(No Model.) 2 Sheets—Sheet 1.

J. PRICE.

TRACTION ENGINE.

No. 363,966. Patented May 31, 1887.

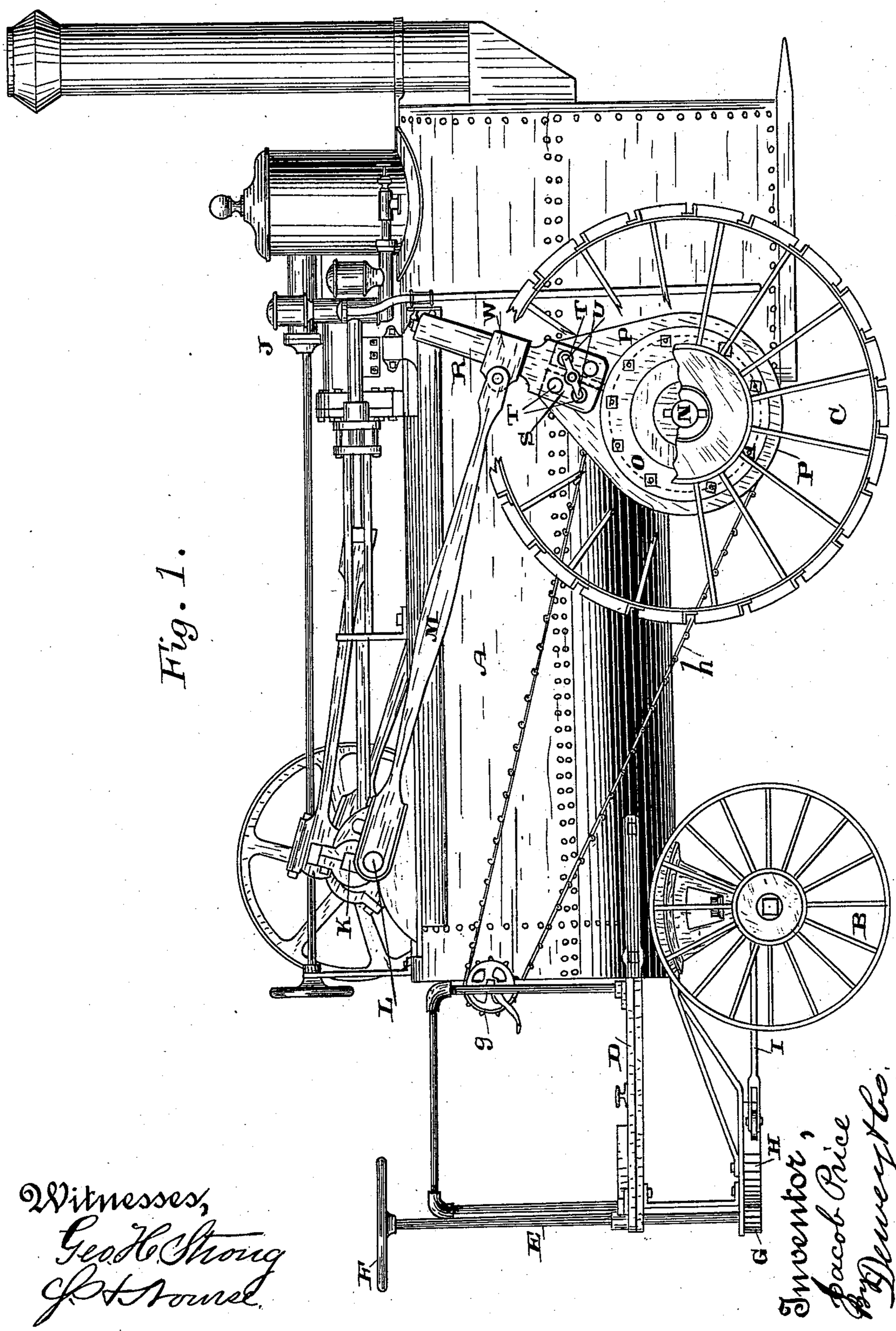

Fig. 1.

Witnesses,
Geo. H. Strong
J. F. Tourse.

Inventor,
Jacob Price
By Dewey & Co.
attys

(No Model.)

2 Sheets—Sheet 2.

J. PRICE.

TRACTION ENGINE.

No. 363,966. Patented May 31, 1887.

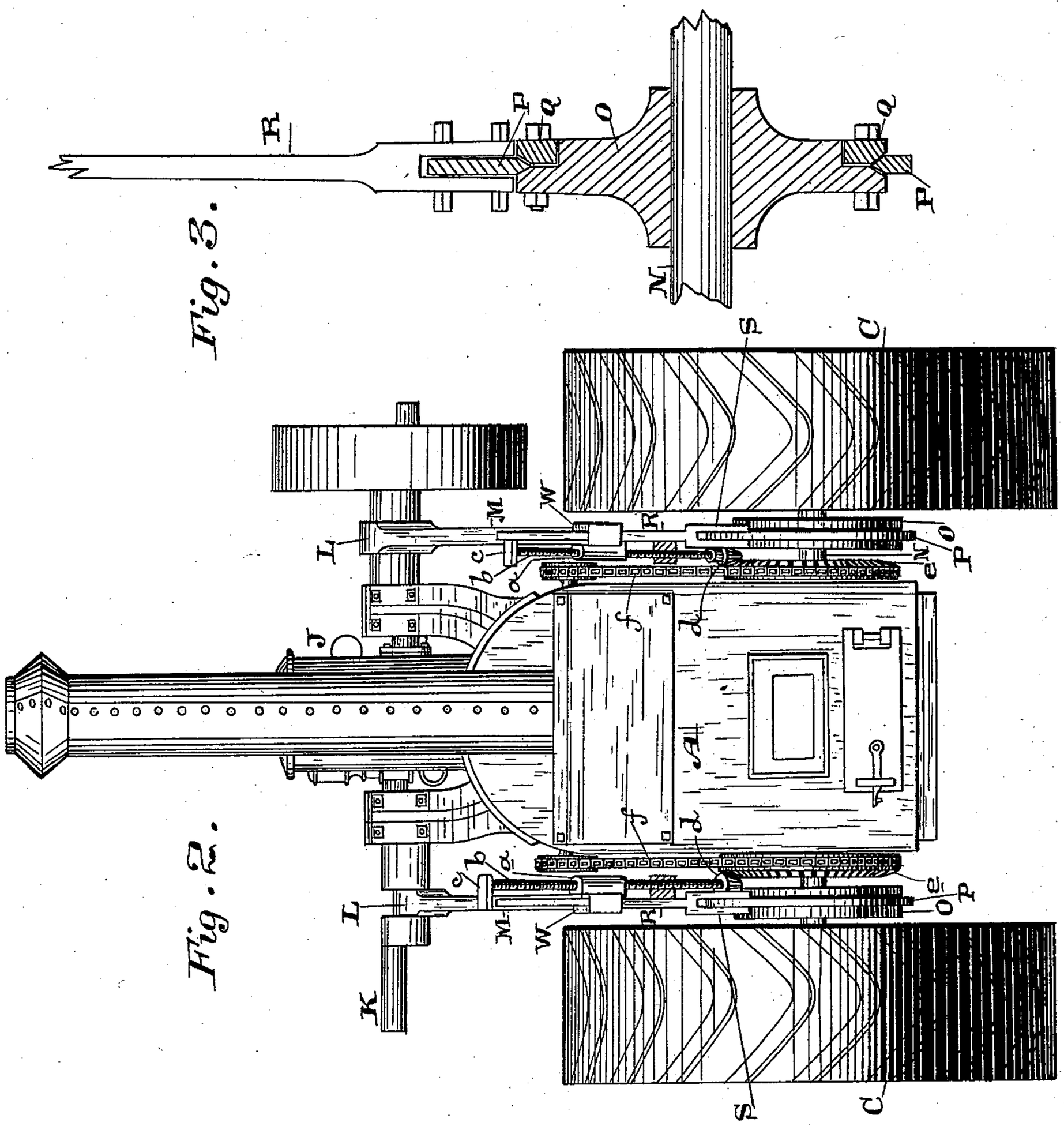

Fig. 2.

Witnesses,
Geo. H. Strong.
J. B. Towse.

Inventor,
Jacob Price
By Dewey & Co.
attys

UNITED STATES PATENT OFFICE.

JACOB PRICE, OF SAN LEANDRO, CALIFORNIA.

TRACTION-ENGINE.

SPECIFICATION forming part of Letters Patent No. 363,966, dated May 31, 1887.

Application filed January 8, 1887. Serial No. 223,833. (No model.)

To all whom it may concern:

Be it known that I, JACOB PRICE, of San Leandro, Alameda county, State of California, have invented an Improvement in Traction-Engines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a traction-engine, which is especially intended for use upon ordinary roadways or fields.

It consists of an engine and boiler mounted upon suitable bearings and traction wheels and an intermittently-oscillating clutch mechanism of peculiar construction, by which the reciprocating motion of the engine is transmitted to the driving-wheels, so as to produce a continuous rotary motion of the same without the intervention of gearing; and it also consists in a means for adjusting the transmitted stroke and the consequent power which is applied to drive the engine.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a side elevation of an engine, showing my attachment. Fig. 2 is a rear end view of the same. Fig. 3 is a sectional detail view.

A is the boiler of the engine, supported upon the forward steering-wheels B and the main traction and driving wheels C, the axle of which is so placed that these receive the principal portion of the weight. The wheels are provided with any well-known form of clutch or pawl-and-ratchet mechanism which will allow one wheel to turn faster than the other when turning corners. The rear end of the fire-box is provided with a door and any feeding device suitable for straw or whatever fuel it may be desired to use.

The front end of the boiler is supported, as before stated, upon the smaller bearing-wheels, and it has a platform, D, supported upon a framework extending in front of the boiler, and a vertical shaft, E, turns in a suitable supporting-box at the front of this platform, having a hand-wheel, F, at the top, by which it is turned, and a pinion, G, at the bottom, which engages a curved segmental rack, H. This rack is connected by arms I to the axles of the front wheels, so that by turning the hand-wheel and vertical shaft the bearing-wheels may be turned so as to steer the apparatus to any desired point.

J is the engine-cylinder.

K is the shaft to which power is communicated by means of the piston and connecting-rods in the usual manner. This shaft extends to each side beyond the journal-boxes or bearings, and has short cranks L, to which the ends of connecting-rods M are fitted, for a purpose to be hereinafter described.

N is the shaft or axle of the main bearing-wheels C, and it has a disk, O, secured to it upon each side of the boiler, these disks having grooves or channels made in their peripheries to receive the correspondingly-shaped inclosing-band P, which surrounds each of them.

In order to adjust the grooves for any wear that may take place, I have fitted a supplemental flange, Q, upon one side of each disk, this flange being secured by bolts, so that it may be moved closer to the opposite side of the disk.

One side of the V-shaped groove is formed upon the main portion of the disk periphery, and the other side of the groove is formed upon this adjustable ring; and it will be seen that by screwing the bolts upon the ring it can be brought closer to the face of the disk, and thus close up the groove, so that the tongue of the inclosing-ring will always fit it sufficiently tight. By removing the ring the strap may be easily taken out or put in at any time. The inclosing strap or ring P extends outward from the disk at one point, which in the present case is above the axle of the wheels, and the sides of this extension are separated sufficiently, so that when they are forced toward each other they will not meet, but will cause the band to clamp or grip firmly upon the disk.

In order to operate this device it is necessary to make the band grip the disk when moving in one direction, so as to turn the disk and the axle, and to make it open or become slack, so as to move backward without turning the disk when moving in the opposite direction. This is effected as follows:

R is a lever arm, the lower end of which is forked, so as to fit over the projecting ends of the clamping-band, as shown at S. Through the two sides of this forked portion are made holes T, and corresponding holes are made in the extension ends of the band. U U are pins

which pass through two of these holes, which are diagonally opposite to each other, as shown in Fig. 1. The rods M from the short cranks L connect with the slides W upon the lever-arms R.

The engine being in motion, the rotary motion of the small crank L is converted into a reciprocating motion through the connecting-rods M, and this in turn is transmitted to the lever R, so as to cause it to vibrate or oscillate from side to side. When it is moved toward the left, as in Fig. 1, the pins U U being in the holes in the forks S, as shown, the action of the lever R will, through these pins, serve to close the band P by drawing the projecting ends closer together, and this will cause it to clamp upon the ring or disk O, so that the power will be transmitted through this device to the wheel-axle and cause it to rotate in the direction in which the lever moves at that time. The opposite motion of the connecting-rod M pushes the lever R back, and the effect of this movement is to cause the pins U U to force the jaws of the band P open, so as to allow it to turn loosely about the disk O. The cranks L upon the opposite ends of the shaft stand in opposite directions, so that when one crank is operated to rotate the wheel-shaft the other one is released and is going back for a new grip upon the disk. The rapid motion of the engine is thus transmitted alternately through these band-clutches to the wheel-shaft, and when the engine is once started the momentum is such that this intermittent movement of the clutches will practically produce a steady and constant progression of the engine.

In order to vary the power and speed of the engine, the sliding block W, which fits upon the lever-arm R, is moved outward or inward on the lever, so that the power of the cranks will be applied farther from or nearer to the center of the wheel, as may be desired. In the present case I have shown a nut, *a*, fixed to the slide W, and through this nut a screw, *b*, passes, the upper end being journaled in a projecting arm, *c*, and the lower end in another projecting arm near the inner end of the lever R.

d is a beveled pinion secured to the lower end of the screw-shaft *b*, and this is engaged by a beveled wheel, *e*, which turns loosely upon the main shaft. This beveled wheel is actuated by means of chain-pulleys *g* and the intermediate chain, *h*, which is shown more clearly in Fig. 1, the screw and gearing being shown in Fig. 2. The pulley *g* is fixed upon a shaft journaled within easy reach of the steersman, who stands upon the platform at the front of the engine, and by turning the crank the beveled gear *e* is caused to drive the pinion *d*, and through it turn the screw *b*, which passes through the nut *a*, and the nut is thus caused to travel outward or inward upon the screw, thus moving the sliding block W farther away from or nearer to the axis of the wheel. In the first case the power would be increased and the speed decreased, and in the second case the speed would be increased and the power decreased, the variations being regulated to suit the necessities of the machine.

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

1. In a traction-engine, the grooved disk secured to the axle of the driving-wheels and the band surrounding said disk and fitting the grooves and having separated ends, as shown, in combination with the lever connected with these ends so as to close them and cause the band to grip the disk when the lever is moved in one direction, and to open them, so as to loosen the band and allow it to move independent of the disk, when turned in the opposite direction, substantially as herein described.

2. The grooved disk fixed to an axle and the friction-band surrounding said disk, having the projecting separated ends, in combination with the power-lever having one end attached to the two projecting ends of the friction-band by means of diagonally-placed pins, one of which passes through each of the ends, substantially as herein described.

3. The disk having the grooved periphery, the band having the projecting separated ends, and the forked actuating-lever having holes made through it to correspond with smaller holes in the ends of the friction-band, said holes standing diagonally, so that one is nearer to the center than the other, and pins passing through the holes, so as to be operated by the movement of the lever, substantially as herein described.

4. The disk secured to the axle of the bearing-wheels, and the ring or flange Q, bolted upon the side of it, so as to be adjustable to or from the disk, and having the groove formed between the two for the reception of the frictional band, substantially as herein described.

5. The frictional band surrounding the grooved disk, which is secured to the bearing-wheel axle, and having its projecting ends separated, as shown, in combination with a lever having diagonally-placed pins, so that one of said pins enters each arm of the band, a slide or clasp fitted upon the lever, and a connecting-rod extending from said slide to a crank or cranks upon the engine-shaft, whereby power is transmitted to the lever, substantially as herein described.

6. The friction-clutch mechanism having the operating-lever and connecting-pins and a slide fitted to said lever through which motion is communicated to it from a crank upon the engine-shaft, in combination with a nut secured to the slide, a screw passing through said nut and having its ends journaled upon the lever, and the beveled gear and pinion through which the screw may be turned, so as to move the slide outward or inward upon the lever-arm, substantially as herein described.

7. The adjustable slide mounted upon the lever-arm, the clutch mechanism by which power is transmitted from the engine-shaft to

the drive-wheel axle, and the screw and nut by which the slide may be moved outward or inward upon the lever, so as to increase or decrease its power, in combination with the beveled gear wheel and pinion, the chain-wheels, and intermediate chain-belt by which the adjustment is made, substantially as herein described.

In witness whereof I have hereunto set my hand.

JACOB PRICE.

Witnesses:
GEO. H. STRONG,
S. H. NOURSE.