

(No Model.)

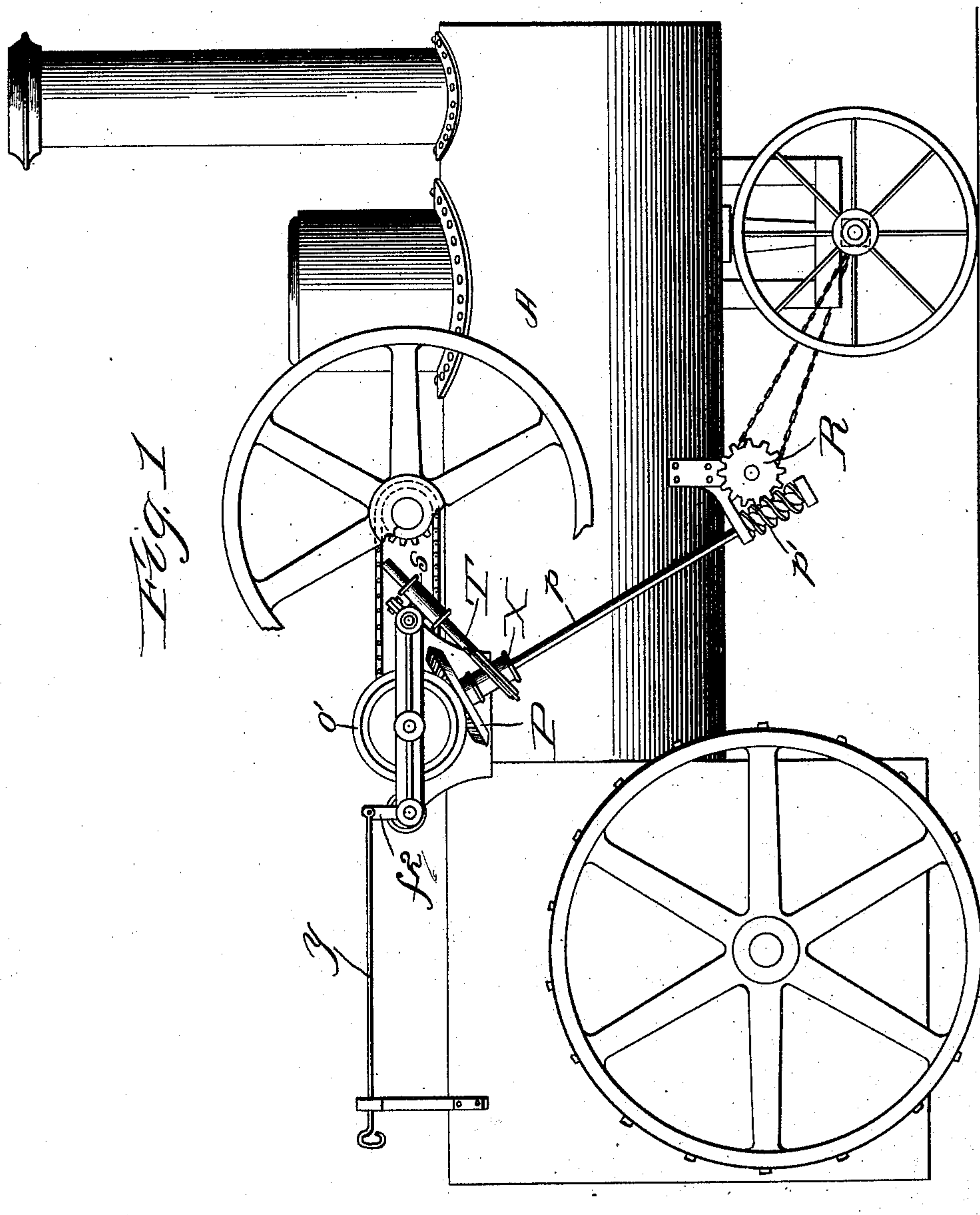
3 Sheets—Sheet 1.

S. B. HART.

STEERING GEAR FOR TRACTION ENGINES.

No. 505,523.

Patented Sept. 26, 1893.



Witnesses
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 H. M. Hill

Trevertor:
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 By Kai & Kai in Athens

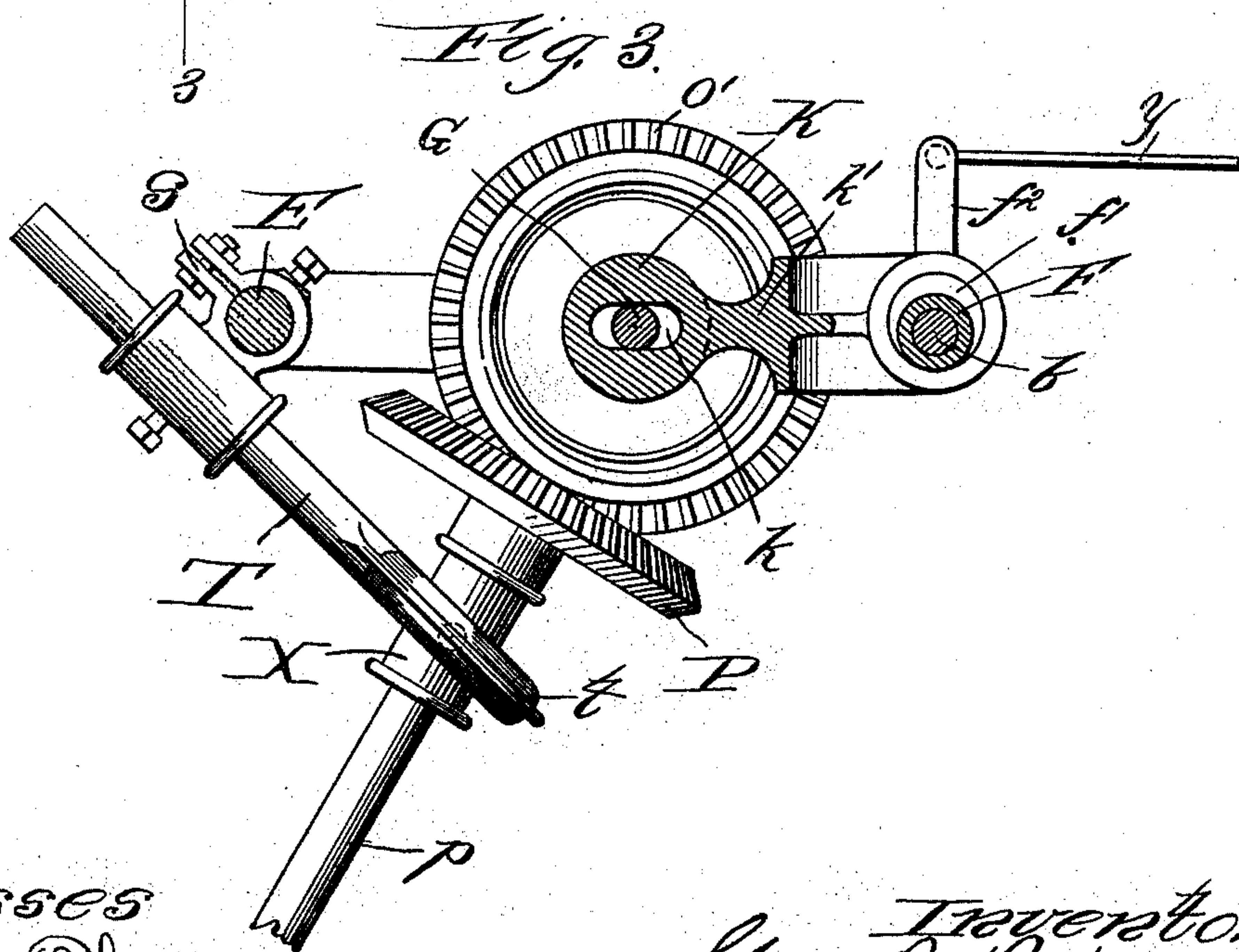
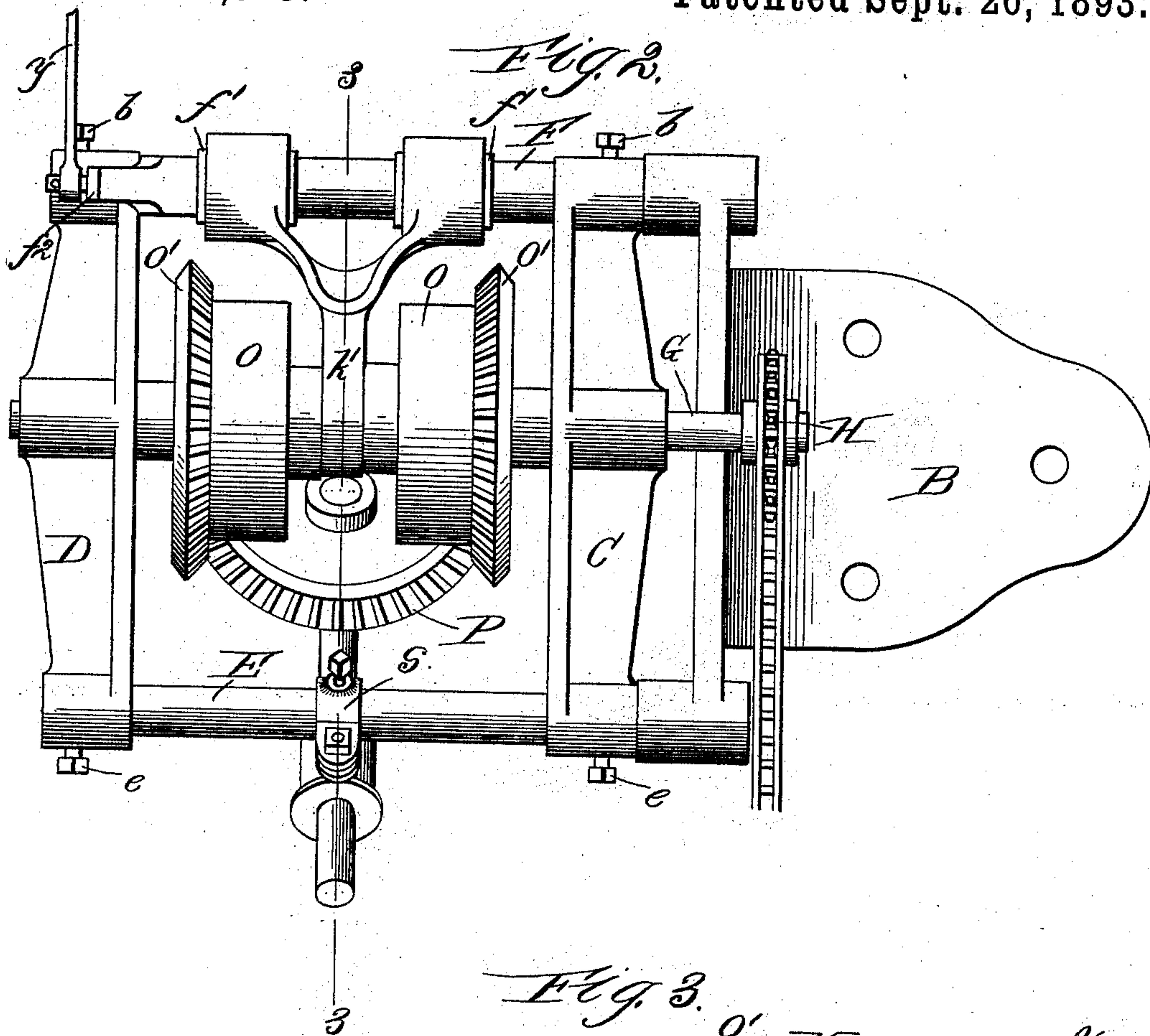
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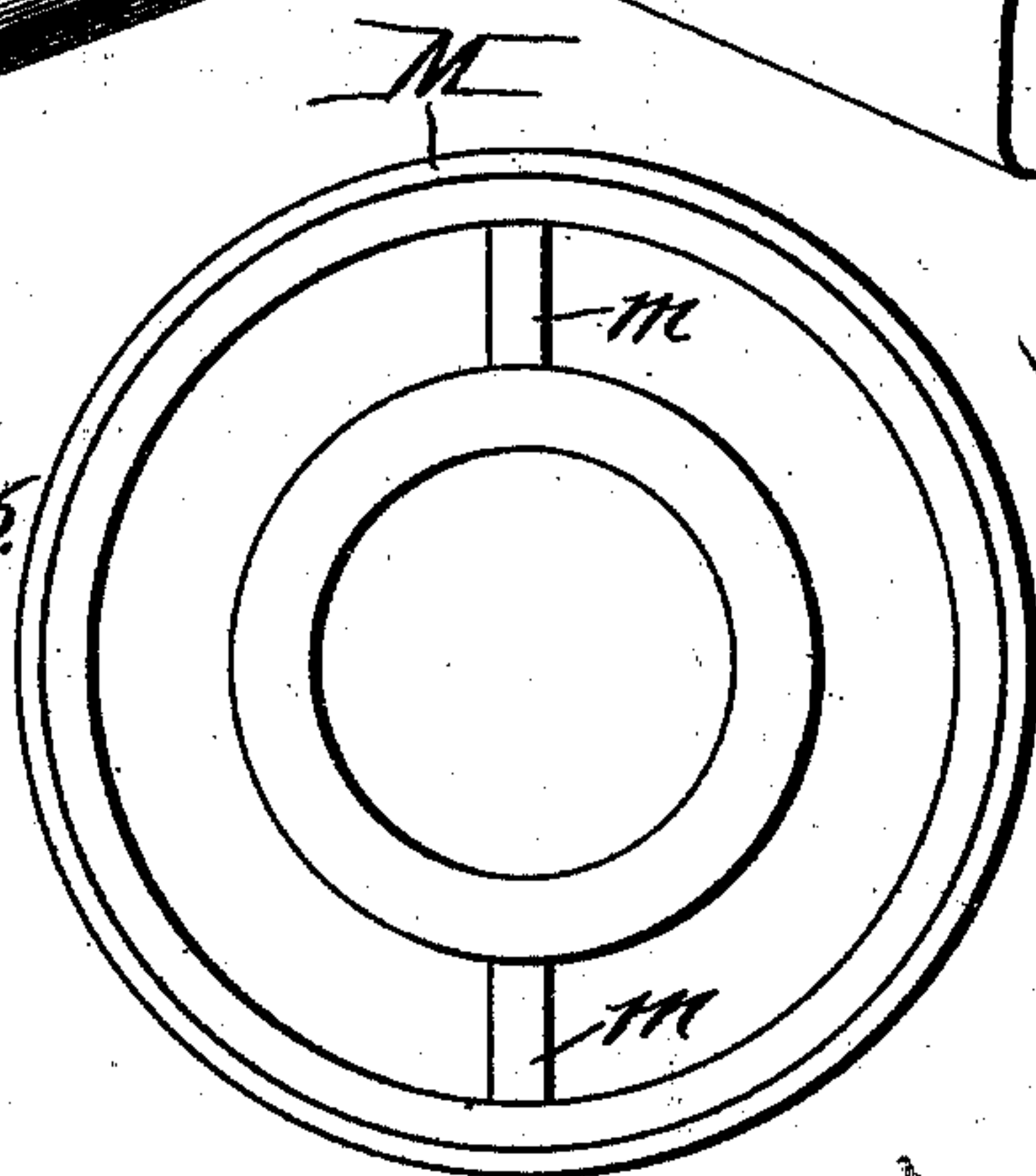
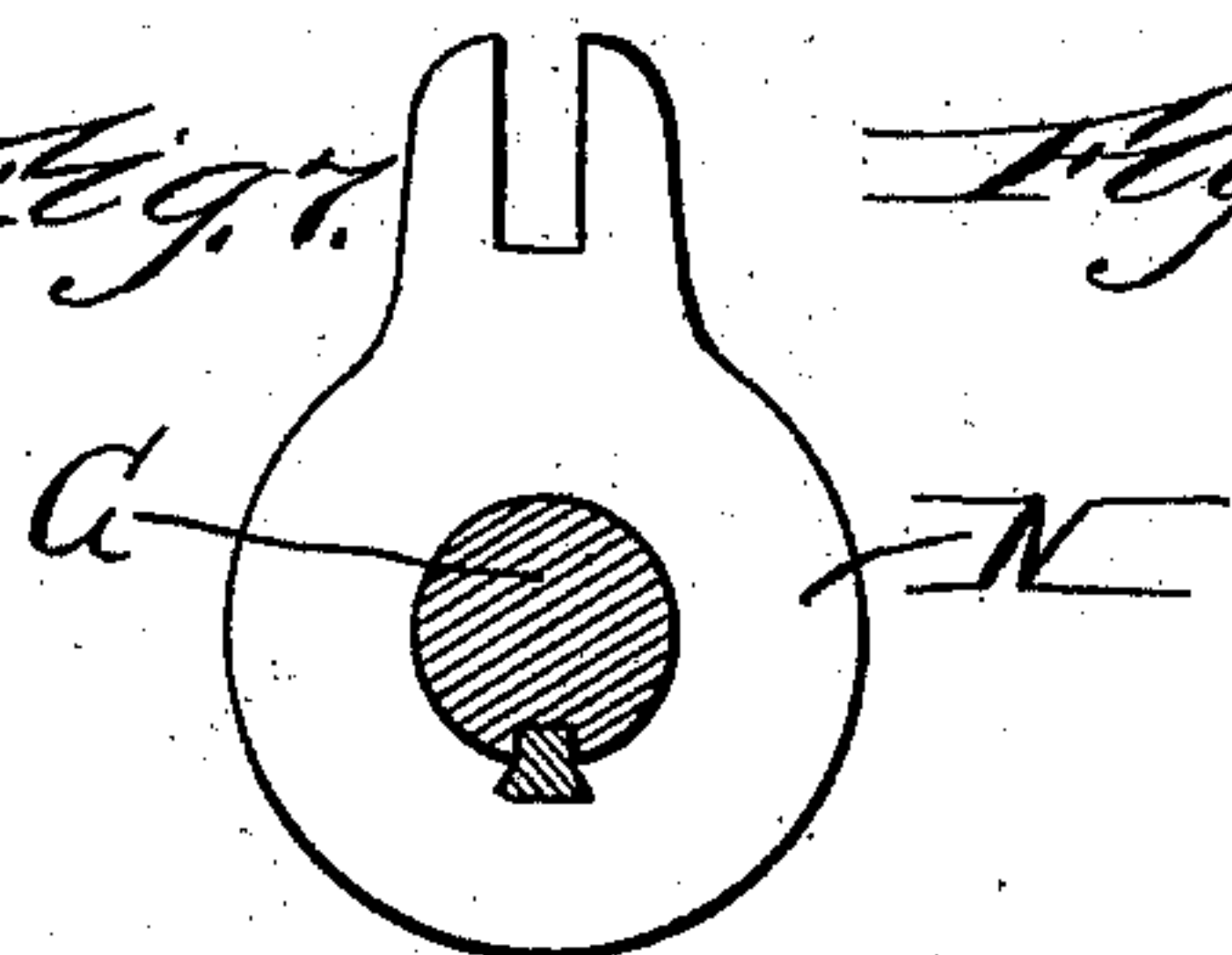
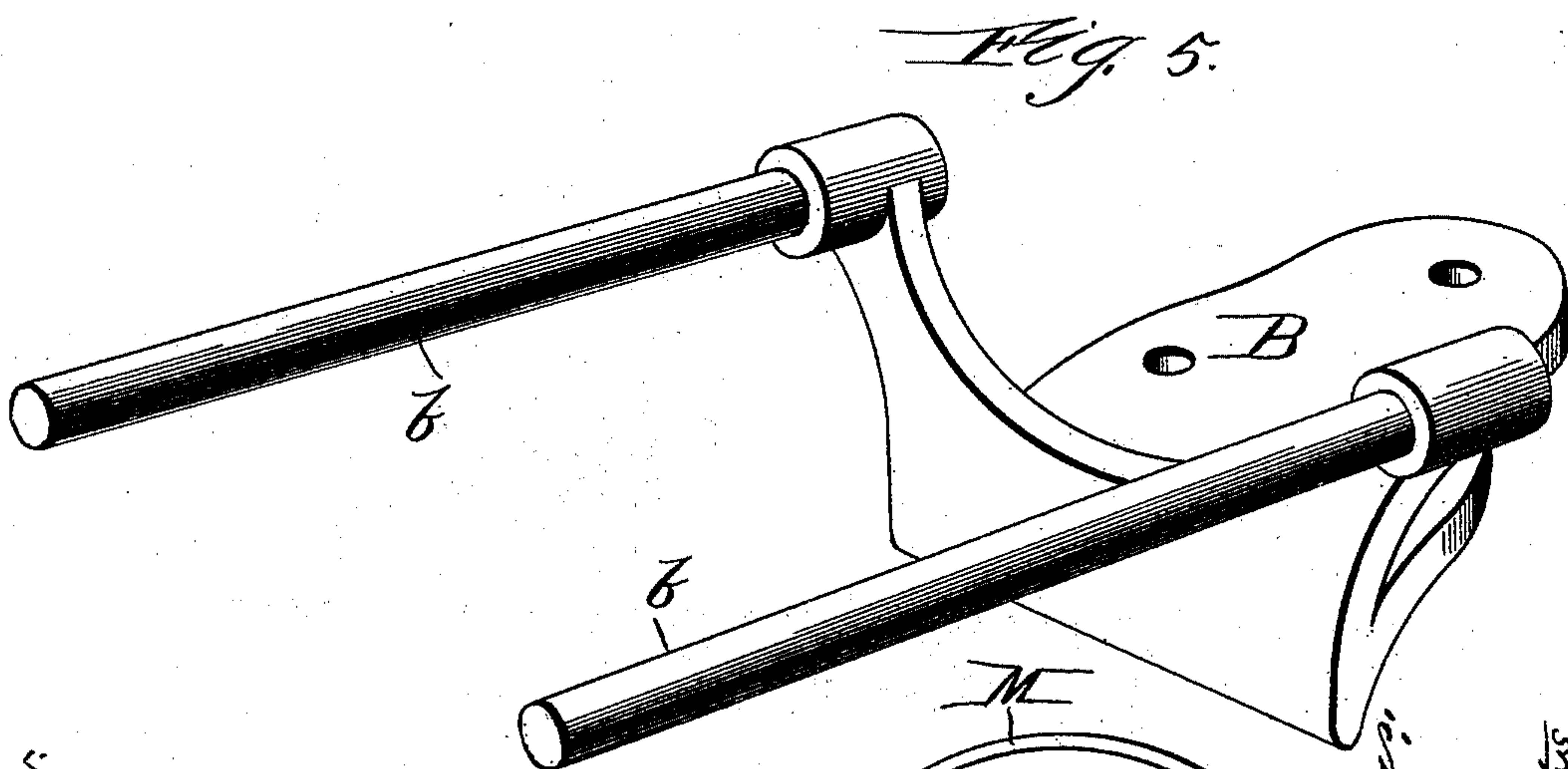
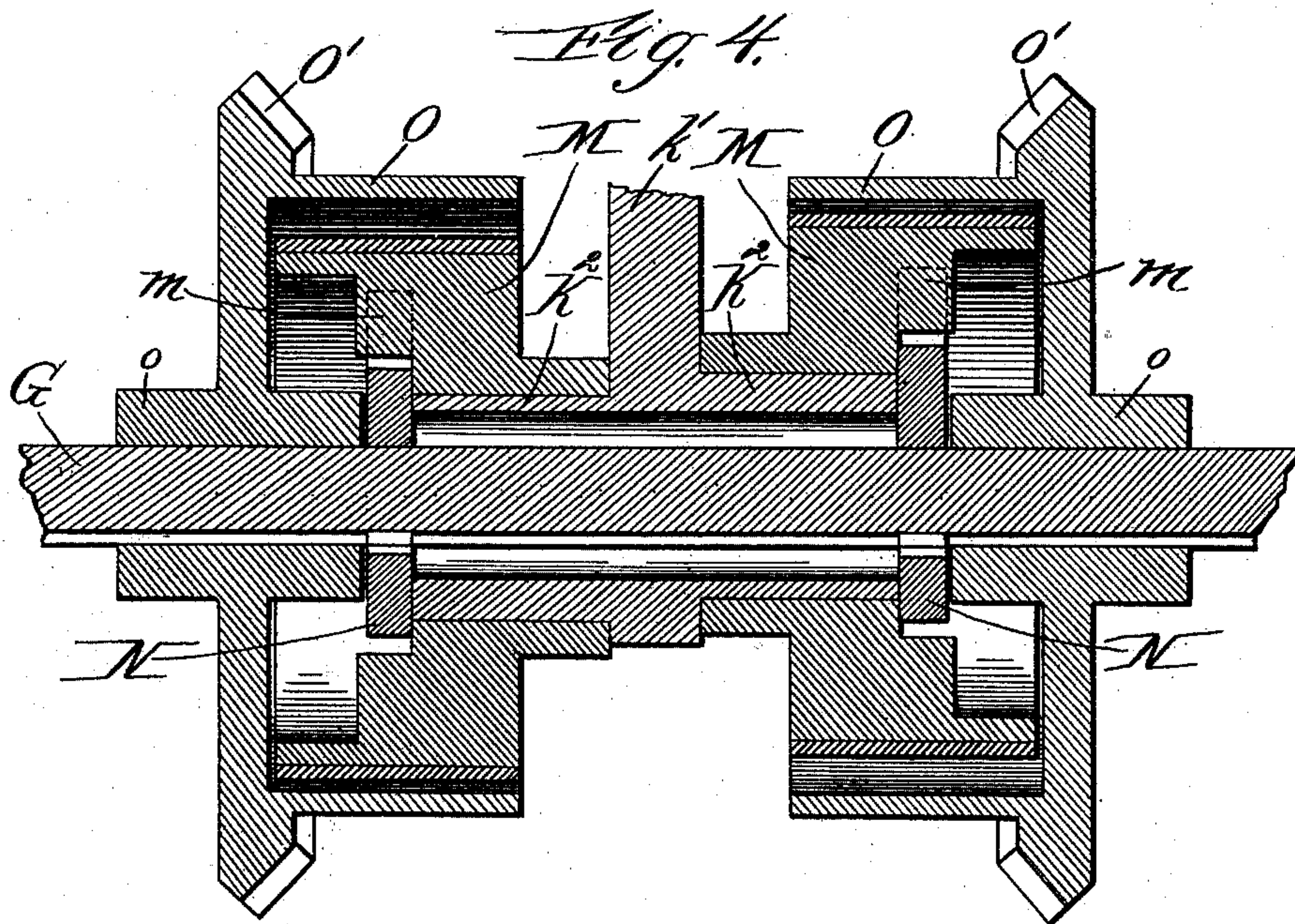
Witnesses
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Witnesses:
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Tested by
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UNITED STATES PATENT OFFICE.

STACY B. HART, OF PEORIA, ILLINOIS, ASSIGNOR TO THE HART WEIGHER COMPANY, OF SAME PLACE.

STEERING-GEAR FOR TRACTION-ENGINES.

SPECIFICATION forming part of Letters Patent No. 505,523, dated September 26, 1893.

Application filed May 19, 1893. Serial No. 474,785. (No model.)

To all whom it may concern:

Be it known that I, STACY B. HART, a citizen of the United States of America, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Steering-Gear for Traction-Engines, of which the following is a specification.

Referring to the accompanying drawings wherein like reference-letters indicate like or corresponding parts:—Figure 1 is a side elevation of a traction engine equipped with my improved device. Fig. 2, is a top-plan of my improvement. Fig. 3, is a partial vertical-section in line 3—3 of Fig. 2, and shows also the adjusting member for the intermediate-gear; Fig. 4, a horizontal longitudinal-section in line with the center of the shaft; Fig. 5, a view of the bracket, which secures the device to the engine; Fig. 6, a view of the outer end and interior of one of the friction wheels or rolls, and Fig. 7, the dog, by means of which the rotation of the shaft is communicated to the friction-rolls.

My invention has for its object the steering of a traction-engine by utilizing in a simple and efficient manner a portion of the power of the engine for that purpose, and consists, first, in the novel construction and arrangement of parts in the steering-device herein described and claimed, and second, in the improved means for securing such devices upon the engine.

In the drawings, A, indicates the boiler of the engine; B, a bracket adapted to be secured to the boiler; *b b*, arms adapted to extend horizontally outward and sustain the steering-device when the bracket is properly secured to the boiler. A frame, C, D, E, F, (which may, if preferred, be cast integral) carries a shaft, G, upon the end of which is a sprocket-wheel, H, or an equivalent member. A similar device upon the working parts of the engine, properly connected with the wheel H, transmits motion to said shaft. The sides of the frame are adapted to receive the arms *b b* and be adjustably secured thereto, as, for example, by means of set-screws *e, e, f, f*. The shaft, G, extends longitudinally through the part K, by means of the aperture *k*, which is enlarged or oblong in cross-section to allow

the part K to be moved transversely upon the shaft. About the center of the part K an arm, *k'*, extends outwardly and is connected to the steering-lever so that the operator can move said part K transversely upon the shaft. Both ends of the part K are turned-off and friction-wheels or rolls, M, are loosely mounted thereon. The ends may be turned to the same diameter, but not from the same center; consequently their circumferential surfaces are not in line with one another and the peripheries of the friction-wheels or rolls mounted thereon are not in the same plane. It will thus be seen that upon moving the part K in one direction the periphery of one of the rolls will be in advance, and upon moving the said part in the opposite direction, the other roll will be in advance, (see Fig. 4.) A dog, N, is mounted upon the shaft and is caused to revolve therewith by any desired means, as by feathering or keying the same upon the shaft, (see Fig. 7,) and engages with a part upon the inside of the roll for such purpose, as, for example, a projection or shoulder *m*. The rolls are thus caused to revolve with the shaft, but are still capable of the limited transverse movement described, (see Figs. 3 and 4.) At each end encircling but not in contact with the friction-wheels or rolls, are the hollow drums, O, having formed upon their peripheries the oppositely disposed bevel-gears, O'. The drums are loosely mounted upon the shaft G, and, if desired, hubs, *o*, may be formed to give a firmer bearing upon the same, (see Fig. 4.) As the part K with the friction-rolls is moved one way, one of said rolls will engage with one of the drums O, and the drum is thus operated, and upon moving the parts the opposite way the contact is broken and the other friction-roll engages with its drum, which is operated in the same manner.

Below the parts just described is the intermediate bevel-gear P, so located as to be continually in mesh with both the bevel-gears O', O'. It will thus be seen that the drums O and the bevel gears O' are actuated one at a time, and thus drive one side or the other of the gear P, and revolve it either to the right or to the left. The revolution of the gear P is communicated to the take-up drum in any convenient manner, as for example by means

of the shaft *p* and worm-screw *p'* thereon meshing with the cog-wheel R, actuating the take-up drum. The take-up drum is connected to and governs the front axle of the engine in the usual manner.

As the invention is intended as an attachment for traction-engines, it may be located in a different position on one engine, or make of engines, from that which it occupies on another. Hence the shaft *p* may assume a different inclination upon different engines. This makes it necessary to provide means for adjusting the intermediate-gear, and for sustaining it in its adjusted position. For this purpose, upon one of the sides of the frame, I adjustably secure the part S, which has a part adapted to receive the arm T. This arm terminates at its lower end in a yoke *t* to which is pivoted a collar X. The shaft *p* extends from the gear P through the collar X and the gear is sustained in proper position by its hub resting upon the end of the collar. The arm T may be adjusted longitudinally in the part S, and secured in its adjusted position in any desired way; the set-screw *s* shown in the drawings serving this purpose. The part S may also be revolved on the side piece E and adjusted to give the desired inclination to the arm T. The shaft *p* may be journaled near its lower end in such a manner as to assist in keeping the parts in proper contact. The operator moves the part K backward and forward to operate the device by means of the steering-lever Y, which may be connected to said part in any desired manner that will allow this function. In the drawings (Fig. 2) the part F is a revoluble sleeve which has formed upon it two parts *f' f'* eccentric to its center of revolution. The part K is so connected to the eccentrics or cams that when the sleeve is revolved, by means of the lever *f²*, the part K is moved forward and backward as desired, thereby causing one or the other of the friction-wheels or rolls to engage with its drum and operate the device and thus direct the course of the engine.

It is obvious that but one cam need be used on the sleeve F, if preferred, and also that this connection may be made by a bell-crank lever, and in other ways to secure the results without departing from the spirit of my invention.

When the frame, C, D, E, F, is cast integral, only slight mechanical changes are necessary to connect the steering-lever to the part K.

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

1. In a steering device for traction engines, the combination of substantially the following elements: a frame supported on the engine; a shaft journaled on said frame and driven by the power of the engine; two hollow drums loosely mounted on the shaft and having formed on their peripheries oppositely

disposed bevel-gears; an intermediate gear meshing with both said gears and adapted to be driven by either one; means for transmitting the motion of the intermediate gear to the take-up drum controlling the front axle of the engine; a part K longitudinally traversed by the shaft and adapted to move transversely thereon; two friction-wheels or rolls loosely mounted on the ends of the part K within, but normally not in contact with, the drums, and having their peripheries in different planes; means for causing the friction-wheels to revolve with the shaft; and means for moving the part K to bring one or the other of the friction-wheels into engagement with its contiguous drum, whereby the intermediate gear is operated and the take-up drum revolved either forward or backward.

2. In a device of the kind described, the combination of substantially the following elements:—a frame supported upon the engine; the shaft G journaled on said frame and driven by the power of the engine; two hollow drums loosely mounted on the shaft and having formed upon their peripheries oppositely disposed bevel-gears; an intermediate gear meshing with both the other gears, and adapted to be driven by either one; a shaft rotated by the intermediate gear and transmitting motion to the take-up drum; the part K longitudinally traversed by the shaft G, and adapted to move transversely thereon; two friction-wheels or rolls loosely mounted on the ends of the part K, within, but normally not in contact with, the drums and having their peripheries in different planes; a dog or latch secured to and revolving with the shaft G, and adapted to engage with the friction-wheels to cause them to revolve with the shaft; and means for moving the part K to bring one or the other of the friction-wheels into engagement with its contiguous drum, and operate the parts.

3. In a device of the kind described, the frame supported by the engine; the shaft G journaled thereon; the part K, carrying the friction-wheels M, M, which are adapted to revolve with the shaft; the drums O, O, having oppositely disposed bevel-gears O', O', upon their peripheries; the intermediate gear P; and means for transmitting the motion of the gear P to the take-up drum; in combination with the sleeve F, having formed thereon one or more eccentrics or cams; a part or parts upon the part K adapted to engage with the cams, whereby the part K will be operated, and means for revolving the sleeve F; substantially as described.

4. In a device of the kind described, a frame supported by the engine; the shaft G journaled thereon; the part K; the friction-wheels M, M, mounted thereon and adapted to revolve with the shaft; the drums O, O, and gears O', O'; in combination with the intermediate gear P; means for transmitting the rotary motion of the gear P to the take-up drum; and means

for adjusting the intermediate gear with relation to the gears O', O'; substantially as described.

5 In a device of the kind described, a frame supported by the engine; a shaft journaled thereon; the part K adapted to move transversely with the shaft; the friction-wheels M, M, mounted thereon, and adapted to revolve with the shaft; the drums O, O, the gears O',
10 O', the intermediate gear P, a shaft *p* actuated by said gear; and means for transmitting the rotary motion of the shaft *p* to the take-up drum; in combination with the adjusting sleeve S, adapted to adjustably receive the
15 arm T; the yoke on said arm; and the sleeve

or collar X pivoted to said yoke, adapted to sustain the gear P; whereby said gear may be adjusted with relation to the gears O', O', so as to change the inclination of the shaft *p*; substantially as described. 20

6. In a device of the kind described, a frame carrying the steering device; in combination with a bracket adapted to be secured to the engine, and provided with two or more extending arms adapted to adjustably support
25 the steering device; substantially as described.

STACY B. HART.

Witnesses:

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