(No Model.)

W. L. FITZHUGH.

VACUUM BRAKE.

No. 517,819. Patented Apr. 3, 1894.

Fig. 1.

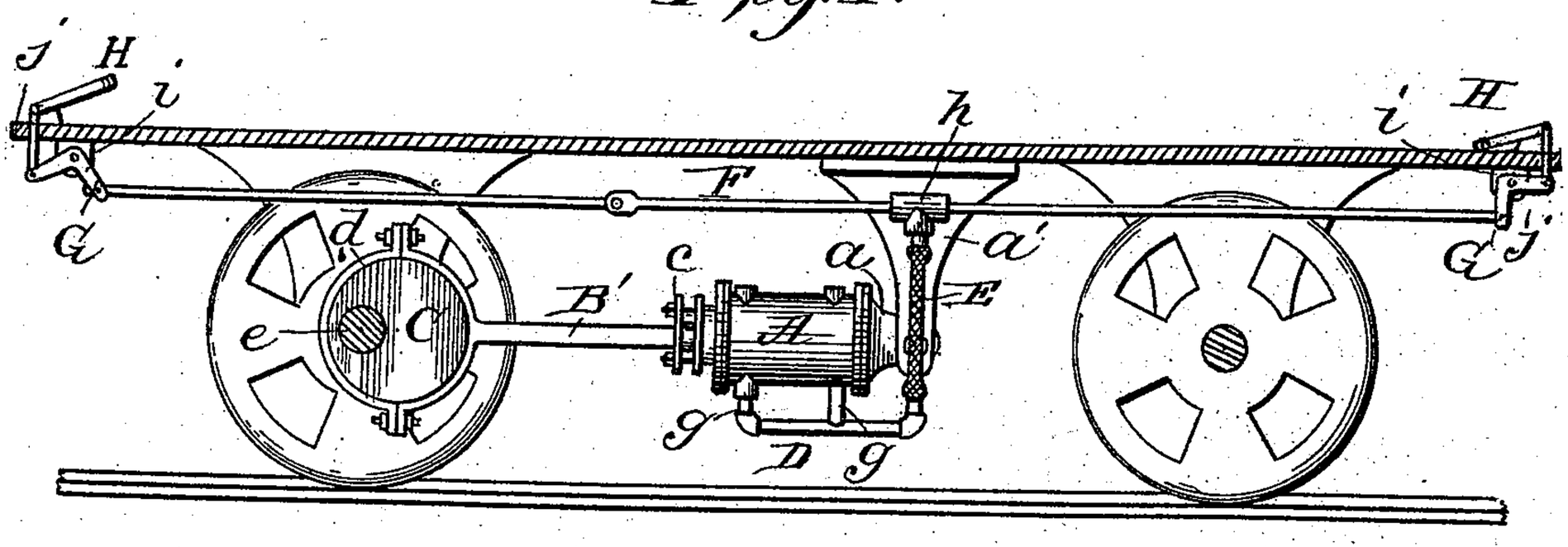
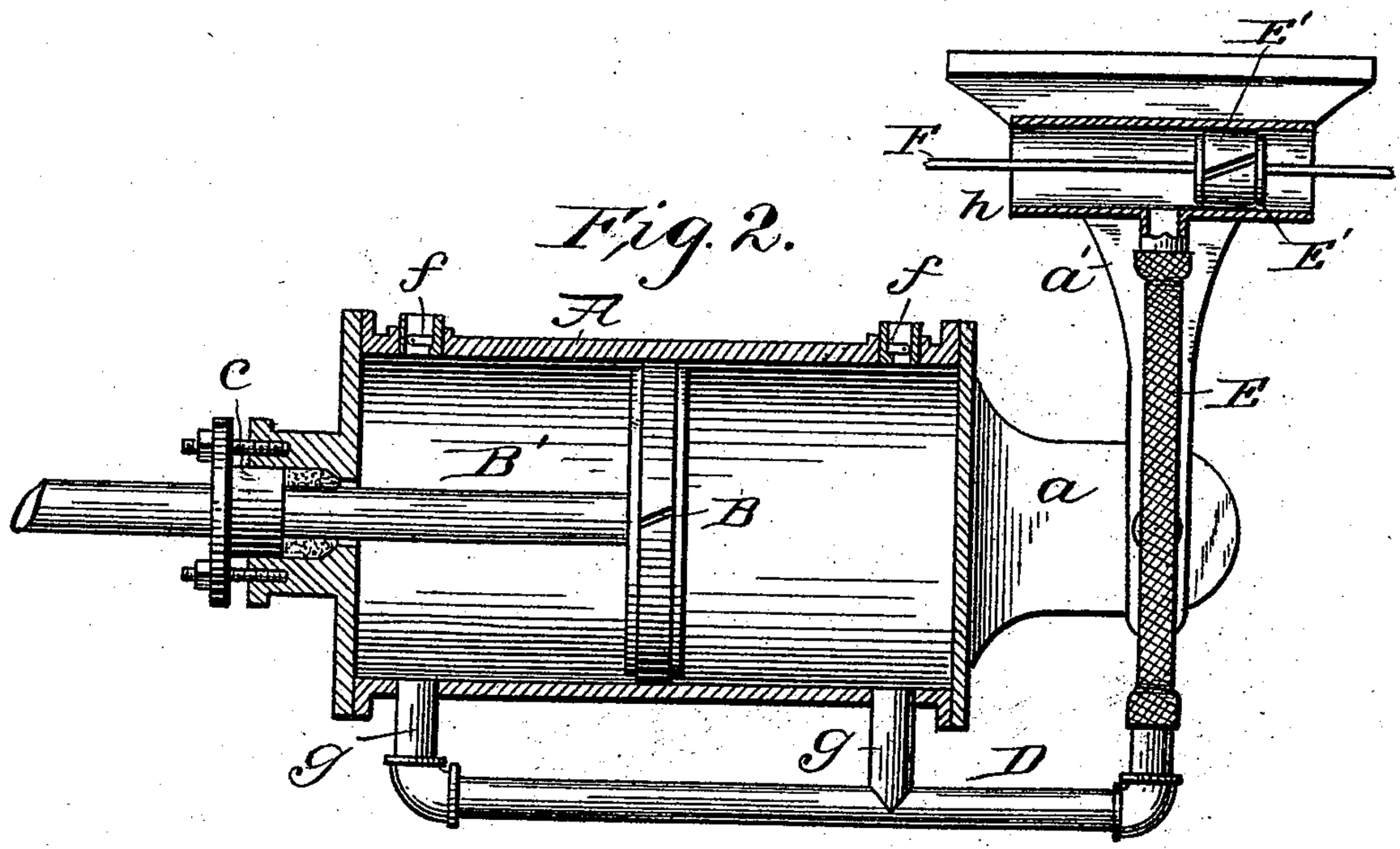


Fig. 2.



Witnesses
W. E. Bowen
Jos. A. Gunnell

Inventor
William L. Fitzhugh
By Myers & Co
Attorneys

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM L. FITZHUGH, OF BALTIMORE, MARYLAND.

VACUUM-BRAKE.

SPECIFICATION forming part of Letters Patent No. 517,819, dated April 3, 1894.

Application filed December 22, 1891. Renewed September 26, 1893. Serial No. 486,573. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. FITZHUGH, a citizen of the United States of America, residing at Baltimore, Maryland, have invented certain new and useful Improvements in Vacuum-Brakes, of which the following is a specification, reference being had therein to the accompanying drawings.

My improvement relates to an improved vacuum car brake, and it consists in the novel combination and arrangement of the parts, substantially as hereinafter disclosed and pointed out in the claims.

In the accompanying drawings:—Figure 1 is a partly sectional and side elevation of my invention as applied to a car for use, and Fig. 2 is an enlarged broken detailed view of the same.

A is a vacuum cylinder or chamber having an extension *a*, at one end or head, pivotally supported at the lower end of a bracket or pendant *a'* bolted or otherwise secured to the under-side of the car B.

B is the piston whose rod B' passes out through a stuffing box *c* applied to the other head or end of the cylinder, the outer end of the piston rod terminating in a semi-circular extension, forming, with a corresponding part, a split collar *d* embracing an eccentric C secured upon the car axle *e*. The cylinder or chamber A is provided in its upper surface with two outwardly opening air valves *f*, arranged near its ends, respectively. Opening through the lower side of and into said cylinder or chamber, near its ends, are two branch pipes *g g* leading from a common air-pipe D connecting by a flexible pipe E with an open ended cylindric valve chamber *h* open to the external air. The valve E' arranged in the chamber or cylinder *h* has a fixed or rigid connection with the valve rod F actuated through bell cranks G pivoted to pendent brackets *i* upon the under side of the car and the crank-levers H pivoted upon the car, near its ends and linked as at *j* to said bell cranks, whereby as the trainman presses preferably by his foot upon either one of said crank-levers the valve E' is operated as presently seen.

In operation it is obvious that, with the valve E' in the position shown in Fig. 2, by depressing say, the left hand one of the crank-levers H, the valve E' is moved so as to close the air receiving end of the pipe E and thus cut off air from the chamber or cylinder A, at once producing a vacuum in the latter, arresting the movement of the piston B and its rod B' and accordingly preventing movement of the eccentric C and thus preventing the turning of the axle with its wheels, slowing the speed of the car as required. It is also apparent that with the valve E' at the opposite side of the pipe E from that shown in Fig. 2, said valve is actuated by depressing the right-hand crank-lever H, and that by varying the application of pressure to the crank levers H, more or less air can be cut off from the piston cylinder A and the axle, with its wheels, be allowed to turn more or less and their movement not be entirely arrested. The advantage which this form of construction presents over any hitherto conceived is made plainly manifest in view of the fact, that in all known forms of air brakes the great strain or jar from violent air pressure sometimes causes rupture of the tubes or weaker parts of the mechanism, whereas by use of the vacuum power which is equally as efficacious and great as that of the air brake, no jarring or straining results can be produced, and all danger from this cause is obviated. Thus constructed a more efficient and less expensive car brake is produced than has hitherto been invented.

Having thus fully described my invention, I claim—

1. The car brake having the vacuum chamber or cylinder with its piston and piston-rod in combination with the eccentric secured to the wheel axle and the air cut off or regulating valve and pipe connection between it and said chamber or cylinder, substantially as specified.

2. The car brake having the vacuum chamber or cylinder, with its air outlet-valves and piston and piston-rod, in combination with the air-pipe having branch connections with said cylinder or chamber near opposite ends thereof, and the valve for opening and closing the outer end of said air pipe, substantially as set forth.

3. In a car brake, the combination with the

valved vacuum cylinder or chamber and its piston and piston-rod having connection with the wheel axle of the valve and crank levers and bell cranks having rod connection with said valve, and the pipe connecting with said cylinder or chamber by branch pipes near its opposite ends substantially as set forth.

4. In a car brake, the combination of the vacuum cylinder or chamber pivotally supported in position under the car, the flexible pipe having branch pipe connection with said cylinder or chamber, near its opposite ends, the piston and piston-rod having eccentric or crank connection with the wheel axle and the air cut off valve with its actuating mechanism, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM L. FITZHUGH.

Witnesses:

SAML. A. DRURY,

JOS. H. GUNNELL.