(No Model.)

# C. F. BERGH.

## RAILWAY TRACK GAGE AND LEVEL.

No. 250,777. Patented Dec. 13, 1881.

*Fig. 1.*

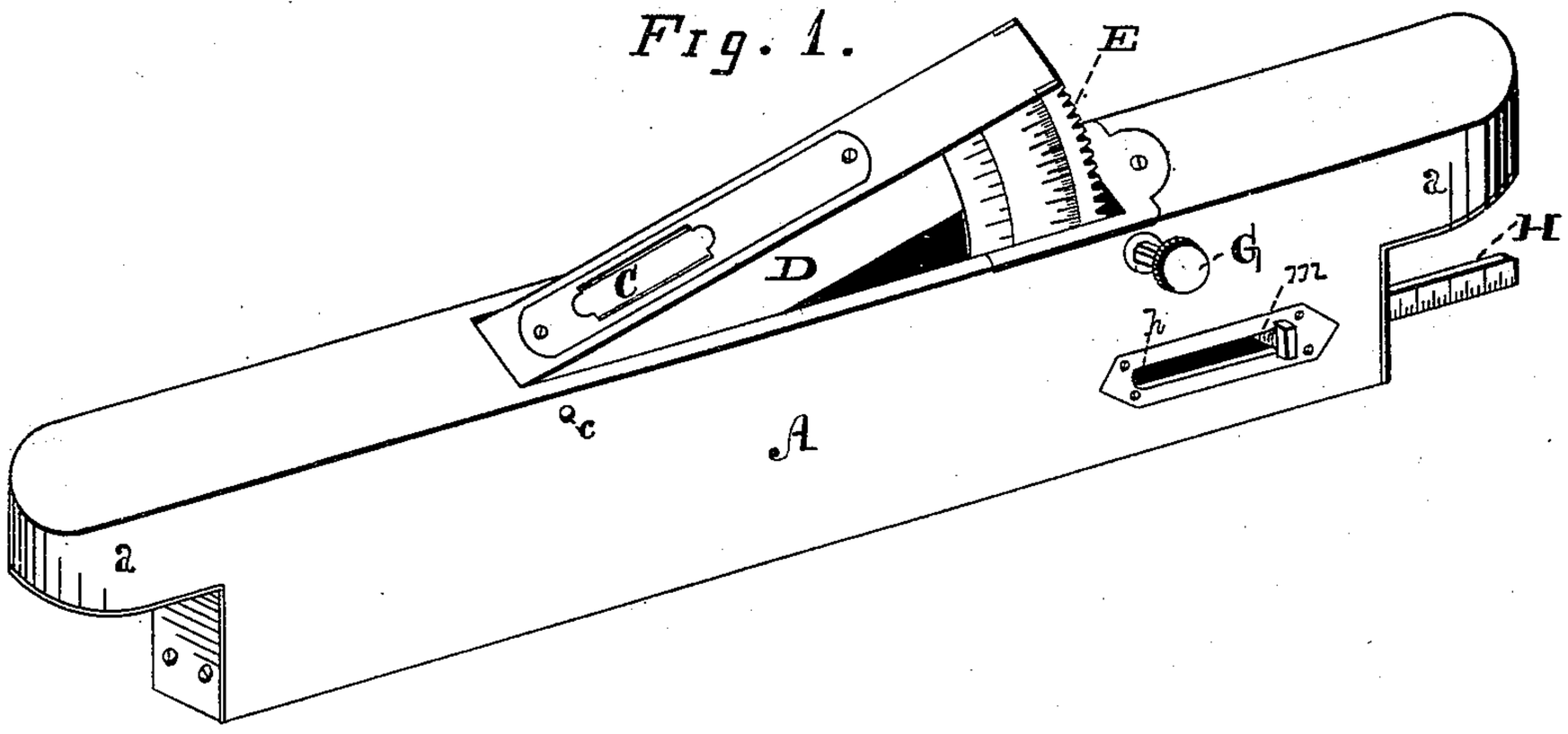
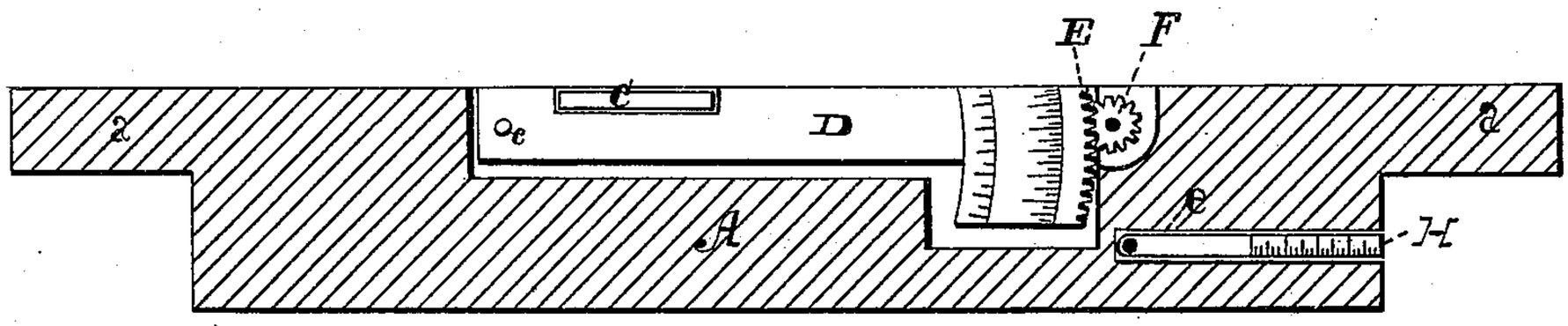



*Fig. 2.*




Witnesses
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# UNITED STATES PATENT OFFICE.

CHARLES F. BERGH, OF ALMA, CALIFORNIA, ASSIGNOR OF ONE-HALF TO LYSANDER COLLINS, OF SAME PLACE.

## RAILWAY-TRACK GAGE AND LEVEL.

SPECIFICATION forming part of Letters Patent No. 250,777, dated December 13, 1881.

Application filed May 31, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES F. BERGH, of Alma, county of Santa Clara, State of California, have invented a Track Gage and Level; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a track gage and level; and it consists in a novel arrangement of parts, whereby an instrument is made which will accomplish the object intended with ease and accuracy.

Referring to the accompanying drawings, Figure 1 is a perspective of my gage. Fig. 2 is a longitudinal section of the same.

Let A represent the stock, having the shoulders *a a*, by which it rests upon and fits between the rails. The top of the stock A is cut out to form an extended recess or chamber, in which a swinging bar, D, fits and is pivoted at one end, as shown at *c*. In the top of the swinging bar D is an ordinary level, C. The end of the bar D is provided with a rack, E, with which a pinion, F, on the end of the thumb-screw G engages, whereby the bar D is raised or lowered about its pivoted end. This means of adjusting the bar D insures the greatest accuracy, and is more effective than the ordinary way of loosening a set-screw. Upon the side of the bar D, at its end, are graduated scales, the one nearest the end denoting inches and the other one degrees. These are made to have a certain correspondence, as will hereinafter be shown. In the lower part of one end of the stock A is a deep socket, *e*, with which a slot, *h*, in the side of the stock communicates. A bar, H, having a hole in its inner end, occupies the socket *e*, and when pushed back entirely does not extend beyond the end of the shoulder *a*. A set-screw, *m*, passes through the hole in the end of the bar H, and when set up secures it. This bar has upon it a scale of inches and subdivisions thereof, as indicated.

In using the instrument the stock A is laid transversely between the rails, its shoulders *a* fitting upon the rails. When the track is in a straight direction the level in the bar D will level it. When the track is to be curved, the degree of curvature having been first determined upon by the direction or curve of the road, the object then is to determine the difference in the horizontal planes of the two rails—that is, how much one must be raised above the other. It is a matter of calculation that when a curve of certain degree is made one rail should be raised above the other a certain distance. The scale of degrees and the scale of inches upon the swinging bar D are made to so correspond that when a certain degree appears above the edge of the stock when the bar is raised a certain inch-line will also appear, and that line is the exact distance the rail must be raised when a curve of this degree is to be made in the track. Now, the degree of a curvature having been determined upon and known, the swinging bar D is elevated by means of the thumb-screw and rack on its end until that degree appears in line with the top of the stock A. On the same line the number of inches which one rail will have to be raised will appear above this stock. The rail is then raised the required dstance and the level in the bar D will determine the track when fixed.

As before said, the graduated scales upon the end of the bar D and the correspondence are derived by calculation, and my object in having both the scales of degrees and of inches upon the bar is that the track-men may see at once how much to raise the rail without having to consult tables of calculation. Knowing the degree of curvature to be made, they have but to raise the swinging bar so that that degree shall appear upon the scale, when the inches, which are made to correspond, will also appear, and they can see at a glance how much to raise a rail.

In case the course of the road-bed requires a very short curve to be made, the rails require to be separated a little more than in the case of a long curve. In order to gage this difference the device of the sliding bar H is used. By loosening the set-scerew *m* the bar H may be pushed out and set as required, so that its length when properly adjusted will determine the distance between the rails. The scale upon this bar is simply to indicate with accuracy the distance it is required to be pushed out, this distance being determined by the known degree of curvature according to previous calculation, so that the distance between the

track may be regulated in accordance with the curve.

It is obvious that this instrument may be for broad or narrow gage roads, by properly marking the scales upon its parts.

I am aware that the use of swinging bars in instruments of this kind is not a new thing, and that devices are used for gaging the distance between the rails. Their construction is, however, either different from mine or they do not embody the parts here shown, which, as a whole, I regard as necessary to make an effective instrument. I therefore do not claim the parts, broadly; but

What I do claim as new, and desire to secure by Letters Patent, is—

1. The track gage and level consisting of the stock A, with its shoulders *a a*, swinging bar D, with its level C, and having a graduated scale of degrees and corresponding inches on its side, as shown, and the adjustable sliding bar H, having a scale of inches thereon, substantially as herein described.

2. In a track gage and level, the swinging bar D, having a level, C, and a graduated scale of degrees and corresponding inches on its side, whereby convenience in adjusting is obtained, substantially as herein described.

In witness whereof I have hereunto set my hand.

C. F. BERGH.

Witnesses:
S. H. NOURSE,
FRANK A. BROOKS.