

No. 647,343.

Patented Apr. 10, 1900.

H. W. WATSON.

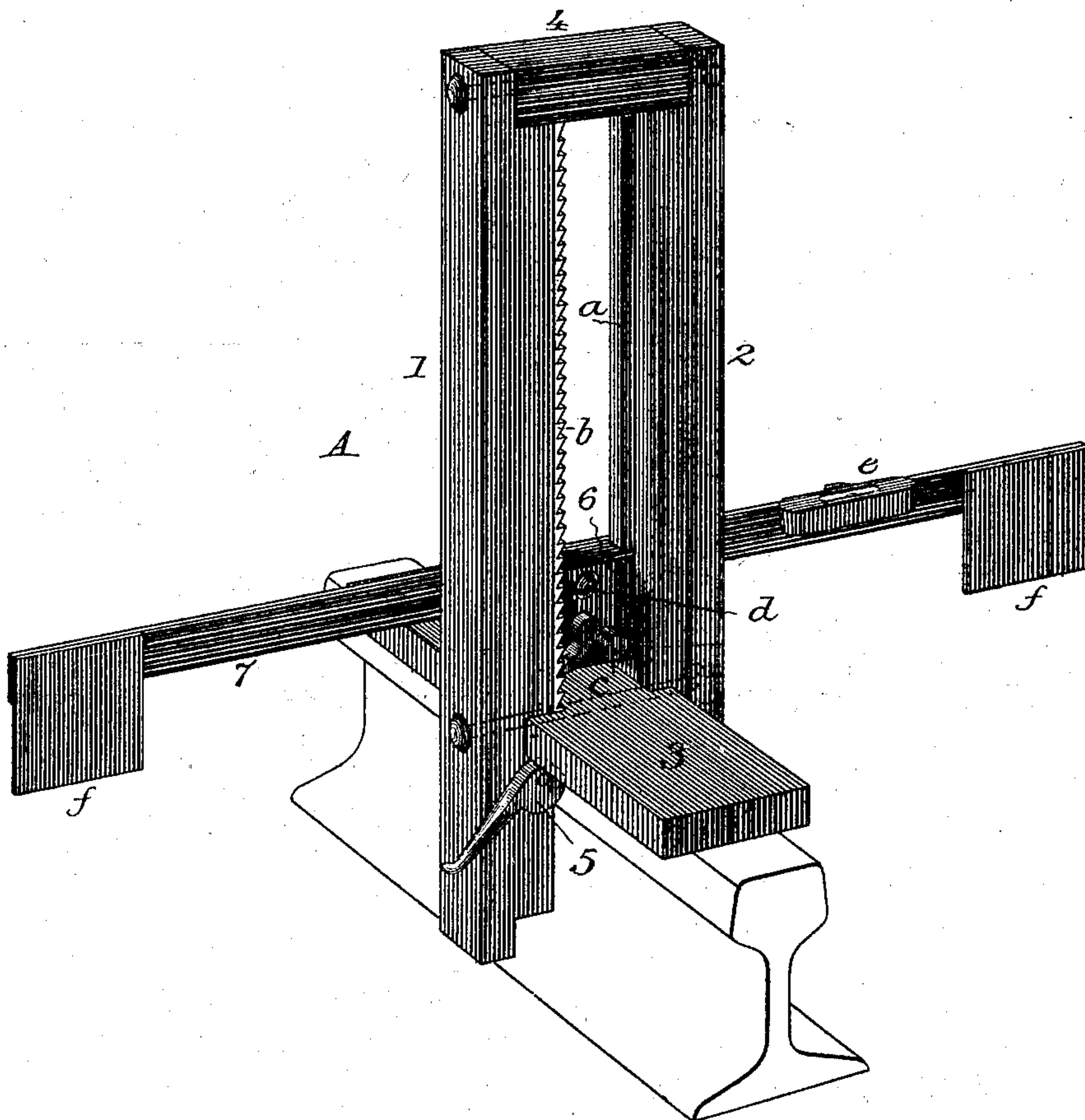
SURFACING BLOCK AND TRACK LINER.

(Application filed Sept. 19, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



Witnesses

Witnesses:
 Sidney P. Hollingsworth
 Arthur C. Fowler

Arthur C. Fowler

Inventor

Henry W. Watson
per R. L. Quinn

for R. L. Quinn

Altorney

No. 647,343.

Patented Apr. 10, 1900.

H. W. WATSON.

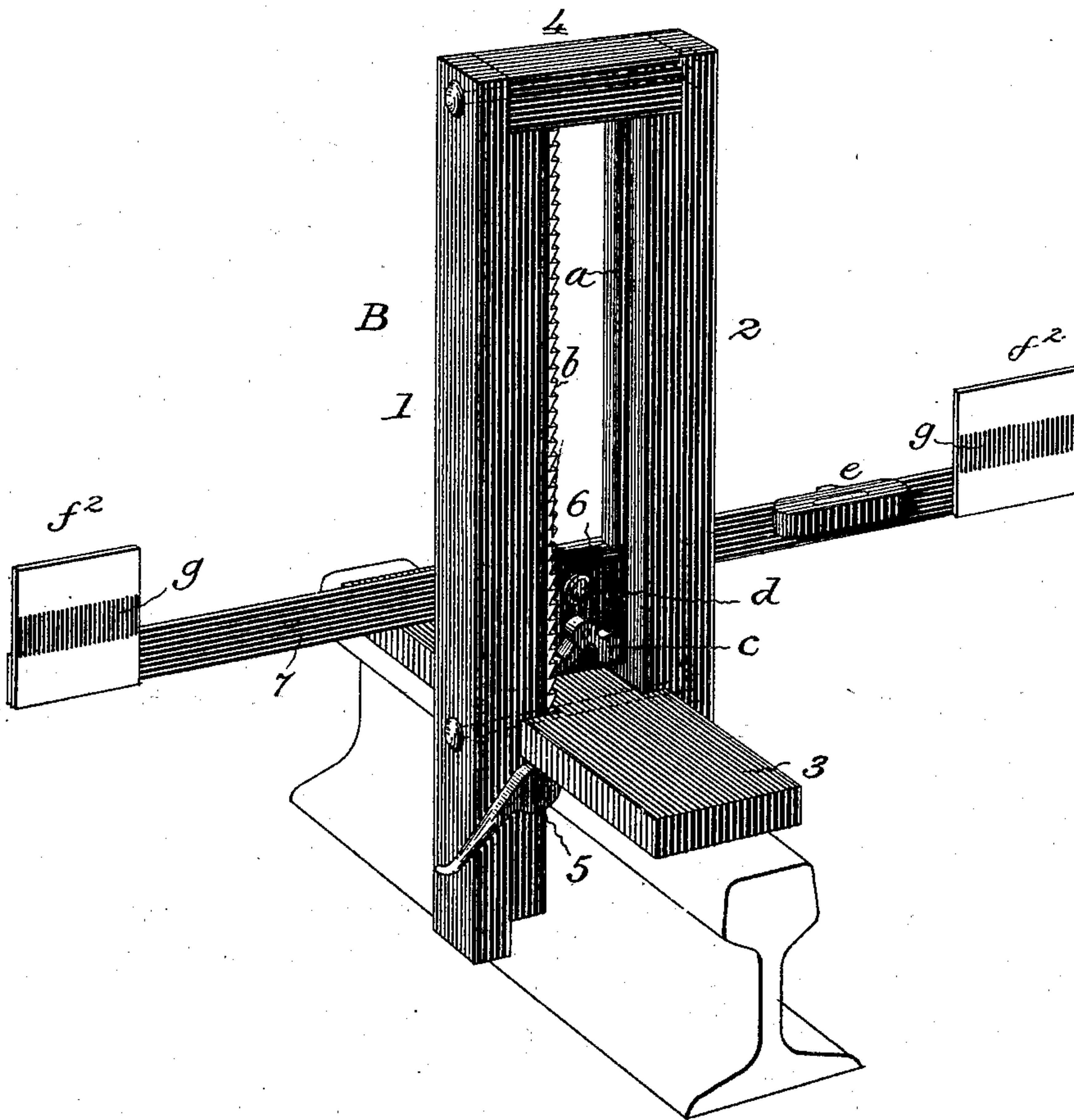
SURFACING BLOCK AND TRACK LINER.

(Application filed Sept. 19, 1899.)

(No Model.)

3 Sheets—Sheet 2.

Fig. 2.



Inventor

Henry W. Watson
per *[Signature]*

Attorney

Witnesses

Sidney P. Hollingsworth
E. W. Loftis

No. 647,343.

Patented Apr. 10, 1900.

H. W. WATSON.
SURFACING BLOCK AND TRACK LINER.

(Application filed Sept. 19, 1899.)

(No Model.)

3 Sheets—Sheet 3.

Fig. 3.

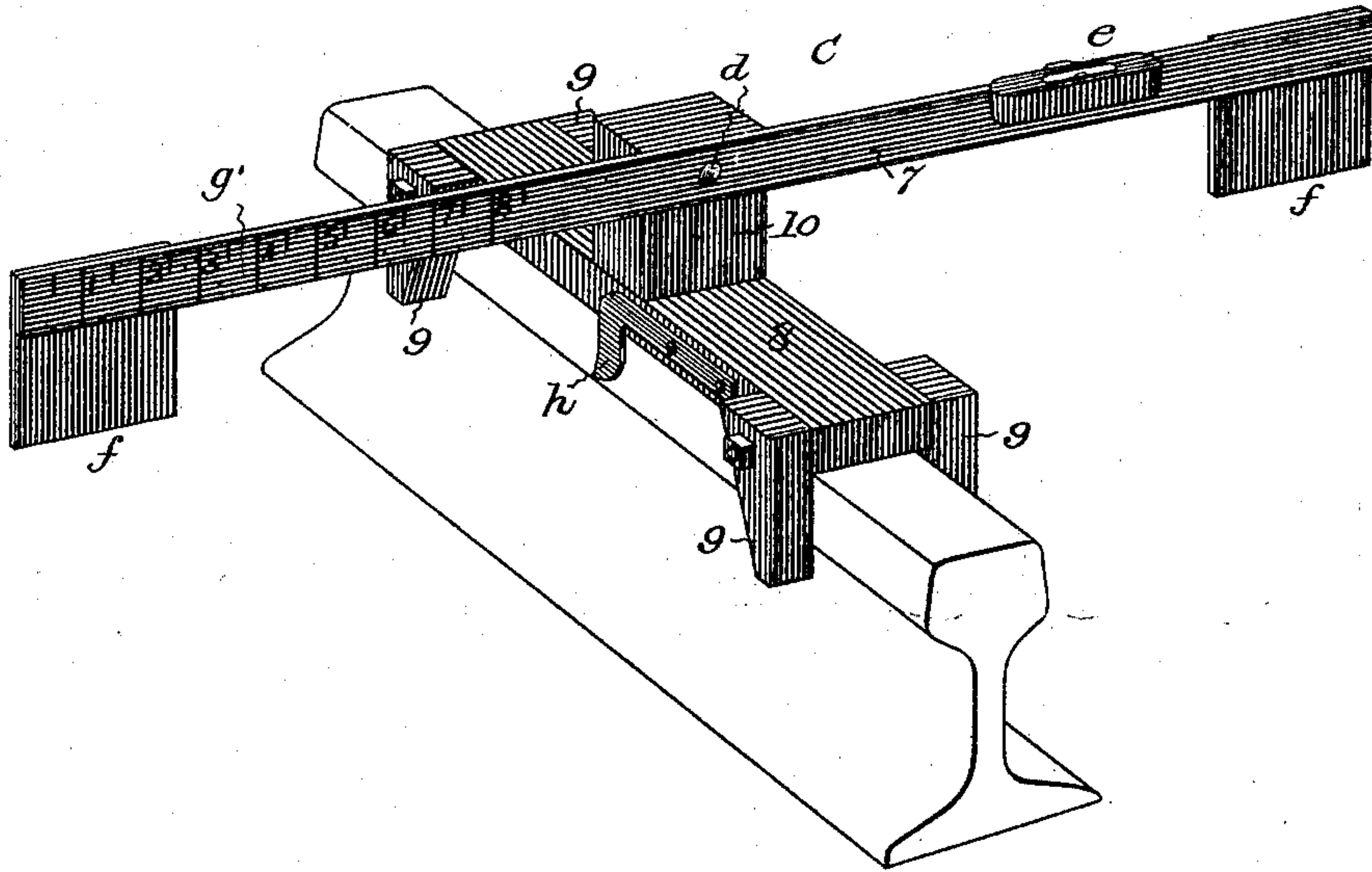
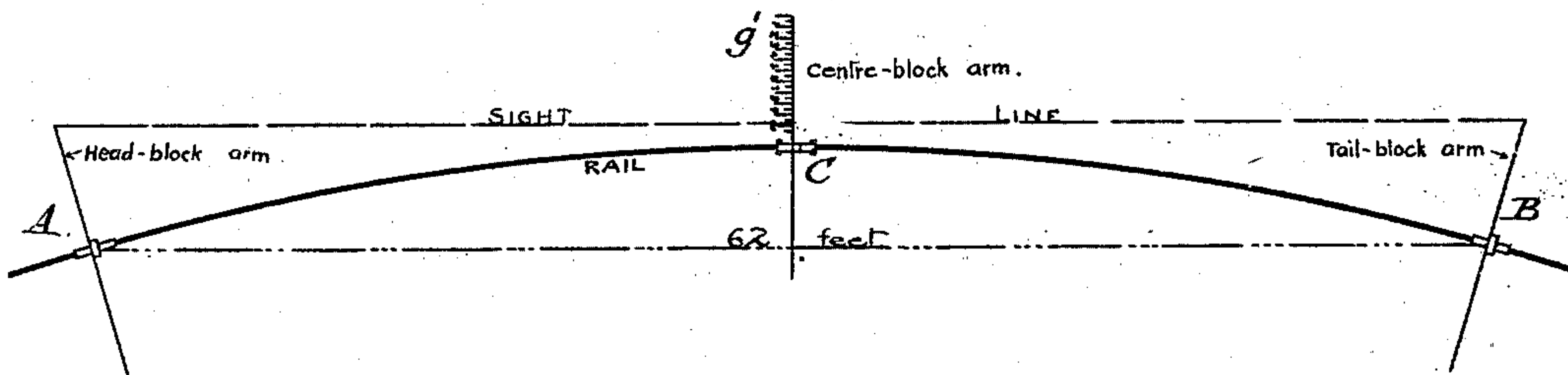


Fig. 4



Witnesses,
Sidney P. Hulingsworth
Arthur C. Fowler

Inventor,
Henry W. Watson
By *R. L. Egan*,
Attorney.

UNITED STATES PATENT OFFICE.

HENRY W. WATSON, OF MITCHELLSBURG, KENTUCKY, ASSIGNOR OF
ONE-HALF TO JOHN M. BAILEY, OF SAME PLACE.

SURFACING-BLOCK AND TRACK-LINER.

SPECIFICATION forming part of Letters Patent No. 647,343, dated April 10, 1900.

Application filed September 19, 1899. Serial No. 731,013. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. WATSON, a citizen of the United States of America, and a resident of Mitchellsburg, Boyle county, in the State of Kentucky, have invented a new and useful Improvement in Railway-Surfacing Blocks and Track-Liners, of which the following is a specification.

This invention relates to means for giving a true "surface" (lengthwise level or inclination) to railway-tracks and for putting the same in perfect line both on straight track and on curves.

The invention consists in a set of three sighting appliances or "blocks" and in certain novel combinations of parts which they embody, as hereinafter set forth and claimed.

The leading objects of the invention are to surface the track, to put it in line, and to determine the degree of curve, if any, by simple devices easily understood and used; to determine the degrees of curves by one hand instead of three, as heretofore, and to provide by one and the same set of appliances for surfacing, lining, and determining the curve at what is practically a single operation.

Two sheets of drawings accompany this specification as part thereof.

Figure 1 of the drawings is a perspective view of the sight-block or head-block. Fig. 2 is a perspective view of the tail-block. Fig. 3 is a perspective view of the intermediate block or center block, and Fig. 4 is a diagram illustrating the operation of determining the degree of a curve by means of the improved surfacing-blocks and track-liner.

Like letters and numbers refer to like parts in all the figures.

The set of appliances consists of a head-block A, Figs. 1 and 4; a tail-block B, Fig. 2, and a center block C, Figs. 3 and 4.

The head-block A comprises a wooden frame composed of uprights 1 and 2, a horizontal rest 3, and a top piece 4, rigidly united with each other by bolts and adapted to straddle a railway-rail, as in Fig. 1. A clamping-lever 5, pivoted to one of the uprights and engaging the head of the rail, clamps the block tightly in working position, with said rest 3 on the top of the rail and extending length-

wise thereof. The inner sides of the uprights 1 and 2 are grooved, as at *a*, Fig. 1, and guided by these grooves there is a vertically-movable inner block 6 between the uprights. A ratchet-rack *b*, attached to the inner side of one of the uprights, and a gravity-catch *c*, pivoted to said inner block, provide for automatically supporting the latter at different heights when the track is to be raised or lowered. A cross-bar 7, forming a pair of flag-arms movable as one part, is pivoted at *d*, Fig. 1, to the inner block 6 and is provided with a spirit-level *e* and a pair of rigid "flags" *f*, the latter (at its extremities) projecting downward and painted black in common with the cross-bar 7 and the frame of the block.

The tail-block B, Fig. 2, is identical with the head-block A, except that the cross-bar 7, forming its flag-arms, is provided with upwardly-projecting flags *f*², the upper and lower portions of which, in common with said cross-piece are white, with a middle stripe *g* of black, the lower edge of which coincides with the upper edge of the cross-bar 7 to facilitate sighting with certainty the level of this edge.

The center block C, Figs. 3 and 4, is adapted to straddle the rail between the head-block A and the tail-block B and to be moved readily along the rail as the work of correcting the surfacing or alinement of the track progresses. The parts of its base, as shown in Fig. 3, are a rest 8, four legs 9 to keep the rest lengthwise of the rail, and a short upright or fulcrum-block 10 at mid-length rigidly united with each other. A pair of friction-springs *h*, Fig. 3, attached to the lateral edges of the rest 8 and pressing against the head of the rail, steady the center block in any position in which it is left. A flag-arm cross-bar 7, similar in length and general characteristics to those of the other blocks A and B, is pivoted to the fulcrum-block 10 at *d* and is provided with a spirit-level *e* and flags *f*. The cross-bar is further provided on each side with a scale or graduations *g*¹, reading inward from the extremity in inches and half-inches, on the flag-arm that projects at the convex side of the curve. Otherwise the flag-arms of the center block are preferably and conveniently identical with those of the head-block A.

When the inner or fulcrum blocks 6 of the head-block A and tail-block B are lowered, as in Figs. 1 and 2, the height of all three of the flag-arm pivots *d* above the rail is alike, as is the height of the flag-arm cross-bars 7 when the latter are leveled by means of the spirit-levels *e*.

On a length of track that is or ought to be level and straight it is only necessary, with the blocks located and adjusted as above, to sight along the three flags on either side of the rail at said height of the tops of the flag-arm cross-bars in order to determine at once whether the rail needs to be raised at any point to surface it and whether it requires to be moved laterally into line.

The customary standard-width gage and the customary level-board for leveling across the track are used in connection with the set of blocks A, B, and C to simultaneously regulate or adjust both rails. Two or more men, with a pair of jacks and such other tools as may be required, including the width-gage and level-board, work in the neighborhood of the center block C and move the latter along toward the head-block A or tail-block B as the work progresses. The two rails are thus adjusted simultaneously until both are in surface and also in line. There is no occasion to transfer the sighting appliances from one rail to the other, for if one rail is surfaced true by means of the blocks and the other rail is raised to the proper height, as determined by the level-board, it also is thrown into surface. So, also, if one rail is in line, as determined by sighting along the three flags on either side, and the rails are the proper distance apart, as determined by the width-gage, both rails must be in line. The rails are in surface when the tops of all the flag-arms are on a level with each other and are in line on straight track when all three flags on either side are in line with each other, with the center block C at all points between the head-block A and the tail-block B. A given force of men is thus enabled to accomplish twice the amount of work they can accomplish by the methods heretofore in use.

Where the true surface is not a dead level, one or the other or both of the vertically-movable fulcrum-blocks 6 of the head-block and tail-block must be adjusted preliminarily by means of the racks *b* and catches *c*. The duplication of such means for vertical adjustment gives an extended scope of adjustment with a given height of frame.

The duplication of the flag-arms at each block serves not only to adapt the set to be used equally well on either rail, as may be most convenient, but renders them self-balanced, and thus facilitates leveling them with accuracy and the surfacing and alining of curved track as readily and with the same exactness as straight track. The flag-arms being brought to a perfect level by their attached spirit-levels *e* give the same height at both extremities of the bars and at all inter-

mediate points as above the rail. The levels *e* are for this purpose only.

The degree of a curve is accurately determined in the manner illustrated by Fig. 4. For this purpose the head-block A and tail-block B are placed sixty-two feet apart on the outer rail of the curve and the center block C is placed equidistant from both—that is to say, thirty-one feet from each. The flag-arms being leveled, the graduated outer arm of the center block C projects beyond the line of the outer arms of the head and tail blocks a certain number of inches, as is shown by its scale *g'*, when the operator sights over it, and each inch or fraction of an inch of such projection represents a degree or a like fraction of a degree, as per rules governing this branch of railway-work. According to such rules each and every curve on each and every section of a railway is numbered, and the foreman of each section is provided with the regulation description of each curve on his section including its degree in inches and fractions of an inch measured as above and the elevation of the outer track, such degree and elevation being determined by the maximum speed of trains running over the curve. The elevation is given by means of the level-board in common use. The present way of determining the degree is by means of a cord sixty-two feet long with a knot tied in the middle, the foreman or a hand measuring with a foot-rule from the knot to the ball or head of the rail and the number of inches from the knot to the rail being the number of degrees. It requires a hand at each end of the cord and one at the knot to so measure the degree, and as it is almost impossible to prevent a cord either sagging or stretching the degree cannot be as accurately ascertained as by means of the improved blocks. Otherwise the latter operate according to the familiar rule in making such measurement, while the foreman or a single hand can do the work unaided.

The materials and colors above suggested are those preferred, but are not of course essential. Known or improved devices may be substituted for those above described for clamping the blocks upon the rail, for holding the fulcrum-blocks in the head-block and tail-block at different heights, and for leveling the flag-arms, and other like modifications will suggest themselves to those skilled in the art.

Having thus described said improvement, I claim as my invention and desire to patent under this specification—

1. A railway-surfacing block having a pair of self-balancing flag-arms, in one part, adapted to project on opposite sides of the rail, and provided with means for indicating when the arms are level, a central pivot on which the arms are movable to level them, and means for supporting said pivot at a determinable height above the rail.

2. A railway-surfacing block having a pair of self-balancing flag-arms adapted to project

on opposite sides of the rail and provided with means for indicating when they are level, a central pivot on which the arms are movable to level them, and means for supporting said pivot at different heights above the rail.

5 3. A railway-surfacing block having a pair of self-balancing flag-arms adapted to project on opposite sides of the rail, a pivot on which said arms are movable, a vertically-movable fulcrum-block carrying said pivot, and means
10 for securing said fulcrum-block at different heights above the rail.

4. A railway-surfacing block having a pair of self-balancing flag-arms adapted to project
15 on opposite sides of the rail, a pivot on which said arms are movable, an upright frame provided with a rack-bar, and a vertically-movable fulcrum-block carrying said pivot and provided with a gravity-catch to coact with
20 said rack-bar.

5. In a set of railway-surfacing blocks, a head-block comprising a pair of self-balancing flag-arms adapted to project on opposite sides of the rail and provided at their outer
25 ends with downwardly-projecting rigid flags, an upright frame provided with means for attaching it to the rail, a fulcrum-block carrying said pivot and movable vertically in said frame, and means for securing said fulcrum-
30 block at different heights above the rail.

6. In a set of railway-surfacing blocks, a tail-block comprising a pair of self-balancing flag-arms adapted to project on opposite sides of the rail and provided at their outer ends
35 with upwardly-projecting rigid flags each

having a horizontal stripe to indicate the upper edge of the flag-arm, an upright frame provided with means for attaching it to the rail, a fulcrum-block carrying said pivot and movable vertically in said frame, and means
40 for securing said fulcrum-block at different heights above the rail.

7. In a set of railway-surfacing blocks, a center block comprising a pair of self-balancing and graduated flag-arms adapted to project
45 on opposite sides of the rail and provided at their outer ends with downwardly-projecting rigid flags, a pivot on which said flag-arms are movable to level them, and a frame provided with means for steadying the block
50 upon the rail and with a fulcrum-block which supports said pivot at a determinable height above the rail.

8. A set of railway-surfacing blocks consisting of head and tail blocks and a center
55 block having flag-arms and pivots on which the said flag-arms are movable to level them, the flag-arm of said center block having a graduated outer end, so that by attaching said head-block and tail-block to the outer
60 rail of a curve at a given distance apart, locating said center block midway between them, and leveling said arms, the degree of the curve may be determined by sighting across the graduated flag-arm, substantially
65 as hereinbefore specified.

HENRY W. WATSON.

Witnesses:

L. E. RUE,
JAS. CRALE, Jr.