(No Model.)

2 Sheets—Sheet 1.

A. B. STEVENS.

RUNNING GEAR FOR VEHICLES.

No. 436,320. Patented Sept. 9, 1890.

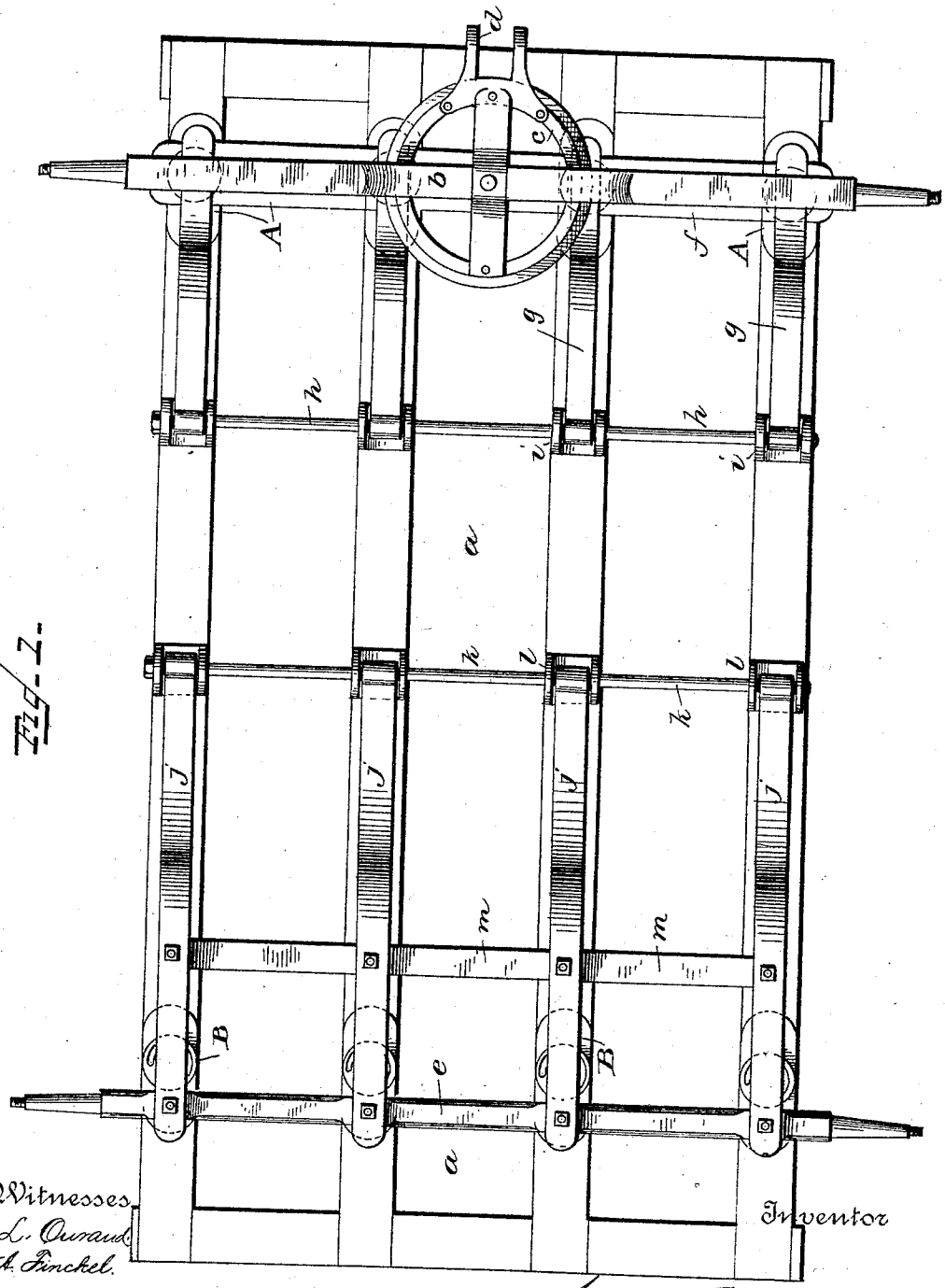


Fig. 1.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

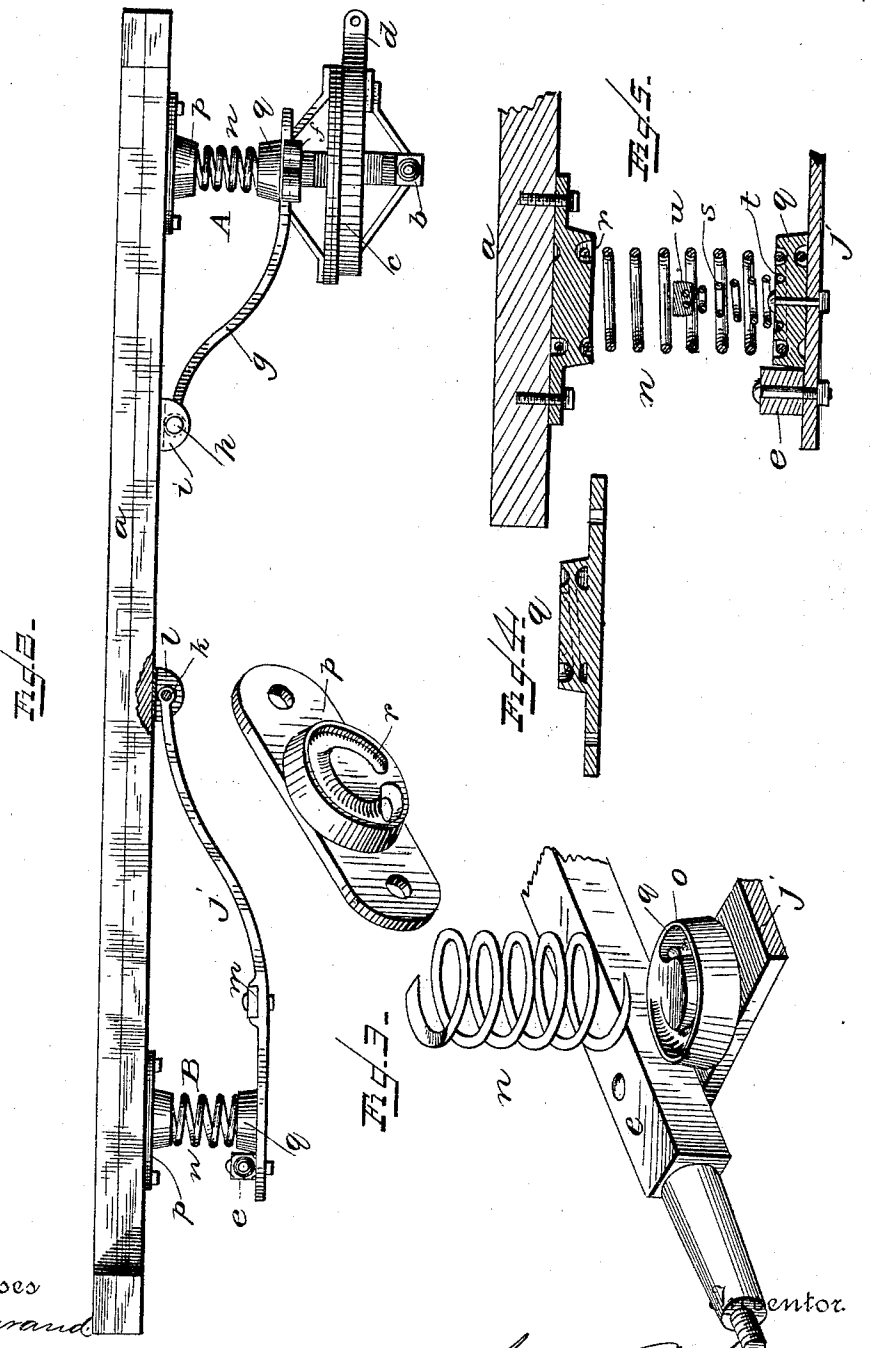
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

ASHER B. STEVENS, OF BROOKLYN, NEW YORK; MOSES N. BAKER (ADMINISTRATOR OF SAID ASHER B. STEVENS, DECEASED) ASSIGNOR OF ONE-HALF TO GILMAN WAITE, OF BALDWINSVILLE, MASSACHUSETTS.

RUNNING-GEAR FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 436,320, dated September 9, 1890.

Application filed September 6, 1888. Serial No. 284,705. (No model.)

To all whom it may concern:

Be it known that I, ASHER B. STEVENS, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Running-Gear for Vehicles, of which the following is a full, clear, and exact description.

The object of my invention is to substitute for the elliptical springs and the reach of ordinary running-gear a system of coiled springs and levers, whereby the construction of running-gear is simplified very largely and the cost greatly reduced.

The invention consists in a series of coiled springs combined with levers arranged longitudinally of the vehicle and connected with the axle or axles, substantially as hereinafter more particularty set forth and claimed.

In the accompanying drawings, in the several figures of which like parts are similarly designated, Figure 1 is a bottom plan view, Fig. 2 a side elevation, Fig. 3 a perspective detail, Fig. 4 a longitudinal section, of one of the spring-fasteners; and Fig. 5, a vertical section of the spring complete, also showing a modification.

I will describe my invention as applied to a vehicle having two sets of four springs each, applied, respectively, to the front and rear axles; but in so doing I wish it to be understood that the springs and levers may be applied in sets of any desired number. However, for the sake of illustration, I will proceed to describe my invention with special reference to the illustration thereof shown in the accompanying drawings.

a may represent the body of a wagon; *b*, the front axle provided with a fifth-wheel *c*, having a clevis *d* to receive the tongue. *e* is the rear axle. To the bottom of the wagon, immediately above the front axle, I arrange the set of springs A, and at the rear of the wagon, and just in front of the rear axle, I arrange a set of springs B.

The springs A are connected as a set by a rigid cross-bar *f*, and to this cross-bar are rigidly affixed a series of levers *g*, corresponding in number with the number of springs A. These levers *g* are pivoted to a common rod *h* in brackets *i*, secured to the bottom of the body. The levers *j*, comprising a similar set, are rigidly secured to the rear axle *e* at one end and pivoted at the other end to a common rod *k* in brackets *l*, secured to the bottom of the body. The levers *j* are about twice the length of the levers *g*, and the fulcral points of this series of levers *j* are about in the center of the body, while the fulcral points of the levers *g* are somewhat in advance of the center. The levers *j* are rigidly connected by a cross-bar *m*, so that said levers shall move together. It will be noticed that the levers *g* have no independence of motion, and this is true also of the levers *j*. Hence any movement of any one of the levers *j* effects a like movement of all the others, and the same is true of the levers *g*, and by reason of this construction any movement of any one of the springs will be transmitted to all of the springs. Hence there will be no wrenching of the springs by the unequal distribution of the load or by sudden jars or shocks on any portion of the vehicle. Depression of one of the springs will cause a depression of all the other springs in a proportional degree.

The springs A and B are of like construction, and a description of one will suffice for all.

Referring to Figs. 3, 4, and 5 for details, it will be seen that the springs consist of a coil *n*, the ends of which are secured in fasteners *o* and *p* by turning the ends of the springs into spiral grooves *q* and *r*, made in said fasteners, respectively. These spiral grooves extend from nothing on the faces of the fasteners downwardly nearly a complete circle, and then underneath on the bottom or under side of the fasteners to or nearly to a similar extent, so that practically an entire coil at each end of the spring will be inserted in the grooved portions of said fasteners, and by such insertion of the springs in their fasteners no other fastenings of the springs is required. The connection of the springs to their fasteners may be made by rotation of the springs on their vertical axes—that is to say, the springs are simply screwed into their

fasteners. The fasteners *p* may have lateral wings for securing them to the under side of the vehicle-body, while the fasteners *q* may be bolted or otherwise attached either to the levers *j* or the cross-bar *f*. While I prefer this form of springs and their fasteners for use in practicing my invention, I do not limit my invention thereto, but may employ springs of other construction and otherwise fastened.

In order to increase the delicacy of the springs, I may provide in each a conical coiled spring *s*, (see Fig. 5,) suitably fastened to the lower fastener *q*, as by a supplemental spiral groove *t*, made in the spirally-grooved fastener *q*, and I prefer to arm the spring *s* with a cushion or block *u* of rubber. In using this spring it is possible to employ a spring *n* of lighter wire, so that it may yield more readily and quickly to the burden or load by imposing upon the spring *s* when such load carries the spring *n* down to the spring *s*. This form of spring will be specially useful in wagons intended to carry delicate machinery, such as sewing-machines and the like, which are subject to disarrangement by being conveyed over rough roads in wagons of ordinary construction.

By connecting the series of levers *g* or *j* rigidly or otherwise making such levers rigid all lateral motion is prevented, and hence there is no possibility of swaying, and the springs are prevented from displacement and their full effective force is obtained in the line of their compression.

I do not limit my invention to its application to four-wheeled vehicles, for it obviously may be applied to two-wheeled and other vehicles.

What I claim is—

1. Running-gear for vehicles, consisting of a series of springs and two series of levers, the levers of each series being rigidly connected together and being of different lengths and pivoted to the vehicle and rigidly connected to the springs, substantially as described.

2. Running-gear for vehicles, consisting of a series of springs arranged over the front axle and a series of rigidly-connected levers bolted to the springs and pivoted to the body of the vehicle, and a second series of springs connected with the rear axle, and also with the second series of rigidly-connected levers likewise pivoted to the under side of the body, substantially as described.

3. The series of springs A and B, combined with the series of rigidly-connected levers *g* and the series of rigidly-connected levers *j*, the latter having their fulcral points about midway of the vehicle and of about twice the length of the levers *g*, substantially as described.

4. A series of springs A and a series of springs B, connected, respectively, to the front and rear of the vehicle, a series of rigidly-connected levers *g*, co-operating with the springs A, and a series of rigidly-connected levers *j* of about twice the length of the levers *g* and connected with the springs B, combined substantially as described.

In testimony whereof I have hereunto set my hand September 5, A. D. 1888.

ASHER B. STEVENS.

Witnesses:
C. H. FREDERICK,
HARRY R. STAUGE.