(No Model.) 2 Sheets—Sheet 1.

M. A. DEES.

DEVICE FOR INCREASING THE TRACTION OF LOCOMOTIVES.

No. 303,130. Patented Aug. 5, 1884.

Fig. 1.

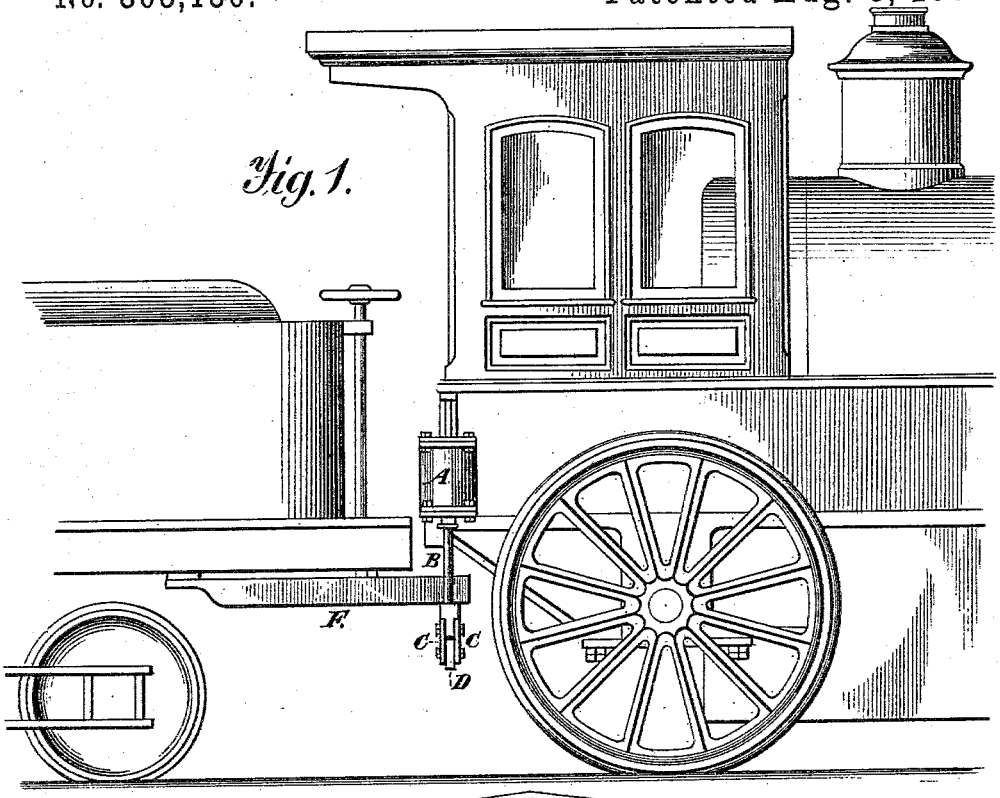
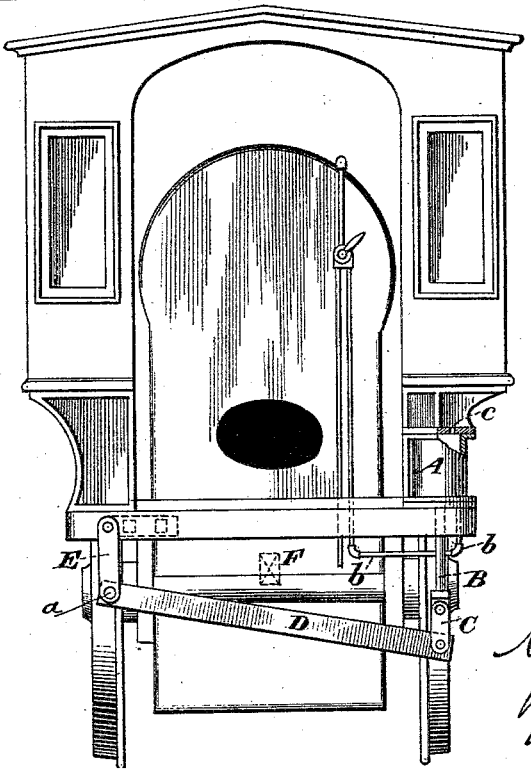


Fig. 2.



Witnesses:
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E. Cruse

Inventor:
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(No Model.) 2 Sheets—Sheet 2.

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DEVICE FOR INCREASING THE TRACTION OF LOCOMOTIVES.

No. 303,130. Patented Aug. 5, 1884.

Fig. 3.

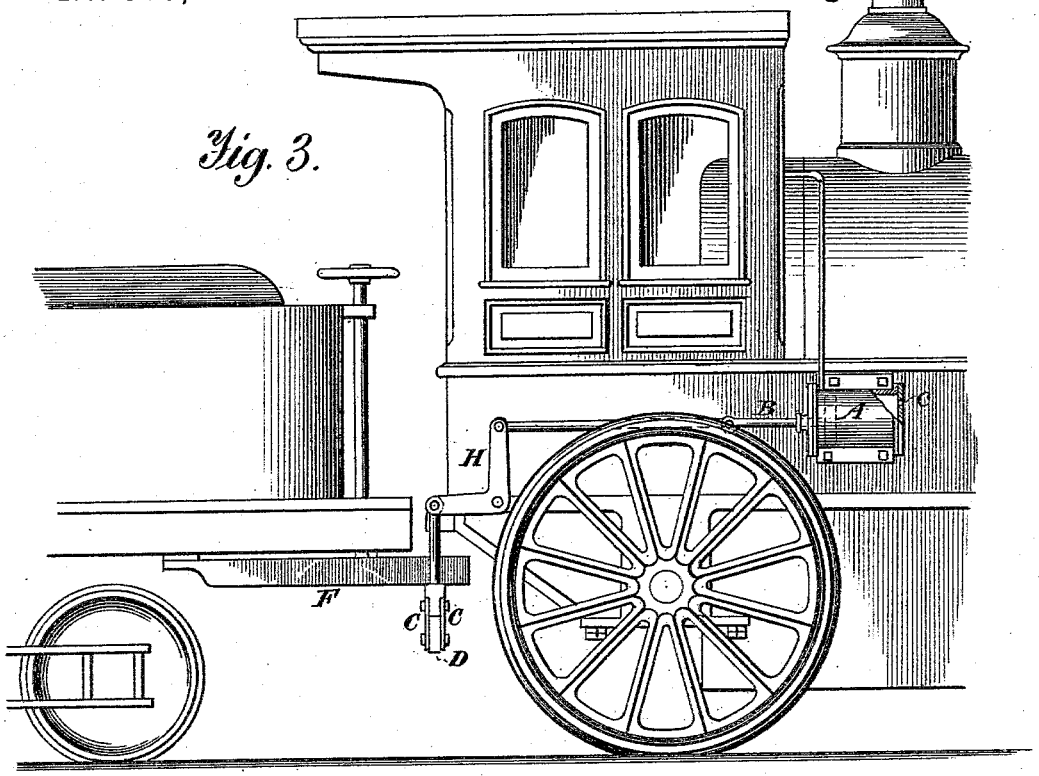


Fig. 4.

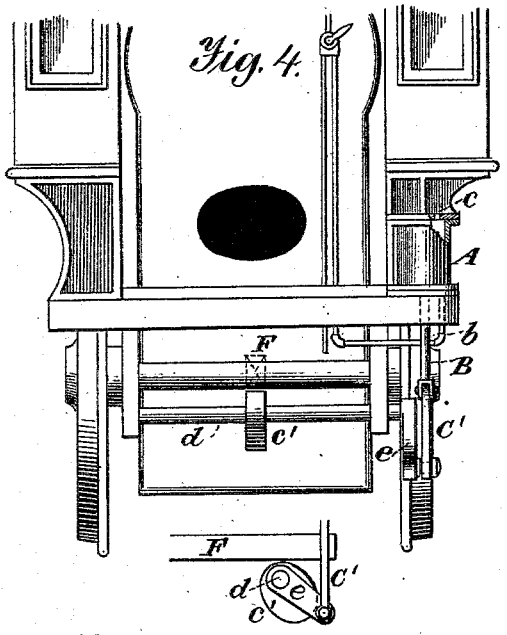
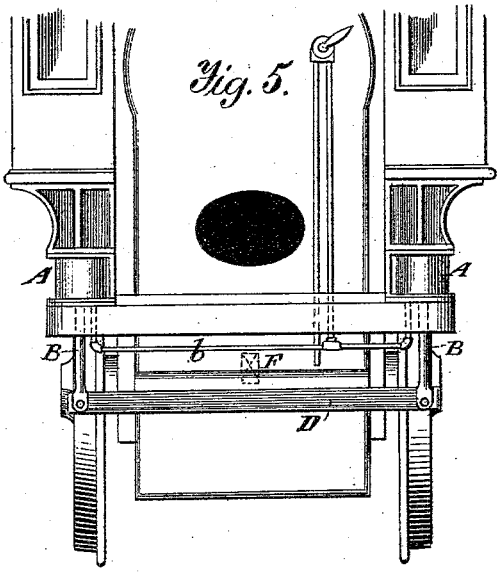


Fig. 5.



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UNITED STATES PATENT OFFICE.

MARK A. DEES, OF MOSS POINT, MISSISSIPPI.

DEVICE FOR INCREASING THE TRACTION OF LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 303,130, dated August 5, 1884.

Application filed November 16, 1883. (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 certain new and useful Improvements in Devices for Increasing the Traction of the Driving-Wheels of Locomotive-Engines, of which the following is a specification.

My invention refers to that class of traction-increasers wherein a part of the weight of the tender may be thrown upon the driving-wheels of the engine to increase their traction.

The object of my invention is to simplify and improve devices for the purpose named, by obtaining, when the device is in use, the most direct connection or attachment between the lifting medium and the tender, and effecting an entire detachment of the parts of the device upon the engine and tender, respectively, when increased traction is not needed or the train is in motion under ordinary circumstances.

In devices for increasing traction heretofore patented, a steam-cylinder has been mounted under the running-board of the cab, and the piston-rod connected with a chain joined to a transverse bar pivoted at the opposite side of the cab, said bar being in turn connected by a chain, with a longitudinal bar extending under the tender, so that the upward movement of the piston, when acting on the devices named, would partially raise the tender and throw its weight upon the driving-wheels of the locomotive. I have found in practice that the device thus arranged can be materially simplified, cheapened, and rendered more effective by the reduction of the number of its parts; by dispensing with a chain-connection between the piston and the transverse bar; by securing the longitudinal bar directly to the tender-sill, and by preventing any connection between the said transverse and longitudinal bars when the device is in its normal condition. My present invention covers a device thus simplified, cheapened, and improved.

In the accompanying drawings, Figure 1 is a side elevation of the cab end of a locomotive and the front end of a tender, showing my invention applied. Fig. 2 is a rear view of the cab, showing the application of the invention. Fig. 3 is a side view similar to Fig. 1, but showing a modified form of the invention. Figs. 4 and 5 show further modifications.

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

A is a steam, air, or hydraulic cylinder.

B is the piston-rod.

C is a link at the outer end of the piston-rod, and which unites with a transverse bar, D, extending across and under the cab, and pivoted at *a* to a link, E, secured to the framework of the engine or the cab.

Instead of a swinging link, E, a brace, as shown by dotted lines in Fig. 2, may be substituted; or the link E, as shown, may be braced, if desired. The lower part of the cylinder is connected with the boiler by a steam-pipe, *b*, having a suitable cock. The upper part of the cylinder is provided with a vent, *c*, for exhausting the air above the piston.

F is a bar attached to the sill or frame of the tender and projecting beyond the forward end of the tender, as shown in Figs. 1 and 3.

Fig. 2 shows the parts in their normal condition—that is to say, when the weight of the tender is not thrown upon the driving-wheels of the engine. The bar F, attached to the tender, is shown in dotted lines in cross-section in Figs. 2, 4, and 5; and it will be seen that in the normal position of the parts the bar D or other lifting medium is not in contact with the bar F. On admitting steam under the piston, the piston will have a certain vertical movement before the bar D will come in contact with and operate upon the bar F to raise the tender. Thus, if the stroke of the piston is twelve inches, it will be seen that the movement of the bar D at the longitudinal center of the engine and tender will be but six inches, and that the piston will, therefore, move upward six inches before the bar D engages with the bar F, and the parts are made operative for accomplishing the object in view. It is important that when the parts are in their normal condition there should be no contact or connection between the bar D and the bar F, for the irregularity of movement which necessarily exists between the engine and tender while the train is in motion would be detrimental to the several parts were there any connection between them. By keeping the parts while the train is in motion entirely out

of contact and detached in every way, any irregularity of movement between the engine and tender is permissible without jarring or in any way injuriously affecting the several parts of my invention. Chains, links, or any other means used for connecting the bars D and F must necessarily rattle and jar during the movement of the train, and the wear and tear consequent upon such employment of connections are to be avoided. It is also important that there should not be any connection whatever between the parts of the invention which are on the engine and those parts which are on the tender, to avoid unnecessary coupling and uncoupling of the parts. It is also important to allow proper and unobstructed curving.

Fig. 3 shows a modification of the invention. In this figure I use a cylinder arranged horizontally or in an inclined position under the running-board, or otherwise conveniently situated, and a bell-crank connection, H, between the piston-rod and the bar D. This connection is effected by the links C in substantially the same manner as the connection is effected between the piston-rod and the bar D by similar links in the construction shown in Figs. 1 and 2.

Fig. 4 shows a further modification. An eccentric, cam, or arm, *c'*, is mounted on a shaft, *d*, capable of partial rotation, and suitably mounted in bearings under the cab. A crank, *e*, is at the end of the shaft, and connected by a rod or link, C', to the piston-rod B. Normally, the eccentric, cam, or arm *c'* is out of contact with the tender-bar F, but the partial revolution of the crank, which must be arranged to stand off from the dead center, will bring the eccentric and tender-bar in contact, and the continuation of the movement will lift the tender.

Fig. 5 shows a further modification. A cylinder is placed at each side of the cab, of half the stroke of the single cylinder shown in Figs. 1 and 2. Each piston connects with the transverse bar D, and a parallel upward movement of the bar causes it to be brought in contact with the tender-bar F to lift the tender.

These modified forms of the invention may be found preferable with some classes of engines, or under particular circumstances, which it will not be necessary to here enumerate.

I disclaim as a part of my present invention the invention for increasing traction and braking described in an application for Letters Patent filed by me April 27, 1883, Serial No. 93,120; but,

Having described my invention, I claim—

1. In a traction-increaser, the combination, with a tender, of a bar directly and rigidly connected with the sill or frame of the tender and projecting beyond the front end thereof, substantially as set forth.

2. In a traction-increaser, a bar extending beyond the front end of the tender, combined with a transverse bar under the rear end of the engine, and adapted to be lifted by suitable means, which transverse bar normally is out of contact with the tender-bar, substantially as set forth.

3. In a traction-increaser, a cylinder or cylinders and a transverse bar having vertical movement given to it by said cylinder or cylinders, combined with a tender-bar projecting over or across said transverse bar, substantially as set forth.

4. In a traction-increaser, a cylinder or cylinders mounted on the engine, and a transverse bar having connections with said cylinder or cylinders and adapted to be lifted thereby, combined with a tender-bar projecting over or across said transverse bar, and adapted to be brought in contact therewith by the upward movement of said transverse bar, to lift the tender, but which tender-bar is normally out of contact with the transverse bar, substantially as set forth.

In testimony whereof I have hereunto set my hand this 12th day of November, A. D. 1883.

MARK A. DEES.

Witnesses:
GEORGE H. HOWARD,
E. L. WHITE.