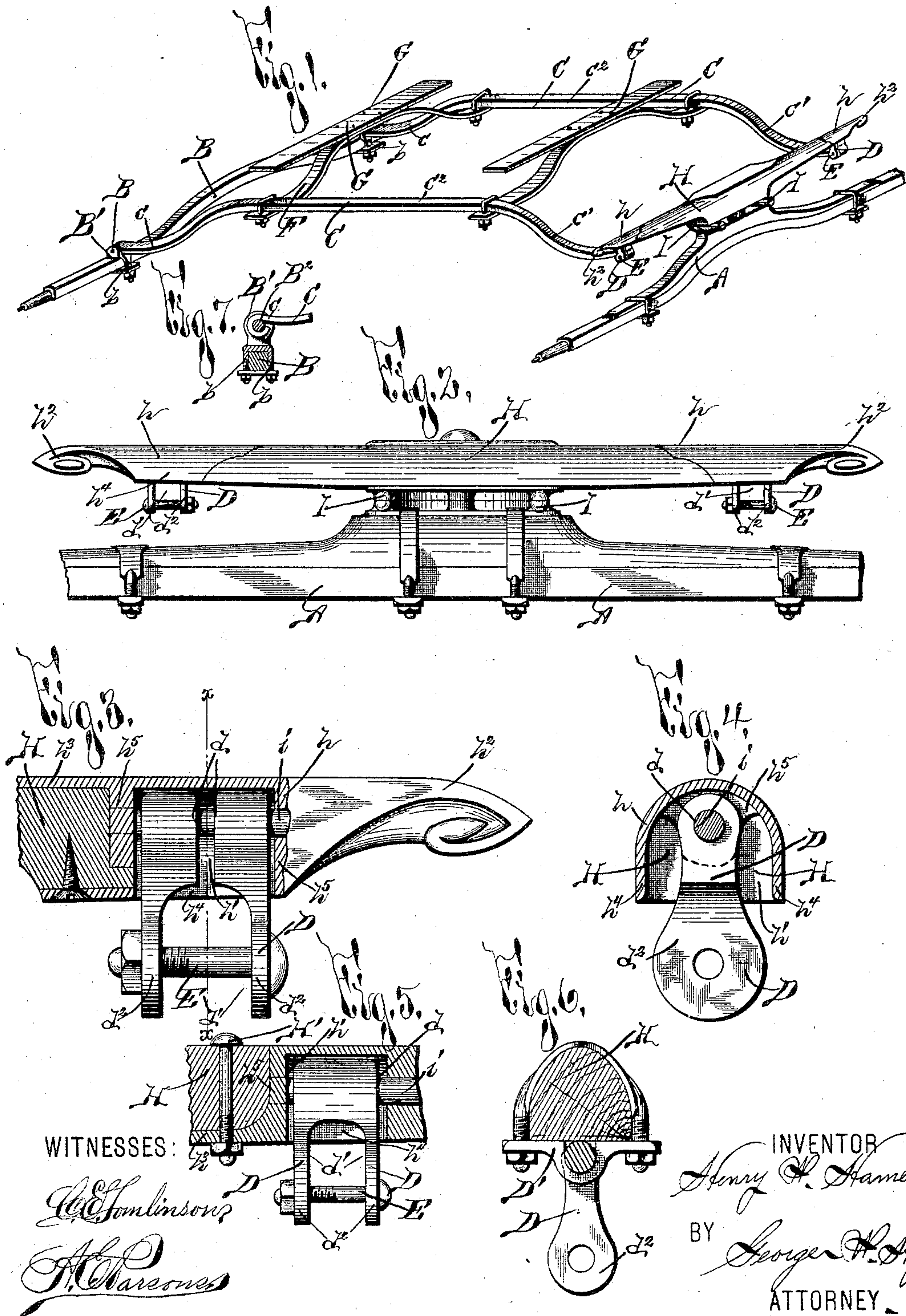


(No Model.)

H. W. HAMELL.  
SPRING GEAR FOR VEHICLES.

No. 493,708.

Patented Mar. 21, 1893.





# UNITED STATES PATENT OFFICE.

HENRY WILLIAM HAMELL, OF POTSDAM, NEW YORK.

## SPRING-GEAR FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 493,708, dated March 21, 1893.

Application filed March 18, 1889. Renewed September 7, 1892. Serial No. 445,221. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY WILLIAM HAMELL, of Potsdam, in the county of St. Lawrence, in the State of New York, have invented new and useful Improvements in Spring-Gears, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to an improved spring-gear, of the class described in my patent No. 340,503, dated April 20, 1886, and has for its object the production of a peculiar arrangement of side springs adapted to yield longitudinally when tensioned without any liability of canting or swaying, and connected to the vehicle body, preferably, by means of transverse springs.

To this end it consists, essentially, in side springs having one end thereof rigidly secured to an axle, preferably the hind axle, and the forward end yieldingly connected to the head block or other support mounted on the forward axle, supports for the vehicle body connected to the side springs at points on opposite sides of the center thereof.

It furthermore consists in the detail construction and arrangement of the parts, all as hereinafter more fully described and pointed out in the claims.

In describing my invention, reference is had to the accompanying drawings forming a part of this specification, in which, like letters indicate corresponding parts in all the views.

Figure —1— is a perspective view of my improved spring-gear as preferably constructed, showing the relative position and arrangement of the parts of my invention. Fig. —2— is a front elevation of a detached portion of the forward axle of a vehicle with the head block mounted thereupon having my improved spring shackle in operative position. Fig. —3— is a detached elevation, partly in section, of the end of the head block, showing the metallic head or end provided thereon, and the swinging spring shackle pivoted to said end. Fig. —4— is a vertical section taken on line —x—x—, Fig. —3—, further illustrating the relative position of the swinging shackle or link, and the extremity of the head block. Fig. —5— is a detached section representing a modified form of the swinging spring shackle and the metallic end secured

to the head block. Fig. —6— is a sectional view, representing a still further modified form of said swinging spring shackle secured to the head block, which is here shown in section; and Fig. —7— is a cross section of the hind axle and the spring shackle rigidly secured thereto.

—A— represents the forward, and —B— the hind axle adapted to receive any desirable form of wheels, and connected together by any suitable construction of reach or braces, not necessary to illustrate in my present invention.

—H— represents the head block mounted upon the forward axle —A—, with any suitable fifth wheel —I— connecting the said parts.

—C— represents the side springs secured at one extremity to a rigid shackle, and secured at the opposite extremity to a swinging shackle allowing the spring to yield longitudinally when compressed.

In my previous patent, from the peculiar construction of the parts, it was necessary to pivot the forward extremity of the spring to a shackle rigidly secured to the head block, and to pivot the opposite extremity to a swinging shackle supported upon the axle in an upright position; but experience has demonstrated the fact that when riding over rough roads, especially when going down hill, the head block to which the forward extremity of the spring is rigidly secured, is caused to support the vehicle body and withstand the strain or tension of the springs, thus unduly straining, and frequently fracturing the said head block. In my present invention, I have entirely obviated this difficulty by pivoting the rear extremity —c— of the spring to a shackle —B'— rigidly secured to the hind axle by means of clips —b— or other suitable clamping device, thus throwing the bearing upon the hind axle and obviating undue strain upon the head block and reaches, and lessening the cost of production. The forward extremity —c'— of the spring is preferably pivoted to a swinging link or shackle —D— which is supported upon the head block or other suitable support mounted on the forward axle. As preferably constructed, the shackle or link is pivoted to a metallic extremity —h— secured upon the head block —H— cast or



otherwise formed with a suitable socket — $h'$ — to receive the shackle — $D$ —. The metallic extremity — $h$ — may be formed with any suitable ornament — $h^2$ — at its free extremity, and with the other extremity — $h^3$ — adapted to be clipped or bolted upon the head block.

At Fig. —7— I have illustrated the preferable construction of shackle — $B'$ — rigidly secured to the rear axle — $B$ —, in which the shackle — $B'$ — and the clips — $b$ — are formed integral for the purpose of economy of manufacture, and the extremity — $c$ — of the spring — $C$ — is pivoted to a bolt or pin — $B^2$ — journaled in the shackle — $B'$ — for the purpose of allowing the spring to turn slightly upon said bolt and enable the same to yield without cramping.

As shown in Figs. —3— and —4—, the socket — $h'$ — of the end — $h$ — is preferably formed on the underneath side thereof with the ears — $h^4$ — extending downwardly partly inclosing the socket — $h'$ —, and preventing the entrance of mud, dust &c., from the top into the shackle bearing.

The shackle — $D$ — is preferably formed of two halves having the journal bearing — $d$ — pivoted in the socket — $h'$ — by the pin — $i$ —, or a suitable bolt secured in ears — $h^5$ — of the socket — $h$ —. The lower extremity of the shackle — $D$ — is provided with the cut out — $d'$ — forming the ears — $d^2$ —, and between these ears and the cut out — $d'$ —, I secure or pivot the extremity — $c'$ — of the spring by means of the pin or bolt — $E$ —. From this peculiar arrangement of the side springs, hind axle, and head block, it will be seen that the strain when passing over uneven ground, especially when going down hill, will be exerted upon the hind axle. The securing or pivoting the forward extremity of the spring to the yielding shackle, allows the spring to yield longitudinally, preventing side sway of the same, and throwing the load upon the hind axle.

The shackle or link — $D$ — is formed of two pieces or halves, as before stated, for the purpose of cheapening the cost of production, but at Fig. —5— I have shown a modified construction of shackle, which is composed of one piece, and is shown pivoted by a like bolt — $i$ — to a modified construction of the end piece — $h$ — in which the extremity — $h^3$ — is secured to the underneath side of the head block — $H$ — by means of bolts — $H'$ — which may be utilized to take up any wear upon the parts.

The extremity — $h$ — may be readily cast in the desired form, or if desired, may be readily drop-forged by the use of suitable dies, thus providing at a slight expense, an end or extremity for the head block, greatly increasing the durability of the same, and greatly facilitating the connection of the side springs.

The spring, as preferably formed, is curved

upward from its extremities with points on opposite sides of the center thereof secured to the transverse springs — $F$ —. The central portion — $c^2$ — of the spring — $C$ —, or the part interposed between the points of said spring supporting the transverse springs — $F$ —, is deflected when under tension, allowing the spring to assume a wave-like form, and insuring easy riding of the vehicle. This central portion — $c^2$ —, as preferably formed, is substantially straight, but it will be seen that if desired, the same might be formed curving slightly downwardly so as to render more positive the bending or deflecting of this part — $c^2$ — when the spring is tensioned.

As stated in my previous patent, the side springs — $C$ — are secured to the transverse springs — $F$ — in such a manner, that when the transverse springs are tensioned, they have a longitudinal movement upon the device securing them to the side springs, allowing the spring — $F$ — to slightly straighten when the same is tensioned.

Secured to the transverse springs — $F$ —, preferably in the center thereof, are the floor supports — $G$ —, upon which the vehicle body is mounted.

At Fig. —6— I have shown a construction of link or shackle — $D$ — which is pivoted to a bearing — $D'$ — clipped directly to the underneath side of the head block without the use of the metallic extremity — $h'$ —, and in some cases where cheapness of production is especially desirable, this forms a very efficient form of swinging shackle to which the forward extremity of the spring — $C$ — may be pivoted for the purpose of allowing the same to yield longitudinally, as previously described.

The spring, as illustrated, is formed of a single piece of spring metal of the preferable form, but it will be understood that the same might be formed of leaves suitably arranged to give the same motion as described, and the shackles might be considerably varied, and other changes might be made in the detail construction and arrangement of the parts, without departing from the spirit of my invention, hence I do not limit myself to the precise form and construction of the parts.

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

1. In a vehicle, the combination of a rear axle, a rigid support upon said axle, a front axle, a head block upon said axle, concaving sockets in the opposite extremities of said head block, links having one extremity pivoted within said sockets, springs having one extremity pivoted to said links and the other to said rigid support, said springs having a substantially horizontal central portion elevated above their extremities, and a vehicle body mounted on said elevated portion, substantially as and for the purpose set forth.

2. In a vehicle, the combination of a body supporting spring, a rigid head block having



a socket in the extremity thereof, provided with substantially flat end walls a link for connecting said spring to said socket, and a pin for supporting said link substantially as specified.

3. In a vehicle, the combination of a body supporting spring, a rigid head block having a separable metallic extremity, a socket in the lower part of said extremity, and a connection having one extremity of less width than said socket and supported therein and connected to said spring, substantially as set forth.

4. In a vehicle, the combination of a body supporting spring, a head block having a concaving socket in the lower part thereof, formed with substantially flat end walls a link composed of separable halves pivotally supported in said socket a pin for pivoting the upper extremity of said link within said socket, a cut out in the adjacent sides of the lower extremity of said separable divisions of the link,

and a spring mounted in said cut out, substantially as set forth.

5. In a vehicle, the combination of a hind axle —B—, a rigid support mounted upon said axle, the head block —H— having a socket in the underside of its extremity, provided with substantially flat end walls a spring shackle having its upper extremity of less width than said socket mounted in said socket, and a spring connected to said rigid support and shackle, substantially as described.

In testimony whereof I, HENRY WILLIAM HAMELL, have hereunto signed my name, in the presence of two attesting witnesses, at Potsdam, in the county of St. Lawrence, in the State of New York, this 6th day of February, 1889.

HENRY WILLIAM HAMELL.

Witnesses:

GEORGE R. C. SMITH,  
SAMUEL C. CRANE.