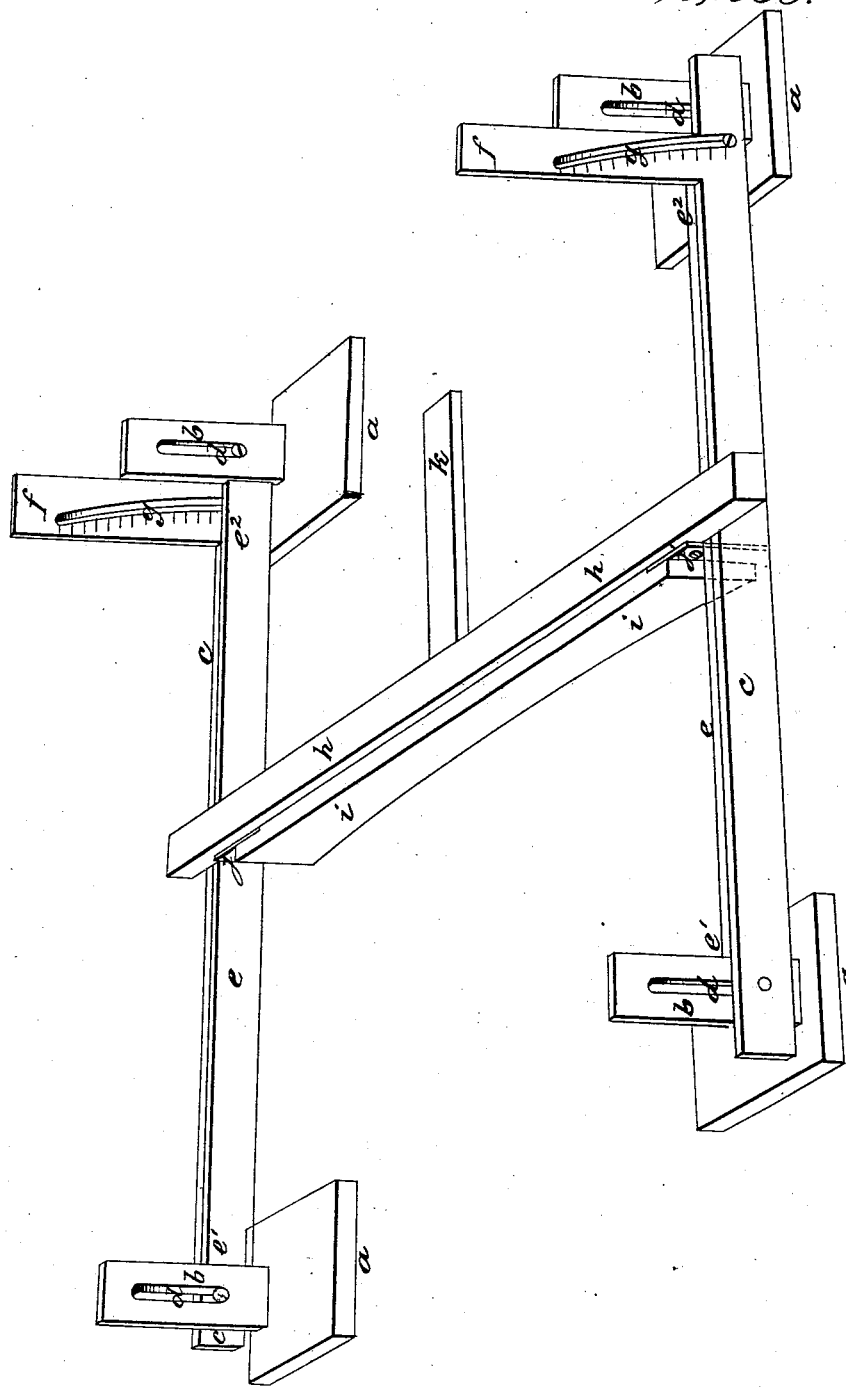


R. Fish.

Level.

N^o 1,403.

Patented Nov, 9, 1839.



UNITED STATES PATENT OFFICE.

RANDAL FISH, OF NEW YORK, N. Y.

APPARATUS FOR GRADING STREETS AND ROADS.

Specification of Letters Patent No. 1,403, dated November 9, 1839.

To all whom it may concern:

Be it known that I, RANDAL FISH, of the city of New York, in the State of New York, have invented an Improved Apparatus, 5 which I denominate the "Combined Road and Street Gage," to be used for the purpose of grading streets and roads in a more perfect and expeditious manner than has been heretofore attained; and I do hereby declare 10 that the following is a full and exact description thereof.

In the accompanying drawing, *a, a, a, a*, are four feet, or pedestals, from which rise four vertical posts, *b, b*. These are to be 15 placed at the sides or other parts of the road or street which is to be graded. In streets the width of which is not too great they may be placed against the curb-stones or on the edge of the foot path. The side pieces, *c, c*, 20 are attached to the uprights *b, b*, by means of screws or keys in such manner as to allow them to be raised or lowered, there being slots *d, d*, in the uprights for that purpose. The side pieces are made double, or of two 25 thicknesses of plank, one within the other, the inner portion *e, e*, having a motion, or being capable of adjustment, independently of the outer portions; they work on a pin, or hinge joint, at their ends *e', e'*, allowing the 30 ends *e², e²*, to be raised or lowered at pleasure, provision being made to retain them in the situation in which it may be desired to place them. For this purpose there are two 35 uprights *f, f*, which rise from the outer side pieces *c, c*, having curved slots in them, as at *g, g*, by means of which, and tightening screws entering the movable pieces, they may be held in place. The piece of timber *h, h*, 40 crosses the street or road, extending from one side piece to the other and resting upon them. To one side of this piece is attached what I denominate the grading gage, marked *i, i*. This I fasten to the cross piece *h, h*, by regulating screws which pass through slotted 45 pieces at its ends, as at *j, j*. The projecting piece *k*, which is attached to the cross piece *h, h*, is for the purpose of moving it and the grading gage upon the side pieces. Levels of any suitable kind are to be placed upon or 50 applied to the side pieces, and the cross piece *h, h*, for the purpose of indicating their horizontal position, or the amount of their deviation therefrom. I usually also make graduations on the uprights *f, f*, by which the elevation of the inner above the outer side 55 pieces may be at once ascertained.

In using this apparatus I have already said that the pedestals may be placed at the sides of the road, where the width is not too great; one, or both, of the side pieces, however, may stand over the middle, or any 60 other part, of the road or street whenever it may be found convenient so to place it, as the capacity for adjustment in the various parts of the machine is such as will admit of this being done without inconvenience. When 65 the road or street is to be flat in its cross section, the bottom edge of the grading gage will be a straight line; when it is to be crowning the bottom edge is to be so curved as to give the desired convexity to the surface of 70 the road. The ascending or the descending grade of the road or street will be regulated by the elevation or depression of the side rails from an horizontal line, which will be determined by means of the levels to be applied to them, or with the assistance of the 75 graduations on the vertical pieces, or uprights, *f, f*. Should it be desired to have one side of the road or street more elevated than 80 the other, this may be regulated by the lateral inclination of the cross bar *h, h*, or by the grading gage. When the apparatus has been adjusted, and the grading gage is moved along upon the side pieces, every deviation from the proper graduation will be 85 rendered apparent, as its lower edge determines the proper line of grading in all directions.

This instrument is applicable in an especial manner to the preparing of the ground 90 for receiving the blocks of wood, where wooden pavements are to be made, for the proper performance of which the utmost precision is necessary; but it is applicable 95 also to the grading of roads and streets generally, and effectually removes the difficulty heretofore encountered in that operation, a defect in the performance of which is always attended by an early deterioration of the 100 road.

Having thus fully described the construction and operation of the apparatus or instrument invented by me for grading roads and streets, I do hereby declare that I do not 105 intend to claim any of the parts of the said instrument taken individually; but what I do claim is—

The manner in which I have combined and arranged those parts as herein set forth, so 110 as to adapt them, by such combination and arrangement, to the attainment of the end

for which it is constructed—that is to say, I claim the combining of the side pieces *c*, and *e*, made adjustable, as set forth, with this grading gage *i*, *i*, and with these provisions
5 for adjusting the same in the manner described.

It will be manifest that this instrument may be varied in some particular points, and yet remain substantially the same in its general structure and use; its essential features
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being its general capability of adjustment as herein pointed out, so that by drawing along that part denominated the grading gage, its lower edge shall show the precise height, or line, of the surface of the road.

RANDAL FISH.

Witnesses:

THOS. P. JONES,
W. THOMPSON.