

No. 641,941.

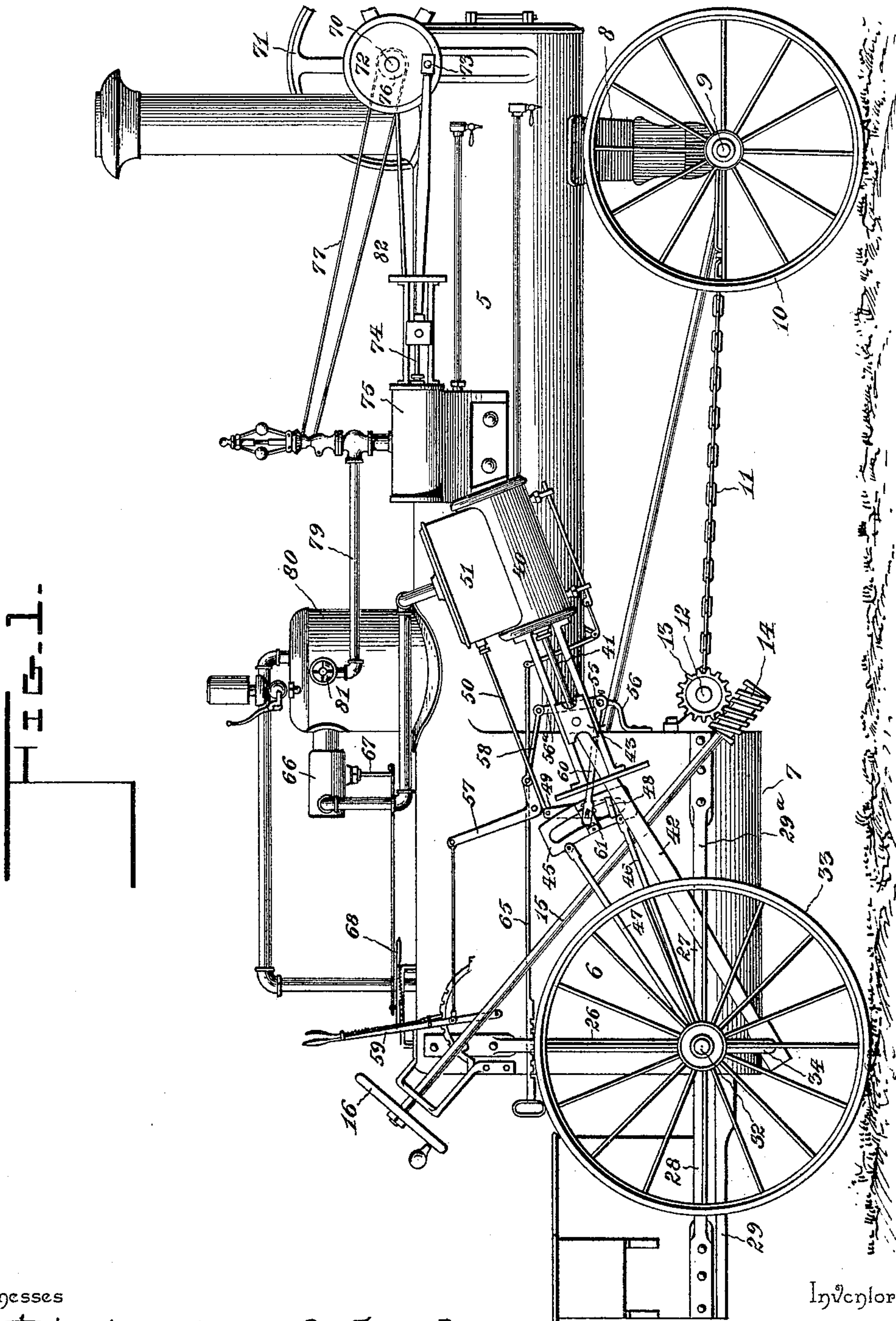
Patented Jan. 23, 1900.

T. E. DODDS.
TRACTION ENGINE.

(Application filed June 19, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses
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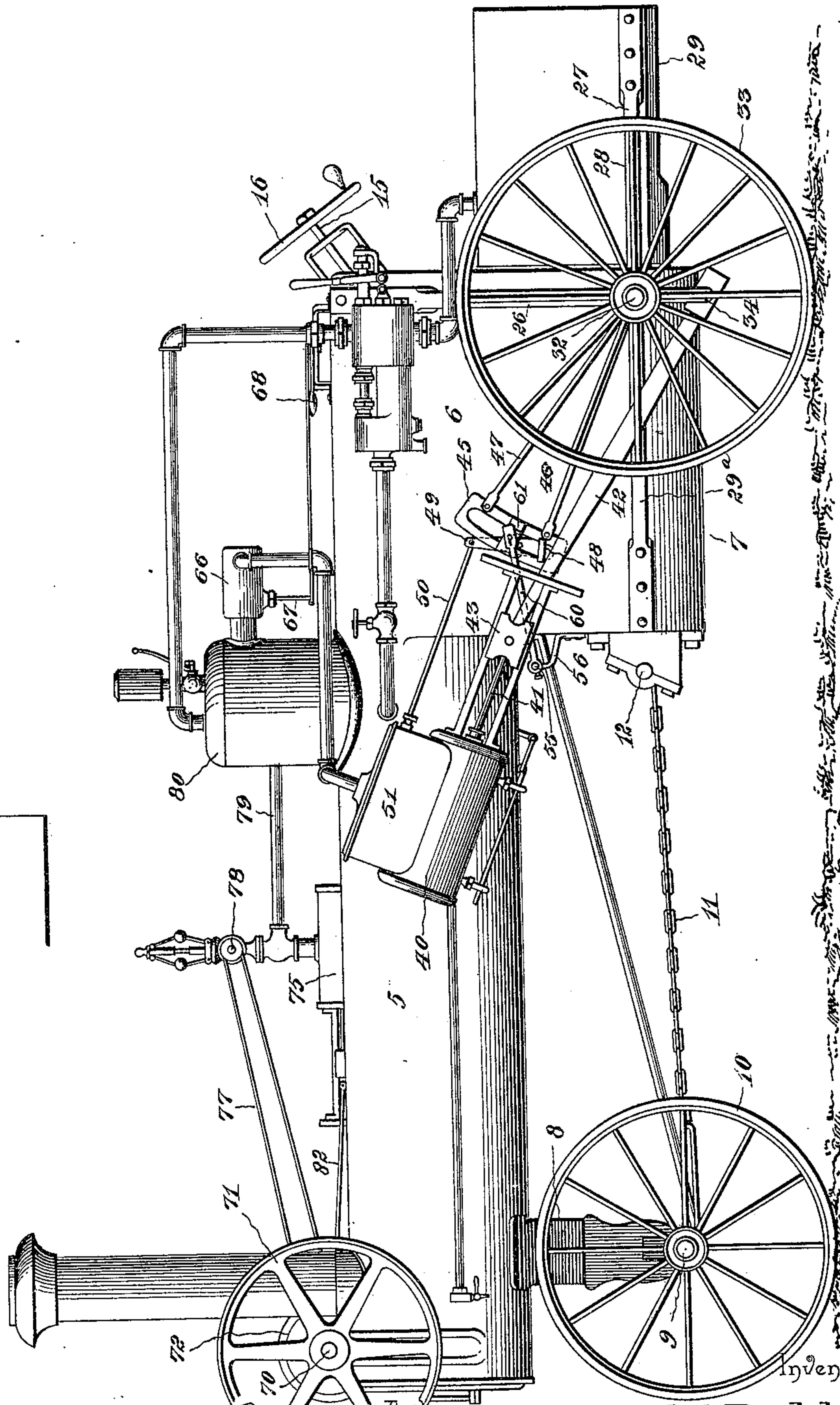
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Fig. 2



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FIG. 5.

FIG. 3.

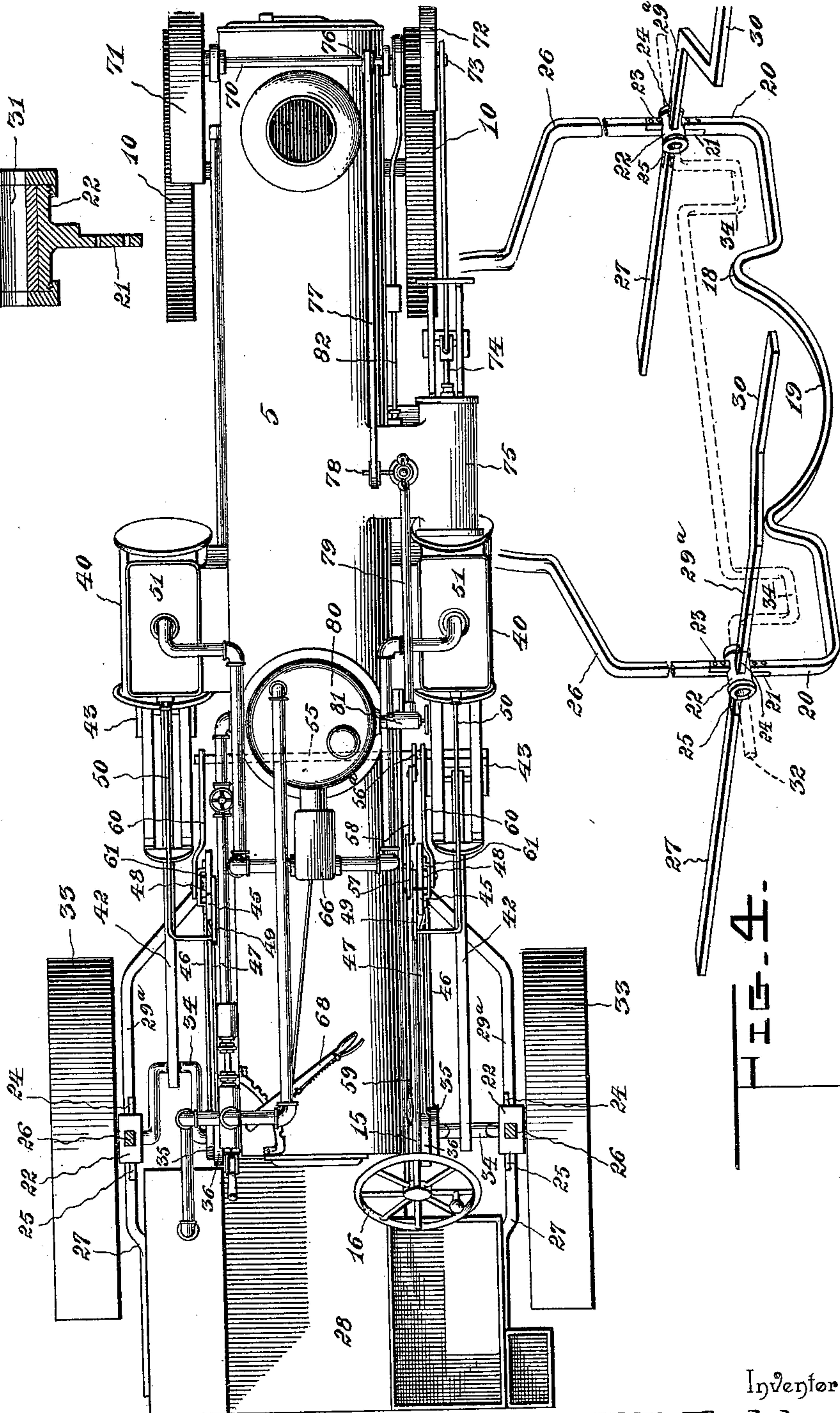


FIG. 4.

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UNITED STATES PATENT OFFICE.

THOMAS E. DODDS, OF CRIDER, KENTUCKY.

TRACTION-ENGINE.

SPECIFICATION forming part of Letters Patent No. 641,941, dated January 23, 1900.

Application filed June 19, 1899. Serial No. 721,127. (No model.)

To all whom it may concern:

Be it known that I, THOMAS E. DODDS, a citizen of the United States, residing at Crider, in the county of Caldwell and State of Kentucky, have invented a new and useful Traction-Engine, of which the following is a specification.

This invention relates to traction-engines; and it has for its object to provide an engine of this style in which there is a boiler mounted upon suitable running-gear, and which boiler carries an engine for running detached machinery, and it has, moreover, two additional and entirely separate engines for rotating the drive-shaft, thus doing away with all gearing and enabling the starting of the machinery without jolting and producing a machine in which the wear and tear will be light, in which the friction will be small, and in which the power applied in driving the machine from place to place will be more effectively employed.

In the drawings forming a portion of this specification, and in which like numerals of reference designate corresponding parts in the several views, Figure 1 is a side elevation of the right-hand side of the machine. Fig. 2 is an elevation of the left-hand side of the machine. Fig. 3 is a top plan view of the machine. Fig. 4 is a perspective view of the rear supporting-frame. Fig. 5 is a detail section of one of the bearings of the rear axle.

Referring now to the drawings, 5 represents the horizontal boiler of the machine, which is similar in all respects to the usual horizontal fire-tube boiler employed in this class of machines, said boiler having a downwardly-extending fire-box 6 at its rear end, terminating in an ash-pan 7. The front end of the boiler is carried by a support 8, having the usual king-bolt connection with an axle 9, having supporting-wheels 10, and which wheels are adapted for movement to guide the machine, this movement of the front axle and wheels being secured through the medium of a chain 11, wrapped around a drum, one end of the shaft 12 of which has a pinion 13 thereon, engaging a worm 14, mounted upon a shaft 15, which extends upwardly and rearwardly of the fire-box and is journaled in suitable bearings. The shaft 15 has the usual operating-wheel 16, the shaft 12 being journaled in suitable bear-

ings upon the front of the fire-box. This mechanism is of the usual construction, as will be understood.

In order to support the rear end of the machine, I form a frame, comprising a transverse bar 18, which extends transversely of and beneath the fire-box 6 and ash-pan 7, the central portion of said bar having a curved seat for the reception of the adjacent portion of the machine. From the central curved portion 19 the ends of said bar are curved outwardly and downwardly and are then continued outwardly in axial alinement and are then extended vertically and upwardly, as shown at 20, the upper ends of the extensions 20 being halved for the reception of similarly-formed lugs 21 upon a bearing-box 22, with which lugs they are bolted or otherwise secured. The boxes 22 are each provided with a halved lug 23, diametrically opposite the lug 21, and with an additional oppositely-extended pair of lugs 24 and 25, which are disposed intermediate the lugs 21 and 23 and are halved for the reception of the ends of upper elements of the supporting-frame. Connected with the lugs 23 are braces 26, which are extended upwardly and inwardly and finally upwardly to engage the sides of the rear end of the boiler. Extending rearwardly of the boxes 22 and connected with the lugs 25 are frame-bars 27, which are connected to a rear platform 28, supported upon sills 29, connected with the under side of the fire-box and extending rearwardly thereof. Additional brace-bars 29^a are connected with the lugs 24 and are extended forwardly and then inwardly and finally forwardly, as shown at 30, the ends 30 thereof being bolted or otherwise secured to the front portions of the fire-box. Thus it will be seen that the rear end of the boiler has a rigid and strong support which thoroughly braces adjacent parts of the machine.

In the boxes 22 are arranged adjustable bearings 31 of any suitable style, and in these bearings are journaled the ends of the axle 32, which ends extend beyond the bearings and are provided with traction-wheels 33. Intermediate the bearings 31 the axle is bent outwardly and then inwardly to form U-shaped cranks 34, through the medium of which the axle and its wheels may be rotated by the

machine, said axle intermediate the cranks being passed through the ash-pan and beneath the fire-box, in which latter it may have suitable bearings, if desired.

5 In order to rotate the axle 32, I affix to each side of the boiler 5 an engine comprising a cylinder 40, from which leads a piston 41, connected with a pitman 42 through the medium of a cross-head 43, the opposite end of said
10 pitman being connected directly with the adjacent crank 34. The eccentrics 35 and 36 are mounted upon the axle 32 at each side of the fire-box and between the fire-box and the corresponding crank, said eccentrics having
15 connection with a link 45 through the medium of pitmen 46 and 47, respectively. This link is slidably mounted upon the headed stud 48 of a rock-lever 49, the opposite end of said lever having pivotal connection with a
20 cut-off rod 50, operating cut-off mechanism in the steam-chest 51 of the engine. The link 45 is movable with respect to the stud 48, so that said stud may be brought to either end of the slot of the link to throw either eccen-
25 tric into operative relation with the lever 49 in the usual manner. In order to shift this link 45 from one position to another to vary the amount of steam admitted to the cylinder and also to reverse the direction of rotation
30 of the axle 32, a rock-shaft 55 is journaled in suitable bearings 56 upon the front end of the fire-box, one end of said shaft having a radially-extending arm 56^a, which is connected with an angular lever 57 through the medium
35 of a connecting-link 58, said lever 57 having connections with a lever 59, pivoted to the boiler, and through the medium of which lever and the intervening connections the shaft 55 may be rocked or oscillated. The
40 usual notched segment and engaging bolt are provided for holding the lever 59 at different points of its pivotal movement.

Adjustably mounted upon each end of the shaft 55 is a radially-extending arm 60, the
45 outer end of which has a slot-and-pin connection with a yoke 61, rigidly connected with the link 45 midway of its ends, whereby as the shaft 55 is rocked it will move the link to different points of its adjustment. It is of
50 course understood that the yoke 61 is of such proportion as to permit the passage of the stud 48 between it and the link, Fig. 1 of the drawings showing the link at the upper limit of its motion to throw the eccentric 35 into
55 operative connection with the cut-off mechanism.

The cylinder 40 of each engine is provided with the usual pet-cocks for blowing off the water of condensation, the plugs of said cocks
60 having a common connection with a reciprocatory rod 65 of the usual construction and arrangement.

The steam-chests 51 are connected with a common throttle 66, the spindle 67 of which
65 has connection with a lever 68, provided with a bolt-and-segment mechanism for holding it in different positions.

Mounted upon the forward end of the boiler 5 in suitable bearings is a shaft 70, which may or may not carry a fly-wheel 71, said shaft
70 having a crank-disk 72, the crank-pin 73 of which is connected with a piston 74 upon engine 75, mounted upon the boiler and entirely independent of the engines comprising the
75 cylinders 40. The shaft 70 carries also a pulley 76, having a belt connection 77 with the operating-spindle 78 of a set of ballast-balls of common construction, the cylinder 75 receiving its steam through a connection 79
80 with a steam-drum 80 of the boiler, the supply of steam through which is regulated by a separate throttle 81. The cut-off rod 82 of the cylinder 75 has the usual form of eccentric connection with the shaft 70, the entire
85 machine being otherwise provided with the usual attachments of whistle, smoke-stack, and similar parts cooperating to form a complete machine.

It will of course be understood that in practice the location and arrangement of the various parts of the device may be altered, their
90 proportions may be varied, and that I may otherwise change the specific construction and arrangement shown without departing from the spirit of the invention.

Having thus described the invention, what is claimed is—

1. The combination with a boiler, of a supporting-frame comprising boxes having lugs oppositely disposed in pairs, a bar connected
100 with corresponding lugs of each box, extending below and connected with the boiler, braces connected with corresponding lugs and connected with the boiler, said braces extending forwardly of the boiler, braces connected
105 with corresponding lugs opposite the last-named lugs, said braces extending rearwardly of the boiler, a platform connecting the last-named braces, additional braces connected with corresponding lugs opposite the first-
110 named lugs, extending upwardly of and connected with the boiler, a driving-axle journaled in said boxes, drive-wheels connected with said axle, and an engine adjacent each wheel and connected directly with said axle.

2. The combination with a boiler, of a supporting-frame comprising boxes having lugs oppositely disposed in pairs, a bar connected
115 with corresponding lugs of each box, extending below and connected with the boiler, braces connected with corresponding lugs and connected with the boiler, said braces extending forwardly of the boiler, braces connected
120 with corresponding lugs opposite the last-named lugs, said braces extending rearwardly of the boiler, a platform connecting the last-named braces, additional braces connected with corresponding lugs opposite the first-
125 named lugs, extending upwardly of and connected with the boiler, a driving-axle journaled in said boxes, and having drive-wheels, and an engine for each of said wheels comprising a pitman forming a direct connection
130 between said engine and the crank-axle.

3. The combination with a boiler, of a supporting-frame comprising boxes having lugs oppositely disposed in pairs, a bar connected with corresponding lugs of each box, extending below and connected with the boiler, braces connected with corresponding lugs and connected with the boiler, said braces extending forwardly of the boiler, braces connected with corresponding lugs opposite the last-named lugs, said braces extending rearwardly of the boiler, a platform connecting the last-named braces, additional braces connected with corresponding lugs opposite the first-named lugs, extending upwardly of and connected with the boiler, and a driving-axle journaled in said boxes.

4. The combination with a boiler of rearwardly-extending sills connected therewith and having a platform thereon, a frame comprising boxes having braces extending radially thereof, one of said braces extending below and in contact with the boiler, a corresponding pair of braces extending forwardly of and connected with the boiler, a corresponding pair of braces extending upwardly of and connected with the boiler, a corresponding pair of braces extending rearwardly of the boiler and connected with the platform upon the sills, a crank-axle journaled in said boxes and disposed with its cranks arranged to rotate within the inclosure of said frame, and means energized from the boiler for rotating the crank-axle.

5. The combination with a boiler, of a supporting-frame comprising boxes having lugs oppositely disposed in pairs, a bar connected with corresponding lugs of each box, extending below and connected with the boiler, braces connected with corresponding lugs and connected with the boiler, said braces extending forwardly of the boiler, braces connected with corresponding lugs opposite the last-named lugs, said braces extending rearwardly of the boiler, a platform connecting the last-named braces, additional braces connected with corresponding lugs opposite the first-named lugs, extending upwardly of and connected with the boiler, a driving-axle journaled in said boxes, drive-wheels connected with said axle, the cranks of the axle being disposed between the wheels and the boiler, a cylinder at each side of the boiler having a piston adapted to be energized from the boiler, and a pitman connected directly with its respective piston and crank.

6. The combination with a boiler, of a supporting-frame comprising boxes having lugs oppositely disposed in pairs, a bar connected with corresponding lugs of each box, extending below and connected with the boiler, braces connected with corresponding lugs and connected with the boiler, said braces extend-

ing forwardly of the boiler, braces connected with corresponding lugs opposite the last-named lugs, said braces extending rearwardly of the boiler, a platform connecting the last-named braces, additional braces connected with corresponding lugs opposite the first-named lugs, extending upwardly of and connected with the boiler, a driving-axle journaled in said boxes, drive-wheels connected with said axle, an engine adjacent each wheel and connected with the axle, a power-shaft mounted upon the boiler, and an engine operatively connected with said power-shaft and independent of the first-named engines.

7. The combination with a boiler, of a crank-axle rotatably mounted with respect thereto, drive-wheels connected with said axle, an engine adjacent each wheel and comprising a piston and cut-off mechanism, direct connections between each piston and its respective crank of the axle, eccentrics carried by the crank-axle, a link mechanism connected with the eccentrics and the cut-off mechanism, a rock-shaft connected with the link of each mechanism, a radial extension on said shaft, an angular lever connected with said extension through the medium of a link, and an operating-lever connected with the angular lever to rock said shaft and shift the link.

8. The combination with a boiler, of a supporting-frame comprising boxes having lugs oppositely disposed in pairs, a bar connected with corresponding lugs of each box, extending below and connected with the boiler, braces connected with corresponding lugs and connected with the boiler, said braces extending forwardly of the boiler, braces connected with corresponding lugs opposite the last-named lugs, said braces extending rearwardly of the boiler, a platform connecting the last-named braces, additional braces connected with corresponding lugs opposite the first-named lugs, extending upwardly of and connected with the boiler, a driving-axle journaled in said boxes, drive-wheels connected with said axle, an engine connected with the axle adjacent each drive-wheel, connections between said engines and the boiler comprising a common throttle, a power-shaft mounted upon the boiler, a separate engine operatively connected with the power-shaft, a steam-pipe connecting the last-named engine with the boiler, and a separate throttle in said steam-pipe.

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

THOMAS E. DODDS.

Witnesses:

J. D. LEECH,

JOHN R. WYLIE.