(No Model.)

2 Sheets—Sheet 1.

J. H. AMES.

AUTOMATIC CAR BRAKE.

No. 318,076. Patented May 19, 1885.

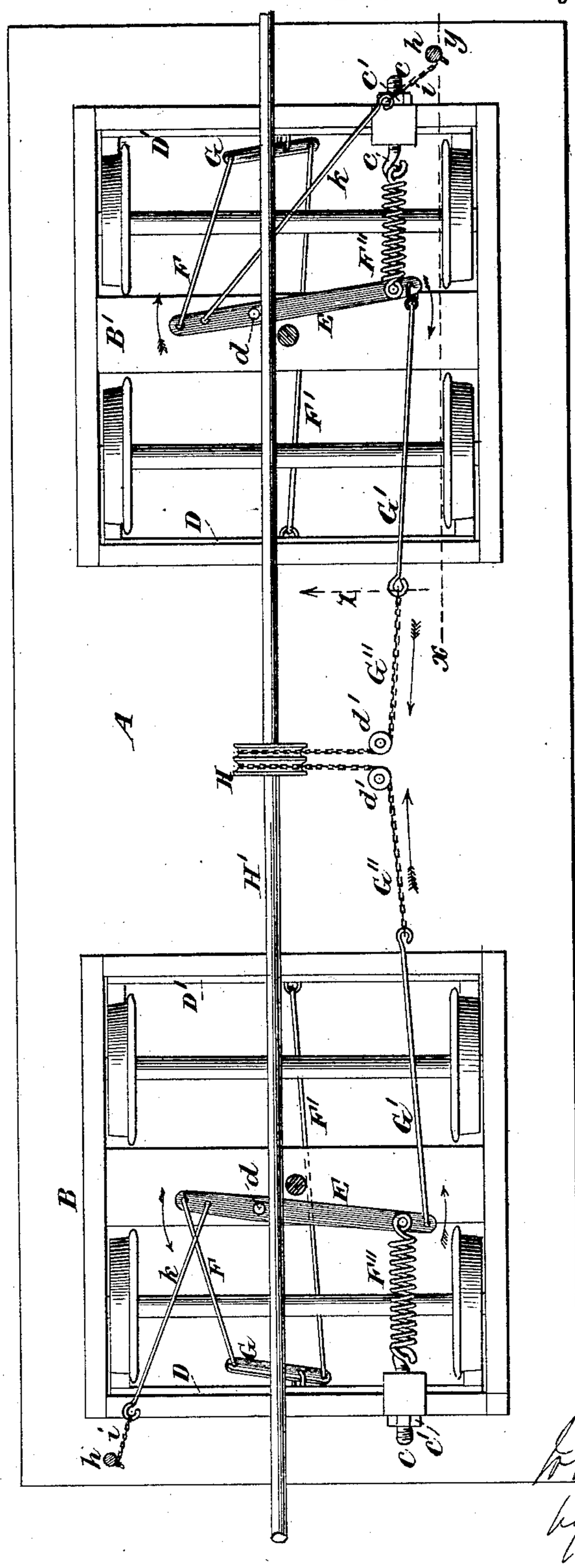


Fig. 1.

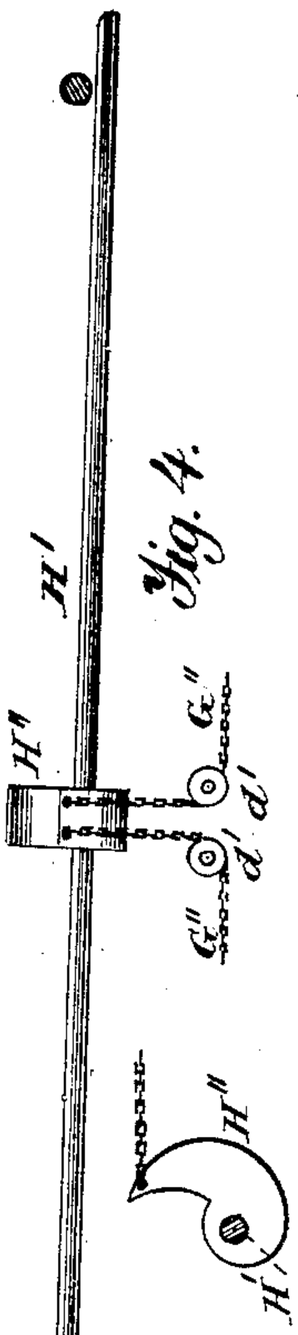


Fig. 4.

Witnesses:
A. Ruppert.
E. Bruce

Inventor:
John H. Ames,
by Munn & Howson
Attys.

(No Model.) 2 Sheets—Sheet 2.

J. H. AMES.

AUTOMATIC CAR BRAKE.

No. 318,076. Patented May 19, 1885.

Fig. 2.

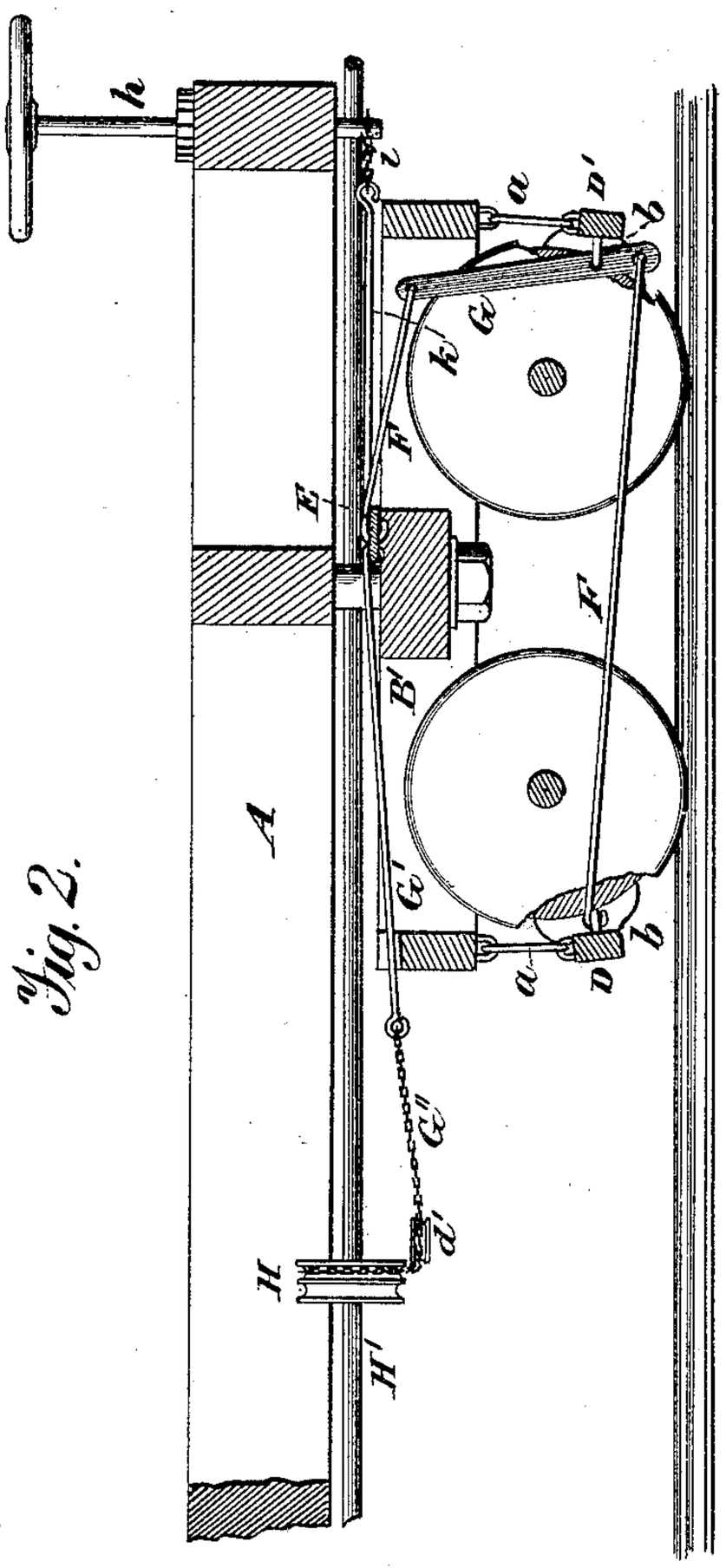
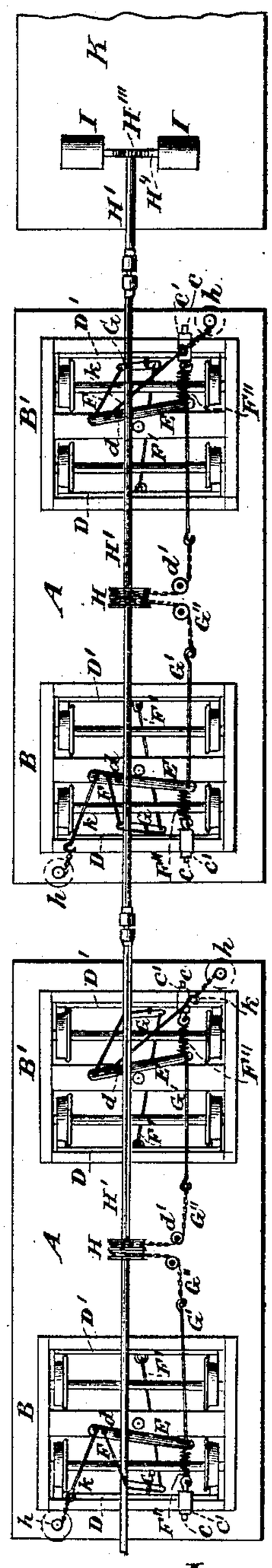


Fig. 3.



Witnesses:
A. Ruppert
E. Bruce

Inventor:
John H. Ames,
by Lott & W. J. Thomas,
Attys.

UNITED STATES PATENT OFFICE.

JOHN H. AMES, OF ST. PAUL, MINNESOTA.

AUTOMATIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 318,076, dated May 19, 1885.

Application filed September 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. AMES, of St. Paul, in the county of Ramsey, and State of Minnesota, have invented certain new and useful Improvements in Automatic Brakes for Railroad-Cars, of which the following is a specification.

My invention consists of the combination of the cars of a train, each having braking and coupling appliances, and a series of coupled bars or shafts, or their equivalents, extending throughout the train and independent of the car-couplings, with springs for drawing or forcing the brakes against the wheels, and with a steam, air, or water engine, or equivalent operating device, whereby a limited rotary movement can be imparted to the coupled bars or shafts in opposition to the pull or push of the springs, so as to insure the simultaneous withdrawal or application of the brakes at any time.

In the accompanying drawings, Figure 1 is a plan view of the trucks of a railroad-car, the upper parts of the car being removed so as to exhibit my improved braking mechanism. Fig. 2 is a vertical section on the line *x y* of Fig. 1, looking in the direction of the arrow *z*. Fig. 3 is a plan view upon a reduced scale, showing a series of cars and part of a tender, my invention being applied thereto. Fig. 4 represents a modification hereinafter described.

Similar letters of reference indicate similar parts in the respective figures.

A is the frame of the car, to the under side of which are pivoted in the usual manner the two trucks B and B'. To each truck is suspended by links *a a* the usual brake-beams, D D', provided with shoes *b*, adapted to the peripheries of the flanged wheels. To the under side of the car-frame, and between the wheels of each truck, a horizontal lever, E, is pivoted at *d*, one arm of the lever E being connected by a rod, F, to one arm of a brake-lever, G. The brake-lever G is pivoted to the outer brake-beam, D', of its truck, the other arm of said brake-lever being connected by a rod, F', to the inner brake-beam, D, of the same truck. On moving the lever E in the direction of the arrow (shown at the ends of said lever) the brake-shoes will be moved away from, and be free from contact with, the peripheries of the wheels. To one end of the lever E is attached a spiral or other spring, F'', the normal action of which spring is to keep the brake-shoes applied to the wheels. The spring is connected to the frame-work of the truck by a screw-bolt, *c*, and nut *c'*. By means of the nut *c'* the tension of the spring can be adjusted. That end of the lever E to which the spring is attached unites with a rod, G', which in turn connects with a chain, G'', passing around a guide-pulley, *d'*, and winding upon a grooved pulley, H. The pulley H is rigidly mounted upon a shaft, H', adapted to have rotary movement in suitable bearings formed in the frame-work of the car, said bearings being detached from the trucks. A separate bar or shaft, H', is used for each car, the shafts being connected between the cars by a suitable coupling-joint, which will admit of a conjoined rotary movement of a series of said shafts, but still allow sufficient vibration to provide for curving while the train is in motion.

The description thus far given applies to the truck at the right-hand side of Fig. 1. A similar arrangement of truck and braking mechanism is provided at the other end of the car, as indicated at the left side of said figure.

Before starting the train pressure or movement is applied to the steam, air, or water engine or operating device, so as to cause a torsional strain upon all of the shafts or bars H', the result being the distention of the springs F'' and the freeing of the brake-shoes *b* from contact with the wheels. The said operating device may consist of the parts I H''' H^4, the shaft H' being rotated by means of the rack and pinion shown. (See Fig. 3.) When it is desired to stop the train, the pressure must be removed from the operating device, so that the strain on the shafts or bars H' will cease, whereupon the springs F'' of each car of the train will apply the brakes to the wheels. The brakes may be applied either gradually or suddenly in accordance with the extent to which the said pressure is released.

As before stated, the normal action of the spring F'' is to force the brake-shoes *b* to the peripheries of the wheels. Supposing, therefore, that the train is in motion, it will be understood that a certain amount of rotation of the bars or shafts H' is necessary in order to

draw the chain and rod G″ G′ and lever E against or in opposition to the action of the spring, the effect of this being the movement of the brake-lever G in the direction indicated by the arrows, and the consequent releasing of the brake-beams D D′, and removal of the brake-shoes from the peripheries of the wheels. Thus it will be understood that when the train is in motion a certain amount of torsional strain is continuously exerted upon the bars or shafts H′, or series of the same, and that to apply brakes this torsional strain is relieved by the exhaust of the steam, air, or water, or by other well-known means. The engine or operating device is preferably mounted upon the tender K or locomotive within control of the engineer. The brake may be applied by the use of a cord running through the train, and connecting with the operating device.

It will be seen that the brake is automatic in its character—that is to say, upon the disarrangement of the shafts or bars H′, or of the mechanism for rotating the same, the brakes are immediately applied to the detached portion of the train by the force of the springs, the result being effected by said cars becoming uncoupled. The connection made between the cars by means of the bars or shafts H′ is entirely independent of the regular car-couplings.

My invention can be used in connection with the ordinary hand-braking mechanism, as shown by staff *h*, chain *i*, and rod *k*. Instead, however, of the brakes being applied to the wheels by the operation of the windlass, as in ordinary braking appliances, the hand-wheel, on being operated, will withdraw the brake-shoes from the wheels.

Fig. 4 shows the use of a cam or snail wheel, H″, which takes the place of the pulley H. (Shown in Figs. 1 and 3.) The same figure also shows the shaft H′ placed out of the longitudinal center line of the car, so as to pass upon the respective sides of the pivots of the trucks.

I do not wish to limit myself to the particular arrangement or construction of spring here shown. A weight may be used as a substitute for the spring, or a spring and weight employed together.

I make no claim in this application to any particular kind of coupling for use between the different sections of the coupled bars or shafts, as any suitable coupling device may be used, provided that the proper rotation of the bars can be effected thereby, and the connections between the said sections shall be unaffected by a strain exerted upon the ordinary couplings or bumpers.

I do not desire to claim, broadly, the combination of braking devices on the cars of a train with a bar extending throughout the train and serving to simultaneously operate all the brakes; but

I claim as my invention—

The combination of the cars of a train, each having braking and coupling appliances and a series of coupled bars or shafts, or their equivalents, extending throughout the train and independent of the car-couplings, with springs or their equivalents for drawing or forcing the brakes against the wheels, and with a steam, air, or water cylinder, or equivalent operating device, with necessary mechanism, whereby rotary movement and torsional strain can be imparted to the bars, or their equivalents, in opposition to the action of the springs, so as to insure the simultaneous withdrawal or application of the brakes throughout the train, the strain upon the bars and the operation of the brakes being unaffected by any strain exerted upon the ordinary couplings or bumpers, all as set forth.

In testimony whereof I hereto set my hand and seal.

JOHN H. AMES. [L. S.]

Witnesses:
FRED. G. PREST,
S. L. PREST.