

W. S. HUDSON.

Locomotives.

No. 136,729.

Patented March 11, 1873.

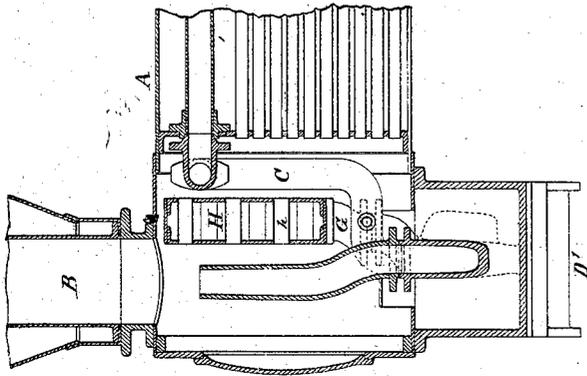


Fig. 2.

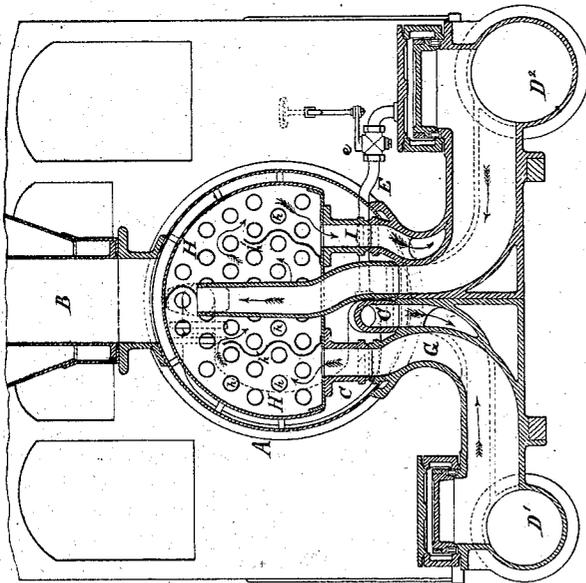


Fig. 1.

Witnesses:

Arnold Hermann

W. C. Dey

Inventor:

W. S. Hudson
by his attorney *J. B. Stearns*

UNITED STATES PATENT OFFICE.

WILLIAM S. HUDSON, OF PATERSON, NEW JERSEY.

IMPROVEMENT IN LOCOMOTIVES.

Specification forming part of Letters Patent No. 136,729, dated March 11, 1873.

To all whom it may concern:

Be it known that I, WILLIAM S. HUDSON, of Paterson, Passaic county, New Jersey, have invented certain Improvements relating to Locomotives, of which the following is a specification:

I employ two cylinders and pistons, connected as usual to the driving-wheels, and provided with suitable valve-gear and with means for admitting steam directly to each when required for starting the train or for ascending inclines. But I adapt the engine for more economical working under ordinary conditions by taking the live steam from the boiler directly only into one cylinder, and exhausting it therefrom into a chamber surrounded by the products of combustion in the smoke-box, from whence it is led in a dried and more or less superheated condition into the other cylinder. The cylinders are preferably different in size, the one which ordinarily receives the live steam being only about three-fourths the diameter of the other.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawing forms a part of this specification.

Figure 1 is a cross-section, and Fig. 2 is a longitudinal section through the front part of a locomotive.

The drawing represents the novel parts with so much of the ordinary parts as is necessary to indicate their relation thereto.

Similar letters of reference indicate corresponding parts in both the figures.

A is the front end of the boiler, B the smoke-pipe, and C the main steam-pipe conveying steam to the cylinders D. The latter will, when it is necessary to distinguish them, be referred to as D¹ D², the smaller being marked D¹ and the larger D². E is a pipe, which may be of smaller diameter than the main pipe C, provided with a valve, e, controlled by the engineer from the foot-board. On opening this valve e the live steam is admitted directly to the cylinder D²; when it is closed the live steam is admitted only to the cylinder D¹. G is a pipe leading the exhaust from the cylinder D¹ into a broad, flat vessel, H, suspended in the smoke-box and thickly perforated with thimbles or short tubes h. This serves as a drier and superheater. After passing through this the steam is conducted by the pipe I to the cylinder D². I pro-

vide one or more partial partitions, h', in the superheater H, which compels the steam to circulate actively through all parts and absorb a large amount of heat from the extended heated surface. The steam discharged from the cylinder D² may be employed to increase the draft, as usual. The valves of both cylinders may be worked by the link-motion or any other suitable means.

My invention in nowise interferes with the action of all the ordinary improvements and variations in the construction and arrangement of the locomotive. I propose to employ my improvement in connection with all the ordinary or suitable styles of construction.

The economy of fuel due to the working of steam from one cylinder into the other has been long known; but I am not aware that any have before so constructed and arranged a locomotive as to adapt it to this style of working.

Some portions of my invention may be employed without the others with some degree of success; but I prefer the whole, combined and arranged as shown.

I claim as my invention—

1. The superheating-vessel H, in the form of a broadly-extended diaphragm, perforated by tubes h and provided with one or more partial partitions, h', arranged as herein specified.

2. The arrangement, in the smoke-box of a locomotive, of a drying and superheating vessel, with connections to the two cylinders, the whole so operated that the live steam shall be received from the boiler into one cylinder and exhausted therefrom into the other cylinder through the said superheater, as herein specified.

3. A locomotive having a secondary live-steam pipe, E, leading to the second cylinder D² and controlling-valve e, with means for operating from the foot-board, in combination with the main steam-pipe C leading to the other cylinder D¹, and arranged for joint operation relatively to the boiler A, and the means for exhausting from the one cylinder into the other and superheating, as herein specified.

In testimony whereof I have hereunto set my hand this 6th day of December, 1872, in the presence of two subscribing witnesses.

WM. S. HUDSON.

Witnesses:

WM. C. DEY,
ARNOLD HÖRMANN.