

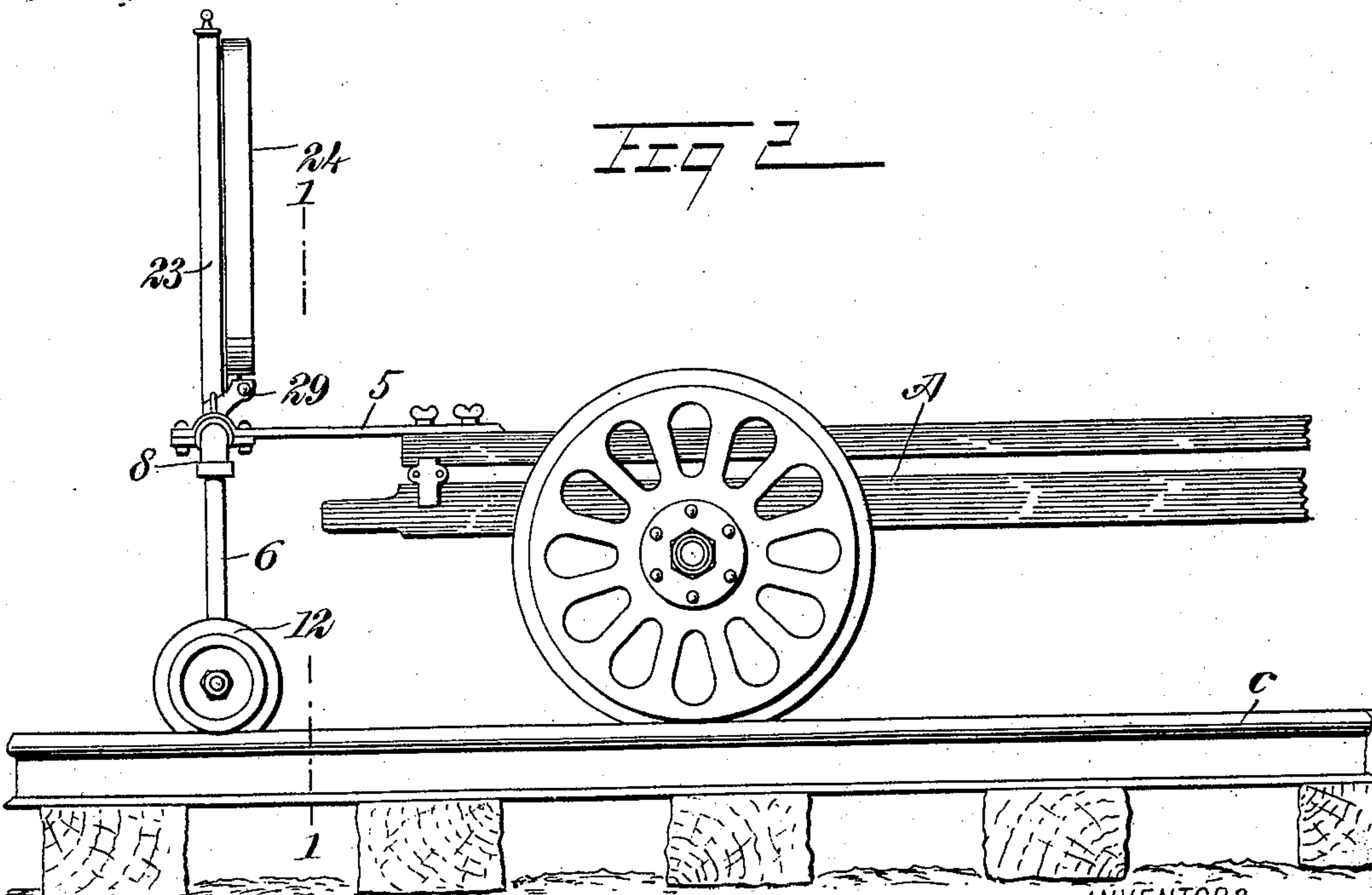
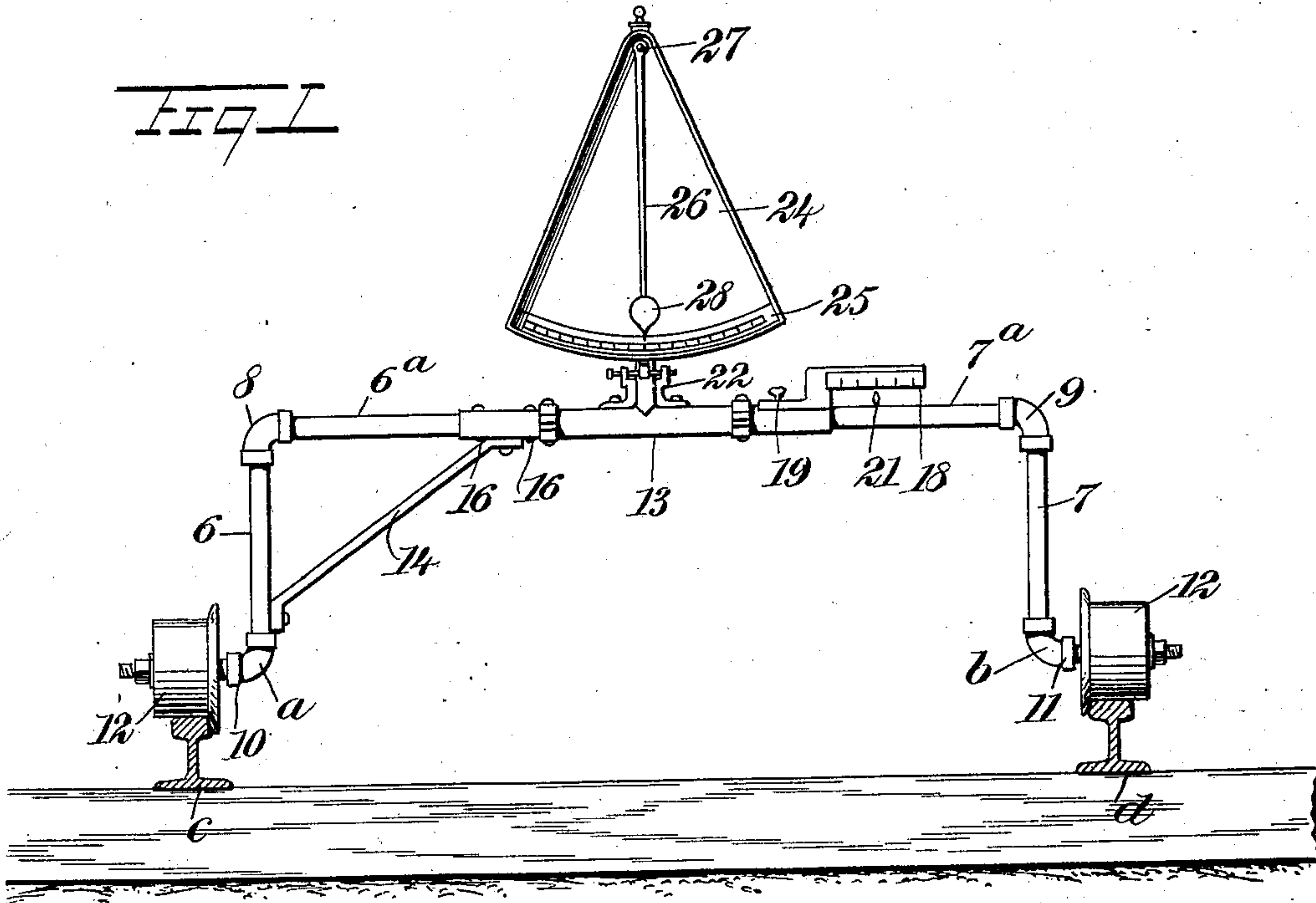
No. 747,872.

PATENTED DEC. 22, 1903.

T. ELLIS & G. H. PURVIS.  
AUTOMATIC TRACK GAGE.  
APPLICATION FILED MAY 16, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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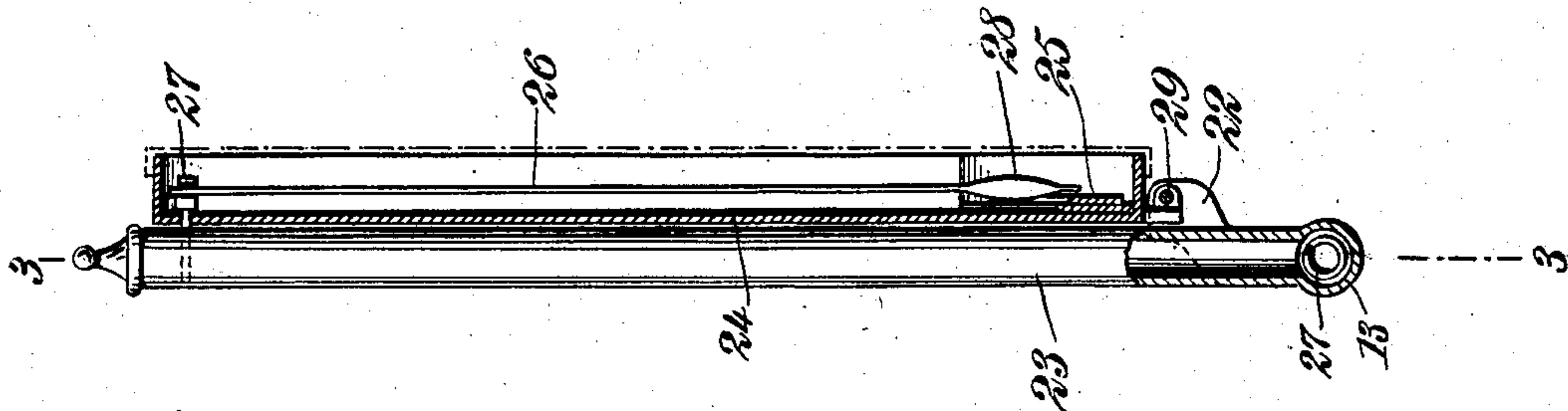
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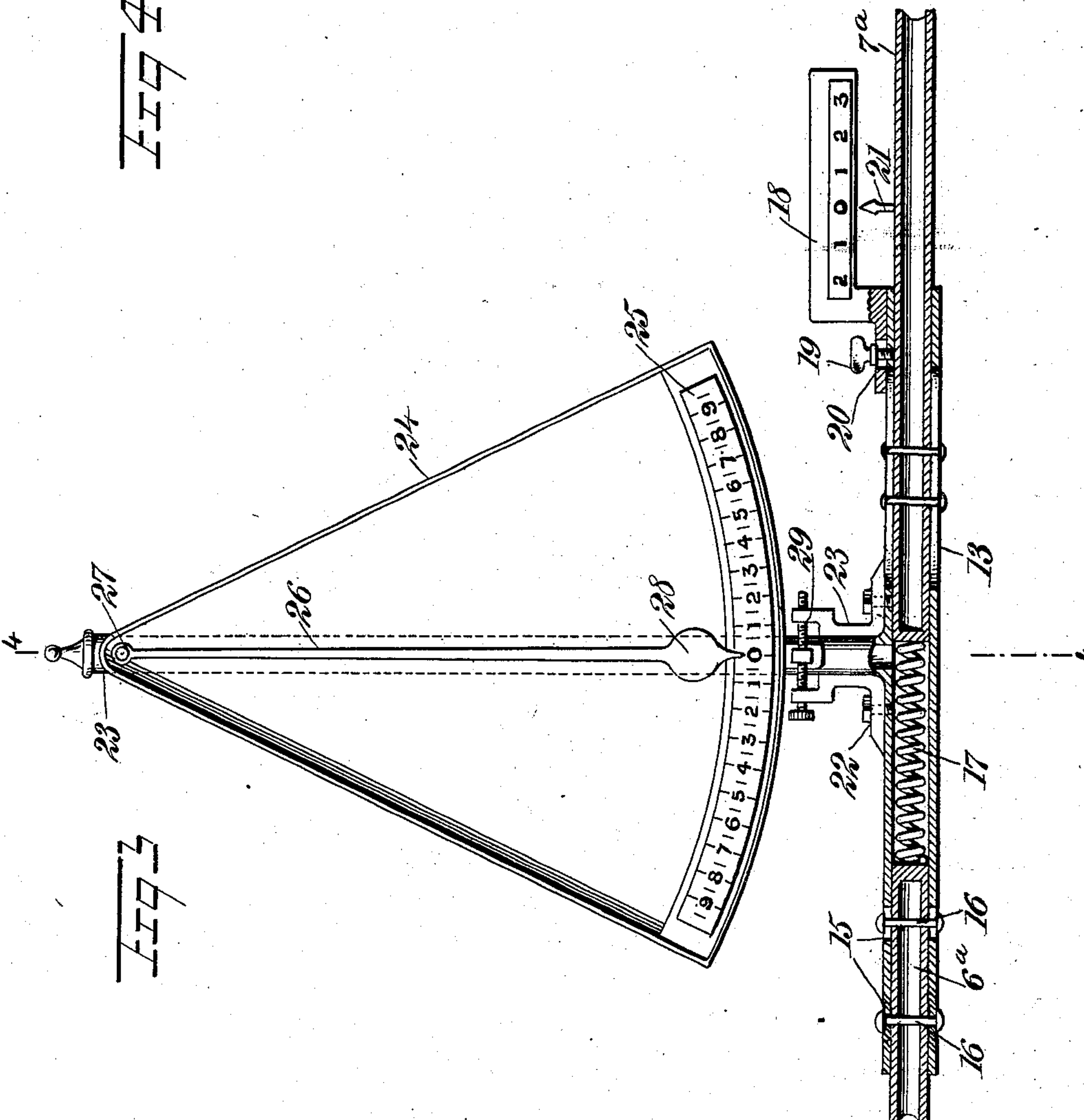
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NO MODEL.

2 SHEETS—SHEET 2



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# UNITED STATES PATENT OFFICE.

THADDEUS ELLIS AND GEORGE HERNDON PURVIS, OF LESTER,  
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## AUTOMATIC TRACK-GAGE.

SPECIFICATION forming part of Letters Patent No. 747,872, dated December 22, 1903.

Application filed May 16, 1903. Serial No. 157,371. (No model.)

*To all whom it may concern:*

Be it known that we, THADDEUS ELLIS and GEORGE HERNDON PURVIS, both citizens of the United States, and residents of Lester, in the county of King and State of Washington, have invented new and useful Improvements in Automatic Track-Gages, of which the following is a full, clear, and exact description.

The invention relates to certain novel and useful improvements in an automatic gage and elevation testing mechanism for railway-tracks.

In the present invention we have especially in contemplation as an object the provision of a mechanism of the type above referred to which may be readily attached to the ordinary hand-car or a track-velocipede in such manner that the exact elevation of curves of a track and the variations in the distances apart of the rails composing the track may be accurately and quickly ascertained. In other words, the exact state of the track, both as to gage and level, may be observed at a glance by the operator of our machine.

To the accomplishment of the above-recited ends the invention consists in the construction, combination, and arrangement of parts, as is described in this specification, delineated in the accompanying drawings, and set forth in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of a device embodying our improvements. Fig. 2 is a view in side elevation, showing our mechanism applied to an ordinary hand-car. Fig. 3 is an enlarged detail view of our improved indicator, the portions of the axle supporting the same being shown in section, such view being taken on the line 3 3 of Fig. 4; and Fig. 4 is a view taken on the line 4 4 of Fig. 3.

Referring now to the accompanying drawings in detail, A designates an ordinary hand-car or similar vehicle used for track-inspecting purposes, to which is designed to be attached, through the medium of a connecting-bar 5, our improved gage and tester.

The gaging and testing mechanism, which is more clearly shown in Fig. 1, is composed

of two supporting axle-arms *a* and *b*, each arm being formed of two tubular sections 6 and 7<sup>a</sup>, arranged approximately at right angles and connected by ordinary elbow-joints, such as shown at 8 and 9. The lower ends of the arms *a* and *b* are provided with outwardly-turned axle extensions 10 and 11, each being adapted to have journaled thereon flanged wheels 12, which wheels are adapted to run upon the rails *c* and *d*, forming the track, when the device is in use. The horizontal arms 6<sup>a</sup> and 7<sup>a</sup> are connected to form the framework by a relatively long tubular sleeve 13, which sleeve slips over the free end portions of said arms 6<sup>a</sup> and 7<sup>a</sup>, one end of said sleeve being connected with one of the arms, as shown the arm 6, through the medium of a brace-bar 14. The sleeve member 13 is provided with longitudinal slots 15, and through these slots are adapted to pass the vertically-arranged set bolts or pins 16, said pins also passing through the portion of the arm 7<sup>a</sup> lying within the sleeve, the construction being such that the arm may move backward and forward easily and freely in the sleeve portion, but will be prevented by said bolts from pulling out or being separated from the sleeve.

Inserted within the sleeve 13 and interposed between the ends of the arms 6<sup>a</sup> and 7<sup>a</sup>, lying within said sleeve, is a heavy coiled tension-spring 17, adapted to push the movable sliding arm 7<sup>a</sup> outward when the track increases in width or gage, it being also evident that when the distance between the rails decreases the arm portion 7<sup>a</sup> will force the spring inward, the spring always holding the flanges of the wheels tight to the gage side of the rail. An adjustable gage 18 is secured to the sleeve 13, the adjustment of said gage being accomplished through the medium of a set-screw 19, working in the slotted portion 20 of the gage-body, an indicator-pointer 21 being fixed to the arm-section 7<sup>a</sup> directly under the gage-bar 18, so that every increase and decrease of gage as the track is passed over is clearly indicated. When the machine is placed upon a track of the correct gage that the entire track should be, the graduated plate portion of the gage-indicator is adjusted, so that the zero-point is directly over the indicator 21, whereby when the track varies in



width the indicating-gage may work freely either way from "0."

Approximately centrally of the outersleeve-section is secured a T-joint 22, into which is  
5 screwed or otherwise suitably secured a perpendicular bar or standard 23, said standard supporting a sector-shaped box or casing 24, to the lower end of which is fixed a segmental dial or measuring-scale 25, said measuring-  
10 scale having thereon a series of numerals running either way from "0," the zero-point being central of the dial. A heavy pendulum or hand 26 is pivoted at 27 to the upper narrowed end of the box, the head 28 of said  
15 pendulum being directly in line with the zero-mark when the track-wheels rest in the same horizontal plane or on a level. Between the lower end of the casing and the sleeve is secured a screw attachment 29, through the  
20 medium of which the dial may be adjusted, so that when the car is placed upon a level track the pendulum will stand at "0," and as the car runs over curves it will indicate the exact elevation in each curve, whether  
25 right or left, and will also indicate on tangents whether a track is level or not, and if not level will show the exact deviation.

From the above description, taken in connection with the accompanying drawings,  
30 the construction and operation of the device will be readily apparent. If placed upon a level track and one of the proper or desired gage, the graduating gaging-bar 18 is adjusted until its zero-point registers with the  
35 indicating-pointer 21 and the pendulum of the dial points directly to the zero-point on the measuring-segment. As the device moves over the track if such track decreases from the proper gage the amount of deviation  
40 will be indicated by the numbers to the left of the zero-mark on the gage-bar and as the gage of said track increases the amount thereof will be indicated by the numbers on the right of the graduated bar. As the elevation  
45 of the curves in the track occur such curves will be indicated by the pendulum swinging over the measuring-dial to the right or left, as the case may be, the amount of curvature or elevation being indicated by the numbers  
50 on the segmental dial-bar.

This device will be found extremely convenient for use by engineers, trackmen, railway constructors, and the like, as it will enable an operator to travel over a considerable  
55 trackage during the course of a day and to indicate in his note-book the exact amount of variations in the level or gage of the track.

While we have shown and herein described one particular embodiment of our invention,  
60 it is of course to be understood that we do not limit ourselves to the precise details of construction shown herein, as there may be

modifications and variations in certain respects without departing from the essential features of the invention or sacrificing any of 65 the advantages thereof.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination with a track-vehicle, 70 of a device for indicating the level and gage of the track, such device comprising wheel-carrying axle-arms, a sleeve connecting adjacent ends of said arms, one of such arms being laterally movable in said sleeve, a measuring-gage for indicating the amount of 75 movement of the arm in the sleeve, and a measuring-dial for indicating the amount of elevation of the track, substantially as set forth. 80

2. The combination of a sectional wheeled frame, and a sleeve connecting adjacent ends of the sections, said sections having lateral movement relative to each other, a spring within the sleeve and normally pressing on 85 the sections to force the same outward relative to each other, a supporting-bracket on the sleeve, a casing having a measuring-dial thereon supported by said bracket, and an indicating-pointer pivoted to swing in said 90 casing over the measuring-dial, substantially as set forth.

3. The combination of a sectional wheeled frame, a slotted sleeve connecting the adjacent end portions of the sections and permitting lateral movement of one of said sections, 95 tie-bolts passing through the slot in the sleeve and through the ends of the frame-sections lying within the sleeve, an adjustable measuring-gage bar carried by said sleeve, and 100 an indicating-pointer carried by an adjacent frame-section, substantially as set forth.

4. In a track level and gage indicating mechanism, the combination of a sectional wheeled frame, a sleeve connecting adjacent 105 end portions of the sections, said sections having lateral movement relative to each other, a spring in the sleeve and bearing against the sections to thrust the latter relatively outward, a bracket carried by said sleeve, a stand- 110 ard supported in said bracket, a measuring-dial for indicating the elevation or level of tracks, carried by said standard, and an adjustable measuring-scale for indicating the gage of the tracks, carried by the sleeve and 115 one of the frame-sections.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

THADDEUS ELLIS.

GEORGE HERNDON PURVIS.

Witnesses:

THERON STAFFORD,  
A. SASSE.