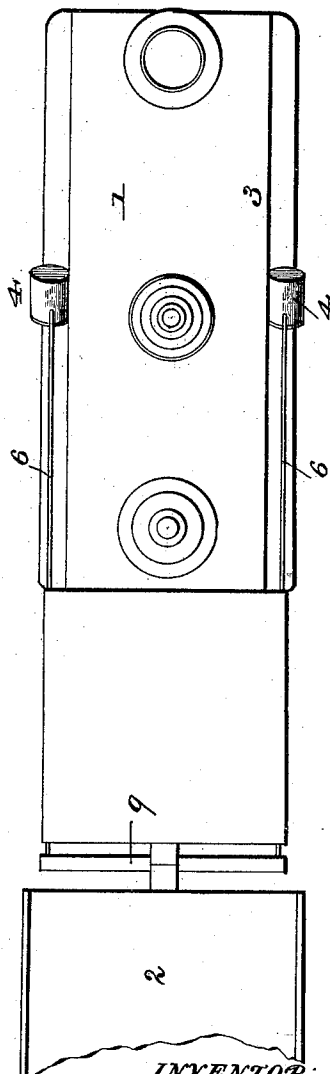
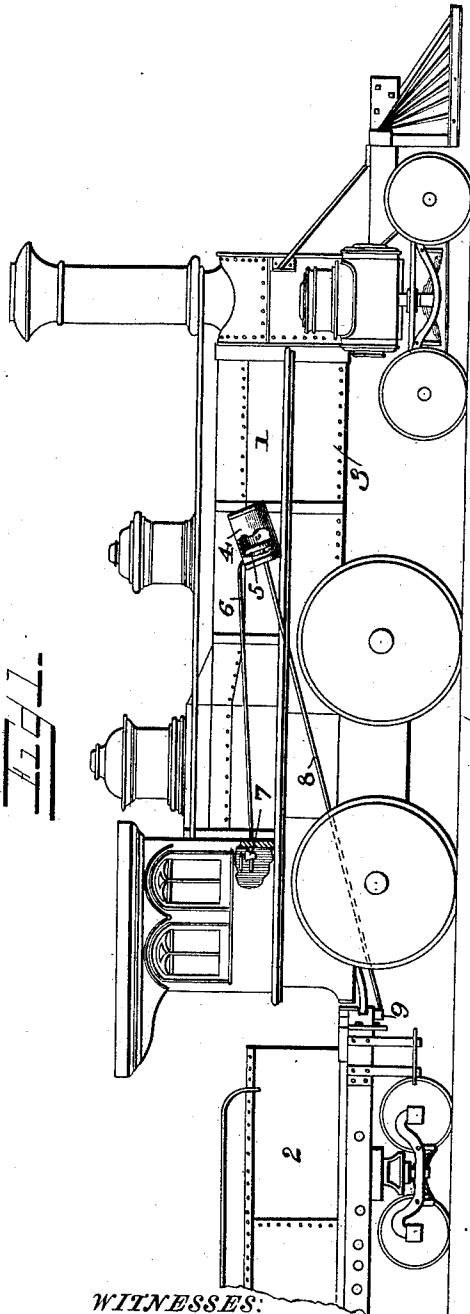


(No Model.)

H. A. GILES.  
TRACTION INCREASER FOR LOCOMOTIVES.

No. 462,944.

Patented Nov. 10, 1891.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

HARVEY A. GILES, OF BELLE FOURCHE, SOUTH DAKOTA.

## TRACTION-INCREASER FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 462,944, dated November 10, 1891.

Application filed May 16, 1891. Serial No. 392,983. (No model.)

*To all whom it may concern:*

Be it known that I, HARVEY A. GILES, a citizen of the United States, and a resident of Belle Fourche, in the county of Butte and State of South Dakota, have invented certain new and useful Improvements in Attachments to Locomotive-Engines; and I do hereby declare that the following is a full, clear, and exact description of my invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in means for increasing the traction or adhesion between the driving-wheels of a locomotive and a railway-track. As is well-known, in ascending steep grades, turning curves, or when drawing exceptionally heavy loads the driving-wheels of locomotives are very liable to slip on the rails, not only causing delay in running the trains, but increasing the wear and tear, and frequently resulting in damage or injury to the locomotive on the tracks. It is now generally the custom in railroads where there are long stretches of heavy grades to substitute for the ordinary light-weight locomotives engines of heavier weight, by which the necessary adhesion to the rails will be secured, thus causing an enhanced expense in running the trains. It is not practicable to run these heavy locomotives throughout the whole length of the road, owing to the great wear and tear on the tracks where they are not absolutely required.

The object of my invention is to provide means whereby the traction or adhesion between the driving-wheels and the rails of an ordinary locomotive may be increased when desired—for instance, as when ascending grades—and reduced to normal when on a level track.

The invention consists in the novel construction and combination of parts, hereinafter fully described, and specifically pointed out in the claim.

In the accompanying drawings, Figure 1 is a side view of a locomotive and tender constructed in accordance with my invention. Fig. 2 is a plan view of the same.

In the said drawings, the reference-numeral

1 designates a locomotive, and 2 a tender of any ordinary construction.

Secured to the boiler 3 at any convenient point upon each side thereof is a steam-cylinder 4, having a piston 5 and a steam-pipe 6 communicating therewith below the piston and also communicating with the boiler and provided with a three-way cock 7. The piston-rods 8 of the pistons 5 extend downwardly and rearwardly and are connected at their lower ends with a cross-bar 9, pivoted or connected to the draw-bar or other part of the tender.

The operation is as follows: When running on a level or ordinary grade, the three-way cocks 7 are turned so that there is free communication between the cylinders 4 and the atmosphere, while communication between the cylinders and the boiler is cut off. When it is desired to increase the pressure upon the driving-wheels of the locomotive, and consequently the traction therebetween and the rails, the three-way cocks are turned so as to shut off communication with the atmosphere and open communication between the boiler and the cylinders. This will cause the steam-pressure to be exerted against the pistons, the tendency of which is to force the locomotive downward, causing the driving-wheels to bear with increased pressure upon the rails, and consequently to increase the adhesive effect therebetween.

Having thus described my invention, what I claim is—

The combination, with a locomotive and its tender, of steam-cylinders secured to the locomotive, the steam-pipes connecting the cylinders with the boiler, pistons within each cylinder, and piston-rods leading from said pistons downwardly and rearwardly and secured directly to the tender, whereby the draft or pull of the train is utilized to increase the traction of the locomotive with the rails, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

HARVEY A. GILES.

Witnesses:

JOHN GAUL,  
W. HUXLEY.