(No Model.)

4 Sheets—Sheet 1.

H. DECKMANN.

TRACTION ENGINE.

No. 303,497. Patented Aug. 12, 1884.

Fig. 1.

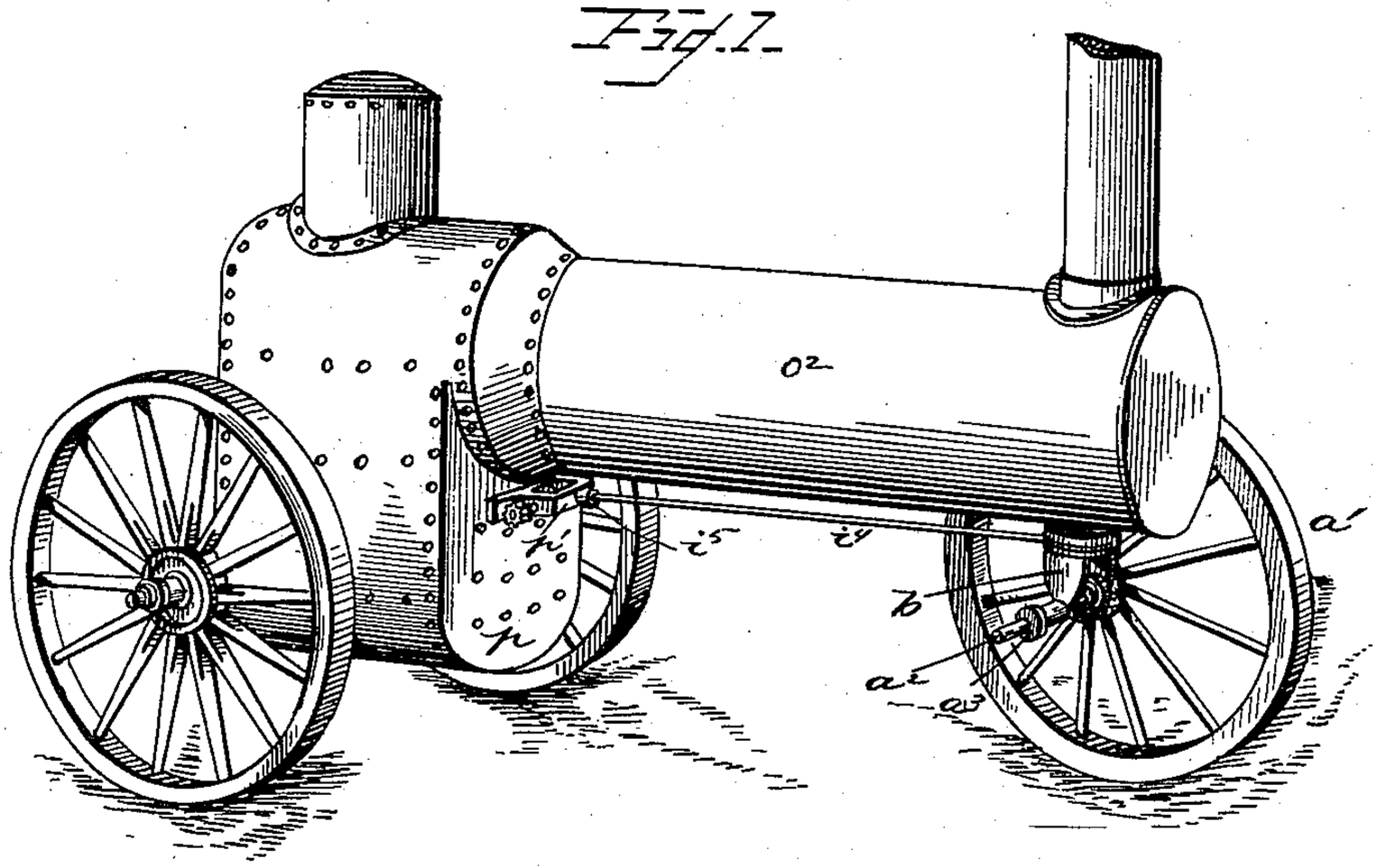

Fig. 2.

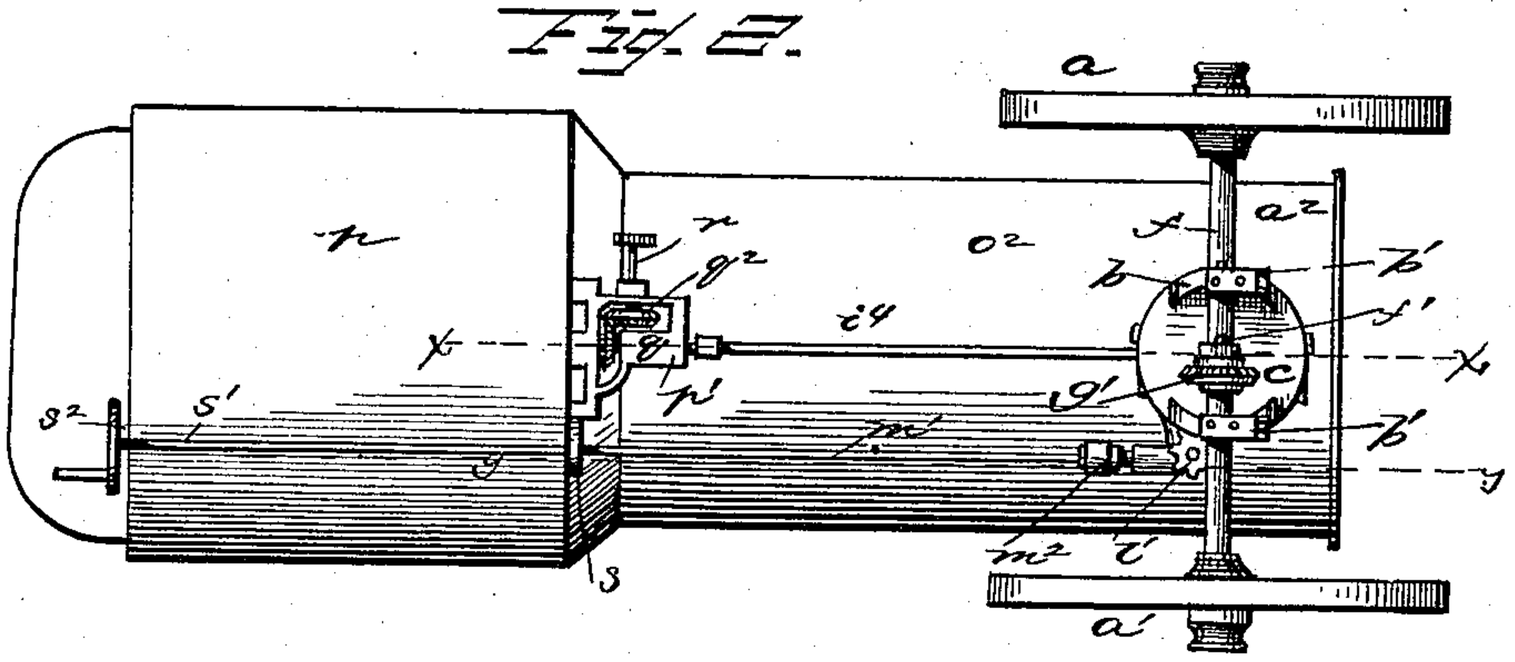

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Fig. 3.

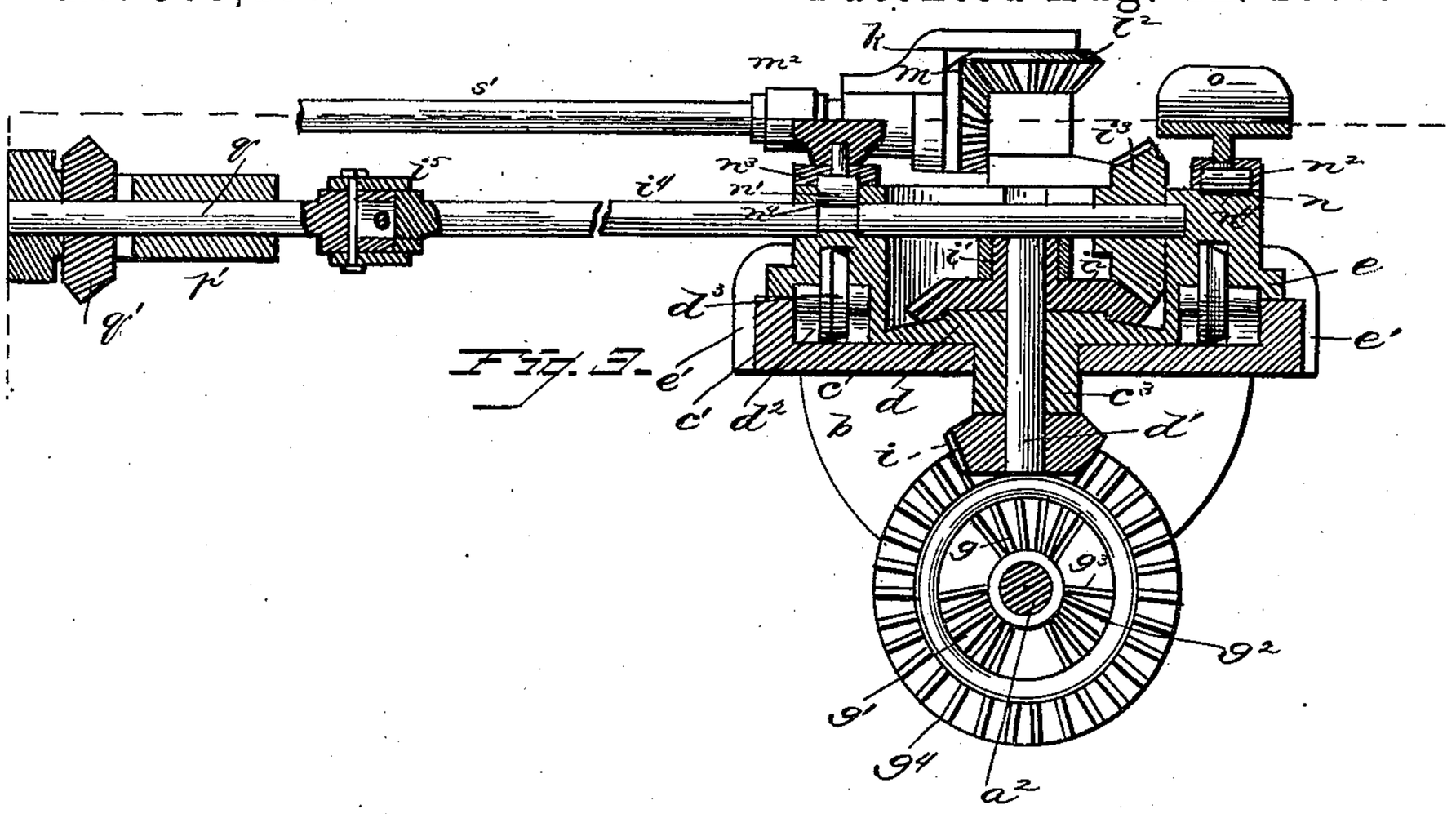

Fig. 4.

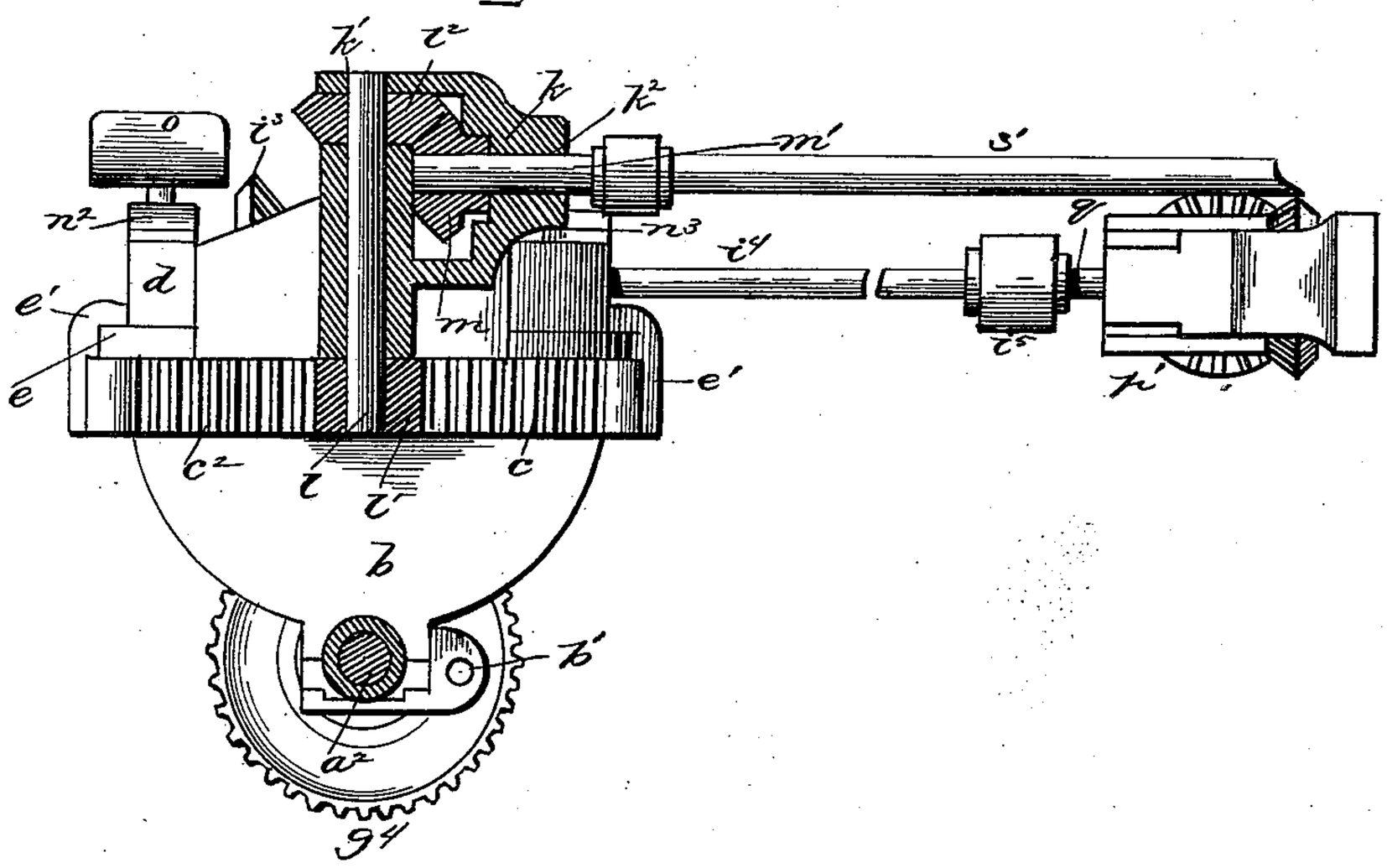

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Fig. 5.

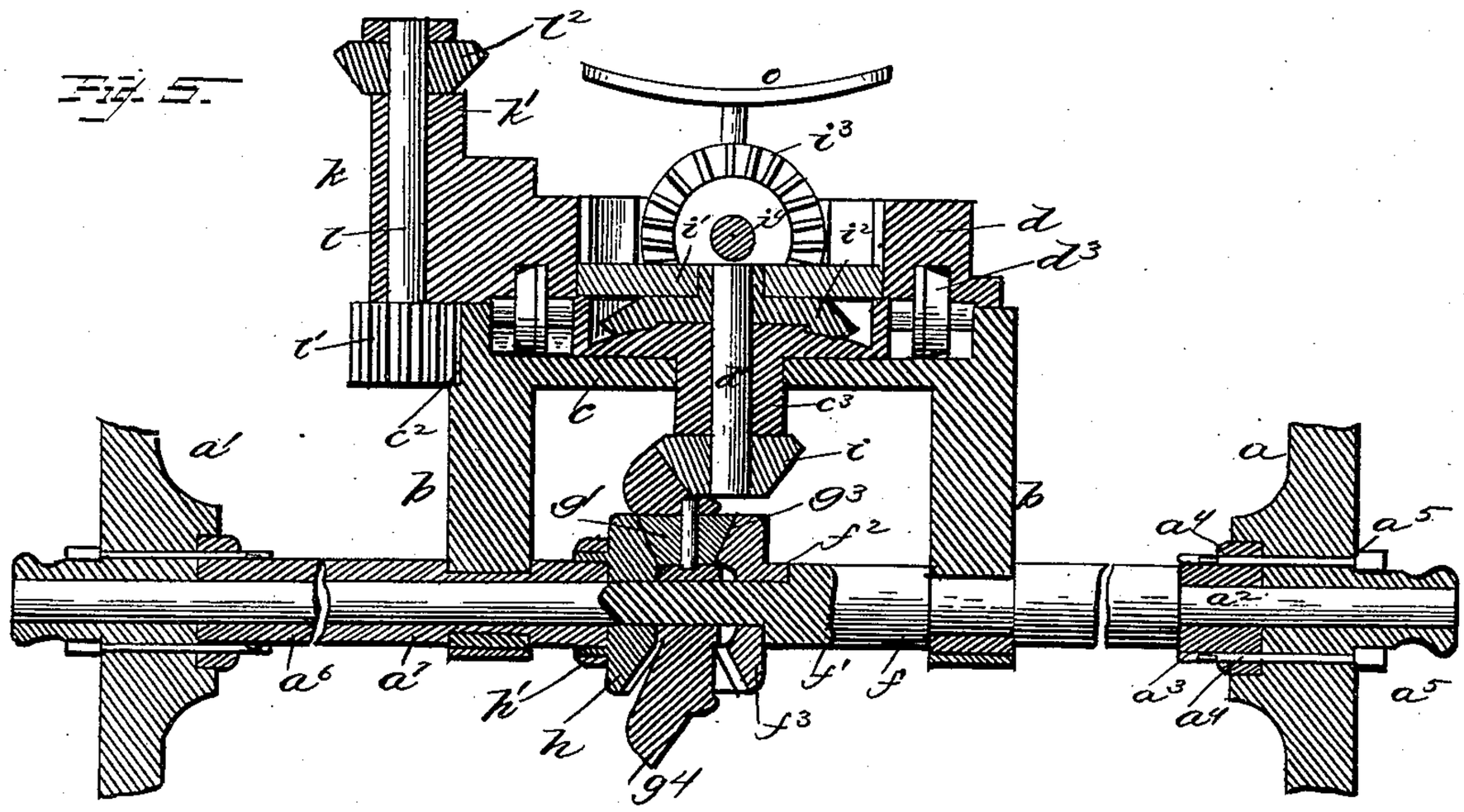

Fig. 6.

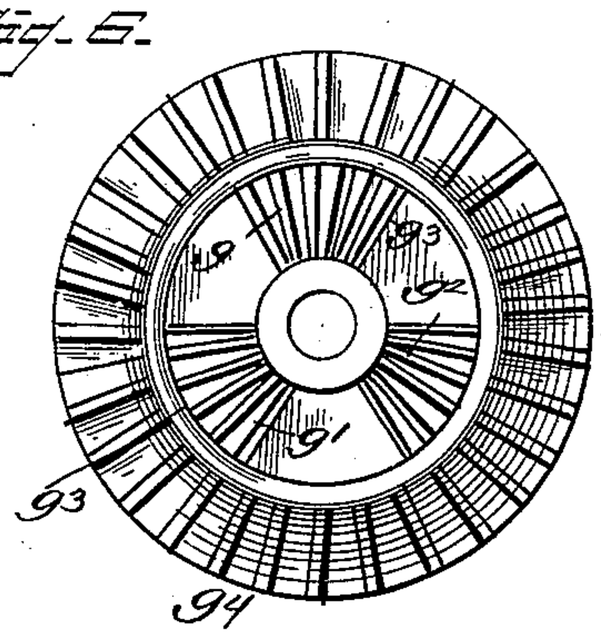

Fig. 10.

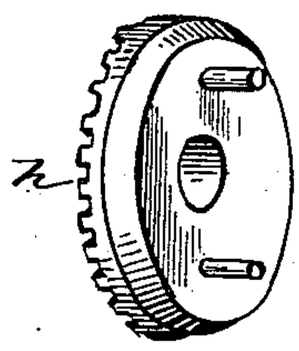

Fig. 7.

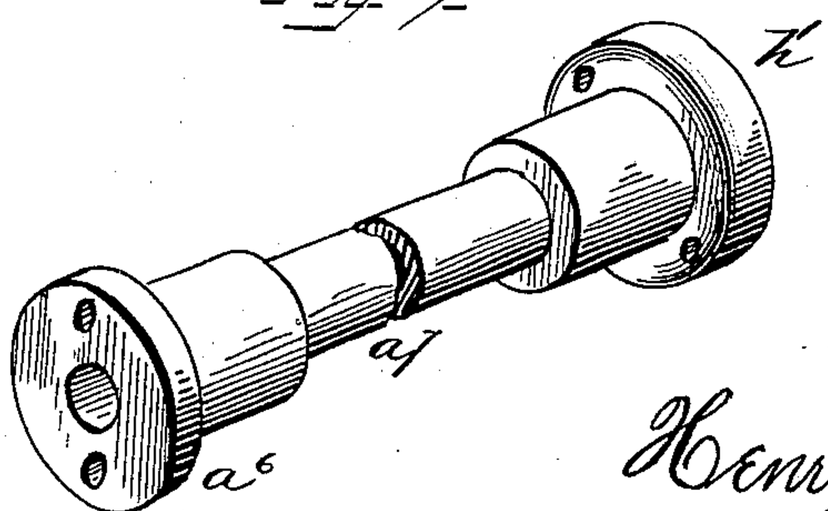

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Fig. 8.

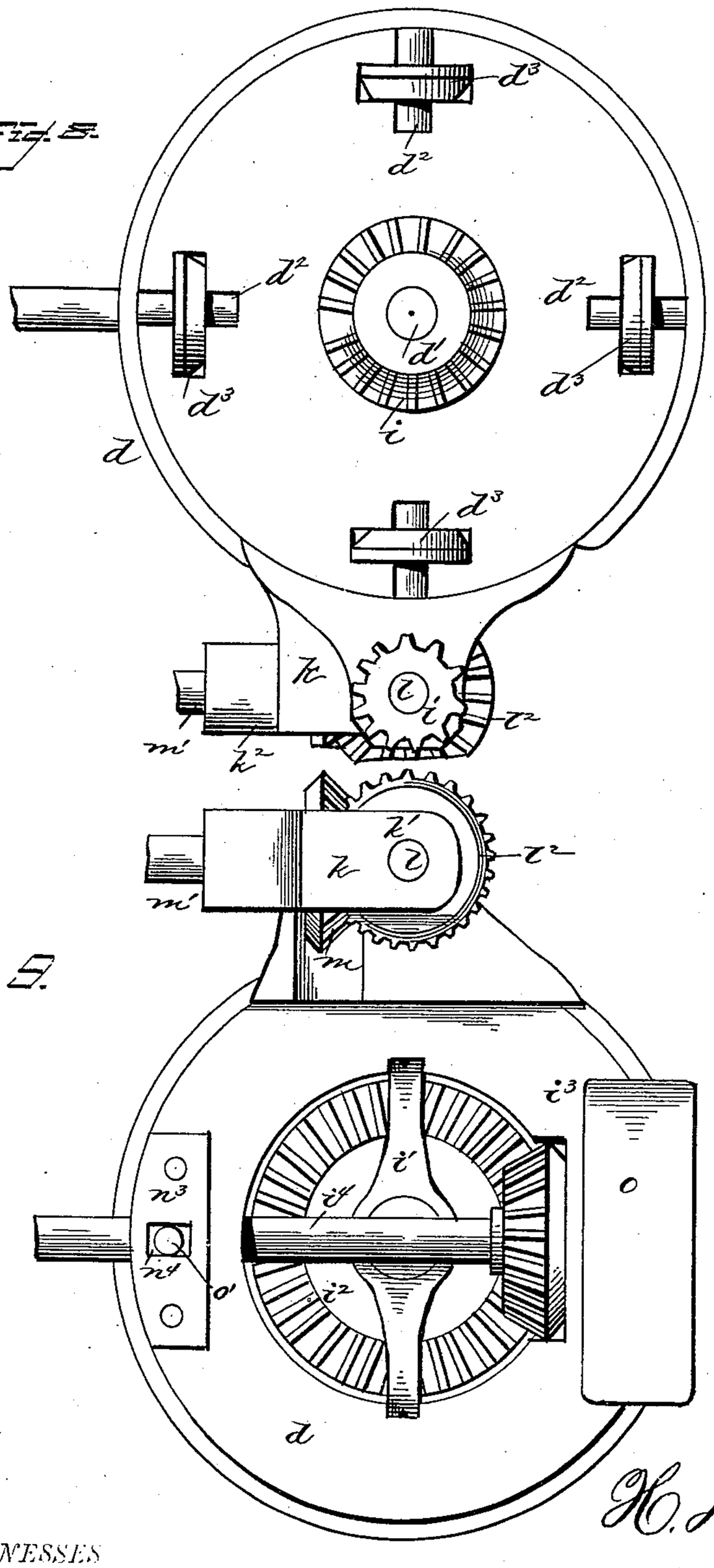

Fig. 9.

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UNITED STATES PATENT OFFICE.

HENRY DECKMANN, OF HUDSON, INDIANA.

TRACTION-ENGINE.

SPECIFICATION forming part of Letters Patent No. 303,497, dated August 12, 1884.

Application filed April 19, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY DECKMANN, a citizen of the United States, residing at Hudson, in the county of Steuben and State of Indiana, have invented a new and useful Traction-Engine, of which the following is a specification, reference being had to the accompanying drawings.

This invention has relation to traction-engines for use on roads or in fields for any of the purposes to which traction-engines are applicable; and it consists in the construction and novel arrangement of parts, as will be hereinafter fully described, and particularly pointed out in the claims.

Figure 1 is a view in perspective of a traction-engine embodying my improvements, one of the front wheels being broken away. Fig. 2 is a bottom view. Fig. 3 is a vertical longitudinal sectional view on the line *x x* in Fig. 2. Fig. 4 is a vertical longitudinal sectional view on the line *y y* in Fig. 2. Fig. 5 is a transverse vertical sectional view taken through the line of the front axle. Fig. 6 is a detail view of the central vertical miter-gear on the front axle. Fig. 7 is a detail view of the sleeve on the front axle, shown detached and the wheel removed from said sleeve. Fig. 8 is a bottom view of the turn-table. Fig. 9 is a plan view of the same, the boiler being removed. Fig. 10 is a detail view of the pinion detached from the inner end of the sleeve.

Referring by letter to the accompanying drawings, *a* and *a'* designate the front wheels of the traction-engine. The axle a^2 for these two wheels is a rotary axle, which is provided near one end with a fixed flanged collar, a^3, provided with pin-holes a^4 a^4 through its flange, at diametrically-opposite points, for the reception of the key-pins a^5 a^5, which pass through horizontal holes in the hub of the wheel *a*, to secure to and cause it to revolve with the axle a^2. The wheel *a'* is secured to a flange, a^6, on the outer end of a sleeve, a^7, in a manner similar to that just described for attaching the wheel *a* to the collar a^3, so that the axle a^2 will revolve in the sleeve a^7 in turning. Linchpins are also used at the ends of the axle to support the wheels in case of breakage of the key-pins. The axle a^2 and sleeve a^7 have their bearings in the lower ends of the brackets *b b* in boxes, the lower halves of which are bolted onto the brackets. Immediately beneath these half-boxes, and secured in place by the same bolts or screws that fasten the half-boxes in place, are pole-eyes *b' b'*, by which to attach a tongue to permit the engine to be guided by a team of horses, if desired. Upon the brackets *b b* is secured the flanged base *c* of the turn-table. The flange *c'* of the base *c*, for a distance equal to about one-third of its circumference and over the left-hand bracket, is provided on its periphery with cog-teeth c^2, for a purpose hereinafter explained. The base *c* is provided with a central opening for the passage of a vertical journal, c^3, on the under face of the top section, *d*, of the turn-table. The top section, *d*, of the turn-table consists of an annular casting having a closed bottom, except at its center, where an opening for a vertical shaft, *d'*, is provided. Bearings d^2 are cast in its bottom for the reception of friction-rollers d^3, which are cast integral with their journals, and are let into their recessed bearings, their peripheries just protruding sufficiently from the recesses to travel on the base *c* of the turn-table—that is, to revolve when the base *c* is turned—and thereby lessen the frictional contact between the top and base. The top section, *d*, is provided with a peripheral flange, *e*, which rests on the vertical flange of the base, and the shoulders of guide-arms *e' e'*, secured to the base-section *c*, engage the upper face of the peripheral flange *e*, to guide the frictional surfaces of the two sections in parallel planes when the base-section is turned either to the right or to the left. The axle a^2 is provided with an enlargement, *f*, at that side of its middle nearest the wheel *a*, and the inner end of this enlargement *f* is provided with a half-clutch, *f'*, which engages a half-clutch, f^2, on the plane face of a miter-pinion, f^3, on the axle. The teeth of this miter-pinion f^3 engage the teeth of three smaller miter-pinions, *g g' g²*, journaled radially in radial recesses g^3 g^3 g^3 in the hub of a larger miter-gear wheel, g^4, at the middle of the axle a^2. The teeth of the miter-gear wheel g^4 are on the right face of its rim. The left face of the miter-gear wheel g^4 is dished, and the teeth of the three small miter-pinions

g' g^2 g^3 project also slightly from that face and engage the teeth of a miter-pinion, h, which is connected by clutch-pins to the flange h' at the inner end of the sleeve a^7. This completes the front axle and the gearing attached to it. The rear axle is an ordinary axle, on which the wheels turn in the usual manner. The miter-gear wheel g^4 on the middle of the axle a^2 meshes with a miter-pinion, i, on the lower end of the vertical shaft d', which passes up through the vertical journal c^3 on the under face of the top section, d, of the turn-table. At the upper end of the vertical shaft d' is a transverse bearing-bar, i', secured in the inner walls of the annular top section, in which the shaft d' is journaled. Below this bearing-bar the vertical shaft d' is provided with a miter-gear wheel, i^2, having its teeth upon its upper face. This miter gear wheel i^2 meshes with a miter-pinion, i^3, on the shaft i^4, which is journaled in bearings in the top section, d, of the turn-table, above the transverse bearing-bar i' and at right angles thereto. This shaft i^4 extends rearward from the top section, d, and is provided at its rear end with a loose coupling-sleeve, i^5. The top section, d, is provided at its left side over the cog-teeth c^2 with a double bearing-bracket, k, having vertical bearings k' and horizontal bearings k^2. This bracket is provided with a vertical shaft, l, upon the lower end of which is fixed a cog-pinion, l', which meshes with the cog-teeth c^2 on the flange-rim of the base-section c. At the upper end this shaft l is provided with a miter-pinion, l^2, which meshes with a miter-pinion, m, on the end of a horizontal shaft, m', journaled in the bearing k^2. The rear end of this shaft m' is provided with a loose coupling-sleeve, m^2. The upper face of the top section of the turn-table is provided at the front and rear of the annular casting with recesses n n', which, together with the slotted cap-plates n^2 n^3, form sockets for the heads n^4 n^4 for the oscillating standards o o', to which the forward end of the boiler o^2 is secured. To the rear wall of the fire-box p is secured a double bracket, p', having longitudinal and lateral bearings for the gearing, to be now explained. The horizontal shaft q, which extends longitudinal of frame of the engine, is coupled by a loose coupling, i^5, to the rear end of the shaft i^4. The rear end of the shaft q is provided with a miter-pinion, q', which meshes with a miter-pinion, q^2, on the inner end of a horizontal shaft, r, at right angles to the shaft q, and the outer end of this latter shaft, r, is provided with a cog-pinion, which receives the power from the engine and transmits it to the gearing within the turn-table, and thence to the gearing on the front axle, and through the latter to the wheels a a'. From the left side of the fire-box p extends an arm, s, which forms the rear bearing for the horizontal steering-shaft s', the forward end of which is coupled to the rear end of the horizontal shaft m' by a loose coupling-sleeve m^2. The rear end of the steering-shaft s' is provided with a hand-wheel, s^2, which is in easy reach of the engineer at the door of the furnace, so that by turning the hand-wheel in the proper direction he can turn the base-section of the turn-table either to the right or left, or hold it straight, or at any intermediate position between its right and left limits, and thus guide and turn the front wheels to cause the engine to travel in any desired direction. By reversing the engine the machine can be moved backward, and may by the instrumentality of the steering mechanism be guided with absolute certainty in its backward movement.

This engine can be made of any desired weight, and is strong and durable in all of its parts. It can be made to travel over rough or uneven roads and up and down inclines with facility. It can also be made to travel through soft fields and in other places where traction-engines as ordinarily constructed cannot be made to travel. The couplings between the front and rear axles being flexible, even those between the boiler and the upper section, d, of the turn-table being oscillating couplings, the unevenness of the ground will be yielded to and the strain on the parts will not wrench them.

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

1. In a traction-engine, the combination, with the front axle, having the supporting-wheel at one end keyed to a flanged collar fixed to the axle, and having an enlarged portion provided with a half-clutch at its inner end engaging a half-clutch on a miter-pinion on said axle, of a miter-gear wheel on the middle portion of the axle, provided in its hub with three radially-journaled small miter-pinions, a miter-pinion on the opposite side of the miter-gear wheel from the miter-pinion, engaging the half-clutch on the axle, the latter miter-pinion being connected by clutch-pins to a flange on the inner end of a sleeve on the axle, the other supporting-wheel for the axle being keyed to a flange on the outer end of the sleeve, and mechanism, substantially as described, for imparting motion to the miter-gear wheel on the middle of the axle to turn the wheels and propel the engine, substantially as specified.

2. In a traction-engine, the combination, with the front axle, having one of its wheels keyed to a flanged collar fixed near one end of the axle, and the other wheel keyed to a flange on the outer end of a sleeve, occupying part of the axle at the opposite side, and a middle miter-gear wheel, provided with small miter-pinions journaled radially in its hub and engaging the teeth of two miter-pinions on the axle, one clutched to the inner end of an enlargement on the axle and the other to the inner end of the sleeve, of the sectional turn-table provided with bearings for the axle and sleeve, and a vertical shaft carrying a miter-pinion on its lower end and a miter-gear wheel near its upper end, and a horizontal shaft having a miter-pinion at its forward end engaging

the miter-gear wheel on the vertical shaft below it, and means, substantially as described, for imparting motion to said horizontal shaft, substantially as specified.

3. In a traction-engine, the combination, with the base-section of the turn-table mounted on the front axle, and provided with cog-teeth extending around one-third of its flanged periphery, of the top section provided with a double bracket at one side over the cog-teeth, having a vertical shaft provided at its lower end with a cog-pinion engaging the cog-teeth on the base-section, and at its upper end with a miter-pinion meshing with a miter-pinion on the front end of a horizontal shaft in said double bracket, and extending to and connecting with a steering-shaft, substantially as specified.

4. In a traction-engine, the combination, with the base-section of the turn-table, having the central opening and the vertical rim-flange, and bearings connecting it with the front axle, of the top section having a downwardly-projecting hollow journal and recesses in its under face, provided with friction-rollers having integral journals, the peripheral flange on the top section, and the shouldered guides secured to the base-section, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HENRY DECKMANN.

Witnesses:

ELIJAH CLAY,

JOHN HUBERTY.