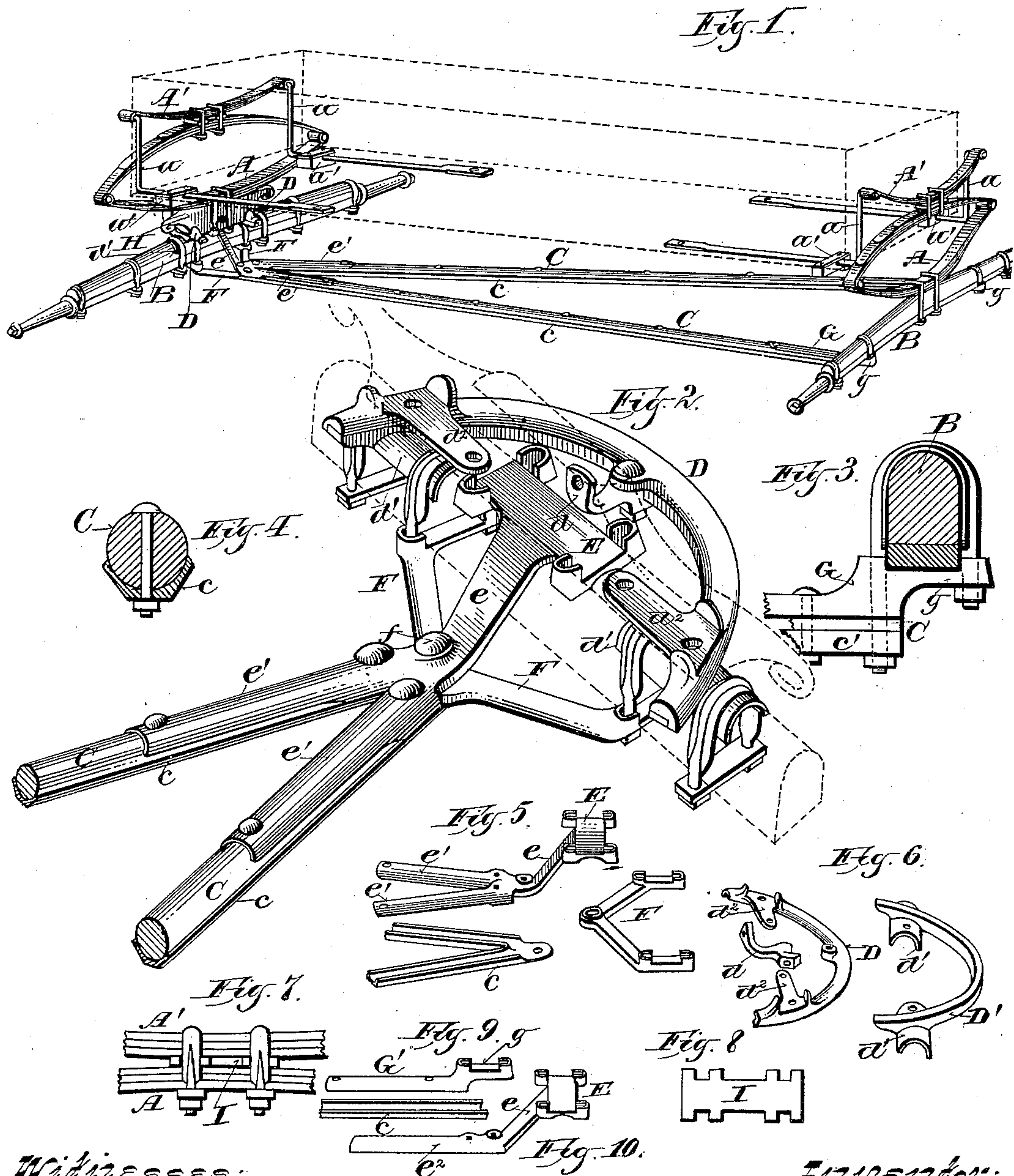


(No Model.)

J. A. CHAPMAN.
VEHICLE GEAR.

No. 409,731.

Patented Aug. 27, 1889.



Witnesses:
Chas. L. Goss.
E. G. Goss.

Inventor:
John A. Chapman,
By *E. G. Goss*
Attorney.

UNITED STATES PATENT OFFICE.

JOHN A. CHAPMAN, OF MILWAUKEE, WISCONSIN.

VEHICLE-GEAR.

SPECIFICATION forming part of Letters Patent No. 409,731, dated August 27, 1889.

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To all whom it may concern:

Be it known that I, JOHN A. CHAPMAN, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Vehicle-Gears; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to the running-gear of vehicles; and it consists, essentially, of an improved spring, an improved fifth-wheel, and an improved reach, and their connections. Its main objects are greater elasticity in the spring, lightness and strength in the reach, and compactness and strength in the fifth-wheel.

In the accompanying drawings, like letters designate the same parts in the several figures.

Figure 1 is a perspective view of a carriage or buggy gear embodying my improvements. Fig. 2 is an enlarged detail view, in perspective, of the fifth-wheel, the location of the axle and head-block relative thereto being shown by dotted lines. Fig. 3 is an enlarged side elevation of one of the rear perch-couplings. Fig. 4 is a cross-section of the reach or perch. Fig. 5 is a detached detail view of the draw-brace and double perch-irons and head-block plate. Fig. 6 represents details of the fifth-wheel; Figs. 7 and 8, details of the plate interposed between the springs and spring-bars, and Figs. 9 and 10 modifications of the perch-irons and head-block plate for a single reach.

As heretofore constructed the elliptic springs employed in end-spring carriages and buggies have been surmounted by wooden spring-bars, which, in fact, were nearly or quite rigid, and to the ends of which the body was rigidly connected by the ordinary body-loops.

Reaches as heretofore made of iron are objectionable, not only because they almost invariably rattle, but because they are heavy and liable to break, and wooden reaches as ordinarily made with a strip or band of flat

iron bolted to their under side are either clumsy or flexible and unsteady, and to secure the required strength in fifth-wheels, as commonly made with the king-bolt or center at the center of the front axle, and with small faces bearing against the axle and head-block, the vertical dimensions of the fifth-wheel must be such as to elevate the head-block considerably above the axle, thus necessitating a different form or curve in the front and rear axles or a disproportionate increase in the vertical dimensions of the head-block or center of the front axle to bring the top of the head-block to the same level with the top of the rear axle.

Referring to the drawings illustrating my improvements, which are designed to attain the foregoing objects and correct the objections referred to, B B represent the axles of a carriage or light vehicle provided with wooden stocks having the same arch or contour both in front and rear.

H is the head-block, secured to the upper section of the fifth-wheel and to the head-block plate, which constitutes a yoke for the clips by which the front spring is secured to said head-block.

A A are elliptic springs of any suitable or well-known style and construction. To the middle of the upper sections of said springs A A are attached, by clips or other suitable means, the half-elliptic metallic spring-bars or springs A' A', between which and said springs A A are interposed plates I, concaved on both upper and under sides to fit said springs, and notched in their edges or formed with lugs to engage and retain in place the clips securing said spring-bars to said spring.

a a are crank-shaped body-loops swiveled in the terminal eyes of said springs A' A', and formed with horizontal arms, which pass through blocks a' a', attached to the under side of the body of the vehicle, and are secured at their inner ends to said body, as seen in Fig. 1. The torsion of the body-loops a a thus permits the expansion of the springs A' A', rendering the body-supporting springs altogether more elastic and the vehicle much easier, besides relieving the body and its fastenings of strain and preventing injury thereto. The springs A' A' serve also to cushion the springs A A, and by receiving the force of

their recoil, when suddenly and violently compressed and released, to prevent consequent breaking, which frequently results from such sudden expansion or recoil of springs as usually constructed.

The fifth-wheel is composed, in the usual way, of two arc-shaped sections D and D', as shown most clearly in Figs. 2 and 6. The upper section D is formed with flanges or plates d^2 d^2 for the attachment of the head-block H, and on each side thereof with up-turned projections for staying said head-block. The lower section D' is formed with transverse flanges d' d' , projecting on each side thereof and shaped to fit the top of the axle-stock, to which they are secured by clips, as seen in Fig. 2. The upper section D is formed with a depending peripheral flange, which overhangs the outer edge of the lower section D', thus guiding and retaining said sections in the proper relative positions. It will be observed by thus forming the sections D D' of the fifth-wheel with the broad thin flanges d' and d^2 , by which they are attached, respectively, to the head-block H and axle B, said axle and head-block are brought close together, and the same arch or curve is permitted in the front as in the rear axle, and at the same time sufficient vertical thickness is allowed in the construction of the sections of the fifth-wheel to afford ample strength without producing disproportion in the vertical dimensions of the head-block or front axle.

E is the head-block plate, formed at the ends with yokes to receive the clips by which the front spring is secured to the head-block, and on the rear edge with an arm e with double perch-plates e' e' , as shown in Figs. 2 and 5, or a single perch-plate e^2 , as shown in Fig. 9, according to the style of reach employed therewith.

F is a bifurcated draw-brace, formed at its ends with clip-yokes, by means of which it is secured to the axle B, the same clips serving to secure the inner ends of the flanges d' d' of the lower section D' of the fifth-wheel to said axle. The brace F is hinged at its apex by the bolt f to the arm e of the head-block plate behind the front axle B.

d is a brace secured to the front face of the head-block H, and to an ear formed for the purpose on the inside of the upper section D of the fifth-wheel. It is formed at its front end with a lip or flange, which projects forward under the lower section D' of the fifth-wheel, clamping the same snugly to the upper section D.

C C are round wood reaches, to which are fitted and secured the perch-irons e' e' or e^2 .

c c are crescent-shaped perch-plates fitted and bolted to the under side of the reaches C C their entire length, and welded together at their front ends, as seen in Fig. 5, when a double reach is employed.

The lower perch-irons c c are flattened on the under side the width of the nuts to fur-

nish a suitable bearing therefor, as shown in Fig. 4. By this construction of the reach the greatest strength with lightness is attained, besides simplifying and cheapening its manufacture, the round reaches C C being very readily turned, the perch-plates rolled, and the shape of said plates rendering them stiff and preventing the sagging of the reach.

G represents an upper rear perch-plate and coupling formed with a yoke g for the clip by which the reach is secured to the rear axle, as seen in Fig. 3.

G', Fig. 9, is a modified form of a rear perch-plate and coupling adapted to a single reach, and differing from those employed with double reaches in having the terminal clip-yoke straight instead of at an angle with the perch-plate.

I claim—

1. In a vehicle-gear, the combination, with an elliptic end spring, of a cross-spring attached at the middle to the upper side thereof and crank-shaped body-loops connecting the ends of said cross-springs with the body of the vehicle, substantially as and for the purposes set forth.

2. In a vehicle-gear, the combination, with elliptic end springs, of half-elliptic springs mounted thereon and crank-shaped body-loops secured at their outer ends in the eyes of said half-elliptic springs and attached at their inner ends to the under side of the vehicle-body, substantially as and for the purposes set forth.

3. In a vehicle-gear, a round wood reach, in combination with a perch-iron having a corresponding concave seat for reception of said wood reach, to which it is rigidly secured, substantially as and for the purposes set forth.

4. The combination, in a vehicle-gear, of a round wood reach, and a perch-iron having a concave longitudinal seat fitted to the under side of said wood reach and flattened on the under side to provide seats for the nuts of the bolts by which it is secured to said wood reach, substantially as and for the purposes set forth.

5. In a vehicle-gear, the combination, with the upper and lower sections of the fifth-wheel, of the head-block plate formed with a rearwardly-projecting perch-iron and a forked draft-brace secured at its ends to the axle, and connected at its angle by the king-bolt with said perch-iron behind said axle, substantially as and for the purposes set forth.

6. In a vehicle-gear, the combination, with the front axle of the head-block, of the upper and lower sections of a fifth-wheel formed with flanges adapted, respectively, to said head-block and axle, a head-block plate formed with yokes for the spring-clips, and a rearwardly-projecting perch-iron and a forked draft-brace hinged at its angle behind said axle to said perch-iron, and formed at its ends with yokes for the clips by which it and

the lower section of the fifth-wheel are secured to said axle, substantially as and for the purposes set forth.

5 7. In a vehicle-gear, the combination, with the front axle and head-block, of the upper and lower arc-shaped sections of a fifth-wheel attached, respectively, to said head-block and axle, a head-block plate formed with a rearwardly-projecting perch-iron, a draw-brace 10 hinged thereto at the center of the fifth-wheel behind said axle and rigidly attached to said axle, and a brace attached to the head-block and the upper section of the fifth-wheel, and formed with a lip projecting under and supporting the lower section of said fifth-wheel, 15 substantially as and for the purposes set forth.

20 8. In a vehicle-gear, the combination, with the front axle and head-block, of the upper and lower sections of a fifth wheel, a plate in

which the head-block is seated, formed with yokes for the spring-clips and a rearwardly-projecting arm branching into the upper perch-irons, a corresponding forked lower perch-iron, between which and the upper 25 perch-irons are secured the front ends of the reaches, and a forked draft-brace hinged at its angle upon the king-bolt between the upper and lower perch-irons at or near the junction of their branching arms, and formed at its 30 ends with yokes for the clips by which it is secured to said axle, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two 35 witnesses.

JOHN A. CHAPMAN.

Witnesses:

CHAS. L. GOSS,

ELLA P. CHAPMAN.