J. RICHARDSON.

PORTABLE ENGINE.

No. 185,966. Patented Jan. 2, 1877.

Fig. 1.

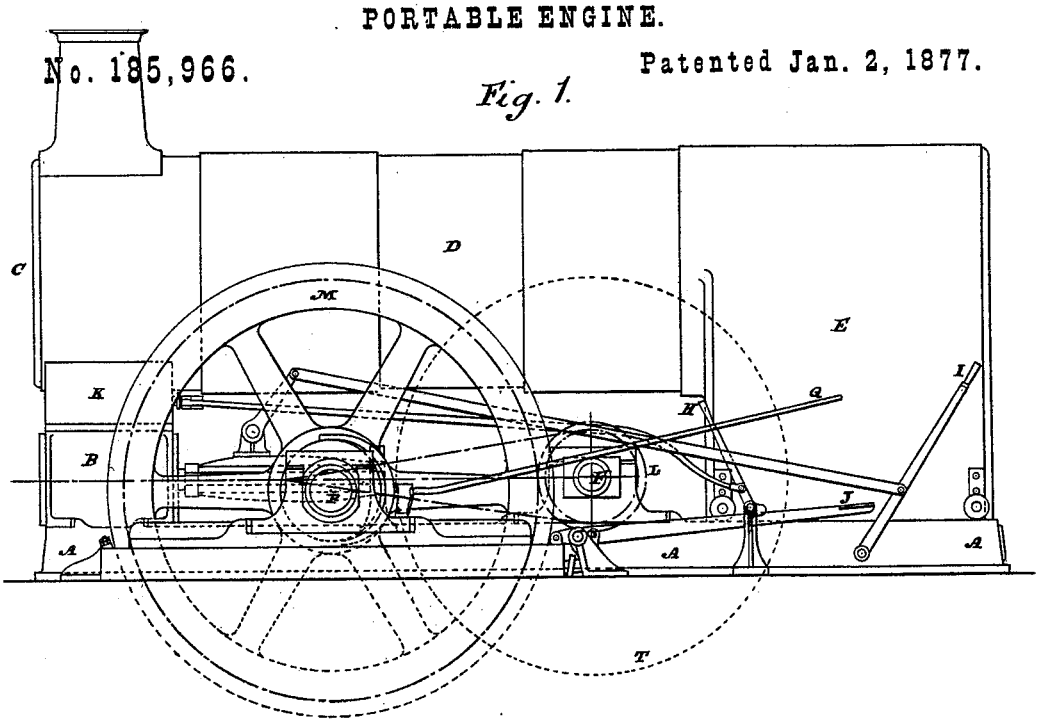
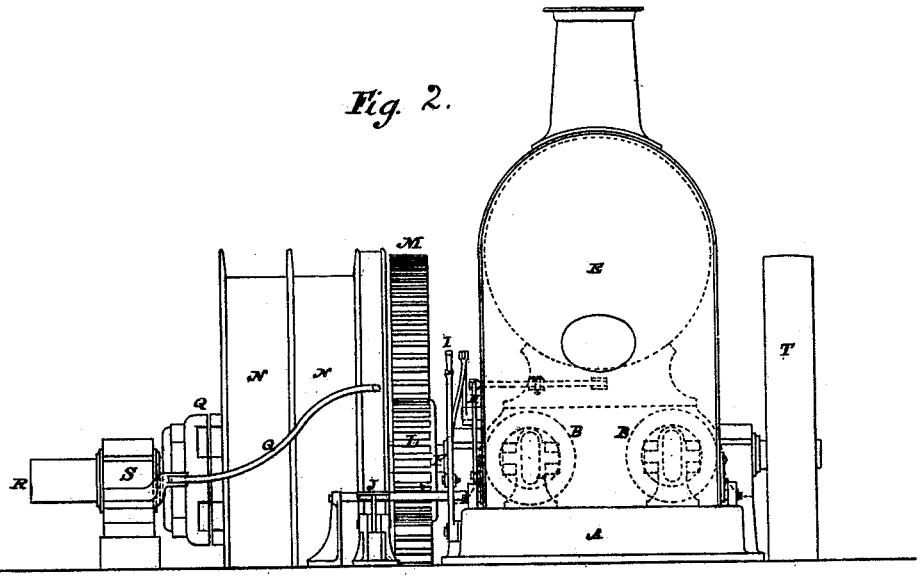


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN RICHARDSON, OF LINCOLN, ENGLAND.

IMPROVEMENT IN PORTABLE ENGINES.

Specification forming part of Letters Patent No. **185,966**, dated January 2, 1877; application filed September 5, 1876.

To all whom it may concern:

Be it known that I, JOHN RICHARDSON, of Lincoln, England, have invented Improvements in Portable or Semi-Portable Engines, for winding, pumping, and driving, of which the following is a specification:

The object of this invention is to arrange the working parts of portable and semi-portable engines upon the bed or foundation and beneath the barrel of a locomotive type of boiler, so that the vibrations of the engine while working shall not be borne by the boiler, as is now commonly the case, the boiler being thereby relieved of all top weight and the hitherto unnecessary strain. The smoke-box end of the boiler rests upon the steam-cylinder, and the fire-box end upon rollers on the bed or foundation, to permit of the expansion and contraction of the boiler under changes of heat and cold.

The invention is clearly represented in the accompanying drawings, Figures 1 and 2, which are a side view and an end view, respectively, of an engine provided with winding-gear.

A is the bed or foundation, forming a tank for the feed-water and the exhaust steam. B B are cylinders, fitted on one end of the bed or foundation, for supporting the smoke-box end C of the boiler D, the fire-box end E having wheels to support it upon the opposite end of the bed or foundation, and to allow for the expansion and the contraction thereof. F is the main or crank shaft, fitted in bearings upon the foundation and under the barrel portion of the boiler, as are also the slide-blocks, within which the cross-heads of the pistons and connecting-rods work.

H is the starting-lever, I the reversing-lever, and J the brake-lever, all of which, as well as the lever of the stop-valve, are on the same side of the engine, the stop-valve being fitted in the valve-chest K above the cylinders. L is a pinion on the main shaft F, which gears into the wheel M of the winding-drums N N, either of which can be put into gear with the shaft P by the clutch mechanism Q.

The shaft P is a supplementary one, whose inner end is in bearings upon the foundation, and the outer end R in a bearing, S, upon masonry or otherwise. T is the fly-wheel, on the opposite side of the engine, for balancing the same.

Instead of the winding-drums, other appliances can be fitted to suit the work the engine is intended for.

The bed or foundation can be mounted upon traveling wheels or upon masonry, as desired.

I claim—

In a steam-engine, the combination of the cylinder or cylinders B B and boiler D, the boiler being arranged to rest at one end upon the cylinders, and at the other end, by friction-wheels, upon the base or foundation of the engine, substantially as and for the purpose herein specified.

JOHN RICHARDSON.

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