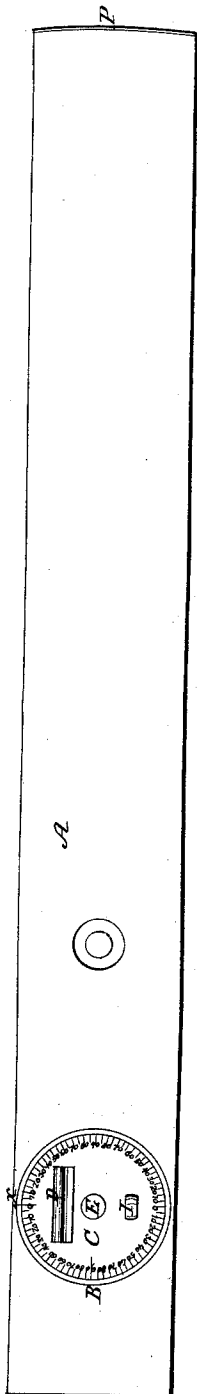


*L. Brooks.  
Bar Level.*

*N<sup>o</sup> 11,596.*

*Patented Aug. 29, 1864.*

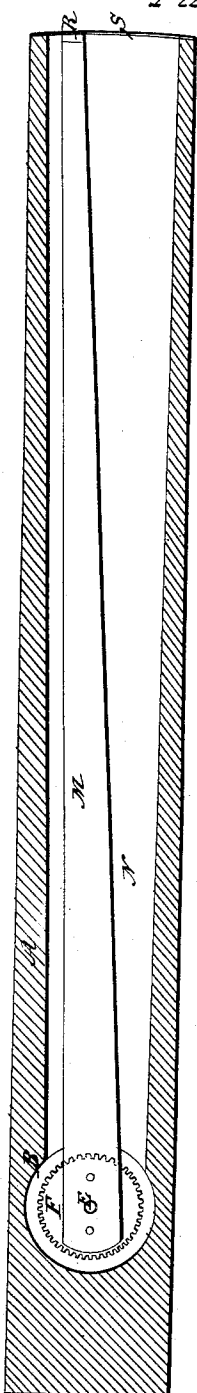
*Fig. 1.*



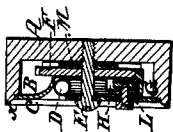
*Fig. 4.*



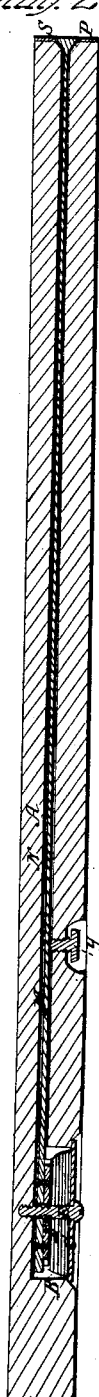
*Fig. 3.*



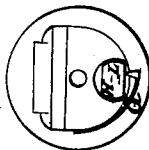
*Fig. 5.*



*Fig. 2.*



*Fig. 6.*



# UNITED STATES PATENT OFFICE.

LEBBIUS BROOKS, OF GREAT FALLS, NEW HAMPSHIRE.

## SPIRIT-LEVEL.

Specification of Letters Patent No. 11,596, dated August 29, 1854.

*To all whom it may concern:*

Be it known that I, **LEBBIUS BROOKS**, of Great Falls, in the county of Strafford and State of New Hampshire, have invented a  
5 new and useful Improvement in the Carpenter's or Mason's Bar-Level; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1 represents a side view of my improved bar level. Fig. 2 is a horizontal and longitudinal section of it. Fig. 3 is a vertical and longitudinal section of it. Fig. 4 is an end view of it. Fig. 5 is a vertical and transverse section taken through the middle of its circular divided plate or limb. Fig. 6 is a rear view of the circular divided plate or limb, its spring catch and cam to be hereinafter described.

In the said drawings, **A**, denotes the bar or beam of the instrument having applied to one side and near one end of it and within a suitable recess **B**, a circular divided plate or limb **C**, which carries a glass spirit level, **D**, and is made to revolve upon an axle or pin **E**, passing through it and screwed or fixed in the bar **A**. The periphery of the circular plate **C**, is divided into equal parts, the divisions of every arc of five or ten degrees of each quadrant being indicated on the plate by proper designating numbers as seen at, **O**, **10**, **20**, &c.

Revolving on the axle or journal of the circular limb or plate, **C**, is a circular wheel, **F**, whose periphery has the same number of teeth upon it or notches placed at equal distances apart as there are divisions on the circular plate **C**. This circular wheel may be termed the locking plate, as it operates in connection with a spring catch, **G**, which is applied to the circular divided limb, **C**, and forced outward by the action of a cam **H**, when turned by the application of the hand of a person to a small button, **I**, disposed on the outer surface of the circular divided plate and affixed upon the turning axle **L**, of the cam.

When the spring catch is made to enter between any two consecutive teeth of the locking plate or wheel it clamps said plate or wheel to the circular divided plate so that any rotary movement of the locking plate shall produce a corresponding rotary movement of the circular divided limb. The

locking plate has attached to it a long arm or index bar **M**, which is made to extend throughout the middle of the bar **A**, and to play or move in a recess, **N**, formed therein, and through a sector of a circle, the arc of which corresponds to the number of degrees of distance between two consecutive divisions of the divided circular limb or plate. Thus, for instance, if any two of such divisions are placed at an arc of five degrees apart, it is intended that the sector through which the index bar shall travel shall be measured by an arc of five degrees.

The circular divided plate or limb is to be placed near one end of the wooden beam or bar. On the opposite end of said wooden beam or bar a graduated plate **P**, or a scale of divisions may be applied corresponding in the number of degrees marked upon it to the measure of the arc comprehended between any two consecutive divisions of the circular plate.

The divided plate or arc on the end of the bar being very much longer than the distance between any two consecutive divisions of the circle, admits of readily being divided into degrees and parts of a degree of a great circle and of having a vernier plate **R**, applied to it and affixed to the outer end of the index bar. There may also be another scale, **S**, applied to the end of the beam, which scale may be made to indicate the amount of rise in inches or parts of an inch of any given base. The object of the index bar and its scale and the locking plate and spring catch as applied to the beam and circular divided plate carrying a spirit level is to enable a person to ascertain more correctly than can be done by the circular divided limb alone the measure of an angle of inclination or declination of the bar or beam of the instrument.

The spring catch and the divisions or spaces between the teeth of the locking plate should be so formed that when the spring catch is made to enter and rest in any one of the spaces or notches in the periphery of the locking plate, and the index bar is raised with its index mark against the zero point or commencement of the arc on the end of the beam, some division of the circular limb shall be brought against the index mark or pointer  $\alpha$  thereof. For the purpose of clamping the index bar to the beam or its index or vernier against any part of the

scale on the end of the beam, a clamp screw,  $y$ , is used, it being screwed down the side of the beam and against the index bar.

To ascertain by the instrument the number of degrees of inclination of any slope, we first bring the index point of the index bar up to the zero point of the scale on the end of the beam, we next place the instrument on the slope with its edge upward and with that end on which the scale is made and applied highest on the slope. Next by turning the button of the spring catch, we throw the catch out of action on its notch or tooth plate, and we revolve the circular limb or divided plate until the bubble of the spirit level rises to the middle of the tube. This done we turn the button of the cam so as to let the spring catch into action on its notch plate whereby we connect the circular plate and index bar and throw the former into a correct position for the latter to be moved until the bubble of the level is brought into the middle of its tube. When this has been done, the clamp screw may be turned up against the index bar so as to confine it in position. While that division of the circular plate which is close against the index serves to point out the number of divisions of the plate comprehended in the arc of elevation, the angle of excess may be read off on the scale at the end of the beam.

Thus it will be seen that the particular object I have had in view has been to provide the bar level with some means of more accurately determining this angle of excess than can be done by the divisions of the small circular limb. For this reason I divide the circular limb into equal parts, say of five degrees each and apply the long index arm and scale to the beam, whereby, by the increased length of arc measuring five degrees on such scale I can readily divide such arc into five parts and subdivide them as occasion may require.

I do not claim the combination of a circular divided limb or plate, C, and a spirit level with a bar or beam A, but

What I do claim as my invention is—

The combination therewith of an index bar, its divided sectional arc or limb and its locking plate and spring catch or the mechanical equivalents for such locking plate and catch, the whole being made to operate together substantially as specified.

In testimony whereof I have hereunto set my signature this twenty-eighth day of December, A. D. 1853.

LEBBIUS BROOKS.

Witnesses:

SAMUEL CLARK,  
ROYAL EASTMAN.