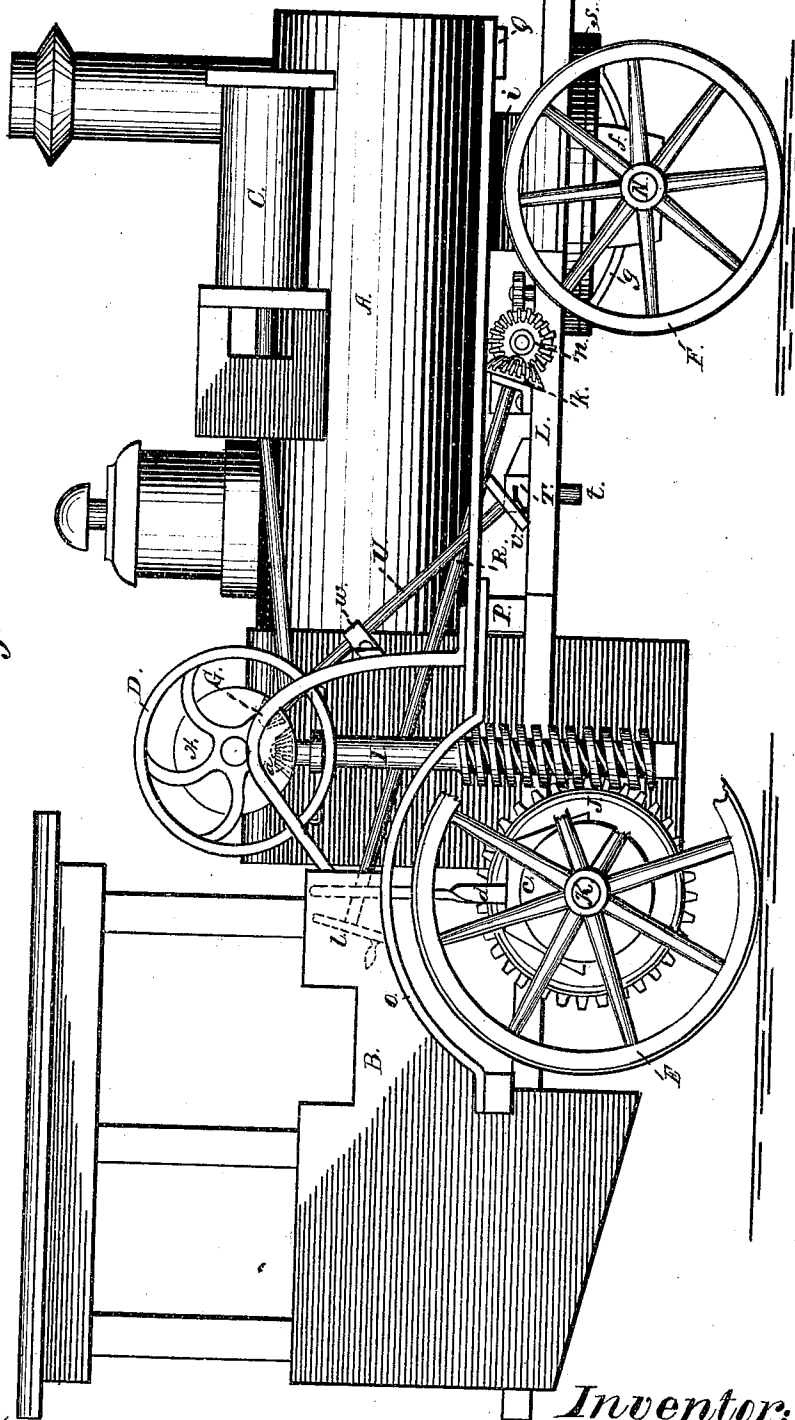


C. R. SHIVELEY.
TRACTION ENGINE.

No. 174,706.

Patented March 14, 1876.

Fig. 1.



Attest:
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Wm. Ritchie

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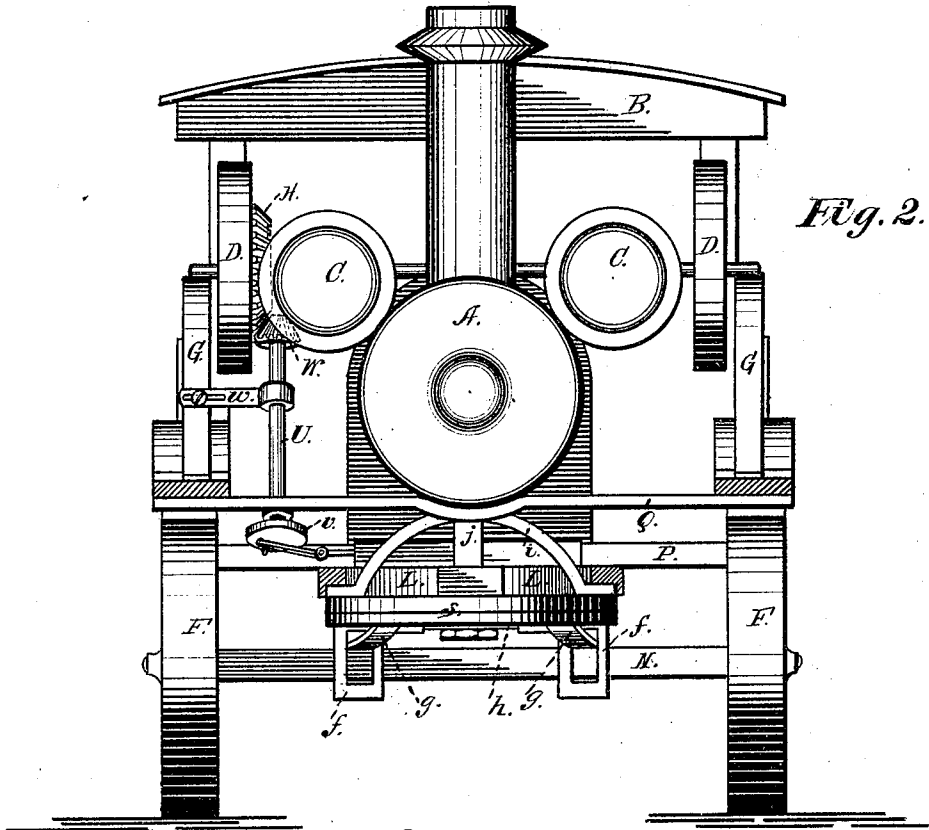


Fig. 2.

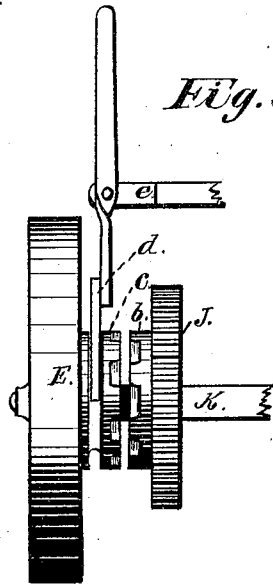


Fig. 3.

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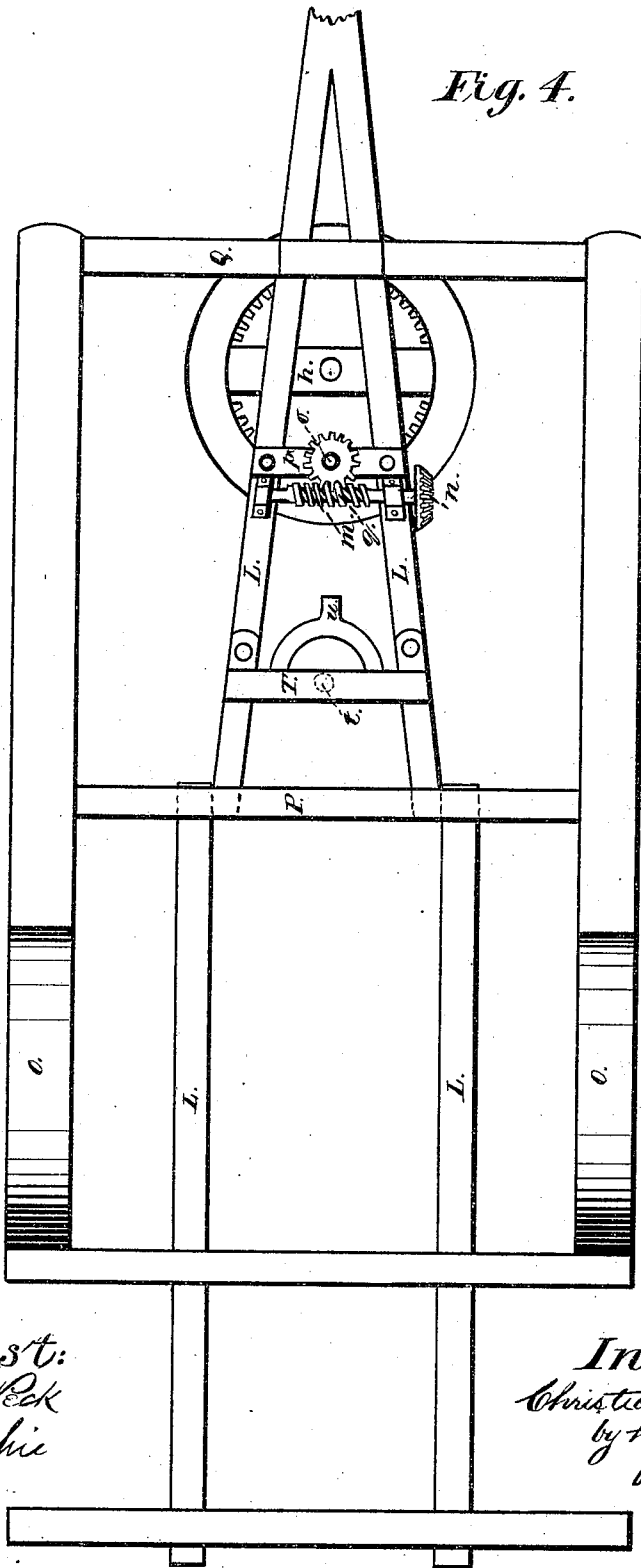
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TRACTION ENGINE.

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Fig. 4.



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UNITED STATES PATENT OFFICE.

CHRISTIAN R. SHIVELEY, OF NEW LEBANON, OHIO.

IMPROVEMENT IN TRACTION-ENGINES.

Specification forming part of Letters Patent No. **174,706**, dated March 14, 1876; application filed January 11, 1876.

To all whom it may concern:

Be it known that I, CHRISTIAN R. SHIVELEY, of New Lebanon, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Traction-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification, in which—

Figure 1, Sheet 1, is a side elevation of a traction-engine embodying my improvements. Fig. 2, Sheet 2, is an end elevation of the same on a smaller scale. Fig. 3, Sheet 2, is a sectional view, illustrating the manner in which the clutch is operated. Fig. 4, Sheet 3, is a plan view of the frame-work on which the engine rests, and illustrates other details not shown in the previous figures, as will be hereafter described.

This invention relates to that class of traction-engines employed for agricultural purposes, and which are so constructed as to transport themselves to the desired place, and there be converted into stationary engines for any of the usual purposes, such as driving thrashing-machines, &c.

The improvements consist in the combination of devices for imparting motion to the supporting-wheels, and for connecting and disconnecting them from the motive power at the will of the attendant; also, in the structure of the frame-work and the apparatus for guiding the machine; also, in the employment of a force-pump, attached to the machine in a peculiar manner, for use in case of fire or for other purposes.

I would thus proceed to describe my improvements and their adaptation to the engine:

A represents the boiler, B the cab, C the steam-chests, and D the fly-wheels, of the engine, provided with the necessary operative parts, as used upon the ordinary portable engines now in use, and supported upon the frame-work and driving and guiding wheels, the former represented by E, the latter by F. The structure of the frame-work will be here-

after described. The customary fly-wheels D are keyed upon a shaft. This shaft is journaled upon the boiler, and further supported by the braces (curved) G, which are connected to the frame-work and the cab, as represented. To the inner side of one or both of these fly-wheels, and revolving with them, is secured the beveled gear-wheel H. I represents a vertical worm-shaft, journaled in bearings at the side of the boiler A, and having keyed upon its top a beveled gear-wheel, *a*, dotted line, Fig. 1, which engages with the wheel H. Keyed upon the axle of the driving-wheels E is a gear-wheel, J, Figs. 1 and 3, rigidly attached to the side of which, and upon the same axle, is a clutch, *b*. The driving-wheel E has rigidly attached to it a corresponding clutch, *c*, operated by a forked lever, *d*, working in a slot in the periphery of the clutch, and passing upward into the cab within easy reach of attendant. This lever is pivoted to an arm, *e*, Fig. 3, which is secured to the fire-chamber. The gear-wheel J engages with the worm I and receives motion from it.

When it is desired to have the machine propel itself, the engine is started, and the gear-wheel J is put in motion, the shaft K revolving with it. The attendant grasps the lever *d* and throws the driving-wheel in till its clutch *c* engages with the clutch *b* upon the wheel J, when the wheel E will revolve and move the engine backward or forward, as is desired.

It can be readily understood that both sides of the engine are provided with vertical worm-shafts, actuated as just described, and imparting motion to both the driving-wheels.

The frame-work of the machine, which is designed to be as springy and yielding as possible, while at the same time it is sufficiently strong that it may at once lessen and withstand the jar incident to the inequalities of the road, is constructed as follows, reference being had particularly to Fig. 4: Two beams, L, extend from the rear of the cab along each side of the fire-box, to which they are attached, and from that point converge, and are bolted or otherwise connected together in front at a point just beyond the forward end of the boiler. To the under sides of these beams are secured the journal-boxes, in which the shaft K revolves. An illustration of the boxes is

seen at *f*, Figs. 1 and 2. They have longitudinal openings or guides, in which are confined the semi-elliptical springs *g*, resting upon the axle, and bolted to the beams *L*.

The fifth-wheel is supported upon the forward axle *N*, and is composed of two annular disks, lying one upon the other. The lower one has its inner edge geared, and has bolted to its under side the journal-boxes *f*, united by the flat cross-bar *h*. The semi-elliptical springs *g*, passing through the guide-openings of the boxes, and bolted to the under side of the fifth-wheel, rest upon the axle *N*, and aid in sustaining any jar.

The driving-wheels are covered by a partial housing, consisting of semicircular plates *O*, Fig. 1, attached firmly to the cab, as represented, and passing forward beyond it. At this end two spring-strips of seasoned wood are bolted to the plates *O*, and supported upon a cross-beam, *P*, resting on the beams *L*, pass forward, and are connected at their front ends by a cross metal spring, *Q*, having a concavity at its center, in which the forward end of the circular boiler rests. The forward end of the boiler is further supported upon a semi-elliptical spring, *i*, which is bolted upon the top of the fifth-wheel. The beams *L* are also bolted to the top of the upper portion of the fifth-wheel, and a king-bolt, *j*, pivoted in the cross-bar *h*, has a head secured to the spring *i*. This bolt forms the pivot on which the fifth-wheel turns.

The mechanism for guiding the engine consists of a rod, *R*, journaled upon the beam *L* and the fire-box, and having at its forward end a beveled gear-wheel, *k*, and at its rear end, which enters the cab, a crank, *l*. Suitably journaled upon the beams *L*, just over the fifth-wheel, is a worm-shaft, *m*, Fig. 4, on one end of which is keyed a beveled gear-wheel, *n*, Figs. 1 and 4, which engages with the wheel *k* upon the crank-rod *R*. An upright shaft, *o*, journaled in a cross-beam, *p*, has on its lower end a pinion, which engages with the teeth on the lower disk of the fifth-wheel *s*, and on its upper end a pinion, which engages with the worm *q*.

Now, by turning the crank *l* in the cab, the fifth-wheel *s*, to which the forward axle *M* is

secured, is turned upon its pivot, carrying with it the forward wheels, which are thus made to guide the machine.

T represents an ordinary force-pump, secured upon the cross-beams *L*, just in front of the fire-chamber, and having an induction-nozzle, *t*, and an eduction-nozzle, *u*, to which hose may be connected in any suitable manner. This pump is actuated by a piston attached to a crank-disk, *v*, secured upon the lower end of a rod, *U*, journaled in a sliding bearing, *w*, which is attached to the brace *G* by means of a clamp-screw, passing through a slot in the bearing, by which means the bearing carrying the shaft-rod *U* may be moved in or out to throw into or out of gear with the wheel *H* a beveled gear-wheel, *W*, keyed upon the top of the rod *U*.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. In a traction-engine, the vertical worm-shaft *I*, arranged as described, in combination with the fly-wheel *D* and axle *K*, with their connecting gearing, substantially as and for the purpose specified.

2. In a traction-engine, the force-pump *T*, located as described, in combination with the adjustable crank-rod *U*, actuated by means of the gearing connecting it to the fly-wheels *D*, substantially as and for the purpose specified.

3. In a traction-engine, the combination of the crank-rod *R*, beveled gearing *k* and *n*, worm-shaft *m*, upright shaft *o*, with its pinions, and fifth-wheel *s*, when arranged in the manner and for the purpose specified.

4. In a traction-engine, the frame-work consisting of the converging beams *L*, connected to the axles, as shown, and provided with a cross-beam, *P*, for upholding the spring-strips *Y*, connected at one end to the housing *O*, and at the other by the cross-spring *Q*, the whole arranged as and in the manner specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CHRISTIAN R. SHIVELEY.

Witnesses:

CHAS. M. PECK,
WM. RITCHIE.