(No Model.) 2 Sheets—Sheet 1.

G. A. BOYDEN.

LOCOMOTIVE DRIVER BRAKE.

No. 403,871. Patented May 21 1889.

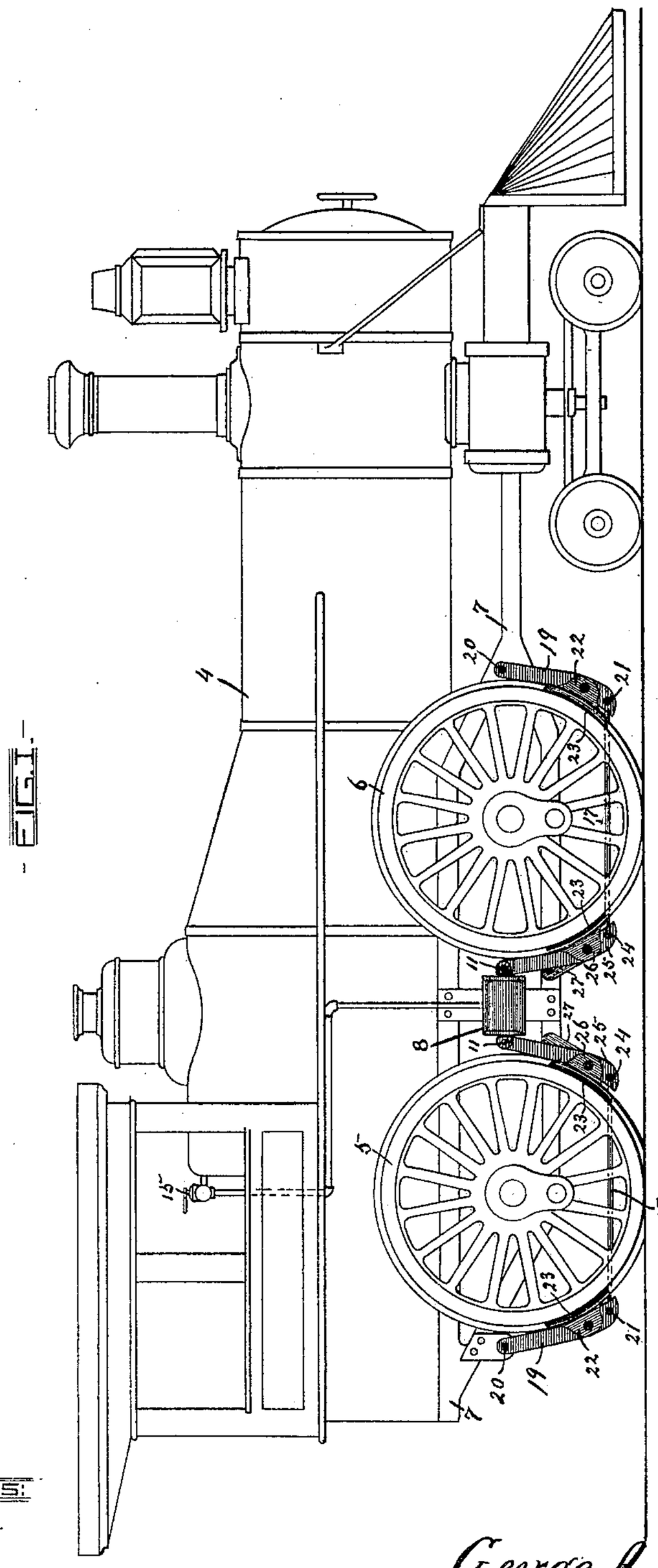

FIG. 1.

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INVENTOR:

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FIG. II.

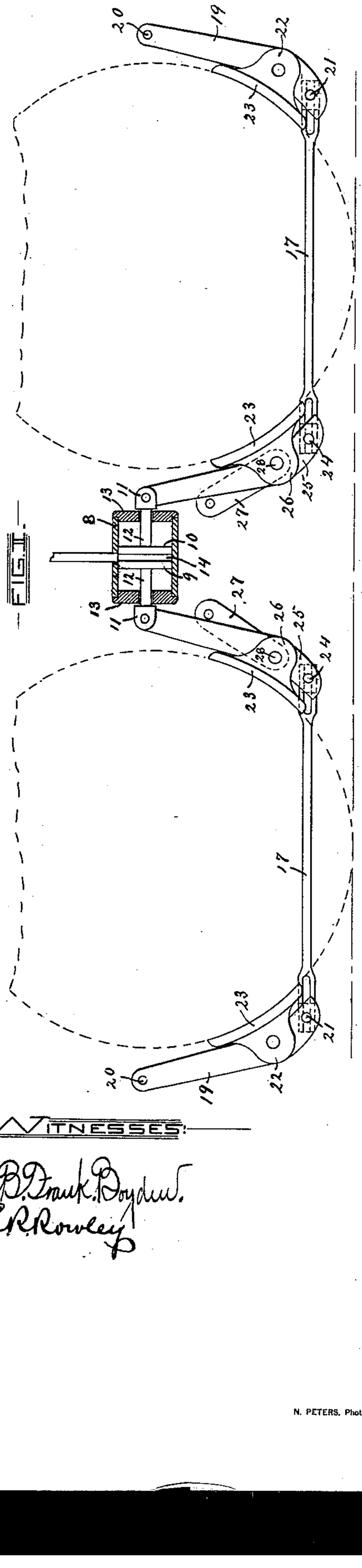
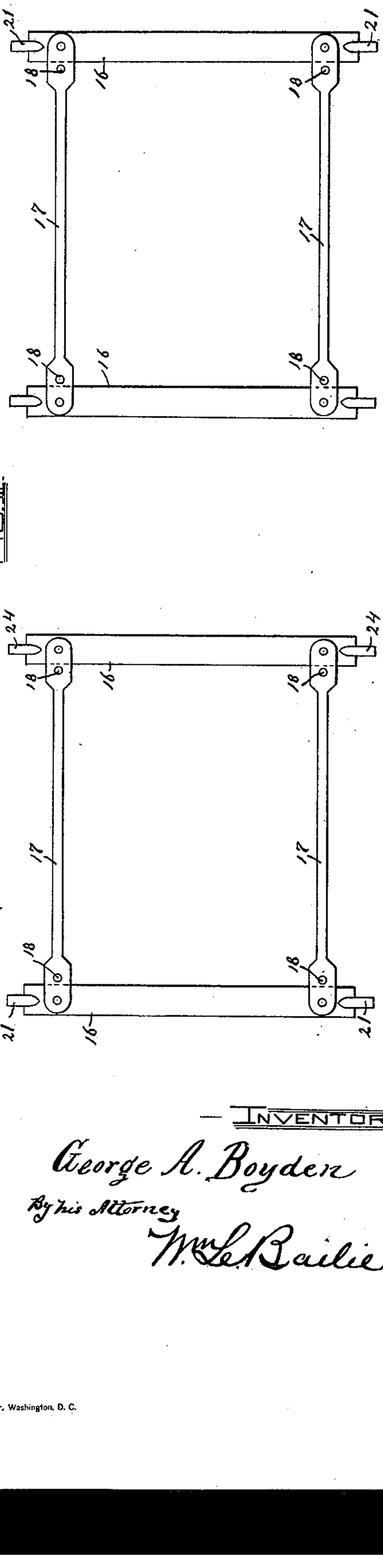


FIG. III.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE A. BOYDEN, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE BOYDEN POWER BRAKE COMPANY, OF SAME PLACE.

LOCOMOTIVE-DRIVER BRAKE.

SPECIFICATION forming part of Letters Patent No. 403,871, dated May 21, 1889.

Application filed December 15, 1888. Serial No. 293,679. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. BOYDEN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Locomotive-Driver Brakes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in locomotive-driver brakes; and it consists of such combination, arrangement, and operation of the various parts thereof that the braking force will be applied with equal power on both sides of each driver of the locomotive, and whereby any undue or unequal strain upon the axles or the bearings of the drivers will be avoided, provision likewise being made whereby the brake mechanism of each driver will be separately self-adjusting and accommodate itself to any intermobility of the parts of the locomotive, all of which I accomplish by the devices hereinafter fully described and claimed, reference being had to the accompanying drawings, in which—

Figure I shows a side elevation in full of a locomotive with the brake mechanism thereon. Fig. II shows a side elevation in detail of the brake mechanism, the power-cylinder shown in section. Fig. III is a detailed view of the brake-beams and tie-rods, looking down thereon.

The same figures refer to the same or similar parts throughout the several views.

The figure 4 denotes a locomotive that is provided with the drivers 5 and 6, to which the brakes are to be applied. Secured to the engine-frames 7 are the cylinders 8, one being placed on each side of the locomotive between the drivers and with their axis horizontal. Each of these cylinders is provided with the two pistons 9 and 10, one of which serves to operate the brakes of the forward driver and the other serving this purpose for the rear drivers, the position of these pistons when the brakes are off being nearly together, as is shown in Fig. II, which is the normal position of these pistons in consequence of the weights of the parts attached thereto, the heads 11 of the piston-rods 12, by coming in contact with the cylinder-covers 13, serving to preserve the proper space 14 between the said pistons, into which is admitted pressure from the boiler or air-tank through the engine-cock 15, whereby these pistons will be moved apart and each piston apply its respective brakes.

In all locomotives there is a certain amount of undesired intermobility between all parts thereof, and particularly is this the case where the railroad-track is uneven, and a very appreciative difference of movement between the drivers is produced thereby. With this in view the cylinders 8 are provided with the separate pistons 9 and 10, whereby an independent movement may be separately imparted to the brakes of the front and rear drivers, the said pistons acting independent one of the other, whereby each will accommodate itself to that stroke which is required to exert the full power thereof, and thus under all conditions of the relative positions of the drivers to fully apply the braking-power. In order that this power of the pistons might be equally distributed on both sides of each driver and to all the brake-shoes thereof, whereby any undue strain upon the driver-axle or bearings will be avoided, the following arrangement of levers and appurtenances is employed. As these devices for both front and rear drivers are fac-similes, one of the other, a description of that for one will be sufficiently comprehensive.

In Fig. III is shown a plan of the brake-beams 16, which are made of such material as will stiffly withstand the stress put thereon. These beams are placed one on each side of the driver which is to be braked. Connecting these beams together are the tie-rods 17, by which movement is imparted from one beam to the other, the ends of these tie-rods being pivoted by a single bolt to the said beams to admit of adjustability, spare holes, 18, being provided therein to shorten these rods should it be at any time required; or the

rods may be provided with threaded swivels, as in common usage for this purpose. Suspended from the engine-frame, on each side thereof, are the vertical levers 19, which are free to be vibrated on the pivots 20, and are in line with the drivers, their lower or free ends being pivoted to the projecting ends 21 of the beams 16, whereby the said beams are supported and free to be moved toward or from the driver. At the proper height on these levers 19 are pivoted the brake-heads 22, the shoes 23 thereof being in such position that by the movement of said levers 19 they will be brought in contact with or released from the periphery of the driver. To impart movement to these brake-beams, there is pivoted to the projecting ends 24 of the beam 16 the lower end of the floating levers 25, the upper end of which is pivoted to the piston-rod head 11, a fulcrum for these floating levers being formed by the brake-heads 26, the shoes 23 of which will be brought in contact with the periphery of this side of the drivers when the piston is moved outward by the admission of pressure to the cylinder, this movement of the floating levers causing the levers 19, with their brake heads and shoes, to be drawn against their side of the driver with a pressure the same as that applied to the brake heads and shoes of the floating levers, the tie-rods 17 serving to draw the brake-beams up squarely and permitting such yield thereto as will cause each brake-shoe to properly adjust itself and thus apply a uniform braking pressure to all the drivers.

In order to support the floating lever 25 in position, the link 27 is suspended from the engine-frame, the lower end of which is pivoted to the fulcrum-pin 28, which is made of sufficient length for this purpose, whereby the floating lever is free to be moved by the piston and apply the braking force to the drivers in the manner set forth.

Having described my invention and the manner of operating, what I claim, and desire to secure by Letters Patent, is—

1. In a locomotive-driver brake, the combination, with a cylinder provided with two separate pistons, a supply-port in said cylinder between said pistons, the two floating levers 25, the brake-shoes 23, pivoted to said floating levers, the levers 19, and their brake-shoes, of the brake-beams 16 and the adjustable connecting-beams 17, whereby the brake-shoes may be adjusted on opposite sides of the wheels, substantially as specified.

2. The combination, with the floating levers 25 and the piston-rods by which they are operated, of the brake-beams 16 and brake-shoes, the adjustable tie-rods 17, pivoted to the levers 25 and 19 on opposite sides of the driver, and the links to which said floating levers are fulcrumed, substantially as specified.

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

GEORGE A. BOYDEN.

Witnesses:

JNO. T. MADDOX,

WM. L. BAILIE.