(No Model.)

S. H. RAYMOND.

VEHICLE SPRING.

No. 415,299. Patented Nov. 19, 1889.

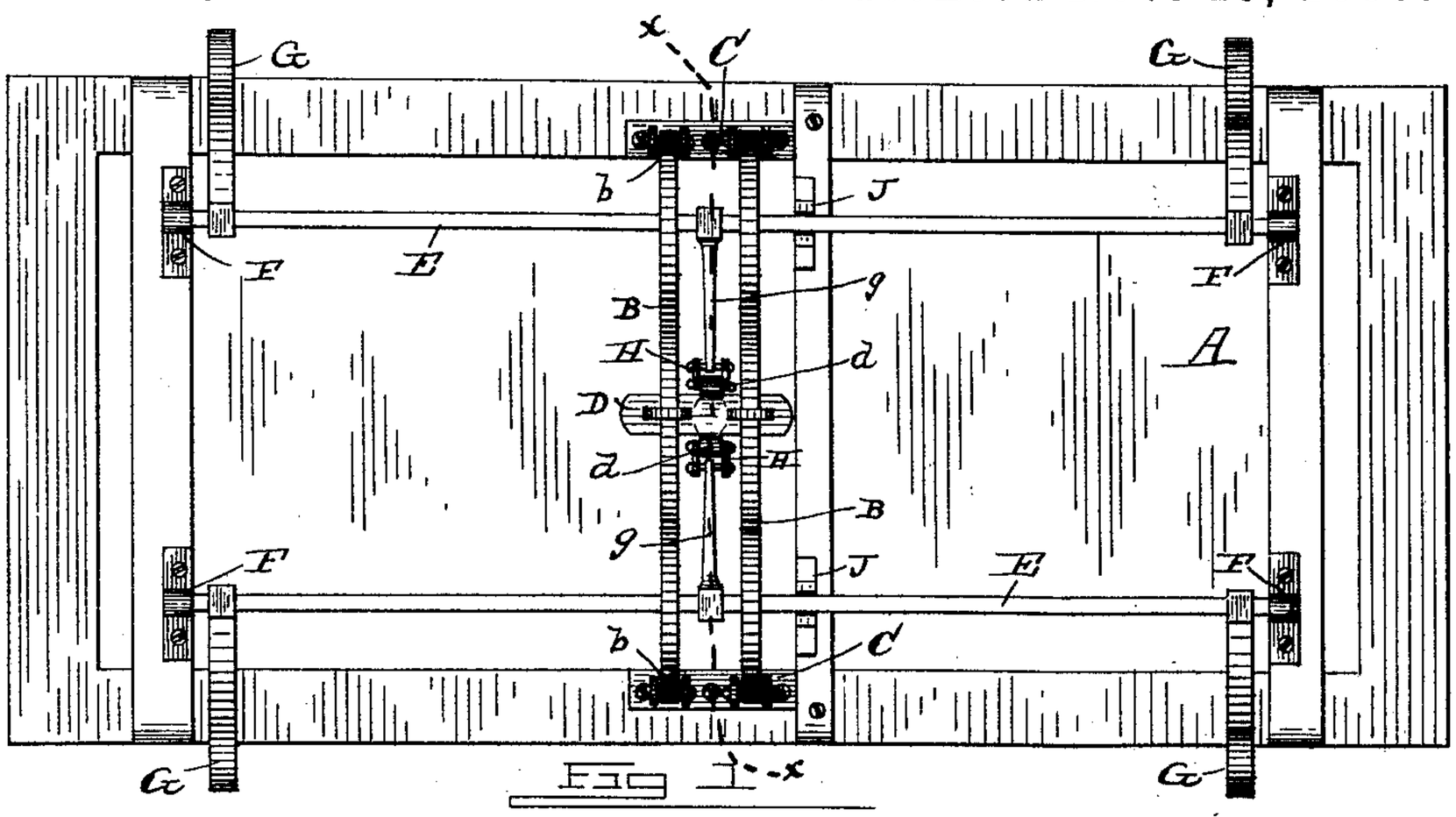

Fig 1.

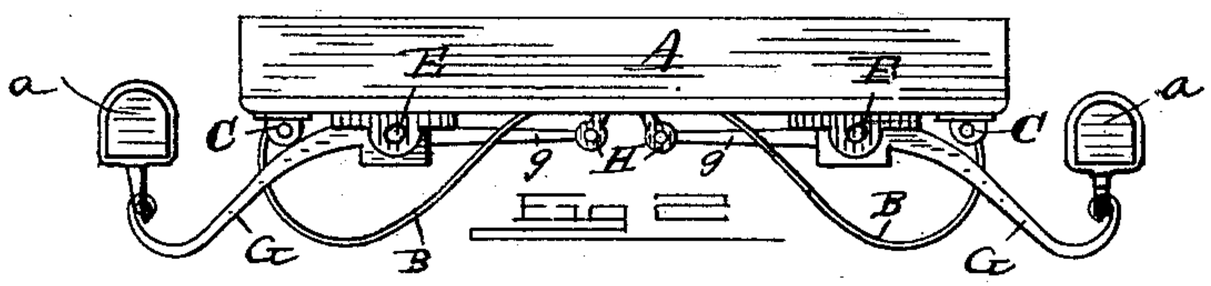

Fig 2.

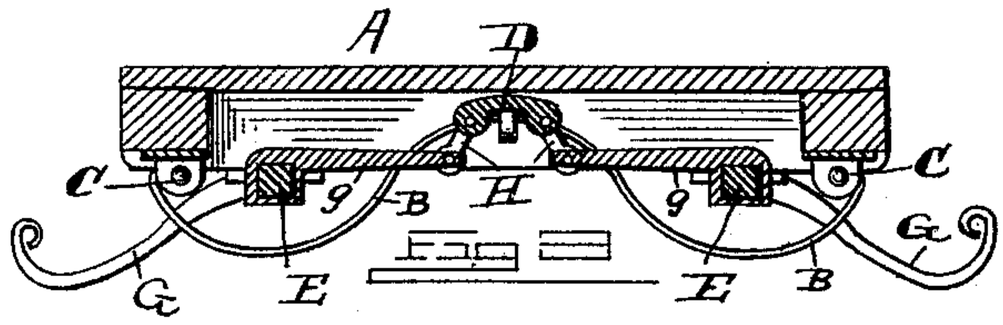

Fig 3.

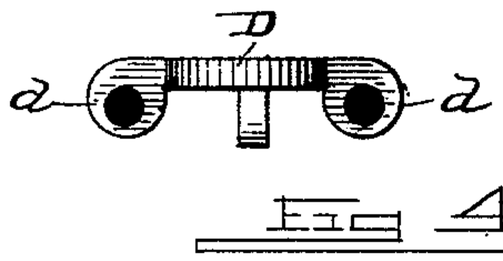

Fig 4.

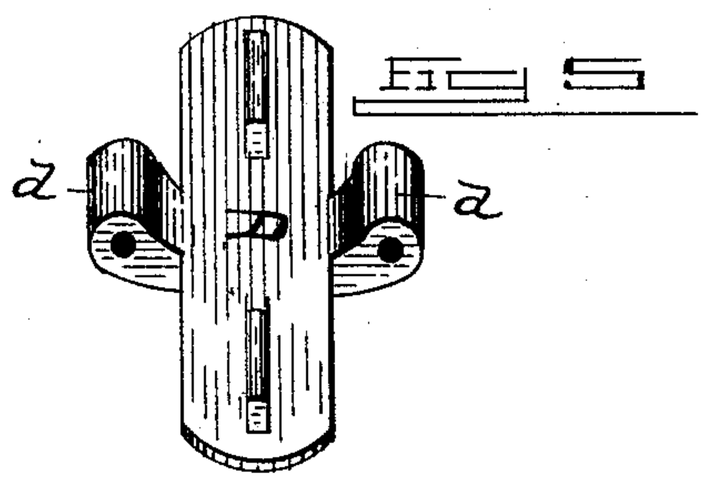

Fig 5.

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UNITED STATES PATENT OFFICE.

SILAS H. RAYMOND, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO THE STANDARD BUGGY SPRING COMPANY, OF SAME PLACE.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 415,299, dated November 19, 1889.

Application filed June 29, 1889. Serial No. 315,991. (No model.)

To all whom it may concern:

Be it known that I, SILAS H. RAYMOND, of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Vehicle-Springs; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

Figure 1 is a bottom plan view of my improved vehicle-spring applied to a body. Fig. 2 is an end view thereof. Fig. 3 is a transverse sectional view on line *x x*, Fig. 1. Figs. 4 and 5 are details.

This invention is an improvement in vehicle-springs, and its objects are to produce a simple, strong, and durable spring-support for the body on the running-gear, whereby the weight of the load on the body will be evenly distributed and the movement of the body will be even and rocking or tilting thereof overcome, while it will be supported with sufficient elasticity to make it ride easily.

To these ends the invention consists in the construction, arrangement, and combination of springs, rock-bars, shackles, and hangers or arms, as will be hereinafter clearly described and claimed.

Referring to the drawings, &c., A designates the vehicle-body, and *a a* designate side bars, which are adapted to be secured to the running-gear, as usual, and which are connected to the spring-supports of the body, as hereinafter described.

B B designate springs secured to the body beneath and transversely of the same, and about centrally thereof. These springs are bent upwardly at center and ends, as shown, giving them a double curve, and their ends are provided with eyes *b*, which are engaged by the bolts of hangers C C, that are attached to the side pieces of the body, as shown. The springs are connected at their centers by an iron D, as shown, which iron is provided with depending perforated ears *d d* between the springs, for a purpose hereinafter explained.

E E designate bars or rods below and parallel with the body and secured near the opposite sides thereof by hangers F F, that are attached to the bottom of the body. The rods E can turn or rotate, but not move longitudinally, and they pass between the bowed ends of the springs and body, as shown. G G are arms rigidly attached to said rods and projecting outwardly, and curved downwardly, preferably as shown, and the outer ends of these arms are suitably connected to the side bars *a a* and suspend the body thereon, as is evident.

g g are short inwardly-standing arms rigidly connected to the rods E, between springs B B, their ends extending inward below the ears *d d* of iron D.

H H are shackels connected by proper bolts to the arms *g* and ears *d* of iron D, by which means the rocking or turning of either rod E is transmitted to iron D, thence to the springs, as is evident.

J J are blocks secured to the bottom of the body, near springs B B, and resting on rods E E, to transfer weight on the center of the body to the rods. It will be observed that the rods E E are connected indirectly through the shackles H and iron D, so that movement of one rod imparts a similar but opposite movement to the other rod, and at the same time tensions or relaxes springs B B. Now then, when the body is suspended, if a load be placed on one corner thereof that corner will be borne down, thus causing a turning of the rod by reason of arm G, the end of which is attached to side bar *a*; but as the rods are connected, as described, a similar movement will be effected of both rods, and hence the body will be evenly lowered throughout, until the springs B are tensioned sufficiently to prevent further turning of the rods, and thus equalize and sustain the load. In other words, whether the load be placed centrally of the body or not, the latter will be maintained in a horizontal position, and consequently when in motion, should there be sudden jar by jolting, &c., the body will move easily in a vertical direction and evenly. The body has free vertical or up-and-down movement, but maintains a horizontal position with respect to the running-gear. The springs B B do not bear the entire weight of the load, as the hangers of rods E E are secured direct to the body; but these springs

are effected by turning or rocking of either rod E, and the latter are only turned when the coincidence of the body with the plane of side bars *a a* is disturbed. This construction gives all the advantages of torsional springs without any torsional strain on the rods E E, the twisting strain on the latter being transferred to springs B.

Only four arms G, two arms *g*, and two springs are shown in the drawings; but the number of these parts could be increased, if desired.

Having thus described my invention, what I claim is—

1. The combination of the pair of rods attached to the body longitudinally thereof, having outwardly-projecting arms for attachment to the side bars of the vehicle, and inwardly-standing arms, with the pair of springs B B, bent upwardly at center and ends and secured at their ends transversely of and to the body, and the shackle-connections between the center of said springs, and the inwardly-standing arms, all substantially as specified.

2. A spring-support for vehicle-bodies, consisting of a pair of parallel rods secured to the body longitudinally thereof and having outwardly-standing arms engaging the side bars and inwardly-standing arms *g g* at center, the pair of transverse double-bent springs B B, secured at their ends to the body, the hanger-iron centrally connecting said springs, and the shackle-connections between said iron and the ends of the inwardly-projecting arms *g g*, all constructed and arranged as and for the purpose specified.

3. The combination of the body, the parallel rods E E, secured thereto having outwardly-projecting arms near their ends and inwardly-standing arms *g g* near their centers, the pair of parallel double-bent springs B B, secured transversely of and to the bottom of the body and depending therefrom and on opposite sides of arms *g*, the iron D, having ears *d d*, connecting said springs, the shackles H H, connecting said iron with the inner ends of arms *g g*, and the blocks J J, all constructed and arranged as and for the purpose set forth.

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

SILAS H. RAYMOND.

Witnesses:

A. OWEN CROZIER,

GEO. A. CUTLER.