

(No Model.)

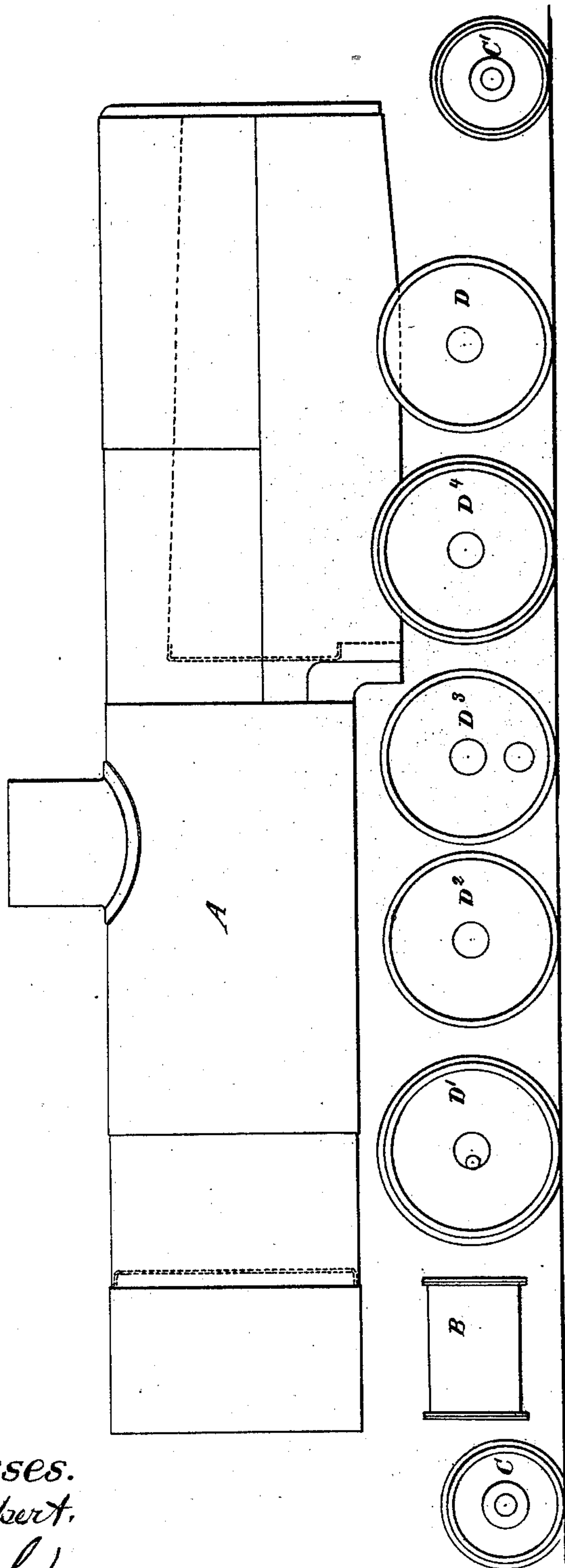
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A. MITCHELL.  
LOCOMOTIVE.

No. 294,252.

Patented Feb. 26, 1884.

Fig. 1.



Witnesses.  
A. Ruppert.  
W. T. Cole

Inventor.  
Alexander Mitchell,  
by H. W. J. H. Wang,  
attys

(No Model.)

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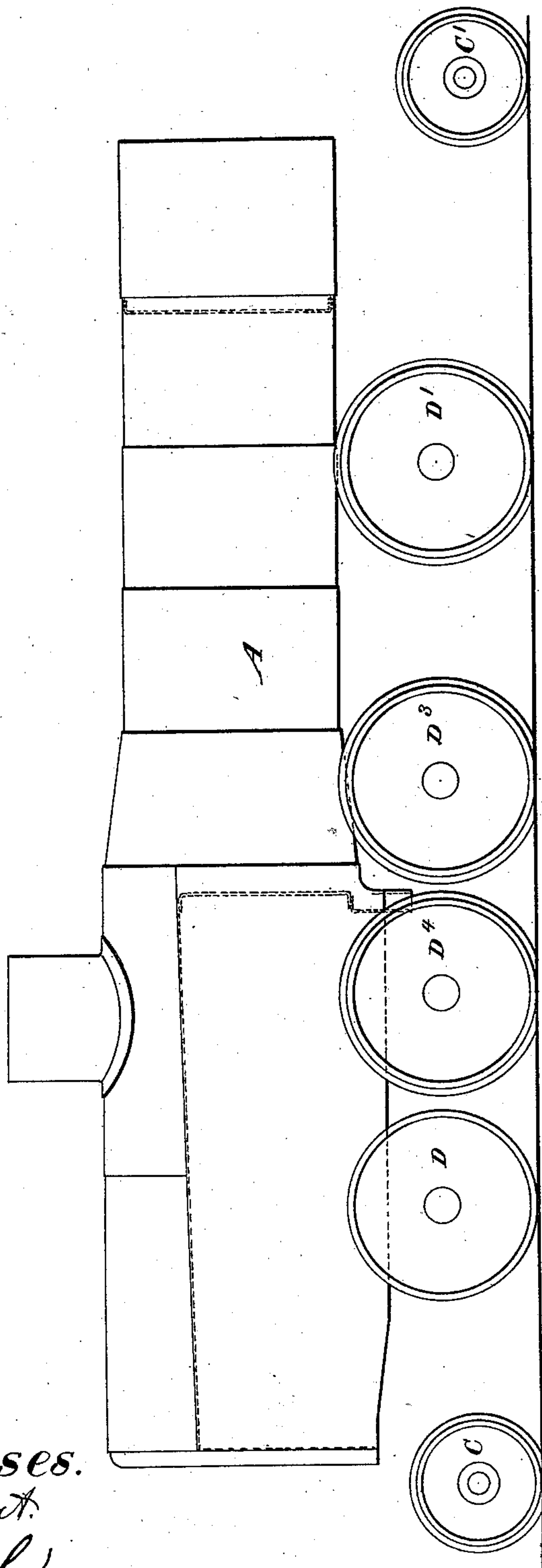
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Fig. 2.



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*Alexander Mitchell,*  
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*att'y.*

(No Model.)

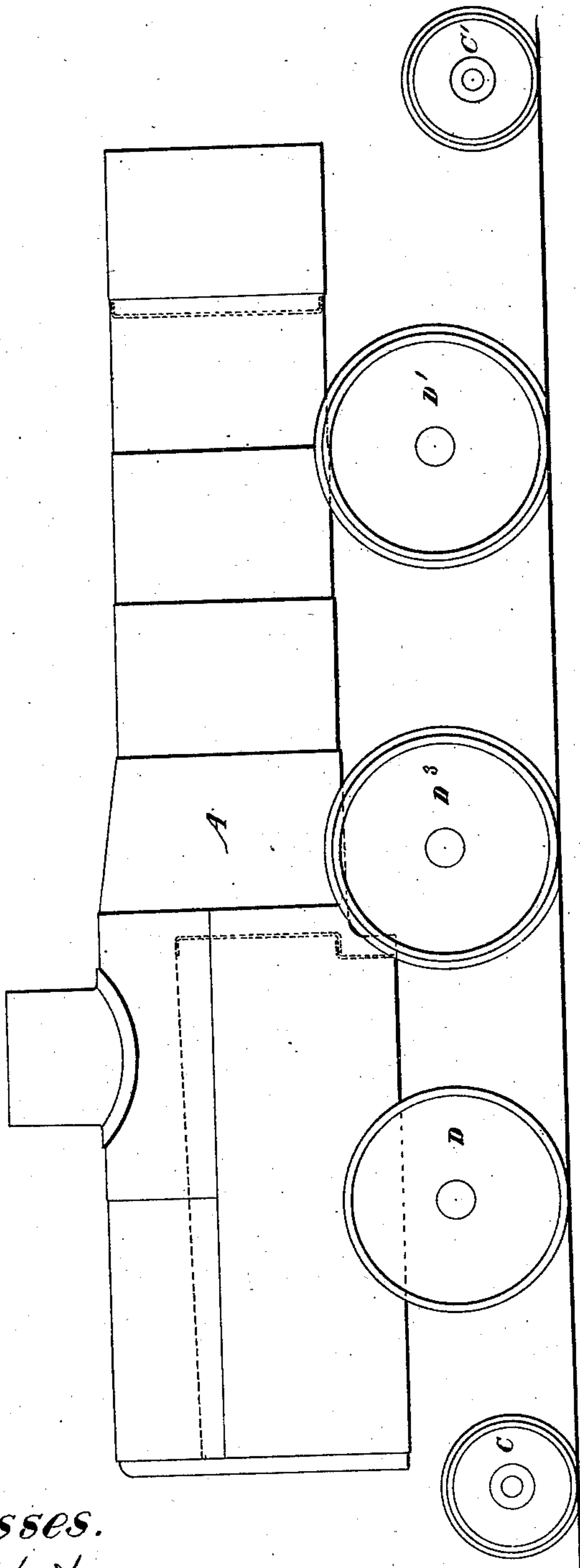
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Fig. 3.



*Witnesses.*  
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*Alexander Mitchell,*  
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# UNITED STATES PATENT OFFICE.

ALEXANDER MITCHELL, OF WILKES-BARRÉ, PENNSYLVANIA.

## LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 294,252, dated February 26, 1884.

Application filed July 31, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ALEXANDER MITCHELL, of Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented certain  
5 new and useful Improvements in Locomotives, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of the invention is to obtain a  
10 less rigid length of wheel-base than is found in ordinary forms of locomotives, to adapt the engine for use on roads having steep grades and sharp curves, to decrease flange friction, and to increase the tractive or adhesive power  
15 of the engine without injuriously affecting the rail. The advantages derived from increasing the number of bearing-points of the engine upon the rail and distributing the weight of the engine over a large extent of rail by employing a number of pairs of drivers are well  
20 known. The effective and economical tractive power or adhesion of the engine must depend upon the proper distribution of the weight over or upon the rail, and this weight can be increased without danger of deflecting the rail  
25 in proportion to the number of the drivers or the bearing-points which support the weight of the superstructure. For this and other reasons it has been for many years the practice to  
30 employ three, four, five, or more pairs of driving-wheels coupled together by a rod-connection.

My invention relates to a locomotive-engine having three, four, five, or more pairs of driving-wheels, and a truck under each end of the  
35 boiler, the rear drivers having plain or flangeless tires. Where five pairs of drivers are employed, one or more pairs located between the front pair and that pair situated under or near  
40 the front end of the fire-box may be also plain; but it is essential to my invention that in all cases the rear pair of drivers shall be plain. Where five or more pairs of drivers are used the front pair may be plain. In all constructions under my invention the overhang at each  
45 end of the boiler is supported by a truck, the truck being constructed to have any of the known sliding, swinging, and rotary motions, and suitably equalized with the front and rear  
50 driving-wheels. The invention is not intended to be restricted to the use of any special style of truck, which may consist of one to four

pairs of wheels, with or without a radius-bar.

In the accompanying drawings, Figure 1 is a side elevation of a locomotive-engine having  
55 five pairs of drivers. Fig. 2 is a similar view of an engine having four pairs of drivers. Fig. 3 is a similar view of an engine having three pairs of drivers. Each figure shows an embodiment of my invention. 60

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

A is the locomotive-boiler. B shows one of the cylinders. C and C' represent, respectively, the forward and rear trucks, the wheels of  
65 which are flanged. D shows the rear pair of driving-wheels, which occupy a position about midway of the length of the fire-box, and which in all modifications of my invention are plain or without a flange. D' is the front pair of  
70 drivers.

Referring particularly to Fig. 1, the front pair of drivers, D', are flanged. The intermediate pairs of drivers, D<sup>2</sup> and D<sup>3</sup>, are plain, while the pair D<sup>4</sup>, which are under the fire-box or  
75 near its end, are flanged. If desired, the front drivers, D', may be plain, in which case the intermediate pair, D<sup>2</sup>, will be flanged, the pair D<sup>3</sup> plain, and the pair D<sup>4</sup>, which are under the fire-box or near its end, flanged. In Figs. 2  
80 and 3 the front pair of drivers, D', are flanged, as also are the intermediate pair, D<sup>3</sup>.

I am aware that heretofore engines have been constructed with a flat driver at the front of the engine in connection with a front truck; but  
85 the results accomplished by such construction are not the same as are effected by my invention. The distance from the center of the front truck-axle to the center of the second driver from the front (said second driver having a  
90 flanged tire) is greater than the distance, in my construction, from the center of the rear truck-axle to the center of the nearest driver having a flanged tire, the distance in the latter case being always at least as much less as  
95 the length of the cylinder. Where a flanged driver is used in front and a plain driver and a truck in the rear, in accordance with my invention, one truck helps the other to guide the engine, the rigid wheel-base being shorter be-  
100 tween the centers of flanged drivers than where flanged drivers are used front and rear, which is the usual practice on the ordinary "Consolidation" engines, and no longer than where the

front driver is plain on the said class of engines. Experience has demonstrated that in the Consolidation engines having flat drivers in front the flanges of their drivers are worn  
5 in curving, on account of the distance being too great from the center of the front truck-axle to the center of the second front or nearest flanged driver. The Consolidation engines having flanged front and rear drivers also wear  
10 the flanges and rails on account of the length of rigid wheel-base, which will be obviated by the use, in accordance with my invention, of flat drivers in connection with a truck at the rear end of the engine.

Having described my invention, I claim— 15  
A locomotive-engine having three, four, five, or more pairs of driving-wheels, and a truck at each end of the boiler, the rear driving-wheels having plain or flangeless tires, substantially  
20 as set forth.

In testimony whereof I have hereunto set my hand and seal this 25th day of July, A. D. 1883.

ALEXANDER MITCHELL. [L. S.]

Witnesses:

J. V. DARLING,  
GEORGE H. FISHER.