No. 698,232. Patented Apr. 22, 1902.

S. S. STRAKER.

STEAM PROPELLED ROAD VEHICLE.

(Application filed Oct. 28, 1901.)

(No Model.) 2 Sheets—Sheet 1.

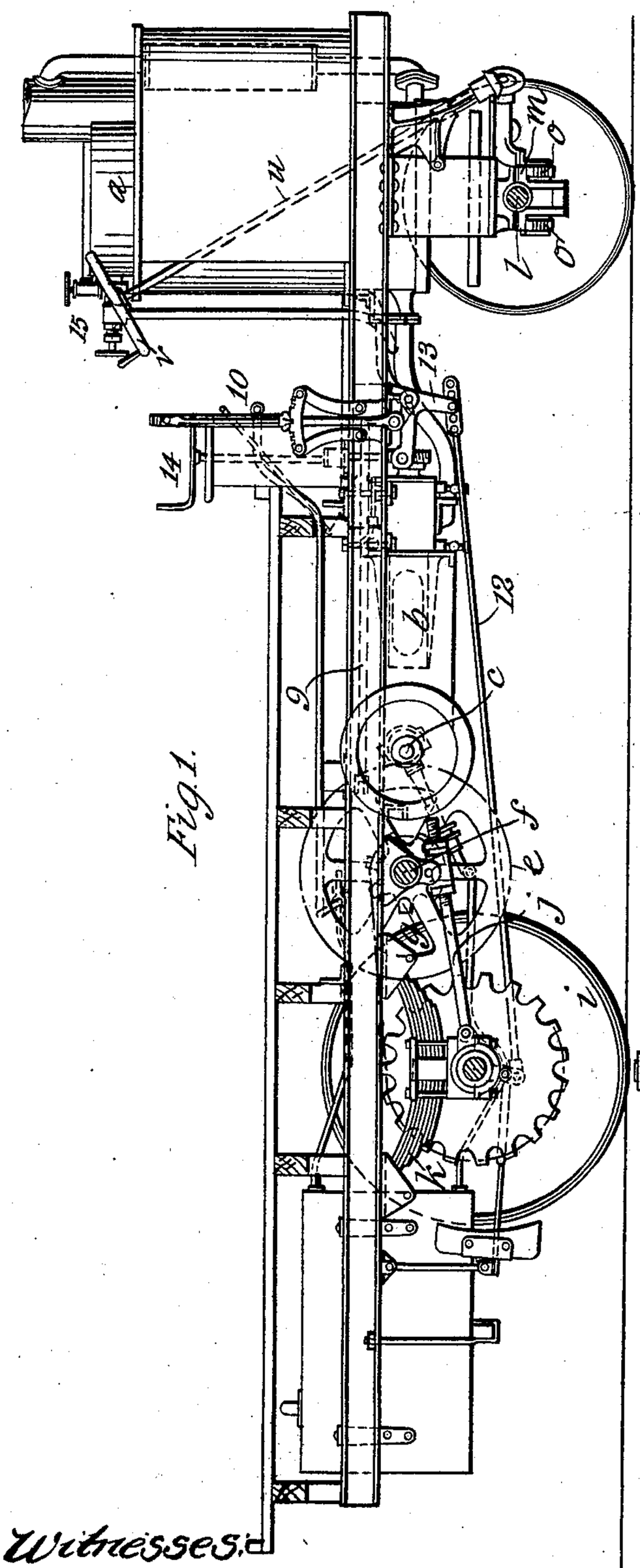

Fig. 1.

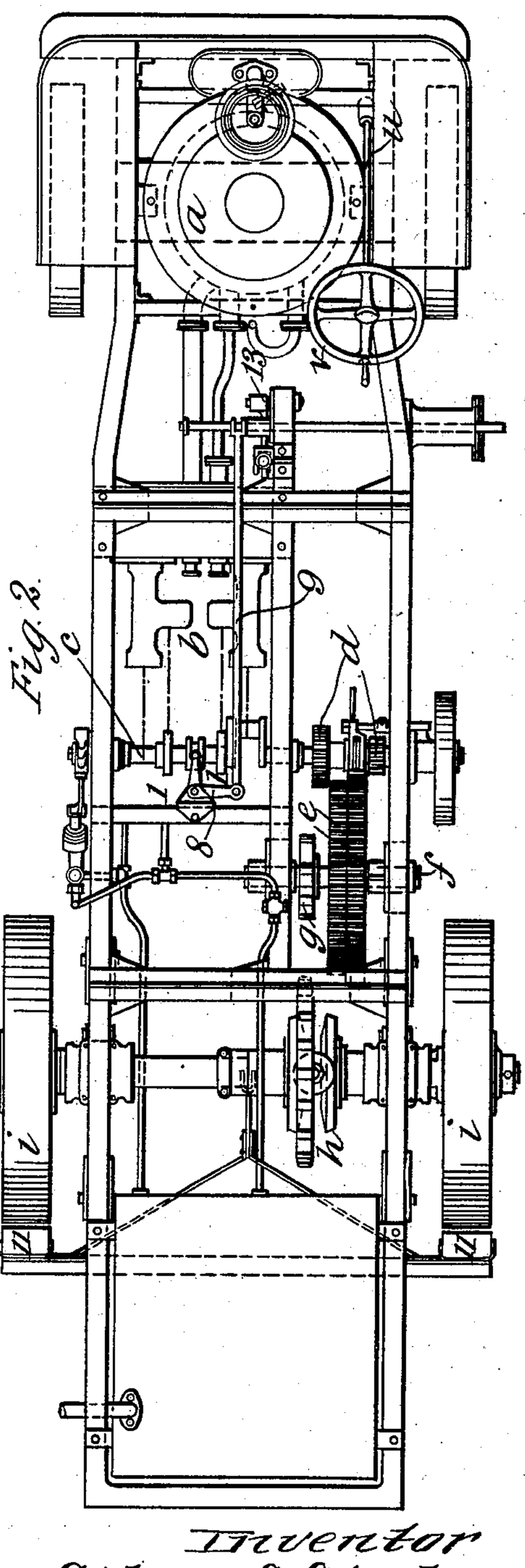

Fig. 2.

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Fig. 3.

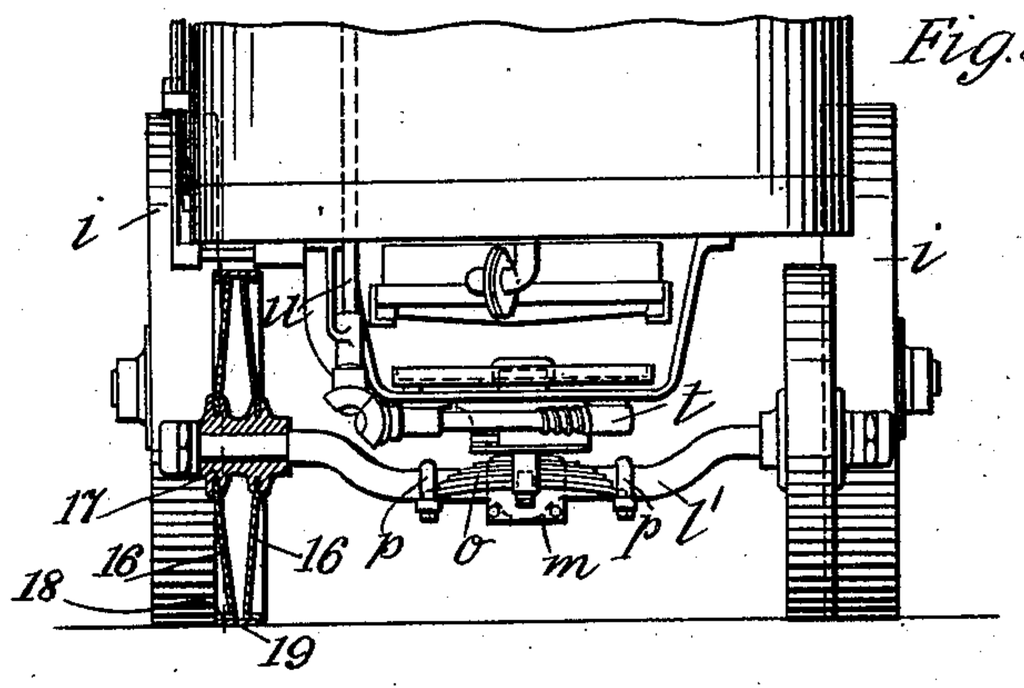
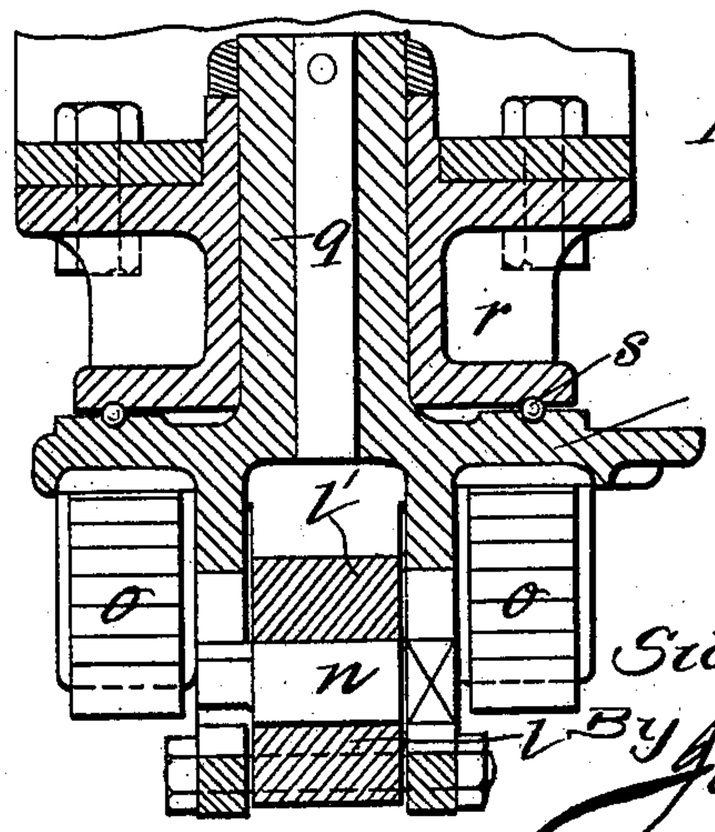


Fig. 4.



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UNITED STATES PATENT OFFICE.

SIDNEY S. STRAKER, OF LONDON, ENGLAND.

STEAM-PROPELLED ROAD-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 698,232, dated April 22, 1902.

Application filed October 28, 1901. Serial No. 80,329. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY SAMUEL STRAKER, a citizen of England, residing at 9 Bush Lane, Cannon street, in the city of London, England, have invented certain new and useful Improvements in Steam-Propelled Road-Vehicles, (for which I have applied for a patent in Great Britain, dated August 28, 1901, No. 17,257,) of which the following is a specification.

This invention relates to steam-propelled road-vehicles of simple and durable design suitable for continuous use on ordinary roads without undue strain upon the framing and driving mechanism. For this purpose I fix a horizontal compound steam-engine under the frame of the vehicle, the engine being provided with suitable means of lubricating the working parts and being inclosed in a dust-proof casing having doors to give free access to the moving parts. I preferably arrange the engine with the cylinders outside and their steam-chests between them. The crank-shaft has fitted to slide on it two toothed pinions of different diameters which can be put into and out of gear with two toothed wheels of different diameters upon a transverse counter-shaft, which has on it a sprocket-pinion and drives through a roller-chain a sprocket-wheel on the differential gear connected to the driving or road wheels. The axle of these wheels rotates in axle-boxes, on which the rear end of the frame is carried on springs. These boxes are connected by radius-rods to points corresponding to the axis of the counter-shaft, so that the rise or fall of the body and frame of the vehicle on the springs does not alter the distance of the centers of the shafts connected by the chain-gear.

In order to lessen the twisting effect on the frame of the vehicle when it travels over uneven roads, I arrange the frame so that it is supported at three points only instead of four points, as is commonly done, and for this purpose I carry the front end of the frame on a roller-bearing, which allows an attachment to the middle of the front axle freely to turn for steering purposes, while at the same time the axle itself has freedom subject to springs to rock in a transverse vertical plane, yielding to inequalities of the track. The attachment of the front axle is connected by worm and bevel-gear to a hand-wheel, by turning which the axle is turned more or less in the horizontal plane for steering. The steam-boiler, which may be of any approved construction, with fuel-bunkers and water-tank, is arranged substantially over the front axle, so that the hind wheels have to carry only the weight of the vehicle and its load.

Such being the general character of a steam-propelled road-vehicle according to my invention, I shall proceed to describe the details of construction and arrangement, referring to the accompanying drawings.

Figure 1 is a side view, and Fig. 2 is a plan, of the underframe and the engines and gear carried by it. Fig. 3 is a view of the front end, one of the front wheels being shown in section. Fig. 4 is a vertical section of the bearing for the front end of the vehicle on the front axle.

a is the steam-boiler, having as adjuncts suitable fuel-bunkers and water-tank, which are arranged to suit the particular form and dimensions of the boiler employed.

b indicates the pair of engines, consisting of two cylinders placed side by side with their slide-valves in steam-chests between them. The piston-rods are guided in the usual way and connected to cranks at right angles to each other on a crank-shaft *c*. On the crank-shaft *c* are fitted to slide on feathers a pair of toothed pinions *d* of different diameters, either of which can be slid into or out of gear with one of a pair of corresponding wheels *e*, fixed on a counter-shaft *f*. A sprocket-wheel *g* on the counter-shaft is connected by a chain, preferably having roller-pins, to a sprocket-wheel on the differential gear *h*, which is connected in the usual way to the axles of the two hind or driving wheels *ii*. These wheels overhang their bearings, each of which is formed in one end of a radius-rod *j*, the other end of which is adjustably fixed to a crank-arm pivoted on the bearing of the counter-shaft *f*. Between the bearings of the hind axles and the frame are interposed springs *k*, which allow the vehicle to move up and down, while the centers of the hind axle and of the counter-shaft remain at constant distance apart.

The fore axle *l*, which may be cranked, as

shown in Fig. 3, has its middle part made of rectangular section, as indicated at l' in Fig. 4, and passes through the fork of a piece m, vertically slotted to allow the up-and-down movement of a pin n, which passes through the axle as a pivot on which it can rock. The piece m has flanges bearing on the middle of springs o on each side, the ends of these springs being secured by clips p to the axle. The upper part of m constitutes a perch-pin q, working in a socket r, attached to the body of the vehicle and having balls s for its bearing on the piece m. A worm t, mounted in bearings on the lower front part of the vehicle, gears with a toothed segment projecting from the piece m, and this worm is connected by bevel-gear and an inclined shaft u to a hand-wheel v, by turning which the vehicle is steered.

The brake-blocks 11 are connected by rod 12 to a bell-crank lever 13, worked by screw-and-nut gear from a hand-wheel 14. The driver, placed immediately behind the boiler, has within easy reach the steering-wheel v, the reversing-lever 10, the brake-wheel 14, and the steam-valves 15.

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

In a steam-propelled road-vehicle, the combination with the front axle connected by springs to the frame so that it can rock and slide vertically, of a boiler arranged over the said axle, a shaft, a pair of horizontal engines in communication with the boiler and having their piston-rods connected to cranks at right angles to one another on said shaft, a pair of pinions of different diameters mounted on said shaft, a counter-shaft, a pair of wheels mounted on the counter-shaft and adapted to be suitably engaged by the said pinions, a sprocket-pinion mounted on said counter-shaft, a differential gear connecting the two parts of the hind axle of the vehicle, a sprocket-wheel on said gear, connections between said sprocket-pinion and said sprocket-wheel, springs attached to the frame of the vehicle and adapted to slide under it, bearings carried by the springs for the hind axle, a bearing on the counter-shaft, and a radius-rod for connecting the springs to the bearing on the counter-shaft.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SIDNEY S. STRAKER.

Witnesses:
FRED. C. HARRIS,
WALTER J. SKERTEN.