April 23, 1963 K. D. SCHREYER 3,086,478

TROLLEY TRACK

Filed May 25, 1959

FIG. 1

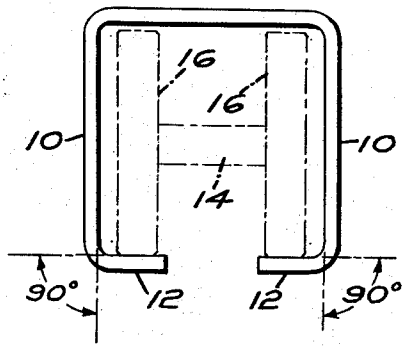


FIG. 3

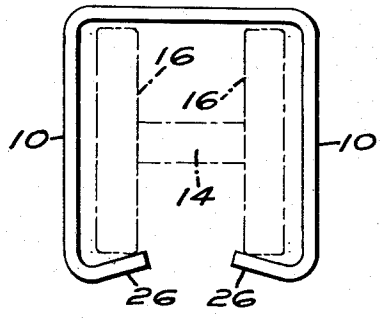


FIG. 1a

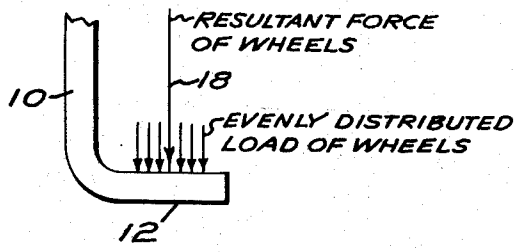


FIG. 3a

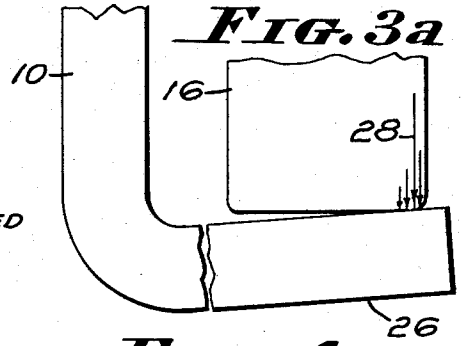


FIG. 2

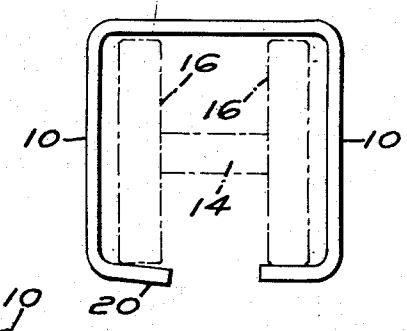


FIG. 4

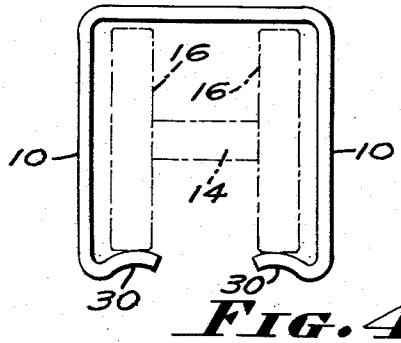


FIG. 2a

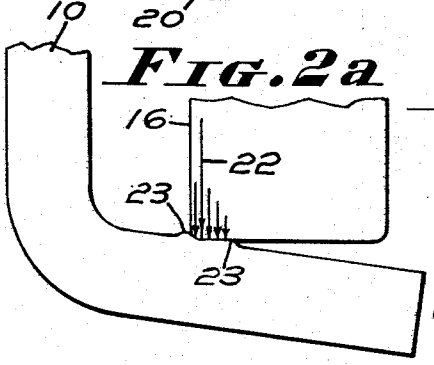


FIG. 2b

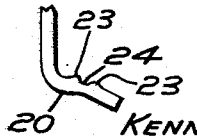
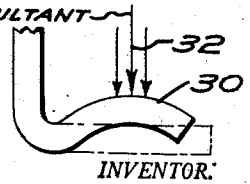


FIG. 4a



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TROLLEY TRACK

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This invention relates to trolley track constructions, and more particularly to box-sectioned trolley trackways of the type wherein the bottom rail portion is centrally slotted to permit suspension therethrough of load engaging devices.

Whereas trolley trackways of the type above referred to are in widespread use, an inherent defect in the conventionally used form has been difficult to overcome. The defect referred to arises from the fact that the two bottom rail or flange portions straddling the slot therebetween provide the rail supports for the roller devices running within the trackway. When employing standard manufacturing processes it is impossible to insure that these bottom rail portions will always be perfectly horizontal and in mutual alignment. Whereas the track flanges must be perfectly horizontal and on the same level to permit cylindrical trolley rollers to run thereon in full tread bearing relation, in accord with prior practice this condition is difficult to attain and therefore rarely exists; and a rule the trolley rollers are canted relative to the rail flanges and therefore concentrate their loadings thereon at the edges of the rollers. This results in excessive wear of the track rails and other disadvantages, as will be explained hereinafter.

The present invention has for one of its objects provision of a structurally simple and inexpensive modification of the standard type trackway construction whereby an improved bearing relationship between the trolley rollers and the rail flanges is assured and maintained throughout the operative life of the apparatus.

Another object is to provide an improved track rail as aforesaid which is adapted to provide ideal support for the trolley rollers and to retain this characteristic throughout the life of the rail portions, thereby minimizing wear and tear on the track and roller parts.

Other objects and advantages of the invention will appear from the specification hereinafter, wherein:

FIG. 1 is a sectional view through an ideally formed track rail of the prior art, such as is rarely accomplished in practice; mounting therein paired trolley rollers in properly supported condition;

FIG. 1*a* shows fragmentarily on enlarged scale a detail of FIG. 1, illustrating diagrammatically an even distribution of trolley loads across the roller and rail tread surfaces;

FIG. 2 corresponds to FIG. 1, but illustrates perhaps in exaggerated form an undesirable track tread and roller support condition as is typically experienced in connection with prior trackway constructions;

FIG. 2*a* corresponds to FIG. 1*a* but relates to the construction of FIG. 2, and illustrates the undesirable load distribution results;

FIG. 2*b* also relates to the construction of FIG 2 and illustrates an excessive wear result incidental to use of the trackway of FIG. 2;

FIG. 3 corresponds to FIGS. 1, 2 but illustrates in exaggeration one form of trackway construction of the present invention in the initial stage of its use;

FIG. 3*a* corresponds to FIGS. 1*a*, 2*a*, but relates to the construction of FIG. 3;

FIG. 4 corresponds to FIG. 3 but illustrates another form of trackway construction of the present invention; and

FIG. 4*a* corresponds to FIG. 3*a* but relates to the construction of FIG. 4.

The present invention takes cognizance of the fact that is is impossible, in practice, to assure that the inwardly turned horizontal flanges of a trolley trackway device may be consistently formed so as to be disposed at right angles to the vertical sides of the trackway unit. Inevitably, portions of the inturned flanges will be sloping downwardly, and other portions of the flanges will be sloping upwardly. Thus, whereas ideally a trolley trackway would be fabricated as shown in FIGS. 1, 1*a*, to comprise a generally box sectioned trackway unit including vertical sidewalls **10**, **10** and bottom inturned flanges **12**, **12** disposed precisely at right angles to the sidewalls **10**, **10**, it is rarely the case that the sectional formation shown in FIGS. 1, 1*a* may be accomplished in practice. In such case, the trolley devices such as may include axles **14** and paired rollers **16**, **16** would be thereby disposed to roll upon the track flanges **12**, **12** in perfectly mating and uniform load distributing manner; the loading distribution being illustrated diagrammatically in FIG. 1*a* wherein the resultant center of loading is indicated at **18**. In such case, the trolley rollers **16**, **16** would be ideally supported and would run upon the track flanges **12**, **12** in such manner as to provide optimum support for the trolley device without excessive wear or tear on portions of the track flanges.

However, as illustrated by FIGS. 2, 2*a*, 2*b*, in actual practice it is common experience to note that in such prior art fabrications of trackway devices designed in the manner illustrated by FIGS. 1, 1*a*, the track flanges will in fact be almost invariably disposed at some angle away from directions normal to the verical planes of the sidewalls **10**, **10**. Thus, for example as illustrated in FIGS. 2, 2*a*, the rail flanges will sometimes be disposed to incline downwardly as indicated at **20**, and at other times upwardly, whereby when the trolley rollers run from the flanges they dispose the hearing loads unevenly across the sections of the track rails and concentrate the loads for example as illustrated at **22**, FIG. 2*a*. Thus, the wear incidental to trolley operations through the trackway system will likewise be concentrated at either he ouside or inside edge of he trolley rollers, whereby the track metal becomes peened as indicated at **23** and grooves as indicated at **24** (FIG. 2*b*) form in the top surface of the rail flanges. This weakens the rail flanges and renders them more vulnerable to bending deflection tendencies thereby accelerating failures of the flanges. FIG. 2*a* illustrates how when down bending occurs the load carrying area decreases, which in turn concentrates wear on narrower surfaces thereby progressively increasing the wear rate; thereby requiring early replacement of the trackway unit and rendering operation of the trolley system relatively expensive.

As distinguished from the prior art, the present invention contemplates an arrangement for decelerating failure rate by deliberate initial formation of the inturned rail flanges so as to incline upwardly toward line contacts with the trolley rollers. Thus, service loadings on the rail flanges causing them to deflect will tend to bend them downwardly towards the ideal roller supporting attitudes as shown in FIGS. 1, 1*a*. This may be accomplished for example by initially forming the rail flanges as indicated at **26** (FIG. 3) to incline inwardly and upwardly, whereupon the trolley roller loadings will initially be concentrated as indicated at **28** (FIG. 3*a*) substantially against the upper edges of the rail flanges. Thus, the trolley loads will be applied against the rail flanges under such conditions that the flange portions will be subjected to downwardly deflecting tendencies proportional to the degree of their deflections above the ideal horizontal attitudes as illustrated by FIG. 1. As the initially deflected flange por-

tions respond to these pressures and lower toward horizontally disposed attitudes the trolley loadings thereagainst spread out, whereby the flange deflection tendencies die out. Hence, the initial "breaking in" period of operation of the trackway unit will in effect apply an automatic alignment finishing operation upon the flanges **26, 26**, resulting in disposing them at optimum attitudes for ideal support of the trolley rollers, and maximum operational life of the trackway unit.

FIGS. 4, 4*a*, illustrate a modified form of the invention wherein the rail flanges of the trackway unit are initially formed so as to be sectionally crowned as indicated at **30**. Thus, as the trolley loads are imposed upon the track flange portions, the trolley rollers will at all times ride upon smoothly crowned surfaces, and any downward deflections of the rail flanges will result merely in shifting of the lines of contact between the rollers and the crowned portions of the rail flanges. At no time, will the edges of the rollers run in damaging contact with portions of the rail flanges, such as would cut into the flanges and excessively weaken them as indicated at **24**, FIG. 2*b*. In this form of the invention, throughout the entire life of the trackway unit the supported trolley rollers run upon crowned rail surfaces; any bending deflections of the rail flanges resulting merely in shifting of the line of bearing contact between the rollers and the rail flanges. Any gradual deflections downwardly of the flanges, in response to constant loadings thereon, will merely cause the zones of wearing contact between the trolley rollers and the rail flanges to shift, thereby subjecting different portions of the flanges to the roller wear. This gradual shifting of the wearing zones distributes the wear and tear upon the trackway unit; and in any case any downward deflections of the rail flanges will result only in adjustments of the flanges towards ideal roller supporting attitudes comparable for example, to the condition illustrated by FIG. 1.

Thus, it will be appreciated that by virtue of the present invention a trackway unit of superior trolley support characteristics may be readily fabricated relatively inexpensively and without need of close attention to the accuracy of the flange formations such as are demanded by arrangements of the prior art. Nevertheless the product of the present invention will inevitably be uniformly superior to prior art trackway arrangements because it will not be subject to operational and structural deterioration incidental to excessive wear of the rail flanges, such as is inevitably experienced in connection with the trackway arrangements of the prior art. It will also be appreciated that whereas only a few forms of the present invention have been illustrated and described in detail, the invention may be otherwise embodied within the spirit of the invention and the scope of the appended claims.

I claim:

1. A trolley trackway device comprising a generally box-sectioned track member including opposed vertical sidewalls leading into inturned generally horizontal bottom rail flange portions the edges of which are relatively spaced to provide a trolley suspension slotway therebetween, said rail flange portions being formed so as to incline upwardly toward said slotway, trolley members within the track member having wheels thereon, said wheels having cylindrical tread portions engaging on the rail flange portions on a point contact, whereby constant loading on the trolley members will cause the rail flange portions to deflect downwardly thus shifting the point contact.

2. A trolley trackway device comprising a track member including opposed generally vertical side walls leading into inturned generally horizontal rail flange portions, the edges of which are relatively spaced to provide a trolley suspension slotway therebetween, said rail flange portions being formed so as to incline upwardly towards said slotway, trolley members having wheels thereon, said wheels having cylindrical tread portions engaging on the rail flange portions on a point contact, whereby constant loading on the trolley members will cause the rail flange portions to deflect downwardly thus shifting the point contact.

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