

(No Model.)

B. F. RIX.  
VEHICLE SPRING.

No. 419,475.

Patented Jan. 14, 1890.

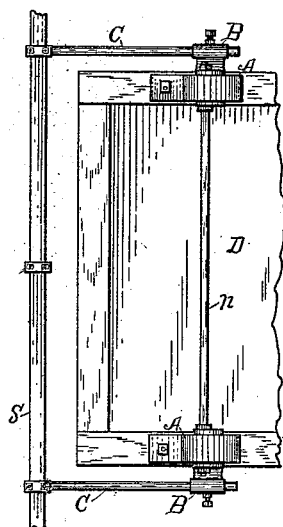


Fig. 1

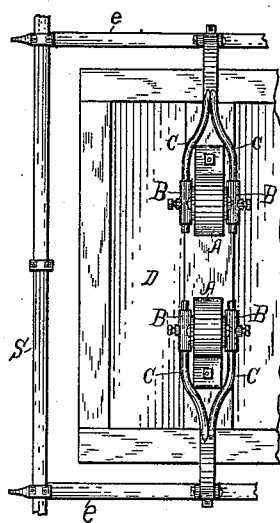


Fig. 2

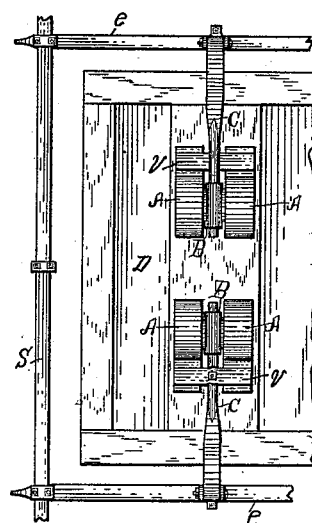


Fig. 3

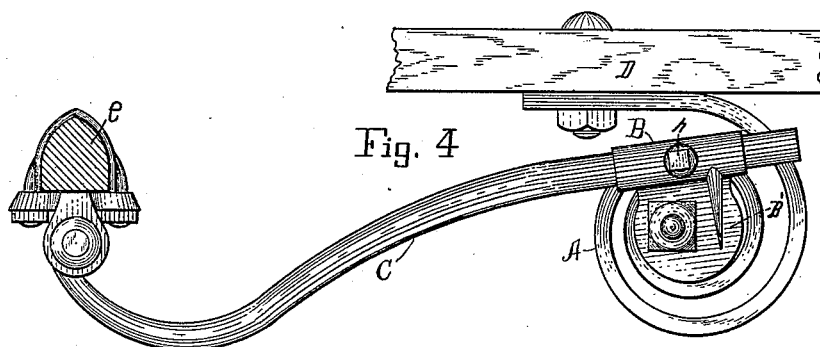


Fig. 4

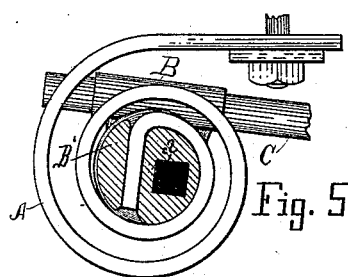


Fig. 5

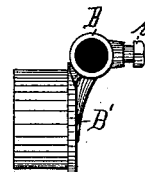


Fig. 6

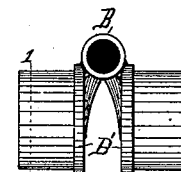


Fig. 7

Witnesses:

Walter S. Wood.  
R. E. Kimble

Inventor.

Benj. F. Rix  
By Lucius C. West

Atty.

# UNITED STATES PATENT OFFICE.

BENJAMIN F. RIX, OF KALAMAZOO, MICHIGAN.

## VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 419,475, dated January 14, 1890.

Application filed March 6, 1889. Serial No. 302,043. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN F. RIX, a citizen of the United States, residing at Kalamazoo, county of Kalamazoo, State of Michigan, have invented a new and useful Vehicle-Spring, of which the following is a specification.

This invention relates to that class of four-wheeled vehicles in which coiled springs are employed, and more especially to that class in which the action of the coil is from the center outward.

The invention has for its objects the below described and claimed novel construction and combination of parts designed to effect the results pointed out in the description.

In the drawings forming a part of this specification, Figures 1, 2, and 3 are under plan views of different constructions, particularly described below; Fig. 4, an enlarged view of lettered details in Fig. 2; Fig. 5, lettered details from Fig. 3, the other side up and enlarged, with part in section on line 1 1 in Fig. 7; Fig. 6, an enlarged detail from Fig. 2; and Fig. 7 is an enlarged detail from Fig. 3.

In Figs. 1, 2, and 3 is shown one end of a four-wheeled vehicle-body bottom upward. Of course the parts shown in these figures are duplicated at the other end of the constructed vehicle.

The springs in the several views are lettered A, the same being single, as at A A in Figs. 1 and 2, and double, as at AA AA in Fig. 3. The springs are coiled by winding a strip of steel upon itself like a clock-spring. The outer free end of the spring or coil is attached to the under side of the body D, and the coiled part hangs down, as in Fig. 4, beneath the body. To the center of the coil is attached the end of a lever C, the other end of said lever being attached to either the side bar *e*, Figs. 2, 3, and 4, or the axle S, Fig. 1, or of course to any suitable or similar support, and the levers of either Figs. 1, 2, 3, and 4 may be attached to either of said supports.

In Fig. 2 the levers C are forked at the inner ends and straddle the spring A, thus using a single spring. In Fig. 3 the springs A are in sets of two, side by side, and the inner ends of the levers are attached between them. In Fig. 1 a single spring is shown;

but they are connected by a square rod passed through the square hole *a* of the castings or brackets B', which attach the ends of the levers C to the center of the coils. This plan of attaching the ends of the levers by means of the parts B' is clearly shown in Fig. 5. The single bracket B' in Fig. 6 is used in Fig. 1, and in Fig. 2 there is one on each side, with their rounded parts in the coil of the spring at the center. This is more clearly shown in Figs. 4 and 5.

The brackets B' are held in Fig. 2 by square bolts in holes such as *a* in Fig. 5. The central attachment when the springs are double, as in Fig. 3, is effected by the double bracket B' in Fig. 7; but as I do not wish to limit the invention to these particular brackets or castings I will proceed to other features, for it is obvious that many ways may be employed to attach the ends of the levers to the center of the coils. It will be observed that the ends of the levers C, as here shown, are attached to the upwardly-extended part of the brackets, which terminates in a thimble B, said end of the levers being passed into the thimble and secured by set-screw *r*, Figs. 4 and 6. The object of thus attaching the end of the lever C at a point removed from the center of the coil by the introduction of the casting B', which is attached to the coil in the center, is to lessen the outward endwise thrust of the lever C when the body D is borne down, during which action the coil contracts. Thus no swinging shackle is needed at the outer end of the lever, where it is attached to its support, and in many uses of the spring and its lever directly attached to the center of the coil no swinging shackle would be needed. The inner end of the lever may be rigidly attached to the casting B', instead of being movably held by the set-screw *r*; but by the latter means, as in Fig. 4, the length of the lever may be adjusted for heavy and light loads, making it shorter, of course, for the heavier load.

In Fig. 3 the double springs are clamped to the body by plates V. The length of the lever C is controlled by loosening the plates *v* and moving the springs in or out, observing of course to first loosen the set-screw *r*, Fig. 4. The casting B', with its upward projection, to

which the lever is attached, is in effect the same as turning an angle in the inner end of the lever and attaching the end of said angle to the center of the coil.

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

1. The combination of a vehicle-body, coil-springs having their upper free ends attached  
10 to said body, the castings attached to the inner ends of the coils and having the projections or offsets provided with the thimbles, arms adjustably attached at one end to said  
15 other ends of the levers are attached, substantially as set forth.

2. The combination of a vehicle-body, a series of springs of two coils each, the upper free ends of the coils being attached to said

body, levers attached at their inner ends to  
the center of the coils, and suitable supports  
to which the other ends of the levers are at-  
tached, substantially as set forth.

3. The combination of a vehicle-body, coil-springs having their outer ends attached to  
said body, the castings attached to the inner  
ends of the coils, said castings provided with  
the angled offsets, and the arms attached at  
one end to said offsets and at the other end to  
suitable supports disconnected from the body,  
substantially as set forth.

In testimony of the foregoing I have here-  
unto subscribed my name in presence of two  
witnesses.

BENJAMIN F. RIX.

Witnesses:

R. E. KIMBLE,  
EUGENE SCOTT.