J. COOPER.

Traction-Engine.

No. 212,358. Patented Feb. 18, 1879.

Fig. 1.

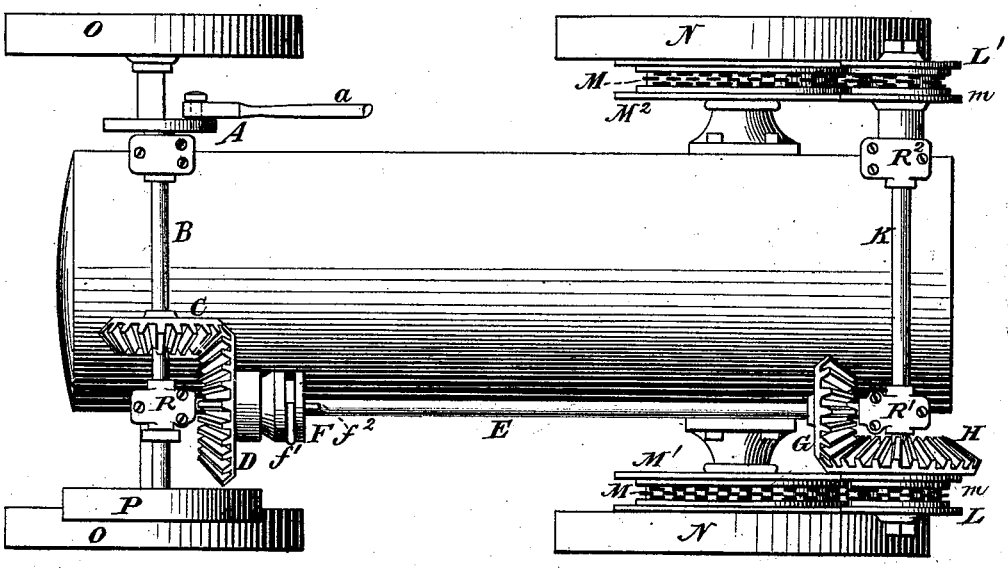


Fig. 2.

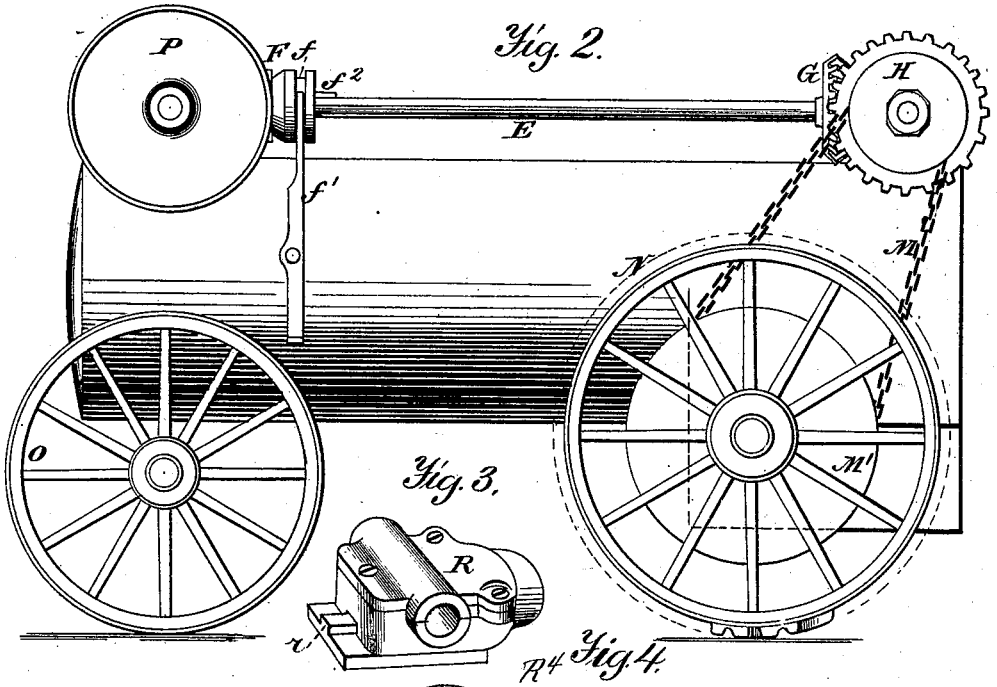
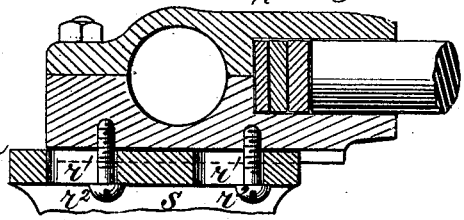


Fig. 3.

Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN COOPER, OF MOUNT VERNON, OHIO.

IMPROVEMENT IN TRACTION-ENGINES.

Specification forming part of Letters Patent No. **212,358**, dated February 18, 1879; application filed November 20, 1878.

To all whom it may concern:

Be it known that I, JOHN COOPER, of Mount Vernon, in the county of Knox 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 of the invention, 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 letters of reference marked thereon, which form a part of this specification.

Figure 1 is a plan view of my invention in connection with a portable steam-engine of common design and structure. Fig. 2 is an elevation of the same. Fig. 3 is a perspective view of my three-way box and adjusting-disks. Fig. 4 is a vertical section of my three-way box and adjusting-disks.

I employ the same letters in referring to identical parts of the drawings.

My invention relates to portable steam-engines; and it consists in the manner in which I take motion from the driving-shaft of a common portable steam-engine and transmit it to the rear carriage-wheels of the engine for the purpose of propelling or assisting in propelling the engine.

A is the crank of the driving-shaft B, to which is connected the pitman *a* of the engine. C is a beveled wheel or pinion securely attached to the driving-shaft. D is a wheel constructed to work in the pinion C, but of greater diameter. This beveled wheel D plays loosely on the shaft E.

F is a friction-clutch, constructed with a spline-seat, which engages a spline-key, f^3, which is rigidly attached to the shaft E, and so constructed that the clutch may be moved to any required distance along the body of the shaft E without being freed from the key. By this means the clutch is made to revolve with the shaft without regard to its position on the shaft. *f* is an annular groove cut in the body of this clutch, in which is placed the upper end of the lever f^1, formed to engage in this annular groove *f* in a manner suitable to control the position of the clutch by this means. Upon the other end of this shaft E, which is located in a horizontal position along and above the boiler of the engine, is attached a small pinion, G, properly beveled and toothed to engage the wheel H, which is rigidly attached to the horizontal transverse shaft K. Upon this shaft K are rigidly attached two chain-pulleys, L L′.

The chain M connects the driving-pulleys L and L′ with the chain-pulleys M^1 and M^2, which are attached securely to the inside of the carrying-wheels N of the rear of the engine. O are the carrying-wheels of the front of the engine, and P is the pulley of the driving-shaft.

The portion of the clutch F which engages the hub D′ of the wheel D is conical, and the hub D′ is formed cup-like upon the same angle of inclination as the conical part of the clutch F, so that when this clutch is forced therein it will cause a strong friction contact.

R is a stationary three-way box, through which the shaft B passes in its bearing, and into the other arm of which the end of the connecting-shaft E enters. R^1 is another three-way box, through which the shaft K passes in its bearing, and into the other end of which the rear end of the shaft E enters. The three-way box R^1 and the common box R^2 of the shaft K are sliding boxes, which are attached to their several standards or bases S by means of the tongue and groove *r*, the slot r^1, and bolts r^2. These boxes are made adjustable by these means, in order to take up any slack of the driving-chains, or to remove them from the deep flanges *m* or place them in position.

In order to accommodate the shaft E to this contemplated adjustment of the shaft K, I construct the arms of the three-way boxes R much longer than the contemplated bearings therein of the shaft E, and insert in the spaces at the ends of the same in the boxes a number of metallic or other suitable disks, R^4.

In case the driving-chain needs tightening, the sliding boxes R^1 and R^2 are properly adjusted for the required tension of the chains. The shaft E is then slipped rearward, so that the pinions G and H properly engage, and then the required disks placed in the box R at the end of the shaft E to maintain its position.

By means of the conical clutch F and the lever *f*, I am enabled to permit the engine to get under motion before applying its power to the propelling of the carriage, which ena-

bles me to utilize without strain or injury to the parts a small and comparatively weak engine for assisting in propelling the carriage; and I can also regulate the amount of power here imparted by regulating the amount of force applied by the lever *f* to the contact of the clutch and hub.

I am aware that heretofore shafts have been made adjustable by means of levers controlling the position of the boxes, as in the case of mill-spindles; but

What I claim as new, and desire to secure by Letters Patent, is—

1. The horizontal connecting-shaft E, in combination with the shafts B and K and the pulley L′, the chain M, and the pulley M^1, constructed and operating together as and for the purposes substantially as described.

2. The three-way box R, in combination with the shafts B and E and the adjusting-disks R^4, and the pinion and wheel G and H, constructed and operating together substantially as and for the purposes described.

3. The chain-pulley M^1, the chain M, and the chain-pulley L, in combination with the shaft K and the adjustable sliding boxes R^1 and R^2, and the adjustable shaft E, constructed and operating together substantially as and for the purposes described.

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

JOHN COOPER.

Witnesses:
W. E. COOPER,
FRANK MOORE.