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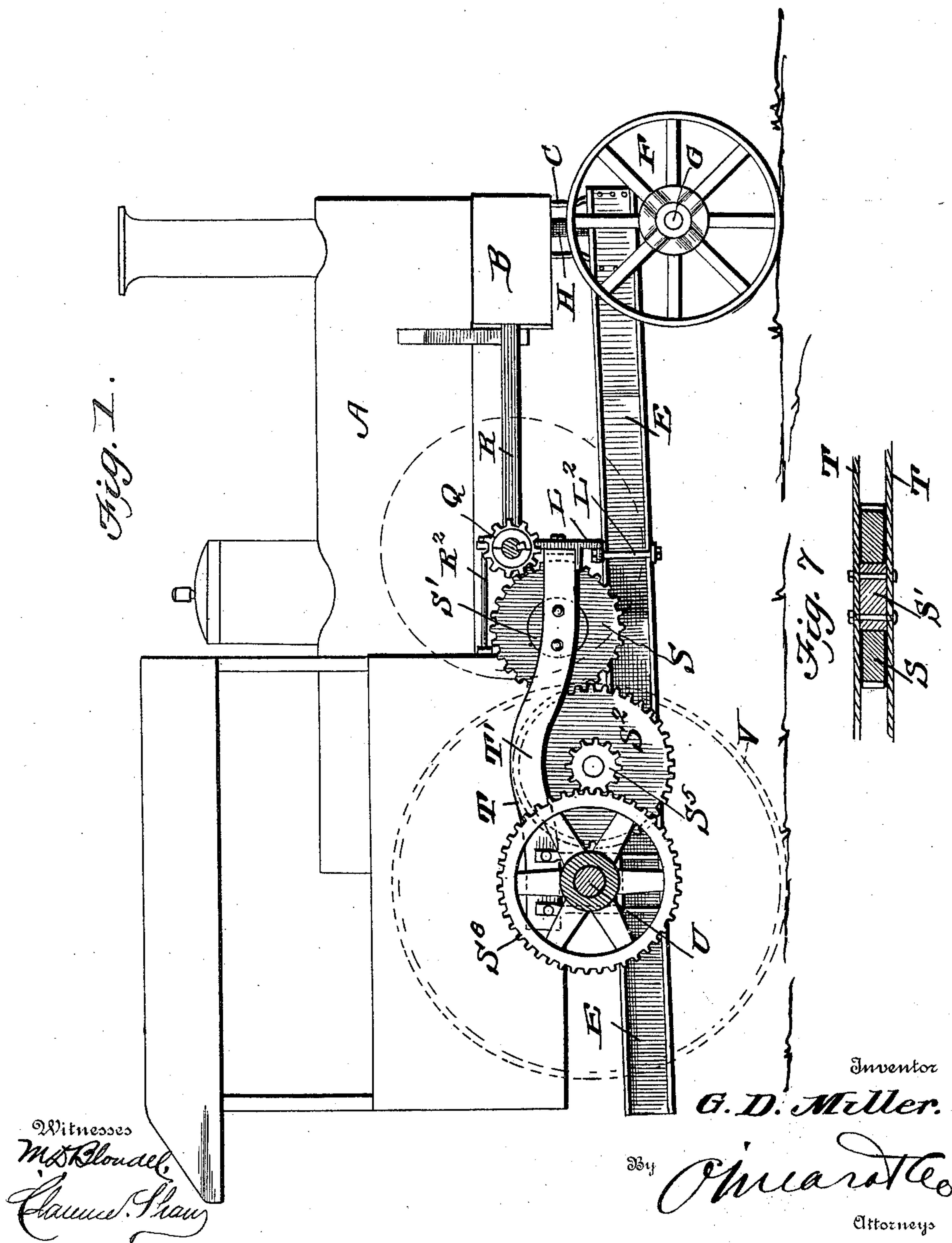
Patented July 15, 1902.

G. D. MILLER.
TRACTION ENGINE.

(Application filed Nov. 30, 1901.)

(No Model.)

3 Sheets—Sheet 1.



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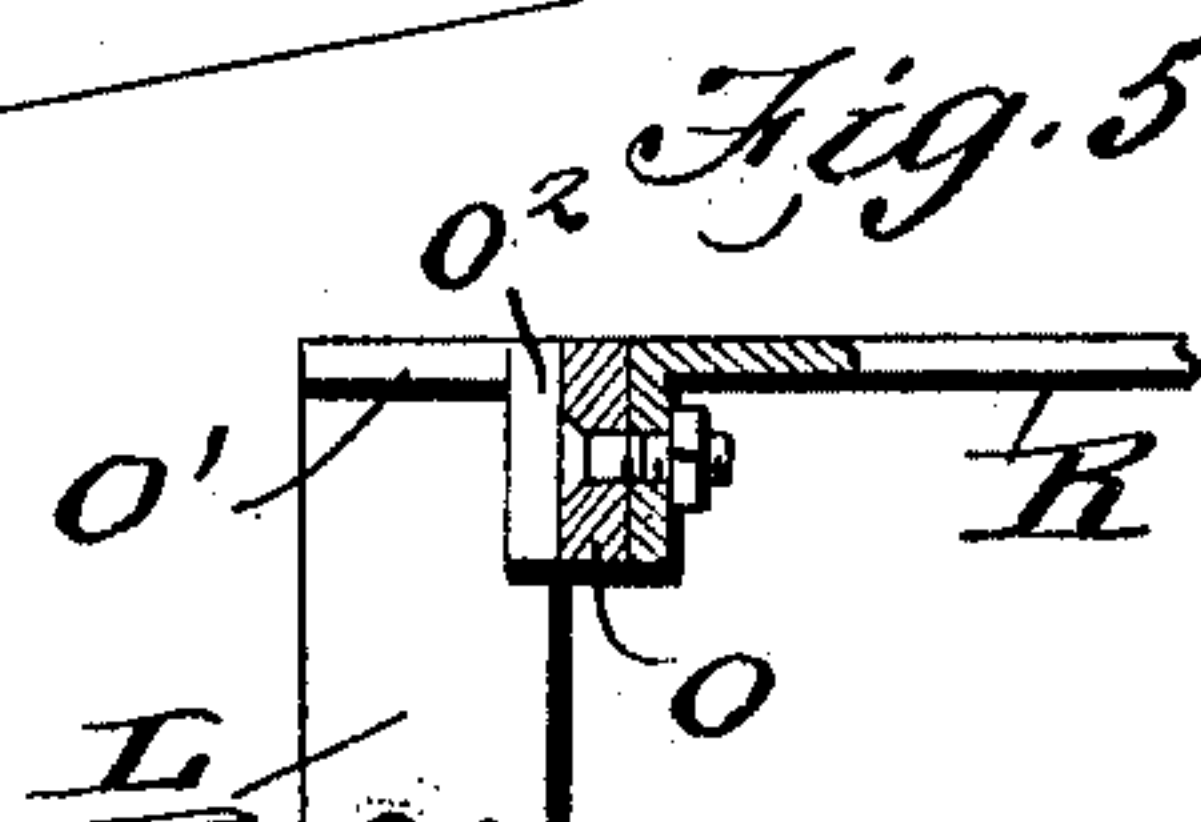
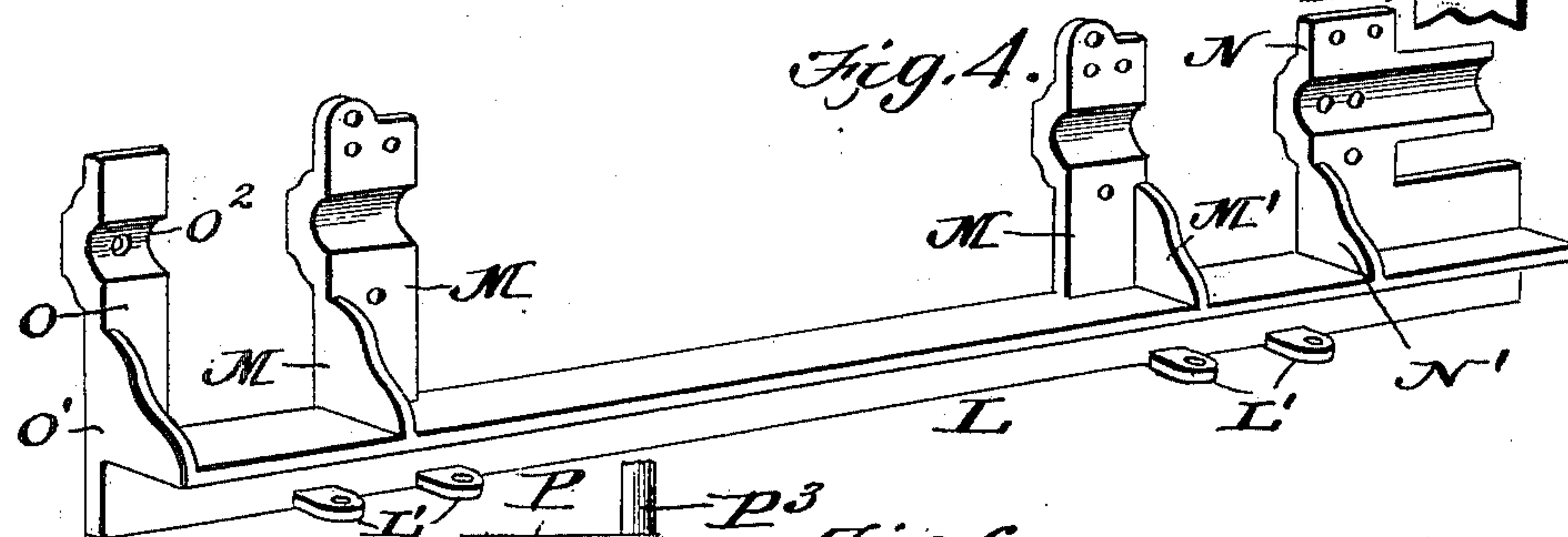
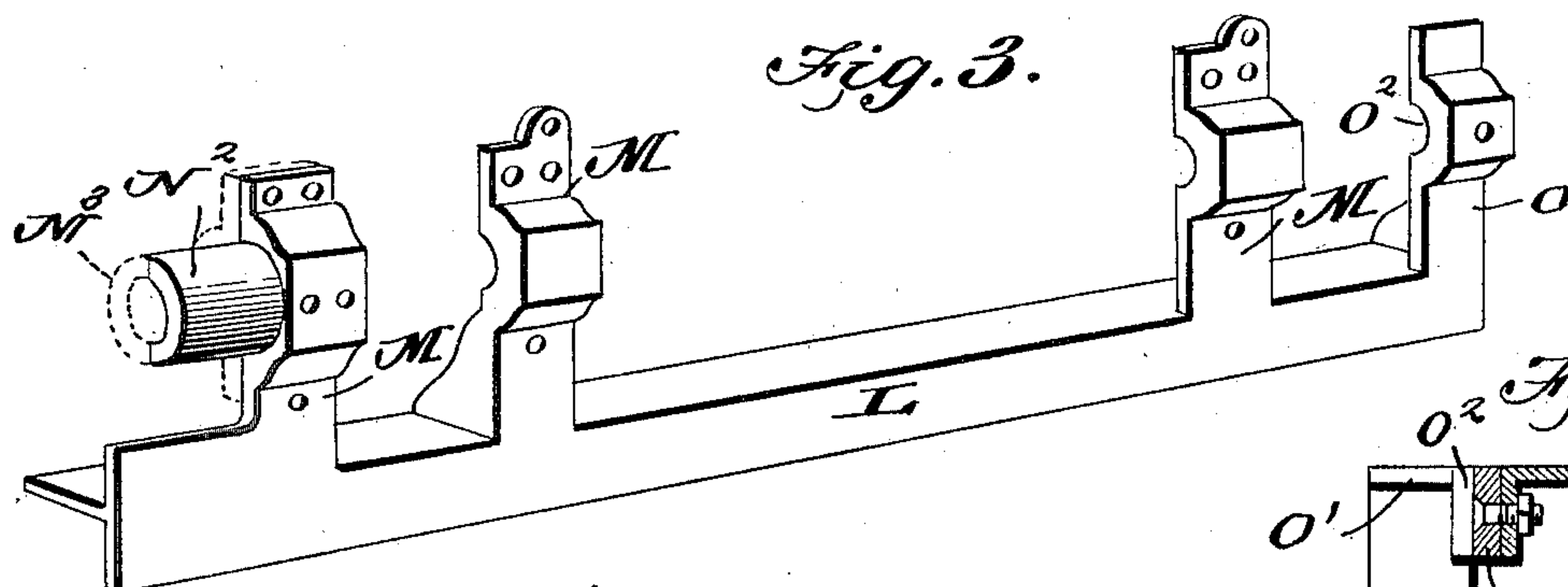
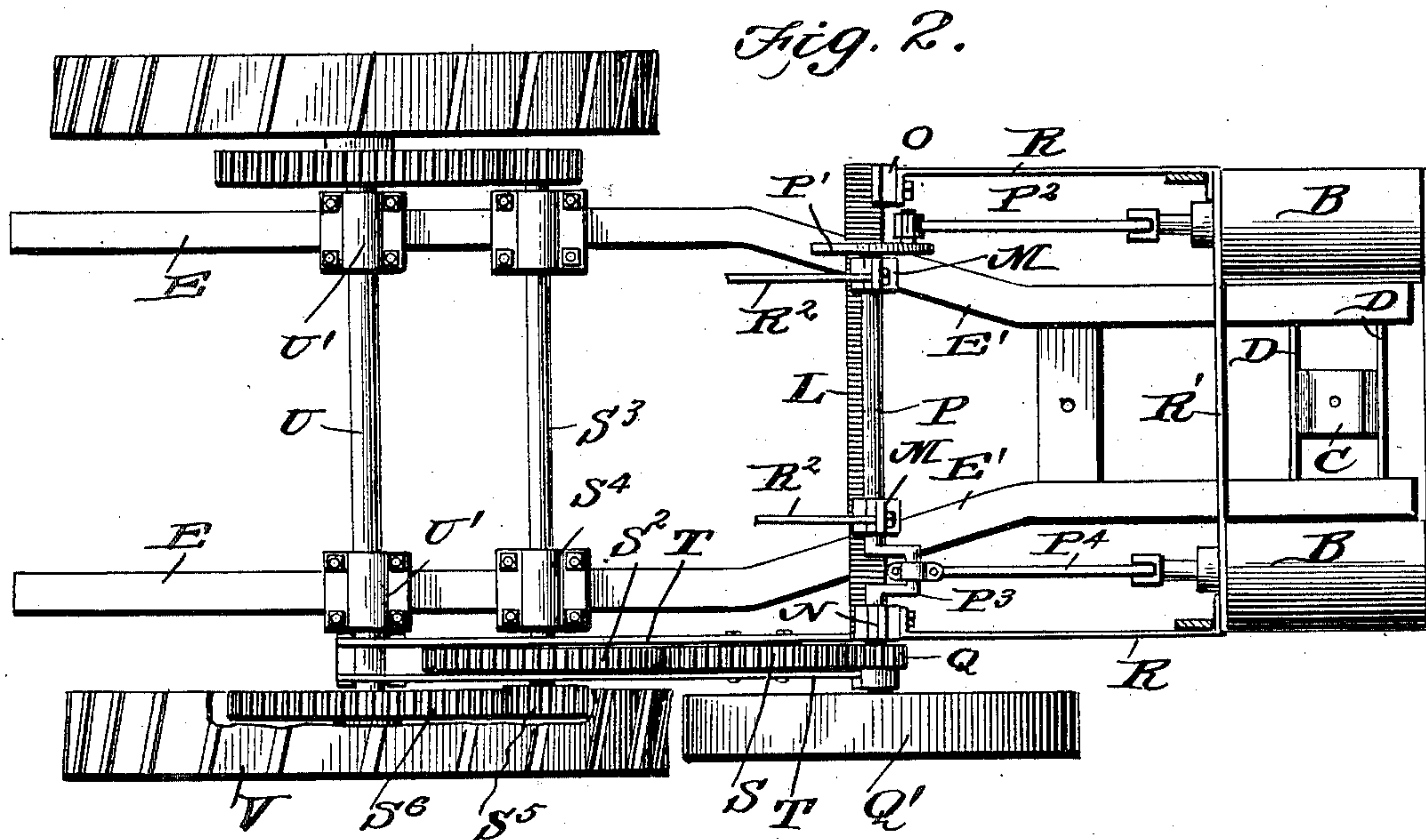
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3 Sheets—Sheet 2.



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Fig. 6.

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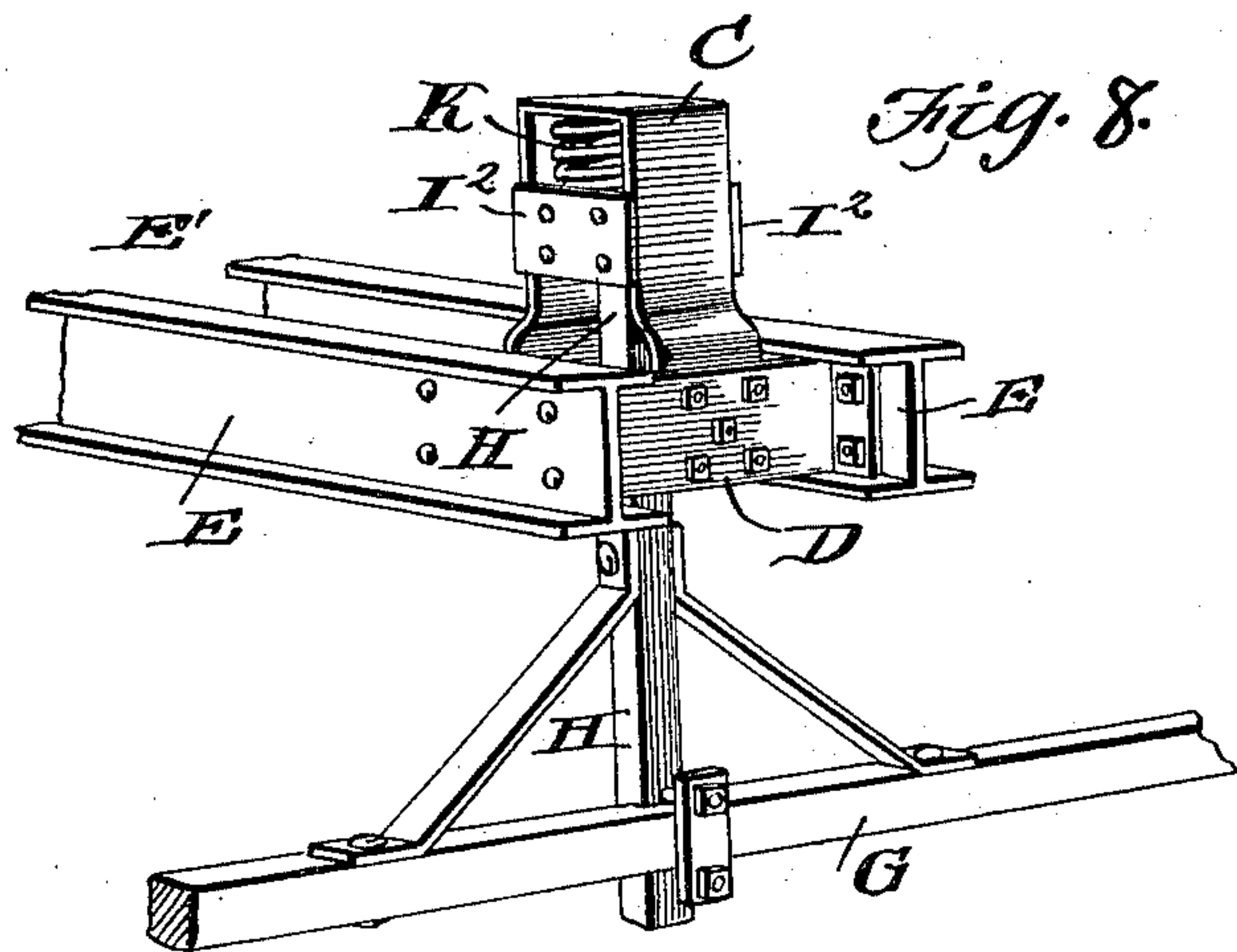


Fig. 8.

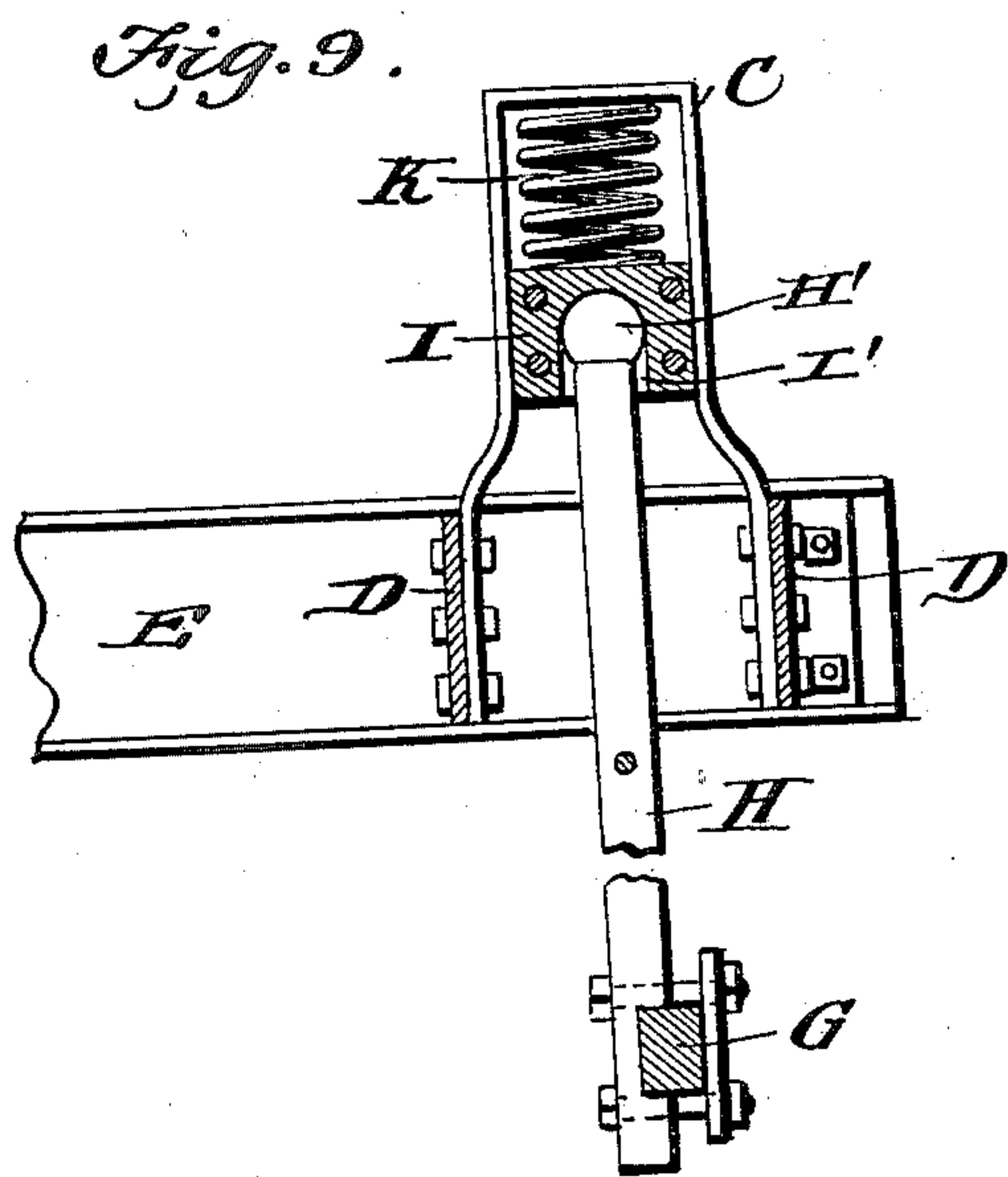


Fig. 9.

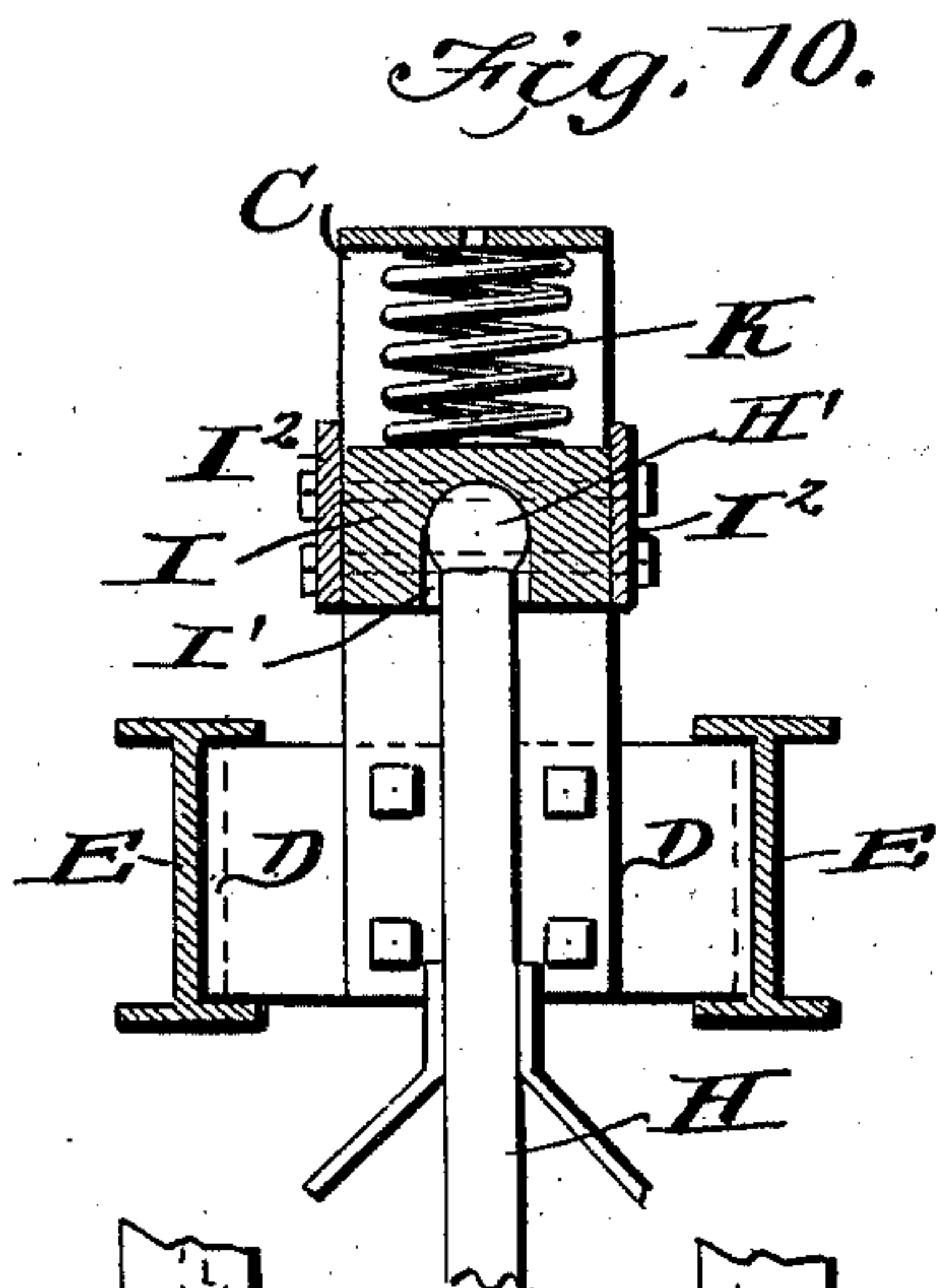
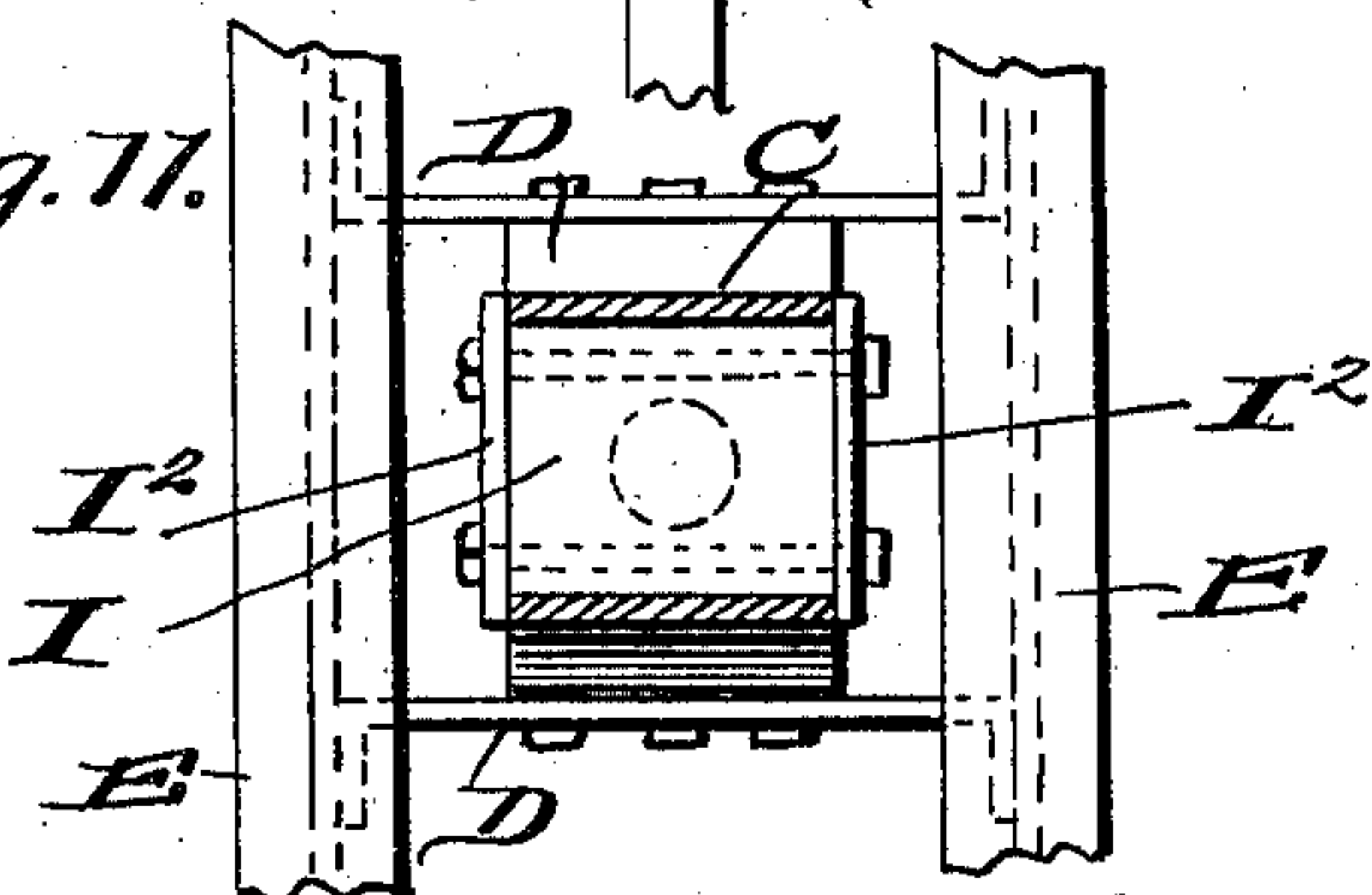


Fig. 10.

Fig. 11.



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UNITED STATES PATENT OFFICE.

GIDEON D. MILLER, OF TUB, PENNSYLVANIA.

TRACTION-ENGINE.

SPECIFICATION forming part of Letters Patent No. 704,652, dated July 15, 1902.

Application filed November 30, 1901. Serial No. 84,176. (No model.)

To all whom it may concern:

Be it known that I, GIDEON D. MILLER, a citizen of the United States, residing at Tub, in the county of Somerset and State of Pennsylvania, have invented a new and useful Traction-Engine, of which the following is a specification.

This invention relates generally to traction-engines, and more particularly to the running-gear frame for supporting the engine and its driving mechanism.

The object of the invention is to provide a running-gear or supporting-frame which shall be of such construction that the driving mechanism may be arranged below the boiler, thereby throwing the center of gravity of the machine to a lower point, and consequently materially increasing the stability of the engine.

Another object of the invention is to provide a novel means for supporting the forward end of the engine upon the running-gear and at the same time so arrange said running-gear that any unusual movement of the front wheels will not affect the steam working parts of the engine.

Another object of the invention is to provide a running-gear or supporting-frame which shall be exceedingly simple, durable, and compact in its construction and arrangement and which will materially lessen the weight of the engine.

With these and other objects in view the invention consists in the novel features of construction and combination, all of which will be fully described hereinafter and pointed out in the claims.

In the drawings forming a part of this specification, Figure 1 is a view illustrating the practical application of my invention, the engine-boiler and steam-operating parts being shown in outline and the traction and balance wheels being shown in dotted lines in order to more clearly disclose the novel features of my improved traction-engine. Fig. 2 is a top plan view of the running-gear or supporting-frame of the traction-engine, the front axle and wheels being omitted from the illustration. Fig. 3 is a detail perspective view of the cross-beam having the integral bearing-brackets. Fig. 4 is a similar view taken from the opposite side. Fig. 5 is a sectional detail illustrating the manner of con-

necting and bracing the cross-beam. Fig. 6 is a sectional detail illustrating the manner of journaling the power-shaft and the pinion connected thereto, and Fig. 7 is a sectional view illustrating the manner of journaling the idler forming a part of the driving mechanism. Figs. 8, 9, 10, and 11 show details of construction.

Referring to the drawings, A indicates the ordinary traction-engine boiler having cylinders B arranged upon opposite sides of the forward end. The forward end of the boiler rests upon a supporting-yoke C, the lower ends of said yoke being securely fastened to the cross-plates D, which plates are securely bolted between the forward ends of the longitudinal I-beams E, which are the main supporting-beams of the running-gear. These beams E are contracted or made to converge adjacent to their forward ends, as shown at E', in order to bring their forward ends into close parallel position, in order to provide ample space for the movement of the forward wheels F, said wheels being mounted upon the ends of the front axle G. A vertical post H is securely fastened to the front axle G at its center, said post passing upwardly between the I-beams and cross-plates and carries a ball H' at its upper end, which fits into the socket I' of the block I, which is movable vertically within the supporting-yoke, guide-plates I² being arranged upon the opposite sides of the said block for the purpose of holding the said block within the yoke and guiding it in its vertical movements.

A stout spring K is arranged within the yoke between its top and the block I, said spring taking up the jar or jolt incidental to the movement of the traction-engine. The post being rigidly connected to the front axle and having a ball or sphere at its upper end which fits into the socket in the block, it is obvious that the front axle will have a free and easy movement in all directions; but at the same time the said movements will be limited by the longitudinal I-beams at each side and the cross-plates at the front and rear.

An angled cross-beam L is securely fastened to the I-beams E, preferably at the contracted portions E', as most clearly shown in Fig. 2, said cross-beam L having integral ears or

lugs L' , through which the fastening-bolts L^2 are passed for the purpose of connecting the said cross-beam to the longitudinal I-beams. This cross-beam L carries the bearing-brackets M intermediate its ends, the bearing-bracket N at one end and the bracket O at the opposite end. These brackets M , N , and O are preferably made integral with the beam L , and in practice I also propose to brace these by means of integral flanges or webs M' , N' , and O' , respectively, as most clearly shown in Figs. 3 and 4. The power-shaft P is journaled in the brackets M , and the other halves of the box are securely bolted to the brackets, said power-shaft having a crank-disk P' at one end, to which one pitman P^2 is attached. The power-shaft is also formed with a crank portion P^3 , which is arranged between the brackets M and N and to which the pitman P^4 is connected, the end of the crank-shaft being journaled in the bracket N which is formed with a semicylindrical extension N^2 , upon its outer side, and the other half of the journaled box is formed with a corresponding semicylindrical extension N^3 , which surrounds the end of the power-shaft and forms the bearing for the pinion Q rigidly mounted upon the end of the power-shaft, as most clearly shown in Fig. 6.

Brace-bars R extend from the brackets N and O to a cross-bar R' , connecting the cylinders, thereby securely bracing the said cylinders and all parts connected therewith. The brackets M are also braced by means of tie-rods R^2 , extending from the upper ends of said brackets to the engine-boiler, as most clearly illustrated in Figs. 1 and 2. The fly-wheel Q' is also mounted upon the outer end of the power-shaft, as shown in Fig. 2.

The pinion Q meshes with the idler S , said idler turning upon a circular block S' , securely fastened between the parallel bars T , the forward ends of said bars being securely fastened to the cross-beam L adjacent to the bracket N , the rear end of said bars being connected to a box mounted upon the main axle U , said axle being mounted in journal-box U' , arranged upon the longitudinal I-beams E . The idler S meshes with a gear S^2 , mounted upon a shaft S^3 , journaled in boxes S^4 , said shaft also carrying a pinion S^5 , which meshes with the gear S^6 , which is mounted from the main axle U , said main axle carrying the traction-wheels V , as shown in Fig. 2.

The parallel bars T are curved upwardly, as shown at T' , in order to permit the free movement of the pinion S^5 , which is arranged at one side and beneath the said bars; but the gear S^2 , which meshes with the idler S , travels between the said parallel bars, as most clearly shown in Fig. 2.

The bracket O is illustrated as having a bearing portion O^2 ; but this curve is produced not for the purpose of bearing, but to permit the boring or cutting tool to be easily introduced into the bearing portions of the brackets M and N for the purpose of grind-

ing or boring the said bearings in order to make them true.

It will of course be understood that a pinion is mounted upon the opposite end of a shaft S^3 and a gear upon the opposite end of the main axle U in order to transmit motion to the opposite traction-wheel.

The running-gear constructed and applied as herein shown and described will enable one to build a traction-engine weighing considerably less than traction-engines now in general use, and by having the power-shaft located so that direct connection can be had with the cylinders and by having the driving mechanism so arranged that motion can be transmitted directly from the power-shaft thereto I am able to dispense with a complicated form of driving-gear and am also able to locate the said driving-gear at a point below the boiler, thereby placing the center of gravity of the machine at a point lower than the traction-engines now commonly used. All of the parts, though of simple construction, are exceedingly strong and durable, and owing to their peculiar arrangement and method of connection an exceedingly simple, compact, and durable traction-engine is provided.

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

1. In a traction-engine the longitudinal beams connected at their forward ends and carrying a supporting-yoke, a vertical post carried by the front axle and working in the supporting-yoke and a spring-pressed block against which the upper end of the post bears, said block being arranged within the yoke, substantially as set forth.

2. In a traction-engine, the combination with the longitudinal supporting-beams, of the connecting-plates connecting their forward ends, the supporting-yoke connected to the said plates, the block movable in the yoke and having a socket, a spring arranged within the yoke and bearing upon the block, and a vertical post having a ball at its upper end fitting into the socket, the lower end of said post being rigidly connected to the front axle, as set forth.

3. In a traction-engine the longitudinal beams having a cross-beam connected thereto, said cross-beam having bearing-brackets, and a power-shaft journaled in the said brackets, said power-shaft being connected with the pistons and imparting motion to the driving mechanism, as set forth.

4. In a traction-engine the combination with the longitudinal beams, of the cross-beam connected thereto and carrying the bearing-brackets, the power-shaft journaled in the said brackets, the operating-pitmen connected with the said power-shaft, the pinion carried by the said power-shaft, and the gearing mechanism driven from the said pinion, substantially as set forth.

5. In a traction-engine the combination with the cross-beam having the bearings M

and N constructed as described, said bearing N having a semicylindrical extension at one side, the power-shaft journaled in the said bearings, the box-section, the semicylindrical extension N³ and the pinion mounted upon the end of the power-shaft and turning upon the semicylindrical extension M² and N³, as set forth.

6. In a traction-engine, the combination with the longitudinal supporting-beams having a supporting-yoke at its forward end, of the vertical post extending upwardly into the supporting-yoke, a spring-pressed block arranged within the yoke, the cross-beam attached to the longitudinal beams and having bearing-brackets arranged thereon, the power-

shaft journaled in the said bearing-brackets, said power-shaft being connected to the driving-pitmen, the pinion carried from the end of the power-shaft, the idler with which said pinion meshes, parallel bars between which the idler is mounted, the forward ends of said bars being connected to the cross-beam, the traction-wheels, axle, gears and shaft whereby the motion of the power-shaft is transmitted to the traction-wheels, substantially as set forth.

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Witnesses:

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