

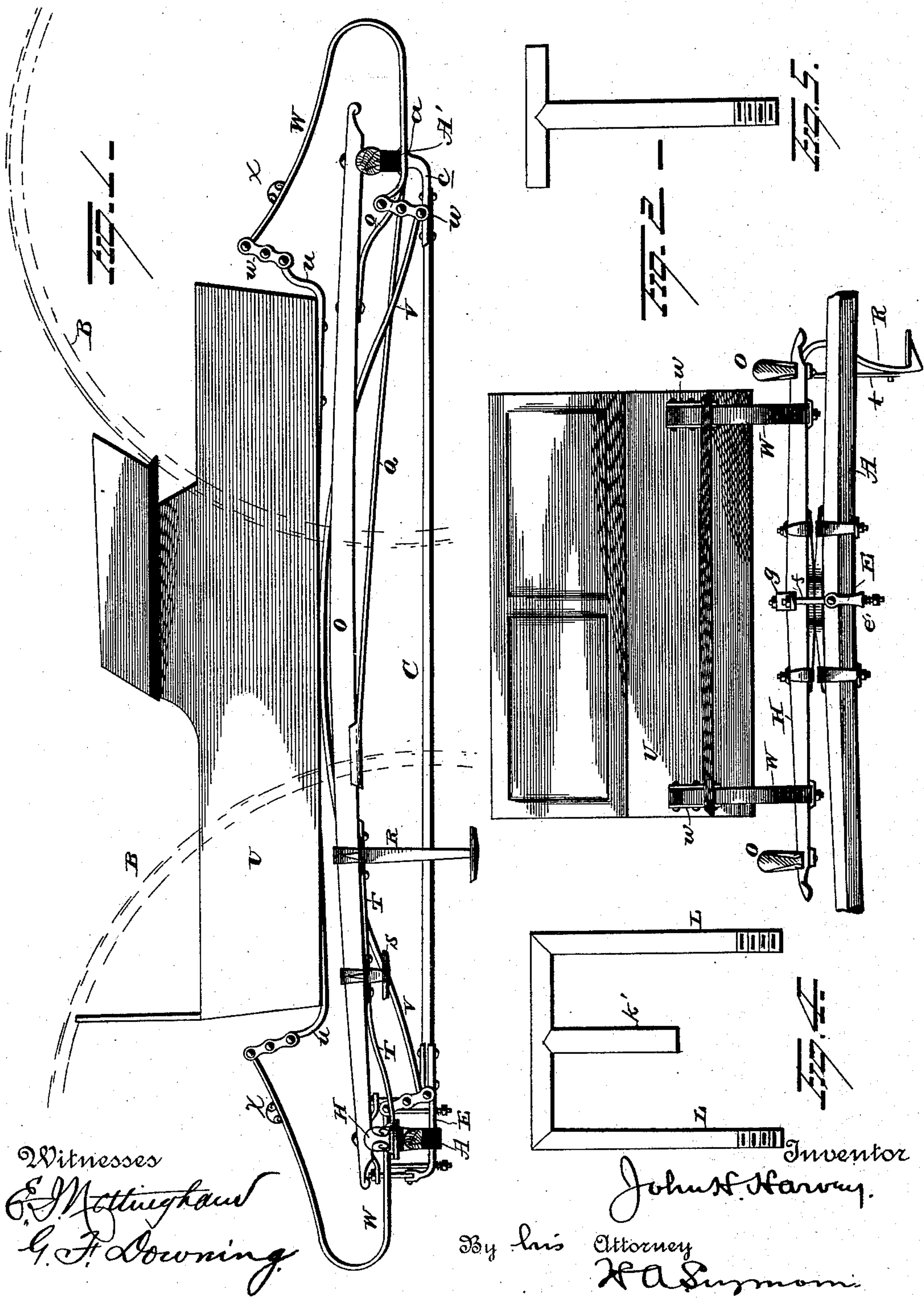
(No Model.)

2 Sheets—Sheet 1.

J. H. HARVEY.
RUNNING GEAR FOR VEHICLES.

No. 409,965.

Patented Aug. 27, 1889.



Witnesses
E. M. Nottingham
G. F. Downing

Inventor
John H. Harvey
By his Attorney
H. A. Symonds

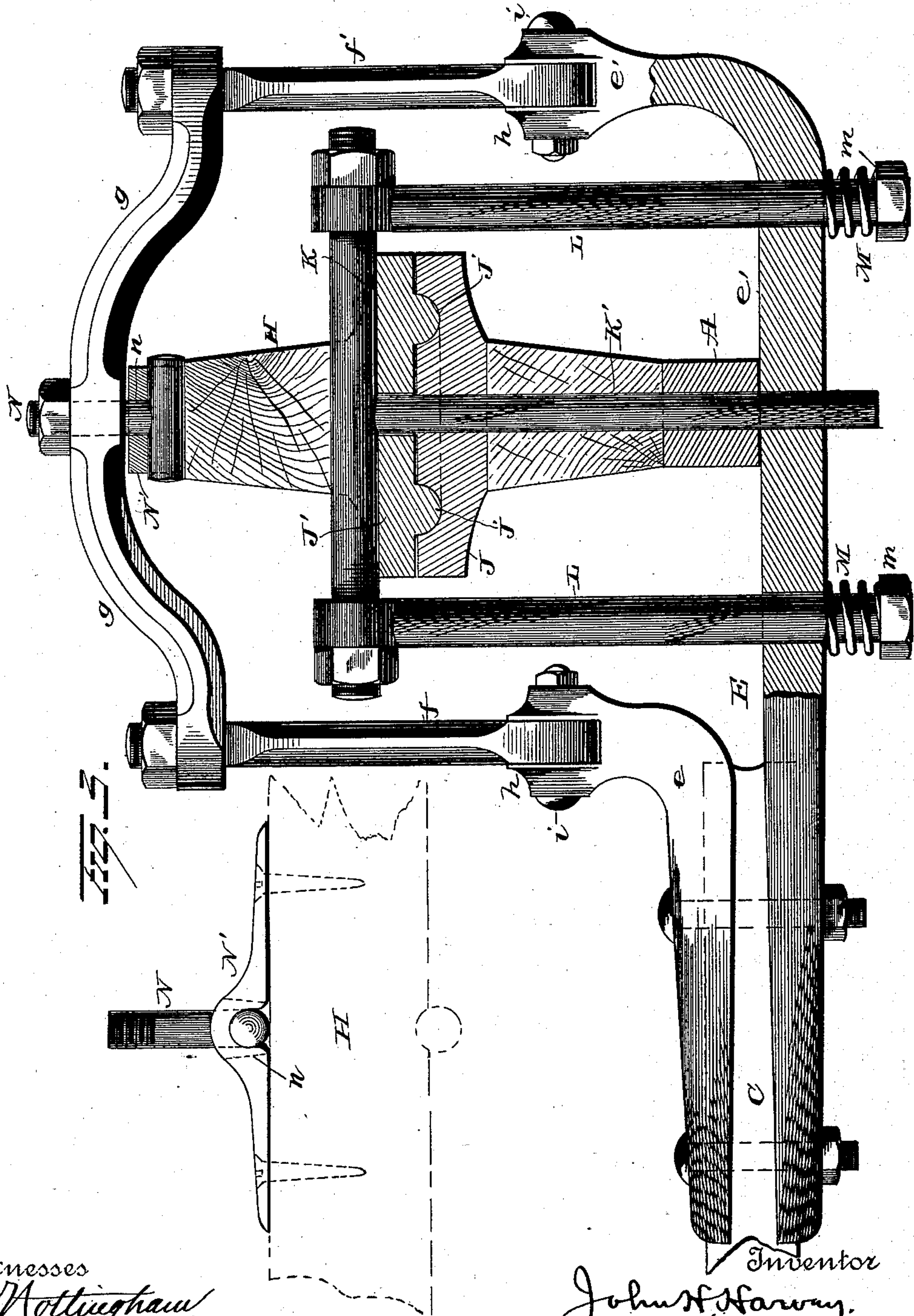
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UNITED STATES PATENT OFFICE.

JOHN H. HARVEY, OF RICH HILL, OHIO.

RUNNING-GEAR FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 409,965, dated August 27, 1889.

Application filed December 4, 1888. Serial No. 292,624. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. HARVEY, of Rich Hill, in the county of Knox and State of Ohio, have invented certain new and useful
5 Improvements in Running-Gears for Vehicles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to
10 make and use the same.

My invention relates to an improvement in vehicle running-gears.

The object is to provide a novel and simple vehicle running-gear and springs having such
15 construction and combination of parts that the body of the vehicle is held substantially horizontal and yieldingly suspended just as effectually when the vehicle is drawn over hilly, rutty, or stony ground as when on
20 smooth roads.

With this object in view my invention consists in certain features of construction and arrangements of parts, whereby simplicity, great strength, and elasticity are attained with
25 comparatively small expense, these features all being fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a vehicle with my improved spring and running-gear attached.
30 Fig. 2 is a front elevation. Fig. 3 is an enlarged view of fifth-wheel and connected mechanism. Figs. 4 and 5 are views of modified forms of king-bolts.

35 A A' represent the front and rear axles, and B B the vehicle-wheels. The reach C connects the axles and preferably extends somewhat below one of them, it being provided at its rear end with a goose-necked iron
40 c, which is clipped at its end a to the middle of the rear axle A'. At the other end this reach is connected to the axle A by means of a jointed yoke E. This yoke consists of the goose-necked irons e e', the arms f f', and the
45 arched plate g, connecting the upper ends of said arms. The goose-necked irons e e' are similar in form to the iron c at the rear end of the reach, and the upper one is provided with a socket on its lower side to receive
50 the reach, and the lower one with a socket on the upper side, and, besides this, the lower one extends out for some distance

beyond the upper one, but both terminate alike at the same distance above the reach in the ears h. To these ears the arms f f' are pivotally connected by pins i passing
55 through each of them. The arched plate g has holes in its ends adapted to receive the upper screw-threaded ends of the arms f f', nuts being turned on to hold the plate rigidly in place. The axle A and the cross-bar
60 H extend through the yoke, one above the other, and have turning contact with each other through fifth-wheels J J'. The lower wheel, or the one on the axle, is provided with
65 an annular recess j, adapted to receive oil, and also to receive the annular rib j' on the upper wheel J'. A recess K, formed in the top of the wheel J', receives the T king-bolt K' and holds it securely, its shank extending
70 down through the centers of the fifth-wheels and into the iron e'. Links L are pivoted on the ends of the king-bolt head, where they are held by nuts or similar means, and they extend also loosely through holes in the iron e'
75 at each side of the axle. Spiral springs M are placed on the ends of these links, and are held thereon by nuts m. The cross-bar H, besides being pivotally connected with the king-bolt K, is also similarly connected to the
80 arched plate g by an inverted-T bolt N, the head of which is held in the socket-strap N', with its free end projecting upward through slot n and through the arched plate g, a nut being secured on this end to hold the bolt in
85 place.

From what has already been described it is seen that the axle A may tip irrespective of the cross-bar H, owing to the joint in the yoke made by the connection of the arms f f' with the irons e e', the pivotal connection of the cross-bar, and the vertical yielding of the king-bolt K. With each tilting motion of the axle A, no matter how slight, the yoke bends at its joints, the king-bolt gives, and
95 the king-bolt and T-bolt turn slightly in the cross-bar, so that the body of the vehicle ordinarily remains practically unmoved.

In the modifications two different forms of king-bolts are shown. One is just like the former construction, only the bolt proper k' is shorter, and the links L, instead of being pivoted to the bolt, are integral therewith. In the other form it is simply a T-shaped bolt.
100

The usual side bars O extend from the rear axle A' to the cross-bar H. Curved bracket-straps o are clipped to the under side of the side bars, and are also clipped to the under side of the rear axle, and brace-rods Q extend from the rear axle near the wheels to the side bars, to the under side of which they are secured by a clip and bolt. This portion of the braces is flattened and on the outer edge provided with an integral guard, against which front wheels rub when the vehicle is cramped. A pair of steps R and S—one a low one and the other higher—are mounted on strap-plate T, which latter is clipped to the under side of the forward ends of the side bars, one end thereof extending down beneath the axle, as in the case of the straps o. The lower step is re-enforced by brace t.

U represents the body of the vehicle. This is provided at each end with the upwardly-projecting spring-arms u, and, extending from a point near its center, with the downwardly-projecting spring-arms V. By means of these spring-arms the body of the vehicle is yieldingly suspended. Springs W are secured to the cross-bar H at the forward end of the vehicle, and to the axle A' at the rear end, with their lower ends projecting inwardly a short distance and their upper ends extending outward, and then inward and upward, to form yielding arms. These ends are loosely connected to the ends of the arms u and V by the shackles w. Cross-strips X connect the long arms of the springs W together.

Importance is attached to the fact that the ends of the spring W in each instance purposely do not extend over quite to the vertical plane in which the ends of the arms u and V are, so that any forward and backward vibrations of the body are quickly compensated for.

Actual tests of the most practical character have shown that my invention possesses superiority over the ordinary forms of vehicle running-gears and springs, and it has been pronounced perfectly successful in overcoming many of the faults detected in other forms of gears without any additional outlay of expense or unnecessary complications of parts.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention; hence I do not wish to limit myself to the particular construction herein set forth; but,

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

1. In a vehicle running-gear, the combination, with front and rear axles, of a reach, a jointed yoke connecting the latter with the front cross-bar or bolster, and a king-bolt connecting the cross-bar or bolster and the front axle, substantially as set forth.

2. In a vehicle running-gear, the combination, with front and rear axle and reach-bar, of a cross-bar or bolster, a yoke yieldingly attached to the cross-bar or bolster and to the reach at points behind and in front of the front axle, and a king-bolt connecting the cross-bar or bolster and front axle, substantially as set forth.

3. In a vehicle running-gear, the combination, with front and rear axles, a cross-bar, and body, of a reach and a jointed yoke connecting said reach and cross-bar, the latter having pivotal yielding and turning contact with the axle, substantially as set forth.

4. In a vehicle running-gear, the combination, with axles, cross-bar, body, and reach, the cross-bar and front axle having fifth-wheels thereon, of a jointed yoke with which the reach has pivotal connection, a king-bolt, links pivoted to said bolt and extending through the reach, and springs on said links, substantially as set forth.

5. The combination, with a vehicle-body and rear axle, of curved springs secured at their upper ends to the body and near their lower ends to the axle, and spring-arms secured to the body and attached at their rear ends to the lower ends of the curved springs.

6. The combination, with the body, cross-bar or bolster, and rear axle, of a set of curved springs connected near their lower ends to the cross-bar and at their upper ends to the body, a set of curved springs connected near their lower ends to the rear axle and at their upper ends to the body, and spring-arms connected to the body and at their opposite ends to the lower ends of the curved springs, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN H. HARVEY.

Witnesses:

W. W. MOODY,
PORTER BLISS.