

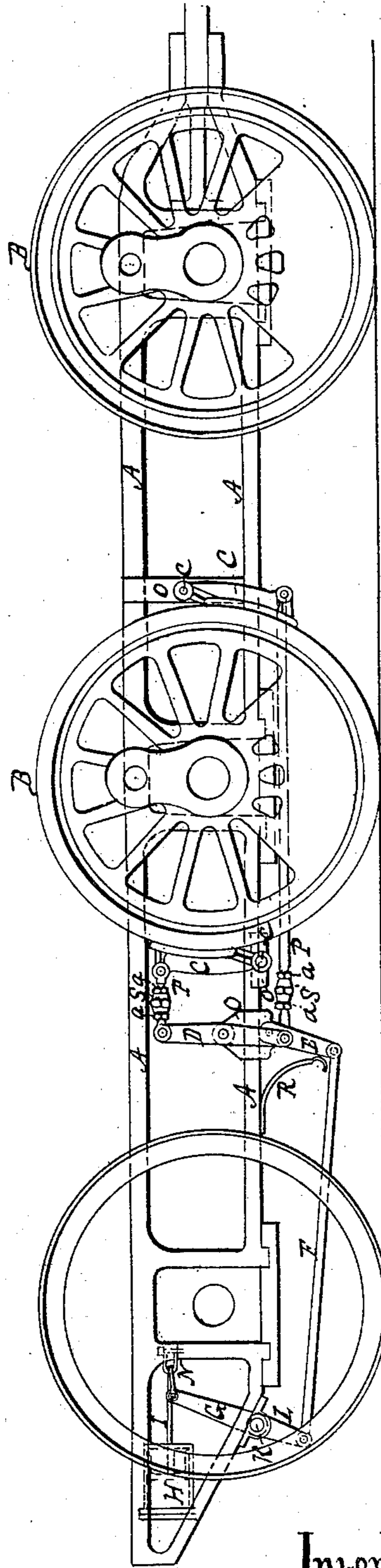
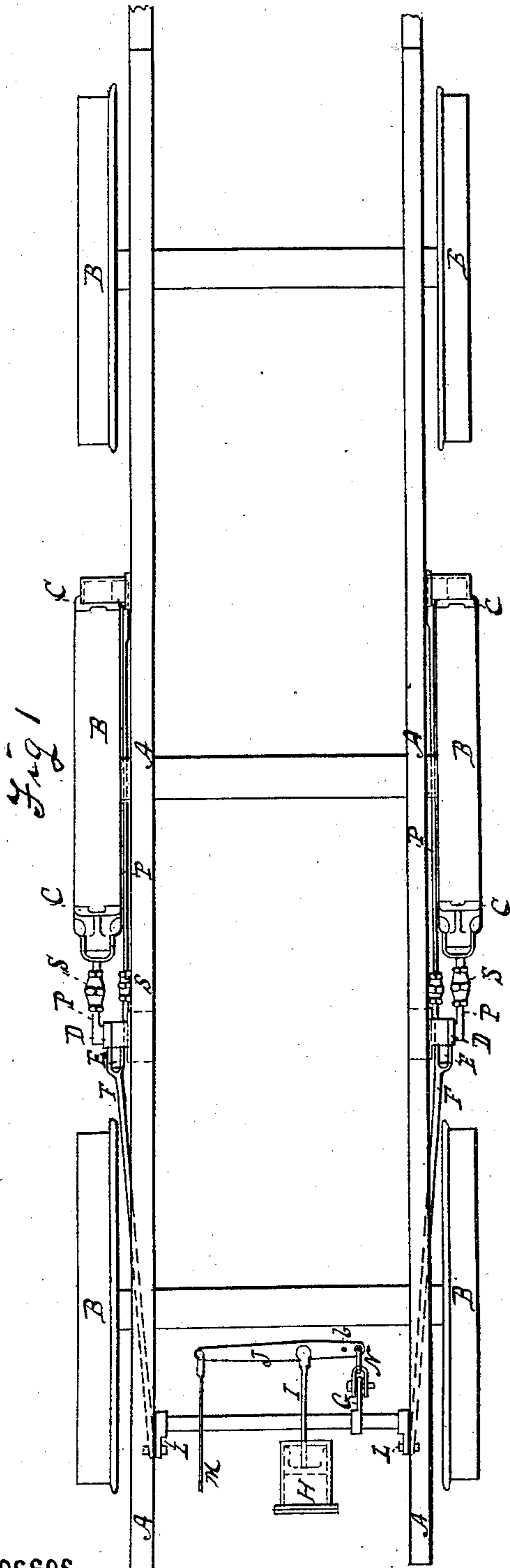
(No Model.)

2 Sheets—Sheet 1.

G. H. POOR.
LOCOMOTIVE BRAKE.

No. 285,068.

Patented Sept. 18, 1883.



Witnesses.

Geo Tauberschmidt
E. J. Walker

Inventor.

George H. Poor
by *J. H. Miller* atty

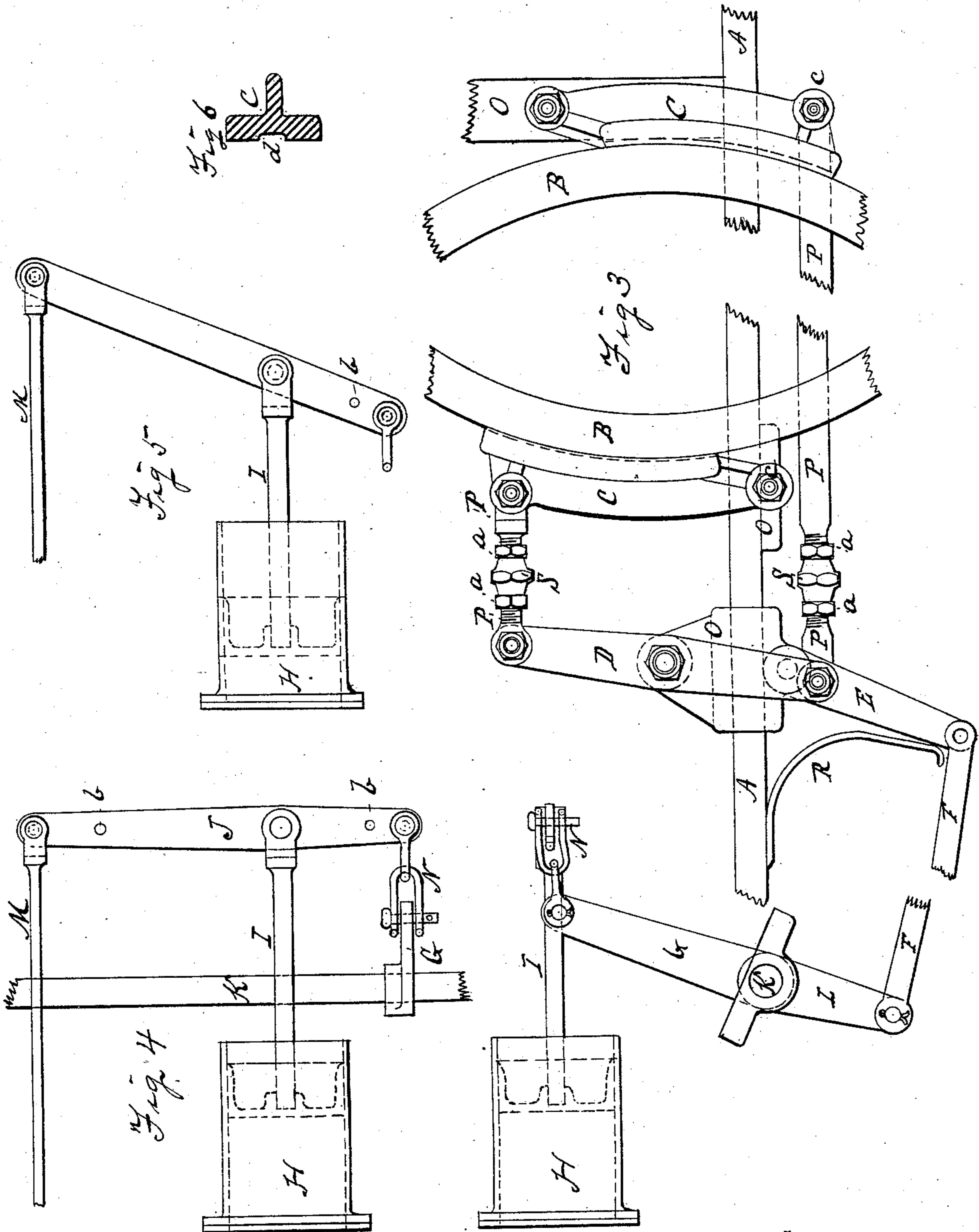
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UNITED STATES PATENT OFFICE.

GEORGE HAMILTON POOR, OF PORTLAND, MAINE, ASSIGNOR TO THE AMERICAN BRAKE COMPANY, OF ST. LOUIS, MISSOURI.

LOCOMOTIVE-BRAKE.

SPECIFICATION forming part of Letters Patent No. 285,063, dated September 18, 1883.

Application filed May 10, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. POOR, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Locomotive and other Brakes; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, wherein—

Figure 1 is a plan view, showing my invention as applied to two opposite drivers of a locomotive. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged view, showing the position of the lever D, shoe, &c., when the brakes are set up. Fig. 4 is an enlarged detail view, showing the position of levers, &c., when the tender and locomotive brakes are set up. Fig. 5 shows position of lever when the tender-brake only is set up, and Fig. 6 is a cross-section of a brake-shoe.

Like letters refer to like parts wherever they occur.

My invention relates more especially to that class of brakes which are intended for use with locomotives, and has for its object to apply the braking-power uniformly and equally to all the shoes of a series, so as to avoid undue shocks or strains on the journals and connecting-rods of the drive-wheels.

The most common method of applying locomotive-brakes is to use a single shoe for each wheel, said shoes arranged between the wheels and bearing against the adjacent surfaces of the two wheels, and operated by the same power, but through independent sets of levers and connections. As a result, the shoes are frequently applied with unequal force, which brings undue strain upon the connecting-rods of the drivers, and, from the manner in which the power is applied, the journal-boxes and brasses are always subject to unnecessary wear, as well as the tread of the wheels. To overcome these objectionable features two things are important: first, to apply the brakes to the tread on opposite sides of each wheel, and, secondly, means for equalizing the pressure between the several shoes of a series. By the construction in common use brake-shoes for locomotives cannot be readily applied to the

tread on both sides, nor can the power be uniformly and equally applied.

I will now proceed to describe more specifically the manner in which and the means by which I overcome these objectionable features, so that others skilled in the art may apply the same.

In the drawings, A indicates the frame of a locomotive of the pattern known as the "mogul," and B the driving-wheels thereof. On the frame A, in front and rear of each driver, to which the brake-shoes are to be applied, and close to the periphery of said wheel, are secured fulcrum plates or brackets O—one for each shoe and one for a lever, D.

C indicates the brake shoes, which are pivoted on the fulcrum-plates, as at *c*, the opposite shoes being preferably pivoted at different ends, as shown in the drawings, and to the free ends of the shoes are pivoted the connecting or tie rods by which they are moved.

P indicates the rods, which are usually made in two sections, connected by a right-and-left hand nut, *s*, with which jam-nuts *a a* may be used. The object of so constructing the tie-rods is that they may be lengthened or shortened to compensate for the wear of the shoes *c*. The extremities of these two rods P are pivoted to the opposite ends of a lever, D, which is in turn pivoted at or near its center on one of the fulcrum-plates O, so that any power applied to set up one shoe must act with equal force on the other. Pivoted on the same fulcrum-plate, O, is a short lever, E, which I term the "fulcrum-lever," and from this lever the power is transmitted to set up the brakes. Secured to the frame A by one end is a relief-spring, R, so shaped that its free end will bear upon the fulcrum-lever E. When power is applied to operate the brakes, this spring R is compressed, so that as soon as the power is withdrawn the spring will react and take off the brakes C.

K indicates a rock-shaft journaled in the frame A, and provided with an upwardly-projecting arm, G, and downwardly-projecting arms L, the latter or lower arms being located near the extremities of the rock-shaft, and each connected with the fulcrum-lever E of its side by a tie-rod, F, while the upper arm, G, is

connected by a link or shackle, N, with one end of a short lever, J. To the opposite end of lever J is connected the brake-rod M of the tender-brakes, while between the two points 5 is connected the source of power, which in the present instance is the piston-rod I of a cylinder, H, though in lieu thereof a hand-windlass may be used; or both devices can be provided, if preferred.

10 Near one or both ends of the lever J may be made pin-holes *b*, into which a pin can be dropped when it is desired to give the lever J a fixed fulcrum; or instead thereof sliding blocks may be dropped in front of either arm 15 of the lever, and either of such devices may be operated from the locomotive, so that when it is desired to apply either the locomotive-brakes or the tender-brakes separately the opposite arm of the lever J can be fixed to form 20 a fulcrum and prevent the operation of the brake mechanism connected with such arm. It is desirable to apply the brakes with a yielding rather than a rigid pressure, in order to prevent wearing or flattening the tread of the 25 wheel. Therefore, air, steam, and like powers are preferably used; but to still further guard the tread of the wheel from wear I prefer to form the face of the shoe with a longitudinal groove, *d*, substantially as shown in cross-section, Fig. 6, which groove by preference is 30 somewhat wider than the tread of the rail, and thus I relieve from all wear that portion of the periphery of the wheel which traverses the rail.

The devices, being of the general character 35 hereinbefore specified, will operate as follows: Power, being applied to lever J, will be transmitted by shackle N, rock-shaft G, lower arm, L, and the rod F to fulcrum-lever E; which latter, being rocked, compresses spring R, and 40 at the same time draws upon one of the tie-rods P. As the two tie-rods P are coupled by the pivoted lever D, it follows that the power must be applied equally to both brake-shoes C, which press toward a common center, and 45 the lever D will also permit the shoes to adjust themselves relatively to each other, so as to compensate for any irregularity on the periphery of the wheel, so that the pressure remains uniform at opposite points on the wheel. 50 Furthermore, as the center of the shoe is grooved longitudinally, there is no wear upon that portion of the wheel, and the tread will remain true, adding greatly to the life of the wheel. When it is desired to apply the tender-brakes only, the pin is dropped into hole 55 *b* in the arm of lever J, or a wedge is dropped in front of the arm on the side next to the locomotive-brake connection, so that the lever J turns on that point as a fulcrum, as shown in

Fig. 5, and the draft is then only on the rod 60 M of the tender-brakes. By fixing the opposite arm as before specified, the locomotive-brakes may be operated separately.

The great advantages of my invention are the simplicity and effectiveness of the devices 65 for applying the shoes upon opposite sides of the wheel, the uniform application of equal power to both shoes, and the protection afforded the connecting-rods, journals, and tread of the wheels. 70

For clearness of illustration I have shown the devices as applied only to two driving-wheels on opposite sides of a locomotive; but it is evident that the devices may be duplicated and applied to any or all the drive- 75 wheels, or to any other car-wheel, and this without the exercise of further invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is— 80

1. In a brake mechanism, the combination of two brake-shoes pivoted at different ends, tie-rods connected with the free ends of the brake-shoes, and a lever which connects the two rods and has its fulcrum at a point be- 85 tween its connections with the rods, substantially as and for the purposes specified.

2. In a brake mechanism, the combination, with two brake-shoes having fulcrums on the frame, of the rods connected to the free end 90 of the shoes, a lever which connects the tie-rods and is pivoted at a point between said connections, a fulcrum-lever pivoted on the frame, and a relief-spring for taking off the brakes, substantially as and for the purposes 95 specified.

3. The combination, with two sets of brake mechanism and power for operating the same, of a coupling-lever, J, having an adjustable fulcrum, whereby the lever may be caused to 100 actuate either or both sets of brake mechanism, substantially as and for the purposes specified.

4. The combination, with the two brake-shoes fulcrumed on the frame, of a lever, also 105 fulcrumed on the frame, and buckle-rods for connecting the free ends of the brake-shoes with the extremities of the lever which is fulcrumed on the frame, substantially as and for the purposes specified. 110

In testimony whereof I affix my signature, in presence of two witnesses, this 4th day of May, 1883.

GEORGE HAMILTON POOR.

Witnesses:

RICHD. K. GATLEY,
ROBERT E. LIBBY.