

(No Model.)

E. F. STEELE.
JOINTED AXLE FOR VEHICLES.

No. 487,059.

Patented Nov. 29, 1892.

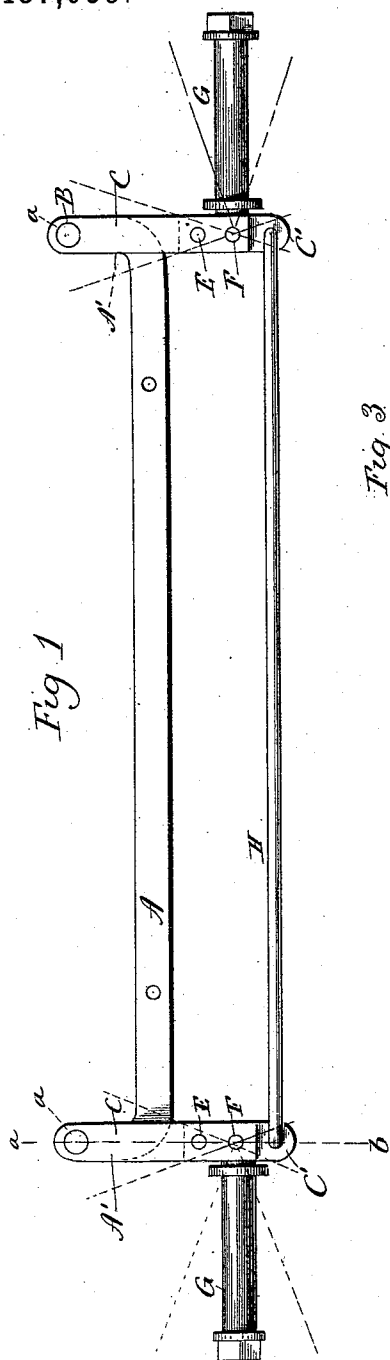


Fig 1

Fig 3

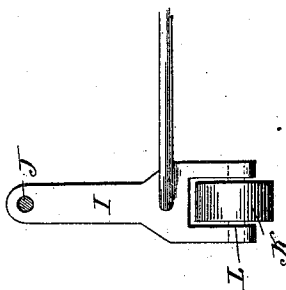
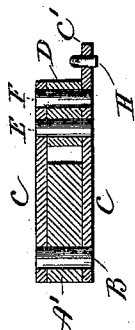


Fig 2



Witnesses
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ELIJAH F. STEELE, OF WALLINGFORD, CONNECTICUT, ASSIGNOR OF ONE-HALF TO WILLIAM H. EDSALL, OF BROOKLYN, NEW YORK.

JOINTED AXLE FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 487,059, dated November 29, 1892.

Application filed February 23, 1892. Serial No. 422,439. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH F. STEELE, of Wallingford, in the county of New Haven and State of Connecticut, have invented a new Improvement in Jointed Axles; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a plan view of an axle constructed in accordance with my invention, instances of the deflection of its spindles by a lateral movement of the vehicle-body being indicated by broken lines; Fig. 2, a sectional view through the axle and one of the links on the line *a b* of the preceding figure; Fig. 3, a detached view of a link or arm, showing a modified form of my invention.

My invention relates to an improvement in jointed axles particularly designed for the forward axles of perambulators or other small vehicles or carts; but also adapted to be used in other situations, the object being to produce a simple and durable axle which will respond to side pressure upon the vehicle-body and to set the forward wheels in position for turning corners without lifting them and turning the vehicle upon its rear wheels, as is now commonly done.

With these ends in view my invention consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

As herein shown, the axle *A* has its ends *A'* bent forward at a right angle to it and provided at their extremities with vertical perforations *a a*. Each of the said ends *A' A'* has pivotally connected with its forward end by means of a vertical pivot *B* a link or arm, which, as herein shown, is composed of two plates *C C*, united at their rear ends by a block *D*, the lower plate being made the longer of the two and vertically perforated to form a coupling-lug *C'*. As thus constructed the forward ends of the links or arms are open, adapting them to be slipped over the said bent ends *A' A'* of the axle on which they have bearing, the vertical pivots *B B*, before mentioned, passing through the ex-

treme forward ends of the plates of each link. The rear ends of the said plates are secured to the blocks *D* by means of rivets *E* and *F*, whereby the rear ends of the links are made virtually solid. Horizontal spindles *G G* are respectively secured to the solid rear ends of the links and project outward therefrom at a right angle thereto, so that normally they extend parallel with the axle, for it is clear that when the vehicle is being propelled straight forward its draft will naturally bring the links into line with it, and therefore at a right angle with the axle. A rod *H*, forming a coupler, has its extremities bent to form hooks, which are passed through the perforated lugs *C'*, formed at the rear ends of the links, which are thus coupled together.

Under the above-described construction the links or arms are virtually connected with the body supported by the wheels whatever its character may be, so as to swing in horizontal planes on vertical axes while the wheels or rollers carried by the spindles rotate in vertical planes on horizontal axes, the arms or links and the wheels or rollers thus moving at right angles to each other.

Although I have shown a construction in which the ends of the axle are bent forward, I would have it understood that I am not limited thereto, but that they may be bent rearward or to some intermediate position, or that they may not be bent at all, all of these constructions being within my invention, which broadly comprehends links or arms arranged to swing horizontally on vertical axes and constructed with horizontal spindles or shafts for wheels or rollers moving in vertical planes, and a coupler joining the links or arms to cause them to move in unison.

When a vehicle provided with my improved axle is being propelled directly forward, the links will conform to the line of draft and keep the wheels mounted on the spindles in line with the rear wheels of the vehicle. Now if the vehicle be subjected to lateral pressure or strain in either direction, the links will be swung on their pivots on one side or the other of the line of the draft, whereby the spindles and the wheels mounted upon them will be correspondingly changed in position

with respect to the rear wheels, the contact between the forward wheels and the ground or other surface with which they are in contact forming the point of purchase for deflecting the links, as described. The forward wheels having thus been changed in direction with respect to the rear wheels, continued propulsion of the vehicle will cause it to turn to one side or the other from a straight path. In this way and by a side pressure the vehicle may be changed in the direction of its propulsion without tipping it to lift its forward wheels from the ground and then rotating it on its rear wheels as upon a pivot to head it in another direction.

While my improved jointed axle is peculiarly adapted for perambulators, I would have it understood that it may be applied to any other vehicle or bodies of a size permitting them to be placed under sufficient side-wise pressure to operate the jointed axle.

While I have shown the links as being composite it is apparent that if desired they may be made in one piece. Furthermore, although I have shown a continuous axle, I may, if preferred, employ a divided axle with the same results, my invention comprehending both, or I may dispense with the axle altogether and connect the inner ends of the links or arms directly with the body supported by means of vertical pivots of any suitable form and construction, whereby the said body would virtually take the place of an axle carrying the links at its respective ends. One link or arm of such a construction is shown by Fig. 3 of the drawings, in which the inner end of an arm I is swung on a vertical pivot J, which is connected with the body to be supported. The outer end of the arm is bifurcated to receive a small roller K, which turns in a vertical plane on a horizontal shaft L, mounted in the said outer end of the arm, which itself swings in a horizontal plane on a vertical axis, while the roller turns in a vertical plane on a horizontal axis.

In view of the modifications hereinbefore suggested and mentioned I would have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with two links or arms having their forward ends swung on vertical pivots and provided in the rear of the said pivots with horizontal spindles or shafts, of a coupler joining the said arms or links at a point in the rear of the said spindles or shafts and free to have endwise movement in either direction, substantially as set forth, and whereby side pressure acts through the surfaces upon which the wheels rest to swing the arms in unison, and thus deflect the wheels in accordance with the direction of the pressure, the said surfaces thus forming points of purchase for turning the wheels by virtue of the tractional engagement of the same with them.

2. The combination, with an axle, of two links respectively pivoted at their forward ends to its ends, spindles located upon the links in the rear of their pivotal connection with the ends of the axle, and a coupler joining the links at points in the rear of the said spindles and free to have endwise movement in either direction, substantially as set forth.

3. The combination, with an axle having its ends bent forward, of links pivoted to the forward extremities of the said bent ends of the axle and extending rearward back of the same, spindles rigidly secured to the rear ends of the links, and a coupler connecting said rear ends of the links and extending parallel with the axle, substantially as described.

4. The combination, with an axle having its ends bent forward at a right angle to it, of two links made open at their forward ends to embrace the said bent ends of the axle, to the forward extremities whereof they are pivoted, and constructed to extend back of the axle, spindles mounted in the solid rear ends of the links, and a coupler pivotally connecting the said rear ends of the links and extending parallel with the axle, the forward ends of the links bearing upon the upper and lower faces of the bent ends of the axle, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ELIJAH F. STEELE.

Witnesses:

CARRIE B. FOWLER,
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