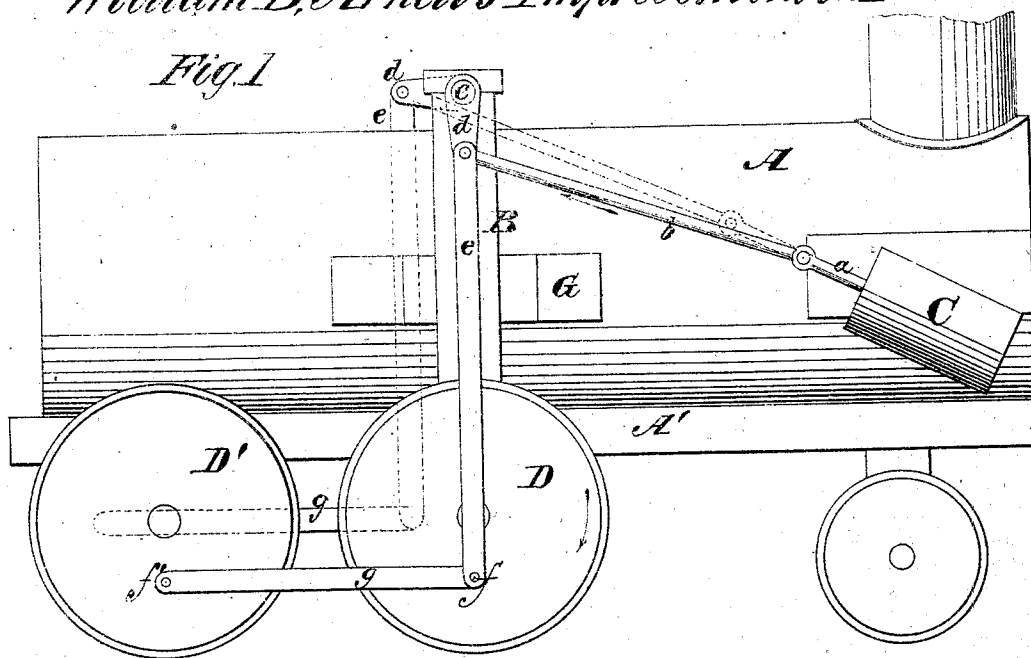


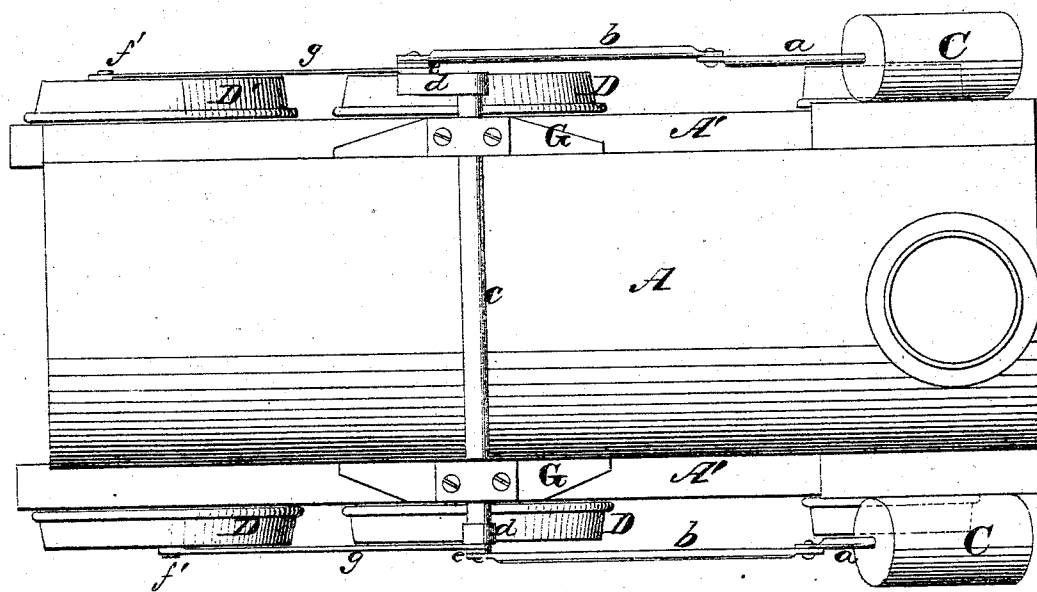
William D. Arnett's Improvement in Locomotives



No. 120,180.

Patented Oct. 24, 1871.

Fig. 2



Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM D. ARNETT, OF DENVER CITY, COLORADO TERRITORY.

IMPROVEMENT IN LOCOMOTIVES.

Specification forming part of Letters Patent No. 120,180, dated October 24, 1871.

To all whom it may concern:

Be it known that I, WILLIAM D. ARNETT, of Denver City, in the county of Arapahoe and Territory of Colorado, have invented an Improvement in Locomotives; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a side view of a locomotive having my improvement applied to it. Fig. 2 is a top view of the same.

Similar letters of reference indicate corresponding parts in both figures.

The object of this improvement is to interpose pitmen-rods and a two-throw crank-shaft between inclined steam-cylinders and the driving-wheels, and so arrange said parts that the power will be transmitted vertically to the rear driving-wheels through the medium of toggles operating alternately on opposite sides of the locomotive, as will be hereinafter explained.

The following description of my invention will enable others skilled in the art to understand it.

In the accompanying drawing, A represents the boiler of a locomotive, and A' the frame thereof, which are supported upon six wheels, four of which, D D', are the driving-wheels. Directly above the axle of the forward driving-wheels D D standards B B are erected upon the frame A' on opposite sides of the boiler, and securely attached to this boiler by means of brackets G G or in any other suitable manner. The

upper ends of the standards B B are provided with journal-boxes for a horizontal transverse crank-shaft, *c*, carrying cranks *d d* on its ends, which are arranged at quarter strokes. To the wrist-pin of each crank two pitmen-rods, *b* and *c*, are connected. The pitmen-rods *ee* are connected at quarter strokes to wrist-pins *f* on the outer faces of the driving-wheels D D, which latter are connected to the rear driving-wheels D' D' by means of rods *g g* and wrist-pins *f f*. The pitmen-rods *b b* are connected to piston-rods *a a*, the pistons of which work in steam-cylinders C C, whose axes if extended backward would intersect the axis of the crank-shaft *c*.

It will be seen from the above description that my improvement can be applied to well-known forms of locomotives by changing the position of the crank-shaft *c*, the standards B B and the pitmen-rods *ee*. It will be seen that during the down strokes of the cranks *d d* these cranks, in combination with the pitmen-rods *ee*, form toggle-joints and afford an advantageous mode of applying power to turn the wheels.

Having described my invention, what I claim as new is—

The combination of the pitmen-rods *ee b b*, crank-shaft *c*, frame B, and inclined cylinders C C, all arranged and operating on the driving-wheels D D, substantially as described.

Witnesses: WILLIAM D. ARNETT.

VINCENT D. MARKHAM,
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