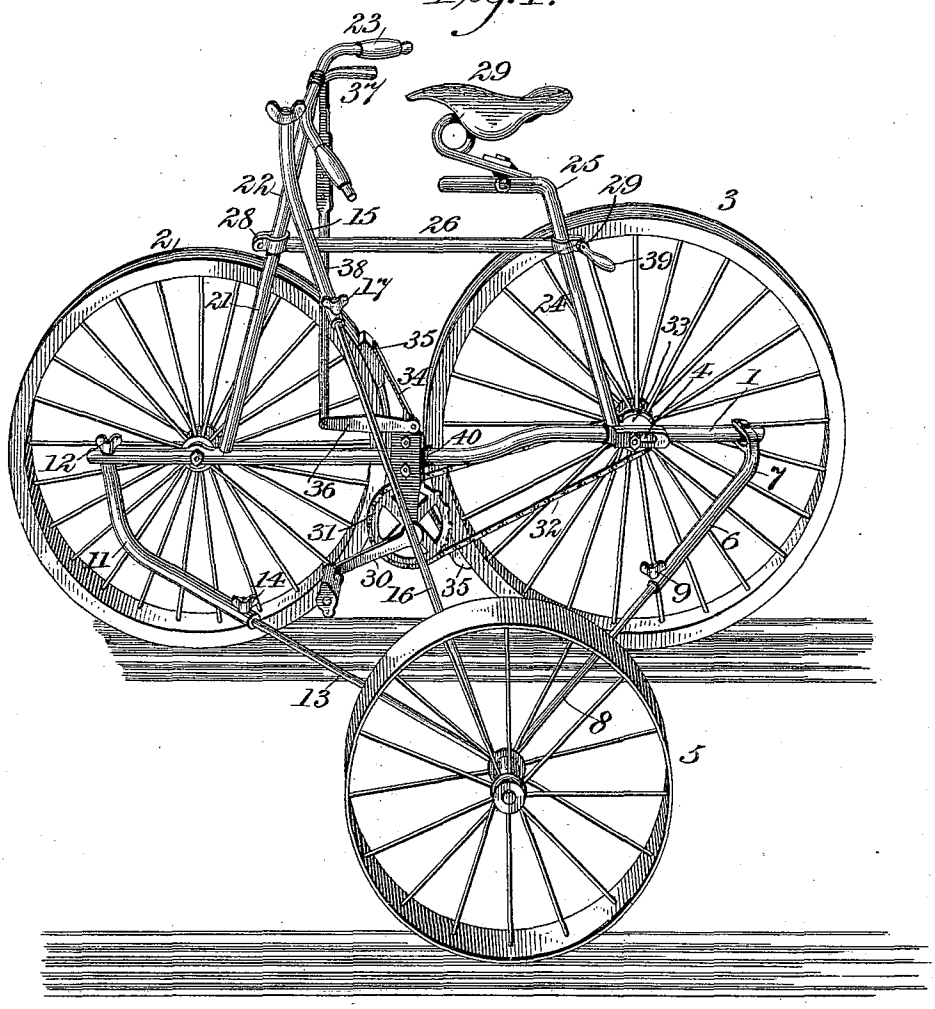
(No Model.) 2 Sheets—Sheet 1.

R. N. MAYFIELD.

RAILWAY TRICYCLE.

No. 419,591. Patented Jan. 14, 1890.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

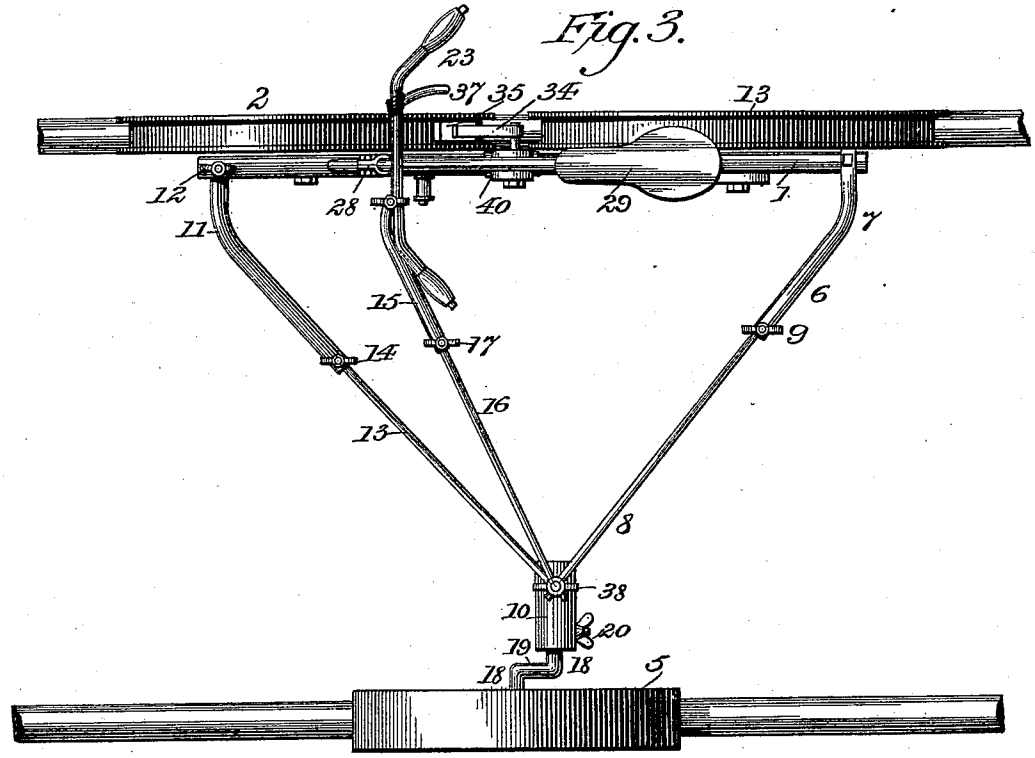
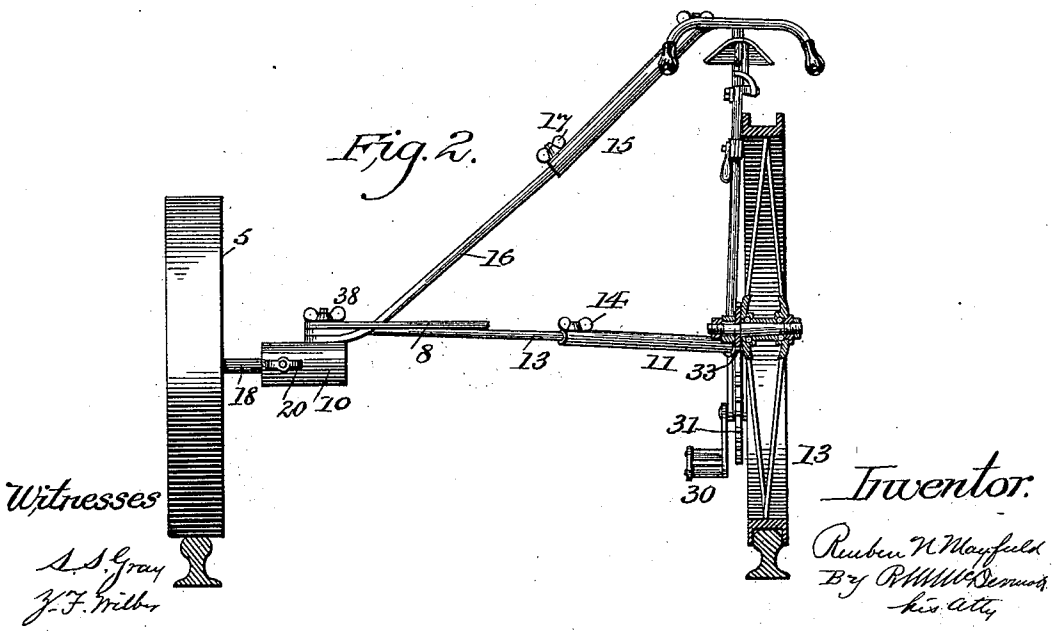


Fig. 2.



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UNITED STATES PATENT OFFICE.

REUBEN NEWTON MAYFIELD, OF BOULDER, COLORADO.

RAILWAY-TRICYCLE.

SPECIFICATION forming part of Letters Patent No. 419,591, dated January 14, 1890.

Application filed November 5, 1888. Renewed October 4, 1889. Serial No. 329,115. (No model.)

To all whom it may concern:

Be it known that I, REUBEN NEWTON MAYFIELD, a citizen of the United States, residing at Boulder, in the county of Boulder and State of Colorado, have invented a new and Improved Railway-Tricycle, of which the following is a specification.

My invention relates to an improved form and construction of railroad-tricycles—that is, a tricycle especially adapted and intended to be propelled upon and along the tracks of a railway by the rider thereof.

Its objects are to furnish a tricycle for such use of simple, light, and compact construction, yet durable and safe in use and requiring a minimum of power, comparatively, for effective and speedy operation, easily used and operated even by those unskilled in and unaccustomed to the use of ordinary bicycles and tricycles, one adapted to be readily changed and adjusted for varying gages of railways, which may also be changed and adjusted to permit its use by riders of different heights or length of limb, and which may be readily folded into a comparatively small compass for transportation on trains or otherwise, and as readily extended and locked in condition for use; to which ends it consists in the features and combinations more particularly hereinafter described and claimed.

In the drawings is illustrated an embodiment of my invention, in which drawings—

Figure 1 is a perspective view thereof; Fig. 2, a section on line *x x*, Fig. 1; Fig. 3, a plan view.

In these figures the reference-numeral 1 indicates the main longitudinal member of the framing carrying the bearings of the main wheels 2 and 3, 2 being the front wheel somewhat smaller than the rear and main driving-wheel 3. The end of the axle of this driving-wheel 3 is supported in a slot 4 in the main brace 1, the axle being clamped at the proper point in the slot 4 to sufficiently tighten the sprocket-chain 32 by a clamping-nut on the inner end of the axle. These wheels 2 and 3 are secured upon the exterior or outer line of the main brace-rod relatively to the frame of the machine, so that the one main longitudinal rod constitutes the entire framing upon that side of the tricycle, economy of material and labor in construction and increased lightness being thus attained, and for lightness with sufficient strength and rigidity the rod 1 may be tubular. These wheels thus connected by the main brace 1 run upon the same rail and are each double flanged, as shown—that is, there are flanges on either side of each wheel, taking on either side of the rail-head, so as to the more securely guide and support the machine. Upon the other rail travels the third wheel 5, considerably smaller than either of the main wheels 2 3, and whose periphery is plain and unflanged. It is connected to the framework of the main wheels on the other side by a system of diagonal brace-rods, which for use with one uniform gage of road might be plain non-extensible rods, but which, to give adaptability of adjustment for various gages, are made extensible, as follows: Each rod is composed of two parts—a tubular portion and a sliding portion telescoping therein—each being provided with a set-screw by which the two parts may be locked at any desired degree of extension, and the outer ends of all the solid or rod portions are secured to a collar 10, in which is seated the axle of the third wheel 5. Of these diagonal brace-rods, the rear one is composed of the tubular portion 6, the solid rod 8, and the set-screw 9. This tubular portion 6 is forked at its inner end, as at 7, the limbs of the fork being pivoted upon the end of the main brace 1, so that the diagonal brace composed of parts 6 and 8 may be folded along the main brace 1 when the end of part 8 is disengaged from the collar 10. The outer or free end of such part 8 is arranged to take upon a pin projecting from the collar 10, upon which pin is a thumb, wing, or set nut 38, clamping 8 thereupon.

At the front end of the main brace 1 is pivoted, by a bolt passing therethrough, the tubular portion 11 of the front brace-rod, a nut 12 taking upon the head of the pivotal bolt to keep the part 11 and main brace 1 in position. Within the tubular portion 11 slides the rod 13, whose free end likewise takes upon the pin or bolt on collar 10, before referred to, a set-screw 14 keeping tubular part 11 and sliding part 13 in proper position.

It should be stated that, while a main brace-

rod 1 only long enough to carry the bearings or axles of the main wheels 2 and 3 might be used, it is preferable to extend them beyond the bearings of the wheels, in order to give increased base area to the machine, as represented by the triangle bounded by the main brace-rod 1 and the diagonal brace-rods 6 8 and 11 13, such increased base area giving greater steadiness to the cycle, especially when used at high speed.

Rigidly secured to and projecting upwardly from the main brace 1 is a handle-standard composed of a tubular portion 21 and a rod portion 22, sliding therein, a handle 23 being secured upon the top of the latter. Such handle-standard and handle are, as stated, rigid from the main brace 1, and are intended merely for the steadying of the rider, there being no necessity of steering, inasmuch as the cycle naturally follows the track and its curvings.

From near the rear wheel the tube 24 projects upwardly, the bent solid rod 25 sliding therein, the two forming the seat or saddle standard, a saddle 29, of usual construction, being secured in the ordinary way upon the horizontal portion of the rod 25.

From the handle-standard to the saddle-standard extends a brace 26, whose ends are formed into clamps grasping the tubular portions of such standards at their upper ends, such ends being split for a little distance, in order that they may be crowded upon their interiorly-sliding solid rods in a manner well known in the arts, 28 being the clamp grasping the end of the tubular part 21 of the handle-standard and 29 the clamp grasping the end of the tubular part of the saddle-standard, 39 being the handle of the nut for the latter clamp, that for the nut of clamp 28 not being shown. Then as one or the other of these clamps is loosened the saddle or the handle may be raised or lowered and then secured in position by the retightening of the loosened clamp.

While, as thus far described, ample provision is made for stability and rigidity of the running-gear and its frame, it is preferable, in order to give greater stability and steadiness to the rider, to add a third diagonal brace composed of a tubular portion 15, pivoted at the top of the handle-standard, and a solid rod 16, sliding therein and connected at its outer end to the collar 10, as in the case of the other diagonal brace-rods, a set-screw 17 being used, as in the other cases, to lock the tubular and the solid parts together at any desired point. As before stated, these diagonal braces or cross-braces connect the third wheel 5 to the main wheels 2 and 3, through the medium of collar or tube 10, in which is secured the axle-rod of the wheel 5. Such axle 18, upon which wheel 5 rotates, is bent, as shown at 19, so that its two ends are in different though parallel planes. This arrangement permits, by turning the shaft 18 in its seat within the collar 10, the angle or position of the wheel 5 relatively to the wheels 2 and 3 to be altered or regulated, a set-screw 20 being seated in the collar 10 to clamp the axle 18 in the desired position.

To communicate motion to the main driving-wheels a sprocket-wheel 31 is journaled in bearings supported in an inverted-U-shaped clamp 40 upon and depending from the main brace or framing rod 1 at about its center, the usual crank-arms 30, with treadles or pedals, being secured upon the ends of the axle of the sprocket-wheel 31, from which wheel an endless belt or sprocket-chain 32 passes over a sprocket-wheel 33, secured upon the hub of wheel 3, the relation of the sprocket-wheels 31 and 33 to each other preferably being such that increased rate of rotation is given the latter. At about the same point a brake-lever 34 is centrally pivoted to the main brace or framing rod 1, which carries at both free ends brake blocks or shoes 35.

From the brake-lever 34 a system of levers 36 extends to the handle 23, where they are connected to a brake-handle 37, pivoted to the handle 23 or handle-standards so that the pulling up of the brake-handle 23 shall cause the impingement of the shoes 35 upon the peripheries of both wheels 2 and 3.

To lessen friction it is preferable that all the bearings used be ball-bearings of any of the usual and reliable constructions, and so far I have used in practice with good results what is known as the "Smith patent bearing" found on many bicycles and tricycles. This construction, by the use of the telescopic diagonal or brace rods, permits adjustment to any width of gage, and it is evident that this part of my invention might be carried into effect by other and known ways of increasing or diminishing their length.

By removing the ends of 13 and 16 from the collar 10 the rear rod 6 8, with wheel 5, may be folded over against the other side of the cycle, the other brace-rod, likewise being folded flat thereagainst, so that the tricycle occupies but little more space for transportation than an ordinary bicycle, thus enabling it to be carried in comparatively small compass on trains, where it may be made great use of and be of large benefit in affording facility for the speedy dispatch of messengers for relief in case of accident, &c.

For use by section-men, two or more may be hitched together by a board or platform extending from the lower diagonal or cross rods of one to another cycle, so that several extra passengers may be carried, while for linemen, &c., a box for carrying tools and material may be secured upon the lower diagonal brace or cross rods.

Having thus described my invention, what I claim is—

1. In a tricycle, the combination of two main wheels upon one side, a single longitudinal main framing-rod connecting and supporting them and supporting the seat, a pedal mechanism secured thereto and depending therefrom, a third wheel on the other side, and

extensible cross brace-rods connecting the third wheel to the main framing-rod, and means for communicating motion to the driving-wheel, substantially as set forth.

2. In a tricycle, the combination of two main wheels upon one side, a single main longitudinal framing-rod connecting and supporting them upon the outside of the tricycle-frame and supporting the seat and brake mechanism, a pedal mechanism depending from and secured to such main rod, a third wheel on the other side, extensible cross-rods connecting the third wheel to such main rod and each pivotally connected at one end and detachably connected at the other end, and means for communicating motion to the driving-wheel, substantially as set forth.

3. In a tricycle, the combination of two wheels on one side supported and connected by a longitudinal main brace-rod and each having flanges on either side of its tread, a third wheel on the other side having a plain or unflanged tread, cross brace-rods uniting the two sides, and means for communicating motion to the driving-wheel, substantially as set forth.

4. In a tricycle, the combination of two main wheels on one side supported and connected by a single longitudinal main brace-rod extended in each direction beyond the bearings of the wheels, a third wheel on the other side, cross-rods uniting the two sides and connected at one end to the extended ends of the longitudinal main brace-rod, and means for communicating motion to the main driving-wheel, substantially as set forth.

5. In a tricycle, the combination of two main wheels on one side supported and connected by a longitudinal main brace-rod, a third wheel on the other side having an axle 18, bent, as at 19, cross brace-rods connecting the two sides, and means for communicating motion to the main driving-wheel, substantially as set forth.

6. In a tricycle, the combination of two wheels on one side, a longitudinal brace-rod connecting and supporting them, a third wheel on the other side, a sleeve 10, receiving and supporting the spindle or axle of the third wheel, cross brace-rods uniting the two sides and detachably connected to the sleeve, and means for communicating motion to the driving-wheel, substantially as set forth.

REUBEN NEWTON MAYFIELD.

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