No. 769,820. PATENTED SEPT. 13, 1904.

B. J. DIPLOCK.

VEHICLE, ESPECIALLY THAT USED ON COMMON ROADS.

APPLICATION FILED OCT. 12, 1903.

NO MODEL. 5 SHEETS—SHEET 1.

Fig. 1

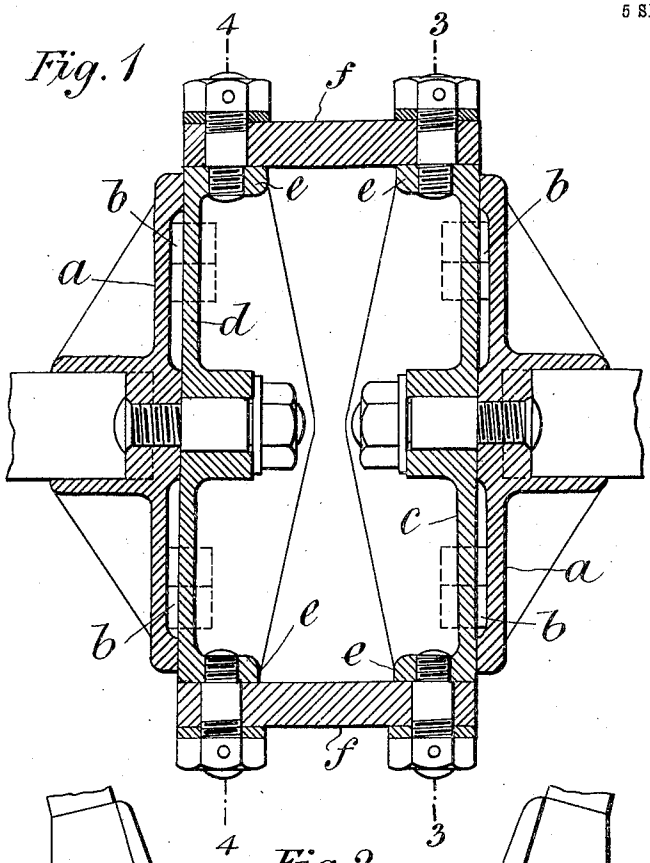
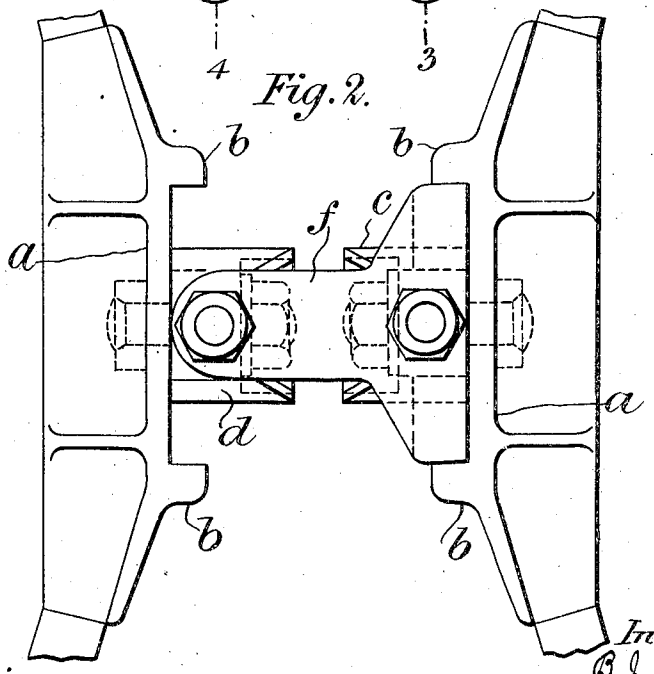


Fig. 2.



Witnesses.
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NO MODEL. 5 SHEETS—SHEET 2.

Fig. 3.

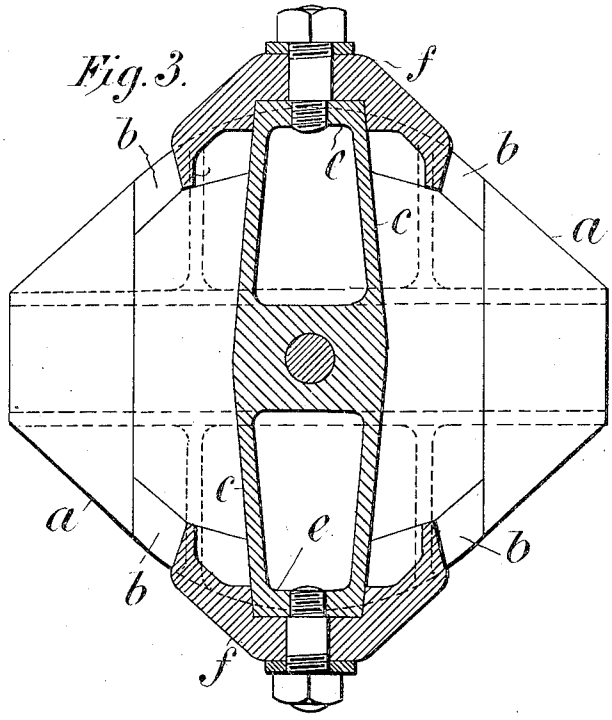
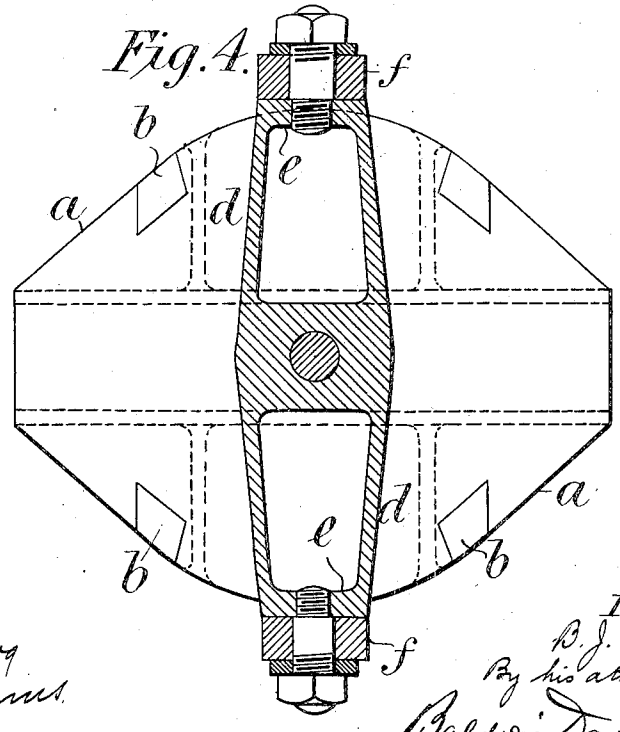


Fig. 4.



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NO MODEL. 5 SHEETS—SHEET 3.

Fig. 5.

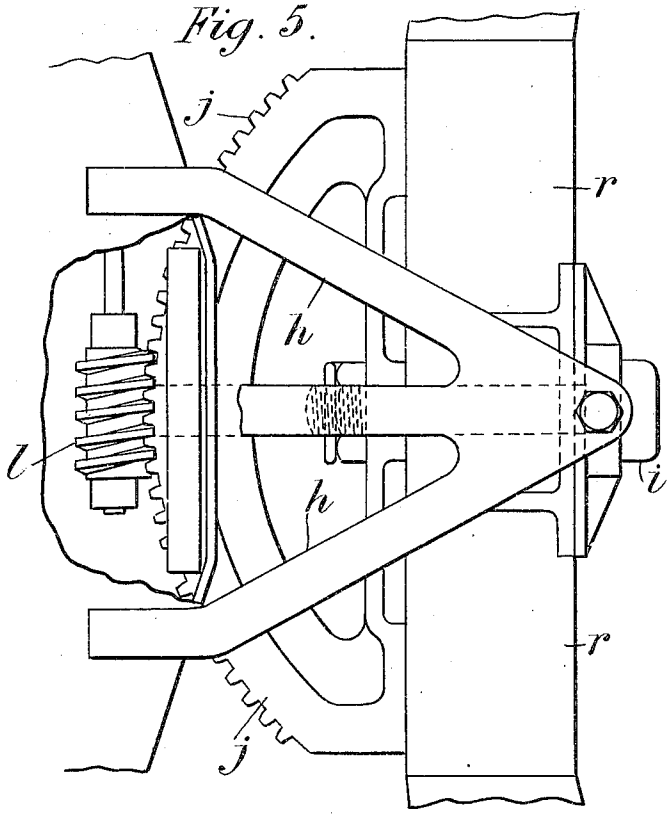
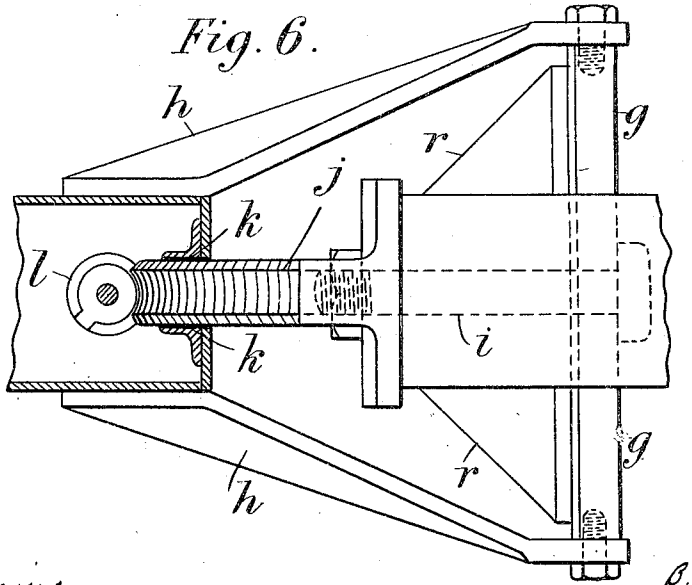


Fig. 6.



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No. 769,820. PATENTED SEPT. 13, 1904.

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APPLICATION FILED OCT. 12, 1903.

NO MODEL. 5 SHEETS—SHEET 4.

Fig. 7.

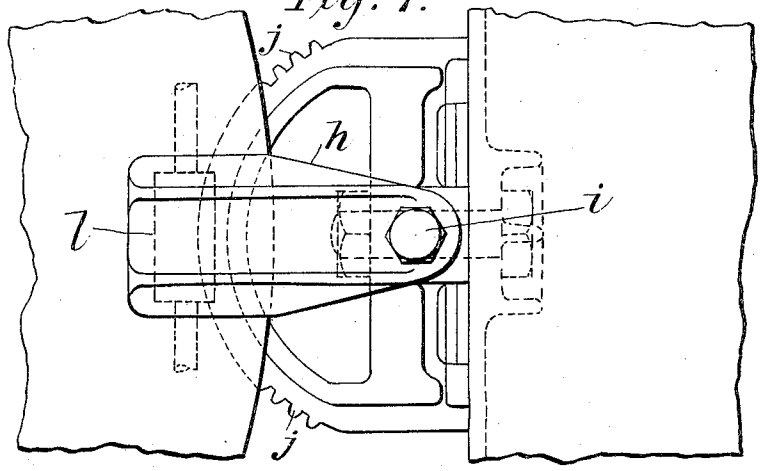
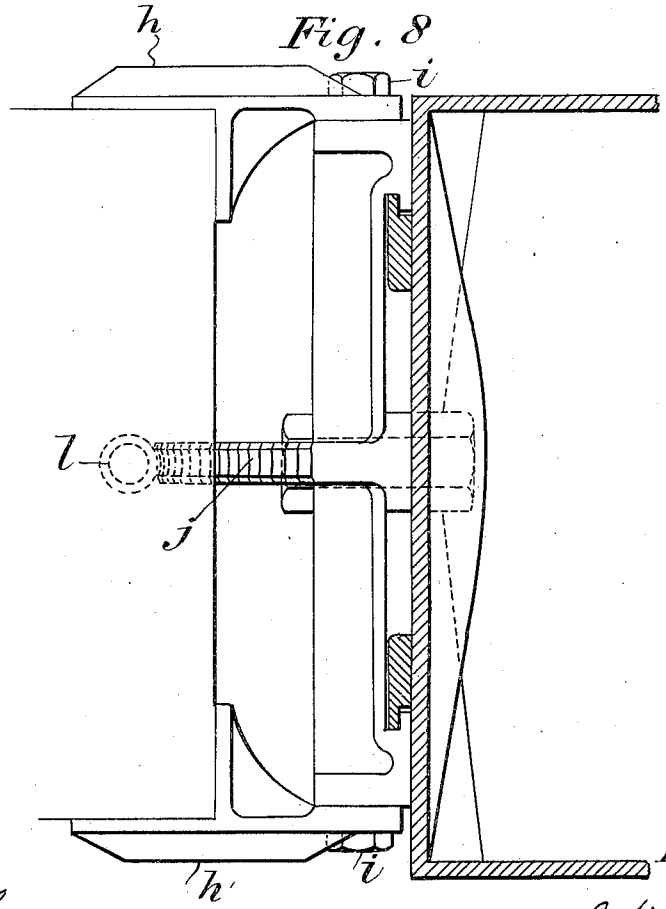


Fig. 8



Witnesses.
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No. 769,820. PATENTED SEPT. 13, 1904.

B. J. DIPLOCK.

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APPLICATION FILED OCT. 12, 1903.

NO MODEL. 5 SHEETS—SHEET 5.

Fig. 9.

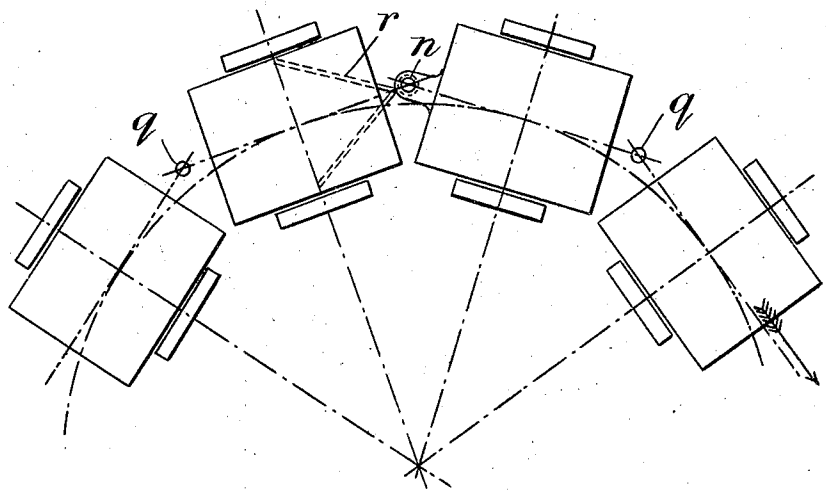
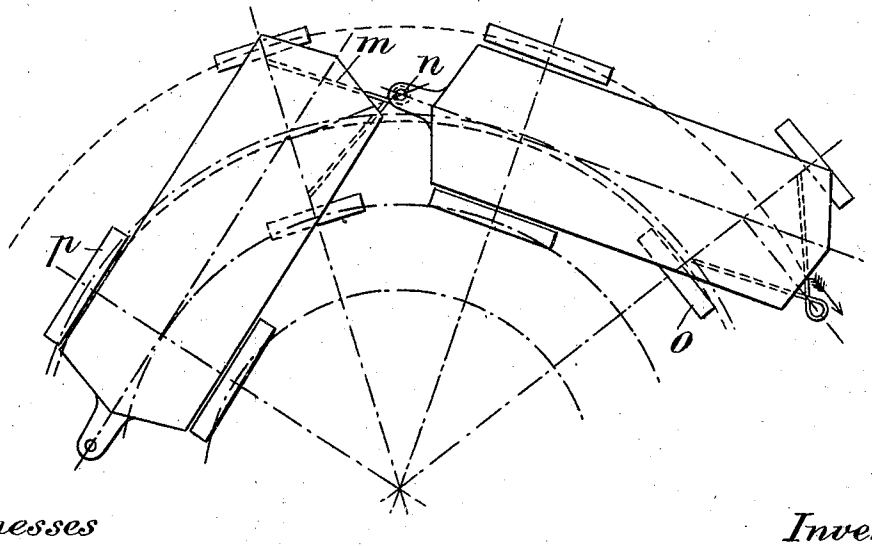


Fig. 10.



Witnesses
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Inventor
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By his attorneys.
Baldwin, Davidson & Wright.

No. 769,820. Patented September 13, 1904.

UNITED STATES PATENT OFFICE.

BRAMAH JOSEPH DIPLOCK, OF WESTMINSTER, ENGLAND.

VEHICLE, ESPECIALLY THAT USED ON COMMON ROADS.

SPECIFICATION forming part of Letters Patent No. 769,820, dated September 13, 1904.

Application filed October 12, 1903. Serial No. 176,664. (No model.)

To all whom it may concern:

Be it known that I, BRAMAH JOSEPH DIPLOCK, engineer, a subject of the King of Great Britain, residing at 53 Ashley Gardens, in the city of Westminster, England, have invented certain new and useful Improvements in Vehicles, Especially Those Used on Common Roads, of which the following is a specification.

According to this invention the body of the vehicle is made in two halves, each mounted on a pair of wheels or other supports—such, for example, as are described in my specification No. 658,004—the halves being pivoted together by a joint giving motion around a vertical and a horizontal pivot in such manner that in going round corners the two halves can make an angle with each other in a horizontal plane and that when upon an uneven road each half can tilt sidewise independently of the other; but the joint is such that the halves cannot tilt lengthwise relatively to each other except to a very limited extent, when they also tilt sidewise.

Figure 1 is a central vertical longitudinal section of one form of joint. Fig. 2 is a plan, and Figs. 3 and 4 are sections, on the lines 3 3 and 4 4, Fig. 1. Fig. 5 is a plan, and Fig. 6 is a side elevation, of a modified form of joint used for steering. Figs. 7 and 8 are similar views to Figs. 5 and 6, showing another modification. Figs. 9 and 10 are diagrams.

In order to make the parts interchangeable, I prefer to adopt the construction shown at Figs. 1 to 4. The adjacent ends of the two halves have fixed to them similar vertical plates *a*, each having on its face four symmetrically-placed lugs or projections *b*. Centrally pivoted to these plates are other vertical plates *c d*, similar to each other and having flanges *e* at the top and bottom. These plates are free to turn about the central pivots, their movement being limited by the lugs *b*, and they are connected together by top and bottom horizontal plates *f*, bolted to their flanges *e*. The top and bottom plates *f* are wider at one end than the other, the wider ends fitting between the lugs, so that the vertical flanged plate *c* of one half of the vehicle is rigidly held to it, while the other, *d*, is free to turn not only about the horizontal pivot, but also about the vertical pivot formed by the bolts connecting its flanges to the horizontal plates *f*. It will be seen that all these parts are interchangeable, so that any two half vehicles can be joined together, and that when one set of pivots becomes worn the top and bottom plates can be turned end for end and the other set brought into use. When it is desired to steer such a vehicle, a different arrangement (shown in plan and side elevation at Figs. 5 and 6, which is next described) is adopted; but in a train of vehicles it is only necessary to steer the front one, the others following in the same track. A vertical shaft or casting *g* is pivoted between two arms *h*, fixed to one half—say the front half—of the vehicle, while the other half—say the rear half—is connected to the shaft or casting *g* by a horizontal pivot *i*. The shaft *g* is kept upright by wings *r*. This pivot has fixed to it a worm-wheel *j*, working in a slot in the front half (formed by the bars *k*) and gearing with a worm *l*, mounted in bearings in it. By turning the worm the two halves are set at an angle to each other; but they are nevertheless free to tilt sidewise independently of each other. This arrangement is very suitable for motor-vehicles, the engine being carried by the front half and the passengers or goods in the rear half.

Figs. 7 and 8 are a sectional side elevation and plan of a modified and more compact arrangement, the same letters being employed.

Figs. 9 and 10 are diagrams showing why vehicles constructed according to this invention will follow one another in the same track, whereas a train of ordinary wagons will not.

Fig. 10 shows the position that the wheels of two four-wheeled wagons would assume when turning round a circle in the direction shown by the arrow with an ordinary drawbar coupling *m* between the two wagons hinging at *n*. It will be noticed that the off front wheel (marked *o*) of the first wagon and the near hind wheel *p* of the second wagon are traveling on nearly the same curve. In other words, the hind axle of the second wagon is practically the whole width of the wagon

nearer to the center of the curve. In a third wagon this loss on the radius of the curve would continue in the same proportion, so that in a long train of these wagons it would be impossible to prevent the rear wagons from running onto the pavement or into the hedge or ditch at the roadside. In ordinary traction-engine practice this difficulty is obviated by limiting the number of wagons and taking a wide sweep with the engine when turning corners. On the other hand, in Fig. 9 the wagons follow each other in exactly the same tracks, and it is evident that by this system a train of any reasonable length can be taken round any corner. In this figure *q* represents the joints for coupling the two halves of the wagon together, and *r* is the draw-bar between the two wagons. The only essential conditions are that the joints *q* shall allow the halves to move relatively to each other around a vertical axis and a horizontal longitudinal axis, but not materially around a transverse horizontal axis, and that the joints *q* and pivots *n* must be midway, or approximately midway, between the axles preceding and following them, respectively. The two halves of the vehicle can be replaced by independent vehicles, provided they are similarly coupled together. The joints *n* may be any form of universal joint or coupling giving freedom of motion in all directions, or they may be similar to the joints *q*, if on a level road.

What I claim is—

1. A vehicle, the body of which is made in two halves or portions connected by a non-extensible coupling and movable around a vertical axis and a horizontal longitudinal axis, but not materially around a transverse horizontal axis.

2. A vehicle, the body of which is made in two halves or portions connected by a non-extensible coupling, the members of which are movable relatively to each other about a vertical axis and a horizontal longitudinal axis, but not materially around a transverse horizontal axis.

3. A vehicle, the body of which is made in two halves or portions each supported on a single axle and connected together by a coupling midway between the axles and which are movable relatively to each other about a vertical axis and a horizontal longitudinal axis, but not materially around a transverse horizontal axis.

4. A train the component parts of which are each supported on a single axle and connected together by couplings, each coupling being midway or approximately midway between the axles preceding and following it and each movable about a vertical axis, every other coupling having its members movable relatively to each other about a vertical axis and a horizontal longitudinal axis, but not materially around a transverse horizontal axis.

5. In a joint the combination of a pair of similar vertical plates, four symmetrically-placed lugs on each plate, a second pair of similar vertical plates working between the lugs, central pivots connecting the plates of the first and second pairs, flanges at the top and bottom of the plates of the second pair, a pair of horizontal plates wider at one end than the other, their wider ends fitting between the lugs on one of the plates of the first pair, and bolts connecting the horizontal plates to the flanges of the plates of the second pair.

BRAMAH JOSEPH DIPLOCK.

Witnesses:
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