DE MONTHEMAR ADAMS.

MEASURING INSTRUMENT.

APPLICATION FILED JULY 24, 1911.

1,010,007.

Patented Nov. 28, 1911.

Fig. 5.

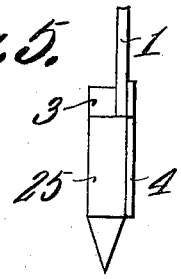


Fig. 6.

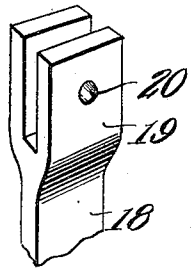
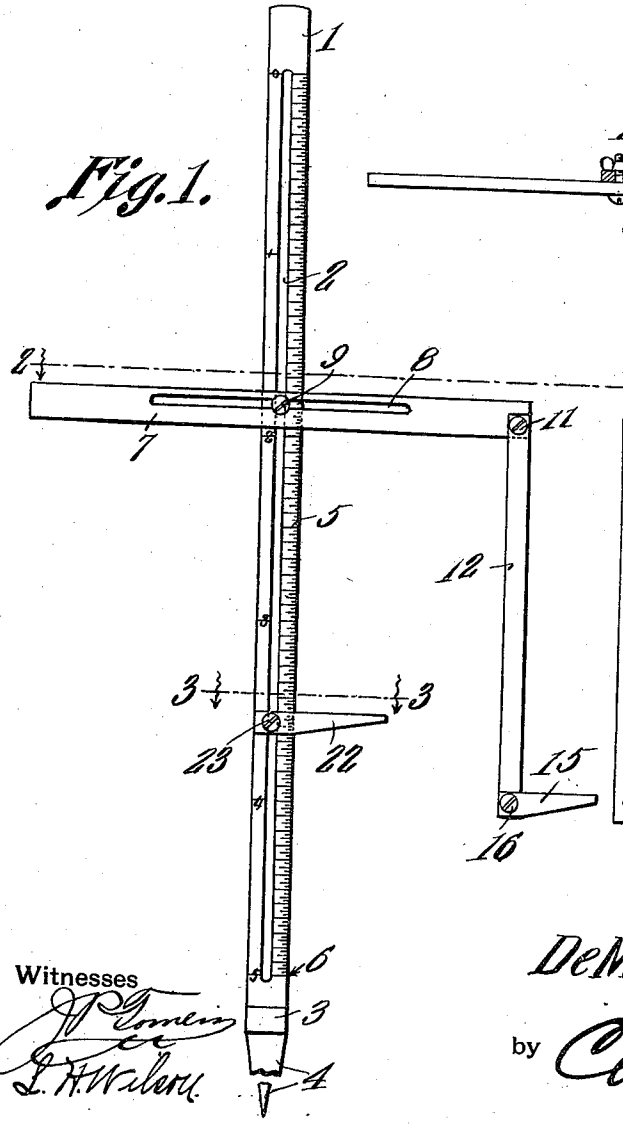


Fig. 1.



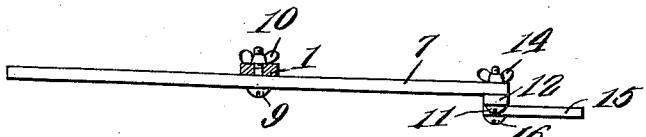


Fig. 2.

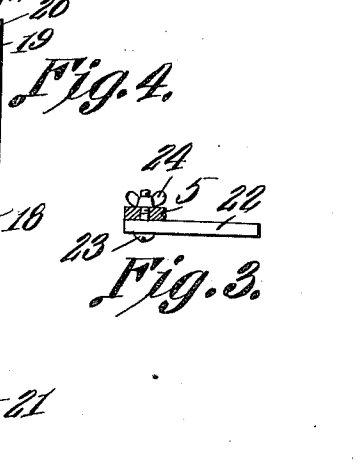


Fig. 4.

Fig. 3.

Witnesses

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MEASURING INSTRUMENT.

1,010,007. Specification of Letters Patent. Patented Nov. 28, 1911.

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To all whom it may concern:

Be it known that I, DE MONTHEMAR ADAMS, a citizen of the United States, residing at Madelia, in the county of Watonwan and State of Minnesota, have invented a new and useful Measuring Instrument, of which the following is a specification.

The device forming the subject matter of this application, is adapted to be employed for determining the depth of sewers, tile ditches, and the like, after the grade stakes have been set by the engineer.

The invention aims to provide grade boards of novel and improved construction, by means of which, a trench may be dug to a predetermined grade, without danger of errors.

A further object of the invention is to provide novel means whereby the grade of a relatively deep trench may be established from grade stakes.

A further object of the invention is to provide a grade board, the constituent elements of which are assembled in a novel and improved manner.

In the drawings, Figure 1 shows the invention in side elevation; Fig. 2 is a transverse section on the line 2—2 of Fig. 1; Fig. 3 is a transverse section on the line 3—3 of Fig. 1; Fig. 4 is a side elevation of an extension, adapted to be employed when a deep trench is dug; Fig. 5 is a fragmental elevation showing the device in position upon a grade stake; and Fig. 6 is a detail perspective of the upper end of the element shown in Fig. 4.

The invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in that portion of this instrument wherein patentable novelty is claimed, it being understood that, within the scope of what is claimed, divers changes in the form, proportions, size, and minor details of the structure may be made, without departing from the spirit or sacrificing any of the advantages of the invention.

In carrying out the invention there is provided as a primary and fundamental element, a rod 1, having a longitudinally extended slot 2. The rod 1 is provided, adjacent its lower end, with an outstanding foot 3, and to one side of the rod 1, adjacent the foot 3, and depending below the same, is a pointed, earth-entering prong 4. The rod 1 is graduated from a point adjacent its top, downwardly, as shown at 5, into feet and inches, preferably. The graduations 5 at their lower end, terminate as shown at 6, above the lower surface of the foot.

The invention further includes a target 7, disposed transversely of the rod 1, the target 7 being formed of a rod, having a longitudinally extended slot 8. Through the slot 8 in the target 7, and through the slot 2 in the rod 1 is passed a bolt 9 or other securing element, carrying a wing nut 10, the construction being such that the target 7 may be clamped at predetermined heights upon the rod 1. Through one end of the target 1 is inserted a bolt 11 or other connecting element, passing through the upper end of an extension rod 12, a wing nut 14 being mounted upon the bolt 11, to bind the parts 7 and 12 together, the rod 12 commonly standing practically parallel to the rod 1 when the device is in use.

The invention further includes an auxiliary target 15, standing at right angles to the extension rod 12, and secured to the lower end of the rod 12 by a bolt and wing nut connection 16.

The invention further includes a supplemental extension rod 18, the same being employed to increase the vertical distance between the targets 7 and 15. The supplemental extension rod 18 is bifurcated at its upper end, as shown at 19, the bifurcations 19 having oppositely disposed openings 20. The auxiliary target 15 may be removed from the lower end of the extension rod 12, the bifurcations 19 of the supplemental extension rod 18 may be made to straddle the lower end of the extension rod 12, a bolt and wing nut connection may be passed through the openings 20, and through the lower end of the rod 12, and the auxiliary target 15 may be mounted on the lower end of the supplemental extension rod 18, the bolt and wing nut connection 16 being passed through an opening 21 in the lower end of the rod 18.

The invention further includes a supplemental target 22, in the form of a rod, somewhat shorter than the member 7. Through the instrumentality of a bolt and nut connection 23—24, passing through the slot 2 in the rod 1, the supplemental target 22 may be clamped at various heights along the rod 1.

In Fig. 5 of the drawings, the numeral 25 indicates a stake which has been driven to

grade by the engineer. The lower end of the rod 1 and the foot 3 thereof are placed on top of the stake 25, the prong 4 entering the earth along one side of the stake. The rod 1 will thus be upheld vertically, upon top of the grade stake 25. The bolt and wing nut connection 9—10 is loosened, and the target 7 is moved downwardly along the graduations 5 of the rod 1, until the lower edge of the target 7 registers, upon the graduations 5, the cut at the particular station represented by the stake on which the rod 1 sets. Another rod 1 is similarly placed, at the next station, or at any other station, along the line of the trench which is to be dug. Obviously, a line connecting the upper edges of the two targets 7 will represent the grade line of the sewer or trench. The device is adapted to be used in connection with an ordinary sighting rod (not shown). If, as shown in Fig. 1, the rod 1 be graduated to the length of five feet, this sighting rod will be five feet in length, plus the distance from the point 6, to the lower face of the foot 3. If this sighting rod be mounted in the trench, between two stations, and if the operator sights along the upper edges of the targets 7, the proper grade may be established at any point intermediate the two stations. If several of the rods 1 are mounted at more than two stations, and their respective targets are set, any errors in the grade, made by the engineer, may readily be checked up, by sighting along the upper edges of the targets 7, presupposing, of course, that the several stations under consideration are upon a continuous grade.

The extension rods 12 and 18 are each of a predetermined length. When a deep trench is to be dug, the rod 12 may be employed, as shown in Fig. 1, the lines from which the grade is to be set off, being represented by the upper edge of the auxiliary target 15. Should the extension rod 12 prove too short, the supplemental extension rod 18 may be attached thereto, in the manner hereinbefore described, thereby lowering the auxiliary target 15 still further. The members 12 and 18 being of a predetermined length, the cut may readily be set off, by adjusting the target 7 upon the graduations 5, in the manner hereinbefore set forth.

If desired, the supplemental targets 22 may be employed, instead of the targets 7 and their accessories. When the targets 22 are employed, they are set to the desired point upon the graduations 5, by adjusting the connections 23. Along the upper edges of the supplemental targets 22, a wire (not shown) may be stretched, longitudinally of the trench, and at one side of the trench. The distance from this wire may be measured downwardly by a right-angled inspector's rod, and since this element is well known in the art, it need not be further described, or specifically shown in the drawings.

From the foregoing it will be seen, that, after the engineer has set his grade stakes, a person of average intelligence, although unskilled in surveying, may readily dig a trench, the grade of which will conform accurately to the grade established by the stakes which have been set previously.

Having thus described the invention, what is claimed is:

1. A device of the class described comprising a rod provided at its lower end with an outstanding foot, and with a prong depending below the foot, the rod being provided with a longitudinal slot, located above the foot; a target disposed transversely of the rod, and having a longitudinal slot, intersecting the slot of the rod; securing means mounted in the slots; the rod being graduated.

2. A device of the class described comprising a graduated rod; a transverse target adjustable longitudinally of the rod; an auxiliary target spaced from the first-mentioned target, and an extensible connection between the targets.

3. A device of the class described comprising a rod; a supplemental target adjustable upon the rod, longitudinally of the same; a principal target adjustable longitudinally of the rod, and transversely thereof; an auxiliary target; an extensible connection between the auxiliary target and the principal target, whereby the auxiliary target may be located at different distances below the principal target; the rod being graduated, to permit the principal target and the supplemental target to be placed at adjusted heights thereon.

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

DE MONTHEMAR ADAMS.

Witnesses:
ADOLPH LARSON,
M. S. DOSSER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."