

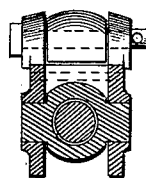
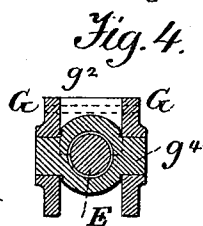
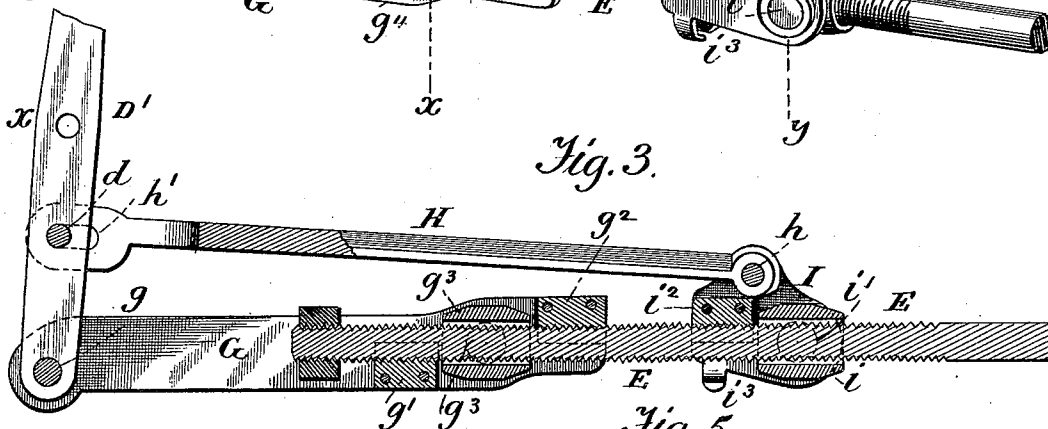
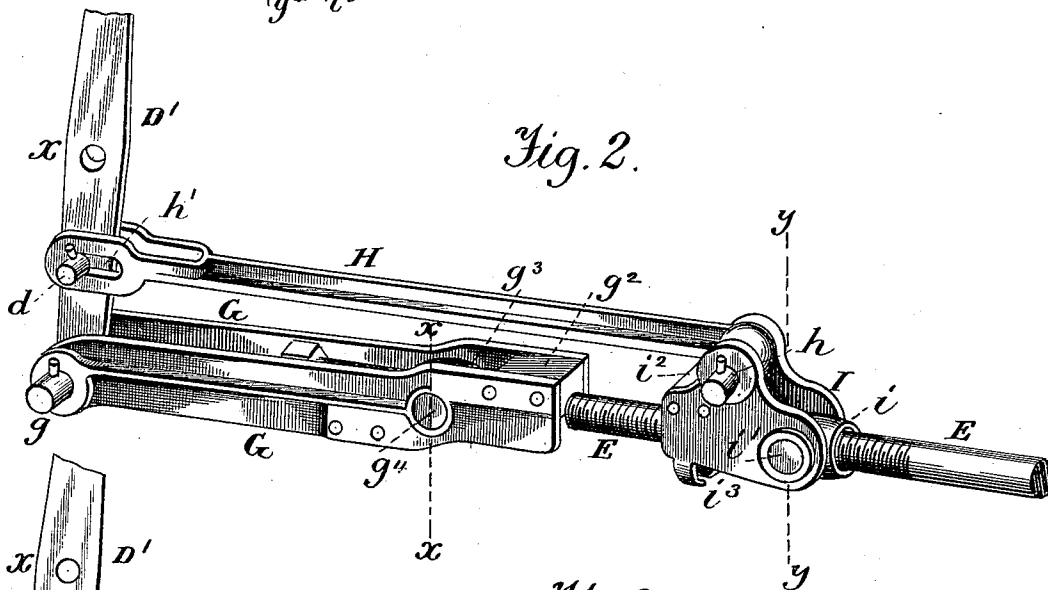
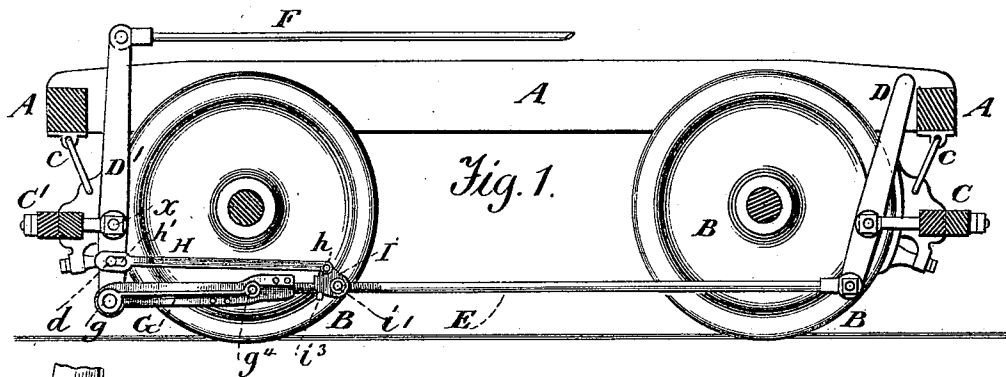
(No Model.)

2 Sheets—Sheet 1.

E. D. EAMES.
AUTOMATIC ADJUSTER FOR BRAKES.

No. 463,716.

Patented Nov. 24, 1891.



Witnesses:
A. Ruppert.
E. Luse

Inventor:
Elisha D. Eames,
by *Wm. J. Howard*
attys.

(No Model.)

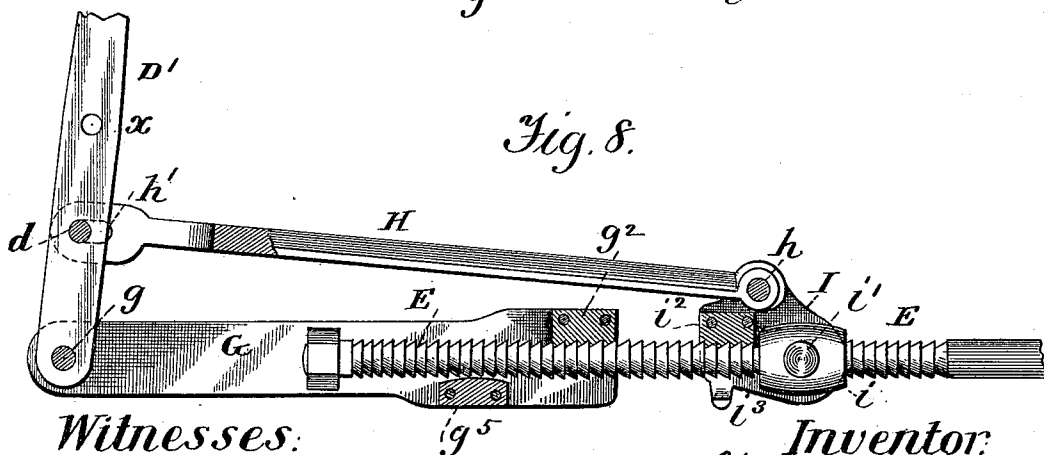
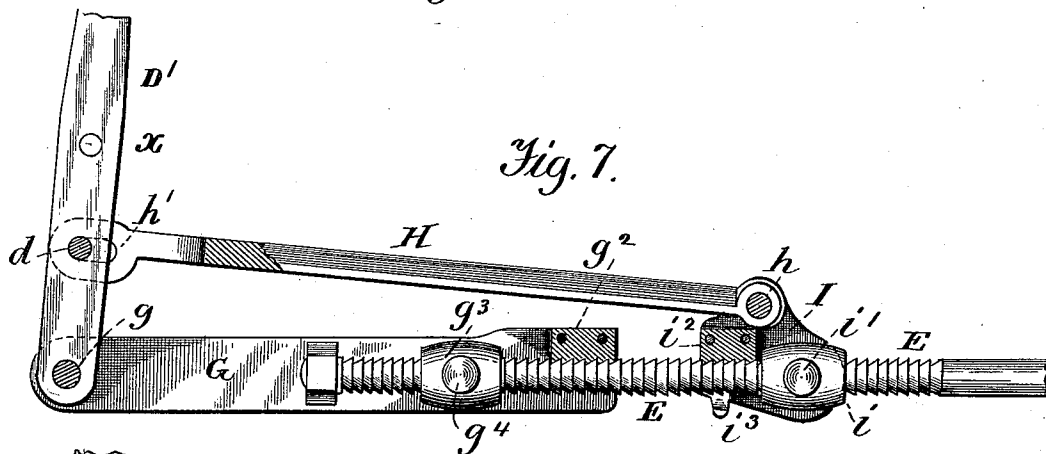
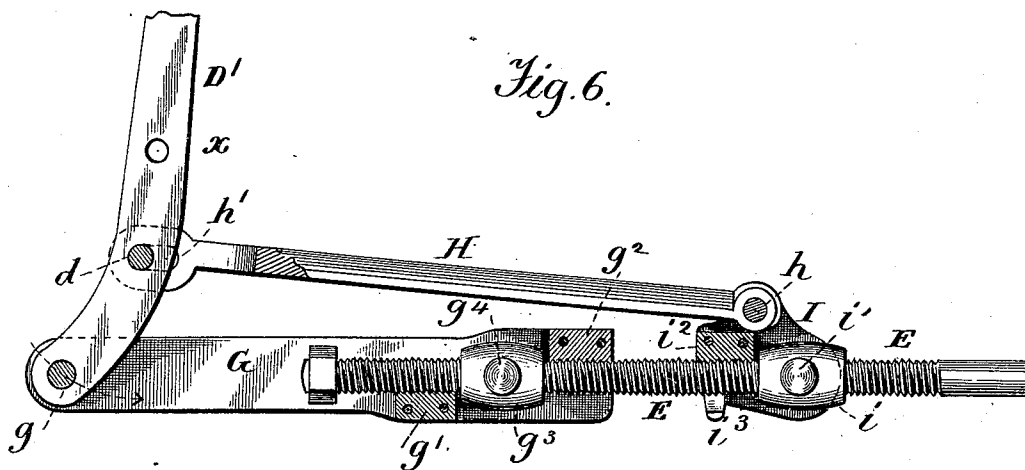
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UNITED STATES PATENT OFFICE.

ELISHA D. EAMES, OF WATERTOWN, NEW YORK, ASSIGNOR TO THE CONSOLIDATED BRAKE-ADJUSTER COMPANY, OF CHICAGO, ILLINOIS.

AUTOMATIC ADJUSTER FOR BRAKES.

SPECIFICATION forming part of Letters Patent No. 463,716, dated November 24, 1891.

Application filed January 25, 1890. Renewed May 6, 1891. Serial No. 391,709. (No model.)

To all whom it may concern:

Be it known that I, ELISHA D. EAMES, of Watertown, in the county of Jefferson and State of New York, have invented certain

Improvements in Automatic Brake-Adjusters, of which the following is a specification, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of this invention is to preserve, automatically, the adjustment of the brake-shoes to the normal or predetermined distance from the wheels intended to exist when brakes are off, so that upon wear of the shoes the increased amount of space between the shoes and the wheels will be at once taken up and the original distance between the shoes and the wheels existing when brakes are off re-established. Various devices for effecting such a result have been projected, some of which have attained a greater or less degree of success.

My invention consists, broadly, in the employment of a threaded, notched, or serrated brake-rod and two jaws, each being provided with one or more half-nuts adapted to engage the threaded or notched rod, and with a thimble or similar device to support it. Each jaw is connected to the brake-lever, and under certain conditions is adapted to be moved forward on the brake-rod by the action of the brake-lever, one jaw securely holding the brake-rod while the other is being moved forward, all of which will be more fully described in the following specification.

In the accompanying drawings, Figure 1 is an elevation of a pair of car-wheels with their brakes and appendages, showing the application thereto of my invention. Fig. 2 is a detached perspective view, upon an enlarged scale, of the parts entering chiefly into my invention. Fig. 3 is a vertical longitudinal section of Fig. 2. Figs. 4 and 5 are cross-sections of Fig. 2 on the lines *xx* and *yy*, respectively. Figs. 6, 7, and 8 are modifications.

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

A A show parts of the truck-frame, and B B the car-wheels. C C' are the brake-beams, suspended by links *c* to the truck-frame. D

D' represent the brake-levers, and E is a brake-rod uniting them. F is a rod connecting the upper end of the brake-lever D' to the diaphragm, piston, winding-staff, or other agent for the application of power. All of said parts and devices may be of any ordinary or approved construction.

The lower end of the brake-lever D is pivoted to the brake-rod E, the lever carrying the brake-beam C in the ordinary manner. The other brake-lever D', which carries the beam C', is pivoted at *g* to one end of a jaw G. This jaw consists of two parallel sides bolted together, said two sides being held a suitable distance apart by means of the half-nuts *g' g''*. The end of the rod E extends between the two dies of the jaw G and is threaded or notched to adapt it to engage with the half-nuts *g' g''*, which are opposed to each other. The rod E also passes loosely through a thimble *g''*, pivoted at *g''*, within the jaw G, between the two half-nuts. The point of connection *g* between the lever D' and the jaw G is preferably below the center of the line of draft of the rod E, for a purpose to be hereinafter explained.

H is a rod bifurcated at its rear end for the reception of the lever D', which is connected to it by means of the pin *d*. Each branch of the rod H is provided with a slot *h'*, through which the pin *d* passes, allowing the lever D' to have a limited movement without affecting the rod H, this movement being equal to that normally existing between the shoes and the wheels when brakes are off. The forward end of the rod H is pivotally connected at *h* to the rear end of a jaw I, similar in construction to the jaw G, but shorter. This jaw has at its rear end a half-nut *i''*, adapted to engage the upper threaded portion of the rod E, and at its forward end a thimble *i*, pivoted to it at *i'*, and through which the rod E loosely passes. The jaw I is also furnished with downwardly-extending lugs *i''*, curved inwardly toward each other under the rod E and serving to limit the tilting movement of the jaw I when such movement becomes necessary in the operation of the device.

The general operation is as follows, referring particularly to Fig. 3: The distance which

the brake-shoes are designed to move in setting the brakes is, as has been stated, the distance which the brake-lever D' is free to move in the slots h' without acting on the rod

5 H. It is therefore seen that so long as the brake-shoes (they having been properly adjusted) are unworn the lever D' will in the act of setting brakes move only a distance equal to that provided for by the slots h' , and

10 consequently the rod H will not be moved; but wear of the shoes having occurred, in order to bring the shoes up to the wheels a greater movement of the lever D' becomes necessary, and this will cause the rod H to be

15 pushed forward, thereby tilting the jaw I on its pivot i' and lifting the half-nut i^2 out of engagement with the threaded portion of the rod E, thus permitting the jaw I, thimble i , and half-nut i^2 to slide forward on the

20 rod to the extent of the wear. Under these circumstances, when brakes are released the first strain will, in the effort to take up slack, come on the rod H and the half-nut i^2 and the strain on the half-nuts $g' g^2$ be

25 taken off. In practice the rod E is about eight feet in length and somewhat flexible. It is also continually in a condition of tension or strain in the direction of its length by reason of the springs on the brake-beams.

30 Now in the act of setting the brakes the point of connection between the brake-beam C' and the lever D' (designated by x) is the fulcrum; but in the act of releasing brakes and sup-

35 posing slack is to be taken up, as before described, x becomes the point at which power is applied and the pin d the fulcrum. Consequently the lever above the pin d will move backward and the part below forward. The

40 connection between the lever D' and the jaw G, being below the center of the line of draft, will cause the jaw G to swing on its pivotal connection to the thimble g^3 , tilting the forward end up and so disengaging the half-

45 nuts $g' g^2$ and permitting the jaw G to move forward on the rod E a distance equal to the slack taken up. The strain on the rod H and jaw I will also tend to deflect the center of the rod E, and so assist in throwing the half-

50 nuts $g' g^2$ out of engagement. The strain will remain on the rod H until the next operation of applying brakes. As soon as the lever D' begins to move for this purpose x will again become the fulcrum, and the lower end of the lever move in a reverse direction, and

55 for the reason that it is connected to the jaw G below the center of the line of draft its effect on the jaw will be just the reverse of that in the operation of taking up the slack. Thus, instead of tending to throw the half-

60 nuts $g' g^2$ out of engagement with the rod E, it will, on the contrary, force and hold them securely in engagement with the rod and prevent slipping. The strain will then be transferred from the rod H to the jaw G and remain on it until it becomes necessary to again

65 take up slack.

The construction just described is that

which I have found to be best adapted to the end in view. I do not, however, limit myself to it, as many slight modifications may be made without departing from the spirit of my invention. For instance, referring to Fig. 6, the brake-lever D' may be bent at its lower end, as shown, and the connection to the jaw G be on the line of draft of the brake-rod. With this modification in taking up the slack, when the pin d becomes the fulcrum and x the point at which power is applied the lower end of the lever D' will move as indicated by dotted lines. This will necessarily cause the jaw G to swing on the thimble g^3 and so throw the half-nuts out of engagement.

Referring to Fig. 7, the rod E is shown with a ratchet-thread, and only one half-nut having a similar thread is used in the jaw G, the thimble g^3 being placed somewhat farther back than in the device illustrated in Fig. 3. Here the connection between the brake-lever and the jaw may be on the line of draft of the brake-rod, for the inclined sides of the threads will permit the half-nut to slide forward when necessary, while the vertical sides of the threads on the rod and half-nut, when interlocked, will prevent any movement of the jaw backward on the rod.

In Fig. 8 is shown a block g^3 , whose upper surface is slightly rounded. This block may be substituted for the thimble g^3 to form a support for the brake-rod.

I have illustrated and described half-nuts as forming the means of engagement between the jaws and the threaded or notched brake-rods, and I prefer to use them, for the reason that they present a large surface for engaging the rod, and are therefore better adapted to withstand the strain, and, further, are less liable to slip than any device presenting a smaller engaging surface. I do not, however, limit myself to the use of half-nuts, as I consider any other mechanical device known to the art and adapted to perform the same function as within the scope of my invention.

Having described my invention, I claim—

1. The combination, in a brake mechanism, of a threaded or notched brake-rod, a jaw, a thimble or other suitable device within said jaw to support the rod, a half-nut within said jaw adapted to engage the threaded rod, and a brake-lever connected to said jaw, substantially as specified.

2. The combination, in a brake mechanism, of a threaded or notched brake-rod, two jaws, each provided with a device to support the rod and with means to engage the threads or notches on said rod, and a brake-lever connected to both jaws, substantially as specified.

3. In a brake mechanism, a brake-lever, a threaded or notched brake-rod, and a jaw connecting the lower end of the brake-lever with the threaded rod, substantially as described, combined with a second jaw having a device to engage the threaded rod, and a rod leading from the second jaw and joined to the brake-

lever by a slotted connection, substantially as specified.

4. In a brake mechanism, a brake-lever, a threaded or notched brake-rod, a jaw connected to the lower end of the brake-lever, a
5 device within said jaw to support the rod, and half-nuts also within said jaw adapted to engage the threaded rod, combined with a second jaw provided with similar supporting
10 and engaging devices for said rod, and a rod

leading from the second jaw and joined to the brake-lever by a slotted connection, substantially as specified.

In testimony whereof I have hereunto set my hand and seal.

ELISHA D. EAMES. [L. S.]

Witnesses:

WILFRED EAMES,

THOMAS C. CHITTENDEN.