F. F. LANDIS.

Portable Steam-Engine.

No. 161,970. Patented April 13, 1875.

Fig. 1.

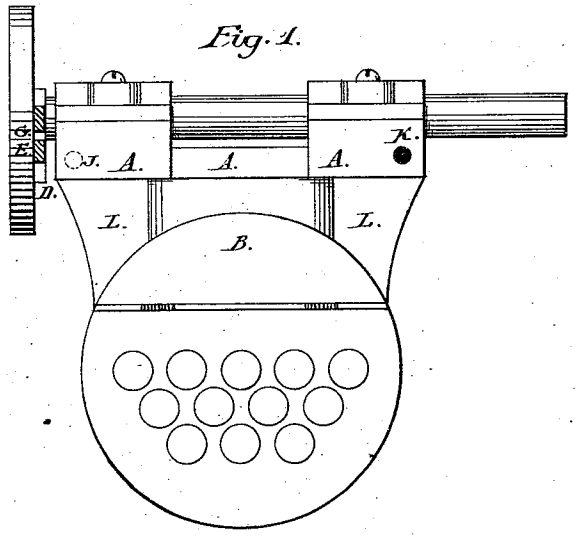
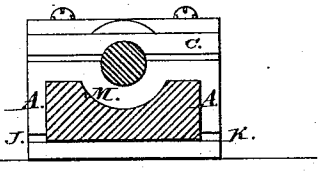


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRANK F. LANDIS, OF LANCASTER, PENNSYLVANIA.

IMPROVEMENT IN PORTABLE STEAM-ENGINES.

Specification forming part of Letters Patent No. **161,970**, dated April 13, 1875; application filed October 1, 1874.

To all whom it may concern:

Be it known that I, FRANK F. LANDIS, of the city of Lancaster, in the county of Lancaster and State of Pennsylvania, have invented a certain new and useful Improvement in Portable Steam-Engines; and I do hereby declare that the following is a clear and exact description of my invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, which forms part of this specification, and in which—

Figure 1 represents a front elevation of the boiler, with its crank-shaft and journal-cooling attachment; and Fig. 2 represents a cross-section of the crank-shaft and its bearings, and of the cooling-chamber attached thereto.

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

My invention consists in the combination of a cold-water reservoir with the boiler of a portable steam-engine, in such a manner that the said reservoir shall form the bed for the crank-shaft journal-bearings, substantially as and for the purpose hereinafter set forth.

In the drawing, B represents the boiler, A the water-reservoir, and C the shaft-bearings. The reservoir is placed upon the top of the boiler crosswise, and is supported by brackets or bearings L L projecting laterally from the sides of the boiler, as shown. The top of the reservoir is indented at both ends, as shown at M in Fig. 2, so as to form semicircular bearings for the shaft; and that part of the reservoir which lies between the bearing parts thereof is of a sufficient width to prevent the heat which rises from the boiler impinging upon the shaft.

Cool water is led into the reservoir A at J, and finds an outlet at K; or it may be convenient to conduct the water from the reservoir into the boiler through one of the brackets L, thus making the water in the reservoir, which has already become partially heated, serve to feed the boiler.

The cold water may be led into A from a reservoir at a higher elevation than A; or it may be pumped up and into A by suitable machinery attached to the engine.

In portable engines, with but few exceptions, the crank-shaft revolves in bearings which are placed either directly upon, or else in such close proximity to, the boiler that the heat of the latter will seriously affect the journals, which are apt to become quite sufficiently hot by the friction. This additional cause of heating is a serious drawback, which cannot well be avoided where it is desired to build a compact engine, with all the parts necessarily in close proximity to the boiler; but by inserting the water-reservoir A between the crank-shaft, with its bearing parts and the boiler, upon which these rest, I obviate this difficulty in a great measure, as the water in A will absorb the heat of the boiler, which does not, therefore, come in direct contact with the journals, as in the case of portable engines as usually constructed.

I am aware that it is not new to cool journals by the aid of cool water, this method of cooling, and thereby preventing heating by friction, having been used, to some extent, in marine-engines; and I do not, therefore, claim, broadly, to cool bearings where the heat is caused principally, if not solely, by the friction. But I am not aware that water has been before employed in this connection for the purpose of diverting the heat from the boiler from the journal-bearings, when these are, as in portable engines, placed in immediate contact with the latter; or that reservoirs have been so constructed and arranged that while the water contained in them would absorb the heat from the boiler, and thus keep the overlying journals free from heating from that source, the heat thus absorbed by the water in the cooling-reservoir may at the same time be utilized by using the water thus partially heated for feeding the boiler.

What I claim, and desire to secure by Letters Patent, is, therefore, as follows:

In a portable steam-engine, the water-reservoir A, located between the boiler and the crank-shaft, and supporting the bearings of the latter, substantially as and for the purpose specified.

FRANK F. LANDIS.

Witnesses:

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