(No Model.)

# N. A. PALMER.

## VEHICLE GEAR.

No. 546,430. Patented Sept. 17, 1895.

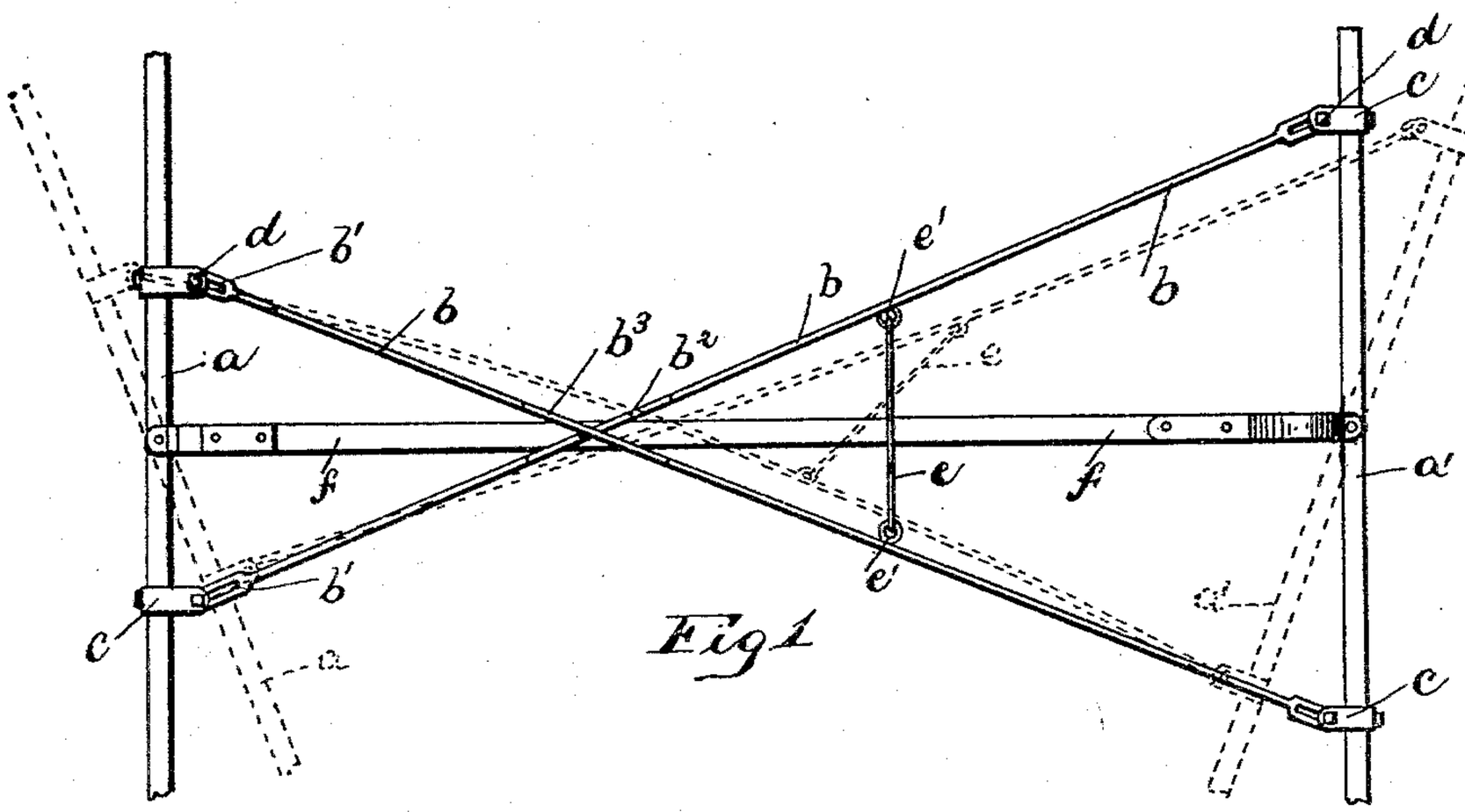


Fig 1

Fig 2

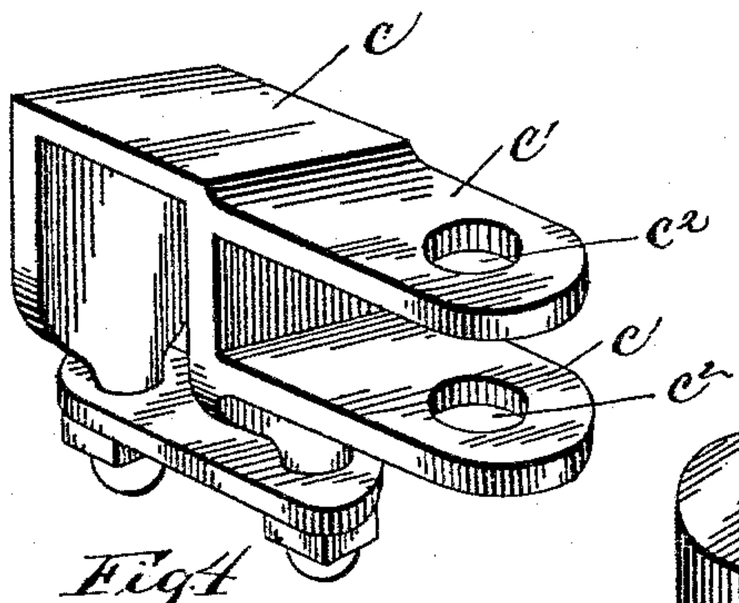


Fig 4

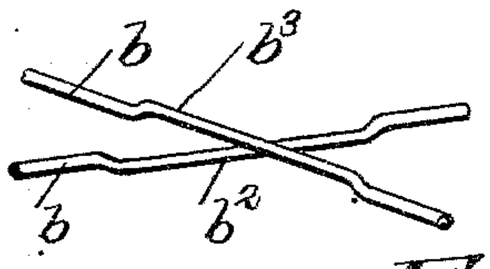


Fig. 3

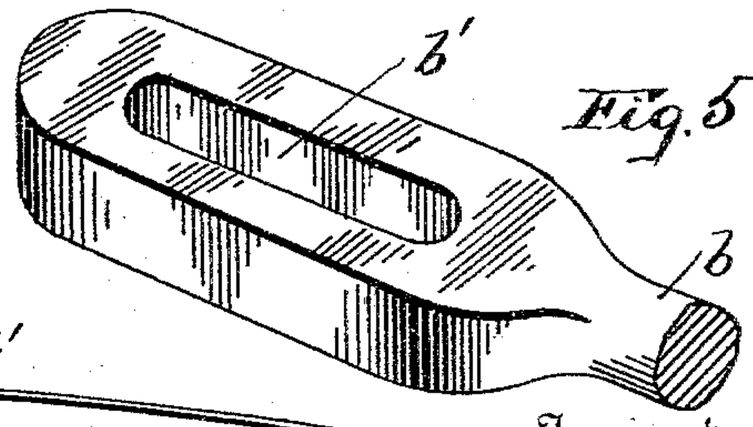


Fig. 5


Fig. 6

Witnesses
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# UNITED STATES PATENT OFFICE.

NORMAN A. PALMER, OF CLARKSBURG, OHIO.

## VEHICLE-GEAR.

SPECIFICATION forming part of Letters Patent No. 546,430, dated September 17, 1895.

Application filed February 8, 1895. Serial No. 537,694. (No model.)

*To all whom it may concern:*

Be it known that I, NORMAN A. PALMER, a citizen of the United States, residing at Clarksburg, in the county of Ross and State of Ohio, have invented a certain new and useful Improvement in Vehicle-Gears, of which the following is a specification.

My invention relates to the improvement of vehicle-gears, and has particular relation to that class of short-turn gears in which crossed draft-rods are employed to adjust the axles when turning.

The objects of my invention are to provide improved means of compensating for the variations in distances when turning between the points of connection of the crossed draft-bars with the axle or axle-clips, to so construct and arrange the parts of my improved gear as to prevent the same from rattling, to provide the yielding reach connection of the axles, and produce other improvements in details of construction, which will be more fully pointed out hereinafter These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of my improved gear. Fig. 2 is a central longitudinal section of the same. Fig. 3 is a detail view in perspective of the draft-rods at their crossing point. Fig. 4 is a detail view in perspective of one of the axle-clips which I employ. Fig. 5 is a similar view of one end of one of the draft-rods, and Fig. 6 is a detail plan view of one of the draft-rods.

Similar letters refer to similar parts throughout the several views.

Referring to the drawings, *a* and *a'* represent, respectively, the front and rear axles of a vehicle, said axles being connected in the manner hereinafter described by the crossed draft-rods *b*. In forming each of these draft-rods I produce the same with the desired inward bow, as indicated in Fig. 6 of the drawings.

The ends of each of the draft-rods are formed, as more clearly illustrated in Fig. 5 of the drawings, with an elongated mortise or slotted opening *b'* therein. At desirable points on each of the axles and on opposite sides of the center of the length thereof I provide clips *c*. As indicated in Fig. 4 of the drawings, these clips are adapted to embrace and be secured to the axles and have formed with their inner sides inwardly-projecting parallel arms *c'*, through which are formed oppositely-located bolt-holes $c^2$. As indicated in the drawings, the diagonally-arranged draft-rods have their slotted end portions *b'* inserted between the clip-arms *c'*, with which they are adjustably connected by means of suitable bolts *d*, which pass downward through the openings $c^2$ and *b'*. These rods *b* are thus arranged to cross each other, and are provided at their crossing-points, respectively, with downwardly or upwardly bent or bowed portions $b^2$ $b^3$, which admit of said rods crossing without friction or conflict.

*e* represents a short transverse tension-rod, the ends of which are adapted to be pivotally connected with suitable eyes *e'*, formed with or projecting from opposite points on the rods *b*. This tension-rod is of such length as, when connecting the draft-rods in the manner illustrated in Fig. 1 of the drawings, to force said draft-rods into the substantially straight lines indicated, assuming that the axles are parallel with each other.

*f* represents a reach-bar, which, as indicated in the drawings, is designed to pivotally connect the central portions of the axles *a* and *a'*. In order to compensate for any contraction or expansion in the space which this bar is designed to occupy, I produce said bar of the rigid portion *g* and yielding or spring portions *g'*.

As shown in the drawings, the yielding or spring portions *g'* may consist of spring-strip terminations for said rigid portion, which are pivotally connected with the axles. However, these spring portions may be interposed at any desired point in the reach and may be of other form and construction than those herein shown and described.

From the construction and operation which I have described it is evident that the elongated slotted openings of the draft-bar ends would admit of the desired longitudinal movement of said draft-bars which may be necessary in compensating for any contraction or expansion of the spaces which said draft bars or rods are designed to occupy, and in order to prevent any tendency of these adjustable connections toward rattling through wear or lost motion I provide the transverse

tension-rod *e*, which exerts such outward force on the draft-rods as to hold the same at all time taut or under tension. In this manner it will be seen that any tendency of the draft-rods to rattle will be readily obviated.

It is evident that the employment of a reach in which is embodied a rigid portion and a yielding or spring portion will prevent any tendency toward said reach becoming loose, while the slight elongation or contraction of said reach which may be necessary will be provided for.

It is obvious that a reach of this construction will also assist in preventing the parts of the gear from rattling.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a vehicle gear the combination with the axles, the axle eyes, the crossed draft rods and pins jointedly and adjustably connecting said eyes and rods, of a tension rod between said crossed draft rods, substantially as specified.

2. In a vehicle gear the combination with the axles, and the axle eyes, of crossed draft rods jointedly connected with said axle eyes, said draft rods being normally curved and bowed laterally substantially as specified.

3. In a vehicle gear the combination with the axles and the axle eyes, of the normally curved crossed draft rods jointedly and adjustably connected with said axle eyes and a tension rod between said draft rods, substantially as specified.

NORMAN A. PALMER.

In presence of—
J. M. GRAHAM,
WILLIS GRAHAM.