

(No Model.)

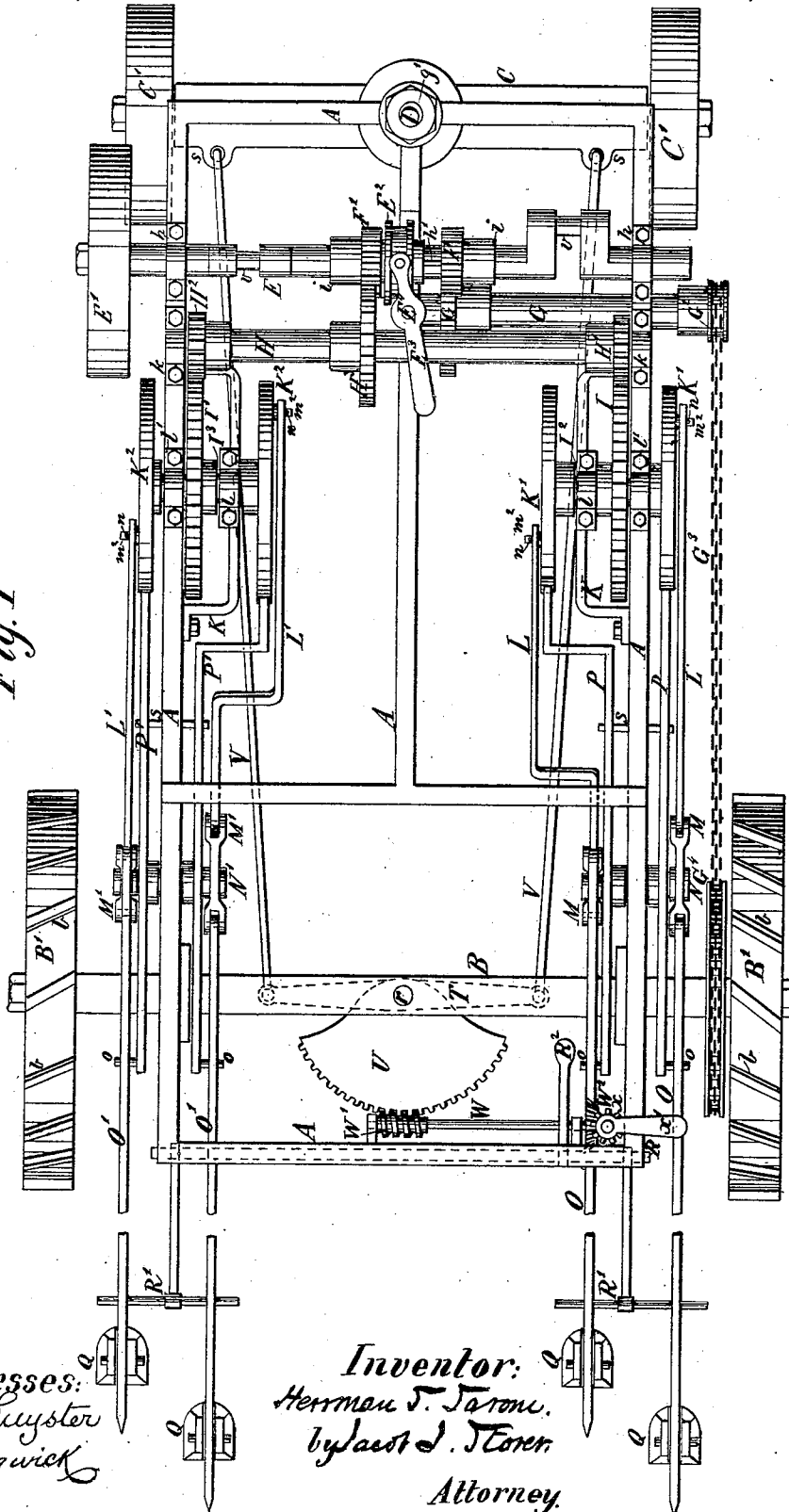
2 Sheets—Sheet 1.

H. S. SARONI.
TRACTION ENGINE.

No. 267,464.

Patented Nov. 14, 1882.

Fig. 1



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(No Model.)

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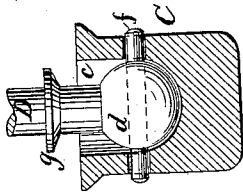


Fig. 2

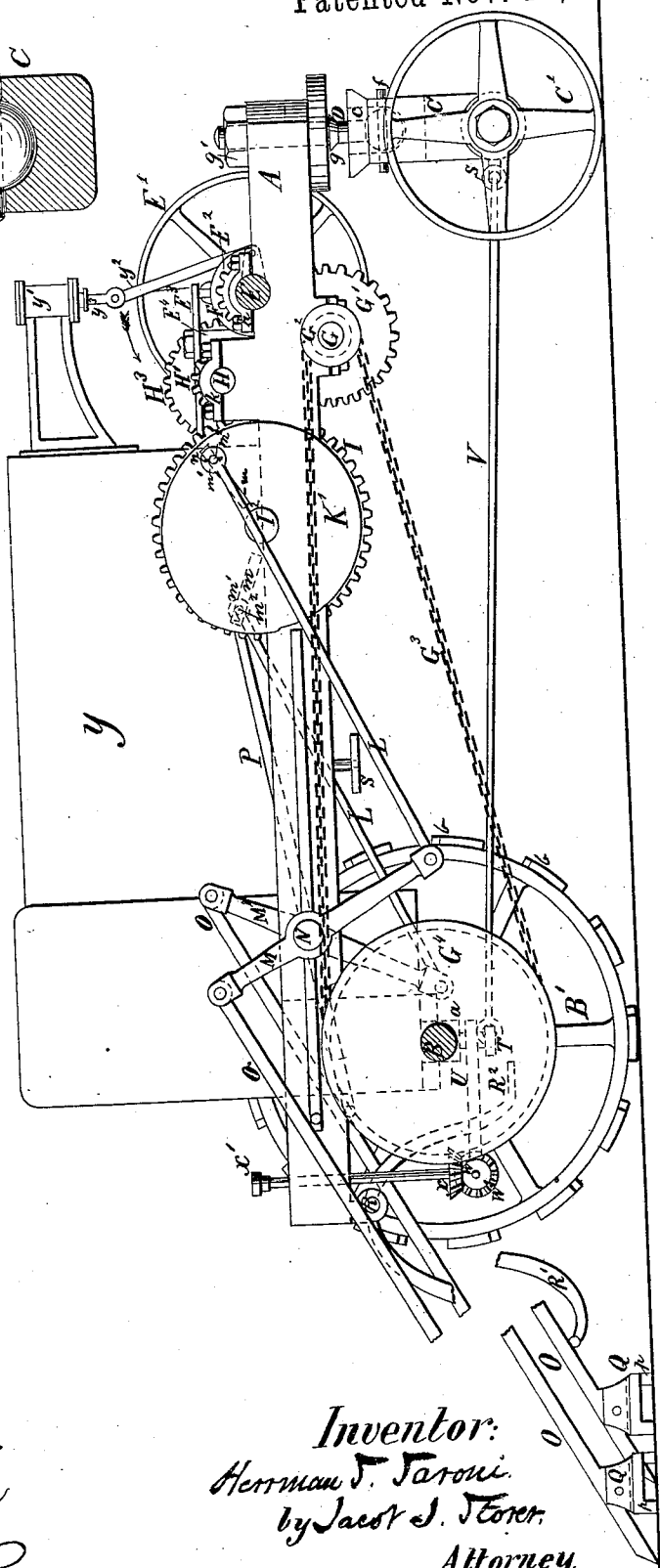
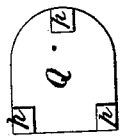


Fig. 3



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UNITED STATES PATENT OFFICE

HERRMAN S. SARONI, OF ST. PAUL, MINNESOTA.

TRACTION-ENGINE.

SPECIFICATION forming part of Letters Patent No. 267,464, dated November 14, 1882.

Application filed January 11, 1882. (No model.)

To all whom it may concern:

Be it known that I, HERRMAN S. SARONI, of St. Paul, in the county of Ramsey and State of Minnesota, have invented certain Improvements in Traction-Engines, of which the following is a specification.

The object of this invention is to construct a traction-engine better adapted for traveling and operating on uneven ground, and for ready conversion into a stationary motive power for thrashing-machines, saws, and other mechanisms.

The invention consists in combining with a traction-engine of ordinary type a series of pushers, with their peculiar actuating and controlling mechanisms, a novel steering-gear, and an improved king-bolt, by means of any or all of which great advantages are gained over traction-engines now in use.

Figure 1 is a plan of my improved engine, with boiler, steam-cylinders, and connecting-rods removed. Fig. 2 is a side elevation of the engine, with parts removed to exhibit other parts. Fig. 3 is an enlarged view of the reverse of a pusher foot or clog. Fig. 4 is an enlarged partly-sectional elevation, showing the king-bolt in position.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents the engine-frame; B, the fixed rear axle, supported in boxes *a*, and carrying the rear or traction wheels, B', whose treads are provided with fixed diagonal ribs or cogs *b*, that give the said wheels B' a better hold on the ground.

C represents the adjustable front axle, carrying wheels C'. The central point of this front axle, C, is curved or bowed upward, enlarged, and has formed in it a socket, *c*, having a hemispherical bottom, in which rests the ball *d* that forms the lower end of the king-bolt D. A pin, *f*, passed fore and aft through the socket *c* and center of ball *d*, holds the king-bolt D in place, yet permits the ends of the axle C to have free movement in a vertical plane, while the diameter of the vertical portion of the socket *c* is sufficient to permit the desired movement of either end of said axle when the engine is moving over uneven ground, in order that the forward part of the engine-

frame may not be inclined laterally from a level or horizontal position. On the said king-bolt D is a collar, *g*, on which the front end of the frame A rests, and, passing up through a suitable socket in the front end of said frame A, the king-bolt D is held in place by a nut, *g'*.

Running across the upper face of the frame A, near the front thereof, the driving or crank shaft E is journaled in boxes *h*, and carries a band-wheel, E', on one end. On the central portion of this shaft E is a clutch, E², that is made to turn with said shaft by a spline, *h'*, and is moved laterally by means of a shifting-bar, E³, that is pivoted on a standard, E⁴, fixed on the frame A. On either side of the clutch E², on the shaft E, is a loose pinion, F F', respectively held from outward movement by collar *i i'*.

Journaled in the frame A, and extending about half-way across it, is a shaft, G, carrying on its inner end a fixed cog-wheel, G', and on its outer end a sprocket-wheel, G², the former of which gears with the pinion F, while from the latter a chain belt, G³, passes rearward over the sprocket-wheel G⁴, that is firmly secured to a driving-wheel, B'. Hence, when through applied power the driving-shaft E is revolved and the clutch E² is clutched with the pinion F, the sprocket-wheel G⁴ and its attached driving-wheel B' are revolved and the engine thereby propelled in the ordinary manner.

By duplicating the shaft G, the sprocket-wheels G² G⁴, and chain belt G³, power may be applied directly to the opposite driving-wheel B', as will readily be seen by an ordinary workman.

These devices for propelling a traction-engine possess no new features, and are well adapted to propel engines over ordinary roads and level fields, but are not efficient in propelling the engine over plowed or very uneven ground, and hence I have devised, in combination with the parts hereinbefore described, other mechanisms to adapt the engine for plowing and for running over plowed ground.

Journaled in boxes *k* on the top of the frame A, parallel with the crank-shaft E, is a shaft, H, carrying, firmly fixed on each end, a pinion H¹ H², respectively, and about centrally a cog-wheel, H³, the latter of which gears with the

crank-shaft pinion F' , while the pinions H' H^2 respectively gear with cog-wheels I' , that are keyed on horizontal shafts I^2 I^3 .

Braces K , firmly secured on opposite sides of the frame A , support the inner journal-boxes, l , of the shafts I^2 I^3 , respectively, while the outer ends of these shafts are respectively journaled in boxes l' , that are fixed on the engine-frame itself.

On either extremity of the shaft I^2 is keyed an eccentric, K' , whose eccentric points are turned in opposite directions from each other, and like eccentrics, K^2 , are keyed in corresponding positions on the shaft I^3 . All these eccentrics K' K^2 have radial slots m , in which are held, by nuts m' pins m^2 , on which the forward ends of the respective connecting-rods L L' are secured by pins n . The rear and lower ends of these connecting-rods L L' are respectively pivoted to the lower ends of levers M M' , that are fulcrumed on their respective shafts N N' , which are journaled in opposite sides of the frame A , and pivoted in the forked upper ends of the levers M M' are the pushers O O' , that extend rearward, so that their sharp points may rest upon the ground in rear of the engine-frame A .

Each shaft N N' serves as a pivot for two lifting-arms, P P' , whose upper ends are heavier than their lower ends, and are designed to come in contact respectively with the eccentrics K' K^2 , and whose lower ends are provided with laterally-projecting pins o , on which the pushers O O' rest.

When the engine is in operation and the clutch E^2 is engaged with the pinion F' , that gears with the cog-wheel H^2 , the shafts I^2 I^3 are thereby revolved in the direction of the arrow, Fig. 2, and the free ends of the pushers O O' being on the ground the eccentrics K' K^2 alternately draw forward and push rearward the lower ends of the connecting-rods L L' , whereby the points of the pushers O O' are alternately thrust into and drawn from the ground, thereby propelling the engine forward, and as the eccentrics K' K^2 revolve they alternately lift and release the inner or upper ends of the arms P P' , whereby the pushers O O' are alternately lifted free from the ground and permitted to drop again at suitable angles thereto.

Near the outer end of each pusher O O' is pivoted a swinging foot or clog, Q , that by swinging adjusts itself in position and serves to prevent the too deep penetration of the pusher-points into the ground, and at the same time offers sufficient fulcrum upon the ground for the effective rearward thrust of the pushers. These clogs Q are provided on their under faces with calks or projections p to give them a better hold on the ground.

By loosening the nuts m' the pins m^2 may be adjusted inward or outward in the slots m of the eccentrics K' K^2 to give a greater or less throw or reach to the pushers O O' .

When it is desired to propel the engine with-

out the application of the pushers O O' they may be lifted clear from the ground by means of a cross-bar, R , having at either end T -arms R' , and operated by a connected lever, R^2 , which is pivoted on the frame A . By pressing this lever or pedal R^2 down the arms R' are pressed upward against the pushers O O' to lift them to the desired elevation, and then the arms P P' fall and rest on the T -shaped stops S that depend from opposite sides of the frame A .

The engine-steering device consists of a swinging bar, T , and toothed quadrant U , pivoting on a bolt, r , that holds them, one below the other, to the lower face of the rear axle, B , while to the ends of the horizontal swinging bar T parallel rods V are linked, that extend forward and are engaged in screw-eyes s , or equivalent devices, that are secured in the front axle, C , near the ends thereof.

A horizontal worm-shaft, W , journaled in boxes t , carries a worm, W' , that engages in the teeth of the quadrant U , and on the opposite end of this shaft W is a bevel-gear, W^2 , in which meshes a gear, X , that is fixed on a vertical shaft, X' , which extends upward within reach of the operator, who, by turning said shaft X' , may cause the front axle, C , with its wheels C' , to turn to the right or left.

Y indicates a boiler properly secured upon the frame A to supply steam to the attached cylinders Y' , by means of which the engine is operated through the connecting-rods Y^2 , that connect the piston-rods Y^3 with the cranks or wrist-pins V of the driving-shaft E .

This engine can be used as a stationery engine for operating saws, thrashing-machines, &c., by throwing the clutch E^2 out of gear with both the pinions F F' and connecting the band-wheel E' by a belt with the shaft of the saw or machine to be driven.

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

1. The combination, in a traction-engine, of the traction-wheels B , the reciprocating pushers O , a motive power provided with a shaft, E , suitable connecting devices between said shaft and the pushers and traction-wheels, and a clutch mechanism for throwing said pushers and traction-wheels into and out of gear at will, all substantially as described.

2. As a means for propelling an engine, the combination, with the frame A , of the shafts I^2 I^3 , eccentrics K' K^2 , connecting-rods L L' , levers M M' , shafts N N' , pushers O O' , and lifting-arms P P' , arranged and operated substantially as herein shown and described.

3. The combination, with the pivoted pushers O O' , of the lifting-arms P P' , provided with lateral pins o , substantially as and for the purpose described.

4. The combination, with the pushers O O' , of the swinging clogs Q , the two being so pivoted together that the clogs will rest under the pushers and the points of the pushers project over and behind the clogs and act on the

ground, substantially as herein shown, and for the purposes described.

5. In a traction-engine, as a means for giving freedom of vertical movement to the ends of the front axle, the combination, with a front axle provided with a suitable central socket, of the king-bolt D, passing through and turn-

ing in the frame A, provided with ball *d* and collar *g* and pin *f*, substantially as herein shown and described.

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