No. 629,011. Patented July 18, 1899.

J. J. A. MILLER.

AUTOMATICALLY ADJUSTABLE ROLLER CAR WHEEL.

(Application filed Dec. 12, 1898.)

(No Model.)

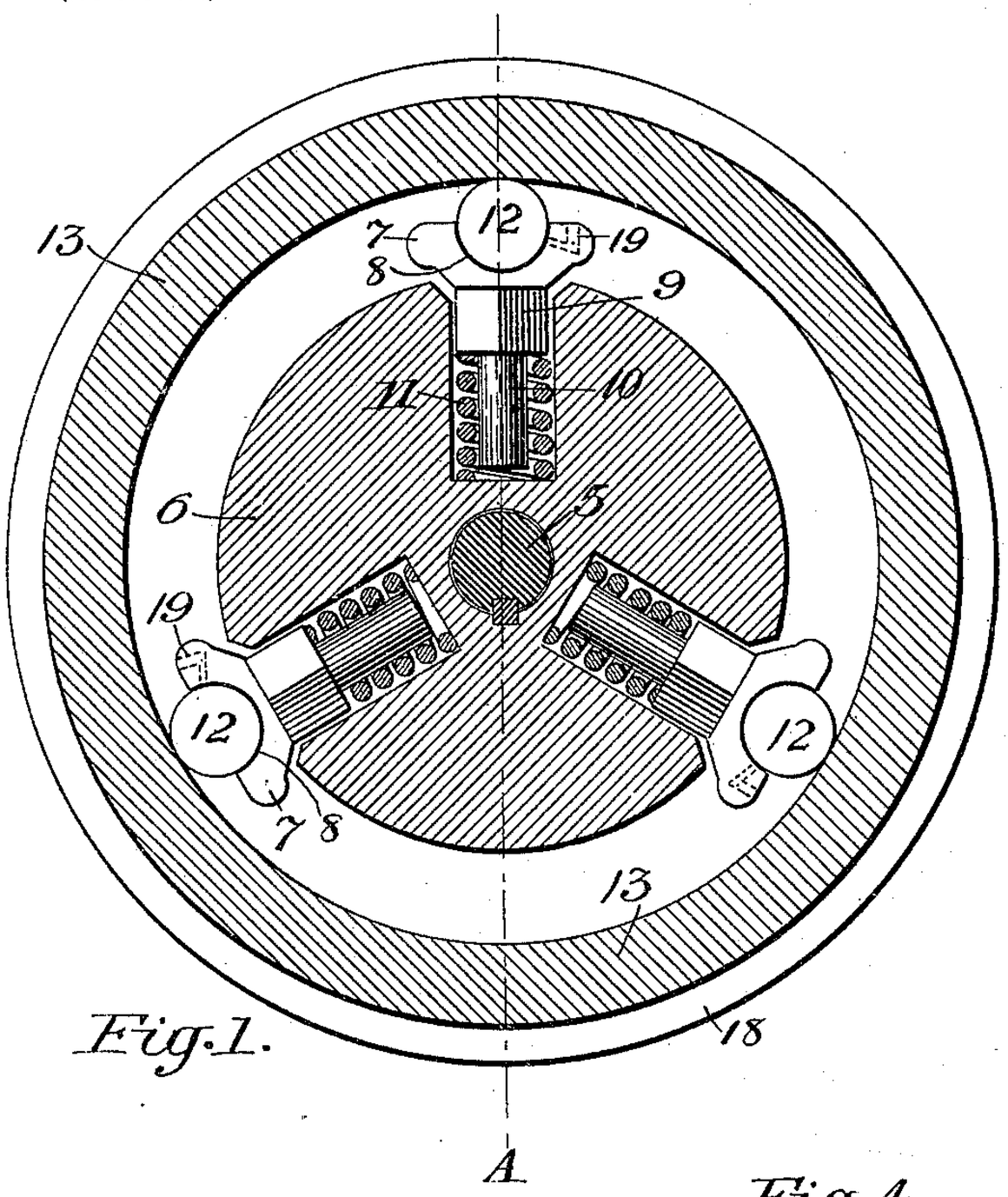


Fig. 1.

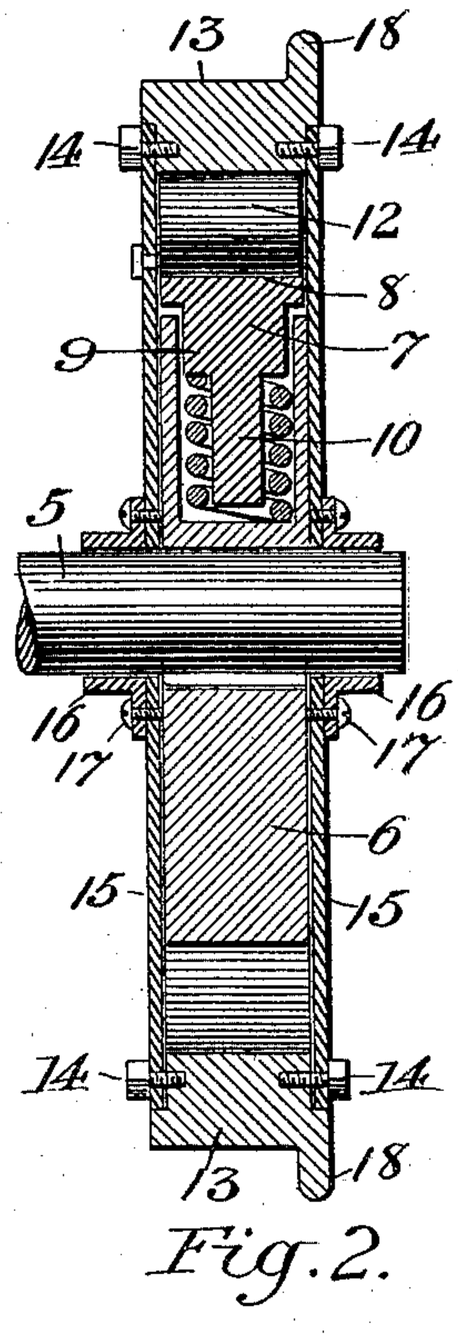


Fig. 2.

Fig. 3.

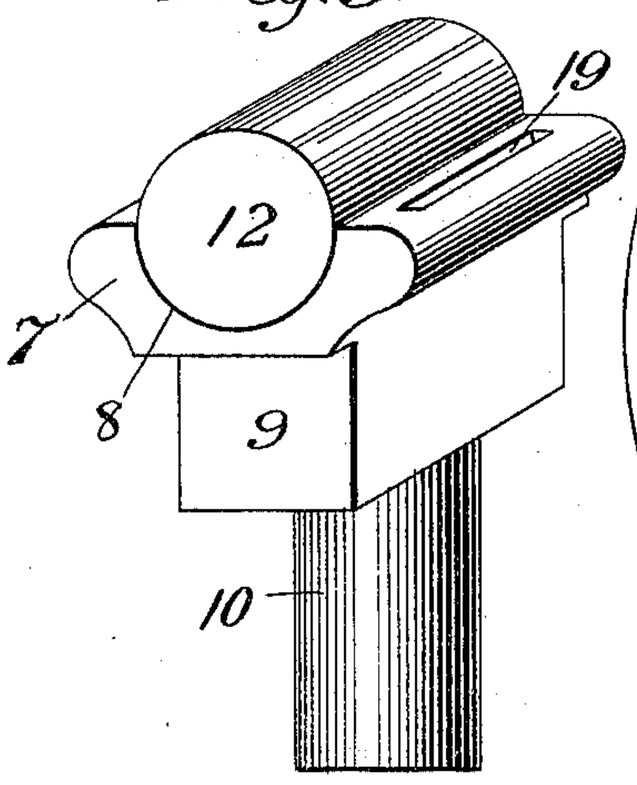
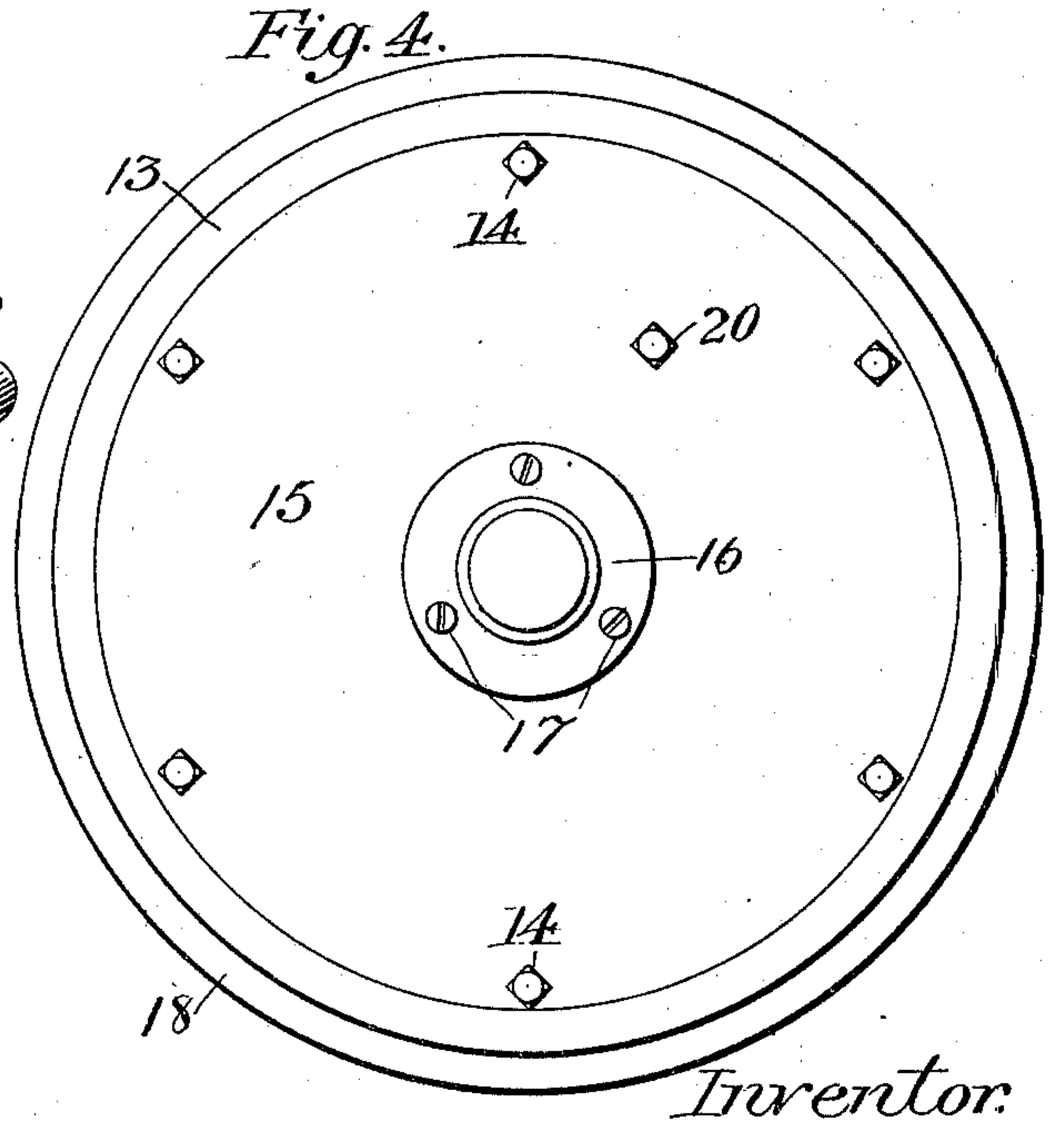


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN J. A. MILLER, OF DENVER, COLORADO.

AUTOMATICALLY-ADJUSTABLE-ROLLER CAR-WHEEL.

SPECIFICATION forming part of Letters Patent No. 629,011, dated July 18, 1899.

Application filed December 12, 1898. Serial No. 699,135. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. A. MILLER, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Automatically-Adjustable-Roller Car-Wheels; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in roller-bearing car-wheels; and the objects of my invention are, first, to provide an automatically-adjustable roller-bearing for car-wheels that will automatically adjust itself and keep in proper running order as both the rollers and the tread-ring and the bearing parts wear away, and, second, to provide a simple and practical roller-bearing car-wheel. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 designates a sectional elevation of my improved car-wheel. Fig. 2 is a cross-section of Fig. 1 on line A. Fig. 3 is a perspective view of the radial roller-block with the rolls in place, and Fig. 4 is a side elevation of the complete wheel.

Similar figures of reference refer to similar parts throughout the several views.

In Fig. 1 the numeral 5 designates a car-axle. This axle may be loose in the disk 6; but it is preferably keyed to it, as shown. The disk 6 is provided at a plurality of points in its periphery with holes of polygonal shape, preferaby square, which extend radially toward the center. The polygonal shape given the holes may extend to their bottoms or may be round from the bottom up for a portion of their length. The number of holes should not be less than three and may consist of as many as can be arranged in the disk without weakening it. Six, eight, ten, or more could be used, depending on the size of the wheel. In these radial holes I fit loosely a roller-supporting block, which consists of a head portion 7, which has a semicircular bearing 8, a neck portion 9, that depends from the head portion, and a stem portion 10, that depends from the neck portion. The neck portion is given the same polygonal form as the top of the radial holes and fits loosely but snugly in them for a short portion of their length and is arranged and adapted to hold the head portion, and especially the roller-bearing, transversely across the periphery and in axial alinement with the axis of the disk. The stem portion is smaller than the neck portion and is surrounded by an expansive coiled spring 11, which rests against the bottom of the hole at one end and bears against the neck of the block with expanding pressure, which tends to throw the block out of the disk. In the bearing of the block I place a roller 12, which bears against the internal periphery of the tread-ring 13 of the wheel, which consists of a ring entirely independent of the disk of the wheel. The rollers and their supporting-blocks are made very nearly the entire width of the tread-ring. I preferably counterbore a circular recess in each side of it, in which is fitted and bolted by bolts 14 a plate 15. These plates fit loosely but snugly around the axle close up against the sides of the disk, which when the side plates are set into the sides of the tread-ring is a little narrower than it is. These side plates may be bolted to the outside of the sides of the tread portion and save forming the recesses in it, in which case the disk would be of about the same width as the tread. Around the axle and to the sides I secure dust-guards 16 by screws 17, which may be of any suitable material and construction. The tread-ring is provided with the usual side flange 18.

In the drawings I have illustrated but three rollers and supporting-blocks; but it can be readily seen that if the periphery of the disk was provided with six or more the tread portion would be very evenly supported by rollers throughout its internal circumference.

In Fig. 3 I illustrate a roller-supporting block in perspective, in which the head portion is much longer than the stem and neck portions, this particular form of supporting-block being used with very wide wheels.

In assembling the elements of the wheel together the springs are first placed in the holes in the periphery of the disk and then the stems

and necks of the radial blocks are placed in the holes, the stems passing down through the springs. The tread-ring is then placed over the radial blocks, and they are pushed down into their holes until the rollers can be slipped into place between them and the interior periphery of the tread-ring. The tread-ring is then supported concentrically around the disk by the rollers, which are held tightly against its internal periphery by the radial expansive thrust of their radial supporting-blocks, which is due to the expansive force of the springs, and the tread-ring as it rolls along a rail rolls on the rollers which rotate in their respective radial blocks, while the disk is stationary on the axle relative to the tread-ring, although, as above stated, the disk-ring may be loose on the shaft, if preferred. The rollers are thus held automatically against the tread-ring by the radial blocks and their springs, and their bearing between the radial blocks and tread-ring is maintained until they wear away to about one-half of their normal diameter. The tread-ring and the blocks also wear; but there can never be any loose play on account of wear between the tread-ring and the disk, and as the rollers are independent of each other one may wear faster than the others and still bear against the tread-ring until its radial block bears against the tread-ring. The capacity and power of the springs for the different-sized wheels should be varied to suit the requirements of the duty the wheel is to put it, street-car wheels requiring lighter springs than railway-cars and freight-cars stronger springs than railway-cars.

19 designates an oil recess or passage which may be formed in one or both sides of the radial blocks and leading to the bearing. These oil-recesses may be filled with a suitable lubricating compound or may be filled with an oil-absorbent and filled with oil. In place of this recess any suitable oil-cup may be attached to the radial blocks. To facilitate the oiling of the block without removing the side plates, I provide an oil-hole through each plate in line with the tops of the blocks large enough to insert the end of an oil-can and resupply them with oil. A plug 20 is screwed in the oil-hole, as once provided with oil they would not need reoiling for several weeks or months.

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

1. In an outwardly-adjustable-roller car-wheel, the combination with the axle, of a disk mounted thereon provided with a plurality of spring-actuated radially-disposed and roller-bearing blocks, a tread-ring surrounding said disk and rollers journaled in said blocks and resiliently held against said blocks and the inner periphery of said tread-ring substantially as described.

2. In an automatically-adjustable-roller car-wheel, the combination with the axle, of a disk mounted thereon, a plurality of roller-supports positioned in the periphery of said disk, rollers mounted in said supports, a tread-ring positioned around said disk and springs arranged to automatically and continuously hold said roller and their supports against said ring whereby said tread-ring may roll around said disk on said rollers and an automatically and continuous adjustment is made for the wear of the rollers and ring, substantially as described.

3. The combination with the axle, of the disk keyed thereto, a plurality of roller-supports radially movable from near the axis to beyond the periphery of said disk, rollers mounted in said support, a tread-ring surrounding said rollers and springs arranged to hold said rollers continuously against said tread-ring, substantially as described.

4. The combination with the axle of a disk keyed thereto, a plurality of radial holes in said disk having a polygonal shape for a portion of their length, blocks fitting loosely in said holes having a portion fitting the polyonal portion of said holes, a bearing formed in the head portion of said blocks adapted to receive a portion of a roller, a tread-ring surrounding said disk and rollers and a spring arranged to radially and continuously press said blocks outward and to hold said rollers constantly against said tread-ring, substantially as described.

5. The combination with the axle, of the disk keyed thereto, the radially-positioned roller-bearing blocks, the expansive springs between said blocks and disk, the roller mounted in said block, the tread-ring surrounding said disk and running and bearing on said rollers and side plates inclosing said disk and rollers secured to the side of said tread-ring, substantially as described.

6. The combination with the axle of a disk secured thereto, a plurality of independent rollers supported at the periphery of said disk, a tread-ring arranged concentrically around said disk and axle and means connected with said disk and roller whereby said rollers bear continuously with an outward radial pressure against said tread-ring, substantially as described.

7. The combination of the rollers, the radial blocks and spring, with the tread-ring, a side plate secured to each side of said tread-ring and adapted to confine said disk and rollers within said tread-ring, substantially as described.

8. The combination of the axle, the disk secured thereto; the radially-adjustable rollers and their bearings, with the tread-ring, side plates secured to said tread-ring and dust-guards secured to said plates and surrounding said axle, substantially as described.

9. The combination with the tread-ring, of the disk, a car-axle secured to said disk, a plurality of radial recesses in the periphery of

said disk, radially-arranged blocks arranged in said recesses, an expanding spring in said recesses arranged to constantly press said blocks outward, rollers journaled in the outer or end portion of said blocks, means for oiling said rollers, a tread-ring surrounding said disk and engaged upon its inner periphery by said rollers, side plates bolted to the opposite sides of said tread-ring and dust-guards surrounding said shaft, and adapted to prevent dust from working between said plates and shaft, substantially as described.

10. The combination with the tread-ring and the axle, of a disk mounted on said axle, rollers mounted on the periphery of said disk and means connected with said disk for holding said rollers continuously against the inner periphery of said tread-ring, substantially as described.

11. In combination with the axle, the disk mounted thereon, the radial bearing-blocks, rollers journaled in said radial bearing-blocks, means connected with said blocks for holding said rollers in axial alinement with said axle, the springs, the tread-ring, the side plates and the dust-guards, substantially as described.

12. The combination with the axle and the tread-ring, of the disk having a plurality of radial holes each having a polygonal shape for a portion of its length, a radial bearing-block in each hole having a polygonal-shaped portion registering with and fitting in the polygonal-shaped portion of said radial holes, a stem portion to each radial block, a coiled spring surrounding said stem, a head portion to each block at the periphery of said disk and extending axially across its periphery, a semicircular bearing in said head portion, a roller seated in said bearing, a tread-ring surrounding said disk and rollers and engaged concentrically by said rollers, and plates secured to opposite sides of said tread-ring, substantially as described.

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

JOHN J. A. MILLER.

Witnesses:

MELVIN O. BEMUS,

CLAUDE A. DUNN.