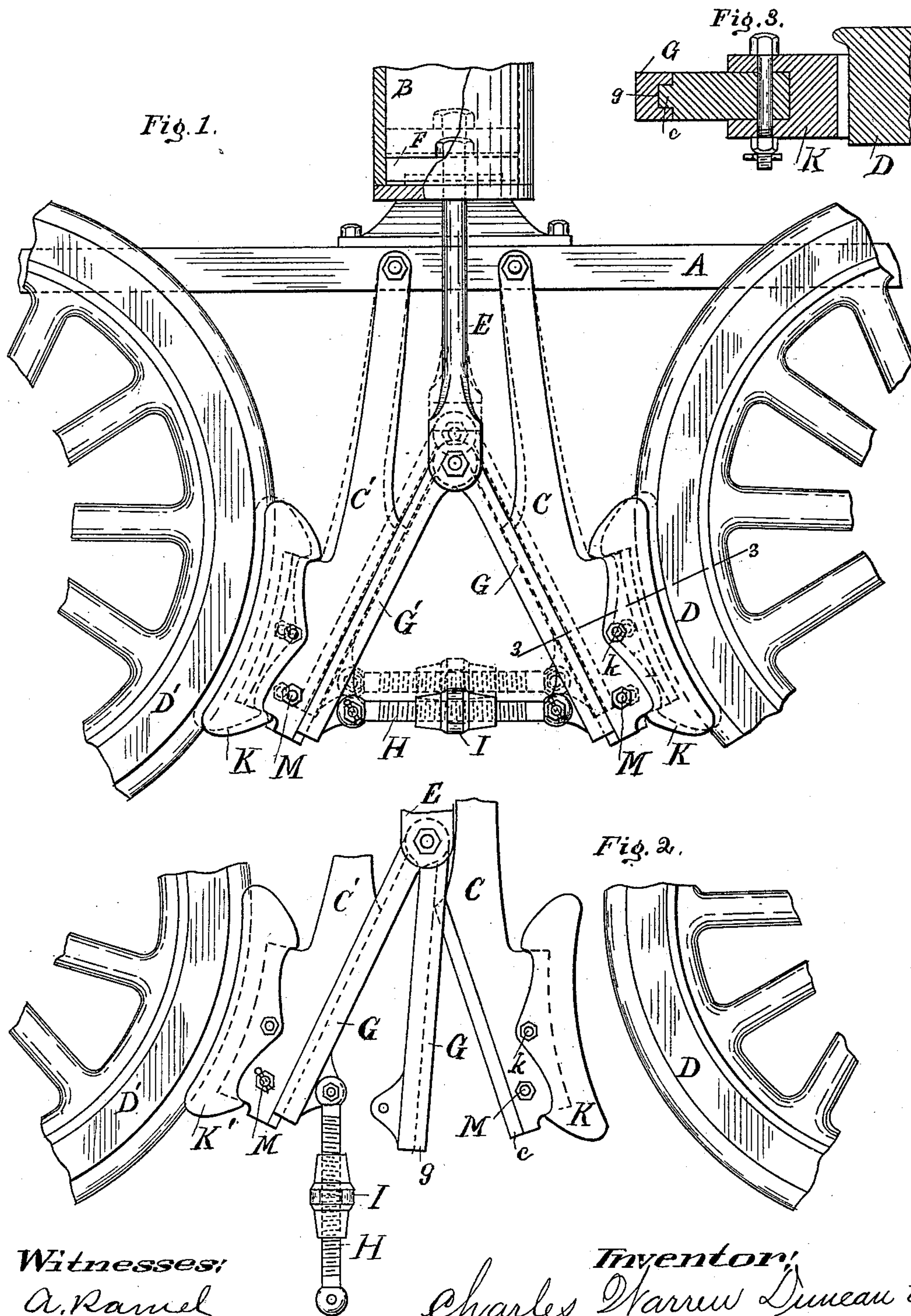


(No Model.)

C. W. DUNCAN.
CAR BRAKE.

No. 463,598.

Patented Nov. 17, 1891.



Witnesses:
A. Ramel
J. H. Crookes.

Inventor:
Charles Warren Duncan by
Paye Bakerwell
his attorney.

UNITED STATES PATENT OFFICE.

CHARLES WARREN DUNCAN, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ELEVENTWENTIETHS TO JAMES A. BAUMGARTNER, OF SAME PLACE.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 463,598, dated November 17, 1891.

Application filed July 2, 1891. Serial No. 398,257. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WARREN DUNCAN, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Car-Brakes, of which the following is a full, clear, and exact description.

My invention relates to car-brakes adapted to be automatically operated by air or steam pressure or by vacuum, more particularly to locomotive-driver brakes adapted to be operated independently of or in conjunction with the train-brakes.

It has for its object the simplification and reduction of the number of parts, and such a construction as to readily permit of the getting at and replacing of worn parts and in an efficient and convenient means for a "take-up" when worn; and it consists in the novel features of construction and in consequent operation in a car-brake hereinafter described.

In the accompanying drawings, in which like letters of reference denote like parts in the several figures, Figure 1 is a side elevation of my improved brake as attached to a locomotive between two of the drivers. Fig. 2 is a view, as in Fig. 1, showing the method of disconnecting, as in replacing a brake-shoe; and Fig. 3 is a cross-section taken on the line 3 3 in Fig. 1.

I have illustrated only my brake and that part of the operative mechanism necessary to operate it. The brake, as a brake, can be, without modifying the essential features of my invention, operated by compressed air or steam or by vacuum.

As illustrated, I operate my brake by compressed air admitted to the under side of the brake-cylinder piston and regulated by any of the well-known methods.

A represents the engine-frame, to which the brake-cylinder B and the depending brake-hangers C C' are attached.

D and D' are respectively the forward and rear drivers.

E is the piston-rod, to one end of which is secured the piston F. To the other end of the piston-rod E are pivotally secured one end of the arms G and G', which are adapted to move about the pivot-joint on the end of the

piston-rod E in a plane parallel to the plane of the drivers D and D'. To the other ends of the arms G and G' are pivotally and removably secured the ends, respectively, of the adjustable connecting rod or spreader H, which is composed of two eyebolts with right and left hand threads, respectively, let into the correspondingly right and left threaded sleeve-coupling I. The connecting-rod H is designed to retain the arms G and G' in such a position relatively that they form a wedge-shaped frame of the whole, resting, as shown in Fig. 1, in between the correspondingly-inclined surfaces of the brake-hangers C and C'. The contiguous surfaces of the brake-hangers C and C' and of the arms G and G' are formed, respectively, with a tongue c and groove g, as indicated in Figs. 2 and 3, to prevent any lateral movement relatively. The lower portion of the brake-hangers C and C' are formed with a laterally-projecting portion corresponding in form to the ordinary brake-head, to which the brake-shoes K and K' are removably secured by the bolts k.

M M represent the heads of the traverse-bolts or steady-rods connecting the brakes on either side of the engine.

The principle of operation of my improved brake is as follows: Pressure is admitted to the cylinder B below the piston F, which tends to raise the piston-rod E, and with it the attached arms G and G'. In this upward movement of the arms G and G', which are held apart by the connecting-rod H, the inclined surfaces thereof abut against the contiguous surfaces of the brake-hangers C and C', forcing them apart against the drivers D and D', to the position as indicated in dotted lines in Fig. 1. When the pressure is removed from beneath the piston F, the wedge-shaped frame, composed of the arms G and G' and the connecting-rod H, will drop to its normal position and the brake-shoes K and K', secured to the brake-hangers C and C', will fall away from the drivers D and D'. When it is desirable to replace a brake-shoe, as K, (see Fig. 2,) the removable bolt which connects that end of the connecting-rod to the brake-hanger C (which bolt is preferably secured by a spring-key) is removed, and then the hanger

can be dropped to a position away from the driver D to the position, as shown in Fig. 2, convenient to remove the shoe K by removing the bolt k , which secures it to the hanger C.

5 Among the principal features of improvement in my new brake is in forming the usual brake-head in the same piece with the brake-hanger.

The advantages are these: The two—the
10 brake-head and the brake-hanger—being in one rigid piece and the brake-shoe being rigidly secured to the same, the wear of the shoe will be dependent only on the position of the pivot-point at which the brake-hanger is
15 pivotally secured to the engine-frame, about which it revolves as a center. This point can be selected, so as to give the most uniform wear to the shoe and so as to wear the shoe most effectually, thereby doing away with the
20 usual uneven wear occasioned by the twisting movement given to the shoe by the turning of the drivers when the brake is applied to the wheels.

The object of making the connecting-rod H
25 adjustable is in order to set the arms G and G' the proper distance apart to secure the most effectual friction between the brake-shoes and the contact-surfaces of the drivers when the pressure is admitted to below the
30 piston when the brakes are applied—that is, for the defined amount of movement of piston-head. This adjustment is also to be used when the shoes are partially worn.

The special form of construction of the operative part of my brake—*i. e.*, the part by
35 which the brake is applied to the wheel—permits of the adjustment above referred to being made with one adjustment—the turning of the right and left threaded sleeve-coupling I.
40

I claim—

1. In a car or locomotive brake, a brake-hanger, in combination with a removable brake-shoe rigidly secured directly thereto,
45 said brake-hanger being formed with a laterally-projecting lug portion adapted to be fitted into a recess formed in the rear side of the brake-shoe, substantially as described, and for the purposes specified.

50 2. In a car or locomotive brake, brake-hangers dependently secured in a suitable position, said brake-hangers being formed with inclined surfaces, arms pivotally secured to the brake-cylinder rod, and a connecting-rod
55 retaining the said arms at an angle relative to each other, combined and operating sub-

stantially as described, and for the purposes specified.

3. In a car or locomotive brake, the brake-cylinder piston-rod, in combination with arms
60 pivotally secured to the projecting end of said piston-rod, a spreading-rod removably connected with the free ends of said arms, retaining said arms at an angle relative to each other, brake-hangers dependently secured to
65 the supporting frame-work of the car or locomotive, said hangers being formed with their adjacent surfaces inclined corresponding to the angle at which the said arms are retained, combined as a whole and operating substantially
70 as described, and for the purposes specified.

4. In a car or locomotive brake, the brake-cylinder piston-rod, in combination with arms
75 pivotally secured to the projecting end of said piston-rod, an adjustable spreading-rod removably connected with the free ends of said arms, retaining the said arms at an angle to each other relatively, brake-hangers dependently secured to the supporting frame-work
80 of the car or locomotive, said brake-hangers being formed with an incline on their adjacent faces corresponding with the angle at which the arms are retained, the whole combined and operating substantially as described,
85 and for the purposes specified.

5. In a car or locomotive brake, the brake-cylinder piston-rod, in combination with arms
90 pivotally secured to the projecting end of said piston-rod, an adjustable spreading-rod removably connected with the free ends of said arms, retaining the said arms at an angle to each other relatively, hanger-arms dependently and pivotally connected to the supporting frame-work of the car or locomotive, said
95 hangers being formed with an incline on their adjacent faces corresponding approximately to the angle at which the said arms are retained, the contiguous faces of the said arms and the said hangers being formed with a
100 tongue and groove, respectively, and brake-shoes removably secured to said hangers, substantially as described, and for the purposes specified.

In testimony whereof I affix my signature, in
105 presence of two witnesses, this 6th day of June, 1891.

CHARLES WARREN DUNCAN.

Witnesses:

J. W. CROOKES,
A. RAMEL.