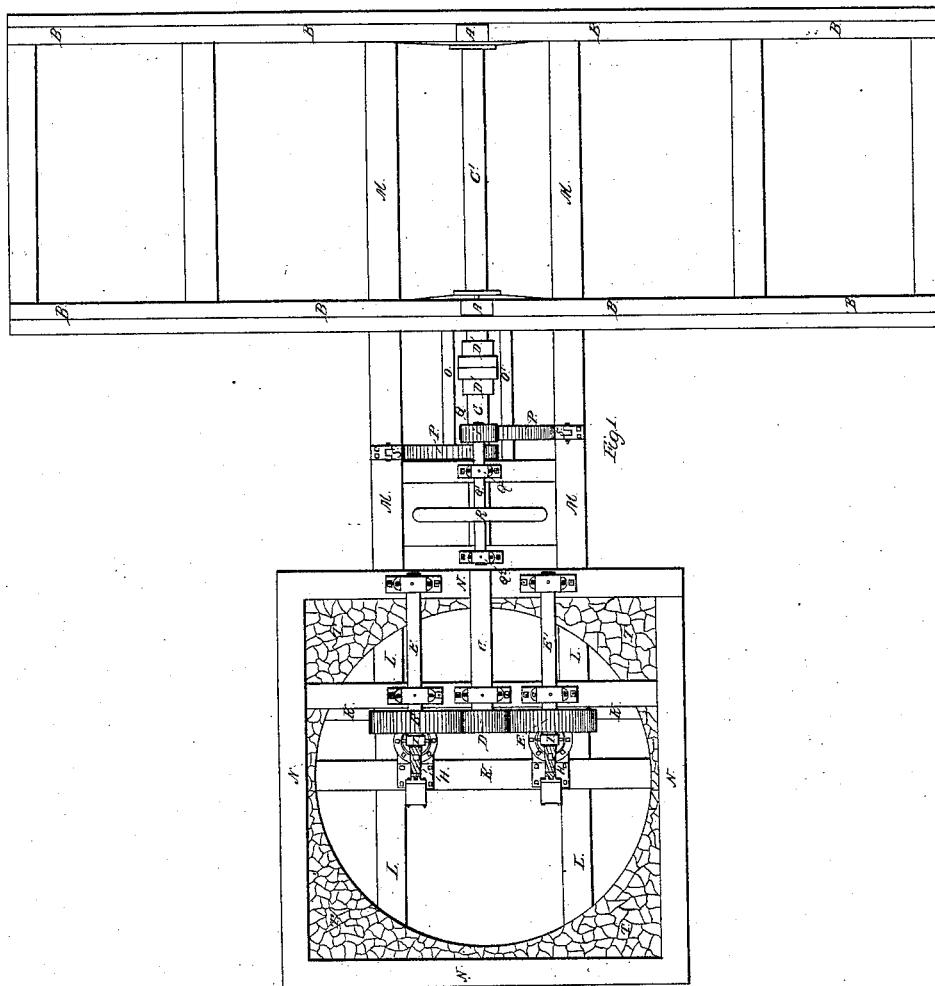


*S. Vail,*  
*Tank Feeder,*

*N<sup>o</sup> 1,234.*

*Patented July 12, 1839.*

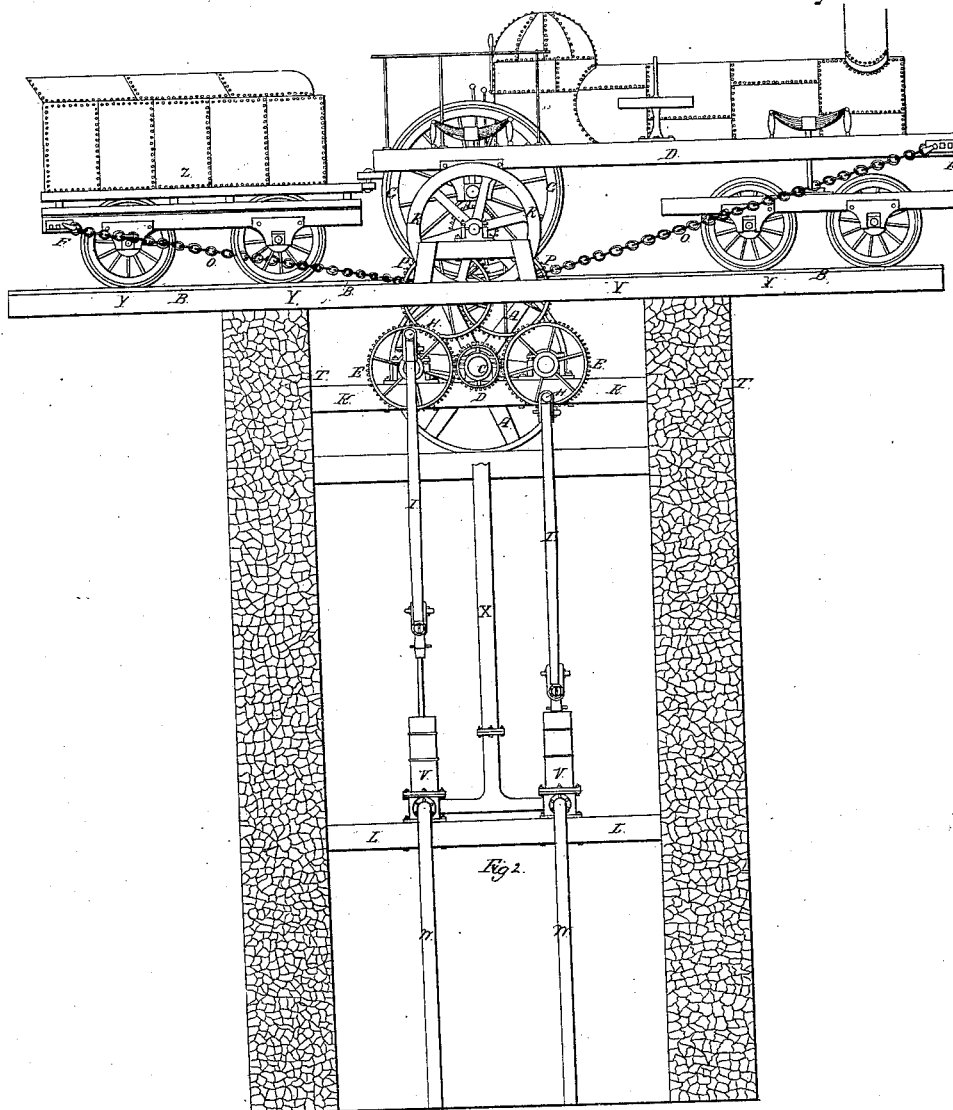


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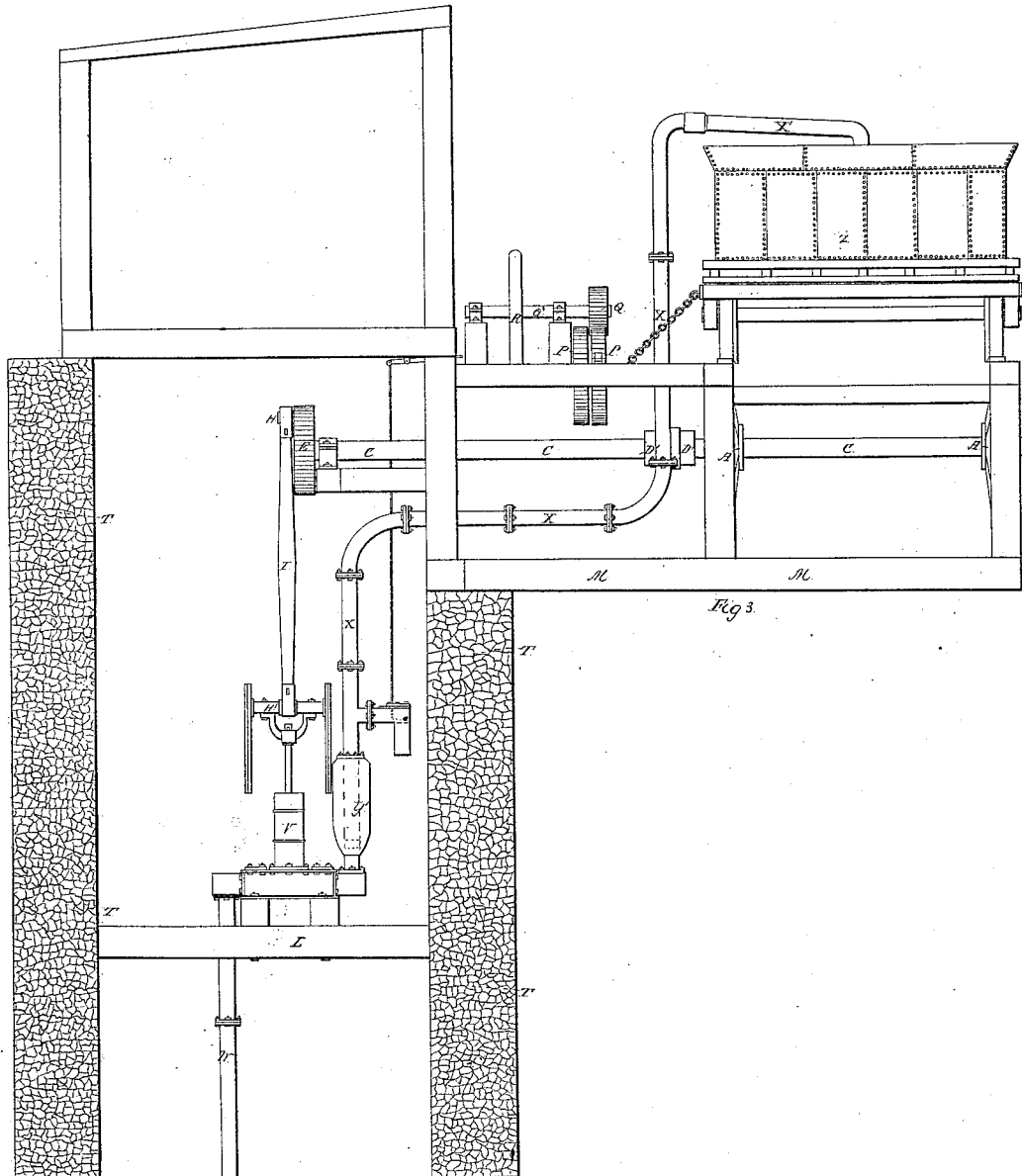


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Patented July 12 1839.



# UNITED STATES PATENT OFFICE.

STEPHEN VAIL, OF SPEEDWELL IRON WORKS, MORRISTOWN, NEW JERSEY.

## MODE OF SUPPLYING WATER TO LOCOMOTIVES.

Specification of Letters Patent No. 1,234, dated July 12, 1839.

*To all whom it may concern:*

Be it known that I, STEPHEN VAIL, of Speedwell Iron Works, Morris township, in the county of Morris and State of New Jersey, have invented a new and useful mode of supplying locomotive-engines with water by pumping it from an ordinary well directly by the power of the locomotive-engine; and I do hereby declare that the following is a full and exact description thereof.

My invention is intended to dispense with the reservoirs now used at those stations where locomotive engines are to take in their supply of water, into which the water has, usually, to be pumped by hand, at great labor, and in which, in cold weather, its temperature is frequently reduced considerably below that of ordinary well water. This object I accomplish by applying the power of the locomotive engine to work a pump, or pumps, raising water from a common well, and supplying the tank therewith by merely driving the locomotive on to the lateral track where it is to receive its supply of water, and allowing its driving wheels to rest on two friction wheels affixed to a line shaft, situated in a pit prepared for that purpose below the track, the peripheries of said friction wheels extending up to the line of the rails, and passing through openings therein, prepared for that purpose. I move the locomotive by means of chains, or other suitable contrivances, so that it shall stand steadily, with the peripheries of its driving wheels resting on the above named friction wheels, which, when the steam engine is started, will necessarily drive the friction wheels, the shaft of which has attached to it the apparatus requisite for working the pump, or pumps.

The accompanying drawing represents the manner in which I intend, generally, to construct and arrange the apparatus for carrying my said invention into effect, and will afford a full and clear exemplification thereof; it will be manifest, however, to every competent machinist, that this apparatus may be varied in form to an indefinite extent, while the same end may be attained by means substantially the same with, or analogous to, those herein pointed out; and I do not intend, therefore, by the subjoined description of machinery, to limit myself to the particular construction given, in carrying my invention into effect.

Figure 1, in the accompanying drawing, is a top view of the pumping apparatus, the well, and the rail-road track, without the locomotive, or tender. Fig. 2, is a side view with the locomotive and tender upon the track, and representing the pumps and their appurtenances within the well. Fig. 3, is a cross section of the track, and of the pit containing the friction wheels, with the pumps, and other apparatus, as seen in this direction. In each of these figures, where the same parts are represented, they are designated by the same letters of reference.

In Fig. 1, A, is that part of the periphery of the friction wheels which passes through the openings in the rail B, B, of the track, and upon which the peripheries of the driving wheels of the locomotive engine are to rest. The position of these friction wheels is shown more distinctly in Fig. 2.

C, C, C, is a line shaft, extending at C', across the pit in the road, where the friction wheels A, A, are attached to it. At its far end, it carries a pinion D, which meshes into two spur wheels E, E, constituting crank wheels, to which are attached the rods for working the pumps. At D', D', there is a clutch box for connecting the two portions of the shaft C, C. The shaft E', E', of the wheels E, E, run in suitable bearings in the frame work of the apparatus.

In Fig. 2, the locomotive is represented in the proper situation for applying the power of its engine to the pumping of water; that is, with the driving wheels G, resting on the peripheries of the friction wheels A, A, over which it is to be securely moored during the period that it is to be employed in the pumping of water, which may be conveniently effected in the following manner.

O, O, are mooring chains, the outer ends of which are to be attached to hooks on the engine, or engine and tender, and their inner ends are to wind around shafts, O', O', shown distinctly in Fig. 1. These shafts run in bearings on the framework of the apparatus, each of them carrying a spur wheel P, P.

A pinion Q, is fixed on a shaft Q', Figs. 1, and 3; this shaft slides endwise in boxes Q<sup>2</sup>, Q<sup>2</sup>, for the purpose of engaging the pinion Q, with either of the wheels P, P. This shifting is readily effected by means of the wheel R, on the shaft Q', which serves as a

hand wheel for straining up the chains, and mooring the locomotive, and operates as a fly wheel when the engine is in motion.

5 S, S, are pawls to the wheels P, P, serving to hold them in place when the engine is properly moored, the mode of doing which will be perfectly obvious to any machinist from the description of the apparatus by which it is to be effected.

10 H, H, are crank pins upon the crank wheels, and I, I, the shackle bars, or connecting rods, leading from them to the pistons of the pumps. K and L, are timbers for supporting the pump and other parts of the apparatus; M, and N, timbers constituting a part of the framing of the apparatus; T, the wall of the well; V, pumps; W, suction pipe; X, rising main; Y, air vessel; 15 and Z, tank; neither of which parts require description, being well understood, and not being of necessity made in the form, or arranged in the precise manner, represented.

Having thus, fully described the nature

and object of my invention, and shown the manner in which the same may be carried 25 into operation, what I claim therein, and desire to secure by Letters Patent, is—

The within described mode of working pumps for raising water from wells, for the supply of locomotive engines and which 30 mode of communicating power may also be applied to other useful purposes: That is to say, I claim the placing of friction wheels upon a shaft, below the track of a rail-road, in such manner as that the driving wheels of 35 a locomotive engine may be made to rest upon their peripheries, and, when set in action by the steam engine, will give motion to said friction wheels, and, consequently, to the machinery attached thereto, substan- 40 tially in the manner, and for the purpose, set forth.

STEPHEN VAIL.

Witnesses:

GEORGE VAIL,

DAVIS V. CANTFIELD.