. SLEEPER.

FRANKLIN ROOT.