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Portable-Engine.

No. 221,265. Patented Nov. 4, 1879.

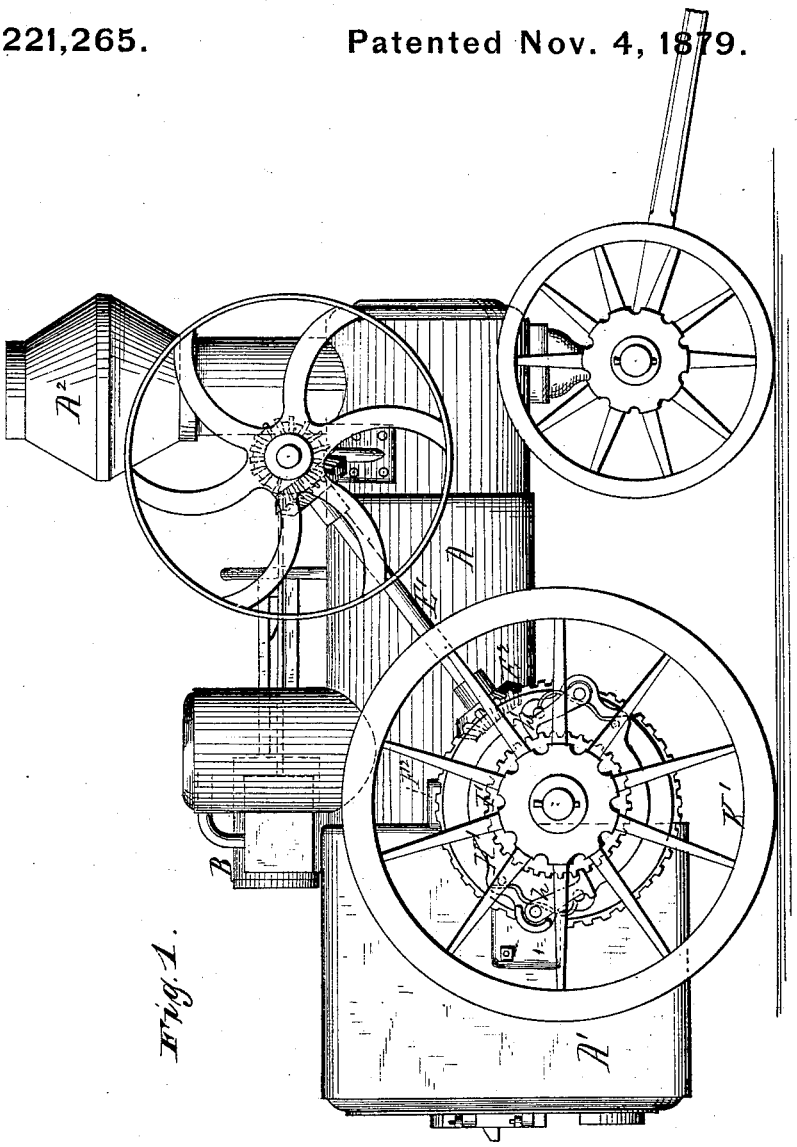

Fig. 1.

WITNESSES

Frank L. Ouseaud.

John G. Center.

By his Attorney

INVENTOR

Joseph Allonas

A. M. Smith

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J. ALLONAS.
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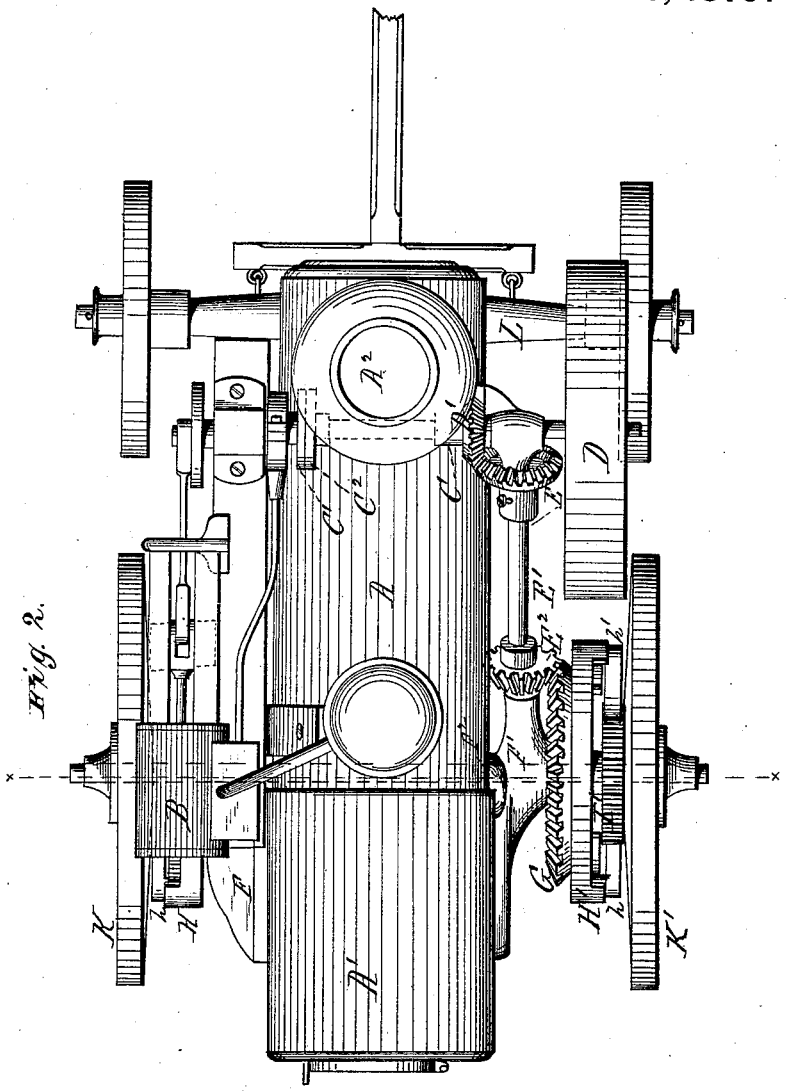

Fig. 2.

WITNESSES
Franck L. Durand.
John S. Center.

By his Attorney

INVENTOR
Joseph Allonas
A. M. Smith

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J. ALLONAS.
Portable-Engine.

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Fig. 3.

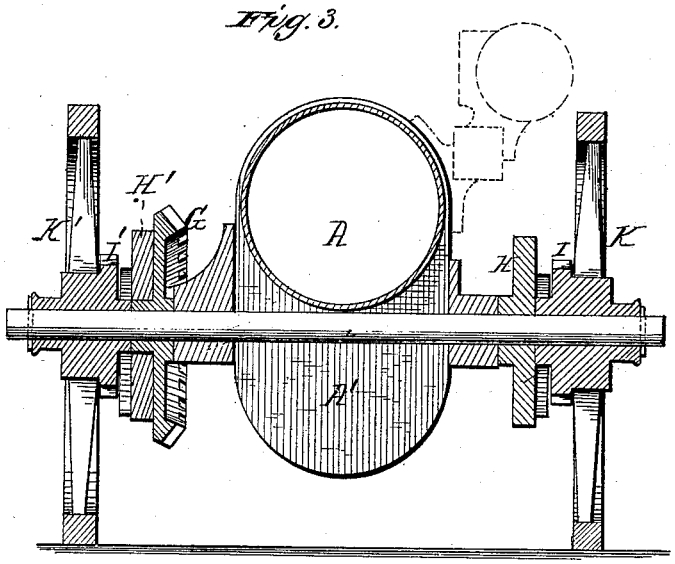


Fig. 4.

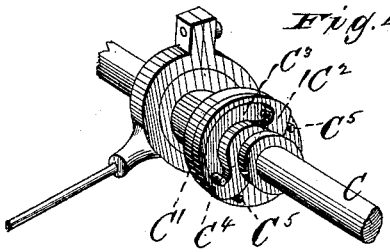
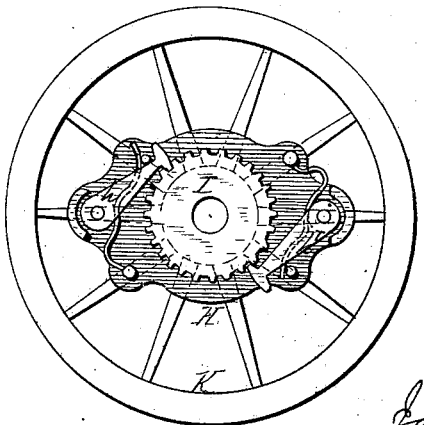


Fig. 5.



WITNESSES
Franck L. Ouraud
John G. Center.

By his Attorney

INVENTOR
Joseph Allonas
A. M. Smith

UNITED STATES PATENT OFFICE

JOSEPH ALLONAS, OF MANSFIELD, OHIO; M. D. HARTER, EXECUTOR OF ESTATE OF SAID ALLONAS, DECEASED.

IMPROVEMENT IN PORTABLE ENGINES.

Specification forming part of Letters Patent No. **221,265**, dated November 4, 1879; application filed September 21, 1878.

To all whom it may concern:

Be it known that I, JOSEPH ALLONAS, of Mansfield, county of Richland, State of Ohio, have invented certain new and useful Improvements in Portable Engines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of my improved engine. Fig. 2 is a plan or top view of the same. Fig. 3 is a transverse section through the rear wheels on the line *x x*, Fig. 2. Fig. 4 is a detached view of the main driving-shaft, showing the device for changing the lead of the valve; and Fig. 5 is a view of one of the wheels, showing a modification in the manner of connecting the pawl-carrier and ratchet-wheel to the traction-wheel and axle.

Similar letters of reference denote corresponding parts in all the figures.

The invention relates to that class of traction or portable engines adapted to be drawn by the team which guides it, the power of the engine being employed to supplement that of the team when required, being adapted to be applied or removed at will; and it consists, more particularly, in a novel arrangement of the gearing through which power is communicated to the truck-wheels, and in providing a reversible clutch or pawl-and-ratchet arrangement, through which the engine can be moved either forward or backward, at will.

It further consists in a novel arrangement of the rear axle and of the brackets in which said axle has its bearings, whereby the weight of the engine and boiler is thrown directly on said axle in advance of the fire-box, instead of being sustained by the joint between the fire-box and boiler.

It further consists in a novel device for changing the lead of the eccentric for facilitating the backing of the engine, and in the combination therewith of set-screws and a stop for regulating the throw of the eccentric, as hereinafter explained.

In the accompanying drawings, A represents the boiler; A′, the fire-box; A^2, the smoke pipe or stack; and B, the steam-cylinder, these parts being constructed in any usual or preferred manner.

C is the main driving-shaft, which is mounted in suitable bearings connected to the boiler, said shaft being connected with and driven from the steam-cylinder in the usual manner. The eccentric which operates the cut-off has connected to it a collar, C′, which abuts against a segmental collar, C^2, connected to the main driving-shaft. This collar C^2 is provided with an elongated slot, C^3, in which a pin or stud, C^4, connected to the collar C′, fits, the throw or movement of the pin or stud in said slot being limited by means of set-screws C^5.

The outer end of the main shaft C, or the end opposite to the eccentric, is provided with the usual band-wheel D, and intermediate between this wheel and the eccentric is mounted a bevel-pinion, D′, secured to and rotating with the main shaft, and from which motion is communicated to a bevel-pinion, E, mounted on an inclined or secondary shaft, E′, which has its forward bearing in the bracket in which one end of the main driving-shaft has its bearing, the other end of said inclined shaft E′ being supported in an arm of one of the axle-brackets, hereinafter described.

The pinion E is shown secured to its shaft by a set-screw, and may be adjusted for throwing it into or out of gear with its driving-pinion; but any suitable means may be employed for throwing the inclined shaft out of gear when the power of the engine is not required for propelling the machine over the ground.

F F′ are brackets, connected at their rear ends with the fire-box and at their forward ends with the boiler, and in which brackets the bearings for the main axle are formed, the bracket F′ being also provided with a bearing for the lower or rear end of the shaft E′, above described.

The brackets are arranged in such manner that the main axle shall be in advance of the fire-box and directly under the rear end of the boiler, so that the weight of the machine shall be thrown principally upon said axle for increasing the traction of the main wheels.

The forward end of each of these brackets

F F′ has an upright or arm, F², formed upon it, rigidly connected with the boiler in advance of the fire-box, said arms serving to take the weight of the boiler and engine, and to relieve the joint between the fire-box and the boiler of the strain consequent upon connecting the axle-supports with the fire-box only, as is ordinarily done, and which in this class of engines, which are subject to heavy jar in being drawn over rough roads or surfaces, has frequently resulted in breaking the joint between the fire-box and the boiler and in the destruction or serious injury of the engine. This is effectually obviated by my construction and arrangement of the bracket, which not only relieves the fire-box of the weight and strain referred to, but also serves to stiffen and strengthen the joint between the fire-box and the boiler, in addition to the feature referred to of giving increased traction to the wheels in consequence of its arrangement in advance of the fire-box and between said fire-box and the forward truck.

G is a bevel-gear, mounted upon and rigidly connected to the main axle, and meshing with a bevel-pinion, E², mounted on the lower end of the inclined shaft E′.

H H′ are pawl-carriers or flanges, rigidly secured to the axle and carrying the pawls *h h′*, which engage with ratchet-wheels I I′, rigidly secured to the traction-wheels K K′.

In Fig. 5 a modification is shown in the arrangement of the ratchet-wheel and the pawl-carrying plate or flange, the latter in this instance being connected with the traction-wheel, while the ratchet-wheel is made fast on the axle.

The pawl-carriers, by preference, are made in the elongated form shown, and the pawls are connected therewith in such manner that they may be reversed for changing the direction of movement of the traction-wheels according to the direction of rotation of the axle and main engine-shaft C.

The forward end of the boiler is mounted upon an axle, L, provided with truck-wheels, and with the usual tongue or pole for drawing the engine from place to place by animal-power, or for guiding the machine when it is propelled by the power of the engine.

Parts of the machine not particularly described may be constructed and arranged in any usual or preferred way.

Having now described the invention, what is claimed as new is—

1. In a traction-engine, the combination of the engine-shaft, the rear axle carrying on each end an automatic clutch or pawl-and-ratchet arrangement, the truck-wheels mounted loosely on said axle and actuated through the medium of said pawl-and-ratchet arrangement, and the inclined shaft geared at one end directly to the engine-shaft and at the other end directly to the axle.

2. The inclined shaft geared at one end directly to a rear axle carrying loose truck-wheels and automatic pawl-and-ratchet arrangements for imparting movement from the axle to the respective wheels, and at the other end directly to the engine-shaft through the instrumentality of a shifting adjustable gear, which can be moved to disconnect said inclined shaft from the engine-shaft, when desired.

3. The bearing-brackets in which the main axle is mounted, connected with the fire-box and with the boiler in advance of the fire-box, for relieving the latter of the weight of the boiler and engine and giving increased traction to the driving traction-wheels.

4. The rear axle arranged below the boiler and in front of the fire-box, in combination with the truck-wheels mounted loosely thereon, the pawl-and-ratchet arrangements for imparting movement from the axle to the respective wheels, the inclined shaft, and the engine-shaft, the whole being constructed to operate substantially as described.

5. The collars C′ C², constructed and operating substantially as described, for changing the lead of the eccentric and reversing the movement of the engine-shaft.

6. The collar C′, provided with the pin or stop, in combination with the slotted segmental collar C², provided with the set-screws, for the purpose and substantially as described.

JOSEPH ALLONAS.

Witnesses:
JOHN G. CENTER,
ALEXANDER MAHON.