(No Model.)

J. KENGEL.

VEHICLE SPRING.

No. 278,971. Patented June 5, 1883.

Fig 1

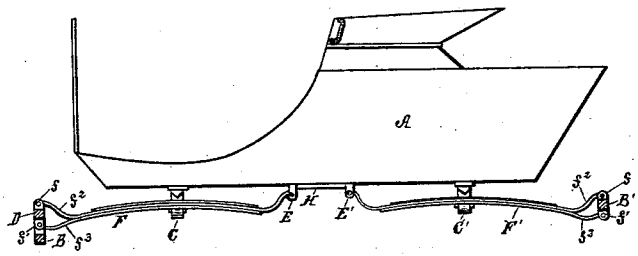


Fig 2.

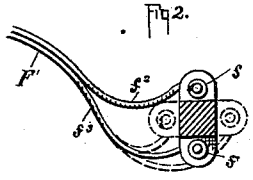


Fig 3.

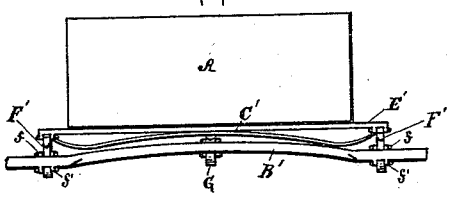
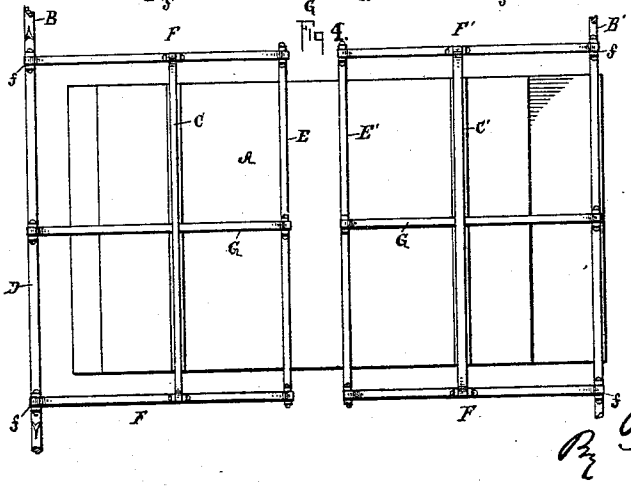


Fig 4.



WITNESSES

S. E. Thomas.

A. E. Inglis.

INVENTOR

Joseph Kengel

By Wm. Seggers.

Attorney

N. PETERS. Photo-Lithographer. Washington. D. C.

UNITED STATES PATENT OFFICE.

JOSEPH KENGEL, OF DETROIT, MICHIGAN.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 278,971, dated June 5, 1883.

Application filed April 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH KENGEL, of Detroit, county of Wayne, State of Michigan, have invented a new and useful Improvement in Vehicle-Springs; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention consists in the combination of devices and appliances hereinafter specified, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a device embodying my invention. Fig. 2 is a separate view of one of the parts. Fig. 3 is an end elevation. Fig. 4 is an inverted plan view.

My invention relates to vehicle-springs, and is adapted either for light carriages or for platform-wagons.

The object of my invention is to provide improved side springs which shall be suitably connected to the running-gear of the vehicle, the body and cross-springs underneath the body, dispensing with side bars, the construction being such as to produce an easy-riding vehicle. I accomplish this object as follows:

In the drawings, A represents the body; B, the front axle; B′, the rear axle. C and C′ represent ordinary cross-springs underneath the body. D is the head-block on the forward axle. E and E′ are cross-braces underneath the body intermediate of its length. F represents a side spring of suitable shape, its ends connected in any suitable manner to the cross-brace E and to the head-block. Said spring is also suitably connected intermediate of its length to the cross-spring C. F′ is a similar side spring, connected to the cross-bar E′ and to the rear axle. It is also connected intermediate of its length to the cross-spring C′, said springs C and C′ preferably semi-elliptic in form. I prefer to construct these side springs, F and F′, in such a manner that the ends may be connected to the head-block and the axle at two points, as shown at f and f', said springs being divided at the front and rear end, respectively, for this purpose, as shown at f^2 and f^3, in order that they may have this double connection which serves to steady the axles and to prevent their turning. I may make these connections of the side springs with the other parts named in any suitable manner, either solid or loose—as, for instance, by shackles or clip-bolts—though I would have it understood that I do not limit myself to any particular method of making such connections. I would also have it understood that instead of connecting the double ends of the side springs to the head-block and axle upon the top and bottom of the same, as shown, these connections may be made on either side of the head-block or axle, as shown in dotted lines in Fig. 2. The upper portion of the double end might be connected to the rear of the head-block and the under portion to the front of the head-block, or vice versa. A connection of the rear side springs may be made with the axle in an analogous manner, if desired. In such a construction the bed-plate ordinarily used upon the rear axle may be dispensed with, although I contemplate the connection of the rear side springs with a rear bed-plate secured upon the rear axle as coming within the scope of my invention. I prefer that said side springs, F and F′, should have the middle portion convexed upward. The head-block may be constructed of metal or wood, as may be desired. It is obvious also that the cross-braces E and E′ may be dispensed with, as it is evident that the inward ends of the springs may be bent inward and connected directly to the body without the use of the cross-bars. In the use of the cross-bars they may be extended beyond the body to a desired length, as shown in Figs. 3 and 4.

Additional springs, G, similar to the side springs, F and F′, may be located beneath the front and rear of the body intermediate of its sides, the extremities of said springs being connected with the head-block and rear axle and to the body. Said springs may also be connected intermediate of their length to the cross-springs C and C′. These springs G may be employed when greater strength in the springs is desired. In lighter vehicles they may be dispensed with. It will be seen, moreover, that the running-gear, being connected with the body by the springs in the manner described, the ordinary reach may also be dispensed with, although it may be used, if

desired. The body may be supported upon the springs in such a manner that it may work down between the springs F and F′ on either side, said springs being located out from the body; or said side springs may be located beneath the body. H is the rub-iron, located between the cross-braces E and E′. Should said braces be dispensed with, the rub-iron may be constructed solid with one of the side springs. In this manner it is evident that very light vehicles may be constructed, as the rear bed-plate, the side bars, and the reach may all be dispensed with, and the cost of production be proportionately diminished without diminishing the strength or elasticity of the vehicle. Likewise, the same construction of springs may be used with heavy vehicles when desired.

What I claim is—

1. In a vehicle, the combination, with the head-block and rear axle, of a front and rear pair of side springs, having a double connection therewith at one extremity and secured to the body of the vehicle at the other extremity, and in connection therewith front and rear cross-springs underneath the body connected with the side springs intermediate of their length, substantially as described.

2. In a vehicle, the combination, with the front head-block and rear axle, of a pair of front and rear side springs, having a double connection therewith at one extremity, and secured to the body of the vehicle at the other extremity, front and rear cross-springs underneath the body, secured at their extremities to the side springs intermediate of their length, and, in connection therewith, front and rear longitudinal springs, G, connected with the body of the vehicle and with the front head-block and rear axle intermediate of their length, substantially as described.

3. In a vehicle, the combination, with the body, provided with cross-braces E and E′, and a front head-block and rear axle, of a pair of front and rear side springs, having a double connection with said head-block and axle at one extremity, and secured to said cross-braces at the other extremity, and, in connection therewith, front and rear cross-springs connected at their extremities with the side springs intermediate of their length, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

JOSEPH KENGEL.

Witnesses:

N. S. WRIGHT,

A. E. INGLIS.