(No Model.) 2 Sheets—Sheet 1.

# P. J. RICHTER.

## WAGON GEARING.

No. 345,321. Patented July 13, 1886.

Fig. 1.

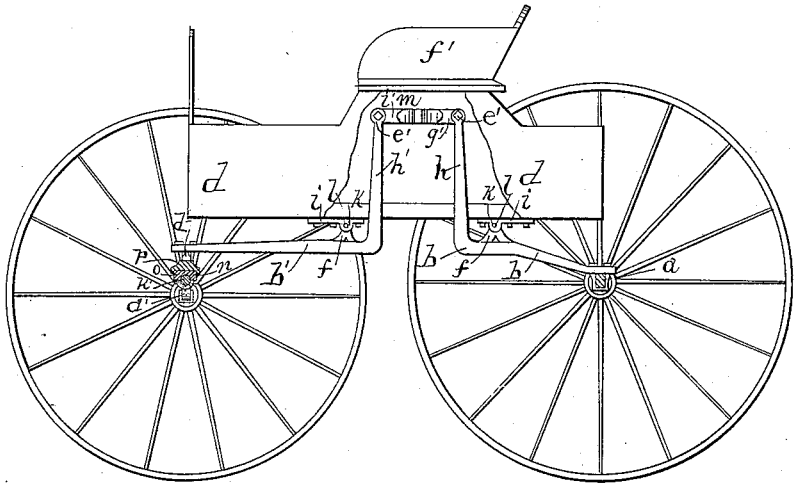


Fig. 2.

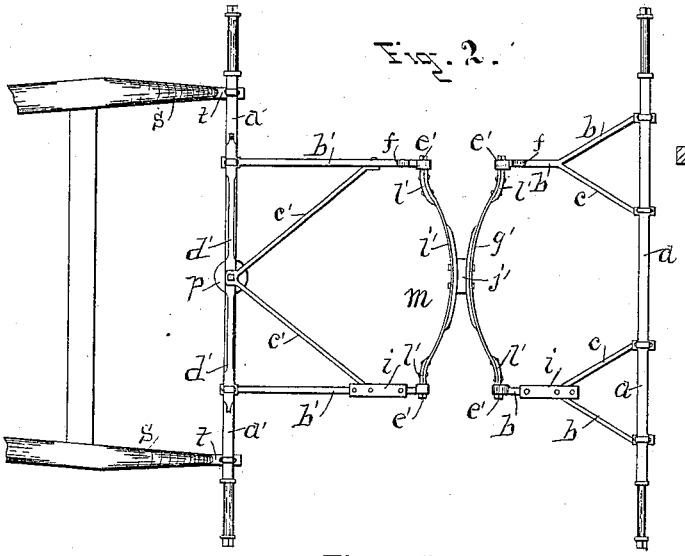
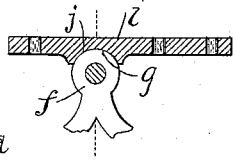


Fig. 3.



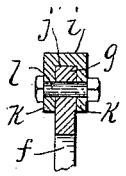
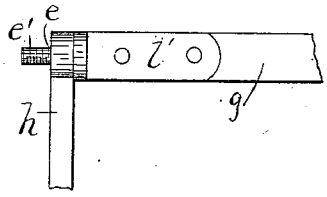


Fig. 4.

Fig. 5.



ATTEST:
G. P. Thomas
W. H. Power

INVENTOR:
P. J. Richter
By
James E. Thomas
Atty.

(No Model.) 2 Sheets—Sheet 2.

# P. J. RICHTER.

## WAGON GEARING.

No. 345,321. Patented July 13, 1886.

Fig. 8.

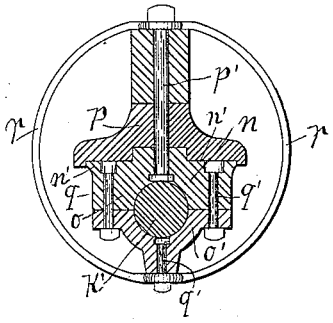



Fig. 9.

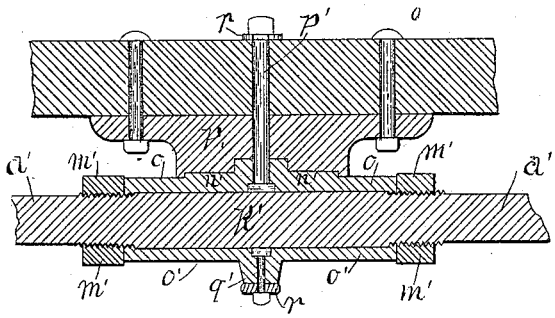



Fig. 10.

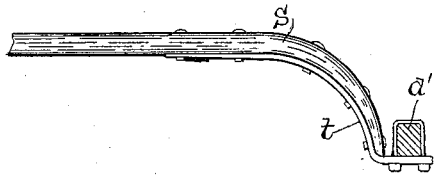



Fig. 6.

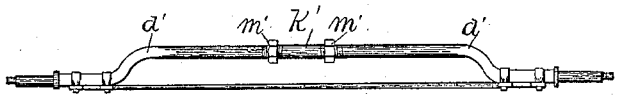




Fig. 7.

Attest:
G. P. Thomas
W. H. Powers

Inventor:
P. J. Richter
By
James E. Thomas
Atty

# UNITED STATES PATENT OFFICE.

PETER J. RICHTER, OF BAY CITY, MICHIGAN, ASSIGNOR OF ONE-HALF TO LOLA M. ROSS, OF SAME PLACE.

## WAGON-GEARING.

SPECIFICATION forming part of Letters Patent No. 345,321, dated July 13, 1886.

Application filed May 20, 1886. Serial No. 202,729. (No model.)

*To all whom it may concern:*

Be it known that I, PETER J. RICHTER, a citizen of the United States, residing at Bay City, in the county of Bay, State of Michigan, have invented certain new and useful Improvements in Wagon-Gearing, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in wagon-gearing; and it consists chiefly in the construction, combination, and arrangement of a set of levers which are supported by the rear axle and the bolster, and suitable bearing-pieces secured to the levers and supporting the body, and central horizontal springs secured to the opposite ends of the levers, and an improved mode of attaching the bolster to the front axle; and the object of my invention is to provide a lever movement which will, when applied to a wagon, require only one spring to allow the proper vertical movement of the axles in relation to the body, and to so arrange and construct the several parts and bearings that they may be strong, durable, and easily constructed, and to arrange the several connected parts that all the noise and rattling may be avoided. I attain these objects by means of the devices illustrated in the accompanying drawings, in which—

Figure 1 is a side view, partly sectional, of a wagon containing my improvement. Fig. 2 is a top or plan view of the gearing of the same. Fig. 3 is a longitudinal section of the saddle-plate and bearing portion of the lever. Fig. 4 is a transverse section of the same. Fig. 5 is a detached view of the end of the lever and the end of the spring connected. Fig. 6 is a view of the front axle detached. Fig. 7 is a view of the rear axle. Fig. 8 is a transverse vertical central section of the front axle and bolster and their connections. Fig. 9 is a longitudinal section of the same. Fig. 10 illustrates the mode of connecting the thills to the axle.

*a* represents the rear axle of a wagon, and *b* are levers which are secured by their outer ends to the rear axle and are held in a proper position by the braces *c*. These levers *b* extend nearly to the central portion between the front and rear axles, and are there turned upward, and the portions *h* are passed through the bottom of the body *d*, just inside of the sides thereof, and are provided on their upturned ends with an opening, *e*, and projecting upward at a point just in rear of the upturned portion is the part *f*, with an upper rounded portion, *g*, through which is a bolt-hole, and forms a fulcrum for the lever.

*i* are saddle-pieces bolted to the under side of the body sill, and are provided with a bearing, *j*, which is curved to fit over and rest upon the portion *g*, and has the side pieces, *k*, projecting downward upon each side of the piece *f*, and a bolt, *l*, is passed through the pieces *k*, and the opening *l*, which secures the parts together.

*b'* are levers secured by their front ends to the outer ends of the bolster *d'*, and extend backward toward the levers *b*, and are provided with upturned ends *h'* and a bearing, *f*, similar to the levers *b*.

*m* is a horizontal spring, placed across and beneath the seat *f'*, and is composed of the curved pieces *g'* and *i'*, placed with their convex sides toward each other, and resting against a central block, *j'*, and to the outer ends of each of the parts *g'* and *i'* are securely riveted the pieces *l'*. These pieces *l'* are provided with a projecting lug, *e'*, which passes through the opening *e*, and is secured in position by a nut or other convenient means. It is, in some cases, more convenient and durable to form the projecting lug *e'* by drawing out the ends of the spring-pieces, or by welding the lug thereto; and I do not confine my invention entirely to the attachment of the pieces *l'* to the ends of the spring-pieces. This lug allows the levers to operate the spring freely, as, when the levers are oscillated, the lug *e'* turns slightly in the openings *e* and prevents the parts of the spring from twisting and binding.

The operation of the levers is that when the wheels pass over an obstruction the outer end of the lever is raised up and the upper end, *h*, bears against the spring *m*, pressing the parts of the same inwardly, while the supporting portion *f* retains its position, and the body and its load remain free from jolt and vibration, the recoil of the spring acting upon the lever.

The saddle *j* forms a durable and reliable support, which is free from rattle and noise,

as the weight of the body and load always rests heavily upon the parts and holds them firmly together.

The central portion of the front axle, *a'*, is provided with a journal, *k'*, of a diameter slightly larger than the remainder of the axle, and upon each end portion of this journal is formed a screw-thread, upon which are placed the nuts *m'*, and upon the journal is placed the box *n*, consisting of the upper portion, *o*, and the lower portion, *o'*. These parts are held together by the bolts *q'*, and the upper portion, *o*, is provided with a circular part, *u'*, upon which rests the bolster-plate *p*, and which is secured to the under side of the bolster *d'*. A king-bolt, *p'*, is passed through the part *o*, and also through the bolster-plate *p* and the bolster, securing the parts together and allowing the bolster-plate to turn upon the portion *n'*. Passed through the portion *o'* is the bolt *q*, and a brace, *r*, extends around the parts and is secured at the point above the bolster by the king-bolt and below by the bolt *q'*, and assists the king-bolt in holding the bolster and axle firmly in position in relation to each other.

The thills *s* are rigidly secured to the axle *b'* by the thill-iron *t* and suitable clips, and when the thills are raised or lowered the axle *a'* turns slightly in the box *n*, so that the rattling and noise of the usual thill-coupling is done away with, and a cheaper mode of attachment is arranged.

By means of the nuts *m'* all end wear and looseness may be taken up, and the bolts *q'* allow the parts *o* and *o'* to be closed together to take up the looseness caused by wear in the box, so that all the parts of the journal-box and bolster-plate connections may be kept perfectly tight and free from liability to produce noise.

I do not confine my invention entirely to riveting the piece *l'* to the projecting ends of the spring-pieces, as it may be preferable to form the projecting lugs *e'* directly upon the ends of the spring-pieces, which would be substantially the same and produce the same result.

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

1. In a wagon-gearing, the combination, with the body *d*, the levers *b* and *b'*, secured, respectively, to the rear axle and the bolster, and provided with the upturned portions *h* and *h'*, and a horizontal spring placed between and connected with the said portions *h* and *h'*, of the supporting parts *f*, extending upward from the central portion of the said levers, and provided with a rounded portion, *g*, the piece *i*, secured to the under side of the body and provided with a saddle, *j*, fitting over and resting upon the portion *g* and having the ear-pieces *k*, extending downward on each side of and pivoted to the part *f*, substantially as and for the purpose set forth.

2. In a wagon-gearing, the combination, with the levers *b*, secured to the rear axle and having the upturned ends *h*, provided with the openings *e*, the levers *b'*, secured to the bolster and provided with the upturned ends *h'*, having the openings *e*, the body *d*, pivotally connected with and supported by the said levers, of the curved spring-pieces *g'* and *i'*, secured together in their central portions, and the pieces *l'*, secured to the projecting ends of the spring-pieces and having the projecting lugs *e'* passed through the said openings *e*, substantially as and for the purpose set forth.

3. In a wagon-gearing, the combination, with the front axle, having the thills rigidly attached thereto, of a journal, *k'*, in the central portion of the axle and provided with screw-threads on its opposite ends and with the nuts *m'* passed upon the threads, the two-part box *n*, resting upon the journal and provided with the circular portion *n'*, and the bolster-plate *p*, substantially as and for the purpose herein set forth.

In testimony whereof I affix my signature in presence of two witnesses.

PETER J. RICHTER.

Witnesses:
J. E. THOMAS,
W. H. POWER.