No. 700,779. Patented May 27, 1902.

A. W. KENT.

STEERING APPARATUS FOR VEHICLES.

(Application filed Dec. 17, 1900.)

(No Model.)

Fig. 1.

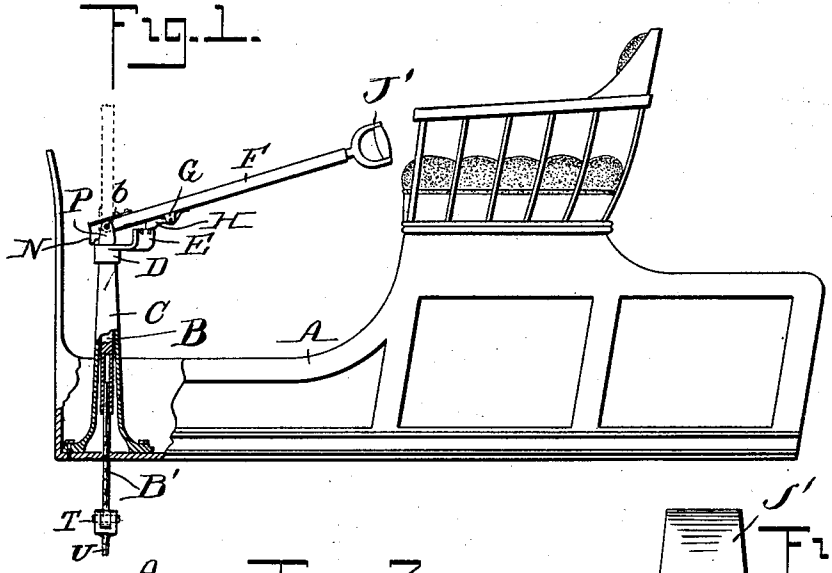


Fig. 2.

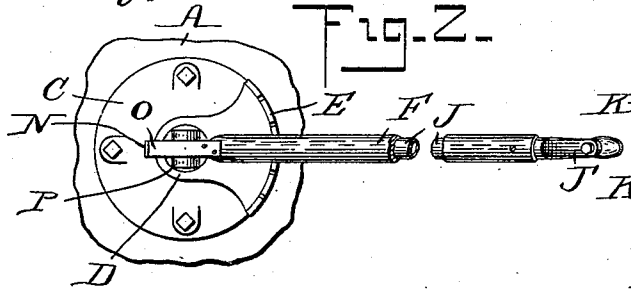


Fig. 4.

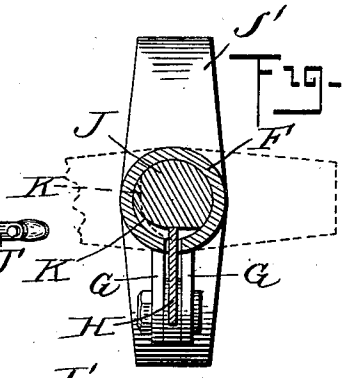


Fig. 3.

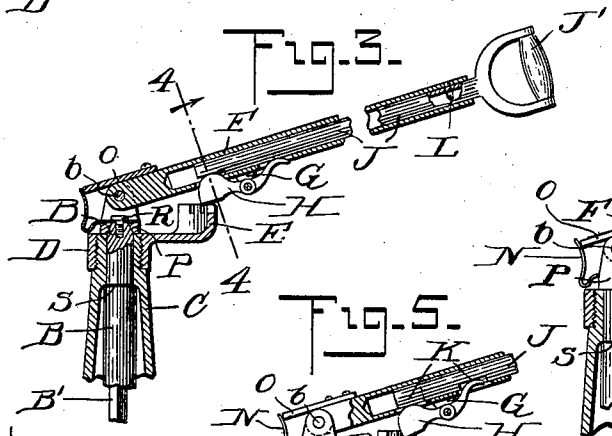


Fig. 5.

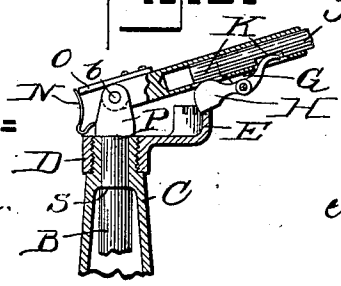
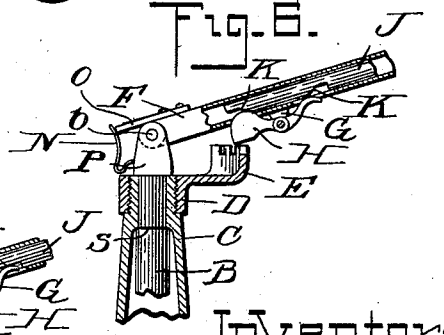


Fig. 6.



Witnesses=

Charles F. Logan.

H. W. Ladd

Inventor=

Alexander W. Kent

by R. H. Reneer,

his Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALEXANDER W. KENT, OF BOSTON, MASSACHUSETTS.

STEERING APPARATUS FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 700,779, dated May 27, 1902.

Application filed December 17, 1900. Serial No. 40,098. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER W. KENT, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Steering Apparatus for Vehicles, of which the following is a specification.

My invention relates to steering apparatus for horseless vehicles, and especially to the class generally termed "automobiles," in which the steering-bar is pivoted to the upper end of a vertical shaft connected below the vehicle-body with devices which control the axle of the forward wheels. With the ordinary construction this vertical shaft is continuous, and the vehicle-body rises and falls with relation to it if the springs yield under variations in the load or otherwise. The pivoted end of the steering-bar thus moves up and down with said shaft and the bar is not mechanically held in a given position. As herein shown, said vertical shaft is duplex or formed in two parts, one connected to the vehicle-body and the other to the running-gear, such parts having a sliding or telescopic movement relatively, but no independent rotary movement. The lower member of this duplex shaft is hinged at bottom to the crank-post usually employed to change the direction of movement of the wheels. This provides for sidewise tipping of the vehicle-body and steering-shaft without a rising-and-falling movement of the pivoted end of the steering-bar and enables me to lock the steering-bar mechanically in a desired position, so as to run for a given time in a straight or curved line without necessary attention by the operator.

I am aware that it is not, broadly, new to telescope the steering-shaft to permit the rise and fall of the vehicle-body on the springs with relation to the running-gear, and I only claim this feature when combined with a locking device for the handle or steering-bar.

The preferred locking means comprises a tubular column or guard fixed to the vehicle-body, so as to surround and support the upper member of said vertical shaft, and furnished at top with a lateral arm notched terminally, in combination with a steering-bar pivoted to the vertical shaft and carrying an adjustable locking-piece adapted to engage with and disengage from the notches of such arm. The steering-bar is tubular, with an internal rod or tube having a partial rotation or limited longitudinal movement, and formed at its inner end with cams or inclines to actuate said locking-piece. As shown, the locking-piece is located in a slot in and pivoted centrally between ears formed on the outer tube, one cam or incline on the inner rod depressing such piece into locking engagement with the notched arm and the other releasing it, so that the bar may swing laterally for steering. A stud projecting from the sliding rod may constitute the locking-piece. A suitable spring or other binder holds the steering-bar in proper position for its work or supports it in vertical position when raised.

In the drawings, Figure 1 represents part of a carriage provided with my improvements. Fig. 2 is a top plan and Fig. 3 a vertical section, both on a larger scale than in Fig. 1. Fig. 4 is an enlarged transverse section on line 4 4 of Fig. 3. Figs. 5 and 6 are vertical sections illustrating the actuation of the locking-piece by cams and inclines on the inner steering-bar.

A represents part of the carriage-body, B the tubular upper member, and B′ the solid lower member of the vertical shaft, pivoted at foot to and rising from the running-gear through the floor of the vehicle.

C is a hollow column secured to the carriage-body and surrounding shaft B B′, for which at top it forms a bearing. The parts B B′ telescope or move longitudinally one within the other, one being square in cross-section and the other having a square axial perforation.

D is an arm forming the upper portion of the column C, preferably made separate from and so as to be screwed to such column, as shown. One side of this threaded portion extends out laterally as an arm, terminating in an arc-shaped horizontal rack E. The shaft B extends slightly above this arm and rack.

F is a tubular steering-bar connected to the top of the shaft B by a horizontal pivot *b*, so that it may be turned up vertically, as shown in dotted lines, or extend toward the operator's seat, as in full lines, Fig. 1. Lugs or ears G, formed on or secured to the steering-tube F, support between them a pivoted lock-

ing-piece H, held in a longitudinal slot in said tube. One end of such locking-piece may be pressed down into any one of the notches of rack E or withdrawn positively therefrom.

I actuate the locking-piece H by means of a tube or rod J, fitting within the steering-tube F and provided with a terminal handle J'. The inner end of the tube or rod J is formed with two cams or inclines K, arranged to bear alternately upon the opposite ends of the piece H, where they extend edgewise through the outer tube. When cams are employed, as in Figs. 3, 4, and 5, I give to the inner tube or rod a partial rotation or oscillating movement; but where mere inclines are adopted, as in Fig. 6, such rod or tube will have a limited longitudinal movement for the same purpose. In either case one of the tubes may be suitably slotted, as at L, Fig. 3, and a pin therein fixed in the other tube will act as a proper stop. By my plan of engaging a projection on the steering-bar in a notch of the rack the vehicle is held to a straight course, when desired, without constant watchfulness and with much relief to the hand of the operator.

I provide a spring N of suitable form to hold the steering-bar engaged with the rack E and to release it when required, so that it may be moved laterally or turned up out of the way and held vertically. As herein shown, a clip or extension O is secured to the pivoted end of the bar F to bear against said spring in either of its positions.

The steering-bar F is pivoted between the upright arms of a yoke P, which is mounted at top of the column C and has a squared and tapering central aperture fitting upon the upper end of the vertical shaft B. The base of the spring N is located within the yoke P, and the yoke and spring are secured to the shaft B by a screw R. (See Fig. 3.) The shaft B has a shoulder S engaging with a corresponding offset within the column C to hold the parts in position while permitting lateral movement of the steering-bar and partial rotation of the duplex shaft B B' in steering the vehicle. The lower end of shaft B' is connected by a hinge or pivot T to the usual crank-post U on the running-gear. This hinge permits the shaft B B' to tip to right or left with the like movements of the body A.

I claim as my invention—

1. In a wheeled vehicle, an upright shaft connected to the running-gear and a vertical sleeve or extension of such shaft connected to the vehicle-body and telescoping with said upright shaft, for relative longitudinal without independent rotary movement, in combination with a steering-bar horizontally pivoted on such vertical extension, and with an adjustable locking device therefor, said extension having no vertical movement independent of the vehicle-body, substantially as set forth.

2. In a horseless vehicle, a vertical shaft connected to the running-gear, a tubular vertical extension telescoping therewith, and a hollow column or guard surrounding such extension, and fixed to the vehicle-body, in combination with a steering-bar pivoted to said shaft, an adjustable locking-piece carried on said bar, and a lateral arm extending from said column or guard and notched marginally to engage such locking-piece when desired, substantially as set forth.

3. In a horseless vehicle, a vertical shaft pivotally connected to the running-gear, a metallic guard surrounding such shaft and a lateral arm notched marginally and supported by said column or guard, in combination with a tubular steering-bar connected to said shaft, a locking-piece mounted in a recess in said tubular bar and a movable rod or tube within such bar serving to actuate said locking-piece, substantially as set forth.

4. In a horseless vehicle, a vertical shaft connected to the running-gear, a hollow column or guard surrounding such shaft and a lateral arm or flange, notched marginally, adjacent to said guard, in combination with a steering-bar connected to said shaft by a horizontal pivot so as to oscillate such shaft by a lateral movement and to swing vertically without moving it, and with a suitable spring permitting horizontal movement of the steering-bar but controlling its vertical movement, substantially as set forth.

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

ALEXANDER W. KENT.

Witnesses:

A. H. SPENCER,

M. C. POWER.