No. 844,768. PATENTED FEB. 19, 1907.

W. L. AUSTIN.

LOCOMOTIVE.

APPLICATION FILED MAR. 8, 1906.

2 SHEETS—SHEET 1.

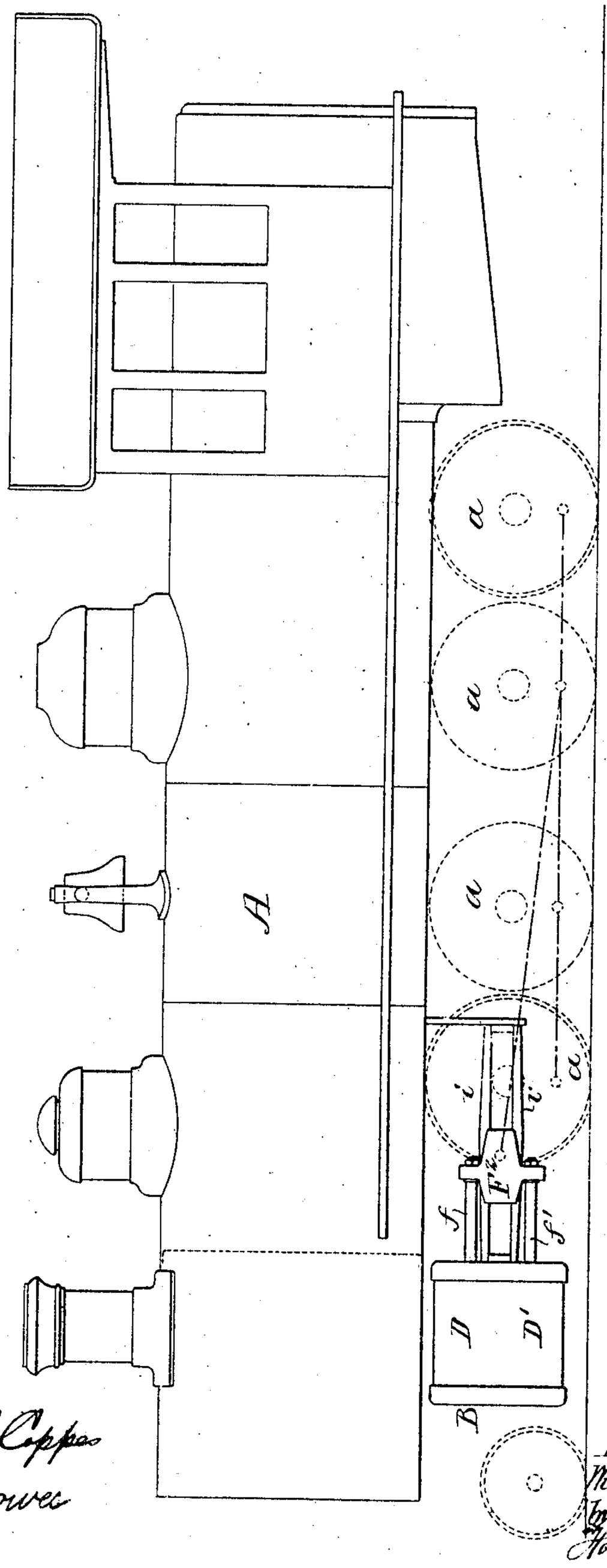

Fig. 1.

Witnesses:
Augustus B. Coppes
Wills A. Burrowes

Inventor:
William L. Austin.
by his Attorneys,
Howson & Howson

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2 SHEETS—SHEET 2.

Fig. 4.

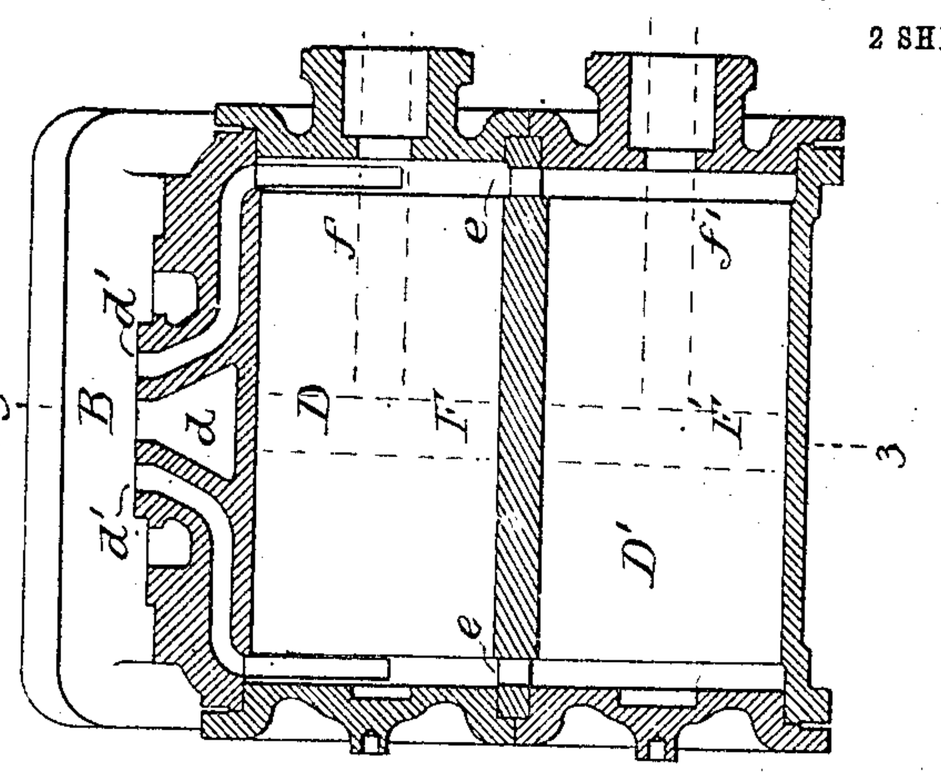


Fig. 5.

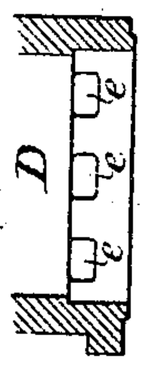


Fig. 3.

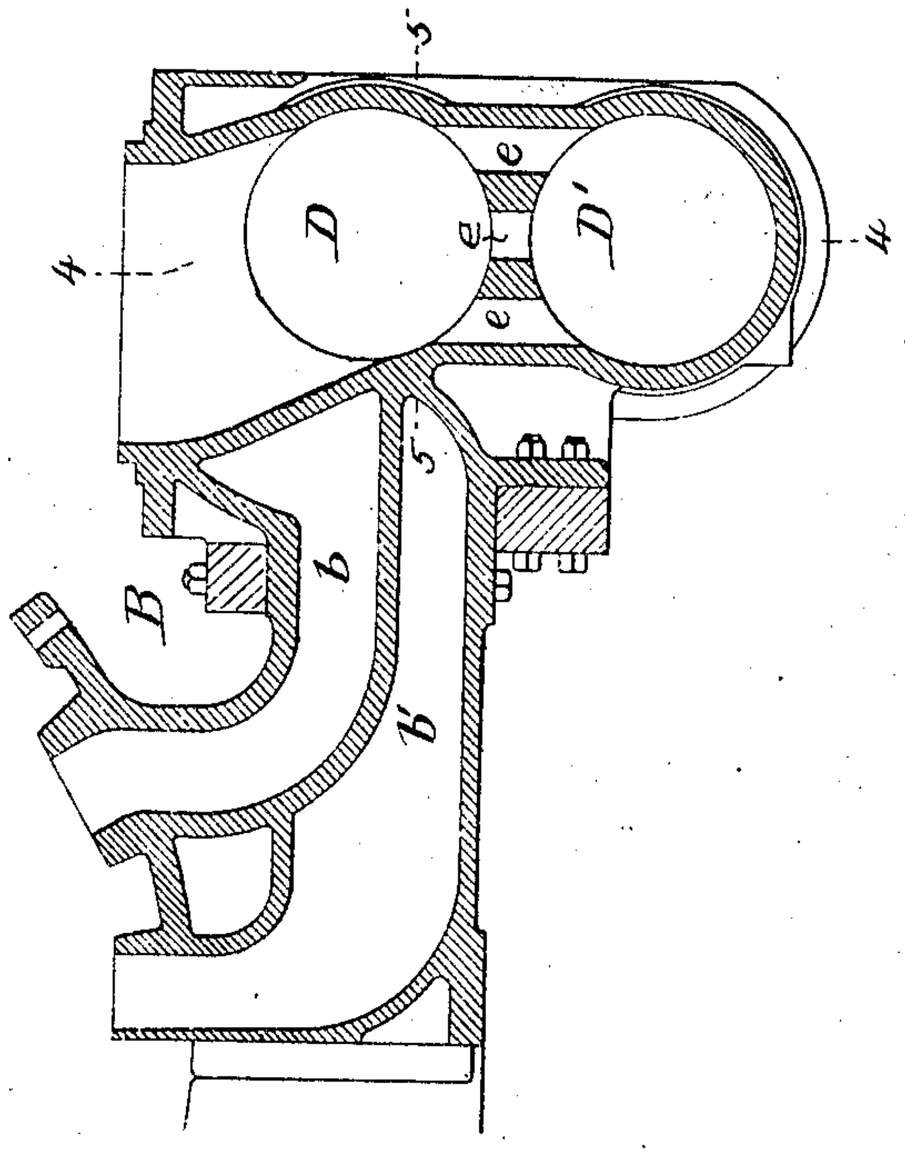
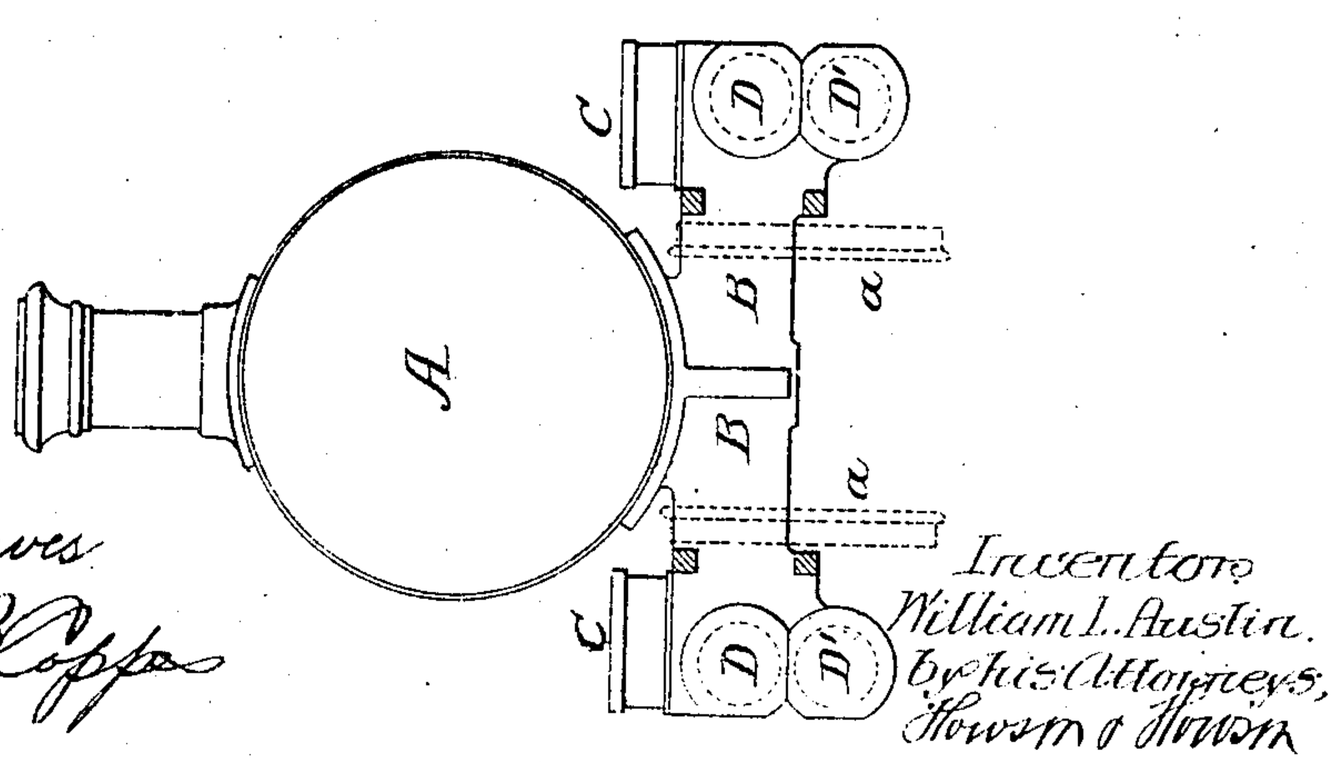


Fig. 2.



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Inventor:
William L. Austin.
by his Attorneys,
Howson & Howson

UNITED STATES PATENT OFFICE.

WILLIAM L. AUSTIN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO BURNHAM, WILLIAMS & COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A FIRM.

LOCOMOTIVE.

No. 844,768. Specification of Letters Patent. Patented Feb. 19, 1907.

Application filed March 8, 1906. Serial No. 304,993.

To all whom it may concern:

Be it known that I, WILLIAM L. AUSTIN, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Locomotives, of which the following is a specification.

The object of my invention is to construct a locomotive of the single-expansion type with an increased piston area without extending the cylinders beyond the normal width of the locomotive. This object I attain in the following manner, reference being had to the accompanying drawings, in which—

Figure 1 is a side view, partly in diagram, illustrating my invention. Fig. 2 is an end view, also partly in diagram. Fig. 3 is a section on the line 3 3, Fig. 4, showing the cylinder-casting. Fig. 4 is a sectional view on the line 4 4, Fig. 3; and Fig. 5 is a sectional view on the line 5 5, Fig. 3.

A locomotive is restricted in width by almost every railroad, due to the width of tunnels, embankments, bridge-foundations, and structures at one side of the track, and it is the common practice of railroads to furnish a chart giving the maximum width and height, and all rolling-stock must be constructed so as to come within these limits. As locomotives have become more powerful the entire space allowed by the railroad companies has been utilized, and at the present time the cylinders are just within the maximum limit; but heavier and more powerful locomotives are now demanded, and in order to supply the demand without increasing the width I have divided the single cylinder into two parts, placing one under the other, the combined surface area of the pistons being greater than in engines heretofore built with single cylinders on each side, and this arrangement enables me to build a powerful locomotive within the specified width required by the railroad companies.

Referring now to the drawings, A is the boiler of the ordinary type. *a a* are the wheels. (Shown by dotted lines in Figs. 1 and 2.) B B are the saddles of the locomotive, supported by the frame and fitting the smoke-box of the boiler in the usual manner. These saddles each contain the two cylinders D D′. In the present instance the cylinder D′ is arranged directly below the cylinder D, as clearly illustrated in Figs. 3 and 4.

b is the steam-inlet passage to the valve-chest C, which is mounted above the cylinder-casing, and *b′* is the exhaust leading from the central port *d* to the exhaust-nozzle. *d′ d′* are the steam-ports leading from the chest to the ends of the cylinder D, and the slide-valve is arranged to uncover the several ports in the ordinary manner. It will be understood that any form of valve may be used without departing from my invention; but in the present instance I have simply shown the valve-surface arranged for the slide-valve of the D type. Passages *e e* at each end of the cylinder structure form communications between the cylinders D and D′, so that part of the steam admitted into one end of the cylinder D will flow into the same end of the cylinder D′, so that the pistons of the cylinders will travel in unison. The pistons F F′ are connected by rods *f f′* to a common cross-head F², arranged to slide on ways *i i′* of any suitable construction, and the driving-wheels are connected to the cross-head in the ordinary manner.

By this construction it will be seen that I can build a very powerful single-expansion locomotive without increasing the width of the locomotive beyond the normal.

I claim—

1. The combination in a locomotive of the single-expansion type, having two cylinders on each side, one directly below the other, of a valve-chest supplied with steam directly from the boiler, there being ports between one cylinder and the valve-chest, and passages at each end forming direct connection between the cylinders, substantially as described.

2. The combination in a locomotive of the single-expansion type, of two saddles, each saddle containing two cylinders, one situated below the other, there being passages at each end of the saddles forming direct communication between the two cylinders, and a valve-chest on each saddle supplied with steam directly from the boiler and having ports in the saddles forming communication between one of the cylinders and the valve-chest, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WM. L. AUSTIN.

Witnesses:
LEON P. THOMAS,
W. N. TUTTLE.