

J. W. BELL.  
Compound-Engine.

No. 159,786.

Patented Feb. 16, 1875.

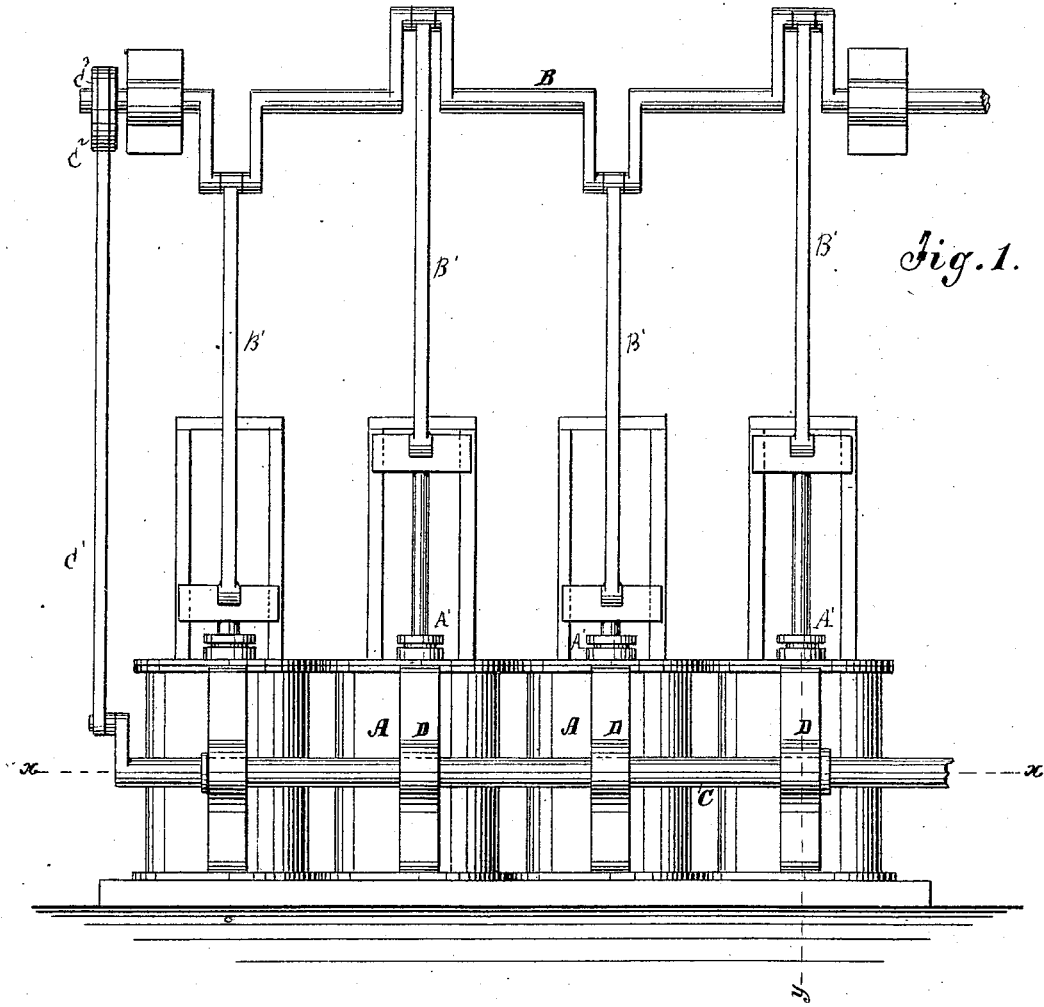
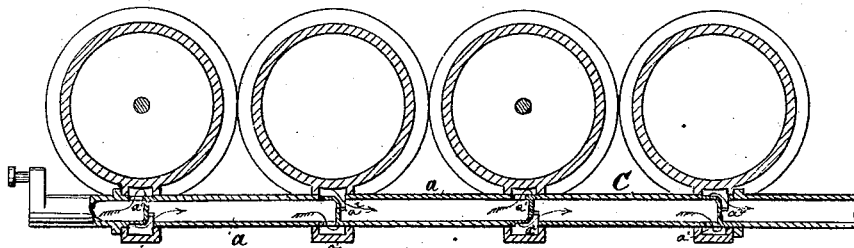


Fig. 2.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JACKSON W. BELL, OF MCKINNEY, TEXAS.

## IMPROVEMENT IN COMPOUND ENGINES.

Specification forming part of Letters Patent No. **159,786**, dated February 16, 1875; application filed July 3, 1874.

*To all whom it may concern:*

Be it known that I, JACKSON W. BELL, of McKinney, in the county of Collin and State of Texas, have invented a new and Improved Compound Engine, of which the following is a specification:

My invention consists of a series of engines for working the steam over by exhausting it from the first into the second, and so on, for utilizing the pressure lost when the steam is exhausted from a single engine into the air, the engines all being connected to one driving-shaft at different points around the axis, and all being connected by a revolving tube, which serves for supply and exhaust pipes and valves to all.

Figure 1 is a plan view of my improved compound engine, and Fig. 2 a transverse section taken on the line *xx* of Fig. 1. Fig. 3 is a vertical longitudinal section of Fig. 1 on line *y*.

Similar letters of reference indicate corresponding parts.

A represents a series of four engines placed side by side, and all connected to one driving-shaft, B, suitably for passing the centers properly. A' are pistons connected with crank-shaft B by the pitman B'. C is a long rocking tube connecting with the supply-pipe from the boiler, and extending along through each steam-chest D, to form a rock-valve for each, and also to serve for conducting the steam to the engine, and from one to another in their order of arrangement. The tube is connected, by rod C<sup>1</sup> and yoke C<sup>2</sup>, with eccentric C<sup>3</sup> on

crank-shaft B. The passage *a* will connect with the exhaust-port of the first engine to the left, and the inlet-port of the next to exhaust from the first into the second, and it will be cut off while the first is taking steam and the second exhausting, at which time the passage *d* will connect the exhaust of the second cylinder with the inlet of the third, and so on, thus making a very simple and efficient valve-motion for a compound engine.

The steam may be admitted to the chest of the first engine through a passage in the shaft also, or by a pipe discharging directly into it.

The common slide-valve arrangement may be employed; but I prefer the arrangement shown.

There will be a difference of pressure in each cylinder, owing to the condensation and expansion, so that each will perform a certain measure of work, and the steam may be reworked until reduced to atmospheric pressure.

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

The series of engines A, having their pistons A' connected, by rods B', with the same crank-shaft B, in combination with the rocking tube C, having passage *a*, steam-inlets *a*<sup>1</sup>, and outlets *a*<sup>2</sup>, as and for the purpose specified.

JACKSON W. BELL.

Witnesses:

G. W. CAMERON,  
T. T. EMERSON.