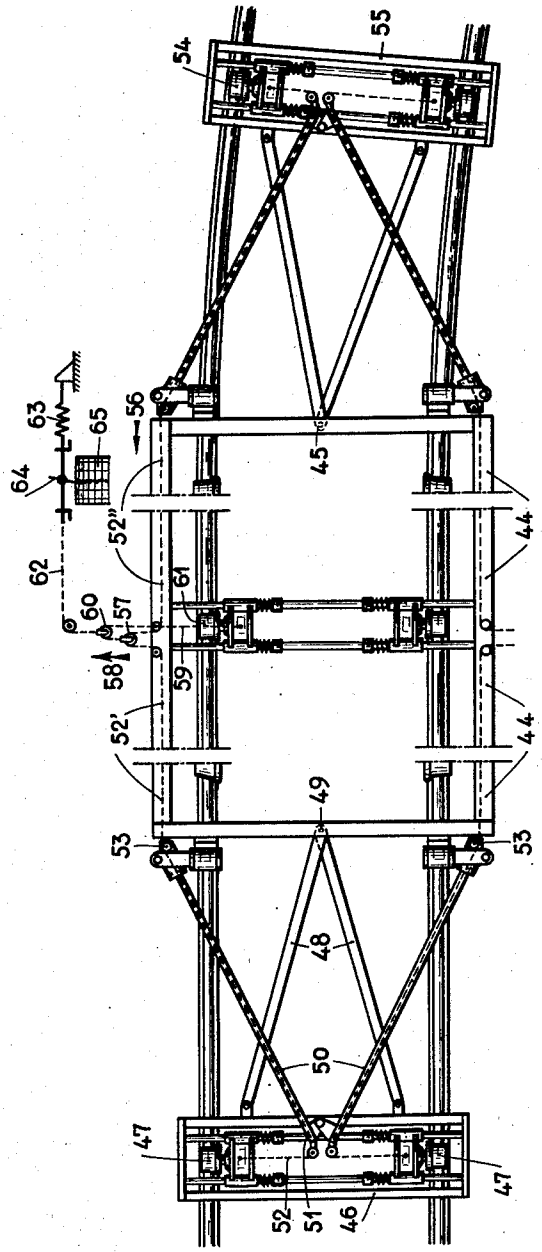
Nov. 26, 1957 P. GROSSMANN 2,814,119

RAILWAY TRACK HORIZONTAL GAUGE

Filed Aug. 12, 1954



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United States Patent Office 2,814,119 Patented Nov. 26, 1957

2,814,119

RAILWAY TRACK HORIZONTAL GAUGE

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Application August 12, 1954, Serial No. 449,399

2 Claims. (Cl. 33—144)

This invention relates to an improvement in the detection of irregularities in the alignment of railroad tracks and more particularly to measuring the horizontal coordinates of a railway track.

It is an object of this invention to provide a measuring vehicle having cars attached thereto each of which has only a pair of sensing elements.

It is a further object of this invention to provide a car attached to a measuring vehicle in which the sensing elements effect both the measurement and the car guidance.

These and other objects of this invention will become more apparent upon consideration of the following description taken together with the accompanying drawing in which the figure is a top plan view of the device of this invention.

This application is related to my copending application Serial Number 414,830, filed March 8, 1954.

In this invention each car is connected to the vehicle by a coupling forcing it to keep a direction transverse to the longitudinal axis of the railway track when the latter is rectilinear, and also keeping it in a radial direction on curves. The vehicle is provided with one element which is in constant orientation with each carriage. The free end of this element is located in the neighborhood of its respective car and serves as fixed point for the measurements effected by the sensing rollers of the car.

A vehicle has been shortened in order to facilitate its representation.

In a frame **44** rolling on the track **45** by means of axles, the axles have been omitted so that the wheel rims appear only in the two outside sections of the vehicle.

In this description of the proposed arrangement the left side of the figure is explained in detail. A car **46** with sensing rollers **47** is aligned with the vehicle on a rectilinear stretch of track and the sensing rollers are urged toward and kept in contact with the track by means of springs.

This car **46** is connected with frame **44** by means of two coupling bars **48** of the same length; they form an isosceles triangle with part of the car **46** as base.

The apex of this triangle is connected with frame **44** at **49** and articulated. The parts described are removable; when no measurement is effected, the carriage may be suspended under the vehicle or placed on the latter, as described in my copending application Serial Number 414,830.

By this means the car **46** is always maintained in a transverse position to the track on the rectilinear stretches of the latter; on the curves, it is practically radial as shown at the right side of the figure. The car **46** does not need two axles to guide it. It rolls on the sensing rollers **47**, which makes the car **46** notably lighter.

Two tubes **50**, of equal length, attached to frame **44**, form a second isosceles triangle. Its apex **51** is located in the immediate vicinity of the car **46**. Since the orientation of the two tubes **50** remains invariable, the point **51**

represents a fixed point with respect to the pendulum-like motion of the car.

Cables **52** are attached to the sensing rollers **47** of the car **46** and pass over pulleys before entering their respective tubes **50**; inside the tubes **50** the cables **52** are carried to the recording devices of the vehicle.

Tubes **50** may be removable or else articulated with respect to the vehicle at the connecting point **53**, so that when the car **46** is removed from the vehicle, the tubes **50** may be folded laterally against the frame **44**, as has been described in my above-mentioned copending application. This method of attachment by articulated tubes **50** is illustrated in the figure.

Referring in detail to one of cables **52** which leaves one of the tubes **50** at **52'**, we see that its other end, passing through **52''**, is connected to a sensing roller **54** of a right car **55** which touches the same track the same as the roller **47** to which this cable **52** is attached at the other end.

Car **55** is on the curve of the track which illustrates how it oscillates pendulum-like with its connecting rods, while the tubes guiding the measuring cables invariably keep their orientation.

Cable **52''** has been displaced in the direction of arrow **56** with respect to the starting position of cable section **52''**; for this reason the reversing sheave **57** over which passes the cable has moved in the direction of arrow **58**.

Another cable **59**, is tied to this reversing sheave; the cable **59** passes through a second reversing sheave **60**, and is connected to the central sensing roller **61** of the vehicle frame **44** which is also in contact with the track.

Finally cable **62** is tied on one end to the reversing sheave **60**, and on the other to spring **63**. The spring **63** controls the movements of a pen **64** of the recording device whose graph **65** is marked by the pen **64**.

It is easy to prove that the movements of this pen **64** are a measure of the deflection of the railway track arc circumscribed by the sensing rollers **47**, **61**, and **54** on the side considered. This is independent of the proper motion of the vehicle frame **44**.

An identical arrangement enables one to record independently the deflections of the opposite railway track.

Various modifications of the above-noted embodiment may be made without departing from the spirit of this invention. For example, the cables may be replaced entirely or in part by chains or equivalent coupling means. As the above-embodiment is for the purpose of illustration only it is intended that the invention be limited solely by the scope of the appended claims.

I claim:

1. A device for determining the camber of the longitudinal contour of a surface of track rail comprising in combination, a frame supported on said track rail, a sensing roller transversely movably mounted on said frame in contact with the surface of said track rail, means yieldingly urging said sensing roller transversely toward said track rail surface, an attachable car supported on said track rail, a second sensing roller transversely movably mounted on said car, a second attachable car supported on said track rail, a third sensing roller transversely movably mounted on said second car, second means yieldingly urging said second sensing roller transversely toward said track rail surface, coupling means attaching said car to said frame to maintain said direction of motion of said second sensing roller transverse to the axis of the rectilinear portions of said track and radial to the curved portions of said track, second coupling means attaching said second car to said frame to maintain said direction of motion of said third sensing roller transverse to the axis of the rectilinear portions of said track and radial to the curved portions of said

track, third means yieldingly urging said third sensing roller transversely toward said track rail surface, a cable connecting said second and third sensing rollers, guide means for said cable, a sheave constructed and arranged to receive said cable and be displaced by movement of said cable in response to relative transverse displacement of said second and third sensing rollers, a second cable connecting said first sensing roller and said sheave, a second sheave constructed and arranged to receive said second cable and be displaced in response to relative displacement of said first sheave and said first sensing roller, and means actuated by displacement of said second sheave to record movement of the same.

2. A device in accordance with claim 1 in which the guide means comprises tubes which are fixedly positioned with respect to the frame and surrounding the first cable to direct said first cable from said cars to the frame.

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