No. 681,062. Patented Aug. 20, 1901.

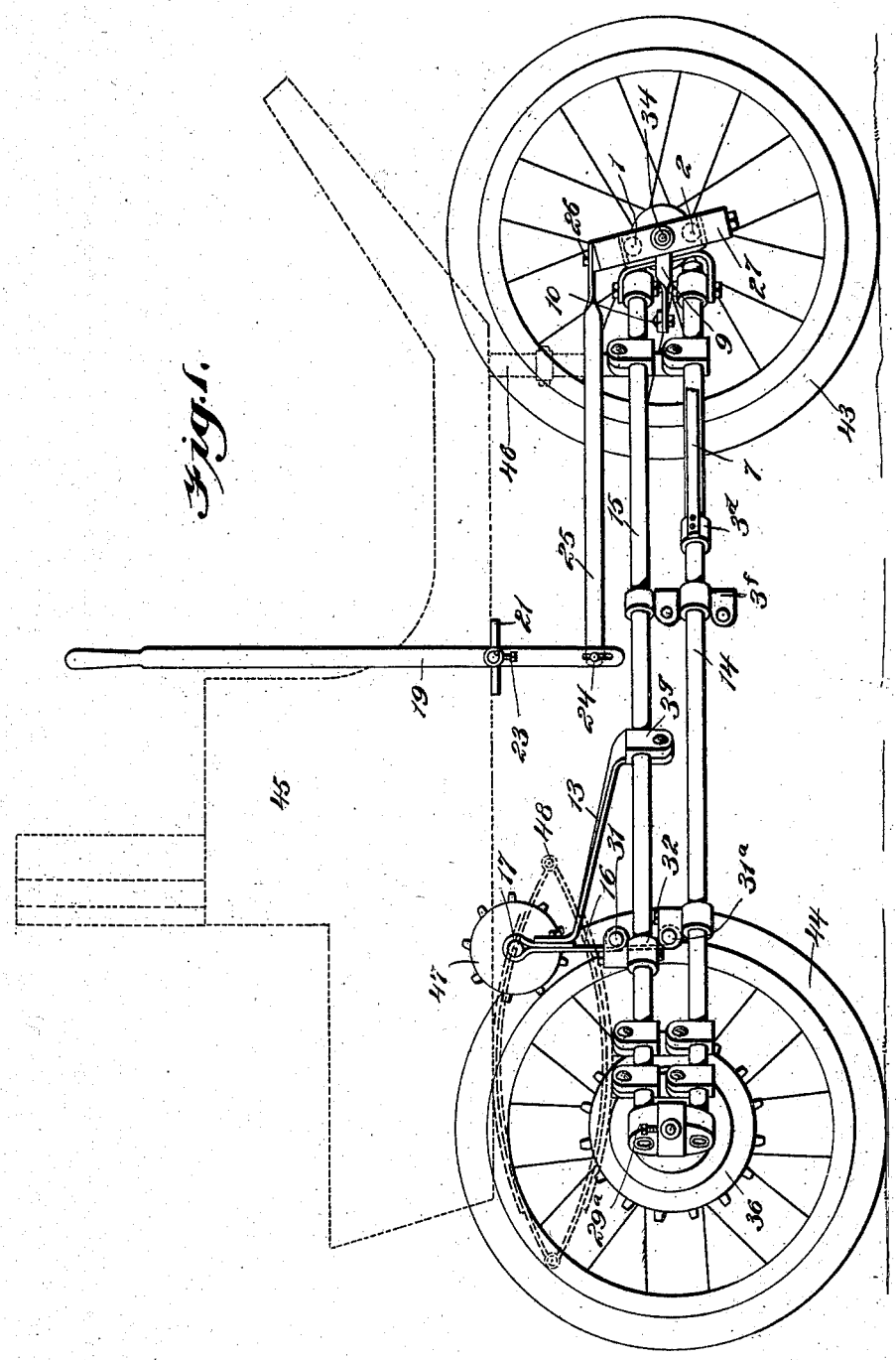
G. J. LOOMIS.

RUNNING GEAR FOR HORSELESS CARRIAGES.

(Application filed Oct. 24, 1900.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



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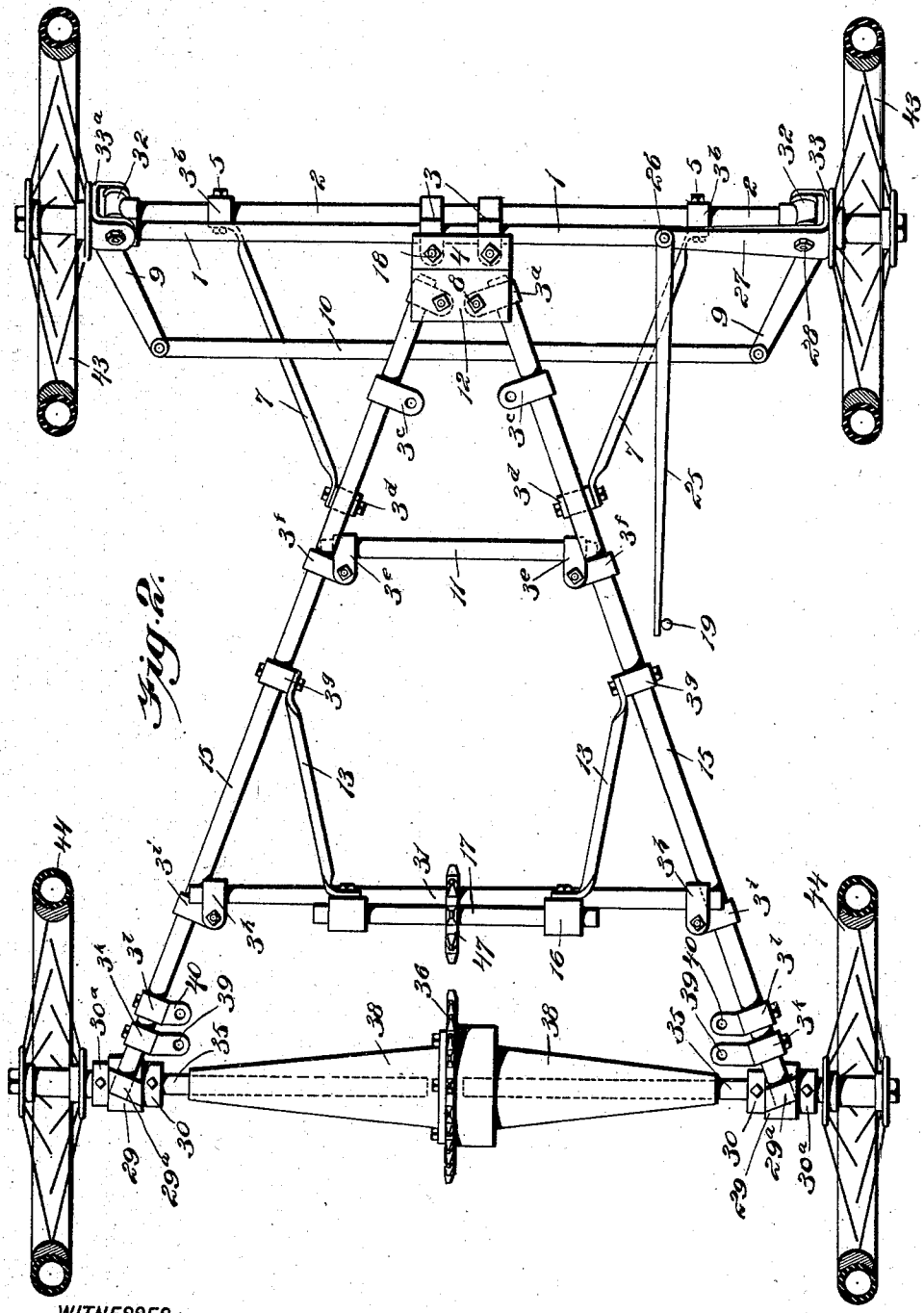


Fig. 2.

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Fig. 3.

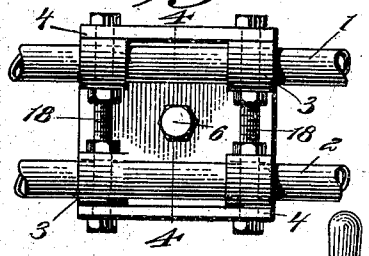


Fig. 4.

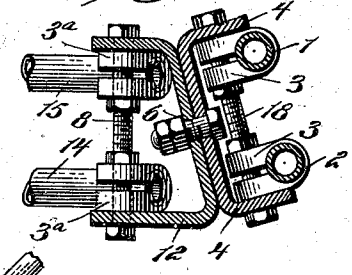
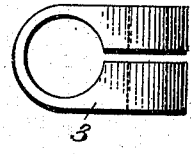


Fig. 8.



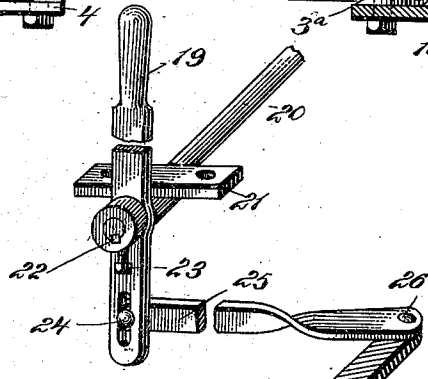


Fig. 9.

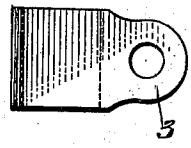


Fig. 5.

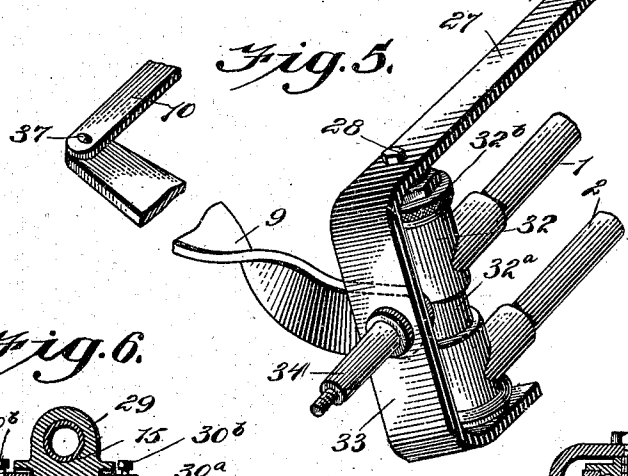


Fig. 6.

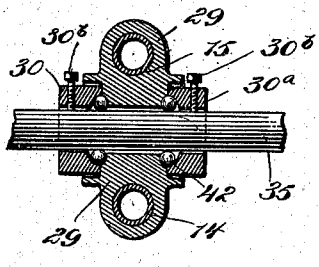
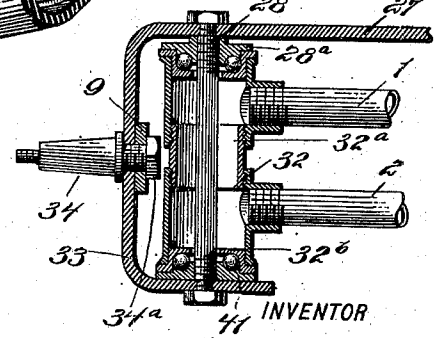


Fig. 7.



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UNITED STATES PATENT OFFICE.

GILBERT JAMES LOOMIS, OF WESTFIELD, MASSACHUSETTS.

RUNNING-GEAR FOR HORSELESS CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 681,062, dated August 20, 1901.

Application filed October 24, 1900. Serial No. 34,186. (No model.)

To all whom it may concern:

Be it known that I, GILBERT JAMES LOOMIS, a citizen of the United States, and a resident of Westfield, in the county of Hampden and State of Massachusetts, have invented a new and Improved Running-Gear for Horseless Carriages, of which the following is a full, clear, and exact description.

My invention relates to running-gears for horseless carriages, and has for its object to provide an improved construction which will be very light and of great strength and which, while rigid enough to bear all strains without undue vibration, will have sufficient give or transverse mobility to accommodate itself to uneven roads.

The invention also comprises a novel construction of the steering device.

I will now proceed to describe the invention in detail, with reference to the accompanying drawings, and will then point out the novel features in the appended claims.

Figure 1 is a side elevation of my improved running-gear and steering device with the carriage-body indicated by dotted lines and the wheels on one side omitted. Fig. 2 is a plan of the running-gear and steering device. Fig. 3 is a detail front elevation of the means for connecting the front part of the running-gear with the rear part thereof. Fig. 4 is a sectional elevation on the line 4 4 of Fig. 3. Fig. 5 is a perspective view of the steering device. Fig. 6 is a sectional elevation of the ball-bearings for the rear axle. Fig. 7 is a detail sectional elevation of the bearing for the steering-knuckle; and Figs. 8 and 9 are a side elevation and a plan, respectively, of a clip used at different places in my improved running-gear for connecting the parts with one another

The improved running-gear comprises two parts—viz., a front section and a rear section connected with each other by a longitudinal pivot, so that one section can swing transversely in relation to the other, thus securing an easy motion of the carriage on uneven roads.

The front section of the running-gear comprises two cross rods or tubes 1 and 2, located one above the other and secured at their ends, as by screw connections, Fig. 7, to the ends 32 of heads having a central member 32^a screwing into each of the ends and ball-bearing plates 32^b. Through each head 32 32^a passes a bolt 28, having secured thereto rigidly cones or plates 28^a, engaging balls 41, which also engage the plates 32^b. The bolts 28 are rigidly secured to steering-knuckles 33 and 33^a, respectively. These knuckles rigidly carry the axles 34 of the front wheels 43 and are also rigidly connected with arms 9, held in place by nuts 34^a and having their rear ends connected pivotally at 37 by a cross-bar 10. This manner of fastening the arms to the knuckles also allows the arms to be swung pivotally up or down on the axles 34 for adjustment. At their centers the upper rod 1 and lower rod 2 carry two clips 3 of the form clearly shown in Figs. 8 and 9, and these clips are securely connected by bolts 18 and nuts with a U-shaped buffer-plate 4, Figs. 2, 3, and 4, the central member of which is preferably inclined and connected pivotally by a king-bolt 6, extending longitudinally of the carriage, with an approximately U-shaped buffer-plate 12, located at the front end of the rear section of the running-gear. It will be noticed that the lower tube 2 is located slightly forward of the upper tube 1.

The steering-knuckle 33 has an inwardly-extending arm 27, connected pivotally at 26 with a longitudinal connecting-rod 25, pivotally connected at 24 with the steering-lever 19. The latter may be fulcrumed directly on the carriage-body 45, Fig. 1, or it may be secured upon a transverse shaft 20, as by means of a key 22 and set-screw 23, and this shaft, which is journaled in brackets 21, (one at each side of the body,) may carry a steering-lever similar to the upper portion of 19 at the other end, so that the carriage may be steered from either side, or I may provide only one steering-lever and make the portion thereof which is above the shaft 20 detachable from the shaft, (by loosening the set-screw 23 and then removing the key 22,) so that the upper or handle portion of the lever may be applied upon one side of the carriage or the other, as may be found most convenient.

The rear section of the running-gear comprises a rear axle consisting of two sections 35, fitted into conical sleeves 38, which carry the sprocket-wheel 36, by means of which the rear axle is driven. This axle carries the rear

wheels 44 and also spaced cone-sleeves 30 30ª, held against lengthwise movement by set-screws 30ᵇ and engaging balls 42 also in engagement with the axle 35, and with a box 29, located between the cone-sleeves 30 30ª and having a screw connection therewith, so that the box can be adjusted laterally. The boxes 29 have oblique sockets 29ª, receiving the rear ends of reach-rods 15 and 14, respectively, there being two superposed reach-rods on each side, and said rods converge toward the buffer-plate 12, previously mentioned, and are secured thereto by clips 3ª and bolts 8. Clips 3ᶜ, secured to the reach-rods 14 and 15 near their forward ends, are adapted for connection with the front support 46 of the carriage-body 45, Fig. 1. The lower tube 2 of the front section has clips 3ᵇ, held thereon by bolts 5, and these clips are connected by braces 7 with clips 3ᵈ upon the lower reach-rods 14, the connection of the braces with both sets of clips being a loose one, so that the braces, while keeping the front and rear axles in parallel planes, will not prevent the transverse movement of the front section relatively to the rear section upon the king-bolt or pivot 6. A little in the rear of the clips 3ᵈ connected clips 3ᵉ and 3ᶠ, standing at an angle to each other, are provided, the clips 3ᶠ fitting upon the reach-rods 14 and 15 and the clips 3ᵉ embracing cross-rods 11, located under the respective reach-rods. These cross-rods 11 are adapted to carry the engine or some other part of the machinery. Still farther toward the rear clips 3ᵍ are secured to the upper reach-rods 15, and from these clips braces 13 extend inwardly and upwardly to hangers or brackets 16, in which is journaled the counter-shaft 17, carrying the sprocket-wheel 47, from which the rear axle is driven. The brackets 16 extend downward to cross-tubes 31 31ª, located above the reach-rods 15 and 14, respectively, and secured thereto by connected clips 3ʰ 3ⁱ. Finally, adjacent to the boxes 29 clips 3ᵏ and 3ˡ are secured to the reach-tubes 14 and 15, and to these clips are attached plates 39 and 40, respectively, adapted for connection with the supporting-springs 48 of the carriage-body, Fig. 1.

It will be seen that the running-gear is simple and strong and affords ready means for the attachment of the carriage-body and of the motor. The steering device is sensitive and easily operated. The front section of the running-gear, owing to the connection of the buffer-plates 4 12 by the longitudinal pivot or king-bolt 6 and the loose braces 7, can swing transversely in relation to the rear section, so that the carriage will run with little jolting upon uneven roads. The braces 7 render the front section rigid against strains coming in a direction lengthwise of the carriage.

Various modifications may be made without departing from the nature of my invention as set forth in the appended claims.

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

1. A running-gear for horseless carriages, comprising a front section and a rear section carrying at their adjacent ends buffer-plates having inclined members in engagement with each other, and a longitudinal pivot passing through said members.

2. A running-gear for horseless carriages, provided at each side of the forward part of its frame with upright heads, steering-knuckles having upper and lower members above and below said heads respectively, one member being extended to form an arm, axles or bolts connecting the upper and lower members of each knuckle through the corresponding head and journaled in such head, front-wheel axles carried by the central upright members of said knuckles to swing therewith, and means connected with the arm of the knuckle for turning the knuckles on their pivots.

3. In a running-gear for vehicles, a front section having at each side a head, knuckles having parallel members between which the heads of the front section are pivoted, one of the parallel members being extended to form an arm, axles secured to the vertical members of the knuckles, an arm secured to the vertical member of each knuckle, a cross-bar connecting the arms, and means connected with the arms of the knuckle for swinging the same, as set forth.

4. A running-gear for vehicles, provided at its front part with an upper and a lower cross-rod, heads connecting the ends of the cross-rods, steering-knuckles, each having parallel members of unequal length between which the connecting-heads of the said rods are arranged and to which heads the knuckles are pivoted, an axle carried by the vertical member of each knuckle, an arm secured to the vertical member of each knuckle, a cross-bar connecting the arms, and means for turning the knuckles on their pivots.

5. A running-gear for horseless carriages, provided at its front part with an upper cross-rod and a lower cross-rod located in advance thereof, connections or heads for the ends of said rods, wheel-carrying steering members pivoted to said heads, and provided with wheel-axles at a height or level between those of the said two cross-rods and means for turning the steering members.

6. A running-gear for horseless carriages, comprising a wheeled front section and a wheeled rear section having an axle, boxes surrounding said axle, and parallel upper and lower reach members connected with the said boxes above and below the axle, those members which are connected with different boxes, converging toward the front section of the running-gear.

7. A running-gear for horseless carriages, comprising a wheeled front section and a wheeled rear section having reach members converging toward the front section, braces inclined upward and rearward from said

reach members, brackets or hangers secured to said braces, and a counter-shaft journaled in said brackets.

8. A running-gear for horseless carriages, comprising a wheeled front section and a wheeled rear section having reach members converging toward the front section, braces inclined upward and rearward from said reach members, brackets or hangers secured to said braces, a cross-rod connecting the reach members and having said brackets secured to it, and a counter-shaft journaled in said brackets.

9. A running-gear for horseless carriages, comprising a wheeled front section and a wheeled rear section having an axle, boxes surrounding said axle adjacent to each wheel and provided with sockets above and below the axle, parallel upper and lower reach members connected with said sockets, those members which are connected with different boxes converging toward the front section of the running-gear, cross-rods connecting said converging reach members, braces extending upward and rearward from the upper reach members, brackets or hangers secured to said braces and to said cross-rods, and a counter-shaft journaled in said brackets.

10. A running-gear for horseless carriages, comprising a wheeled rear section having superposed reach members converging toward their front ends, clips embracing said reach members, a buffer-plate adjacent to the clips, connecting-bolts passed through the said plate and through the clips, and a wheeled front section connected with said buffer-plate.

11. A running-gear for horseless carriages, comprising a wheeled rear section having reach members converging toward their front ends, a cross-rod extending from one reach member to the other, and located in a plane different from that of the reach members, connected clips disposed at an angle to each other and embracing respectively the cross-rod and the adjacent reach member, and a wheeled front section connected with the front ends of the reach members.

12. A running-gear for horseless carriages, provided with alining transverse sleeves at its rear portion, wheel-carrying axles fitted into said sleeves, boxes loosely mounted on the axles between the wheels and said sleeves, bearing-balls interposed between the axles and said boxes, and reach members extending from said boxes to the front part of the running-gear.

13. A running-gear for horseless carriages, provided with reach members extending forwardly from the rear axle, and clips embracing the reach members adjacent to the axle and extending at an angle to the reach members, said clips being adapted for connection with the supporting-springs of the carriage-body.

14. A running-gear for horseless carriages, provided with a frame having adjacent members, mating clips embracing said members, and a connecting-bolt extending from the clip embracing one member to the mating clip embracing the other member.

15. A running-gear for horseless carriages, provided with a transverse sleeve at its rear portion, a wheel-carrying axle or shaft surrounded by said sleeve, bearing-boxes loosely mounted on the shaft and adjustable lengthwise thereof toward and from the said sleeve, a plurality of sets of bearing-balls interposed between each box and the shaft, and reach members extending from said boxes to the front part of the running-gear.

16. A running-gear for horseless carriages, comprising a front section and a rear section having at their adjacent ends buffers each of which has approximately parallel end members secured to the respective section, and a central member substantially parallel to that of the other section, and a longitudinal pivot connecting said central member.

17. A running-gear for horseless carriages, comprising a front section and a rear section having at their adjacent ends buffers each of which has approximately parallel end members secured to the respective section, and an inclined central member substantially parallel to that of the other section, and an inclined longitudinal pivot connecting said central member.

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

GILBERT JAMES LOOMIS.

Witnesses:
DANIEL W. BATES,
FREDERIC A. BALLOU.