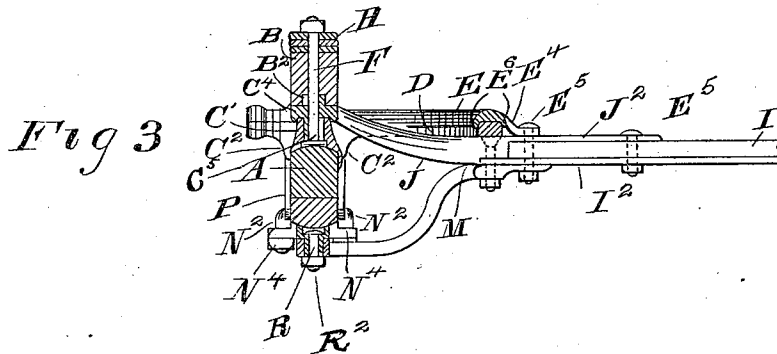
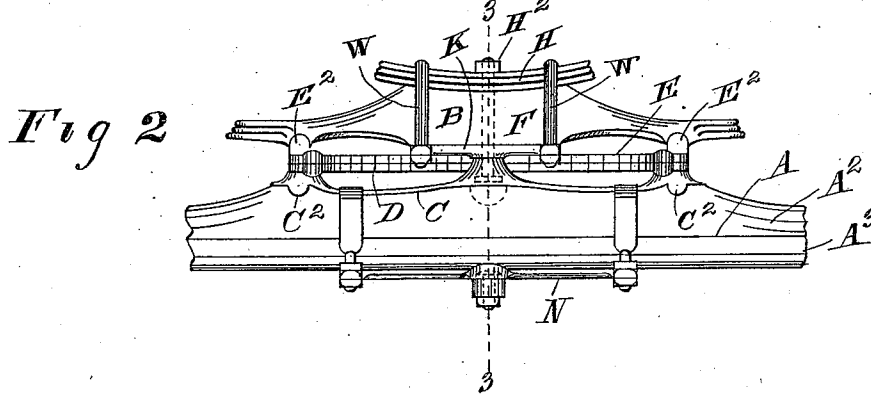
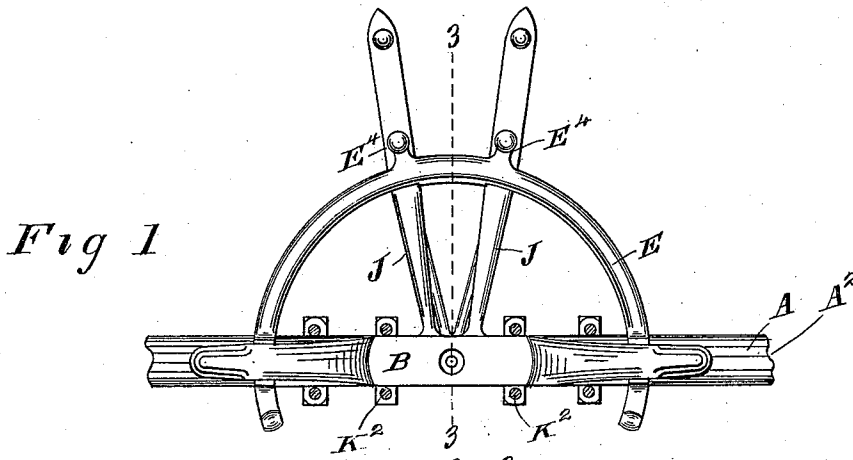


E. B. SMITH.
FIFTH WHEEL FOR VEHICLES.

No. 553,693.

Patented Jan. 28, 1896.



Witnesses

James D. Arnold
E. B. Smith

Inventor
E. B. Smith

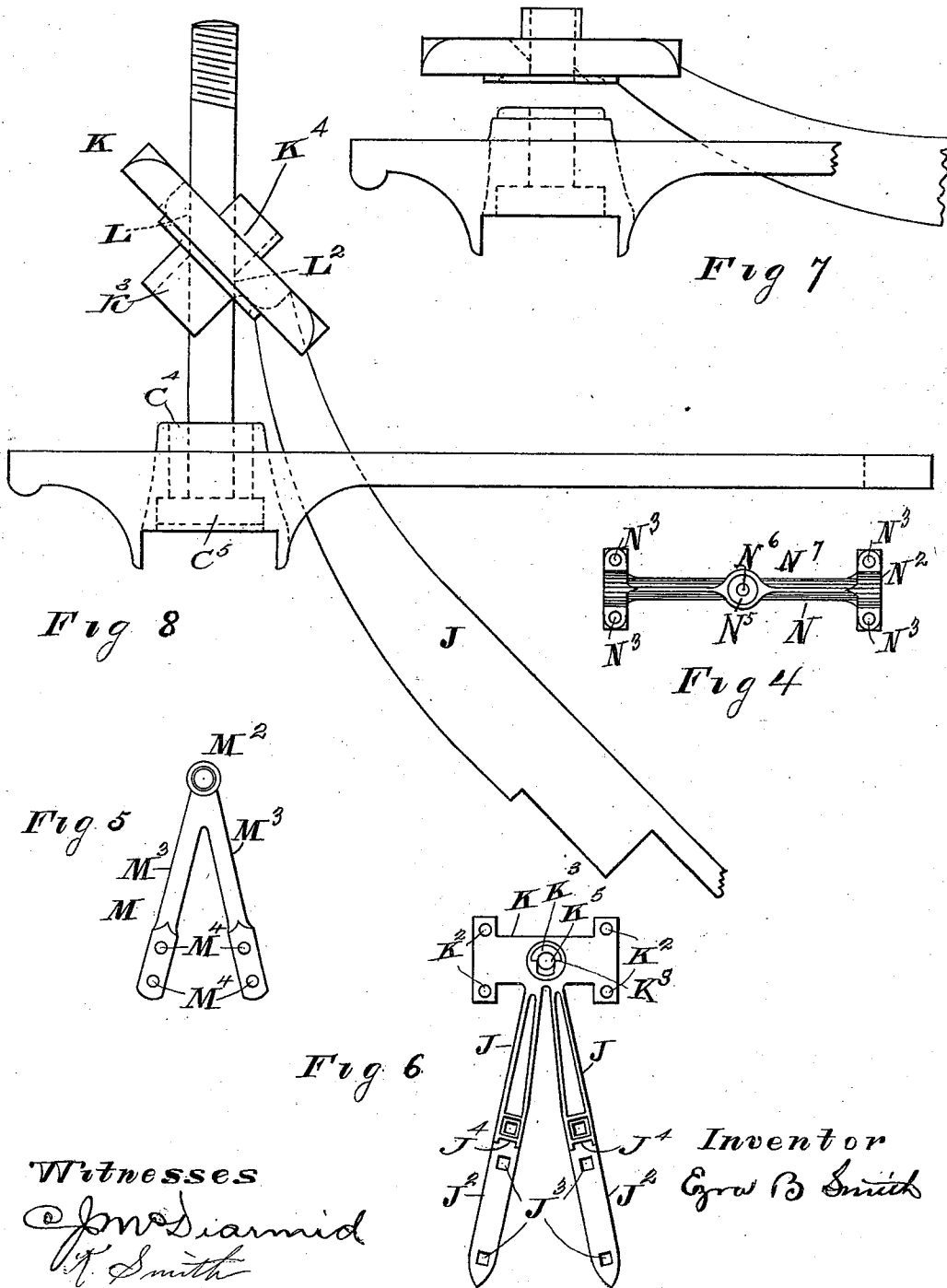
(No Model.)

2 Sheets—Sheet 2.

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E. B. Smith

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UNITED STATES PATENT OFFICE.

EZRA B. SMITH, OF CINCINNATI, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE
EBERHARD MANUFACTURING COMPANY, OF CLEVELAND, OHIO.

FIFTH-WHEEL FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 553,693, dated January 28, 1896.

Application filed October 16, 1893. Serial No. 488,287. (No model.)

To all whom it may concern:

Be it known that I, EZRA B. SMITH, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Fifth-Wheels or Circles for Vehicles, 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 application, and to which reference is hereby made, Figure 1, Sheet 1, is a plan view of a fifth-wheel, illustrating my invention, the front spring and its securing-clips being omitted from the head-block. Fig. 2 is a front elevation of the said wheel, a central portion of the spring resting on the front bolster and the securing-clips being shown in place. Fig. 3 is a vertical central transverse section of the wheel shown in Fig. 2 and taken in the plane of the dotted line 3 3 of Figs. 1 and 2. Fig. 4, Sheet 2, is a top elevation of the lower axle-brace. Fig. 5 is a top elevation of the lower perch or reach-brace. Fig. 6 is a bottom view of the upper reach-brace. Fig. 7 is a modified form having the lower projections of the plate K removed and the king-bolt F set in. Fig. 8 is a view illustrating the advantageous use of the slanting aperture in putting the upper reach-brace in place after the king-bolt and the lower part circle of the wheel are in place on the axle.

A indicates the axle of any well-known form and construction, and B the head-block. The axle is here shown as commonly constructed—viz., part A² of wood and A³ of iron.

Upon the axle A rests the supporting iron brace or bed C, and this latter in turn supports near or at its ends the lower fifth-wheel or part circle, D. This lower part circle, D, may be cast in one with the bed C, or riveted or otherwise secured thereto. The bed C is provided beneath with lugs C², between which the axle A is received in the usual manner. Between adjacent lugs C² holes admit bolts or screws for securing the bed and circle to the axle at said points.

The bed-plate C is preferably bent on either side of the king-bolt, thereby conforming to the shape usually taken by the head-block. It is, however, unnecessary to always use the bent form, as a straight plate will answer the purpose.

As shown by dotted lines in the rear of the woodwork covering the axle, the bed-plate C has a flange depending therefrom which is intended to allow the bolting of the plate at or near the center of the gear, increasing the strength of the combination.

The mid-central portion of the bed C is provided with an opening for the reception of the king-bolt F, the form of which opening will be hereinafter described. The lower part circle, D, supports the upper fifth-wheel or part circle, E. The latter has the customary pair of clips E², one pair near each end, and between the clips of each pair the head-block B sets. Holes admit screws or bolts for securing the head-block to the part circle E.

Upon the head-block may be a spring H, of any desired form, when the construction of the vehicle is such as to require a spring there.

It will be noted that the fifth-wheel bearings lie substantially behind the head-block and axle.

The upper part circle, E, contains means for attachment to the reach, and these means in the present instance consist of the perforated lugs E⁴, projecting from the rear portion of said upper circle, E, and connected to the reach directly or through connections by means of the bolts or screws E⁵.

Flanges E⁶ of the top circle, E, project downwardly at the junction of the perches and the friction-plates. These flanges E⁶ assist in guiding the friction-plates and in retaining the latter in place. In case the king-bolt breaks these flanges will operate to retain the friction-plates in position.

The reach or reaches I preferably have the customary under brace-iron, I². The rearward metal ends or braces J of the reach have their upper rear portion, J², extending back over the wooden end of the reach, so that the latter lies between this portion J² and the under brace-iron, I², which is at one end of the brace M, and is firmly secured thereto in the customary manner.

For economy of construction the four parts are secured together by the bolts E^5 passing through them, and tightened with nuts in the usual manner. Holes, as J^3 , admit of the passage of these bolts through the braces. These braces J join a cross-piece K , and the latter is centrally secured to the under side of the head-block B , preferably by clips W , passing up over the head-block and spring H , if the latter be present, the lower ends of the clips passing through the openings K^2 in the piece K . This brace is in one piece with what are commonly known as the "cross-ties" which hold the clips, and extends to the end of such ties as an integral part of the same. This plate or piece K has underneath, at or near the center, a downward semiannular flange K^3 and above a semicircular flange K^4 , at the rear side of a vertical opening K^5 , extending concentrically through the flange K^3 and in front of flange K^4 .

Recesses J^4 are provided in the lower portion of the perch-irons J to engage the forward end of the perch, obviating the necessity of using a bolt to keep the perch from splitting. The forward end of the wooden portion of the perch sets into the recess J^4 of the perch-iron, substantially as indicated on the drawings. The necessity of such recess is because the adjacent hole J^3 , which carries a bolt, multiplies the chances of the perch splitting by reason of being so close to the end.

In the lower-fifth wheel brace, C , is a central opening C^4 , which just admits the annular flange K^3 and allows the latter to turn therein easily and without undue friction, forming a king-bolt or reinforcing king-bolt. The upper flange, K^4 , extends up into a recess B^2 in the head-block, constituting strength and forming a long substantial bearing for the king-bolt and removing strain therefrom when the latter is fitted thereto.

In the brace C , below where the bottom of the flange K^3 extends, the opening is enlarged for the head of the king-bolt, forming the opening K^5 . This opening K^5 of the flange K^3 is angular and closely engages the angular head of the king-bolt and thus prevents the rotation of the latter.

In putting together the several aforementioned parts the king-bolt F is introduced through the opening C^4 from below, the head of the bolt occupying the recess C^5 , and being larger than opening C^4 cannot be drawn up through the latter. The reach-brace J and piece K are then connected to the bolt by piece K being passed over the bolt, the latter entering and passing up through opening K^5 and the flange K^3 embracing the bolt and being in the opening C^4 of brace C . The head-block B with the upper fifth-wheel, E , attached is now placed in position, the king-bolt F extending up through the head-block and also through the spring H , if present, and secured in place by a nut H^2 . It is evident that the bolt will hold together firmly and compactly the head-block, the upper and

lower parts of the fifth-wheel brace K J and spring H . At the same time the brace-plate and the head-block will rotate easily upon the said central pivotal bearing, and at the same time hold firmly together the various upper and lower portions constituting the upper and lower halves of this pivotal joint.

The opening K^5 in the brace-piece K is made of a special form, to wit: The front wall, L , and the lower part of the back wall, L^2 , of the opening are slanted upward toward the front of the head-block, substantially as shown, the upper front edge of the opening K^5 being cut away and the lower back edge being likewise cut away. (See more particularly Fig. 8.) The purpose of this construction is to enable the reach-plate K to be adjusted on the king-bolt after the latter has been fixed to the axle and axle-plate. The plate K with the forward end of the reach-piece is passed up through the fifth-wheel, rear circle and plate in an inclined position, and the plate passed above the bolt and dropped into position, as shown in Fig. 3, the bolt entering the opening K^5 and passing up through it. This operation is successfully performed by means of the aforesaid inclined walls L L^2 and enlargement of the said opening K^5 , as shown and described. The advantages of this construction permit making circles D and E unbroken, thereby forming a strong, desirable, continuous rear bearing. It is obvious to any one skilled in the art of the manufacture of carriages that this construction can only be obtained when a moderate cost is desired by constructing the novel features set forth in king-bolt arrangement.

The under reach or brace, M , consists of an eye M^2 and an arm or arms M^3 , according as the reach I is single or double, the arms being provided with holes M^4 , through which bolts E^5 are passed for securing the brace to the reach.

On the under side of the axle is the brace plate or bar N , whose ends have lugs N^2 , between which fit the axle. Holes N^3 in said lugs admit clips P , which embrace the axle and hold the brace N to it by means of nuts N^4 , as shown. At the mid-center of this brace-plate N an annular flange N^5 extends downwardly, and the opening N^6 through this flange extends up through the brace-plate N . In practice, the flange N^5 fits in the eye M^2 of brace M , and a bolt R and nut R^2 secure them together. The head of this bolt rests in an enlarged portion N^7 of the opening N^6 . Thus the lower portion of the axle is well braced, as is also the fifth-wheel and the reach.

The plate K , occupying only the central portion of the length of the head-block, permits the latter to be arched, and the bed-plate C at either side of the mid-length is bent or curved down, and then rises toward the ends, substantially as shown in Fig. 2.

The modified form shown in Fig. 7, where the opening in the center of the bed-plate is

reduced, it being only large enough to accommodate the king-bolt, is a form which would be possible in some cases in order to avoid one of the important features of my fifth-wheel, where the downward-projecting lug of plate K forms a turning-point for the bed-plate. While the modified structure will never be so strong, and not preferable, and never accomplish much, it would, however, menace the original construction in a way to bring about petty competition, which would be largely the result of advertising.

While the various features of my invention are preferably employed together, one or more of said features may be used without the remainder, and in so far as applicable one or more of said features may be employed in connection with fifth-wheels of specific construction other than the one herein specifically set forth.

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

1. In a fifth wheel, in combination with the king bolt over the axle, the head thereof resting in the bed plate of the lower circle and over the axle, and the circles E and D of the fifth wheel located partly at the rear of the king bolt, the circles D and E passing over the perch, and the head-block plate having flange K⁴ extending into head-block and flange K³ extending into bed plate C, substantially as and for the purposes specified.

2. In a fifth wheel, the axle and head-block, plate C in one with the lower circle D, and having opening C⁴ and large opening C⁵ below, and head-block plate K having downward flange K³, extending into the opening C⁴, upwardly extending flange K⁴, and the king bolt passing through the plates C and K, and closely embraced by the flanges K³ and K⁴, and having its head received into the recess C⁵ and circles E and D being partly at the rear of the king bolt, substantially as and for the purposes specified.

3. In a fifth wheel, the axle and head-block, plate C in one with the lower circle, and having opening C⁴ and large opening C⁵ below, and head-block plate K having downward flange K³, extending into the opening C⁴, separate from the upper half of the circle, and the king bolt passing upward through the plates C and K, and closely embraced by the flange K³, and having its head received into the recess C⁵, the reach and part of circles E and D being at the rear of the axle, substantially as and for the purposes specified.

4. In a fifth wheel, the combination of the circles E, D, located partly behind the king bolt, and bed plate C of the latter having central king bolt recess and perch iron J, head-block plate K thereof provided with the flange K³, fitting in the central recess of bed plate C, bed plate C rigidly secured to the axle, king bolt from the upper side of the axle, through plates C and K, and head-block, and the under reach brace M having eye M², and under axle brace N secured thereto, and having flange

N⁵ entering the eye of brace M, the braces M and N pivotally secured together, the circles of the fifth wheel extending rearwardly, unbroken and passing over the reach, the upper circle being fastened thereto at E⁴, substantially as and for the purposes specified.

5. In a fifth wheel, the combination of fifth wheel circles E, D, bed plate C of the lower having central king bolt recess, perch iron J, in one with head-block plate K provided with the flange K³, fitting in the central recess of bed plate C, king bolt from the upper side of the axle, through plates C and K, and head-block, the circles located partly at the rear of the king bolt, and the under reach brace M having eye M², and under axle brace N secured thereto and to the plate N, and having flange N⁵ entering the eye of brace M, the braces M and N pivotally secured together, substantially as and for the purposes specified.

6. In a fifth wheel, the combination of the head-block, axle, bed plate C having king bolt recess C⁴, C⁵, king bolt therein, fifth wheel circles E and D for the most part at the rear of the king bolt, perch iron J and plate K having under vertical flange K³ fitting into the king bolt recess and upper flange K⁴, the front wall L of flange K⁴ and the rear wall L² of the flange K³ being removed, substantially as and for the purposes specified.

7. In a fifth wheel, the combination of the circles E, D, and bed plate C of the latter having central king bolt recess, perch iron J and head-block plate K thereof, provided with the flange K³, fitting in the central recess of bed plate C, plate C rigidly secured to the axle, king bolt from the upper side of the axle, passing through plates C and K, and head-block, the circles partly located at the rear of the king bolt, and the under reach brace M having eye M², and under axle brace N secured thereto, and having flange N⁵ entering the eye of brace M, the braces M and N pivotally secured together, the plate C and brace N secured by the clips to the axle, substantially as and for the purposes specified.

8. In a vehicle fifth wheel, having two rearwardly extending circles, passing over the perch in rear, the upper circle provided with flanges between lugs E⁴ extending downward either side of the lower circle at the perch, and lugs E⁴ present to fasten the top circle to perch, substantially as and for the purposes specified.

9. In a vehicle fifth wheel having the rear of the top circle fastened to the perch iron J by the lugs E⁴ of the latter, the lower circle D passing between the perch J and the upper circle E and between the downwardly projecting flanges of the latter, and a king bolt located above the axle, engaging the forward ends of the perch irons J, substantially as and for the purposes specified.

10. In a vehicle fifth wheel, the perch irons J, in one with head-block plate K having a central flange under the head-block extending downward and also having a central flange

extending up into the head-block, and a king bolt the head resting in bed plate C engaging said flanges, substantially as and for the purposes specified.

- 5 11. In a fifth wheel, the axle and head-block, plate C in one with the lower circle, and having opening C⁴, and head-block plate K having downward flange K³, extending into the opening C⁴, and the king bolt passing upward
10 through the plates C and K, and embraced by the flange K³, and having its head resting under curved plate C, the reach and part of the circles E and D being at the rear of the axle, substantially as and for the purposes
15 specified.

12. In a fifth wheel, the axle and head-block, plate C in one with the lower circle, and having opening C⁴, and head-block plate K having downward flange K³ extending into the opening C⁴, and the king bolt passing upward

through the plates C and K, and embraced by the flange K³, a curved bed plate, the reach and the circles E and D, substantially as and for the purposes specified.

13. In a fifth wheel, the axle and head-block, 25 plate C in one with the lower circle, and having opening C⁴, and head-block plate K having downward flange K³, extending into the opening C⁴, the king bolt passing upward through the plates C and K, and embraced by the 30 flange K³, and king bolt head resting under the bed plate C, the reach and part of the circles E and D being at the rear of the axle, substantially as and for the purposes specified.

EZRA B. SMITH.

Attest:

C. J. MCDIARMID,
K. SMITH.