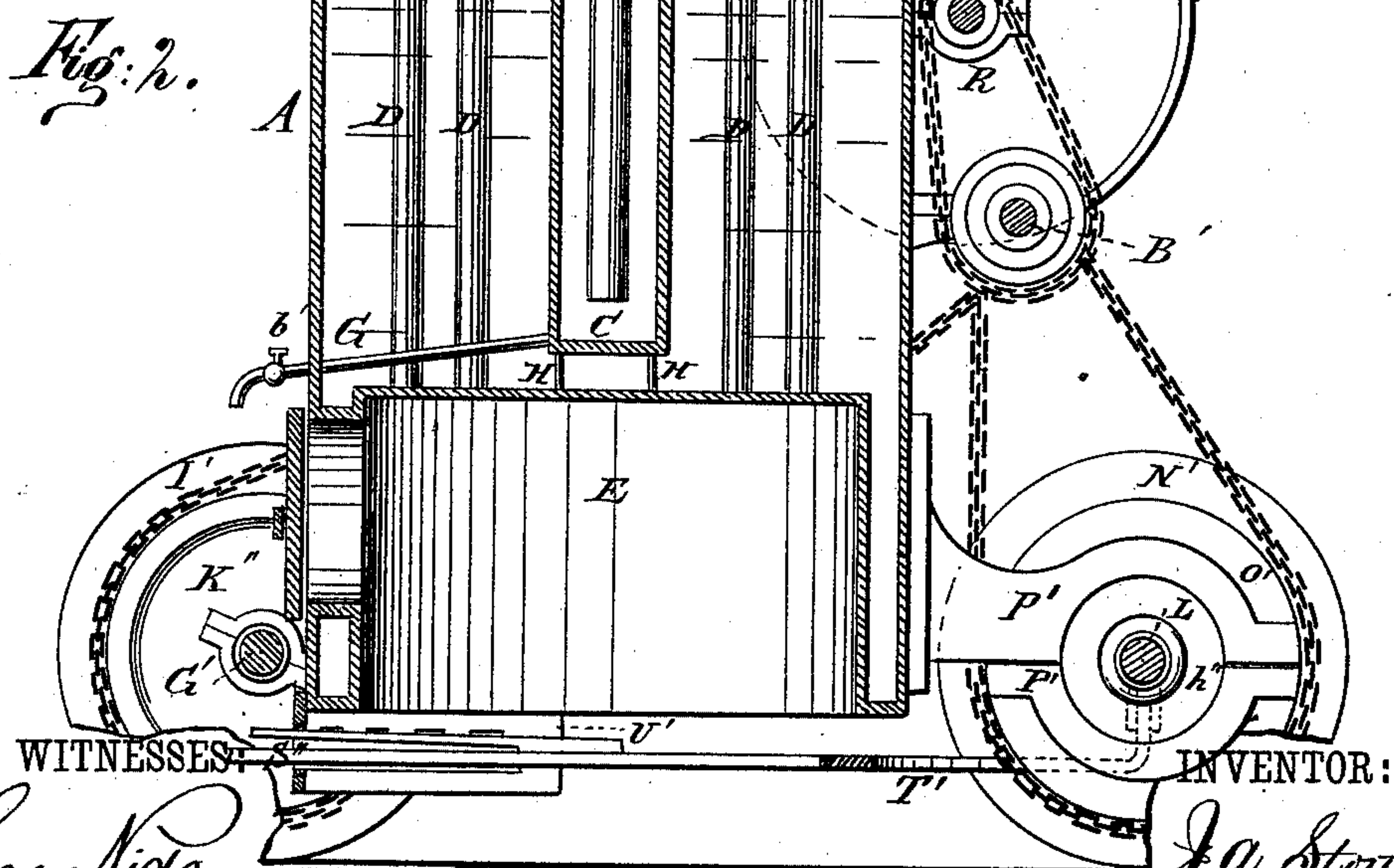
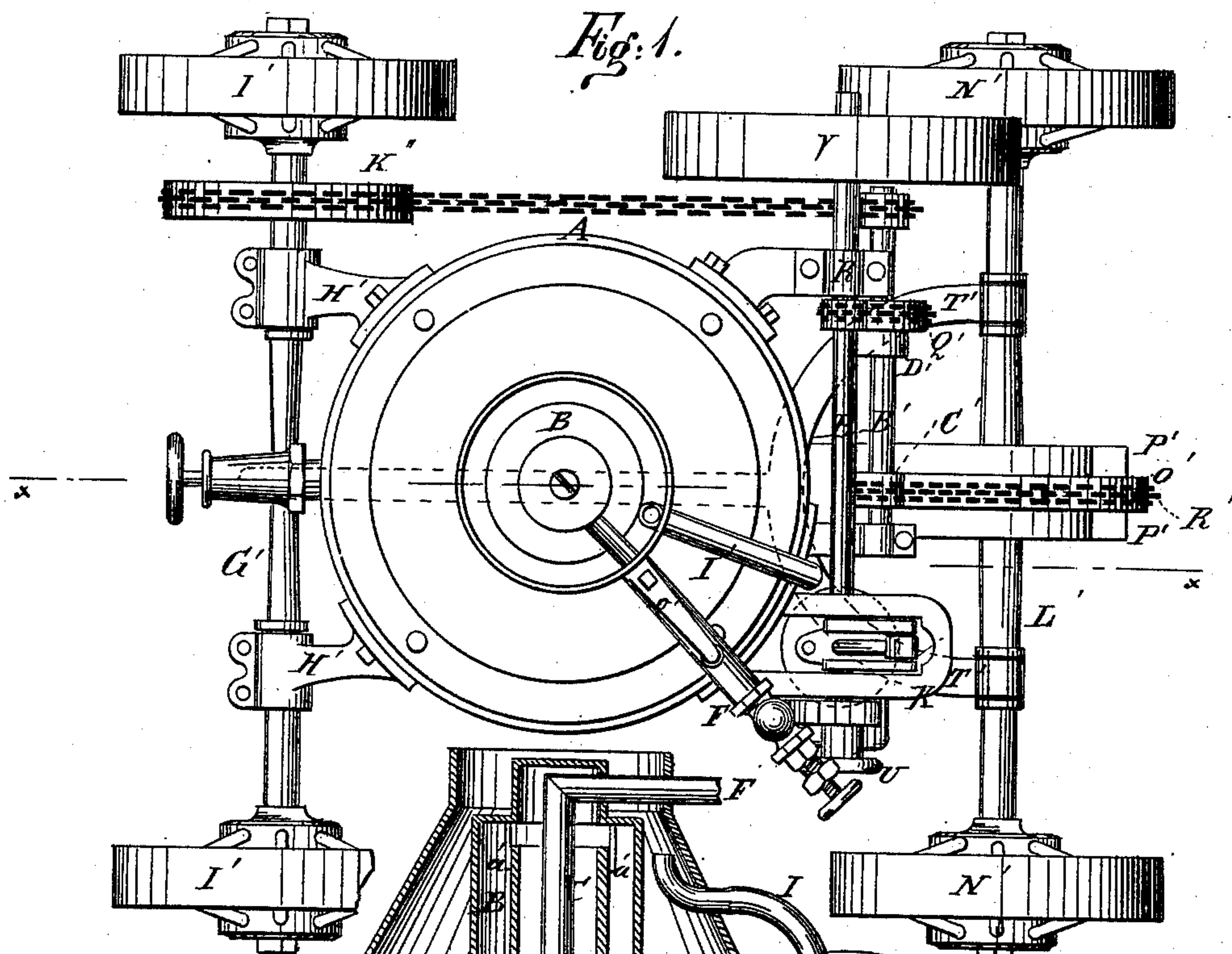


J. A. STOUT.
Traction-Engine.

No. 223,405.

Patented Jan. 6, 1880.



WITNESSES:

Chas. Nida
C. Sedgwick

INVENTOR:

J. A. Stout
Munn & Co

BY

ATTORNEYS.

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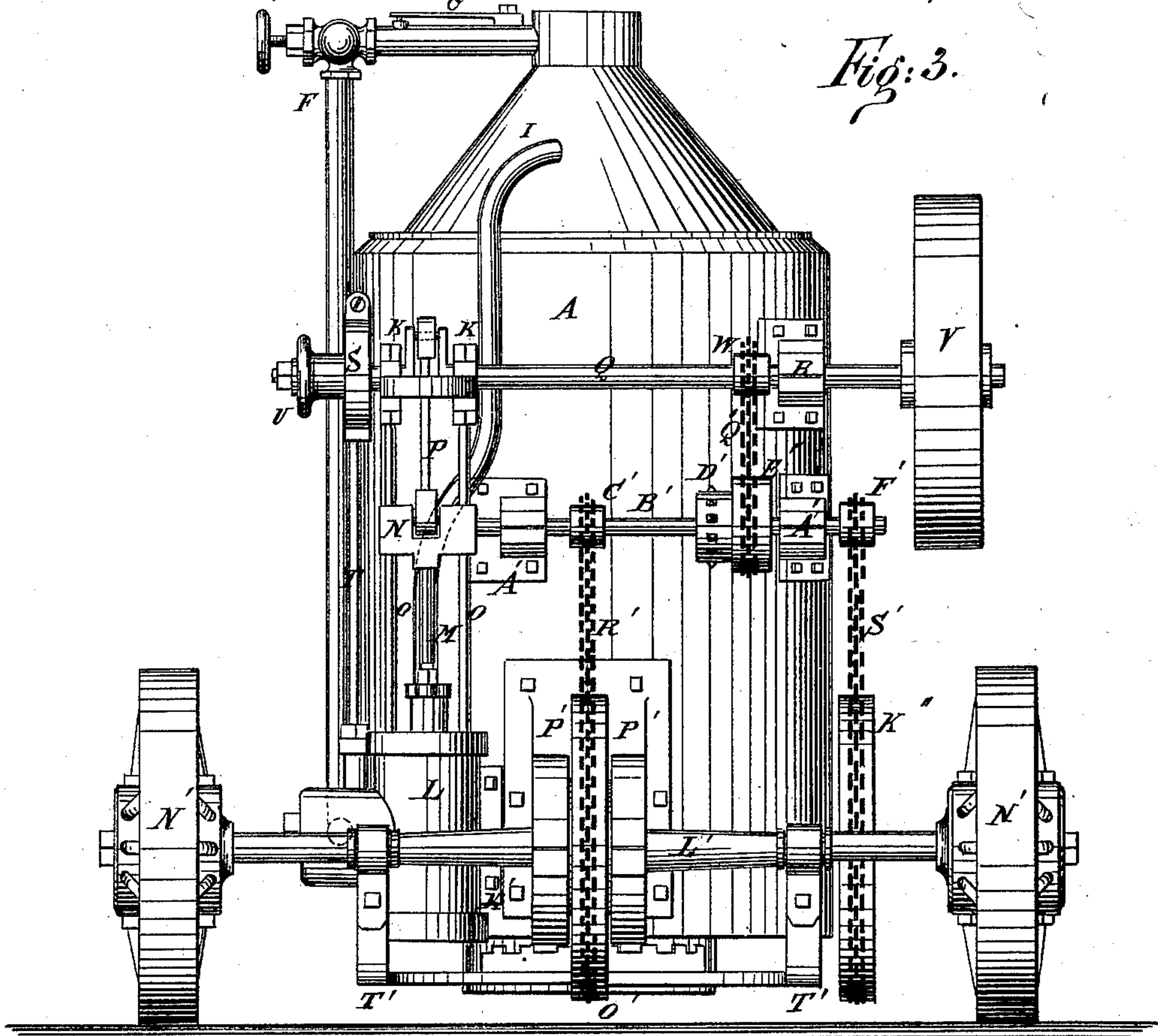
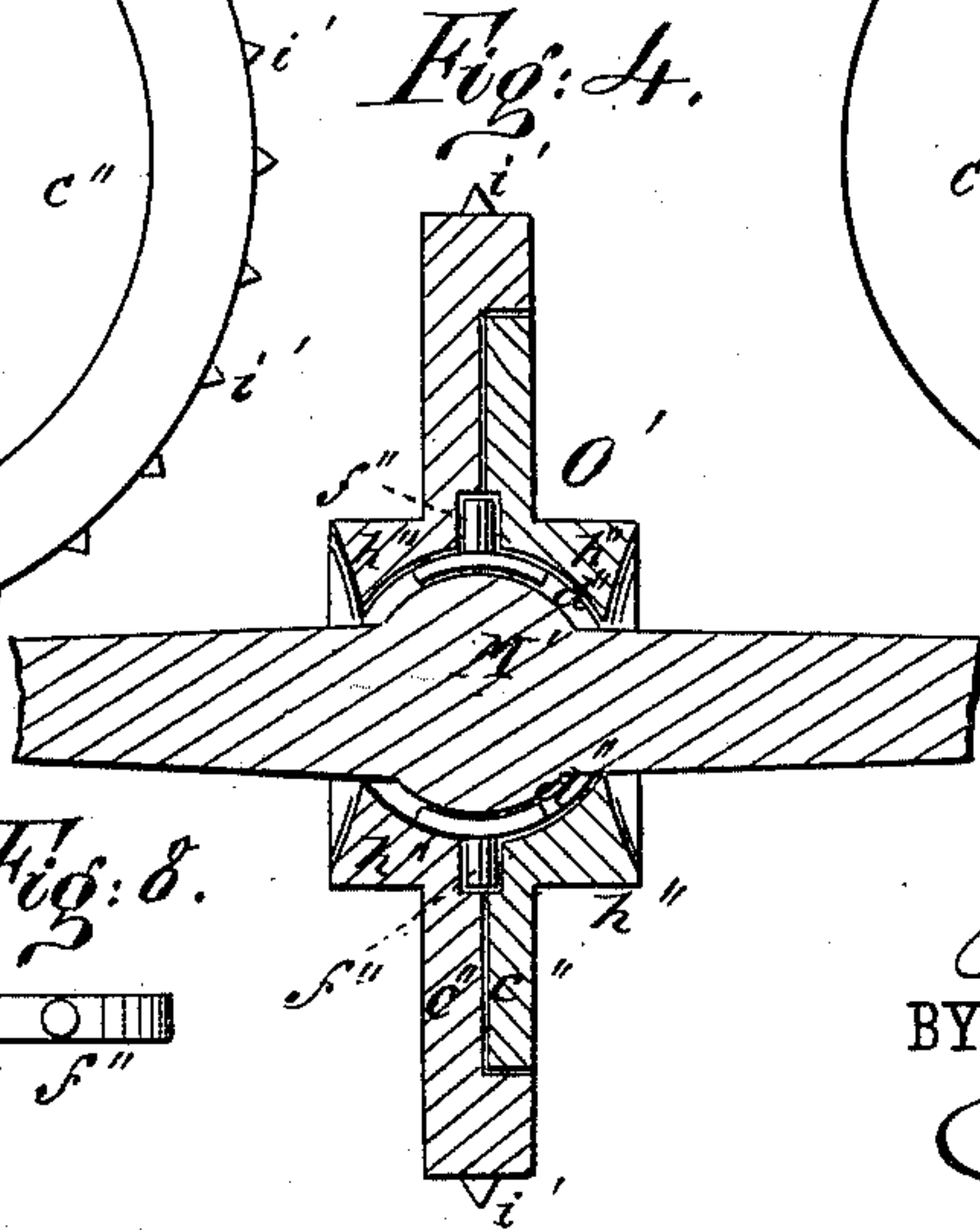
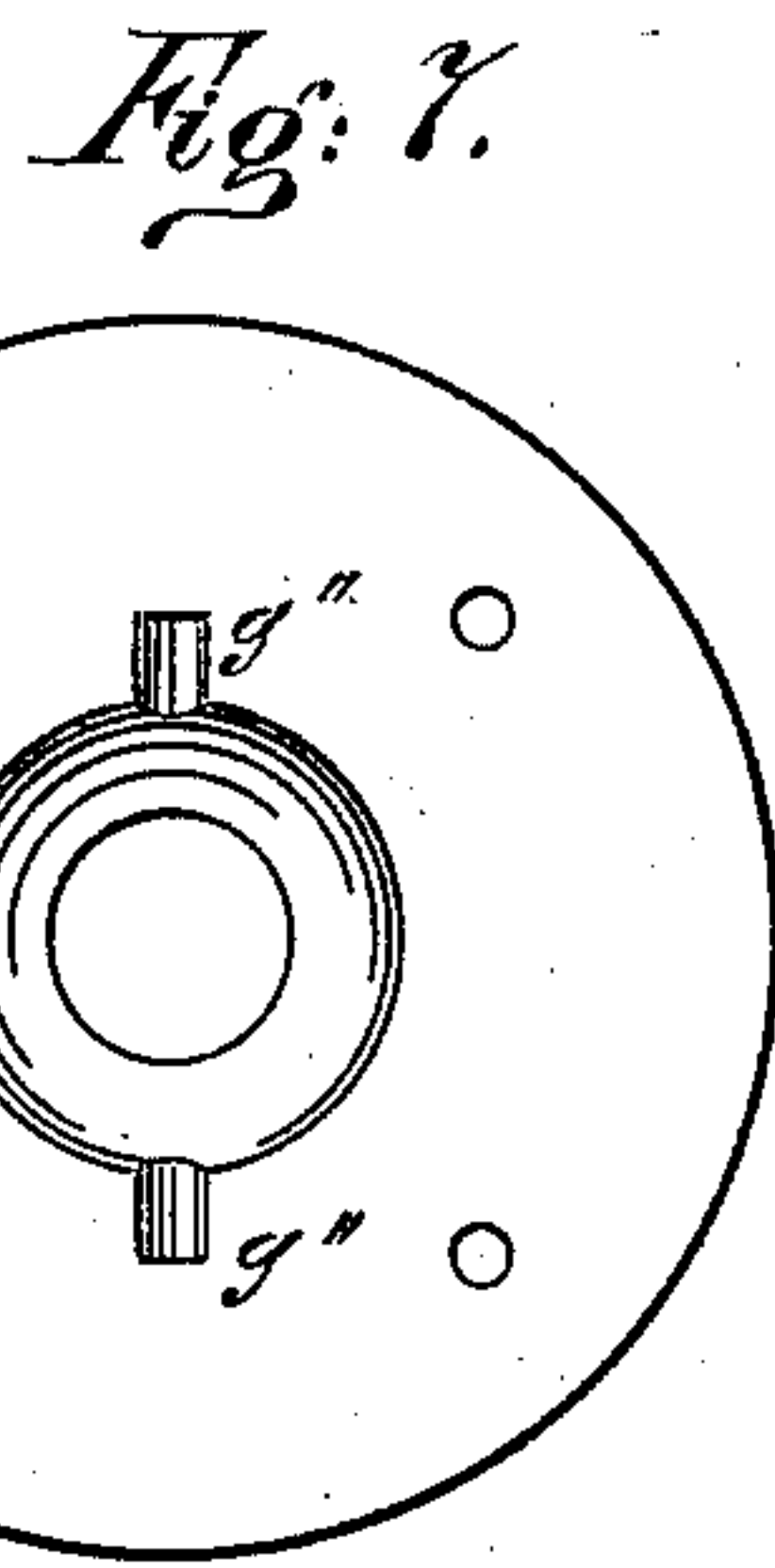
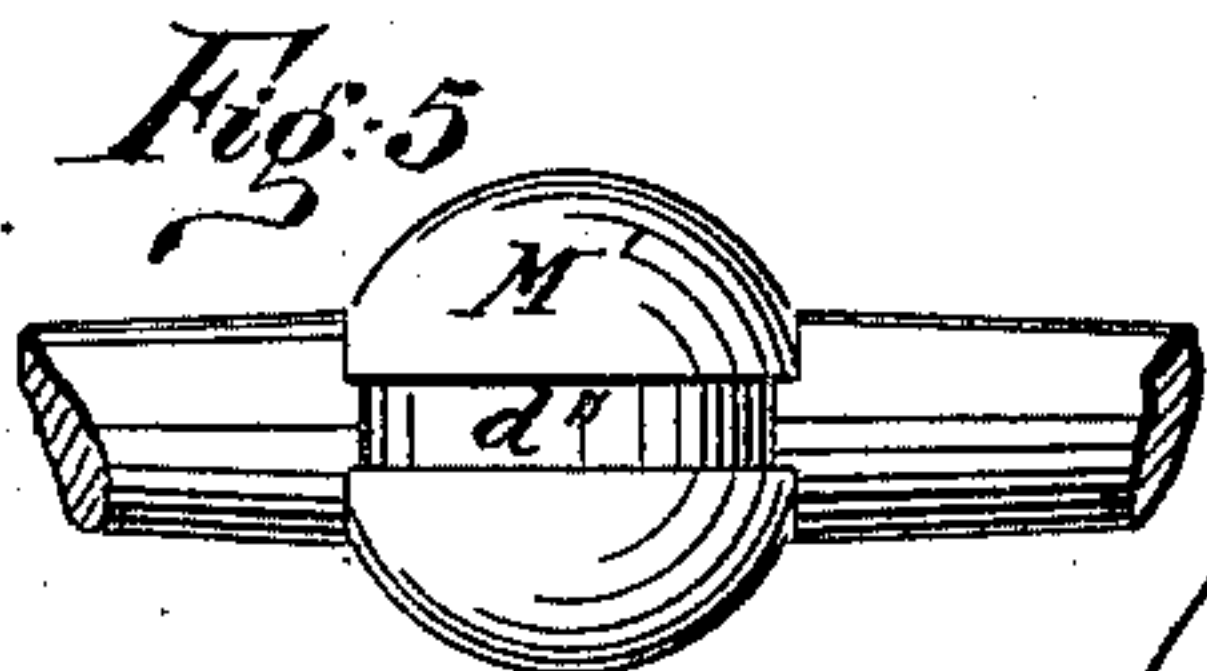
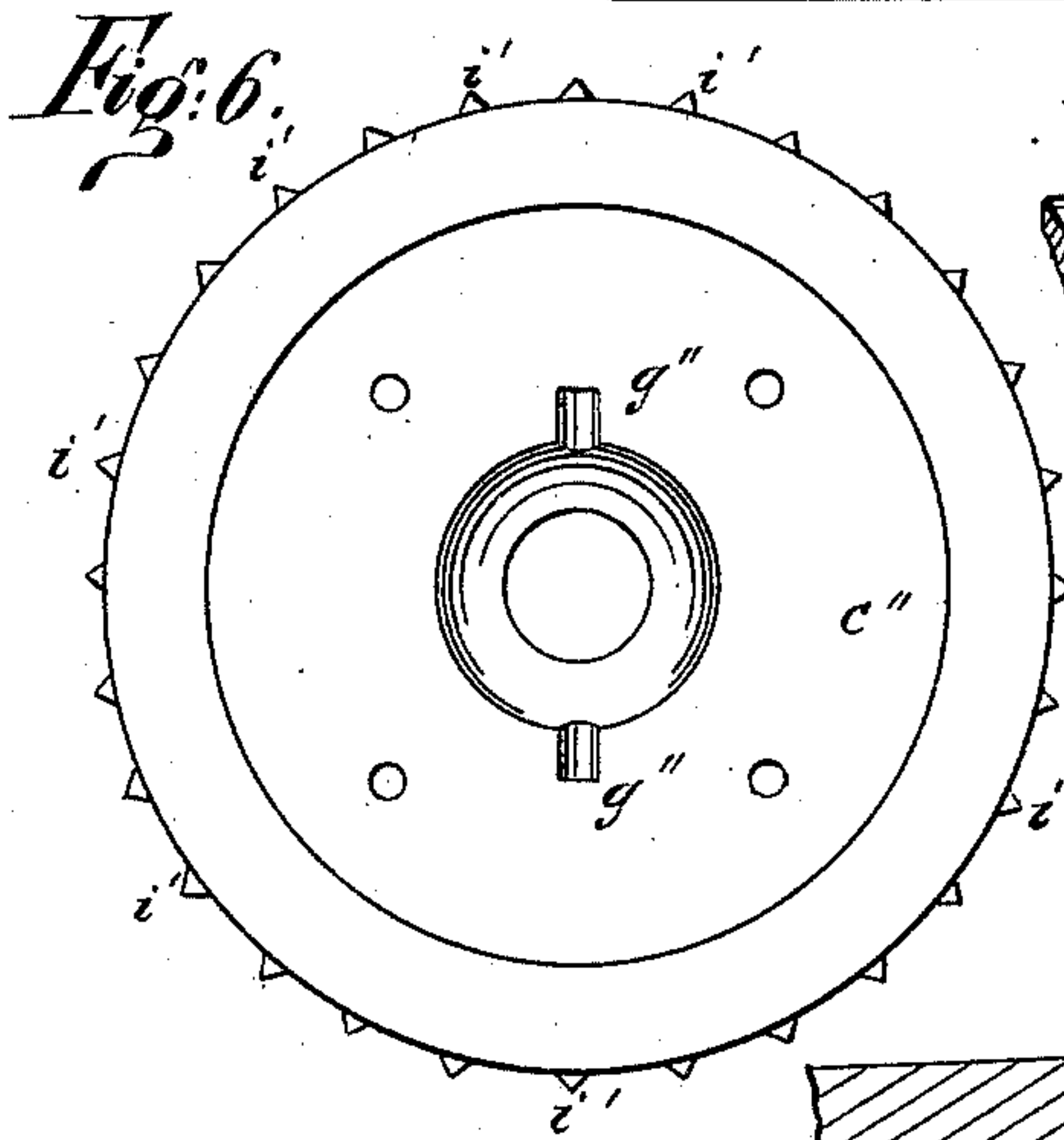


Fig: 3.



WITNESSES:

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INVENTOR:

J. A. Stout
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UNITED STATES PATENT OFFICE.

JAMES A. STOUT, OF BELLEVILLE, ILLINOIS, ASSIGNOR TO HIMSELF AND
HARRISON MACHINE WORKS, OF SAME PLACE.

TRACTION-ENGINE.

SPECIFICATION forming part of Letters Patent No. 223,405, dated January 6, 1880.

Application filed July 2, 1879.

To all whom it may concern:

Be it known that I, JAMES A. STOUT, of Belleville, in the county of St. Clair and State of Illinois, have invented a new and Improved Traction-Engine, of which the following is a specification.

Figure 1 is a plan of the engine. Fig. 2 is a sectional elevation on line *x x*, Fig. 1. Fig. 3 is a front elevation of the engine. Fig. 4 is a sectional elevation, showing the arrangement of ball, trunnion, and socket. Fig. 5 is a plan of the ball on front axle. Fig. 6 is a plan of the inside of one part of the socket or journal-box of the ball. Fig. 7 is a plan of the inside of the other part of the same. Fig. 8 is a plan of the trunnion that connects the ball with the socket.

Similar letters of reference indicate corresponding parts.

To apply the propelling power directly to an adjustable front axle, to provide the axle with a universal or ball joint motion, and to make a more economical and safe boiler for the engine are the objects of my invention.

The invention will first be described in connection with the drawings, and then pointed out in the claim.

In the drawings, A represents the shell of the boiler; B, the steam-dome; and C a steam-reservoir, suspended by bolts *a'* from the top of the dome to within a few inches of the crown-sheet of the fire-box. This steam-reservoir receives steam from the dome and dries or superheats it, because of the heating-surface it presents, and thereby increases the steaming capacity of the boiler, and it displaces unnecessary water in the boiler, in all these points giving this boiler an advantage over others.

D represents the boiler-flues; E, the fire-box; F, the steam-pipe, provided with safety-valve *O''*, which takes steam from the bottom of the reservoir C and conducts it to the engine, and hence takes the driest steam.

G is a drain-pipe leading from reservoir C, for the purpose of drawing off the condensed steam when the boiler is allowed to cool off. It is provided with a cock, *b'*.

H are the stay-bolts to sustain the crown-sheet of the boiler, and I is the exhaust-pipe of the engine.

In an upright boiler the danger of overheating flues, which always threatens horizontal boilers on steep grades, is avoided, from the fact that in upright boilers the flues cannot be uncovered by the water, as is often the case with the flues of horizontal boilers under the conditions alluded to.

The driving power consists of the engine attached, as shown, to the boiler by the lugs K K'. Its parts, as seen, consist of the cylinder L, piston-rod M, cross-head N, guide-rods O, pitman P, attached to the crank of the main shaft Q, that revolves in bearings in the lugs K and R, eccentric S, controlling the valve-rod T, and the reversing-cam U.

I make no claim to novelty in any of these parts, and they may be of other forms and designs, and yet perform the required work.

On the opposite end of the main shaft is a band or fly wheel, V, and on the same shaft is a toothed wheel, W. Below this main shaft, and revolving in boxes A' bolted on the boiler, is another shaft, B', that has keyed upon it the four toothed wheels C', D', E', and F'.

The boiler and attachments are secured to the axles so that their weight will be about equally distributed upon the four wheels, and the wheels are preferably all of the same height.

The hind axle, G', is attached to the boiler in the usual manner, revolving in two strong wide bearings in the lugs H', that are bolted to the boiler-shell.

The hind wheels, I', are independent, and driven by any suitable device on each end of the axle, as is also the toothed wheel K''.

The front axle, L', is provided with a longitudinally-slotted ball, M', midway of its length, which forms the pivotal journal, on which about one-half of the weight of the boiler and attachments is supported. Being fast to the axle, when revolved it will revolve the axle and drive the wheels N'. This ball is inclosed in a socket or journal-box, O', made of two pieces of metal, *c''*, turned to fit the ball and each other also, and bolted together. Fitting in the slots or keyways *d''* of the ball M' are two movable trunnions, *f''*, whose projecting pins are journaled in the sockets *g''* within the large socket O'. Hence it will be seen that the ball is given a very considerable range of motion

both in a horizontal and a vertical plane, and invests the front axle and wheels with all the freedom of motion that can be desired. This journal-box, inclosing the ball M' , is held in position by being clamped between the strong lugs P' , that are bolted to the front of the boiler-shell, and are clasped over and around the projecting collars h'' , and the rim of this box or socket is furnished with teeth i'' , that convert it essentially to a toothed wheel.

The toothed wheel W of the main shaft is connected with the wheel E' of the counter-shaft by the linked chain or belt Q' , and the wheel C' of the counter-shaft with the socket O' by the chain or belt R' , so that the power of the engine is transmitted directly to the front axle; and the chain or belt S' transmits power from the wheel F' to the wheel K'' on the hind axle whenever it is desirable to apply propelling force directly to the rear wheels.

The front wheels may be keyed fast on the ends of the axle, or arranged so that they may be made tight or loose at pleasure.

When moving straight along a road the wheels should, of course, be tight; but when turning a corner it would be of advantage, perhaps, to have them loose. There are various devices by which this arrangement can be effected.

The counter-shaft B' is used so that the speed of the wheels may be regulated more easily than it could be if connection were made directly to them from the main shaft, which is speeded for running a thrashing or other machine.

The wheel D' indicates that the speed of the wheels may be changed by belting from it to the wheel W , instead of from the wheel E' .

The turning or steering device may be one of many forms. The device shown in the drawings is composed of a yoke, T' , with ends bent upward and made to clasp the front axle on either side of its center, and furnished with a rearward-extending split handle, S'' , with

which to guide the wheels, that may be moved and set fast between any of the teeth of the rack U' .

In most or all traction-engines having wheels with smooth rims, where the propelling mechanism is attached only to the rear axle, the force of two horses hitched to the tongue is usually necessary to assist in pulling the engine on a road and to guide it. The difficulties in the way of these engines lie in their lack of traction or pulling adherence to the ground.

To increase the traction or pulling power of a road-engine the same principles should be applied that apply to a locomotive—that is, increase the number of drivers.

By the devices herein set forth I have nearly or quite doubled the effectiveness of the power applied, and have made the movements of the engine more readily and easily controlled.

I do not confine myself to the use of toothed wheels and chains or belts for the transmission of power from the engine to the front axle, for obviously gear-wheels can be used as well.

In order to turn on the road readily, one of the hind wheels will be keyed to the axle and the other be loose and driven by attachments, but so as to be rigidly controlled, if desired, and the two front wheels are loose, but with attachments to make rigid the axle when desired.

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

The combination, with the front axle, L , and boiler-shell having lugs P' , of the toothed wheel having socket O' and smaller sockets g'' , the two movable trunnions f'' , having projecting pins, and the slotted ball M' , as and for the purpose specified.

JAMES ANDREW STOUT.

Witnesses:

JOHN SPRING,
MATT. SPRAUL.