

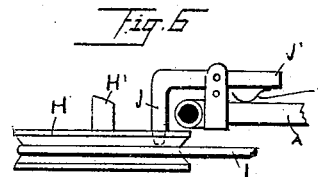
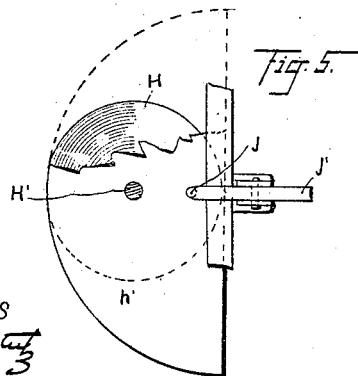
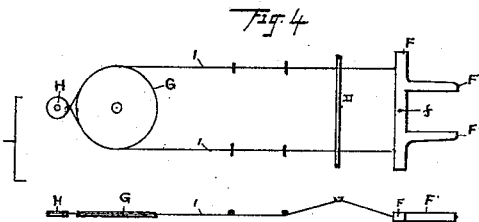
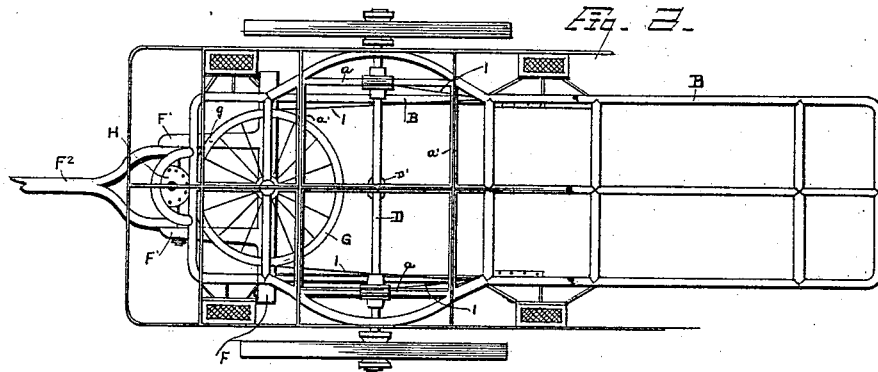
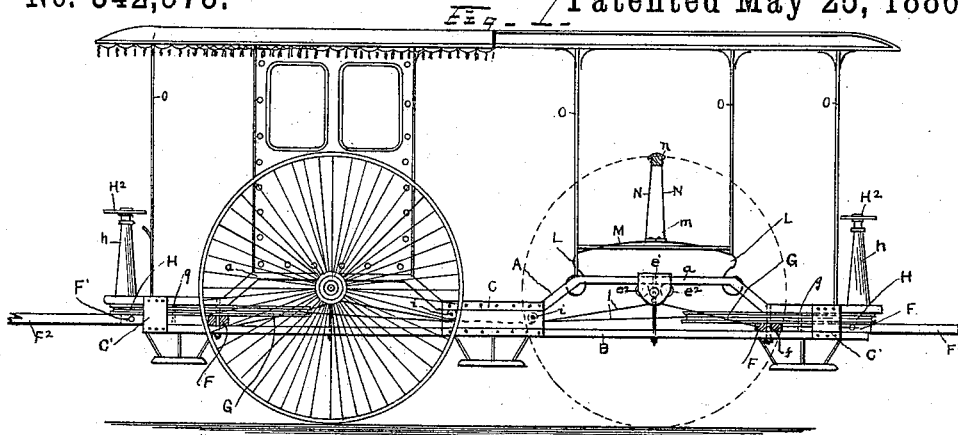
(No Model.)

2 Sheets—Sheet 1.

C. G. CANFIELD.
PASSENGER VAN.

No. 342,573.

Patented May 25, 1886.



WITNESSES
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 7.

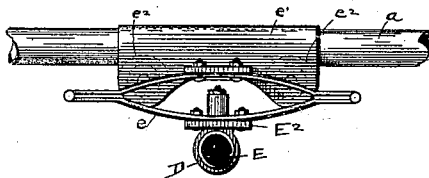


Fig. 8.

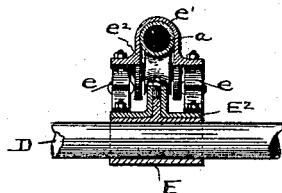


Fig. 9.

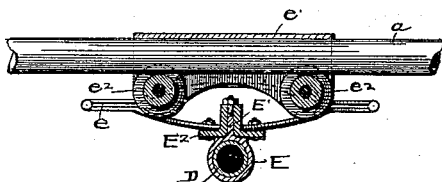


Fig. 10.

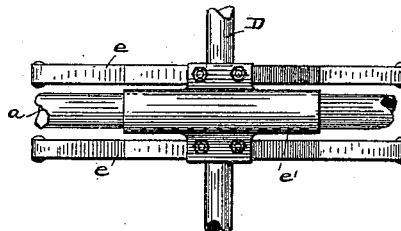
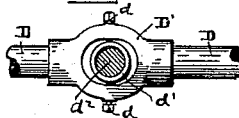


Fig. 11.



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CHARLES G. CANFIELD, OF CLEVELAND, OHIO.

PASSENGER-VAN.

SPECIFICATION forming part of Letters Patent No. 342,573, dated May 25, 1886.

Application filed March 17, 1886. Serial No. 195,540. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. CANFIELD, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Passenger-Vans; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in passenger-vans, in which a double frame-work is made of metal tubing, preferably steel, to the end that the desired strength is attained in combination with minimum lightness of structure. Both axles are provided at their respective centers in such manner that they may turn and rock, respectively, in horizontal and vertical planes, and may move vertically on the king-bolts, and the arrangements are such for coupling and operating the two axles, so that they are made to move simultaneously in the same direction, and for moving the rear axle by hand, that the vehicle first may be guided in the usual manner, to wit—by means of a tongue and team; second, the two axles may be operated from the tongue and made to move in unison, to the end that the vehicle may be quickly moved to one side; and, third, meanwhile the forward axle being guided by the tongue, the rear axle may be turned by hand, to the end that the rear of the vehicle may be quickly turned to the one side, for instance, in turning sharp corners, or to avoid colliding with other vehicles or objects.

My invention also relates to details of construction, and in the combination of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved passenger-van, the right-hand portion having the curtains, upholstery, &c., removed to show more clearly the frame-work. The right and left hand portions of the van are supposed to be fac-similes of each other. Fig. 2 is a plan view, the right-hand portion showing the lower frame, and the left-hand portion showing the upper frame, the two frames being jointed together by plates, as shown in Fig. 1. Fig. 3 is a plan view of an axle, yoke, and sleeve, showing also the king-bolt in section. Fig. 4 is a diagram showing a plan in side elevation

of one set of the guiding-cables and attachment. Figs. 5 and 6 are details, the former in plan and the latter in elevation, showing the manner of fastening and operating the guiding mechanism. Fig. 7 is a side elevation; Fig. 8, a transverse section; Fig. 9, an elevation in longitudinal section, and Fig. 10 a plan of the springs and mechanism for supporting the vehicle from one of the axles.

An upper frame-work, A, and a lower frame, B, are connected by the plates C and C' into one general supporting structure for the body of the van. This frame-work, in the main, is preferably of steel tubing, as being at the present time the best material that I have any knowledge of for combining, at a moderate cost, the maximum strength with the minimum lightness in such vehicles. The corners and angles of the frame-work are practically made by cutting the tubes at the proper angles and joining the beveled ends by welding or riveting in cores, respectively, of the proper shape. By means of suitable dies or formers the angle in the tubes may be bent. I therefore do not wish to be understood as limiting myself to any particular manner of shaping or joining the frame-work.

The axles D pass between the upper and lower frames, the former being raised over the axle, as shown in Fig. 1, the raised portion forming a platform for the seat. The axles are made of two pieces of tubing, except at the ends, where they are made solid for the wheel-journals. The two parts of an axle are connected by a yoke, D, in the center of which is pivoted, on the bolts *d*, a vertical sleeve, *d'*, the bore of which fits easily on the king-bolt *d''*, the latter extending from the frame A above to the frame B below. The axle may turn on the king-bolt as a vertical axis, and may rock on the bolts *d*, and the king-bolt may slide endwise through the sleeve *d'* as the vehicle is elevated or depressed on the spring.

The frame of the vehicle is supported from the axles in the following manner: Sleeves E are mounted on the axles just inside the wheel. Each sleeve is provided with a trunnion, E', extending upward from the center of the sleeve, and is journaled in the hub of the cap E², and is secured on top of the hub by a nut. On the cap E², and located on either side of the hub thereof, are secured springs *e*, of the or-

dinary construction, said springs extending lengthwise of the van. On the springs are secured the yoke e' . This yoke extends up over the tube a of the upper frame, and fits as close to the tube as may be without actual contact. Inside the yoke are the grooved wheels e' , that fit and support the tube a . These wheels are journaled on pins that extend laterally through the legs of the yoke. As the axles are turned in guiding the vehicle, the wheels e' travel under the tubes a , supporting the van, but causing little friction, the tubes a being straight, and the sleeve E slides endwise on the axle a trifle, more or less, according to the arc in which the axle is moved. The guiding-cables I are attached to the sleeve E , by which arrangement the cables are kept in line with the grooved carrying-wheels i , that guide the cables at the central portion of the van.

F are cross-bars, to which the tongue-hounds F' are attached. The cross-bars are pivoted on vertical spindles f , that extend from the frame A to the frame B . On the spindles f , and usually located above the cross bars, are journaled the large grooved lateral wheels G , that may turn independent of the cross-bars.

H are small grooved lateral wheels, separated a short distance from the wheels G . The wheels H are mounted, respectively, on the spindles H' , that extend up through and are journaled in standards h , and are provided above the standards with hand-wheels H^2 . The standards h are secured to plates h' , that in turn are secured to the frames A .

It will be observed that there are hounds, cross-bars, wheels G and H at both ends of the van, and the tongue F^2 may be transferred from one set of hounds to the other set when the vehicle is to travel in the other direction. There is a steering-cable, I , for each axle. The cable for the axle at the right hand end of the van is shown in Fig. 4. The ends of this cable are attached to the ends of the cross-bar F . From thence they connect with the sleeve E of the axle. From thence they span the wheel G . The cable is then crossed and wraps round the wheel H . The cable for the axle at the left-hand end of the van is arranged in the same manner, but in the reverse direction.

In whichever direction the van is traveling the forward axle is controlled by the tongue, and the wheels G and H , around which the cable passes from the forward axle, serve for the time being only as idle-wheels. The rear axle having no tongue to guide it is controlled by its cable, and the latter is operated by the wheel H , located at the opposite or forward end of the van, the hand-wheel H^2 being by the side of the driver. A dog, J , passes through a hole in the plate h' , and may enter a notch or hole in the wheel H for locking the latter, in which case the rear axle remains stationary, as with ordinary vehicles. By pressing on the lever J' the dog is drawn up and the wheel H released. This lever is in convenient proximity to the foot of the driver, and

has a spring, j , underneath for elevating this end of the lever and depressing the dog to lock the wheel H . The dog at the rear of the van is always blocked up, leaving the rear wheel, H , unlocked; otherwise the forward axle could not turn.

The driver at any time, by depressing the lever J at his feet and grasping with one hand the wheel H^2 , that is near him, may turn the rear axle in either direction and skew the rear of his van—for instance, in turning sharp corners, or to miss an obstruction or pass a vehicle. By releasing the lever J and turning the hand-wheel back to the starting-point, by means of the spring j , the wheel H is locked and the van moves steadily on like other vehicles.

Persons unacquainted with the possibilities of this van might suppose the latter adjustment to be the normal working position of parts. There is, however, another movement that this unique vehicle may be indulged in at times, that must be described before it is safe to state what is the normal adjustment of this much-guided craft. Suppose both dogs J are blocked up, in which case the rear axle would have nothing to hold or guide it, and while in this condition a pin, g , is passed down through a hole in one of the wheels G and into a corresponding hole in the hounds or cross-bars below, thus locking the wheel and cross-bars. As aforesaid, the one cable is attached to a cross-bar and the other cable embraces the wheel G , that is next above such cross-bar. By locking the wheel and adjacent cross-bar we couple the two cable systems together, so that both axles are made to move in unison, and both axles are consequently operated by the tongue. Now, if the tongue is turned to one side both axles are turned to corresponding angles with the van, and the latter, as it moves forward, also moves oblique to the one side, each end of the van moving the same distance laterally.

With an ordinary vehicle, in turning out to miss ruts, obstructions, or other vehicles, the driver has little trouble in getting the forward wheels where they are wanted. The hind wheels, however, are likely to be just where they are not wanted, and in consequence receive many hard knocks that the forward wheels escape.

With my improved van and the adjustment just described the hind wheels, so to speak, take care of themselves by imitating the movement of the forward wheels. This peculiar movement of the van has other advantages. In receiving or discharging passengers the van is quickly brought broadside to and parallel with the curbstone or landing, and the van has to travel but a short distance to accomplish this. It is believed that this latter adjustment—that is, with both axles controlled by the tongue on account of its many peculiar advantages—will be more used than either of the other adjustments mentioned.

The seats are arranged back to back, the

5 tiers of seats extending crosswise of the van. Series of flat springs L are arranged in upright positions, and are secured at their lower ends to the respective cross-tubes *a'* of the frame A. Opposite springs, L, are hinged at their upper ends to the end of a thin broad flat spring, M, the latter spring lying in a horizontal position lengthwise of the van. Each spring M forms the support for two single seats located on opposite sides of the double seat-back, the latter being constructed as follows: A wooden cross-piece, *m*, extends across the series of springs M, and is secured to the center of each spring. Plates N, preferably of thin perforated wood, are secured on each side of the cross-bar *m* at the bottom, and at the top are secured to the head or rails *n*. Standards O support the cover, that may be of any suitable material and of ordinary construction.

What I claim is—

1. In a passenger van or vehicle, the combination, with an upper and lower frame-work having suitable rigid connecting devices, of king-bolts extending between the frames and attached to both axles, pivoted, respectively, on the king-bolts, said axles operating and extending out between the frames, substantially as set forth.

2. In a passenger van or vehicle, the combination, with an upper and lower frame constructed each of metal tubing, the two frames being rigidly connected, forming a supporting structure for the vehicle, a king-bolt secured to both frames, of axles pivoted on the king-bolt between the two frames, substantially as set forth.

3. In a passenger van or vehicle, the combination, with axles pivoted at their respective centers to the frame-work of the vehicle, a tongue, and suitable mechanism connecting the tongue with the forward axle, of a guiding-wheel located at the forward end of the vehicle, suitable cables or devices connecting the guiding-wheel with the rear axle, substantially as set forth.

4. The combination, with pivoted axles and pivoted cross-bars connected respectively with the axles, said cross-bars having tongue-hounds attached, of guiding-wheels located at or near the ends of the vehicle, each guiding-wheel being connected with the axle and cross-bar located at the opposite end of the vehicle for the connected guiding-wheel, the parts being arranged substantially as set forth.

5. The combination, with pivoted axles and cross-bars, guiding-wheels, and connecting mechanism, arranged substantially as described, of hand-wheels for operating and dogs for locking the respective guiding-wheels, the parts being arranged substantially as set forth.

6. The combination, with pivoted axles and cross-bars, lateral wheels located in close proximity to said cross-bars, guiding-wheels and connecting-cables arranged substantially as described, of pins or suitable devices for connecting the lateral wheels with the adjacent cross-bars to connect the two axles, the parts being arranged substantially as set forth.

7. The combination, with a vertical king-bolt, and a sleeve mounted on the king-bolt, so as to turn or slide endwise, of an axle and yoke, the latter being pivoted to the sleeve, substantially as set forth.

8. In a vehicle, the combination of sleeves mounted on the respective axles to slide endwise thereon, supports for the vehicle pivoted to the respective sleeves, and ways extending lengthwise of the vehicle for engaging the said supports, substantially as set forth.

9. In a vehicle, the combination, with upright springs arranged in pairs and rigidly secured at the bottom ends to the vehicle, of horizontal springs hinged respectively at the ends to the upright springs, and a double-seat back secured at the center of the horizontal spring, substantially as set forth.

10. In a passenger-van, the combination, with series of single seats arranged back to back, of lateral springs respectively for each pair of seats, and upright springs hinged to the ends of each lateral spring for supporting the latter, substantially as set forth.

11. In a passenger-van, series of single seats arranged back to back, lateral springs hinged to upright springs for supporting, respectively, each pair of seats, and a continuous double back extending across and secured to the center of the lateral spring, the parts being arranged substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 9th day of January, 1886.

CHARLES G. CANFIELD.

Witnesses:

CHAS. H. DORER,
ALBERT E. LYNCH.