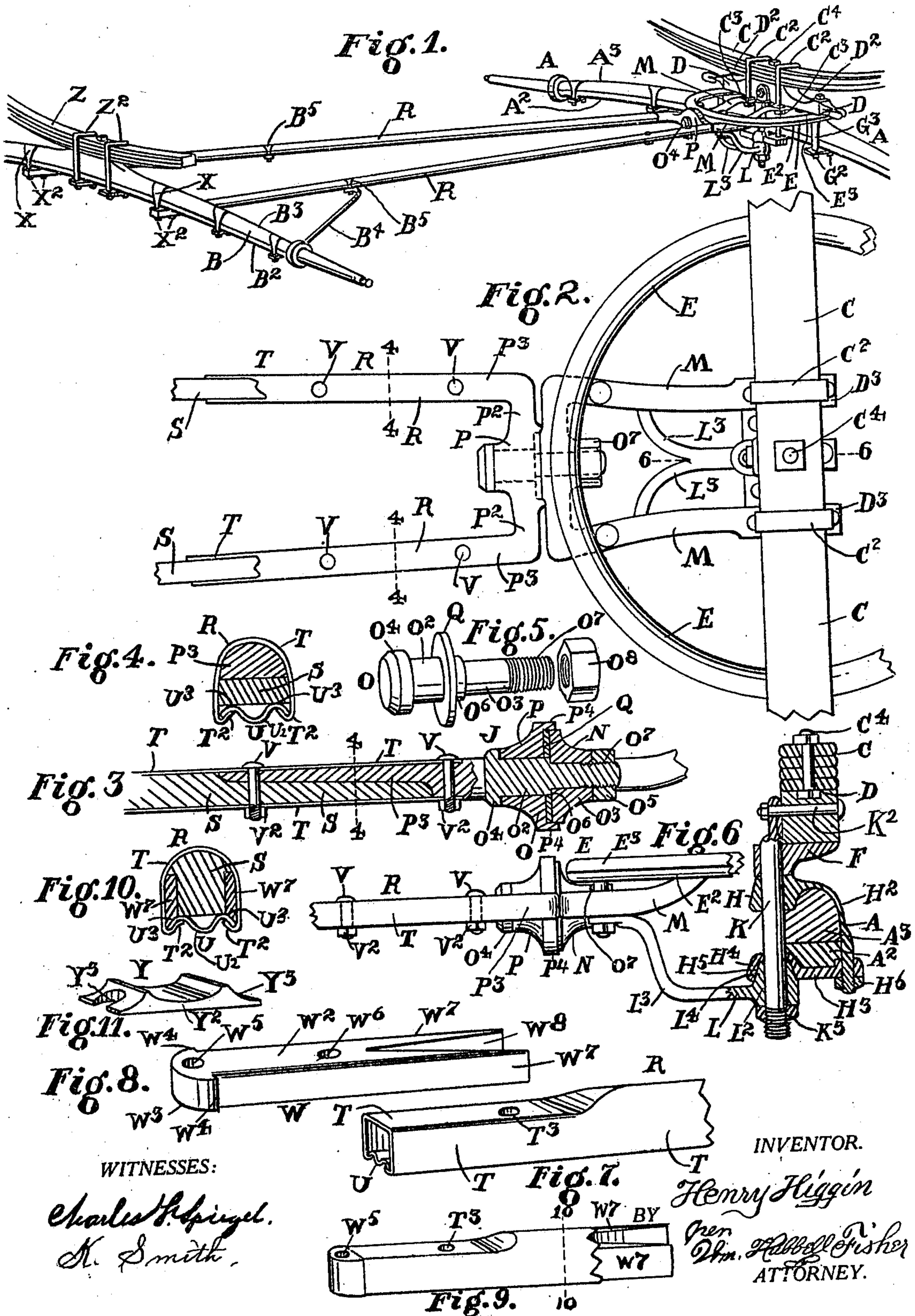


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SWIVELED RUNNING GEAR.
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SWIVELED RUNNING-GEAR.

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To all whom it may concern:

Be it known that I, HENRY HIGGIN, a citizen of the United States, and a resident of the city of Newport, in the county of Campbell and State of Kentucky, have invented certain new and useful Improvements in Swiveled Running-Gear, of which the following is a specification.

The several features of my invention and the various advantages resulting from their use conjointly or otherwise will be apparent from the following description and claims.

In the accompanying drawings making a part of this specification, in which similar letters of reference indicate corresponding parts,—Figure 1 is a view in perspective of a vehicle gear embodying my invention. Fig. 2 is a plan view of that portion of the vehicle gear shown in Fig. 1 which is at the right hand and at the middle of the same. Fig. 3 is a vertical sectional view of that portion of either of the reaches shown in Fig. 2, and of the swivel or pivotal connection between the fifth wheel and the said reaches. Fig. 4 is a vertical transverse section of either of the perches taken in the plane of the dotted line 4, 4, of Fig. 2, or of the dotted line 4, 4, of Fig. 3. Fig. 5 is a view in perspective of the stud bolt which forms the central portion of the pivotal connection swivel aforementioned, and also affords a perspective view of the nut which engages it. Fig. 6 is a view partly in elevation and partly in section of the parts shown in Fig. 2,—the upper spring and headblock, axle and those portions of the fifth wheel adjacent to said headblock and axle being in section, the section being taken in the plane of the dotted line 6, 6, of Fig. 2. The central bolt connecting the upper spring to the headblock, and the king bolt and other parts are in elevation. Fig. 7 is a view in perspective of the rear end of the reach shell or perch shell, in a form prepared to connect directly to a square axle. Fig. 8 is a view in perspective of a heel iron which is to be inserted in the rear end of the reach. Fig. 9 is a view in perspective of the reach or perch shell which incloses the wooden filler, and also of the heel iron combined with said perch shell, etc. Fig. 10 is a transverse cross section of the rear portion of the perch when the heel iron is combined with the rear end of the perch. Fig.

11 is a view in perspective of a chair or saddle piece adapted to set on the top of the rear portion of the perch iron and to adapt the perch to be connected to an axle round on the under side.

I will now proceed to describe my invention in detail. The particular construction of the front axle bar, and of the headblock and of the king bolt and of those parts of the fifth wheel which are close to this front axle may be varied as desired. Such particular construction forms no portion of my invention. All that is necessary in relation to this construction is that the fifth wheel and any braces it may have shall in some proper manner be connected to the swivel connection hereinafter mentioned, which constitutes one of the features of my invention, namely: a feature which shall enable the reach to accommodate itself to the varying side thrusts and to the varying vertical thrusts to which the gear of a vehicle, especially the gear of a road vehicle, is constantly subjected.

I wish it to be understood that my invention is applicable not only to a system of front and rear cross springs, as shown, but also to other descriptions of spring platforms and of other kinds of springs combined with the running gear of the vehicle.

For the purposes of the illustration of my invention, I have shown and shall describe one of the various kinds of front construction of the running gear to which my invention is applicable.

A indicates the front axle, of which one portion A² is of iron and the other portion A³ is of wood, as is commonly the manner in which such axles are now made.

C is a transverse cross spring mounted on the ordinary headblock D.

The fifth wheel E has the usual lower segment E², and the upper segment E³. The respective ends of the upper segment E³ are secured to the headblock D at the under side of the respective end portions, the usual frame piece F and bolts D², D², respectively passing through these end portions of this upper segment E³ of the fifth wheel, and through this frame piece F and through the headblock D.

The lower segment E² of the fifth wheel is connected at its ends to the axle A re-

respectively by means of clips G^3 , whose respective straps G^2 lie under the axle A. At the midlength of the axle is a piece (brace) H whose strap H^2 passes down over the front side of the axle and is there connected to a tie piece H^3 , which extends under the axle A, and terminates in the enlarged portion H^4 . The front connection of this strap H^2 to the tie piece H^3 is the nut H^6 .

At the rear side of the axle A is the king bolt K. The upper end of this bolt is rigidly secured to the headblock D by a bolt K^2 . This king bolt K passes down through the frame piece F and through the piece H, and through the rear thickened portion H^4 of the tie piece H^3 , and through the front end L^2 of the forked brace L. A screw thread on the lower portion of the king bolt K below the brace L is engaged by a nut K^3 . The brace end L^2 has an upward extension bearing L^4 which fits a recess H^5 in the piece H^4 of the tie strap.

The axle A and its piece H, H^2 , tie H^3 and piece H^4 as one turn and revolve around the king bolt K, the piece H^4 rotating on the bearing L^2 . As the lower segment E^2 of the fifth wheel E is rigidly connected to the axle it also turns therewith. Thus while the headblock and the upper segment of the fifth wheel segment is stationary relative to the length of the running gear, the lower segment rotates with the front axle as the latter is moved to cause the vehicle to make a turn on the road. In the illustrative instance, the braces M, M, are connected at one end to the headblock D, preferably by being connected to the frame piece F aforementioned. This frame piece F is connected to the headblock by the clips C^2 , C^2 , the latter being secured to said piece by nuts C^3 , in the usual manner.

The forked brace L, from the part L^2 already mentioned, diverges in two branches L^3 , L^3 .

All the constructions relative to the front portion, and thus far described, are old and well known in the state of the art.

It has been customary to unite the braces M, M, and the forks or branches L^3 , L^3 , rigidly in some manner to the reaches of the vehicle.

One of the features of my invention consists of new and useful means connecting the front headblock through the medium of such braces and branches or their equivalent to the reaches or perches of the vehicle, whereby the front portion of the vehicle may change its horizontal plane relative to the rear portion of the vehicle, and vice versa. The means are substantially as follows:

N indicates a bolt sleeve, connected rigidly to the said braces M, M, and to the branches L^3 , L^3 . Preferably the sleeve N is integral with the braces M, M, and the branches

L^3 , L^3 , are bolted to the said braces M, M. This socket N is thereby held rigidly in position with the front axle A.

P indicates another portion of a bolt sleeve. This portion P is rigidly connected to the forward end of the reaches R, R.

O is a bolt having an enlarged portion O^2 , and a terminal head or flange O^4 . The opposite end of the bolt is provided with a screw thread O^7 . When combined, the enlarged portion O^2 of the bolt is located in the sleeve P, and the shank O^3 of the bolt in the sleeve N. The shoulder O^6 between the enlarged portion O^2 and the smaller shank O^3 rests against the rear end of the sleeve N. Between the socket P and the socket N is located a washer Q, to avoid the wear of the sleeve and to reduce friction. On the screw threaded portion O^5 of the shank O^3 is a nut O^8 , which holds the sleeve N closely to the washer Q and the sleeve P. An annular flange P^4 is preferably present on the sleeve P, and this flange covers the periphery of the washer Q and extends over the periphery of the adjacent portion of the sleeve N. Thus I exclude dust and dirt from the washer Q and from the joint between the sleeves P and N.

It is apparent that the reaches R, R, and the rear axle B can move in a rotatory manner, that is, in a direction around the midlength of the vehicle as an axis. This capacity for such movement obviates all torsional strain ordinarily present when the reaches are fastened rigidly in every direction to the headblock, or its intermediate rigid connections between the headblock and the reaches.

The preferred kind of reaches present and their preferred connection with the sleeve constitute other features of my invention, and are as follows: The sleeve P is made in one with the arms P^2 , P^2 , extending out at right angles to the axis of this sleeve P. These arms P^2 , P^2 , respectively terminate in the arms P^3 , P^3 . Each of these arms connects with an adjacent portion of the adjacent reach. Each arm P^3 tapers as shown, and is received in the shell of a reach consisting of a metal shell or shells, embracing a central portion or filler S of wood. The kind of shell shown herein is that which forms the exterior top and sides of the reach and is indicated by the character T. The exterior bottom U of the reach is a sheet of metal corrugated in the direction of its length and having the central corrugation U^2 and the curves U^3 extending from the bottom edges of the central corrugation up over and outward and down, see Fig. 4. The bottom edges of the shell T respectively extend inwardly under the curved portions U^3 of the bottom U and then upwardly forming the flanges T^2 , T^2 . Thus the shell T and bottom U embracing the wood within constitute a very strong and elastic reach, and

which can withstand much torsional as well as transverse and longitudinal strain, although it is true, that my swiveled joint aforementioned relieves my reaches of torsional strain.

Each extension arm P^3 of its arm P^2 extends under the shell T and upon the wood S , and is bolted thereto by the rear one of the bolts V , V , passing through these parts, and its nut V^2 , below screwed there to said bolt. A similar bolt V and its nut V^2 secures the forward end of the shell T to the arm P^3 .

The rear ends of the reaches R , R , may be connected to the rear axle B without any additional device or strengthening means, but I prefer to combine with the rear end of each reach a heel iron W having a shank W^2 which so far as it is present takes the place of the wood S of the reach. A head W^3 has shoulders W^4 projecting respectively beyond the sides of the shank. These shoulders set against the shell T and regulate the distance this heel iron may be driven into the reach. When the heel iron and the reach are united, they are combined as shown in Fig. 9. The upper side or top of the adjacent end portion of the reach is flattened, see Fig. 7, to enable it to be brought up closely against the under side of the rear axle.

A clip X , seated on the axle B , secures the heel end of the reach to the axle. One of the rods of the clips passes through the hole W^5 of the heel iron W and the other rod passes through the hole T^3 of the reach (Figs. 7 and 9) and the hole W^6 of the heel iron W . Nuts respectively screwed to said rods secure the latter in place, and the reach with its heel iron to the axle. The union between the heel iron W and the reach is made stronger by providing the heel iron with the tapered extension pieces W^7 , W^7 , constituting a fork, see Fig. 8. The wood S enters the space W^8 between the forked portions W^7 , W^7 , and the latter extend along the sides of the wood within the shell.

A convenient chair or saddle piece Y having a flat bottom and a curved top Y^2 and open ended slots Y^3 , Y^3 , may be employed to adapt the top of the reach to receive the axle B , in cases where the under side of the axle is rounded in cross section. The slots Y^3 , Y^3 , are preferably open ended. The axle B sets in the recess Y^2 upon this chair. The chair sets on the flat end of the reach, and the clip rods respectively pass through the slots Y^3 , Y^3 , before passing down through the holes in the heel iron and reach as aforesaid.

In the illustrative drawing, Fig. 1, the axle B is compound, consisting of an iron portion B^2 and a wooden upper portion B^3 . A spring Z upon the axle is clipped thereto by the customary clips Z^2 , Z^2 . The rear por-

tion of the reaches R , R , may be braced by braces B^4 , one for each reach, extending from the outer portion of the axle B to the reach and there united at B^5 by a clip or other suitable fastening.

It is understood that the wood S of the reach is preferably integral from end to end, thereby adding much strength to the reach to resist transverse strains.

What I claim as new, and of my invention and desire to secure by Letters Patent, is:—

1. In a reach, the combination of a shell forming the top and sides, and a corrugated bottom strip, engaged with the sides of the shell, substantially as and for the purposes specified.

2. In a reach, the combination of a shell forming the top and sides, and a bottom strip having a corrugation at the median line of its length, this bottom strip engaged with the sides of the shell, substantially as and for the purposes specified.

3. In a reach, the combination of a shell forming the top and sides of the reach and a corrugated bottom piece having the central portion of its bottom corrugated in the direction of its length, the corrugation being convex in a direction away from the arch of the shell, substantially as and for the purposes specified.

4. In a reach, the combination of a shell forming the top and sides of the reach and a corrugated bottom piece having the central portion of its bottom corrugated in the direction of its length, the corrugation being convex in a direction away from the arch of the shell, the edges of the shell curved inwardly and upwardly and the edges of the bottom respectively lying within the edges of the shell and overlapping the edges of the shell, substantially as and for the purposes specified.

5. In a reach, the combination of the shell forming the top and sides and a bottom strip having a corrugation at the mid line of its length, this bottom strip engaging with the sides of the shell, and a strengthening filler embraced by the shell and bottom strip, substantially as and for the purposes specified.

6. In combination with a reach, consisting of a metal shell provided with a filler, the heel iron having a shank adapted to be received in the shell, and provided with shoulders, adapted to rest against the end of the shell, substantially as and for the purposes specified.

7. In combination with a reach consisting of a metal shell, and having a filler, the heel iron having a shank provided with the tapering branches, the shank adapted to enter the shell and to receive a portion of the filler between the branches, substantially as and for the purposes specified.

8. In combination with a reach consisting

of a metal shell, and having a filler, the heel iron having a shank provided with the tapering branches, the shank adapted to enter the shell and to receive a portion of the filler
 5 between the branches, the heel iron provided with shoulders adapted to rest against the end of the shell, substantially as and for the purposes specified.

9. The combination of a reach, consisting
 10 of a metal shell and a heel iron inserted therein, the heel iron provided with shoulders resting against the end of the shell, that end of the heel iron which is outside of the shell being provided with a vertical
 15 opening, and the shank of the heel iron also provided with a vertical opening, and the shell also provided with vertical openings alining with the last named opening of the heel iron, and a clip seated on the axle
 20 and having its rod respectively passing through the holes in the heel iron and the holes of the shell, substantially as and for the purposes specified.

10. In combination with a reach, consisting
 25 of a metal shell, having a bottom of a separate piece, downwardly corrugated in its central median line, and also elevated at the edges, and a heel iron received within the shell and resting on said corrugation and
 30 said elevation, substantially as and for the purposes specified.

11. In a vehicle gear, the combination of the forward part of the gear, and a swivel joint, and an elongated metal tapered extension from said joint, and a shell embracing
 35 a wooden filler, and constituting the main portion of the reach, the tapered extension located in the forward end of the shell and alongside of a tapered portion of said
 40 wooden filler and bolts for securing the said tapered metal extension to the shell and its wooden interior, substantially as and for the purposes specified.

12. In a vehicle gear, the combination of
 45 the forward part of the gear, and the reach portion, having a metal shell provided with a corrugated bottom embracing a wooden central portion, and a swivel joint located between the two parts, the joint provided
 50 with an arm and an extension entering the shell of the reach, and with securing bolts constituting the mode of connection between the swivel joint and the shell portion of the reach, substantially as and for the purposes specified.

13. In a vehicle gear, the combination of the reach consisting of a shell embracing a wooden center, and the heel iron entering
 60 said shell at its rear end and located in its rear end portion and adapted to be connected along with the rear end of the shell to the rear axle, and a swivel having a horizontal axis located between the forward gear and the reach and having a metal extension
 65 tapered and entering the forward end of the

shell and lying alongside of a correspondingly tapered portion of the wood within the shell, substantially as and for the purposes specified.

14. In a vehicle gear, the combination of
 70 the reach consisting of a shell provided with a bottom having a corrugation at its median line, this shell embracing a wooden center, and the heel iron entering said shell at its rear end and located in its rear end portion
 75 and adapted to be connected along with the rear end of the shell to the rear axle, and a swivel having a horizontal axis located between the forward gear and the reach and having a metal extension tapered and entering
 80 the forward end of the shell and lying alongside of a correspondingly tapered portion of the wood within the shell, substantially as and for the purposes specified.

15. In a vehicle gear, the combination of
 85 the headblock and the forward axle and king bolt and braces M, M, connected to the headblock and the brace L, L², L³, connected to the king bolt, and the sleeve N rigidly connected to the braces M, M, L³, L³, and the
 90 sleeve P connected to the arms P², P², the latter carrying the tapered extensions P³, P³, and the reach irons connected at rear to the rear axle, having outward shell and corrugated metal bottom and inward wooden filler,
 95 and respectively receiving at their front end the tapered extensions P³, P³, a bolt O having a head O⁴, an enlarged portion O², the sleeve P embracing this enlarged portion O², a washer Q interposed between these sleeves
 100 and located on and around this enlarged portion O², the bolt O having the diminished portion O³ and the shoulder O⁶, between the portions O² and O³, the sleeve N located on the diminished portion O³, and
 105 next to the washer Q and the shoulder O⁶, and the nut O⁸ screwed on to the forward end of the bolt and against the sleeve N, substantially as and for the purposes specified.

16. In a reach, the combination of a shell forming the top and sides, and a corrugated bottom strip, engaged with the sides of the shell, and a filler within the space enclosed by the shell and by the corrugated
 115 bottom strip, substantially as and for the purposes specified.

17. In a reach, the combination of a shell forming the top and sides, and a bottom strip having a corrugation at the median
 120 line of its length, this bottom strip engaged with the sides of the shell and a filler within the shell, substantially as and for the purposes specified.

18. In a reach, the combination of a shell
 125 forming the top and sides, and a corrugated bottom strip, engaged with the sides of the shell, and means within the shell for holding the bottom strip in position, substantially as and for the purposes specified.

19. In a vehicle running gear, the combination of the headlock D, and frame piece F beneath, the axle A, A², located below the said frame piece F and contiguous thereto, tie piece H³ provided with enlargement H⁴, king bolt K passing through the frame piece, and brace H and enlargement H⁴, brace L having forked branches L³, L³, the king bolt passing through the front portion L of the said brace, which front portion is received in the enlargement H⁴, the fifth wheel extending from the headblock D rearwardly, the braces M, M, extending from the headblock rearwardly, and connected to the bolt sleeve N located between the rear ends of the said braces, the said branches L³, L³, respectively connected to the rear portions of the said braces M, M, a double reach R, R, whose forward ends turn inwardly, and a sleeve P rigidly connected to said reaches R, R, and a pivot bolt connecting said sleeves N and P.

20. In a vehicle running gear, the combination of the headblock D, and frame piece F beneath, the axle A, A², brace H supported on the axle and located below the said frame piece F and contiguous thereto, tie piece H³ provided with enlargement H⁴, king bolt K passing through the frame piece, and brace H and enlargement H⁴, brace L having forked branches L³, L³, the king bolt passing through the front portion L of the said brace, which front portion is received in the enlargement H⁴, the fifth wheel extending from the headblock D rearwardly, the braces M, M, extending from the headblock rearwardly, and connected to the bolt sleeve N located between the rear ends of the said braces, the said branches L³, L³, respectively connected to the rear portions of the said braces M, M, a double reach R, R, whose forward ends turn inwardly, and a sleeve P rigidly connected to said reaches R, R, and a pivot bolt connecting said sleeves N and P.

21. In a vehicle running gear, the combination of the headblock D, and frame piece F beneath, the axle A, A², brace H supported on the axle, and located below the said frame piece F and contiguous thereto, tie piece H³ provided with enlargement H⁴, king bolt K passing through the frame piece, and brace H and enlargement H⁴, brace L having forked branches L³, L³, the

king bolt passing through the front portion of the said brace, which front portion is received in the enlargement H⁴, the fifth wheel extending from the headblock D rearwardly, the braces M, M, extending from the headblock rearwardly and connected to the bolt sleeve N located between the rear ends of the said braces, the said branches L³, L³, respectively connected to the rear portions of the said braces M, M, a reach, and a sleeve P rigidly carried at the forward end of the reach, and a pivot bolt connecting said sleeves N and P.

22. In a vehicle running gear, a reach, a sleeve at the forward end of the reach, a second sleeve in front of and in conjunction with the first named sleeve, a headblock, braces substantially parallel and connected at their rear end to the said second sleeve and at their front end to the headblock, lower braces connected at their rear ends to the said upper braces in the vicinity of the sleeve, and their front portions merged into one, a king bolt, located at the rear of the axle, journal bearing for said king bolt from said headblock and axle, a lower journal bearing on the front portion of the said lower brace, said lower journal bearing receiving the king bolt, an extension of the axle engaging the lower portion of the said lower journal bearing.

23. In a vehicle running gear, a reach, a sleeve at the forward end of the reach, a second sleeve in front of and in conjunction with the first named sleeve, a headblock, braces substantially parallel and connected at their rear end to the said second sleeve and at their front end to the headblock, lower braces connected at their rear ends to the said upper braces in the vicinity of the sleeve, and their front portions merged into one, a king bolt, located at the rear of the axle, a journal bearing for said king bolt from said headblock and axle, a lower journal bearing on the front portion of the said lower brace, said lower journal bearing receiving the king bolt, an extension of the axle engaging the lower portion of the said lower journal bearing, this extension receiving the king bolt.

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Witnesses:

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