

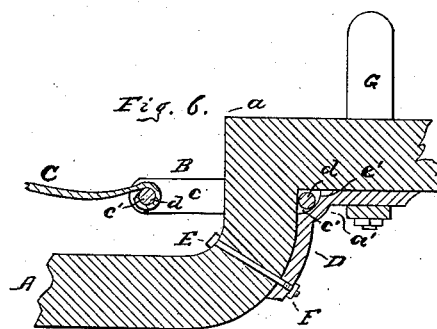
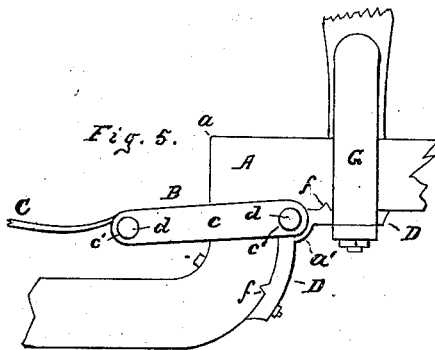
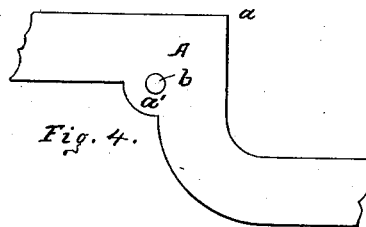
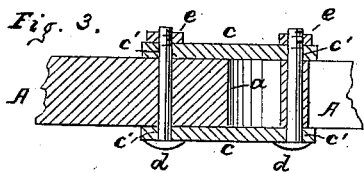
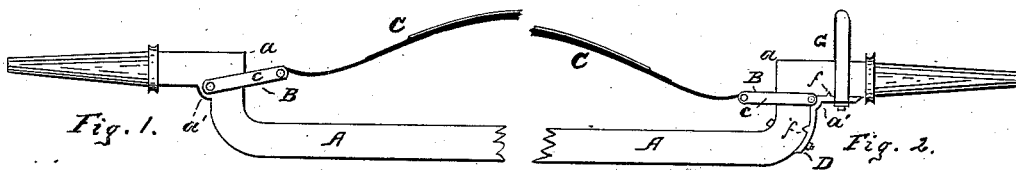
(No Model.)

F. BACON.

SPRING COUPLER FOR VEHICLES.

No. 381,900.

Patented May 1, 1888.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

FRANCIS BACON, OF WATERLOO, NEW YORK.

## SPRING-COUPLER FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 381,900, dated May 1, 1888.

Application filed October 1, 1887. Serial No. 251,268. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS BACON, a citizen of the United States, and a resident of Waterloo, in the county of Seneca and State of New York, have invented certain new and useful Improvements in Spring-Couplers, of which the following is a specification.

This invention relates to the class of couplings employed for linking vehicle-springs to other parts of the vehicle; but it refers especially to the means employed for connecting half-elliptic springs, or springs of that class, to the angles or elbows of bowed or crank-shaped draft-wheel axles, my purpose being to provide improved means to that end. I have set forth the distinctive features of my invention in my several claims; but to enable others fully to understand how to apply my invention to use, I will now explain the same with greater particularity, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation, centrally broken, of a bowed or crank-shaped draft-wheel axle having a half-elliptic spring connected thereto by means embodying my invention. Fig. 2 is a like representation showing the means employed for permitting my invention to be applied to use with advantage in connection with axles not especially adapted to such use. Fig. 3 is a detail view, the same being a horizontal section through one of the elbows or angles of the form of axle shown in Fig. 1, and also showing in like manner the coupling device employed in connection therewith. Fig. 4 is a detail, the same being a side view, enlarged, of one of the axle elbows or angles shown in Fig. 1. Fig. 5 is a detail, enlarged, the same being a side elevation of one of the elbows or angles of the axles shown in Fig. 2, and also showing in like manner the coupling device employed in connection therewith; and Fig. 6 is a vertical central longitudinal section through the parts shown in Fig. 5 when the same are arranged together as there indicated.

Like letters of reference indicate like parts.

A represents a bowed or crank-shaped vehicle-wheel axle, and *a a* are its upper corners, elbows, or angles. In constructing axles of this class with the intention of applying my invention thereto I make supplemental or re-enforce portions or webs *a' a'* in the lower or

outer angles formed at the meeting or junction of the vertical parts with the upper horizontal portions; and *b b* are transverse openings between the said re-enforce portions and the main portion of the axle. In practice these re-enforce portions may be made homogeneous or in one and the same part with the axle; but they may also be made in detachable parts with advantage, as will hereinafter more fully appear.

*B B* are coupling links or shackles. These links consist, as shown, of side bars or pieces, *c c*, pierced at or near their ends, as indicated at *c' c'*, Figs. 5 and 6; and *d d* are bolts passing through the openings *c' c'*.

*e e* are nuts run upon the threaded ends of the said bolts.

*C* is a half-elliptic spring, the ends of which are bent about or otherwise firmly connected to the bolts *d' d'*.

In Figs. 2, 5, and 6 I have shown an axle substantially the same as that already described, excepting that the parts or portions *a' a'* are there represented as detachable.

*D* is a plate or angle-piece, made, by preference, in one piece of malleable iron. A peculiarity of its construction is that it is recessed or open at its angle, as indicated at *e'*, Fig. 6. To prevent lateral movement of the lower or vertical arm of the plate *D*, I deem it best, although not absolutely necessary, to make thereon small bars or lugs *f f*, arranged, as shown, to overlap the sides of the depending part of the said axle, and, if need be, I employ a slender bolt, *E*, passing through the said axle and also through the said plate; and *F* is a nut on the threaded end of the said bolt. In practice I clamp the plate *D* to the axle by means of the thill-clip, and I do not, therefore, regard the bolt *E* as essential under all circumstances, excepting as an additional aid in retaining the plate securely in place and in supporting it.

*G* in Figs. 2, 5, and 6 represents a thill-clip performing the function referred to; but any suitable clip may be employed for the same purpose.

To couple the spring to the axle, I arrange the side pieces, *c c*, of one link or shackle so that a bolt *d* may be passed first through one of the said pieces, then through or across one

of the said lower angles or corners of the axle and over those portions of the link or shackle support therein, and then through the other of the said side pieces, it being understood that both shackles or links are applied in like manner, are connected to the ends of the spring, and that the nuts *e e* are set.

It will be perceived from the foregoing description and from reference to the drawings that the outer ends of the links or shackles extend across the axle in the lower angles or corners already referred to, and that they are firmly there supported by the link or shackle supports, respectively. These are the principal or characteristic features of my invention, and by their means I am enabled to couple the spring to the axle at a sufficient height above the latter, and yet not so high as to needlessly risk the bending of the axle by throwing the strain of the load upon unnecessarily long vertical parts, offsets or up-rights forming portions of axles of the class referred to, and the axle is in no way weakened at any place.

I desire also to state that I regard the parts *a' a'* included between the vertical and horizontal parts of the plates *D D*, as the equivalents of the parts *a' a'* shown in Fig. 1, although the latter are permanent and the former removable, the one being adapted to axles made without reference to my invention, and the others forming a component part of the axle, as already explained.

It will also be perceived that the links or shackles may be applied and removed with facility, that they are capable of a vertically-swinging movement, and may easily couple to springs not half-elliptic in form.

Half-elliptic and other springs have heretofore been joined to vibrating shackles or links having bearings applied to bowed or crank-shaped vehicle-wheel axles, and I do not, therefore, here intend to claim the combination of such parts, broadly.

I am aware that vehicle-springs have heretofore been combined with links supported directly by or on the wheel-axle, and that such supports have also been detachably connected to the axle, and I do not, therefore, here intend to claim the same, broadly; but,

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

1. The combination of the bowed or crank-shaped vehicle-wheel axle, the shackle or link supports or bearings *a' a'*, arranged at the lower or outer angles formed at the junction of the upper horizontal parts of the axle with the vertical parts of the same, the

shackles or links having their outer ends extending across said supports at those portions thereof which are along or within said angles, and the vehicle-spring connected at its ends to the inner ends of the said shackles or links, substantially as and for the purposes specified.

2. The combination of the bowed or crank-shaped vehicle-wheel axle, the detachable shackle or link supports or bearings *a' a'*, arranged in the lower outer angles formed by the upper horizontal parts of the axle and the vertical parts thereof, the shackle or link supports having their outer ends bearing on the said parts *a' a'*, and the vehicle-spring connected at its ends to the inner ends of the said shackles or links, substantially as and for the purposes specified.

3. The combination, with the axle *A*, of shackle or link supports consisting of detachable angle-shaped irons arranged in the lower outer angles formed by the upper horizontal parts of the axle and its vertical parts, links or shackles having their outer ends supported by the said irons at the angles thereof, and the spring *C*, connected at its ends to the inner ends of the said links or shackles, substantially as and for the purposes specified.

4. The combination, with the axle *A*, of the detachable supports or bearings *a' a'*, having one or more lateral arms or extensions and arranged in the angles formed by the upper horizontal parts of the said axle and its vertical portions, vertically-vibrating shackles or links having their outer ends arranged between the said axle and the said supports or bearings, of the spring *C*, attached at its ends to the inner ends of the said shackles or links, and clips connecting the said supports or bearings detachably to the axle, substantially as and for the purposes specified.

5. The combination of the crank-axle *A*, the detachable link-supports *a' a'*, arranged underneath the horizontal parts or shanks of the said axle and at or near the outward sides of its vertical parts, the spring *C*, and the links or couplings connected to the ends of the said spring and having their outer bolts between the said shanks and the said supports, substantially as and for the purposes specified.

Signed at Waterloo, in the county of Seneca and State of New York, this 27th day of September, A. D. 1887.

FRANCIS BACON.

Witnesses:

J. B. CROCKER,

CHAS. E. RICHARDSON.