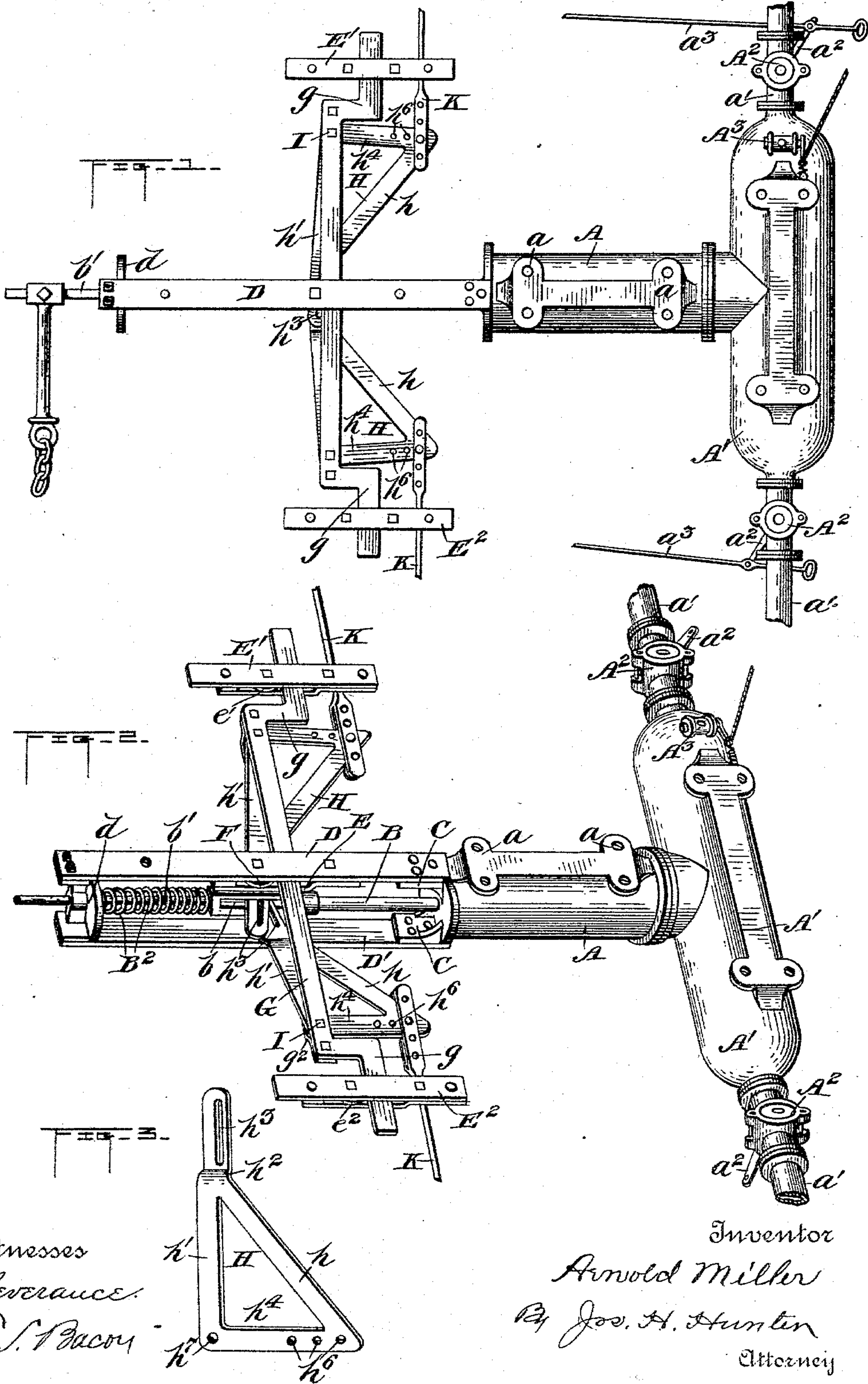


(No Model.)

A. MILLER.  
CAR BRAKE.

No. 490,079.

Patented Jan. 17, 1893.



Witnesses  
 Severance  
 N. S. Bacon

Inventor  
Arnold Miller  
By Jos. H. Hunter  
Attorney



# UNITED STATES PATENT OFFICE.

ARNOLD MILLER, OF MEDFORD, WISCONSIN.

## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 490,079, dated January 17, 1893.

Application filed September 5, 1892. Serial No. 445,127. (No model.)

*To all whom it may concern:*

Be it known that I, ARNOLD MILLER, a citizen of the United States, residing at Medford, in the county of Taylor and State of Wisconsin, have invented certain new and useful Improvements in Air-Brakes for Railway-Cars, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to an improvement in air brakes for railway cars and it consists in the combination and arrangement of parts hereinafter described and definitely pointed out in the claims.

15 The aim and purpose of this invention is the provision of an improved cylinder connection and brake mechanism for air brakes which will add to the general efficiency and durability of this class of inventions in a simple and inexpensive manner. This object is  
20 attained by the construction illustrated in the accompanying drawings wherein like letters of reference indicate corresponding parts in the several views and in which.

25 Figure 1 is a plan view of the improvement. Fig. 2 is a perspective view and Fig. 3 is a detail of one of the levers.

In the drawings, A represents the brake cylinder having the securing flanges  $a$  by which it is attached to the car. At the supply end of the cylinder is a storage tank  $A'$  arranged at right angles to the cylinder into which the supply pipes  $a'$  lead at opposite ends. These pipes are provided with valves  $A^2$  at points near the storage tank, which valves are controlled by levers  $a^2$  having attached to their outer ends the actuating rods  $a^3$  extending to the outside of the car. An exhaust valve  $A^3$  is placed on the tank  $A'$  normally closed by a spring and adapted to be opened by drawing on a cord attached to a lever on the stem of the valve, and extending up into the car. The tank is formed with suitable flanges for attachment to the bottom  
45 of the car.

50 B is the piston rod having, as is usual, a piston head located in the cylinder. This rod is flattened at its end and has an elongated slot  $b$  formed horizontally therein, for purposes hereinafter stated. At the end of the piston is a small rod or continuation  $b'$  form-

ing at its junction a shoulder against which a coiled spring  $B^2$  engages, the spring being sleeved on the rod  $b'$ .

The cylinder A has at its outer end on opposite sides outwardly extending brackets C formed with flat upper faces to which are bolted parallel outwardly extending plates D,  $D'$ . These plates are connected, at their outer ends by a reinforced plate  $d$  having a central aperture therein through which the rod  $b'$ , passes. The outer end of the spring  $B^2$  engaging the inner face of the connecting plate  $d$ , and is held from movement thereby. This connecting plate thus acts as an abutment for the spring and guide for the piston rod.

A bracket or cleat E is formed on the under side of the plate D, at or near its center, in which a suitable friction roll F is mounted at its outer end. Similar brackets  $E'$ ,  $E^2$  are secured to the body of the car on opposite sides and substantially in alignment with the other bracket.

G is an equalizing lever extending across the bottom of the car at right angles to the plates and piston. This lever has angle arms  $g$  on its ends which fit in the brackets  $E'$   $E^2$  and work or reciprocate therein, their outer edges engaging the friction rolls  $e'$   $e^2$  in these brackets while the central portion of the lever is located in the bracket E, on plate D, in the rear of the roll F.

H represents the brake rod actuating levers, which as shown in Fig. 3 are bell-cranks or right angle bars having their ends connected, by the cross bar  $h$ , to prevent spreading. The bar  $h$ , is prolonged and has a slight lateral bend  $h^2$  therein, and an elongated slot  $h^3$  while the bar  $h^4$  has a series of perforations  $h^6$  therein. The apex or corner of the lever is perforated as at  $h^7$  through which a suitable bolt I passes, the bolt passing through the lever G at a point near its outer end and through an offset  $g^2$  on the under-part of the lever. By this means the levers H are pivotally secured to the levers G. The inner ends of the levers H are over-lapped and inserted in the slot  $b$  of the piston rod, and have a bolt passed through the slots therein and the piston rod. The bends in the ends of the levers H are to allow their over-lapping without affecting the planes of the levers.



K represents the brake rods, which are shown broken away. These rods are arranged to extend to the brakes shoe levers, as is usual. Their ends are bifurcated and perforated and  
5 are secured to the ends of the levers H, by suitable pins passing through the perforations.

The operation is as follows:—As the air is forced into the cylinder the piston rod is forced  
10 out drawing the outer ends of the levers H in and consequently setting the brakes. As the pressure in the cylinders is released the spring B' forces the piston and levers back to their normal position. The purpose of the equal-  
15 izing lever is to equalize the pressure on the wheels on opposite ends of the car and allowing a vibratory movement of the brakes rods without materially affecting the consistency of pressure. In forming the cylinder with  
20 the auxiliary tank the brakes are held tight for a longer period than otherwise and the elasticity of the device is increased.

I am aware that many minor changes and details of my invention can be changed and  
25 altered without in the least departing from the nature and principle of my invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

30 1. In an air brake mechanism, the combination with a cylinder of parallel plates se-

cured thereto, a piston rod between the plates, a spring on the rod, an equalizing lever loosely supported by the plates, bell-cranks pivotally connected with the equalizing lever and con- 35 nected with the piston rod and brakes rods connected with the bell cranks, substantially as described.

2. In an air brake mechanism, the combination with the brakes rods, of levers for actu- 40 ating the same, a piston rod a source of air supply for driving the piston, sliding pivotal connection between the levers and piston and a sliding equalizing lever carrying the actu- 45 ating levers, substantially and described.

3. In an air brakes system, the combination with a cylinder of a piston rod entering the same means for supplying an expansive agent to the cylinder, bell crank levers slidingly and pivotally engaging the piston rod, a re- 50 turning spring on the rod an equalizing lever extending across the piston rod, a pivotal connection between the bell cranks and equalizing lever, brackets for supporting the equalizing lever, and brakes rods connected to the 55 bell cranks substantially as described.

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

ARNOLD MILLER.

Witnesses:

ALEX. MATHEY,  
E. H. SCHWEPPE.