

July 13, 1965

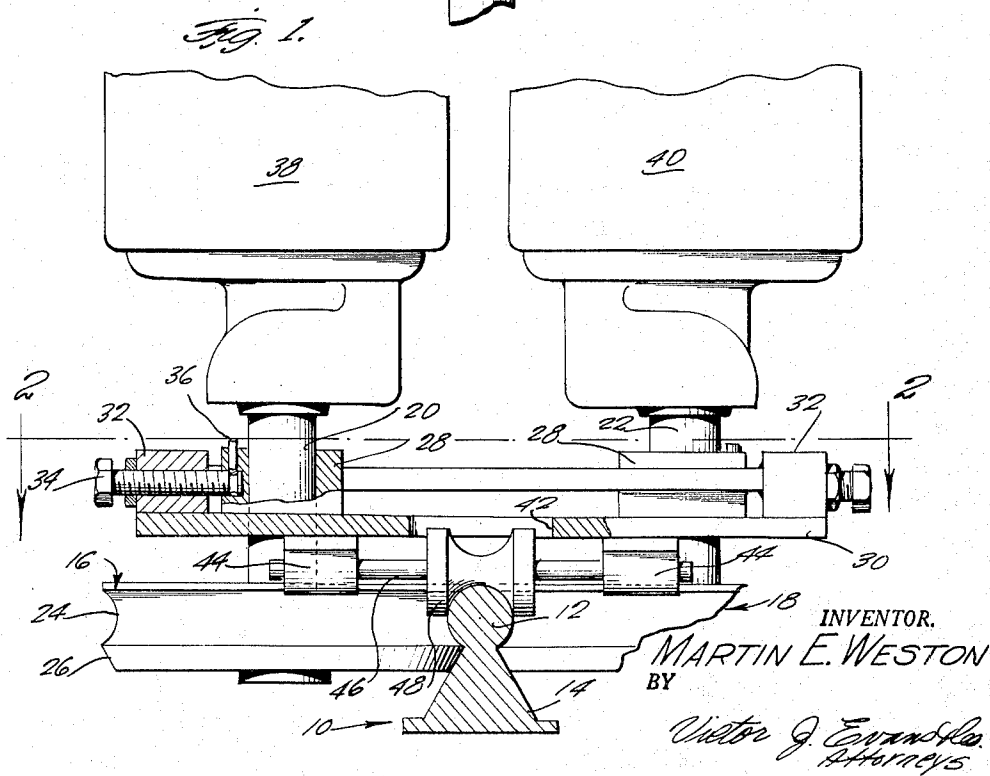
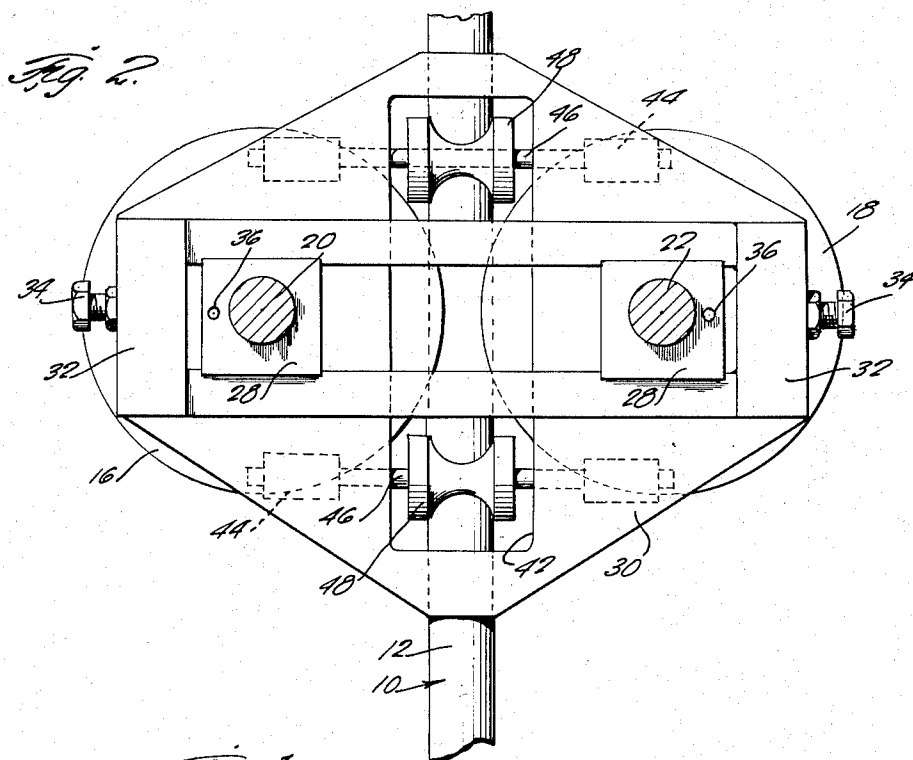
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3,194,178

WHEEL ASSEMBLY FOR A MONORAIL

Filed Sept. 13, 1963

3 Sheets-Sheet 1



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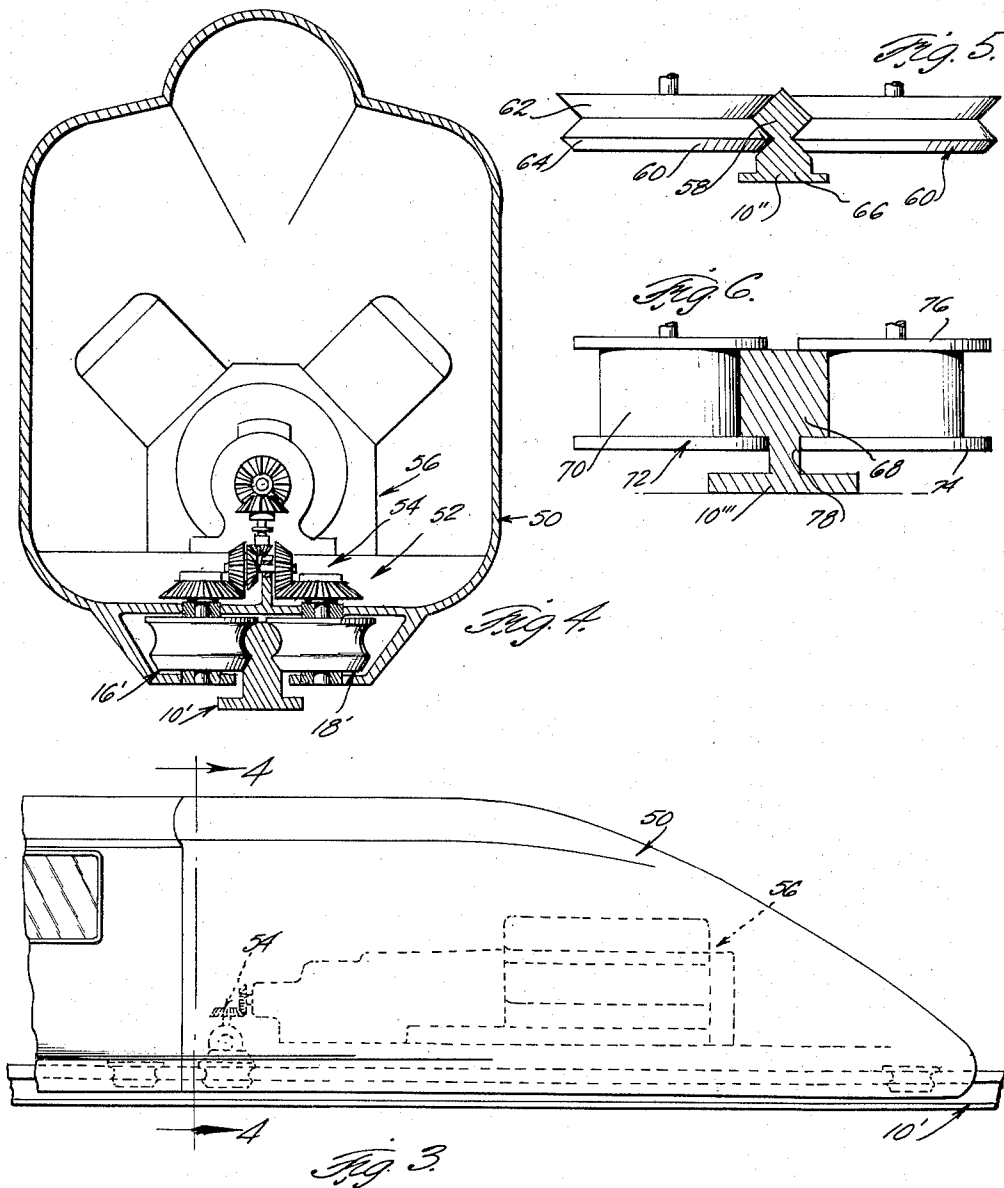
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

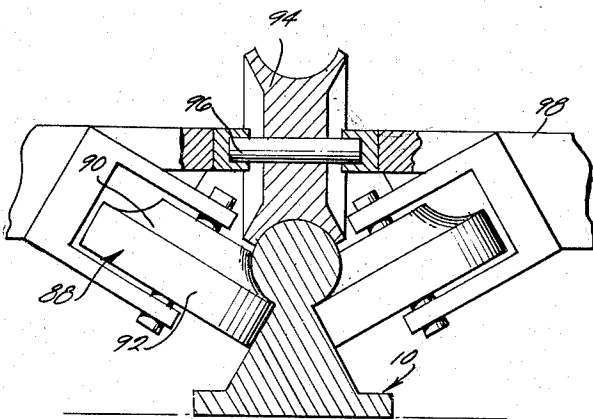
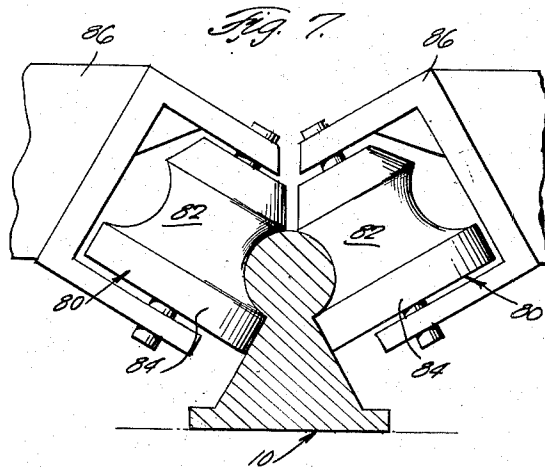
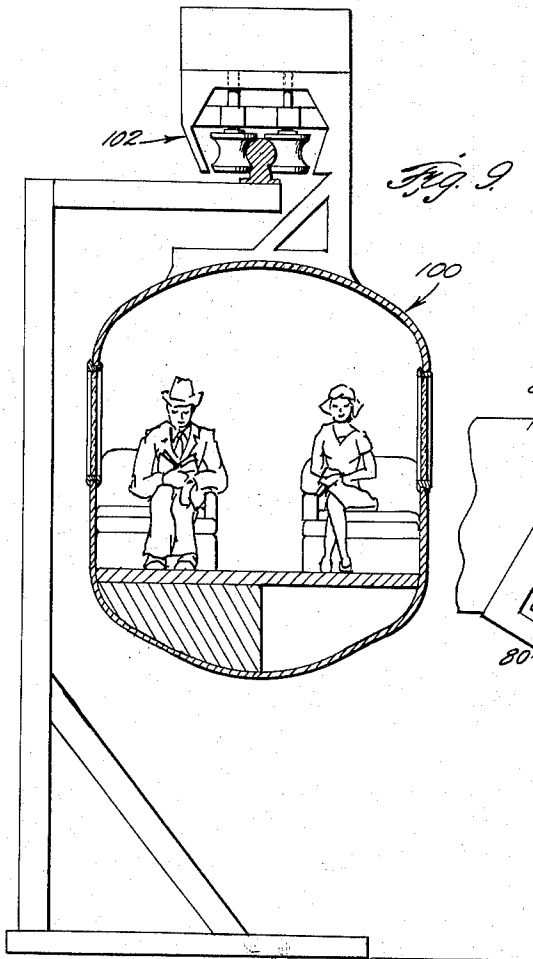


Fig. 8.

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WHEEL ASSEMBLY FOR A MONORAIL

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4 Claims. (Cl. 104-119)

The present invention relates to rolling equipment generally and in particular to a wheel assembly for a monorail.

An object of the present invention is to provide a wheel assembly which is useful for railroads, overhead or surface, or for such overhead supports as door hangers, amusement devices, roller coasters, and the like.

Another object of the present invention is to provide a wheel assembly for a monorail which is sturdy in construction, one having a minimum of friction when rolling, and one which is highly effective in action.

A further object of the present invention is to provide a wheel assembly for a monorail which lends itself to ease of maintenance, one which has long life characteristics, and one which is economically feasible.

These and other objects and advantages of the present invention will be fully apparent from the following description when taken in connection with the annexed drawings, in which:

FIGURE 1 is an elevational view partially in section of a first embodiment of the present invention, portions being shown broken away,

FIGURE 2 is a view taken on the line 2-2 of FIGURE 1,

FIGURE 3 is a side elevational view of the locomotive portion of a train employing the wheel of the present invention, the dotted line showing indicating the wheel assembly and the related driving mechanism,

FIGURE 4 is a view on an enlarged scale, taken on the line 4-4 of FIGURE 3,

FIGURE 5 is an elevational view of a modified form of the invention, shown on a rail, the rail being shown in section,

FIGURE 6 is a view similar to FIGURE 5 of a further modification of the present invention,

FIGURE 7 is a view similar to FIGURE 5 and FIGURE 6 of a still further modification of the present invention,

FIGURE 8 is an elevational view of a still further modification of the present invention, and

FIGURE 9 is a view in section of an overhead monorail railway car showing how any one of the forms of the invention may be employed to support the railroad car.

Referring in detail to the drawings in which like numerals indicate like parts throughout the several views, in FIGURES 1 and 2, the numeral 10 designates generally a rail having a substantially cylindrical head 12 and a truncated web 14 supporting the head 12.

The device of the present invention, in a first embodiment, consists in a pair of driving wheels 16 and 18 mounted on the lower ends of vertical shafts 20 and 22, respectively. The wheels 16 and 18 are identical and will be described with reference to the wheel 16.

The wheel 16 is provided with an upper portion 24 conformably shaped to a portion of the rail head 12 and has a lower portion 26 conical and shaped to fit against the web 14 adjacent the junction of the web 14 with the head 12. The shafts 20 and 22 are supported in bearing blocks 28 which are slidably movable on a support plate 30 so that the wheels 16 and 18 may be moved toward and away from the rail 10.

A bearing block 32 projects upwardly and is secured to each end of the support plate 30 and is provided with internal threads for threadably engaging an adjusting

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bolt 34 which has its free end keyed to the adjacent block 28 by means of a removable key 36 as shown in FIGURE 1.

A frame (not shown) supports a motor 38 of which the shaft 20 is the motor shaft and another motor 40 of which the shaft 22 is the motor shaft.

Depending from the support plate 30 on each side of a slot 42 are bearings 44 in which is journaled a shaft 46. Mid-length of the shaft 46 is a roller 48 having its mid-portion conformably shaped to the upper portion of the rail head 12 as shown most clearly in FIGURE 1.

One roller 48 and its support components is positioned forwardly of the driving wheels 16 and 18 and another one, as shown in FIGURE 2, is positioned rearwardly of the driving wheels 16 and 18.

In FIGURE 3 there is shown and designated generally by the reference numeral 50 a locomotive which might employ the wheel assembly above described but in which, for purposes of illustration, there is a modified form of the invention as shown in FIGURE 4.

In FIGURE 4 the numeral 52 designates generally the driving mechanism for the locomotive 50 and it is seen to include driving wheels 16' and 18' as previously described with reference to wheels 16 and 18 and which are drivably engageable with a rail 10'. The roller 48 is omitted in this version of the invention and a suitable gear train, as at 54, drivably connects the wheels 16' and 18' to a source of motor power 56 such as an engine or the like.

In FIGURES 5 to 8, inclusive, other wheel and rail assemblies are shown which may be substituted for the previously described wheel assemblies and the associated rails. In FIGURE 5, the rail 10'' is provided with a substantially square head 58 and the drive wheels 60 have an upper portion 62 conformably shaped to fit the head 58 and a lower portion 64 conformably shaped to fit the adjacent part of the web 66 of the rail 10''.

In FIGURE 6 the rail 10''' is shown having a square head 68 against which a mid-portion 70 of the driving wheel 72 bears. Flanges 74 and 76 overlie the head 68 and the flange 74 bears against the adjacent portion of the web 78 of the rail 10'''.

In FIGURE 7 a further modified form of the invention is shown in which the rail 10 is identical to the rail described with reference to FIGURE 1 and FIGURE 2 and in which the wheel assembly comprises identical wheels 80 having mid-portions 82 conformably shaped to fit the head of the rail 10 and cylindrically walled portions 84 designed to bear against the adjacent portion of the web of the rail 10. Because the cylindrically walled portions 84 bear flatly against the web of the rail 10 the wheels 80 are canted at an angle so that their upper ends converge toward each other. The wheels 80 are mounted in frame members 86 in any conventional manner.

In FIGURE 8, another assembly is shown in which wheels 88 have an upper portion 90 conformably shaped to fit the head of the rail 10 below the mid-line thereof. Each wheel 88 has a lower portion 92 engageable with the adjacent part of the web of a rail 10.

This form of the invention includes a roller 94 supported on a shaft 96, the roller 94 engaging the upper portion of the head of the rail 10 for support of the frame 98 in the conventional manner.

In FIGURE 9, the reference numeral 100 designates generally a monorail railway car employing a wheel assembly 102 of one of the types or similar to that illustrated above. Additionally, each of the wheel assemblies heretofore described may be employed with overhead doors, monorail systems where the rail is laid upon the ground, roller coasters, or in any mechanism requiring support of a carriage on a rail.

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While only preferred forms or embodiments of the invention have been shown and described, other embodiments of the invention may be made and practiced and numerous changes and modifications may be made in the invention without departing from the spirit thereof as set forth in the appended claims.

What is claimed is:

1. In combination with a rail having a head supported upon a web, a wheel assembly comprising a frame, a pair of wheels arranged in opposed relation one on each side of the head of said rail, a third wheel having its axis displaced from and parallel with a plane formed by the axes of the pair of wheels, each of said wheels having a portion rollingly bearing against said rail head, each of said pair of wheels having another portion rollingly engaging a part of said web of said rail, and means supporting each wheel on said frame for free rotation.

2. In combination with a rail having a head supported upon a web, a wheel assembly comprising a frame, a pair of wheels arranged in opposed relation one on each side of the head of said rail, a third wheel having its axis displaced from and parallel with a plane formed by the axes of the pair of wheels, each of said wheels having a portion rollingly bearing against said rail head, each of said pair of wheels having a cylindrical portion rollingly engaging a part of said web of said rail, and means supporting each wheel on said frame for free rotation.

3. In combination with a rail having a cylindrical head supported upon a web, a wheel assembly comprising a frame, a pair of wheels arranged in opposed rela-

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tion one on each side of the head of said rail, a third wheel having its axis displaced from and parallel with a plane formed by the axes of the pair of wheels, each of said wheels having a portion conformably shaped to said rail head rollingly bearing against said rail head, each of said pair of wheels having another portion rollingly engaging a part of said web of said rail, and means supporting each wheel on said frame for free rotation.

4. In combination with a rail having a cylindrical head supported upon a web, a wheel assembly comprising a frame, a pair of wheels arranged in opposed relation one on each side of the head of said rail, a third wheel having its axis displaced from and parallel with a plane formed by the axes of the pair of wheels, each of said wheels having a portion conformably shaped to said rail head rollingly bearing against said rail head, each of said pair of wheels having a conical portion rollingly engaging a part of said web of said rail, and means supporting each wheel on said frame for free rotation.

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