(No Model.) 2 Sheets--Sheet 1.

A. ROSS.

CAR WHEEL.

No. 301,756. Patented July 8, 1884.

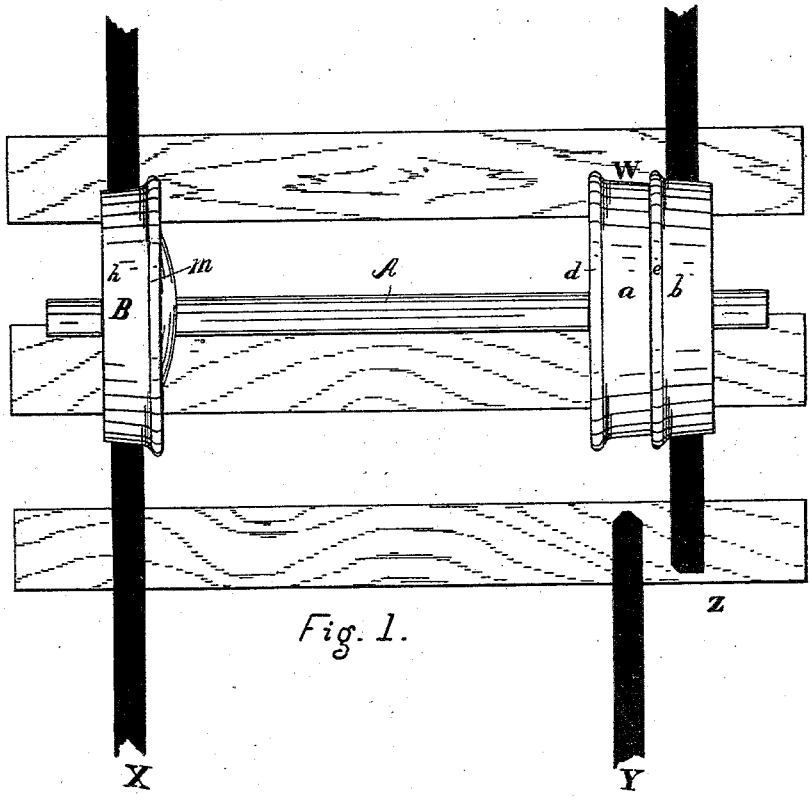

Fig. 1.

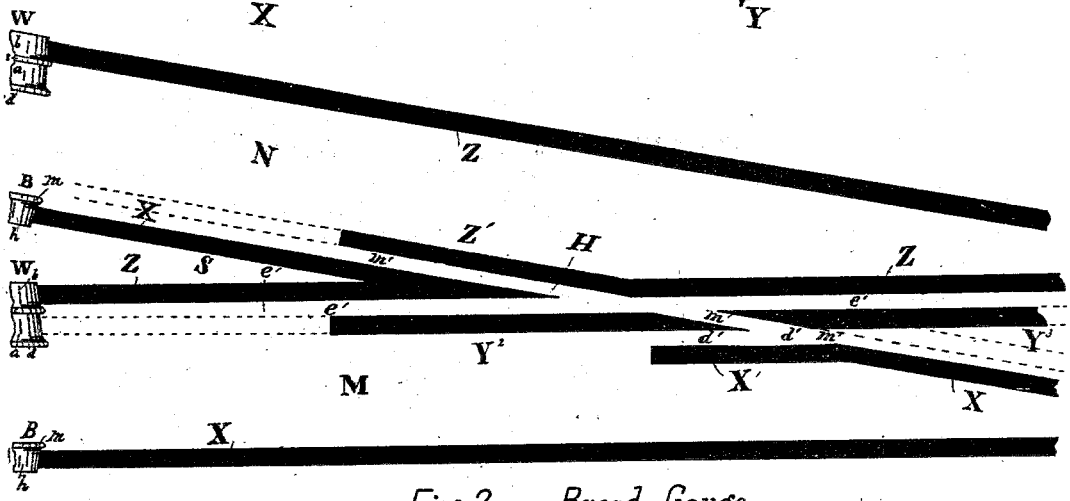

Fig. 2. Broad Gauge.

ATTEST.

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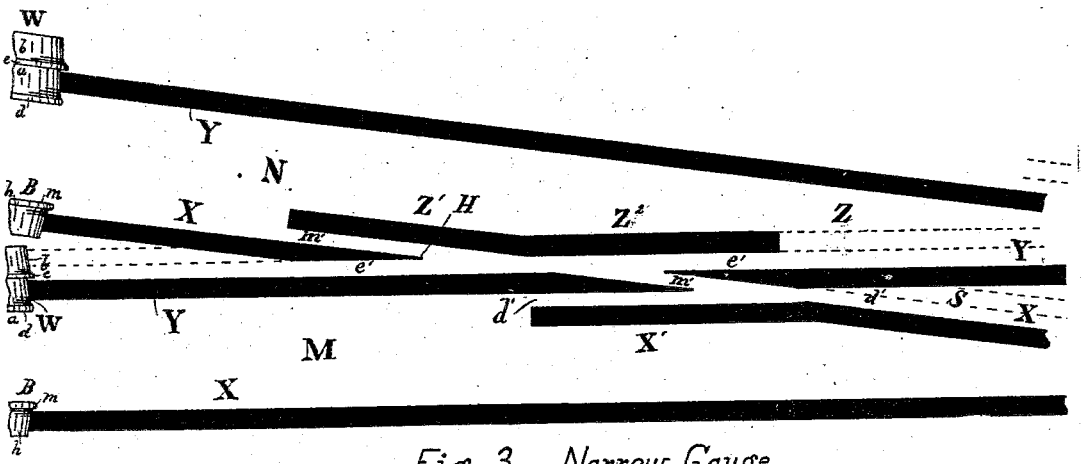

Fig. 3. Narrow Gauge.

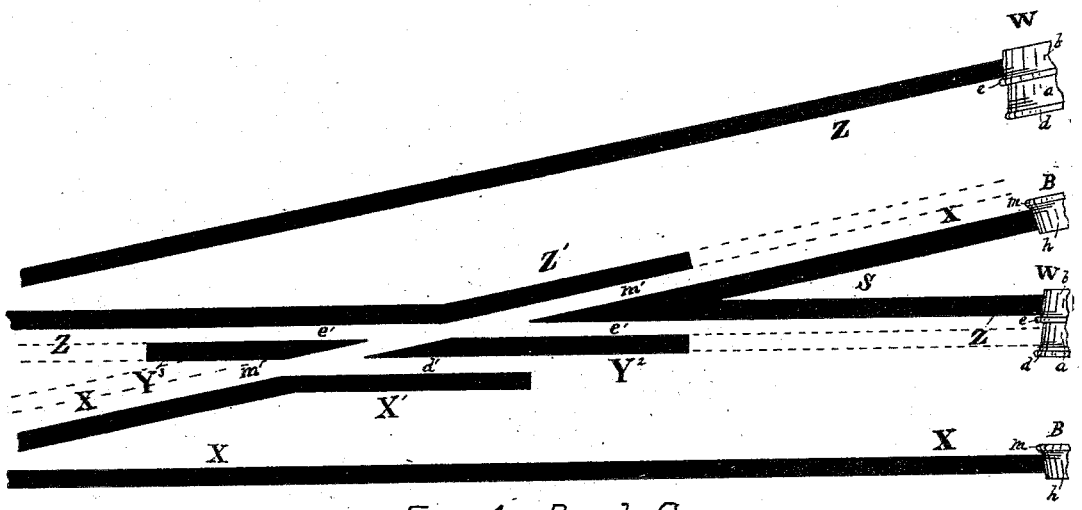

Fig. 4. Broad. Gauge.

ATTEST.

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UNITED STATES PATENT OFFICE.

ABRAHAM ROSS, OF CINCINNATI, OHIO, ASSIGNOR TO CATHARINE ROSS, OF SAME PLACE.

CAR-WHEEL.

SPECIFICATION forming part of Letters Patent No. 301,756, dated July 8, 1884.

Application filed July 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM ROSS, of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Car-Wheels and Frogs for Same, of which the following is a specification.

The object of my invention is to provide a car-wheel which, when employed under a railway-vehicle, will permit said vehicle to run from a broad to a narrow gage track, and vice versa, and also to run on either a narrow gage or a broad gage, or both, without the necessity of changing the trucks of said vehicle.

In different portions of the country the gage of railroads differs, and where this difference is but slight the compromise wheel suffices for either gage; but where the difference in the gage varies to a greater extent—as, for instance, between the northern and southern roads of the United States—it has heretofore been necessary to transfer freight and passengers from a train on one gage road to another train on the other gage, or, as is sometimes done, change the trucks under the cars—that is, substitute narrow-gage trucks for broad-gage trucks, or vice versa. In either event the expense and delay are considerable, and my invention completely overcomes the delay and to a considerable extent the expense thus incurred, as will be obvious from the following description.

Referring to the drawings forming part of this specification, Figure 1 is a plan view of a portion of a track changing from a broad to a narrow gage, and showing a car-axle with two car-wheels connected thereto, one of said wheels illustrating the principal feature of my invention. Fig. 2 is a plan view of a track, showing a frog at the intersection of two broad-gage tracks adapted for the passage of my improved wheel. Fig. 3 is a plan view of two narrow-gage tracks, showing a frog at the intersection of the two adjacent rails of said tracks, said frog being adapted to admit of the passage of my improved wheel. Fig. 4 is a plan view of two broad-gage tracks, showing a frog adapted for the passage of my improved wheel, said frog being located at the intersection of the adjacent rails of the tracks, the track which crosses the straight track being inclined in an opposite direction from that shown in Fig. 2.

My improved car-wheel W is at the axle made preferably nearly or quite the same thickness of the ordinary car-wheel, and is provided with the two peripheral faces or treads *a b*, (each preferably beveled,) separated by a flange, *e*, extending around the entire periphery of the wheel, the inner edge or face of the wheel being provided with the ordinary flange, *d*. Both of these treads *a* and *b* are of equal diameter, so that both the narrow and broad gage tracks may be laid on the same level, and not cause the car to tilt, as would be the case if the treads were of different diameters. The wheels are secured to the axle A in any suitable manner, and are at such a distance apart that when used on a narrow-gage track, then the tread *h* of wheel B is on one rail, X, and the tread *a* of wheel W will rest upon the other rail, Y, of the narrow-gage track, the flange *f* of wheel B being on the inside of the one rail, X, and the flange *d* on the inside of the other rail, Y, and in the event of being used on a broad-gage track the tread *h* of wheel B will rest upon one rail, X, and the tread *b* of the wheel W will rest upon the other rail, Z, the flange *f* of wheel B being on the inside of the one rail, X, and the flange *e* on the inside of the other rail, Z. When the track changes from one gage to another, the end of one of the rails of the broad-gage track is continued a short distance from the end of the rail of the narrow-gage track on the same side, as shown in Fig. 1, and the wheel W will thus run from one gage to the other without any interruption.

The wheel W is also usefully applicable to the locomotive or driving engine, the driving-wheel and the smaller wheels on one side of the locomotive being made double, to facilitate its running on the broad and narrow gage and passing from the broad to the narrow gage, or vice versa.

When my improved wheel is employed, it is necessary that the frogs at track-crossings and switches be so constructed that both of the flanges *d* and *e* of the wheel will pass, whether it be running on a broad or narrow gage track. If the cars are turned, the wheel W, which has

run on the rail on one side of the track, will then run upon the rail on the other side of the track; but such turning of the cars necessitates duplicating the frogs. To avoid duplicating the frogs the cars are not to be turned. The wheel W will therefore always run on the same side of the track, and it will then be necessary to put these special frogs on only one side of the track.

The frogs which I employ in broad and narrow gage tracks to permit my improved wheel to pass are shown in Figs. 2, 3, and 4 of the drawings, and are formed as follows: First with reference to a broad-gage track: In Figs. 2, 3, and 4 the single wheel B is supposed to run upon that rail of each track which is toward the bottom side of the sheet of drawings. This rail is designated by the same letter as was the rail in Fig. 1, upon which the single wheel there ran—viz., by the letter X—and in the narrow-gage track the rail upon which the tread *a* of the wheel A runs will be designated, as before, by letter Y, and in the broad gage the rail upon which the tread *b* of wheel W runs will be indicated, as heretofore, by the letter Z. In the broad gage shown in Fig. 2 the rail Z of track M is divided, as usual, to form the passage-way *m'* for the reception of the flange *m* of wheel B, running on track N, as it, (the wheel,) cross-rail Z, and the rail Z of the track M and rail X of track N on the left-hand side meet, and end in a point, H, in the usual manner. Rail Z is continued beyond the passage-way *m'*, and is at its end provided with the usual wing-rail, Z'. The rail X of track N as continued is provided at its left end with the usual wing-rail, X'. Between the rail Z of track M and the right-hand portion of rail X, with its wing-rail X', are interposed the two guard-rails Y^2 Y^3. The guard-rails Y^2 Y^3 are separate, and their separation forms a continuation of the aforesaid passage-way *m'* for the reception of the flange *m* of the wheel B. The adjacent ends of the guard-rails Y^2 and Y^3 are beveled to allow the passage *m'* to form substantially a straight line between said guards, and in connection with that portion of said passage-way *m'* between wing-rail Z' and adjacent rail X, thus allowing the flange *m* of wheel B to pass uninterruptedly across rail Z of track M and past the guard-rails Y^2 Y^3. The guard-rails Y^2 Y^3 are sufficiently removed from the rail Z of track M to form, in connection with said rail Z, a passage-way, *e'*, for the reception of flange *e* of wheel W, and the wing-rail X', with rail X, is sufficiently removed from guard-rails Y^2 Y^3 to form a passage, *d'*, for the reception of the flange *d* of wheel W. It will thus be observed that the wheel W, which runs on rail Z of track M, crosses the rail X of the track N without obstruction, and is at all times suitably supported. For instance, the guard-rail Y^2 supports the wheel W by being under tread *a* at the point where the passage-way *m'* parts the rail Z, and the rail Z supports said wheel when the latter is passing that portion of passage-way *m'* which is between guard-rails Y^2 and Y^3. The flange *m* of wheel B on rail X of track N, running in passage-way *m'*, has also full opportunity to cross rail Z of track M and go between the guard-rails Y^2 Y^3.

In Fig. 3 the preferred arrangement of parts for a frog at the intersection of the rail X of track N and of rail Z of track M, where the tracks are narrow-gage, is shown. It will be observed that the parts and passage-ways are the same (or substantially the same) as in the broad gage of Fig. 2, with the following principal exceptions, viz: The guard-rail Y^2 is extended toward the left and the guard-rail Y^3 toward the right, thus forming the rail Y of track M. On this rail Y runs the tread *a* of wheel W. The wing-rail Z' is present, and rail Z of track M, connecting thereto, is present in the form of a short rail or guard, Z^2. That part of rail Z of track M which in Fig. 2 connects with rail X of track N at the point H is omitted. It will be observed that the wheel W, running on rail Z of track M, can pass along and upon said rail and through the frog without obstruction, the way *e'* affording a passage for flange *e* of said wheel, and the passage-way *d'* affording a way for the flange *d* of said wheel.

In Fig. 4 two broad-gage tracks are shown, the rail X of track N crossing rail Z of track M in a direction which is the opposite of that shown in Fig. 2: The frog in Fig. 4 is substantially the same as that shown in Fig. 2, the location of certain parts, obvious upon inspection, being reversed. The bevels upon the guard-rails Y^2 Y^3 are made in a direction opposite to that of belonging to the guard-rails shown in Fig. 2.

In a narrow-gage track, where the rail X of a track, N, crosses the rail Z of a track, M, in the same direction as in Fig. 4 the rail of track N crosses rail Z of track M, the same respective and analogous changes will be made in the frog as compared with the frog of Fig. 4 as were made in the narrow-gage frog of Fig. 3 as compared with the frog of Fig. 2.

Obviously the angle S between the tracks X and Z, or X and Y, may be increased according to the specific angle of direction at which the rails are to cross, and if the angle S be increased it will at length become a right angle. In such event any suitable arrangement of the various rails, &c., will be made for the support of the tread of the wheels W and B, and for the uninterrupted passage of their respective flanges.

The frog may be so formed that the change from one gage to another may be made as the car-wheel passes from the frog. For example, if the guard-rails Y^2, Figs. 2 and 4, were continued in the left-hand direction from the frog, as shown by dotted lines, then a car coming on the track M and moving from the right-hand side of drawings toward the left side thereof would, upon crossing the frog, be transferred to a narrow gage, and if wing-rail Z' is continued, as shown in said figures, then

the car moving on the track N from the right to left on the track N will be transferred from the broad to a narrow gage. If the guard-rail Y^3 be continued, as shown in dotted lines in Figs. 2 and 4, a car moving from left to right on the track M will be transferred from the broad to a narrow gage. When the guard-rail Y^3 is continued, as shown in dotted lines in Figs. 2 and 4, a car moving on track M from left to right will be transferred to a narrow-gage. The continuation by dotted lines shown in Fig. 3 illustrates how a car moving on a narrow-gage track may in a similar manner be transferred onto a desired broad track.

I have thus fully described one form of frog which may be employed in connection with my invention in order to more fully illustrate the working and advantages of my invention; but I do not make any claim for such frog in this application, as I purpose making it the subject of separate Letters Patent.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. The improved railroad-wheel having inner flange, *d*, and concentric rail-treads *a* and *b*, of equal diameter and of equal width, said width being that of the ordinary tread, said treads being separated by the adjacent flange *e*, adapted to run upon railroads of different gages, substantially as and for the purposes specified.

2. In combination, a wheel provided with flanges *d* and *e* and concentric rail-treads *a* and *b*, of equal diameter and of equal width, said width being that of the ordinary rail wheel-tread and located at or near one end of an axle or shaft, and a wheel having single rail-tread *h* and flange *m*, located at or near the other end of the said shaft or axle, substantially as and for the purposes specified.

3. In combination, a wheel provided with flanges *d* and *e* and concentric rail-treads *a* and *b*, of equal diameter and of equal width, said width being that of the ordinary rail wheel-tread, said treads being separated by the intervening adjacent flange *e*, and a wheel having single tread *h* and flange *m*, said wheels being respectively located at or near the opposite ends of a common shaft or axle, substantially as and for the purposes specified.

4. The improved railroad-wheel having inner flange, *d*, concentric rail-treads *a* and *b*, of equal diameter and of equal width, said width being that of the ordinary rail wheel-tread, said wheels being separated by the adjacent flange *e*, the said treads correspondingly diminishing in diameter toward the outer edge of the wheel and adapted to run upon railroads of different gages, substantially as and for the purposes specified.

ABRAHAM ROSS.

Witnesses:
J. WM. STREHLI,
WALTER CHAMBERLIN.