

W. D. Arnett,

Motor.

No. 111,003.

Patented Feb. 7, 1871.

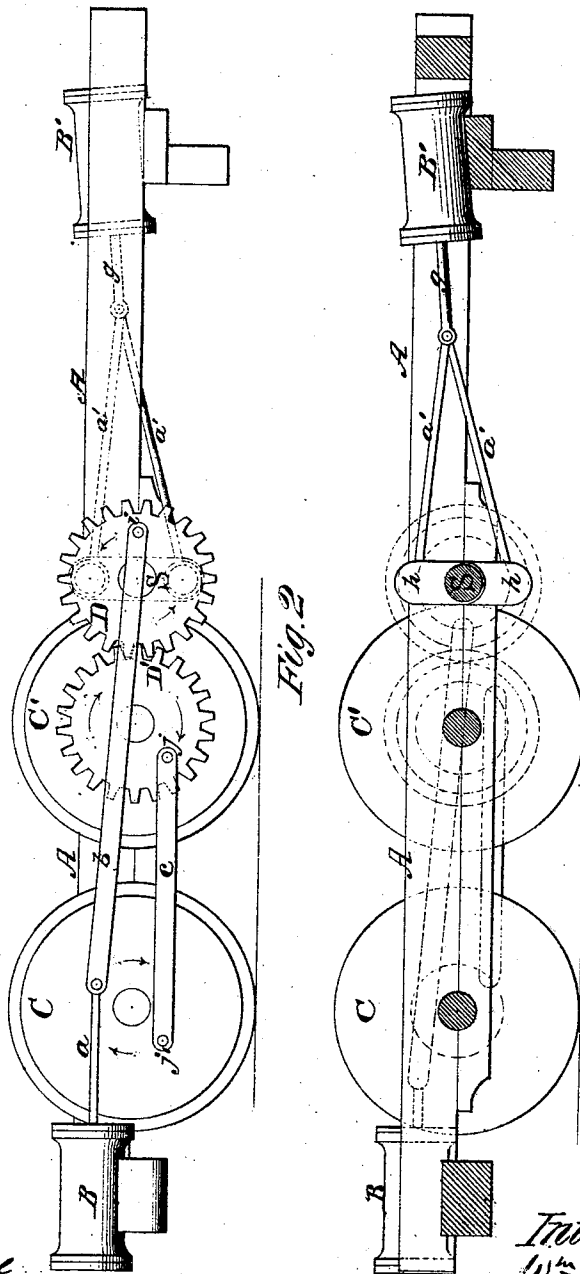


Fig. 2

Witnesses.
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by
M^{rs} M. Kenwick & Lawrence.

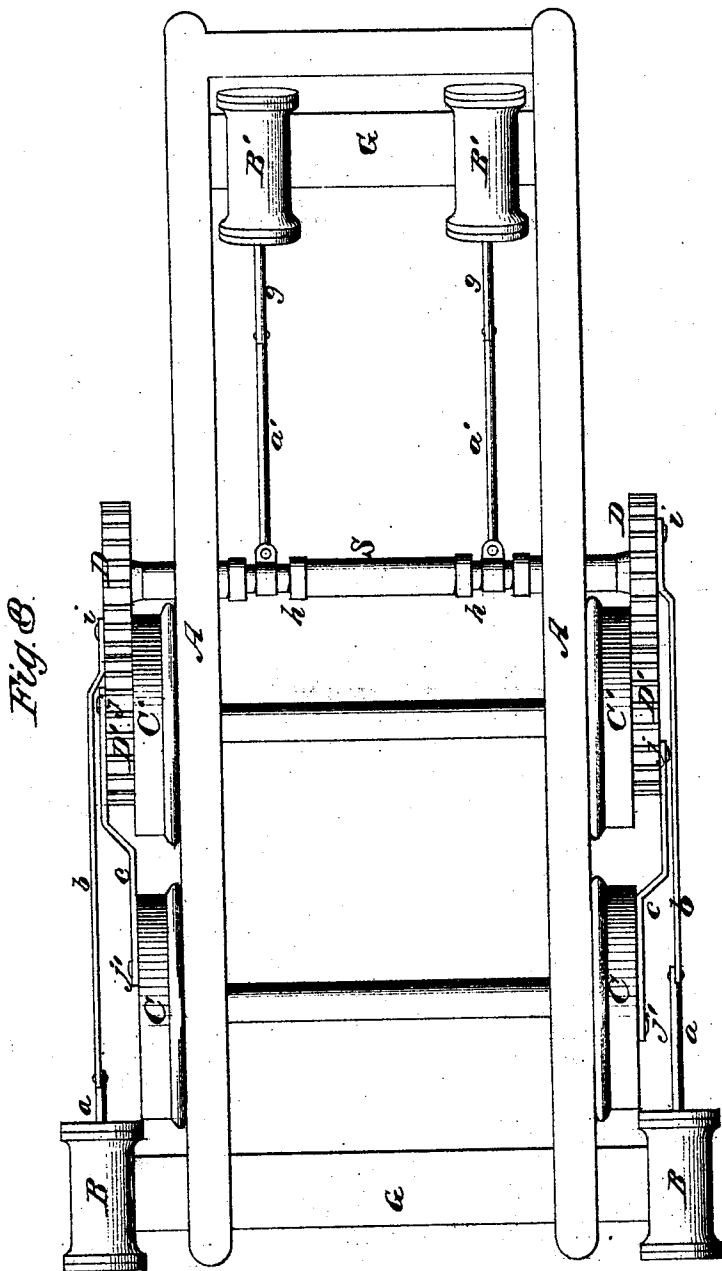
W. D. Arnett,

2. Sheets, Sheet 2,

Motor.

No. 111,603.

Patented Feb. 7, 1871



Witnesses,
 R. H. Ashwell,
 G. N. Campbell,

Inventor
 W. D. Arnett
 by
 Mason, Fenwick & Lawrence

United States Patent Office

WILLIAM D. ARNETT, OF DENVER, COLORADO TERRITORY.

Letters Patent No. 111,603, dated February 7, 1871.

IMPROVEMENT IN DRIVING-POWER FOR LOCOMOTIVES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, WILLIAM D. ARNETT, of Denver, in the county of Arapahoe and Territory of Colorado, have invented a new and improved Driving-Power for 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, plate 1, is a side elevation of a locomotive-carriage having my invention applied to its wheels.

Figure 2, plate 1, is a longitudinal section through the same.

Figure 3, plate 2, is a top view of fig. 1.

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

This invention relates to an arrangement of the steam-cylinders, the pitman-rods, and cranks upon the frame of a locomotive, whereby the power is more equally and advantageously distributed to the driving-wheels than hitherto.

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

The frame A of the locomotive may be constructed in the usual well-known manner, and the driving-wheels C C' applied thereto in a manner which is well understood by builders.

At or near each end of this frame A a cylinder-bed, G, is applied, on which two steam-cylinders are applied, which may receive steam from the boiler in any suitable manner.

The piston-rods *a a* of the rear cylinders B B are connected to pitman-rods *b b*, which extend forward, and are applied to wrist-pins *i i* on the surfaces of two spur-wheels D D.

The wheels D D are keyed on the ends of a crank-shaft, S, having two cranks *h h*, to which the pitman-rods *a' a'* of piston-rods *g g* are connected.

The piston-rods *g g* are applied to pistons B' B' at or near the front end of frame A.

The points of attachment of the pitman-rods *b b* and *a' a'* are so arranged relatively to each other that the shaft S is taken hold of and power applied to it by the four cylinders at four points, in a circle or at quarter strokes, so that, practically, the shaft S has

four cranks, which are equidistant from the axis of said shaft.

The spur-wheels D D engage with the teeth of spur-wheels D' D', which are keyed on the end of the axles of the front drivers C' C'. Thus motion is transmitted from the crank-shaft S to said drivers.

The wheels C' C' communicate rotary motion to the rear drivers C C through the medium of two connecting-rods *c c*, which are applied to wrist-pins *j j* on spur-wheels D' D', and to wrist-pins *j' j'* on the wheels C C.

The wrist-pins on wheels D' D' C C have the same length of strokes as the wrist-pins *i i* and cranks *h h*, so that all the wheels rotate at the same degree of speed.

The wrist-pins *j j* and *j' j'* are so, relatively to one another and to the wrist-pins *i i* and cranks *h h*, that there are four impulses on each side of the frame A, operating at different points of a circle to propel the carriage; that is to say, by dividing a circle into eight equidistant points, and distributing these points as described, we have the arrangement above described.

By this arrangement the locomotive will not act against itself nor against traction, the forward pressure is counterbalanced by the backward pressure, and power is applied uniformly to the crank-shaft; hence, it will be seen that there is a very rapid application of the propelling impulses to the wheels, which will greatly assist in ascending grades, as well as in the propulsion generally.

If desirable, the spur-wheels may be located inside of the frame A; but I prefer to have them outside thereof, for convenience of access and repairs.

Having described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

The relative arrangement of the wrist-pins *i i j j j' j'* and cranks *h h*, in combination with the connecting-rods, the spur-wheels D D', and steam-cylinders B B', substantially as described, and for the purposes set forth.

WILLIAM D. ARNETT.

Witnesses :

WM. RAYMOND,
M. L. HERR.