No. 765,871. PATENTED JULY 26, 1904.

H. K. AKINS.

LEVELING INSTRUMENT.

APPLICATION FILED NOV. 27, 1903.

NO MODEL.

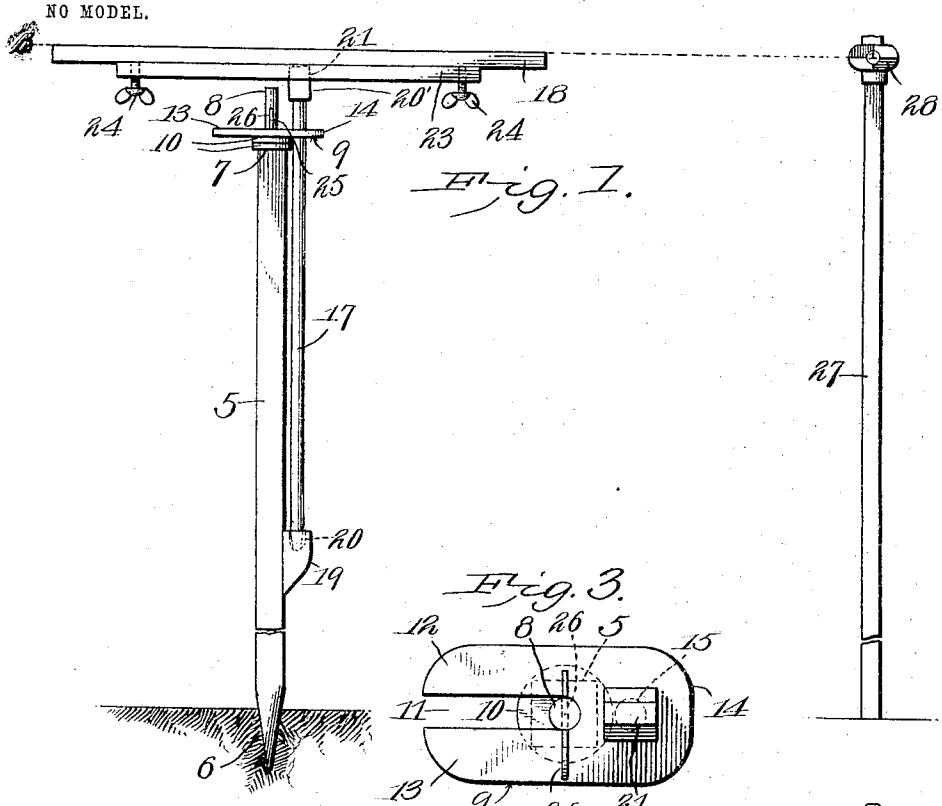


Fig. 1.

Fig. 3.

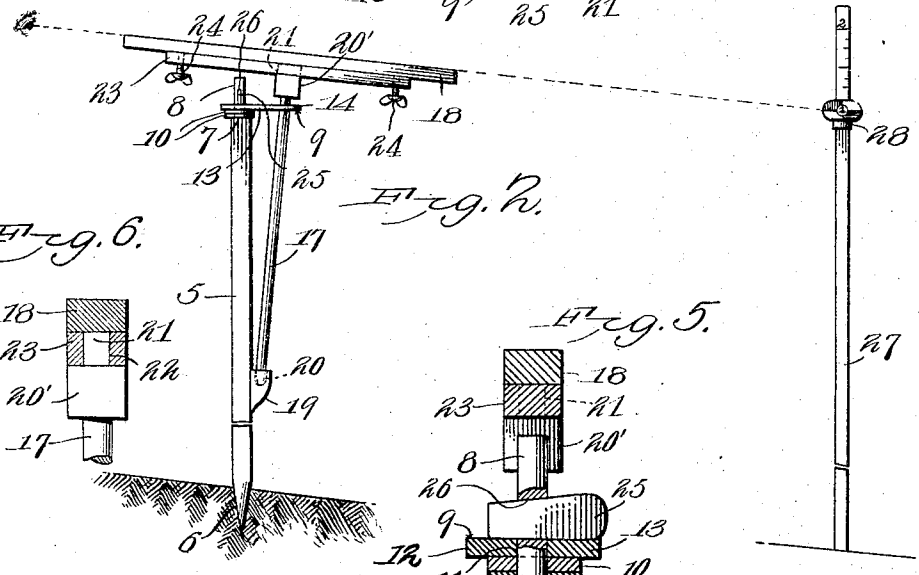


Fig. 2.

Fig. 6.

Fig. 5.

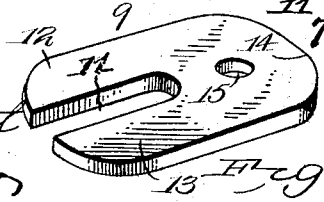


Fig. 4.

Witnesses

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No. 765,871. Patented July 26, 1904.

UNITED STATES PATENT OFFICE.

HENRY KING AKINS, OF GRAND SALINE, TEXAS.

LEVELING INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 765,871, dated July 26, 1904.

Application filed November 27, 1903. Serial No. 182,871. (No model.)

To all whom it may concern:

Be it known that I, HENRY KING AKINS, a citizen of the United States, residing at Grand Saline, in the county of Van Zandt and State of Texas, have invented a new and useful Level, of which the following is a specification.

This invention relates to an improved leveling instrument designed for use in making ditches for draining lands, in terracing hillsides, grading and leveling roads, and for other purposes.

The object of the invention is to provide an inexpensive, durable, and efficient device of this character composed of few parts and capable of performing all the ordinary functions of complicated instruments now in use for similar purposes.

A further object of the invention is to provide means for adjusting the leveling-beam and means for tilting said beam at an angle or inclination with respect to the standard independently of the level-adjusting means.

A still further object is to provide a standard having a revoluble level-supporting arm adjustable with relation to the standard.

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 hereto appended, it being understood that various changes in form, proportion, and minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

In the accompanying drawings, Figure 1 is a side elevation of a leveling instrument constructed in accordance with my invention, illustrating the manner of using the same for grading or terracing. Fig. 2 is a similar view showing the level-supporting arm in the adjusted position for ascertaining the inclination of the ground to be drained. Fig. 3 is a top plan view of Fig. 1 with the horizontal bar and leveling-beam removed. Fig. 4 is a detail perspective view of the guiding-block. Fig. 5 is a vertical sectional view of Fig. 1, and Fig. 6 is a detail sectional view of the supporting-arm.

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

5 designates a bar or standard formed of wood, metal, or other suitable material, the lower end of which is tapering, as shown at 6, to permit the standard to be readily driven in the ground. The upper end of the standard 5 is provided with a shoulder 7, defining a reduced cylindrical extension 8, upon which is adjustably mounted a guide-plate 9, said plate resting upon washers 10, mounted on the cylindrical extension and bearing against the shoulder 7. The guide-plate 9 is preferably formed of a flat piece of metal or other suitable material, one end of which is bifurcated, as shown at 11, to form a pair of parallel spaced arms 12 and 13, adapted to engage the extension 8, the opposite end of said plate being preferably rounded, as shown at 14, and provided with an opening 15 for the reception of the supporting-arm 17 of a leveling-beam 18. Secured in any suitable manner to the standard 5 is a bearing-block 19, having a socket 20, formed in the top thereof, adapted to receive the lower end of the supporting-arm 17, said arm being revolubly mounted in the socket, so as to permit the leveling-beam 18 to be rotated in a horizontal plane without the necessity of adjusting the standard. The upper end of the supporting-arm 17 is preferably squared, as indicated at 20′, and provided with a tenon 21, which engages a mortise 22 in the horizontally-disposed bar 23, upon which the leveling-beam 18 is mounted. As a means for leveling the beam 18 I provide one or more adjusting-screws 24, passing through the opposite ends of the bar 23 and engaging the leveling-beam, so that by adjusting said screws either end of the beam may be raised or lowered. The guide-plate 9 is locked in the adjusted position by means of a key or wedge 25, which engages an opening 26 in the extension 8 and clamps the guide-plate in contact with the washers 10, the latter being

preferably formed of leather, rubber, or other yieldable material capable of being slightly compressed when the key is driven to its seat.

In practice when the device is used for grading roads or the like the bar or standard 5 is driven in the ground and the beam 18 leveled by adjusting the screws 24. A target-pole 27 is then set up at some distance from the instrument and the target-block 28 adjusted to the desired graduation on the pole, after which the block 28 is sighted over the top edges of the beam 18, as will be readily understood.

In laying off drains the beam is first leveled, as above described, and said beam tilted downwardly at the desired inclination by loosening the key or wedge and sliding the guide-plate outwardly in a horizontal plane until the top edge of the beam is in alinement with the target-block.

The wedge is then driven in the opening 26, which locks the guide-plate, carrying the supporting-arm and leveling-beam in the adjusted position, as clearly shown in Fig. 2 of the drawings.

By having the supporting-arm revolubly mounted on the bar or standard and adjustable laterally with respect thereto the leveling-beam may be tilted to allow for the desired fall in the drain and at the same time rotated in any direction so as to permit the same to be successively brought into alinement with several targets without the necessity of turning or otherwise adjusting the standard. The guide-plate 9 also allows a limited orbital movement of the supporting-arm and leveling-beam around the bar or standard.

Having thus described the invention, what is claimed is—

1. In a device of the class described, a standard, a support revolubly mounted on the standard and adjustable laterally with relation thereto, and a leveling instrument carried by the support.

2. In a device of the class described, a standard, a support journaled in the standard and adjustable laterally with relation thereto, a leveling instrument carried by the support, means for leveling the instrument, and means independent of the leveling means for adjusting the instrument with respect to the standard.

3. In a device of the class described, a standard, a support journaled in the standard and arranged substantially parallel therewith, a leveling instrument carried by the support, and a guide-plate forming an adjustable connection between the upper portion of the support and the standard.

4. In a device of the class described, a standard, a laterally-adjustable support revolubly mounted on the standard, a leveling instrument carried by the support, an adjustable guide-plate connecting the support and standard, and means for locking said plate in the adjusted position.

5. In a device of the class described, a standard, a slotted guide-plate having an opening formed therein adjustably mounted on the standard, a revoluble support journaled in the standard and engaging the opening in the guide-plate, and a leveling instrument carried by the support.

6. In a device of the class described, a standard provided with a reduced extension, an adjustable guide-plate mounted on the extension, a revoluble support journaled in the standard and passing through the plate, a leveling instrument carried by the support, means for locking the plate in adjusted position, and means for leveling the instrument.

7. In a device of the class described, a standard provided with a reduced extension defining a shoulder, a revoluble support, a leveling instrument carried by the support, a guide-plate mounted on the reduced extension of the standard and forming an adjustable connection between said standard and the support, yieldable washer interposed between the shoulder and the guide-plate, and means for locking said guide-plate in the adjusted position.

8. In a device of the class described, a standard, a revoluble support, a guide-plate adjustably mounted on the standard and having one end thereof bifurcated and its opposite end provided with an opening, a revoluble support passing through the opening in the plate and having its lower end journaled in the standard, a leveling instrument carried by the support, and means for leveling said instrument.

9. In a device of the class described, a standard, a revoluble support, a bar secured to the support, a leveling instrument mounted on the bar, means carried by the bar for adjusting the leveling instrument, and a guide-plate forming an adjustable connection between the support and the standard.

10. In a device of the class described, a standard, a bearing-block secured to the standard, an adjustable guide-plate having an opening at one end thereof mounted on the standard, a revoluble support, one end of which passes through the opening in the guide-plate, the opposite end thereof being journaled in the bearing-block, a bar secured to the support, a leveling instrument mounted on the bar, and adjusting-screws passing through the bar and engaging the leveling instrument.

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

HENRY KING AKINS.

Witnesses:
J. A. McPHAIL,
W. V. CATES.