(No Model.) 3 Sheets—Sheet 1.

C. E. BROCKMAN.

SULKY.

No. 562,702. Patented June 23, 1896.

Fig. 1.

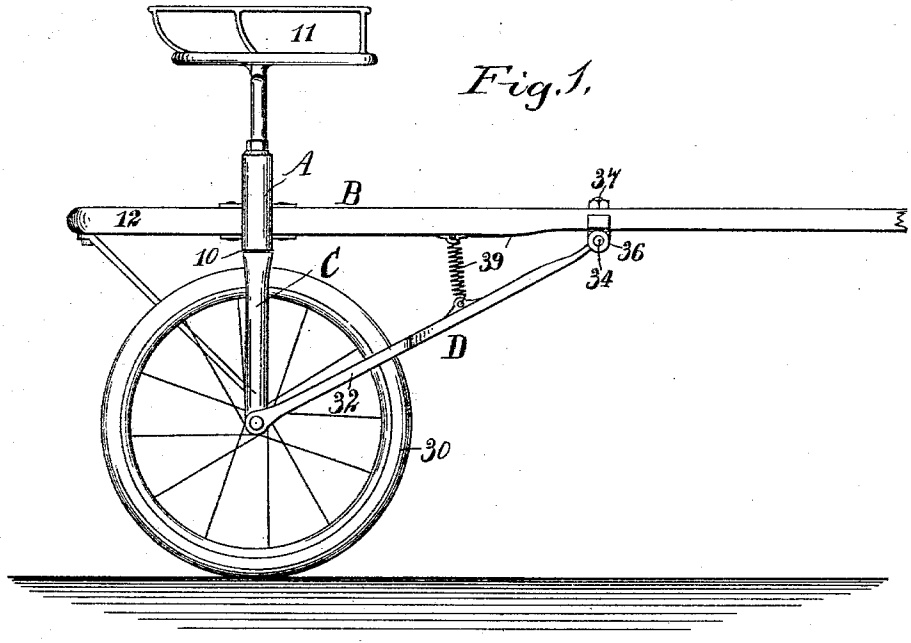
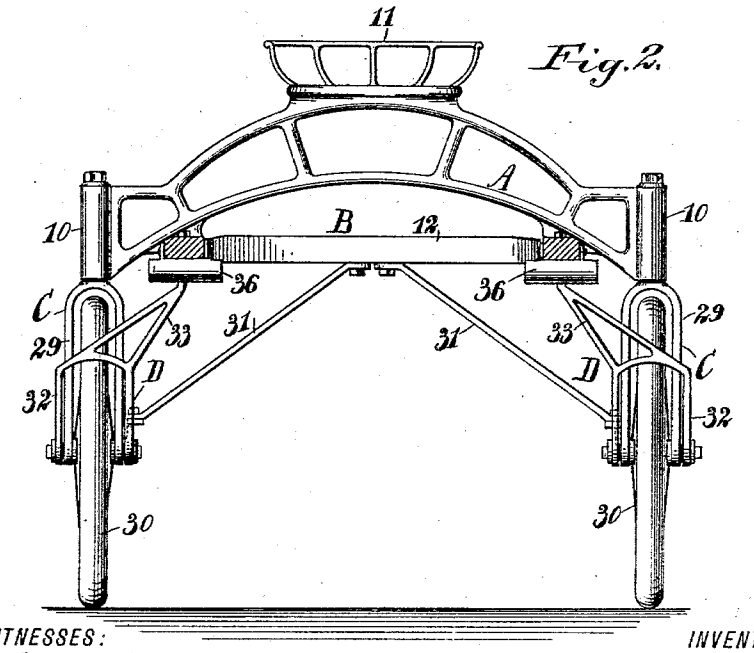


Fig. 2.



WITNESSES:

L. N. Legendre

J. Redfield

INVENTOR

C. E. Brockman

BY Munn & Co

ATTORNEYS.

(No Model.) 3 Sheets—Sheet 2.

C. E. BROCKMAN.

SULKY.

No. 562,702. Patented June 23, 1896.

Fig. 3

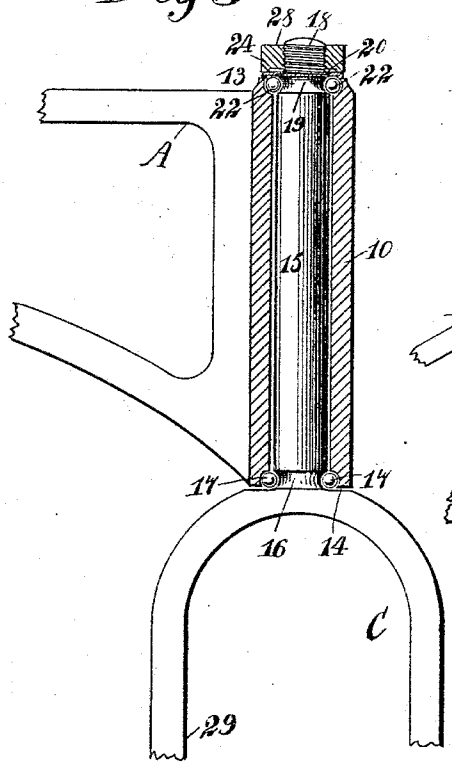


Fig. 4.

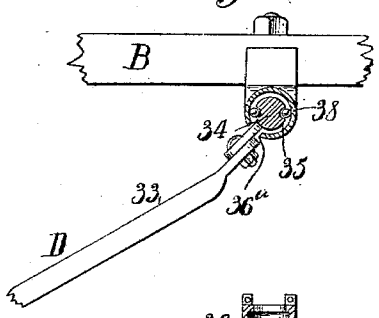


Fig. 5.

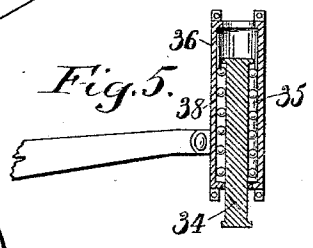


Fig. 6.

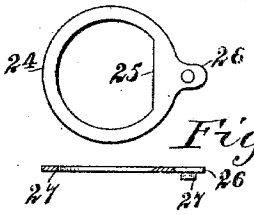


Fig. 7.

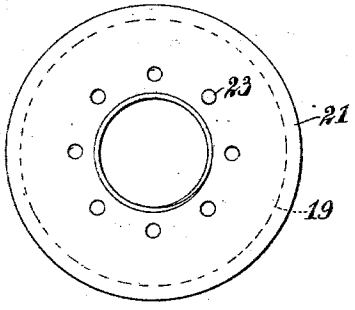
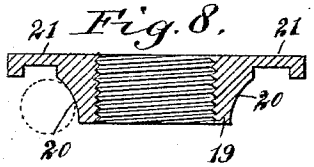


Fig. 8.



WITNESSES:

L. N. Legendre.

J. Fred. Acker

INVENTOR

C. E. Brockman.

BY

ATTORNEYS.

(No Model.) 3 Sheets—Sheet 3.

C. E. BROCKMAN.

SULKY.

No. 562,702. Patented June 23, 1896.

Fig. 9.

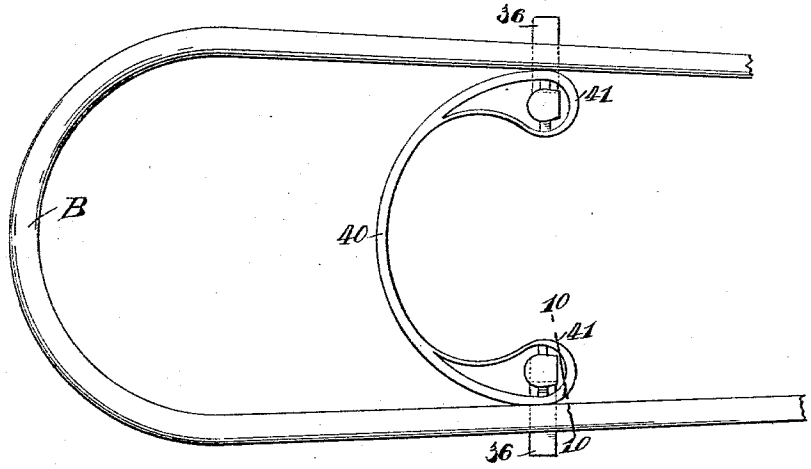


Fig. 10.

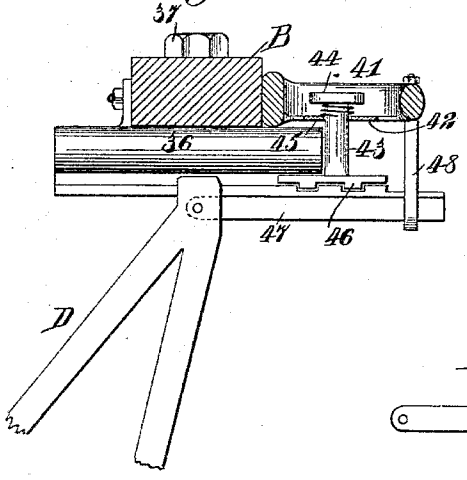


Fig. 11.

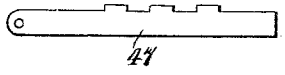
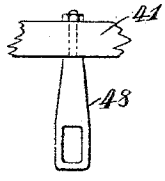


Fig. 12.



WITNESSES:

L. N. Legendre

J. Redfield

INVENTOR

C. E. Brockman

BY

ATTORNEYS.

UNITED STATES PATENT OFFICE.

CLARENCE EUGENE BROCKMAN, OF MOUNT STERLING, ILLINOIS.

SULKY.

SPECIFICATION forming part of Letters Patent No. 562,702, dated June 23, 1896.

Application filed March 31, 1896. Serial No. 585,613. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE EUGENE BROCKMAN, of Mount Sterling, in the county of Brown and State of Illinois, have invented a new and useful Improvement in Sulkies, of which the following is a full, clear, and exact description.

My invention relates to an improvement in sulkies, and especially to an improvement in racing-sulkies; and the object of the invention is to so connect the wheels with the frame of the sulky that the said wheels will offer but comparatively little resistance when turning a curve, since the wheels will be so hung that they will automatically conform to the curve to be taken.

A further object of the invention is to provide braces for the wheels, which in the event the guide-arms regulating the turning of the wheels should break, said braces will act to prevent the wheels taking a position dangerous to the safety of the rider.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improved sulky. Fig. 2 is a front elevation of the same, the shafts being in section. Fig. 3 is an enlarged detail view of one end of the truss-frame, the boxing or bearing being in section, showing the manner in which one of the wheel-hangers is journaled therein. Fig. 4 is a detail sectional view of the casing and of a guide-head having movement in the said casing and adapted for attachment to the guide-arm of a wheel. Fig. 5 is a detail horizontal section through the said casing and guide-head, illustrating the manner in which the guide-head may move in the casing and the position it will assume when the vehicle is in the act of turning a curve. Fig. 6 embraces a plan view and a vertical section through a washer adapted for use in connection with a wheel-hanger. Fig. 7 is a plan view of a lock-nut adapted for attachment to the wheel-hanger and serving as a portion of a bearing for the same. Fig. 8 is a vertical section through the said nut. Fig. 9 is a plan view of the shafts of the sulky, illustrating the application thereto of an improved form of foot-rest and likewise a device for locking the guide-arms of the sulky, so that it may be used in the ordinary manner. Fig. 10 is a section taken substantially on the line 10 10 of Fig. 9. Fig. 11 is a side elevation of a locking device adapted for attachment to a guide-arm; and Fig. 12 is a view of a portion of the brace or frame in which the foot-rest is located, illustrating the application of a stirrup to the same.

In carrying out the invention a truss-frame A is provided, which is preferably made of steel tubing, or wood and steel, as light as possible consistent with strength, and a vertical box 10 is formed at each end of the aforesaid truss-frame, while the rider's seat 11 is usually supported by the said frame. The shafts B are provided with the usual rear bow-section 12, which extends rearwardly beyond the truss-frame, the shafts being secured to the said frame in any suitable or approved manner.

At the lower end of each box 10 an annular groove 14 is made, and a like groove 13 is produced at the upper end of each of the said boxes, while in each box the spindle 15 of a bifurcated wheel-hanger 29 is mounted to turn. At the lower end of the hanger-spindle 15 an annular groove 16 is produced, coinciding with the lower groove in the box in which the spindle is journaled, and balls or rollers 17 are received in the two registering-grooves, forming bearings for the lower ends of the aforesaid spindles of the wheel-hangers.

The upper end of each spindle 15 is reduced and provided with an exterior thread 18, as shown in Fig. 3, and at the reduced portion of each spindle a lock-nut 19 is secured, the said nut having its outer face provided with an annular concavity 20 near its lower end, and the nut is further provided with an annular flange 21 at the top, and when the said nut is in position on the spindle of a wheel-hanger the concaved or grooved surface 20 of the nut will coincide with the upper groove in the box 10 in which the spindle is mounted, so that ball-bearings 22 may be held between the upper portion of a bearing and the grooved surface of the nut 19 on the spindle, as is also shown in Fig. 3.

One side face of the threaded portion of each spindle is preferably longitudinally flattened, and a ring-like washer 24 is placed over

the flattened portion of the said spindle, the said washer having a flattened inner face 25, as shown in Fig. 6, and the washer is likewise provided with an extension 26 from one edge, having a pin 27 arranged to enter one of a series of openings 23 in the nut 19, when the nut, which may be termed a "bearing-nut," is in position on a spindle, the washer serving to prevent the nut turning; and finally a jam-nut 28 is secured upon the upper end of a spindle against the upper end of a washer 24.

The wheels 30 are mounted to turn in the bifurcated or body portions 29 of the wheel-hangers C, and the said wheels are preferably provided with pneumatic or bicycle tires. The wheels are free to turn in such measure as to conform to a curve around which the sulky is to be drawn, but cannot go too far inward or outward and thereby endanger the rider should guide-arms D, which control the automatic lateral movement of the wheels, become broken; and such extreme movement on the part of the wheels is prevented by attaching braces 31 in a pivotal or swivel manner to the hangers 29 and to the bow portion of the shafts.

As heretofore stated, each wheel is provided with a guide-arm, and each guide-arm comprises a bifurcated body-section 32, which embraces the wheel and its hanger, and is pivotally attached to the latter, and a shank-section 33, preferably made integral with the body-section 32, and the shank-section of each guide-arm has a preferably T-shaped head-bar 34, secured to it preferably in a removable manner, as shown in Fig. 4. The horizontal member of the head-bar 34 is longer than its shank member, and is provided with grooves 35, made longitudinally therein, and the grooved horizontal member of the head-bar has sliding movement in a casing 36, which casing may be and usually is constructed in two sections, and contains ball-bearings 38, which are placed in the grooves of the head-bar, as shown in both Figs. 4 and 5. These ball-bearings are prevented from leaving the casing, although the head-bar may extend outward at either end of the casing, as occasion may demand, its end movement being limited by the length of the slot 36^a made in the casing and through which the shank of the head-bar extends.

A spring 39 is preferably attached to the shank portion of each guide-arm and to the under face of the shaft above the shank, as shown in Fig. 1, the said spring serving in a measure to regulate the movement of the head-bar in its casing, the casing of the head-bar being attached to the shaft by means of a bolt 37, or the equivalent of the same.

It is evident that as the sulky is traveling around a curve the guide-arms will move inward or outward, according to the necessity of the case, and will cause the wheels to conform as nearly as possible to the radius of the circle or curve described by the vehicle in turning, so that the wheels will in no manner act as a drag to retard the motion of the vehicle, but will always roll straight ahead or directly backward, as the case may demand; and, as heretofore stated, should the guide-arms break at the rear of the springs 39 the rear braces 31 will serve to prevent the wheels assuming a dangerous position.

In Figs. 9, 10, 11, and 12 I have illustrated an attachment to a sulky whereby the wheels may be prevented from conforming automatically to a curve when the sulky is turning a corner, and wherein the sulky may be used in the ordinary manner. To this end a brace 40, preferably of semicircular form and rearwardly curved, is attached to the shafts, the ends of the brace terminating in loops 41, and each loop is provided with a spider-like bottom 42, (shown in Fig. 10,) adapted to serve as a guide for posts 43, which have free movement in suitable openings in the aforesaid spider. The post 43 is provided at its upper end with a plate 44, preferably shaped to conform to the heel of a shoe, and the rider's heel is intended to rest upon this plate, while the instep of the foot will be supported by the forward end of the loop in which the plate is contained. At the lower end of the post 43 a toothed or locking bar 46 is secured, and the said toothed bar 46 is adapted to mesh with the toothed surface of an under locking-bar 47, which is pivotally attached to the adjacent guide-arm D; and the free end of the lower toothed or locking bar 47 is supported in a stirrup 48, secured to the brace. A spring 45 is coiled around each sliding post 43, bearing on the web or spider 42, through which the post passes, and the heel-plate of the posts. These springs normally hold the toothed face of the post out of engagement with the locking-bar 47, at that time permitting the wheels of the sulky to automatically conform to the curve to be taken; but when the wheels are to be prevented from thus acting and the sulky is to be used as an ordinary sulky, as, for example, on a straight track, by pressing down on the heel-plates 44 the toothed bars 46, connected with these plates, will be carried to locking engagement with the guide-arm-locking bars 47, effectually preventing the said guide-arms from moving in their casings 36.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a sulky, a frame, hangers pivotally mounted in the frame and arranged to journal the wheels of the sulky, and guide-arms attached to the hangers, having sliding movement at their forward ends on the shafts of the sulky, whereby the wheels will accommodate themselves to the curves around which the sulky may be drawn, as and for the purpose specified.

2. In a sulky, a frame, hangers adapted for journaling the wheels and having bearings in the said frame, the said hangers being free to turn, casings secured upon the shafts of the sulky, guide-arms comprising a bifurcated

body pivotally connected with the wheel-hangers, and shanks provided with head-bars having sliding movement in the aforesaid casings, as and for the purpose specified.

3. In a sulky or other vehicle, a frame to which the shafts are attached, hangers provided with spindles mounted to turn in bearings in the said frame, the body portions of the hangers being bifurcated for the reception of wheels, casings secured to the under face of the shafts, transversely of the same, guide-arms comprising bifurcated body portions pivotally connected with the wheel-hangers, and shanks projected forwardly from the bifurcated body, and head-bars pivotally connected with the shanks of the guide-arms, the said head-bars having lateral movement in the aforesaid casings, as and for the purpose specified.

4. In a sulky or like vehicle, a truss-frame having bearing at its ends, wheel-hangers comprising bifurcated body portions and shanks attached thereto, the said shanks being mounted to turn in the bearings of the truss-frame, shafts attached to the said frame, casings longitudinally located on the shafts in advance of the truss-frame, guide-arms connected with the body portion of the wheel-hangers, and head-bars attached to the forward ends of the guide-arms, the said head-bars having silding movement in the aforesaid casings, as and for the purpose specified.

5. In a sulky or like vehicle, a truss-frame having bearings at its ends, wheel-hangers comprising bifurcated body portions and shanks attached thereto, the said shanks being mounted to turn in the bearings of the truss-frame, shafts attached to the said frame, casings longitudinally located on the shafts in advance of the truss-frame, guide-arms connected with the body portion of the wheel-hangers, head-bars attached to the forward ends of the guide-arms, said head-bars having sliding movement in the aforesaid casings, and braces having a swivel connection with the rear portion of the body of the sulky, and likewise a swivel connection with the inner portion of the wheel-hangers, as and for the purpose set forth.

6. In a sulky or like vehicle, the combination, with a truss-frame and shafts attached to the same, of hangers for the wheels mounted to turn in the truss-frame, and guide-arms for the said hangers attached to them and arranged to have longitudinal movement at their free ends below the said shafts in casings attached to the said shafts, as and for the purpose specified.

7. In a sulky or like vehicle, the combination, with a frame and shafts, and casings attached to the shafts in advance of the frame, of wheel-hangers pivotally connected with the said frame, guide-arms attached to the said hangers, head-bars adjustably attached to the forward ends of the said guide-arms and mounted to have sliding movement in the casings of the shafts, and springs connecting the guide-arms with the shafts at the rear of the head-bars of the said guide-arms, as and for the purpose specified.

8. In the construction of sulkies and like vehicles, the combination, with a frame having boxes attached thereto, and wheel-hangers provided with shanks mounted to turn in the said boxes, the shanks of the hangers at their lower ends being grooved to receive ball-bearings, the upper ends of the shanks being reduced and threaded, of a bearing-nut located upon the upper reduced portion of the wheel-hanger shank, adapted for engagement with the upper portion of the box in which the said shank is mounted, the said bearing-nut having a concaved peripheral surface for the reception of roller-bearings, a washer located upon the upper end of the shank of the wheel-hanger, held against turning and connected with the bearing-nut, and a locking device also carried by the shank of the wheel-hanger, having bearing upon the said washer, substantially as and for the purpose specified.

9. In a sulky or like vehicle, the combination, with a frame, a shaft, boxes formed upon the frame, and wheel-hangers journaled in the said boxes, of a casing secured horizontally to the lower portion of the shafts in advance of the frame, open at its ends, guide-arms comprising bifurcated body portions pivotally attached to the hangers, and shanks extending forwardly beneath the shafts, and head-bars attached to the shank portions of the guide-arms, having roller-bearings in the said casings attached to the shafts, the movement of the head-bars being limited in the aforesaid casings, as set forth.

10. In a sulky, a frame, hangers pivotally mounted in the frame and arranged to journal the wheels of the sulky, guide-arms attached to the hangers, having sliding movement at their forward ends on the shafts of the sulky, whereby the wheels may accommodate themselves to the curve around which the sulky may be drawn, and locking devices arranged for locking engagement with the guide-arms to prevent the movement of the latter when occasion may require, as and for the purpose specified.

11. In a sulky, the combination, with the shafts, of spring-controlled heel-plates provided with locking-surfaces, hangers pivotally mounted in the frame of the sulky, arranged to journal the wheels of said sulky, guide-arms attached to the said hangers, the said guide-arms having sliding connection with the said shafts, and locking-surfaces projecting from the said guide-arms, adapted to be engaged by the locking-surfaces of the heel-plates, as and for the purpose specified.

CLARENCE EUGENE BROCKMAN.

Witnesses:
WASH. BROCKMAN,
J. D. STUBBLEFIELD.