LE VERT CLARK.

DOUBLE SAFETY CAR WHEEL AND PROPELLING PARTS COÖPERATING THEREWITH.

APPLICATION FILED JAN. 30, 1909.

955,382. **Patented Apr. 19, 1910.**

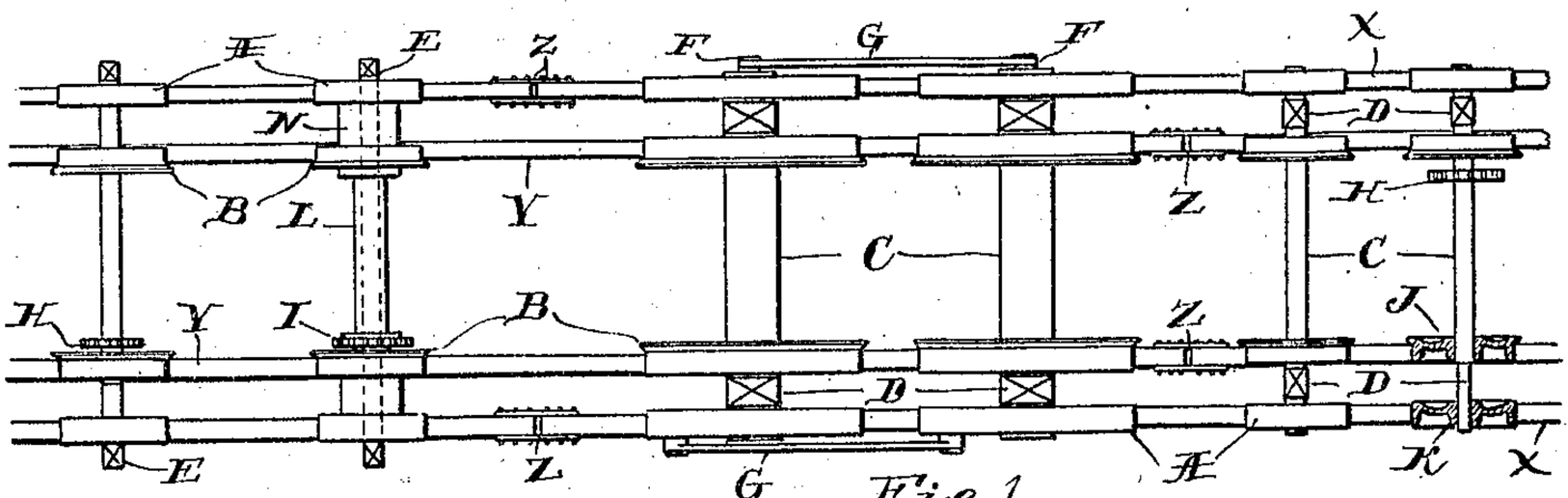

Fig. 1

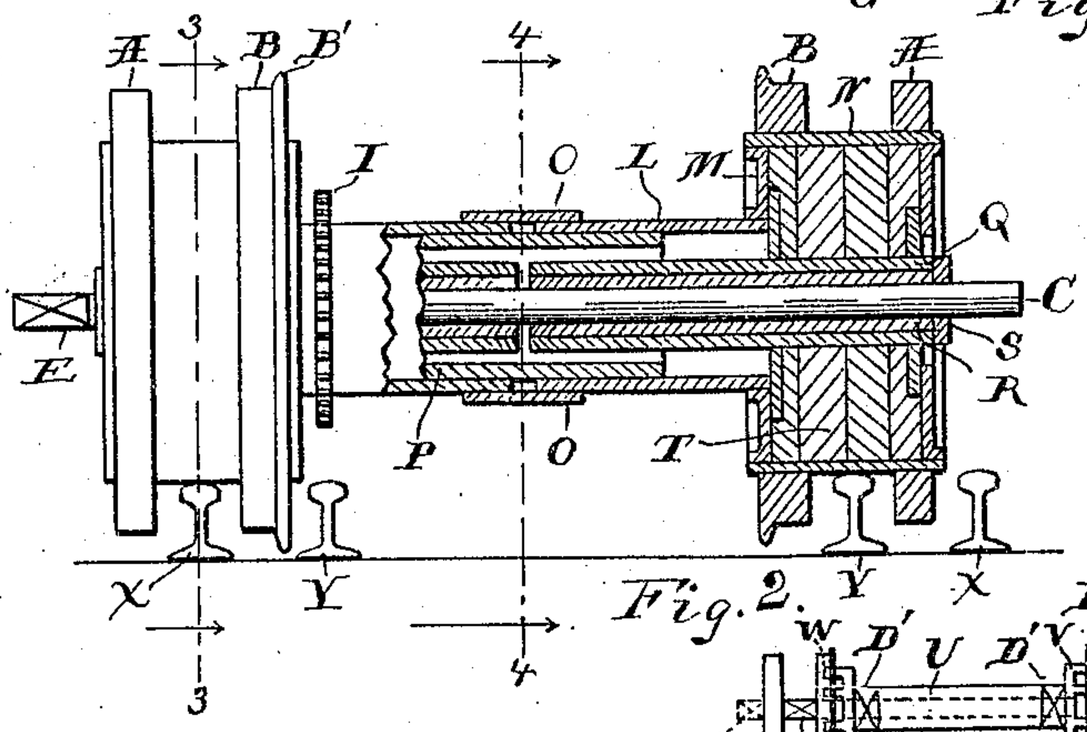

Fig. 2.

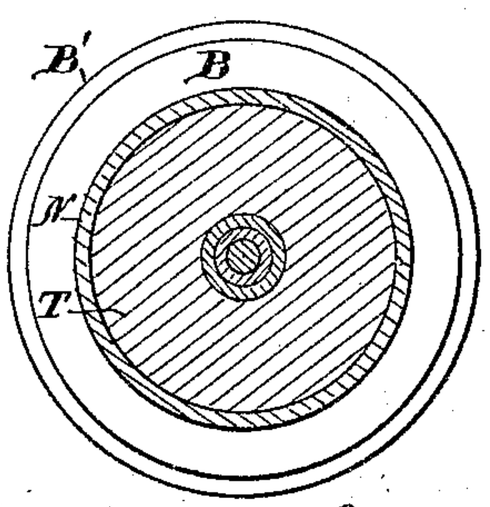

Fig. 3.

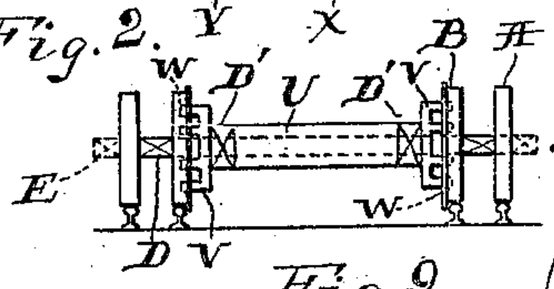

Fig. 9.

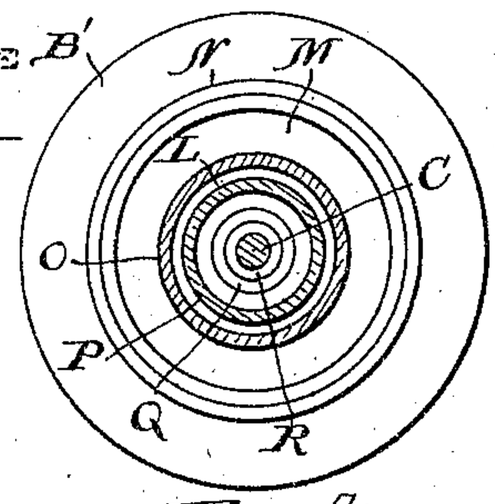

Fig. 4.

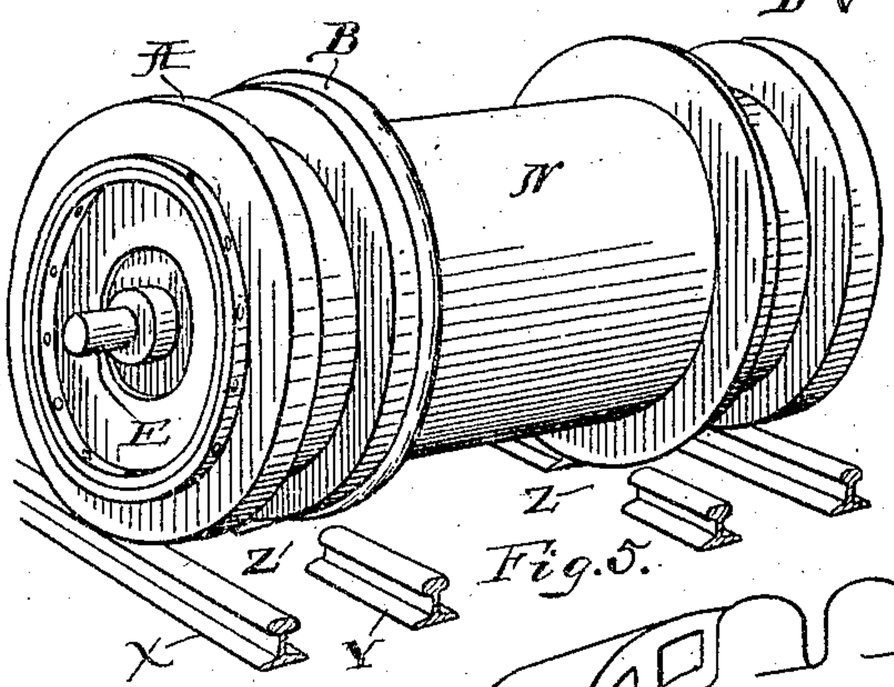

Fig. 5.

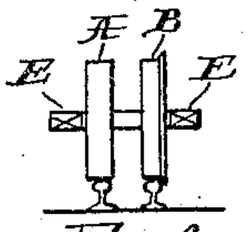

Fig. 6.

Fig. 7.

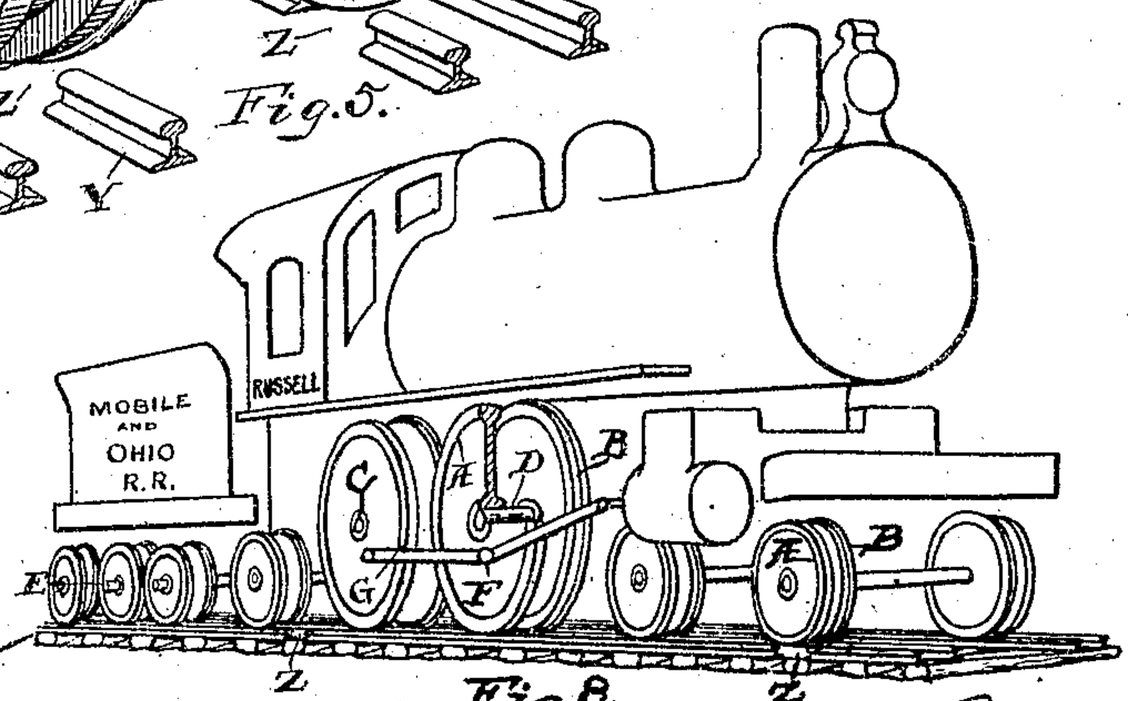

Fig. 8.

Witnesses

H. R. Martin

Inventor

Le Vert Clark

UNITED STATES PATENT OFFICE.

LE VERT CLARK, OF DETROIT, MICHIGAN.

DOUBLE SAFETY CAR-WHEEL AND PROPELLING PARTS COÖPERATING THEREWITH.

955,382. Specification of Letters Patent. Patented Apr. 19, 1910.

Application filed January 30, 1909. Serial No. 475,235.

To all whom it may concern:

Be it known that I, LE VERT CLARK, a citizen of the United States, residing at Detroit, in the county of Wayne, State of Michigan, have invented new and useful Improvements in Double Safety Car-Wheels and Propelling Parts Coöperating Therewith; 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 letters of reference marked thereon, which form a part of this specification.

This invention relates to car and locomotive wheels and axles, and such parts as necessarily coöperate with them. Its object is to provide double wheels:—to meet the improved operating conditions afforded by a concentric tracks railroad; for example, such as is described in my Letters Patent #927,830, July 13th, 1909; or for an electric two track railroad for which my application is pending, Serial #476,743, filed Feb. 8th, 1909. Which double wheels may also be used, indiscriminately with old style wheels upon any standard gage track, of present construction, without any alteration or change therein, in the same train. Which train will run from the improved two track construction to the old style single track construction of connecting transportation lines, as not to interfere with exchange of cars between said lines.

The further object of this invention is to make the movement of car wheels, in cities, practically as noiseless as possible; which is done principally, by preventing "low joints", in the track, and the incessant pounding thereof. Its object is also to lessen the cost of maintenance of track, roadbed, rolling stock, and city street pavement, which latter will not have to be torn up so often for repairs. to low joints which cannot occur under a double wheel. Likewise its object is to divide the weight of traffic equally, between the inner and outer track members of a two track railroad, of four lighter rails instead of having all the burden on two heavier rails, as at present operated, with single wheels on one track.

A pair of double wheels makes a wider wheel base for a much stronger two-track railroad, upon the same cross ties, without encroaching upon "standardized" clearances, as at present adopted, between rolling stock and objects alongside the track, in bridges, tunnels, platforms, third rails, etc. A more stable equilibrium for all classes of rolling stock is thus afforded, especially for high speed locomotives and motor cars. In treating this subject a double wheel member will be understood as having essentially two separated wheel tread surfaces adjacent to each other, to travel abreast, in relation to a centrally disposed wheel axle and journal and parts necessarily coöperating therewith. One of which tread surfaces will be flanged and the other tread surface will be flangeless and widely separated from its adjacent flanged tread surface; which wide space is necessary between the two treads for the essential and special purposes hereinafter described. All wheel tread surfaces on the same axle are necessarily of the same diameter. The wheel tread surfaces or tires may each be supported by means such as are ordinarily used to carry tires; which tire-supporting portions are placed apart, but adjacent to each other, when a journal is placed on the axle as a seat for a journal box and truck frames placed between adjacent tires. Other and improved means are also shown in my double wheel whereby adjacent tires may be supported concentric with the wheel axle by a more or less solid tire-supporting portion, carrying both wheel treads; the tires on which portion are also spaced apart as above described; which space may be utilized as a seat where a brakeshoe can be applied directly to the face of the tire-supporting portion, between the respective flanged and flangeless tires.

Another feature characteristic of my invention—wherein it differs from all other multiple wheel treads, is that in cases of derailment, the tires of my double wheel will normally drop down and straddle the rail; that is, one tire drops on each side of the rail; which function is performed with equal facility on standard gage tracks of single rail construction; and better still, upon the new style railroad of concentric tracks construction of my invention; making it practically impossible for a train to get "off the track" in the very frequent accidents from broken rails or broken wheel flanges.

In the drawings: Figure 1 is a ground

plan, partly in horizontal section, of double wheels, embodying this invention, on a "section" of concentric tracks railroad. Fig. 2 is a pair of double wheels on the same axle appearing as if derailed; one member in elevation, the other in longitudinal section and connected together by a waist of lesser diameter, bisected to allow wheel members to turn independently. Fig. 3 is a cross section on the line 3—3 of Fig. 2; also a cross section of Fig. 5. Fig. 4 is a cross section on the line 4—4 of Fig. 2. Fig. 5 is a perspective view of a pair of double wheels connected by an axle, and a cylinder of uniform diameter supporting the wheel treads. In cross section it is the same throughout as that shown in Fig. 3. Fig. 6 is an elevation of a double wheel having adjacent separated tire supporting portions and journal bearings outside thereof, on a short axle. Fig. 7 is the same as Fig. 6 but with a journal on the axle between its adjacent wheel portions which support flanged and flangeless wheel tread surfaces, respectively. Fig. 8 is a diagrammatic outline of a perspective view of double wheels, as they may appear assembled, in action. Fig. 9 is an elevation of a pair of double wheels on an axle, each wheel member having a journal bearing between adjacent tire supporting portions thereof, and also journals outside; a sleeve or quill around the axle between opposite wheel members, to support a concentrically disposed electric armature of the gearless type to propel said wheels.

The two separated wheel tread surfaces may consist of two railroad tires, one of them with, the other without a flange, that is plain, like a wagon wheel, around the drum tire-supporting portion or felly of a tubular wheel; the space between tires is the place where brakes may be applied, instead of on the tires to "stop the cars"; or else said tires may be placed around two adjacent separated tire-supporting portions; as shown in the modified preferred form of double wheels, if propelling power is applied directly to the axle. In which case, the double wheel member is made in two portions, one carrying a flanged tire, the other a flangeless tire, respectively, and having a journal bearing upon the axle either between or outside said adjacent portions. The chief function of the flangeless or boosting tire is to run only upon the boosting track member, where it divides the burden, lessens the noise, and smoothes the way of its adjacent flanged tire, upon the gage track member, where its flange keeps the trucks in alinement, when on the rails. The flangeless tires are placed, preferably, outside of the flanged tires, to afford a wider space between opposite wheel members for more powerful electric motors, or for locomotive boilers and fire boxes of larger diameter. Provision is also made for attaching driving gear wheels to the wheel members or axle members of double wheels, to work with motor gear; also for attaching crank pins and connecting rods in the usual way to the outside of double wheels for the purpose of propelling said wheels by ordinary means, such as steam reciprocating engines; gear or gearless electric motors, or by internal combustion engines.

In cases of derailment the separated tires themselves act as double safety flanges to impinge against the rails on each side of the track center, before the trucks can possibly get out of alinement, slue around, "bunch" the crossties, tear up the track, and throw the cars into the ditch. Broken flanges or rails will no longer be such an element of danger, as at present. To prevent such common accidents, with single wheels, on bridges and in tunnels, guard rails are placed, alongside the track, to catch and hold the wheels in alinement after they are derailed. Guard rails serve no purpose whatever except in cases of derailment, which may never occur at that place. The double wheel dispenses altogether with guard rails and in lieu thereof is effective either with the two track or single construction. Single track and switches even of the heaviest rail are, mechanically, of too weak a construction to long resist the tremendous vertical strains upon its joints when operating heavy locomotives especially of the electric type, and electric motor cars. A pair of double wheels, on one axle, is equivalent to, but has this material advantage over, an ordinary four wheeled truck, with two axles: whenever one tire is over a joint, broken rail, or gap, the other tire always rests on the solid girder-like portion of the adjacent rail in the other track. By employment of which means, heavier loads are carried at a higher rate of speed with far greater safety and more economy in the maintenance of track, roadbed, rolling stock, and city pavement, than is at present possible, especially with electric railways.

Among the other functions described, the double wheel passes quietly, at grade, straight across all manner of crossings, switches, joints, rail gaps, and intersecting rails, without bumping into or against such inequalities in the surface; and in order that one tire shall assist the other in performing this noiseless and useful function, it is essential that the said wheel tread surfaces be widely separated and that one of the wheel treads be flangeless; because if both of the tires have flanges, the side friction caused by the extra wheel flanges would be greatly increased and it would also be impossible to run the double wheel with two flanges on present standard gage tracks without cutting extra notches for the extra flange to pass through in all intersecting rails; and

also to provide an extra trench in street pavements for the extra flange to run in; all of which useless construction is avoided in my improved double wheel. The plain or flangeless tire in the new combination of my invention, travels like a wagon wheel on a road. Its function when "on the track" is to assist or "boost" the adjacent flanged tire abreast on the double wheel, and when the flanged wheel is "off the track", its function, as previously described, is to act as a guide wheel to keep the trucks in alinement, in which respect, it takes the place of a guard rail. The same function is performed by each tire alternately; which is possible to the fullest extent, only by having the wheel tread surfaces respectively flanged and flangeless and separated from each other with a wide intervening space on the tire-supporting portion; which space may be used either as a seat for applying brake-shoes when its diameter is large, or as a seat or journal for placing journal boxes when the diameter of the seat is small or preferably coincident with the axle itself. In which latter case, the tire-supporting portions are in two parts and a journal is placed between them on the axle concentric therewith. If the adjacent wheel tread surfaces and rails are close together, say the width of an intervening wheel flange or less, too near together to admit the track rail when derailed or "off the track", then the combination is not mechanically operative on standard gage single tracks and switches or concentric tracks, to attain the results or perform the functions of my improved double wheel: not only when the train is "on the track" but also when the train is "off the track" or derailed. Therefore no flange would be necessary on either tire of the double wheel of my invention, if the track rails were flanged to hold the wheel, or the wheel was used on street vehicles, as described in my American Patent #919,825, vehicle-wheel.

In Fig. 1, A represents one of the flangeless wheel tread surfaces, or boosting tires, placed on the outside tire-supporting portion of the double wheel member; it always rests on the boosting track member X when running on a concentric tracks railroad. When the wheel is on the old style single track, the boosting tire runs idle but its tread is always in the same plane with the tread of the adjacent tire. B is one of the flanged tires on the inside tire-supporting portion of double wheels. It rests on the gage track member Y. Z is a joint of the rails which may be left wider or much more open than usual, so that the expansion and contraction of each rail is confined to itself alone, instead of being communicated to connecting rails to buckle or break the rails or joints. The result of welding the joints on a long line of rails, is to cause the track and crossties to move out of line slightly but is sufficient to gradually crumble the pavement to admit water; which softens the roadbed at joints or else freezes and heaves up both track and city pavement, so as to effectually destroy in a short time, what appears at first to be the best possible track of old style construction. E is a journal, outside of the double wheel on the end of the wheel axle, which may be used with journal boxes in car truck frames of the ordinary type, when made a little wider. F is a crank pin placed in the ordinary way on the outside of the double driving wheel member of a locomotive or self propelled car. G is a side bar or rod connecting the crank pins F F of driving wheels assembled in the same frame. H is a cog wheel, attached in the usual way directly to the wheel axle for driving electric motor cars, and locomotives, to co-act with motors of the gear type. I is a cog gear wheel attached directly to the waist portion of my tubular wheel, to drive it, cooperating with a motor of the gear type. J is an inside tire-supporting portion of a double wheel to carry a flanged tire. It may in a general way resemble a single car wheel of ordinary pattern. K is an outside tire-supporting portion to carry the flangeless boosting tire. In structure and appearance it does not differ materially from the inside tire-supporting portion J, adjacent. Said tires may be integral parts respectively of the separated adjacent tire portions of the double wheel or they may be forced, shrunk on, or otherwise secured to said portions. The portions J and K are separated by a journal D between or may have a journal only on the outside as E or have both together as hereinafter shown in Fig. 9. The bore of the tire-supporting portion J may be slightly larger than the bore of its adjacent portion K. The parts of the axle inside said respective wheel portions being made correspondingly slightly larger and smaller to more easily put said portions on and off the axle under hydraulic pressure in the usual way. The length of the journal D is preferably not less than twelve inches to meet the requirements of the heaviest type of steam or electric locomotives. In consequence, the distance apart of the adjacent wheel tread portions will be made to conform to the requirements of the journal bearings and frames to be placed between them. This distance will preferably be standardized probably at about twelve inches to make all wheel tread surfaces of the double wheel and rails coöperating therewith, uniform.

In practice, two brake-shoes, not shown, may be used instead of one on the end of each brake-beam, to apply directly to the double tread surfaces which will greatly reduce the wear, and increase the efficiency of

service especially in passenger traffic. Another way is to apply the brake-shoe between the adjacent wheel treads, directly upon the drum or tire-supporting portion N of the tubular wheel, hereinafter described, of which L is the waist portion connecting opposite wheel members with a longitudinal axle therethrough. Obviously therefore, the tire-supporting portion N in Fig. 1, may be made in one piece or casting, or otherwise solidly disposed, down to the axle, for instance by substituting metal or a non-yielding element for the slightly resilient element T and tubes Q and R shown in Fig. 2; and have a longitudinal concentric axle therethrough, with journals E on the ends. The portion N between the adjacent tires is of a diameter relatively larger than the axle C and relatively smaller than the tires A and B. The solid intervening tire-supporting portion as modified may still be used as a place or seat to apply brake-shoes, instead of applying brakes to the two tires; as for example when the tires are supported by the separated portions J and K. In this respect, the only difference between the journal D and a solid tire-supporting portion N, is one of diameter simply. In other words, the journal D when of small diameter is preferably placed on the axle, as the seat for a journal bearing; the portion N when of larger diameter, is better adapted as a seat to receive brake-shoes. The portion N when solid may also be used as a journal if made of little larger diameter than the axle C. The journal D and portion N differ, therefore, from one another in no essential respect; however, each can perform its own respective function better, when their difference is only in the diameters of the designated seat. That is, when of small diameter, preferably coincident with the axle, the seat N between adjacent tires becomes a journal for a journal bearing and when the seat N is of large diameter, it becomes a place to receive brake-shoes.

In Fig. 2, A as before, is the flangeless boosting tire; B a flanged gage tire; B′ is a flange integral with the tread of the tire B. The tread surfaces A and B are always placed apart so that a brake-shoe may be applied between, upon the drum N or friction tire not shown, placed there to receive the shoe. C is a longitudinal wheel axle having journals, outside the wheel members, which may be assembled in any standard truck of present construction widened for the purpose. L is the waist portion, consisting of a relatively smaller cylinder attached to the drumheads M of the double wheel. N is the felly or tire supporting portion of the double tubular wheel. When these two double wheel members are to revolve independently on each end of the same axle, the waist will be divided along the line 4—4, as shown in cross section, in Fig. 4; but if they are not to so revolve, then, the waist is not divided, and extends without a break from wheel to opposite wheel, as shown at L in Fig. 1. Again as to Fig. 2, O is the outside telescoping tube somewhat larger than the waist, to telescope the adjacent ends of the waist divided, as stated. P is the inside telescoping tube for the same purpose. They both give rigidity and strength to the waist when divided and also permit the opposite wheel members to have independent revolving motion when rounding curves. Q is the axle sleeve or tube spaced within by another tube R holding the axle C. S is a thrust bearing cap around the axle at the ends of the tubes to receive the lateral thrusts of the wheel. It is intended that this inner tube R holding the axle may be made to receive roller bearings spaced around the axle so that the double wheel may not only revolve on its own axle but its axle may also revolve simultaneously and independently on its own journal E. The result of which is that the two opposite wheel members will turn independently of each other on the same axle. The axle may also be permanently fixed inside its tube R so as not to revolve. In which case the wheel members will revolve only in the ordinary way on the outside journals E. The tube R with its axle is made easily removable from the tube Q for the purposes of renewal or repairs. The cog gear wheel I may be permanently attached either to the waist L or to the drumheads M. T is a semiresilient slightly yielding noiseless packing material, for instance, wood or fiber, for which coil spiral springs may be substituted, between the axle and the outer drum portion N. The wheel in this figure is supposed to be derailed so that its drum portion N is resting on the tops of the track rails on which it will roll along until the wheels are brought to a stop, in the usual way, without coming in contact with or tearing up the crossties. In the meantime the wheel tires act as safety flanges to keep the trucks in alinement. At present, without a guard rail, there is no way for the ordinary single wheel, as at present constructed, when derailed, to catch against the side of the track, until, say, the right hand wheel goes over to the left hand rail; before which happens, the trucks get so far out of alinement as to throw the train off the embankment, to the great peril of human life and certain destruction of cars and track.

In Fig. 5, N is the drum, felly, or tire-supporting portion of a double wheel extending across in uniform diameter to become the felly member of the opposite wheel. In internal construction it may be of the same general character as shown in the larger diameter of Fig. 2, and in cross sec-

tion Fig. 3. This wheel may be used in any standard truck made a little wider to receive it. It is intended for the very heaviest traffic. In Fig. 5 is shown also how one tire of the double wheel rests solidly upon the rails while its adjacent tire or wheel tread surface goes straight across the gap in the adjacent rail of a two track railroad construction.

In Fig. 6, the double wheel is shown with an outside journal E on each end of a short axle.

In Fig. 7, D is a journal between adjacent tire-supporting portions, having flanged and flangeless wheel tread surfaces respectively, of a double wheel.

In Fig. 8, the locomotive frame rests upon the journal D between the adjacent tire supporting portions of the double wheel. Other double wheels, a pair on each axle, are shown elsewhere in the same figure. Driving wheels are preferably made with spokes in the usual way with crank pins F and side rods G, co-acting therewith. The tender of the locomotive is assumed to be equipped with three pairs of double wheels having outside journals E on the ends of the axles as shown in Figs. 1, 2 and 5.

In Fig. 9, U is a hollow cylinder or quill around the axle to support a concentrically disposed gearless armature as a direct electrical drive to propel said pair of double wheels. Said cylinder may also be placed around the waist L of Figs. 1 and 2 or may itself be substituted for or constitute the waist. Attached to each end of said quill is a species of crown gear wheel V, the teeth of which are inserted in hollow places or pockets W in the spokes or drum-heads of opposite wheel members on the same axle. The hollow armature preferably supported by the quill, revolves inside an electric field or casing not shown; which latter may be supported either on the journals D′, on the quill, or on the journal D, between adjacent wheel tire-supporting portions. E is the outside journal which may be placed in an ordinary truck frame of the usual construction though wider. This kind of equipment is preferably used in directly propelled motor cars and electric locomotives for high speed. The double wheel members are relatively of larger diameter, as is the case of steam locomotive driving wheels. The so-called crown gear wheel V may be omitted altogether if the waist L shown in Fig. 1 is made to serve instead, as a hollow armature axle U for directly propelling said tubular wheels. A cog driving wheel not shown may also be placed around the quill to engage with a gear motor to drive said double wheels.

While I have represented in the drawings flangeless wheel tread surfaces on the outside of the double wheel members, where, preferably, they ought to be, yet the flangeless treads will run equally as well on a boosting track member laid inside the standard gage track member of a two track railroad.

The wheels embodying my invention make it physically impossible to hammer down, or bump along the joints in either one of the concentric tracks. Hence "low joints" will altogether cease to be, and generally, a better track "surface" will be more easily maintained.

What I claim is:

1. The combination of a tire-supporting portion carrying a flangeless boosting tire having a plain wheel-tread surface, and widely separated therefrom another tire of the same outside diameter carrying a wheel-tread surface with a flange next adjacent thereto on the side toward the track center; a wheel axle concentric therewith; journals and places for journal boxes on said axle; means for spacing said tires apart, and holding said respective wheel flange, tread surfaces and axle in their relative positions; a seat between the respective separated wheel tread surfaces on which seat a brakeshoe and journal box are respectively applicable, when said seat is there placed to receive it, substantially as described.

2. The combination with a tire-supporting portion carrying a flangeless wheel tread surface; and separated therefrom, another tire-supporting portion carrying a flanged wheel tread surface, of the same outside diameter; a wheel axle concentric therewith, of relatively larger and smaller diameters where it passes through the respective hubs of said adjacent portions of the double wheel member; a journal and place for a journal box on said axle, between said adjacent hubs; means for spacing and holding the respective wheel tread surfaces, tires, axle and journal boxes, in their relative positions, substantially as described.

3. The combination of two, adjacent tire-supporting portions of a double wheel, one portion carrying a plain boosting tire, having a flangeless wheel tread surface; and apart from it, the other portion carrying a gage track tire having a flanged wheel tread surface, of the same outside diameter; a longitudinal axle concentric with and extending through the hubs of said adjacent tire-supporting portions; a journal and a place for a journal box on the axle between the said adjacent hubs; means for spacing and holding the respective wheel tread surfaces, tires, axle and journal boxes in their relative positions, substantially as described.

4. The combination of two, adjacent tire-supporting portions of a double wheel; one portion carrying a plain boosting tire with a flangeless wheel tread surface and the other carrying a flanged wheel tread surface of the same outside diameter for the gage track; a

longitudinal axle concentric with and extending through the hubs of said adjacent tire-supporting portions; a journal and a place for a journal box on the axle between said adjacent portions of the double wheel; a power applying gear wheel secured to the axle to co-act with a pinion on said geared motor, substantially as described.

5. The combination of two, adjacent tire-supporting portions of a double wheel; one portion carrying a plain boosting tire having a flangeless wheel tread surface, for the boosting track, and the other portion carrying a tire having a flanged wheel tread surface for the gage track; a longitudinal axle concentric with and extending through the hub of each tire-supporting portion of said double wheel; a journal and place for a journal box and engine frame on the axle between the adjacent wheel portions; a crank pin with a place for power applying connecting rods on the outside of each double wheel member to co-act with the reciprocating parts of an engine to propel said wheel, substantially as described.

6. The combination of two adjacent tire-supporting portions of a double wheel; one portion carrying a tire having a flangeless wheel tread surface for the boosting track and the other carrying a tire having a flanged wheel tread surface of the same diameter for the gage track; a short axle concentric with and extending through the hub of each of the adjacent tire-supporting portions of the double wheel; a journal and place for a journal box upon said axle between said adjacent separated hub portions of each double wheel member, substantially as described.

7. The combination of two tire-supporting portions of a double wheel adjacent to each other; one portion carrying a tire having a flangeless wheel tread surface for the boosting track and the other separated therefrom carrying a tire having a flanged wheel tread surface of the same outside diameter; an axle concentric with and extending through the hub of each adjacent wheel portion; a place on the axle between said adjacent wheel portions for applying a brakeshoe; a journal upon each end of the axle, substantially as described.

8. The combination of a pair of double wheel members, each composed of two adjacent tire-supporting portions, one portion carrying a tire having a flangeless wheel tread surface for the boosting track, and the other, spaced at some distance apart from it, carrying a flanged wheel tread surface of the same outside diameter for the gage track; a wheel axle concentric with and extending longitudinally through the hubs of said tire-supporting portions of each double wheel member; journals and a place for journal boxes on said axle, between adjacent portions of and outside each wheel member; a hollow quill or sleeve concentric with said axle to afford a seat for supporting concentrically therewith a power applying hollow gearless armature axle; means to attach each end of said quill to opposite double wheels for the purpose of driving same, substantially as described.

9. The combination of a plain boosting tire having a flangeless wheel tread surface, and separated therefrom, another tire having a wheel tread surface of the same outside diameter and a flange toward the track center; a drum or tire supporting cylinder concentric therewith, and extending through said tires; a place or seat on said drum between said adjacent tires for applying a brakeshoe; a single axle concentric with and extending through said drum; a journal and place for a journal box on each end of said axle; a movable sleeve around said axle inside said drum with sufficient space allowed between said sleeve and axle, for placing antifriction bearings when necessary; another tube inclosing said sleeve and axle; a thrust bearing cap around the axle covering each end of said sleeve and tube; a semi-resilient slightly yielding material packed between the axle bearing tube and the outer drum; drumheads perforated therethrough, substantially as described.

10. The combination of a series of concentrically disposed tubular members; the outside tube of largest diameter constituting a felly or tire-supporting portion; a tire having a flangeless wheel tread surface, for the boosting track and separated therefrom a tire having a wheel tread surface of the same outside diameter for the gage track; a wheel flange toward the track center; a longitudinal axle therethrough; a removable sleeve around the axle with sufficient space allowed to interpose antifriction roller bearings when needed between the axle and sleeve; a larger tube to hold the inner sleeve, rollers and axle; end closures or drumheads; thrust bearing cap around the axle covering the outside end of the tubes; a section or tube of reduced diameter called the waist divisible about its middle; tubes outside and inside telescoping the adjacent ends of the waist when divided; the waist connecting two double wheel members on the same axle; a journal and place for a journal box on each end of said axle; power applying means coöperating with said double wheels to propel same, substantially as described.

11. The combination of a tire-supporting portion, carrying a flangeless tire with a plain wheel tread surface, and another tire separated therefrom, of the same outside diameter; a wheel axle concentric therewith; a journal and a place for a journal bearing on said axle; means for spacing and holding said tires apart and holding the tires, tire-

supporting portion, and axle, in their relative positions; a seat concentric with the wheel axle; to which seat when relatively large, a brake-shoe is applicable; and when said seat is relatively of small diameter, a journal bearing is applicable, substantially as described.

In testimony whereof, I sign this specification in the presence of two witnesses.

LE VERT CLARK.

Witnesses:
BENJAMIN F. MULFORD,
K. CAPLIN.