(No Model.)

2 Sheets—Sheet 1.

M. A. DEES.

LOCOMOTIVE.

No. 272,218.

Patented Feb. 13, 1883.

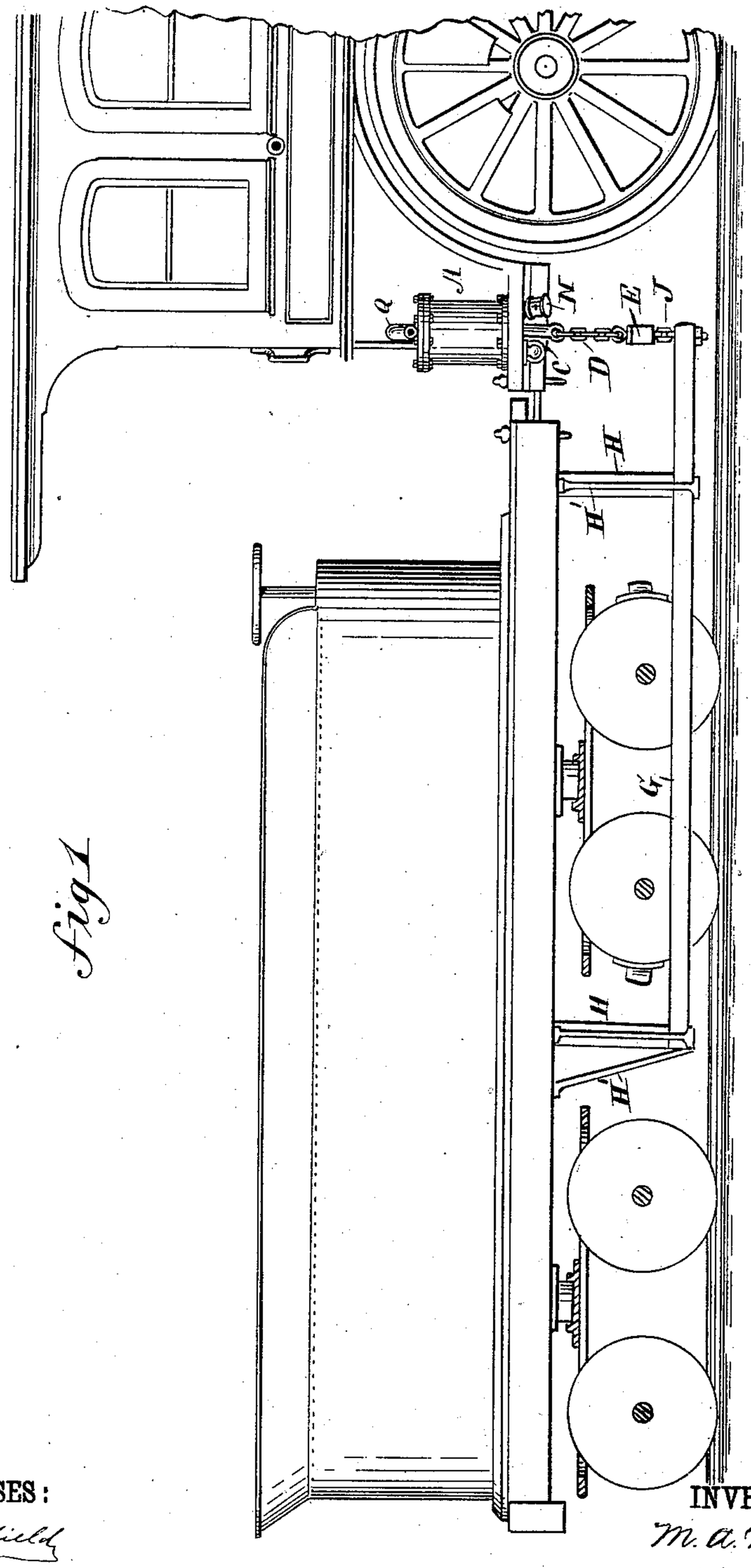

Fig. 1.

WITNESSES:

J. D. Garfield

C. Sedgwick

INVENTOR:

M. A. Dees

BY Munn & Co

ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

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Fig 2.

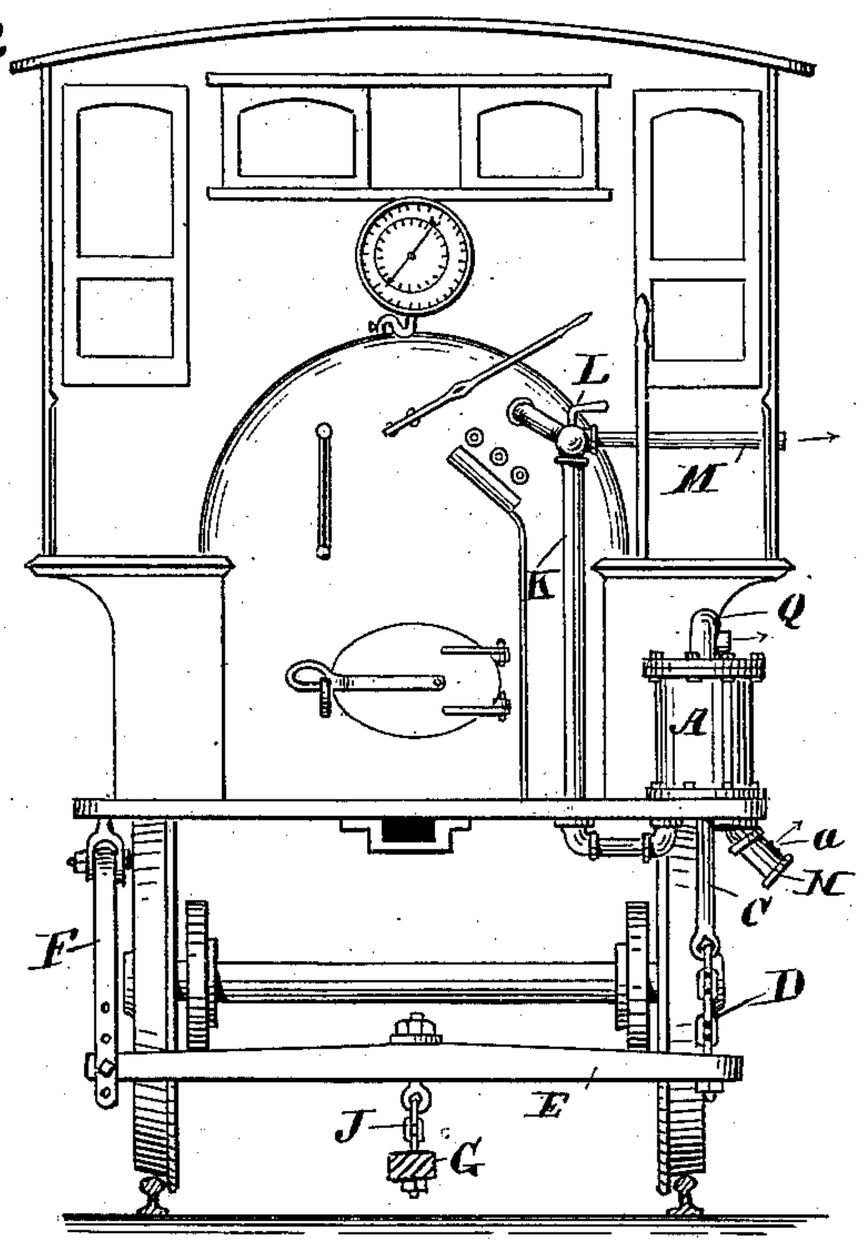


Fig 3.

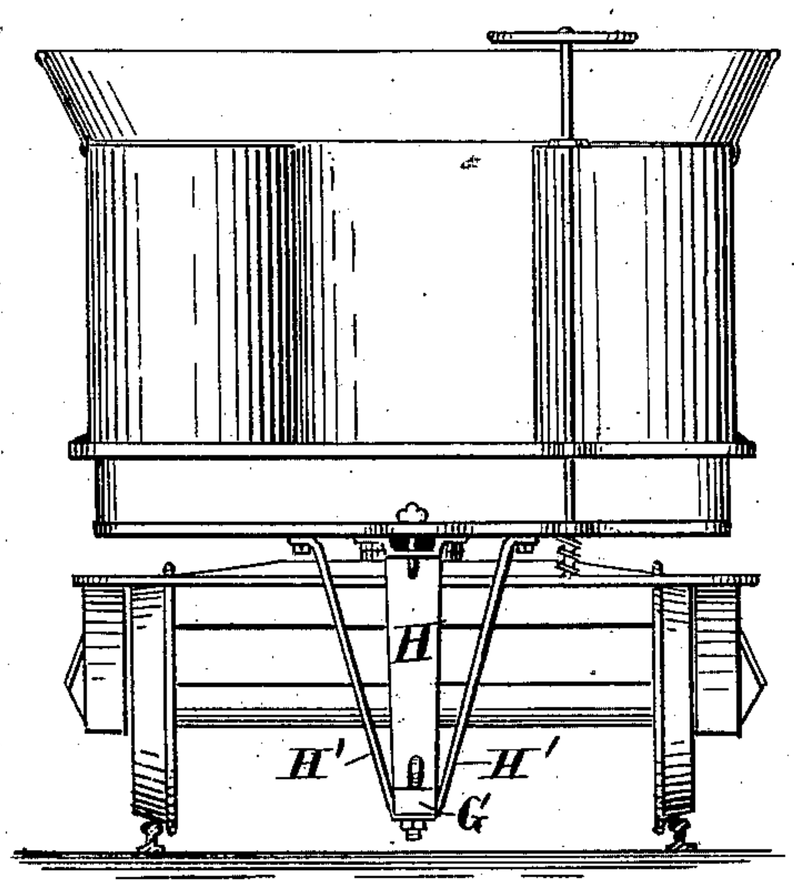
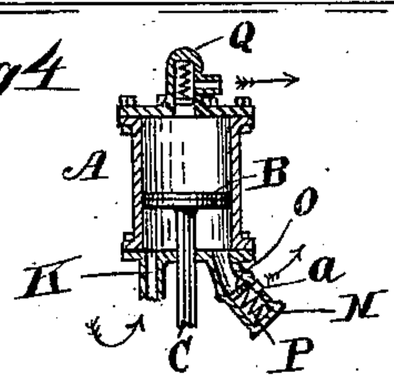


Fig 4.



WITNESSES:

J. D. Garfield

C. Bedgwick

INVENTOR:

M. A. Dees

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

MARK A. DEES, OF MOSS POINT, MISSISSIPPI.

LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 272,218, dated February 13, 1883.

Application filed July 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, MARK A. DEES, of Moss Point, in the county of Jackson and State of Mississippi, have invented a new and Improved Device for Increasing the Traction of the Driving-Wheels of Locomotives, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved device for increasing the traction of the driving-wheels of locomotives, for the purpose of preventing the slipping of those wheels on the track, especially when starting the locomotives at stations, &c.

The invention consists in the combination, with a vertical cylinder on the rear end of a locomotive, of a heavy beam held under and connected with the floor of the tender, which beam has its front end connected with the piston of this cylinder, whereby, when steam or compressed air is admitted into the cylinder, the piston will be forced upward and the weight of the front part of the tender will act on the rear part of the locomotive, thus materially increasing the traction of the driving-wheels.

The invention further consists in providing an escape-valve in the bottom of the cylinder, to prevent raising the piston too high and lifting the front part of the tender from the tracks.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal elevation of the rear part of a locomotive and of its tender provided with my improved device for increasing the traction of the driving-wheels. Fig. 2 is a rear end elevation of the locomotive. Fig. 3 is a rear end elevation of the tender. Fig. 4 is a detail longitudinal sectional elevation of the cylinder for operating the piston of the device for increasing the traction.

A vertical cylinder, A, resting on the platform of the locomotive at one side, or otherwise suitably attached and held to the locomotive, contains a piston, B, the rod C of which projects from the bottom of the locomotive, and has a chain attached to its lower end.

The lower end of the chain D is attached to one end of a transverse lever, E, below the rear end of the locomotive, the opposite end of which transverse lever is pivoted adjustably in a hanger, F, at the opposite side of the locomotive, this hanger being pivoted to the under side of the floor of the locomotive.

A heavy beam, G, of wood or metal, is held under the tender, and is attached to the lower ends of downwardly-projecting standards H, which are suitably braced and stiffened by braces H′, one of these standards being at or near the middle of the under side of the tender-floor, and the other being near the front end of the same. The front end of the beam projects under the middle of the transverse lever E, and is connected with the same by a short chain or link, J.

The steam passes from the boiler into the lower end of the cylinder A through a pipe, K, provided with a three-way cock, L, from which an escape branch pipe, M, leads to the side of the cab or to some other place. A safety-valve projects from the bottom of the cylinder A, and consists of a short tube or cylinder, N, closed at the lower end, and provided with a piston, O, which is pressed toward the upper end of the cylinder N by a spring, P, interposed between the lower end of the cylinder N and the piston O. This cylinder is provided with a side aperture, *a*, through which the steam can escape when the pressure is so great that it can press the piston O below this aperture.

A safety-valve, Q, which will open at a very low pressure, is arranged on the top of the cylinder, and is used for the purpose of permitting the escape of air or steam that may accumulate above the piston B, thereby preventing backward pressure.

In place of operating this above-described device by means of steam admitted into the cylinder A, compressed air may be used; or it may be operated by a vacuum, or in any desired manner. If the traction is to be increased, compressed air or steam is admitted into the cylinder A for the purpose of drawing the piston-rod C into the cylinder A. This piston-rod C being connected with the lever E, and this lever being connected with the beam G, which is rigidly united with the forward part of the tender, it is evident that the weight of the forward part of the tender will act on the piston-rod C, and will press the same downward. This pressure on the piston will naturally exert a downward pressure on the rear part of the locomotive, and will thus increase

the traction of the driving-wheels. As the lever E is adjustably pivoted in the hanger F, it can easily be adjusted, as circumstances may require, to operate more or less rapidly.

In order to prevent lifting the front part of the tender entirely from the rails, I have provided the escape-valve on the bottom of the cylinder, so that when the pressure in the lower part of the cylinder is too great it presses the piston O downward sufficiently to let the steam escape through the aperture *a* in the cylinder N. If the piston B does not fit closely in the cylinder, and steam escapes to the upper part of the cylinder, this steam causes a back-pressure, and to avoid this I have provided the safety-valve Q.

An opening or valve may be provided in the top of the cylinder to let the air in when the piston descends.

By means of the pipes K and M a vacuum may be produced in the cylinder A below the piston, to cause the piston and the lever E to descend when the apparatus is not to be used.

If desired, the cylinder A can be located and attached to the locomotive below the floor, and in that case the piston-rod C can be connected directly with the beam G.

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

1. The combination, with the vertical cylinder A, piston B, rod C, and beam under the tender, of a transverse lever, E, connected by a chain, D, with said rod, by a link, J, with the beam, and pivoted adjustably in a hanger, F, at the side of the locomotive, substantially as and for the purpose set forth.

2. In a device for increasing the traction of the driving-wheels of locomotives, the combination, with the cylinder A, the piston B, and the piston-rod C, of the lever E, the hanger F, in which the lever E is adjustably pivoted, and the beam G, held under and connected with the tender and connected with the lever E, substantially as herein shown and described, and for the purpose set forth.

MARK ASHLEY DEES.

Witnesses:
I. P. DELINAS,
H. BLOOMFIELD.