

No. 747,975.

PATENTED DEC. 29, 1903.

J. C. JOHNSON.
RAILROAD LEVEL AND GAGE.
APPLICATION FILED AUG. 13, 1903.

NO MODEL.

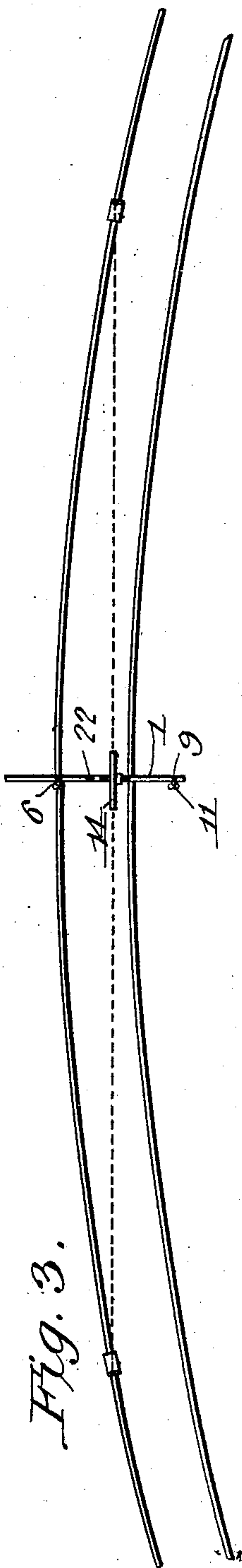


Fig. 3.

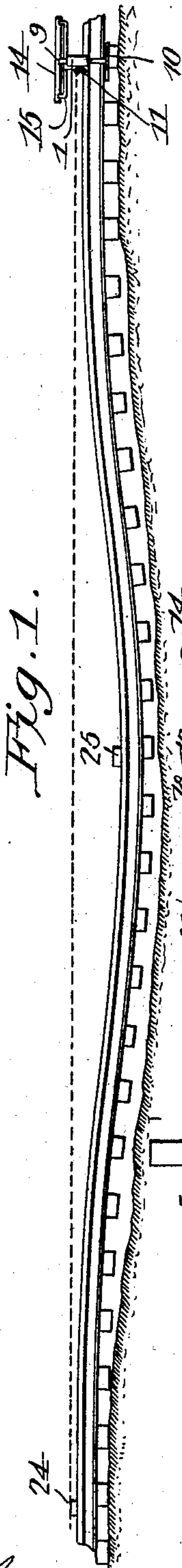


Fig. 1.

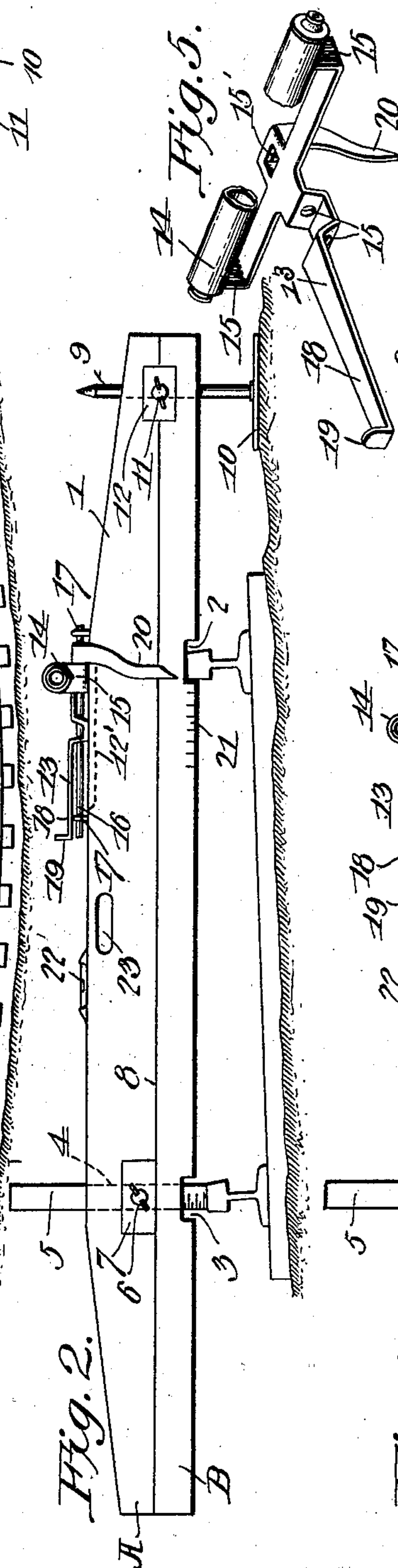


Fig. 2.

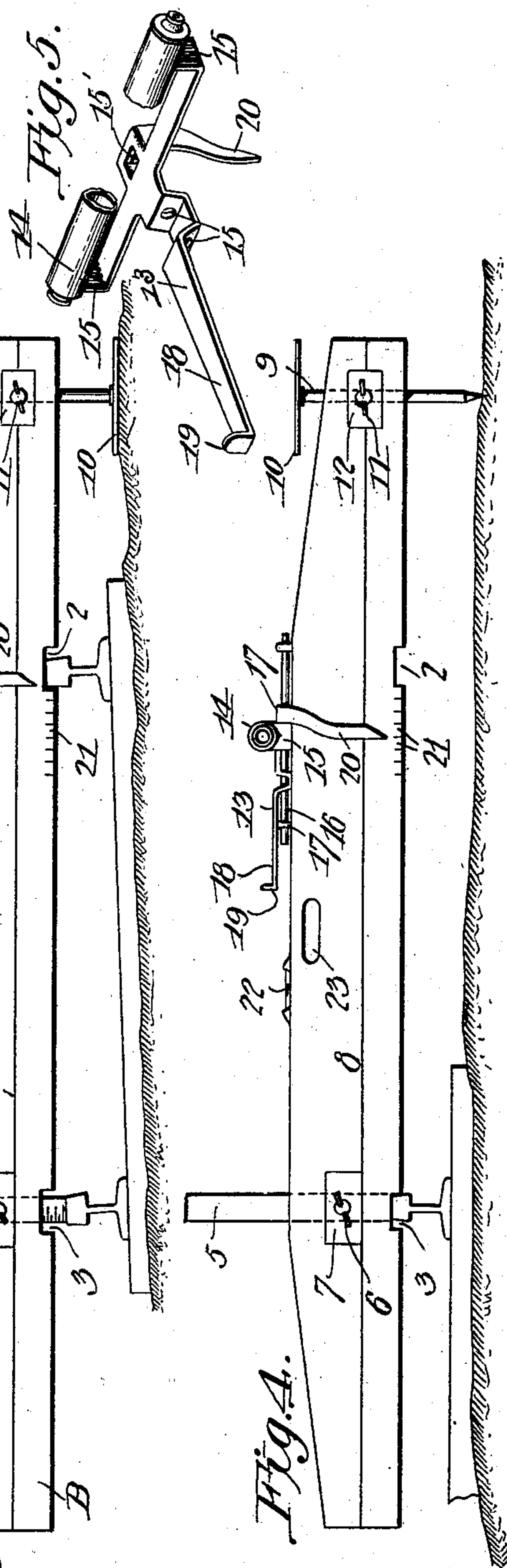


Fig. 4.

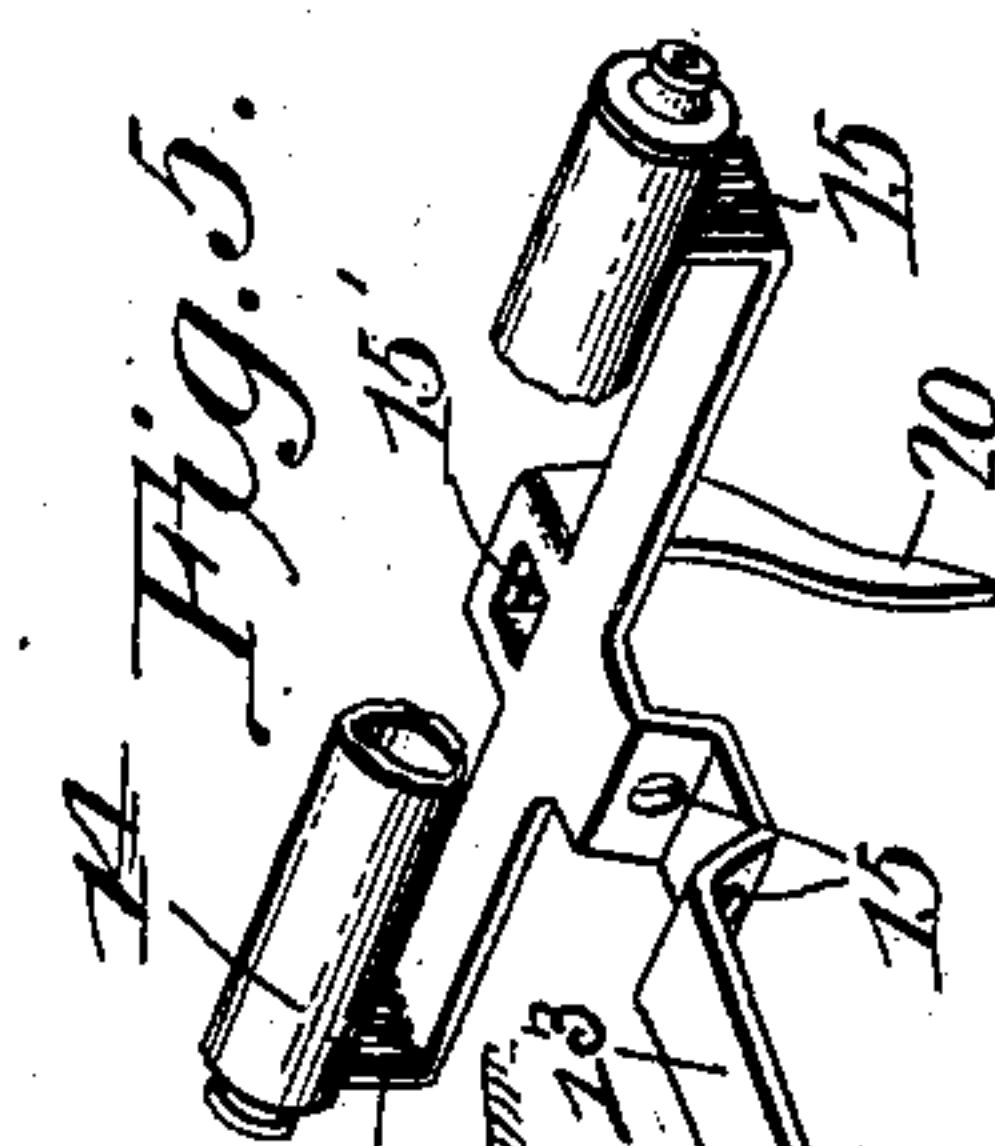


Fig. 5.

Witnesses
E. H. Stewart
S. H. McKee

J. C. Johnson, Inventor.
by C. A. Snow & Co.
Attorneys

UNITED STATES PATENT OFFICE.

JOHN CHARLTON JOHNSON, OF CHURCHWOOD, VIRGINIA.

RAILROAD LEVEL AND GAGE.

SPECIFICATION forming part of Letters Patent No. 747,975, dated December 29, 1903.

Application filed August 13, 1903. Serial No. 169,386. (No model.)

To all whom it may concern:

Be it known that I, JOHN CHARLTON JOHNSON, a citizen of the United States, residing at Churchwood, in the county of Pulaski and State of Virginia, have invented a new and useful Railroad Level and Gage, of which the following is a specification.

This invention relates to an improved surfacing-board or track-gage, and has for its object to provide a simple, inexpensive, and efficient device of this character for leveling, alining, and adjusting the relative position of railway-track rails.

A further object of the invention is to provide means for securing the proper elevation of the outer rail, particularly on curves, and to determine the degree of the several curves in a line of track without resorting to lengthy mathematical calculations.

A further object of the invention is to provide a surfacing-board having a telescope adjustably mounted thereon and provided with a depending arm adapted to act in conjunction with a graduated scale on the surfacing-board and indicate the degree of curvature of the rails as the telescope is moved back and forth in the act of making the necessary observations, said telescope being detachably mounted on the board, so as to permit the same to be readily removed and used for alining the several sections of track.

A further object is to provide a device of the character described which may be readily adapted for gaging and establishing a ditch on either side of the track and to provide means for leveling and supporting the board when used in this capacity.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims here appended, it being understood that various changes in form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a track, showing the application of my improved surfacing-board for alining or leveling the several sections of track. Fig. 2 is a side elevation of

the board, illustrating the manner of obtaining the desired elevation of the outer rail at the curves. Fig. 3 is a top plan view showing the manner of obtaining the degree of the curves. Fig. 4 is a side elevation of the board, showing the same used for establishing a ditch-line. Fig. 5 is a detail perspective view of the telescope-bracket and indicator-arm detached.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates the surfacing-board substantially rectangular in shape, as shown, and formed of wood, metal, or other suitable material, preferably wood on account of its lightness and being less liable to expand or contract when subjected to intense heat or cold. The lower edge of the board is provided with notches or recesses 2 and 3, spaced apart a distance equal to the gage of the track to be laid, and slidably mounted in an opening 4, communicating with the recess 3, is a vertically-disposed bar 5, the face of which is provided with a series of graduations indicating inches and fractions thereof, said bar being held in its adjusted position by means of a set-screw 6, engaging a threaded opening in a plate 7, secured to the board. The face of the board is painted or otherwise marked in two colors, (designated by the letters A and B,) the upper portion of the board being preferably red and the lower portion thereof white, defining a central gage-line 8 parallel with the lower edge of the board, said gage-line being used as a target in leveling the several sections of rails, as will be more fully explained hereinafter. An adjustable rod 9, provided with base or foot 10, is slidably mounted in a suitable opening in one end of the board, a set-screw 11, passing through a plate 12, serving to secure the rod in the adjusted position. The object of the rod 9 is to support the end of the board when used for establishing a ditch-line on either side of the track, as clearly shown in Fig. 4, and to assist in steadying the board when taking the elevation of the outer rail on curves. Slidably mounted in a groove or recess 12' in the upper edge of the board is a bracket 13, adapted to support a telescope 14. The bracket 13 is preferably stamped from a single piece

of metal, being formed with laterally-projecting arms 15, which extend in opposite directions a short distance beyond the board, said arms being notched or bifurcated to form a rest or support for the telescope, as shown. The body of the bracket is formed with a series of openings 15', through which passes a pin or rod 16, fastened in suitable bearings 17 on the board, the bracket being also formed with a longitudinal extension 18, provided with an upturned portion 19, which forms a handle and by means of which the bracket is adjusted longitudinally on the pin or rod. The bracket 13 is provided with a depending arm or indicator 20, which extends parallel with the face of the board and moves over a scale or series of graduations 21 and indicates the degree of curvature in the track as the bracket is moved back and forth, as will be more fully explained hereinafter. The scale or graduations 21 indicates the degree of curve in a given arc from a tangent, said arc having a given chord, the scale being used in conjunction with the arm or indicator 20 to save the trouble of a trigonometrical survey, if such has never been made. A spirit-level 22 is secured to the upper edge of the board, and said board is also provided with a suitable opening or handle 23 for conveniently transporting the instrument from place to place.

The construction of my device will be readily understood, and the manner of using the same is as follows: When it is desired to level or grade the track, the surface-board is placed transversely across a section of track having the proper grade, with the rails engaging the notches 2 and 3, as clearly shown in Figs. 1 and 2 of the drawings. Suitable blocks 24 and 25 are then placed on the track at suitable distances from the board, the block 24 being placed on a section of track previously surfaced and the block 25 where the track grade is sunken or too low, after which the proper grade may be obtained by sighting from the block 24 either with the naked eye or with the telescope 14 to the center or gage line on the board, the sunken portions of the track being raised by means of a jack or similar device until the blocks 24 and 25 are brought in alinement with the center gage-line on the board.

In laying curves the bar 5 is lowered from the body of the board according to the necessary elevation of the outer rail, which will be indicated by the graduation-marks on the bar, and said bar secured in the adjusted position by means of the set-screw. The track is then elevated until the spirit-level shows the proper adjustment of the mechanism for securing the relative position of the opposite rail.

In order to ascertain the degree of curvature in the track, the board is placed across the track at the middle ordinate, as illustrated in Fig. 3, and the bracket holding the telescope adjusted by sliding the same inwardly

toward the center of the track. By sighting with the telescope from either side of the board a predetermined distance, by way of illustration we will say thirty-one feet, the degree of curvature may be obtained, the arm 20 indicating the degree of the curve on the scale, as clearly shown in Fig. 2 of the drawings.

A ditch-line may be established on either side of the track by reversing the rod 9 and placing the end of the board having the notch 3 formed therein over the rail and dragging the opposite end of the board along the ground, the rod being previously adjusted to the desired height coming in contact with the ground and marking the same. The notches 2 and 3 being spaced apart a distance equal to the regulation distance between the rails renders the device capable of being used in the ordinary manner as a track-gage.

From the foregoing description it will be seen that I have provided an extremely simple, inexpensive, and efficient surface-board by means of which a section foreman or other person can with one instrument obtain the height of the outer rail of a curve, the degree of said curve, aline the several sections of track, and effectually gage and level the same.

Having thus described the invention, what I claim, and desire to secure by Letters Patent, is—

1. A gage for measuring railroad curves comprising a body portion, a sighting instrument adjustably mounted thereon, and means for determining the degree of curvature of the track by the movement of the sighting instrument.

2. A gage for measuring railroad curves comprising a body portion, a sighting instrument adjustably mounted thereon, means for determining the degree of curvature of the track by the movement of the sighting instrument, and means for determining the elevation of the outer rail of the curve.

3. A gage for measuring railroad curves comprising a body portion, a sighting instrument adjustably mounted thereon, means for determining the degree of curvature of the track by the movement of the sighting instrument, means for determining the elevation of the outer rail of the curve, and means for supporting the end of the body portion.

4. A gage for measuring railroad curves comprising a body portion, a sighting instrument adjustably and detachably mounted thereon, means for determining the degree of curvature of the track by the movement of the sighting instrument, and a target carried by the body portion for alining the rails.

5. A gage for measuring railroad curves comprising a body portion provided with track-receiving notches or recesses, a sighting instrument adjustably mounted on the body portion, means for determining the degree of curvature of the track by the movement of the sighting instrument, and a level carried by the body portion.

6. A gage for measuring railroad curves comprising a body portion, a sighting instrument adjustably mounted thereon, a scale on the body portion and means carried by the sighting instrument and coöperating with the scale for determining the degree of curvature of the track by the movement of the sighting instrument.

7. A gage for measuring railroad curves comprising a body portion, a bracket provided with a depending arm adjustably mounted thereon, a sighting instrument removably supported by the bracket, a scale on the body portion coöperating with the arm for determining the degree of curvature of the track, and means for determining the elevation of the outer rail of the curve.

8. A gage for measuring railroad curves comprising a body portion, a bracket provided with laterally - extending arms adjustably mounted thereon, a sighting instrument supported by the arms, a scale on the body portion, and a depending arm carried by the bracket and coöperating with the scale for determining the degree of curvature of the track.

9. A gage for measuring railroad curves comprising a body portion having a slot or recess in the upper edge thereof, a rod or pin

secured to the body portion and extending longitudinally of the recess, a bracket provided with an indicating-arm adjustably mounted on the pin or rod, a sighting instrument detachably supported by the bracket, track-receiving notches formed in the body portion, and a scale carried by the body portion and coöperating with the indicating-arm for determining the degree of curvature of the track.

10. A gage for measuring railroad curves comprising a body portion provided with track-receiving notches or recesses, a graduated bar adjustably mounted on one end of the body portion and a vertically-disposed rod provided with a marking shoe or foot adjustably mounted in the other, a sighting instrument adjustably mounted on the body portion and means for determining the degree of curvature of the track by the movement of the sighting instrument.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN CHARLTON JOHNSON.

Witnesses:

L. W. CLARK,
B. E. PETERMAN.