

William D. Arnett Impt in Locomotives.

117031 *Fig. 1*

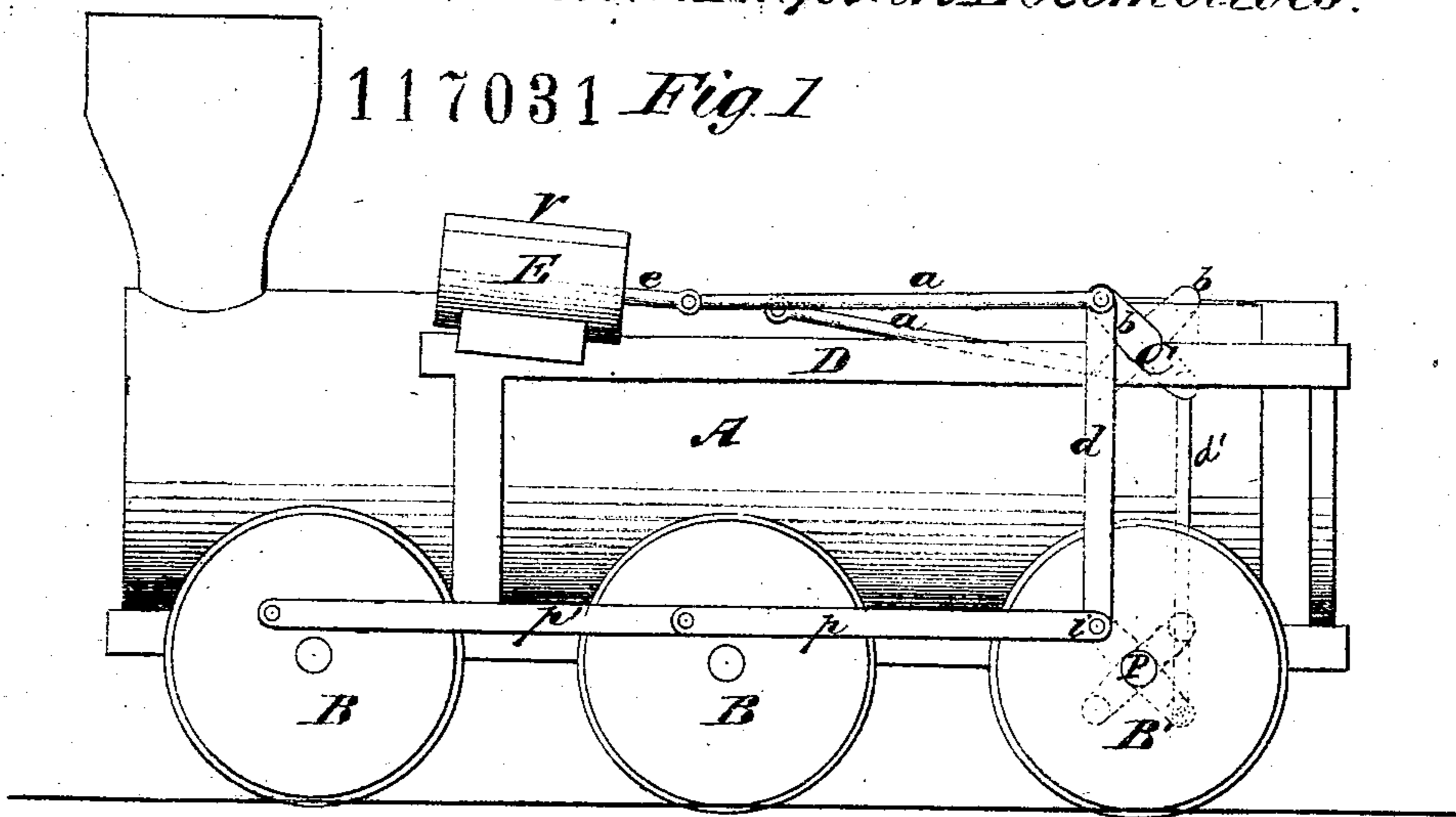


Fig. 2

PATENTED JUL 18 1871

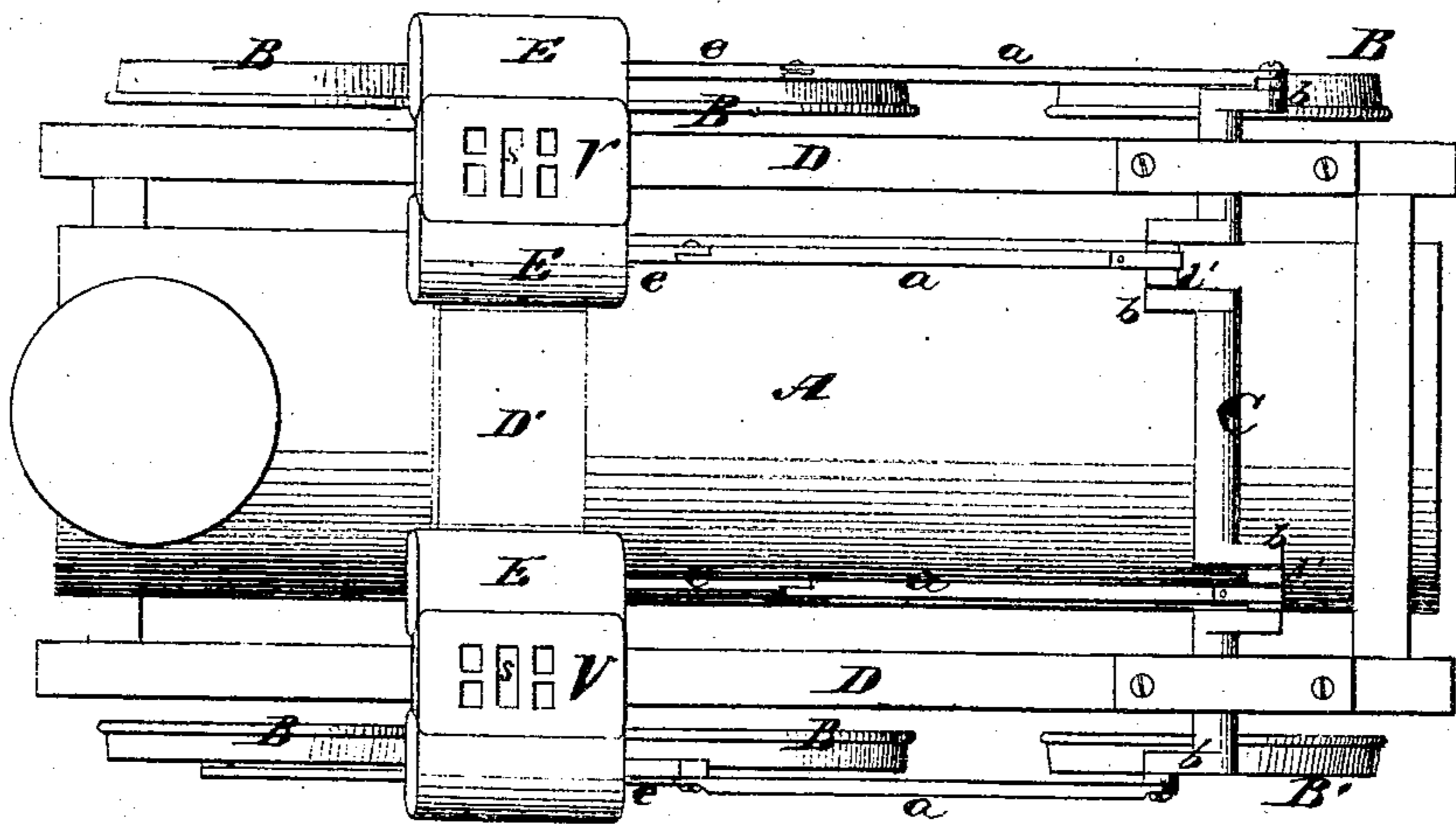
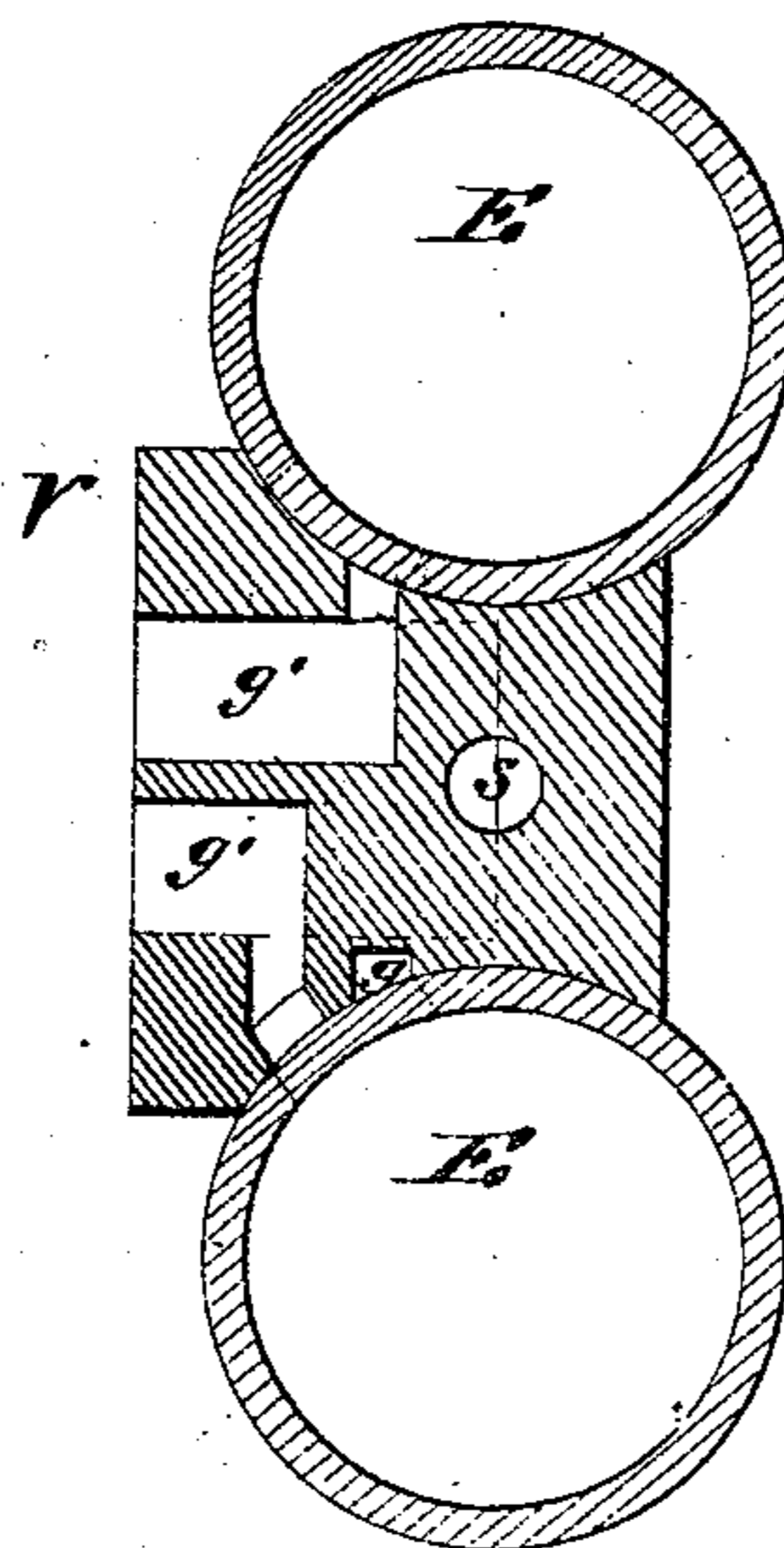
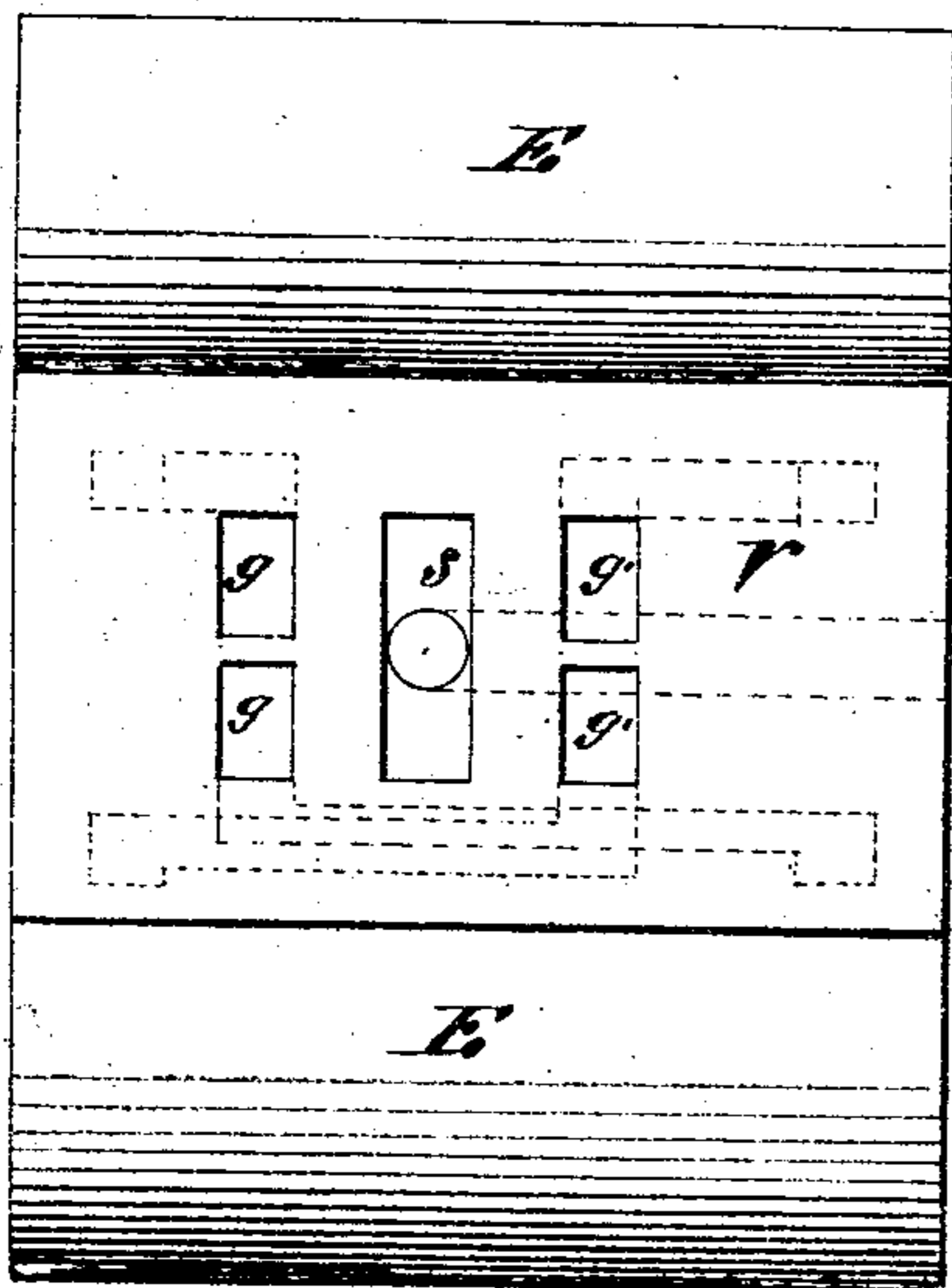


Fig. 3

Fig. 4



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UNITED STATES PATENT OFFICE.

WILLIAM D. ARNETT, OF DENVER, COLORADO TERRITORY.

IMPROVEMENT IN LOCOMOTIVES.

Specification forming part of Letters Patent No. 117,031, dated July 18, 1871.

To all whom it may concern:

Be it known that I, WILLIAM D. ARNETT, of Denver, Arapahoe county, Territory of Colorado, have invented a new and useful 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. Figs. 3 and 4 are views representing the combination of two steam-cylinders with a valve-seat adapted therefor.

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

This invention relates to certain improvements on the invention set forth in the schedule annexed to my Letters Patent bearing date on the 7th day of February, 1871. The nature of this invention consists in the arrangement, on each side of the locomotive and upon a suitable frame, of two steam-cylinders, both communicating with a single valve-chest, and both connected, through their piston-rods and pitmen-rods, with a crank-shaft, which latter is connected by four pitmen-rods to the crank-axle and faces of the rear driving-wheels, as will be hereinafter shown.

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

In the accompanying drawing, A represents the boiler of the locomotive, which is suitably mounted in a frame, D, which is supported upon the axles of driving-wheels B B B'. At the front end of this frame D, and supported upon a horizontal transverse beam thereof, are four steam-cylinders, E, arranged on each side of the frame in pairs. These cylinders are inclined, as shown in Fig. 1, so that their longitudinal axes intersect the axis of a horizontal transverse crank-shaft, C, which is located over and in the vertical plane of the axle P of the rear driving-wheels B', and which is supported on the top of the frame D. Each pair of steam-cylinders E E is supplied with steam through ports *g g g' g'*, and exhaust through ports S, which are made

through a valve-bed, V, on which a single slide-valve works. In this way two cylinders, E E, on each side of the locomotive, are supplied with steam at the same time, and through a single valve-chest, and exhaust through a single port in the valve-seat bed V. The piston-rods *e* of the two pairs of steam-cylinders E E are connected to the front ends of pitmen-rods *a*, which are connected at their ends to cranks *b* on the shaft C. Each pair of cranks *b b* is arranged at quarter-stroke, or, in other words, each pair is arranged at right angles, as indicated in Fig. 1, so that while one pair of pistons is pushing, the other pair is pulling. The cranks *b* on the outer ends of the shaft C are connected to wrist-pins *i* on the outer faces of the rear driving-wheels by means of pitmen-rods *d d*; and to the same wrist-pin *i* rods *p* are connected, which are also connected to wrist-pins on the next forward wheels B. These latter wheels B are connected to the front wheels B by means of rods *p'*, as shown in the drawing. In this way the piston-rods of the outer cylinders on both sides of the locomotive are connected indirectly to the rear driving-wheels. The rods *a'* of the inside steam-cylinder are connected to cranks on the axle P of the rear driving-wheels.

By this arrangement the force is applied in a vertical or nearly vertical direction to turn the rear driving-wheels of the locomotive, while the steam-cylinders through which this force is transmitted are arranged near the forward end of the locomotive and operate alternately in pairs.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The arrangement, on each side of a locomotive, of a pair of steam-cylinders, which receives steam through a single slide-valve bed, V, and whose piston-rods *e e* communicate motion to the crank-shaft P of the rear driving-wheels through pitmen-rods *a a* and *d d'*, substantially as described.

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Witnesses:

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