Dec. 9, 1958 J. L. NEWTON 2,863,417

GRADING INDICATOR

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Fig. 1.

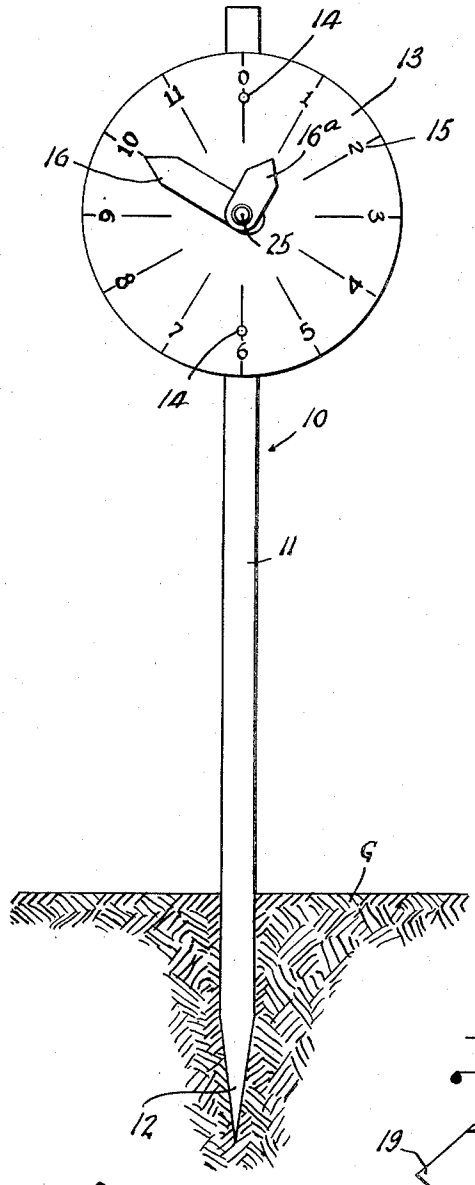


Fig. 2.

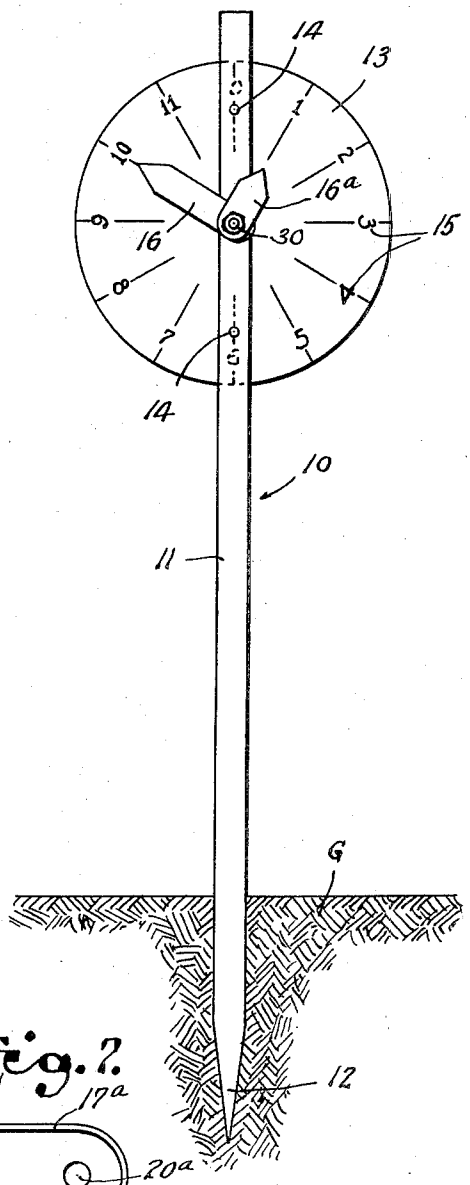


Fig. 7.

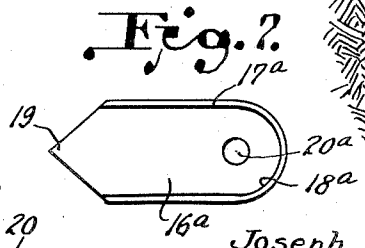
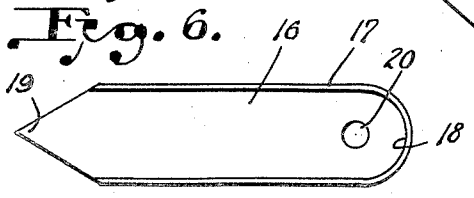


Fig. 6.



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Fig. 3.

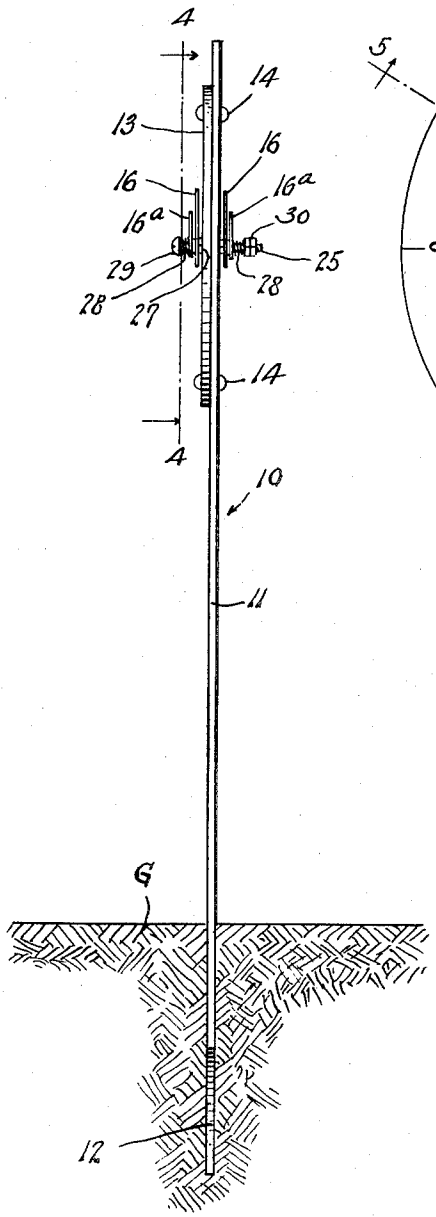


Fig. 4.

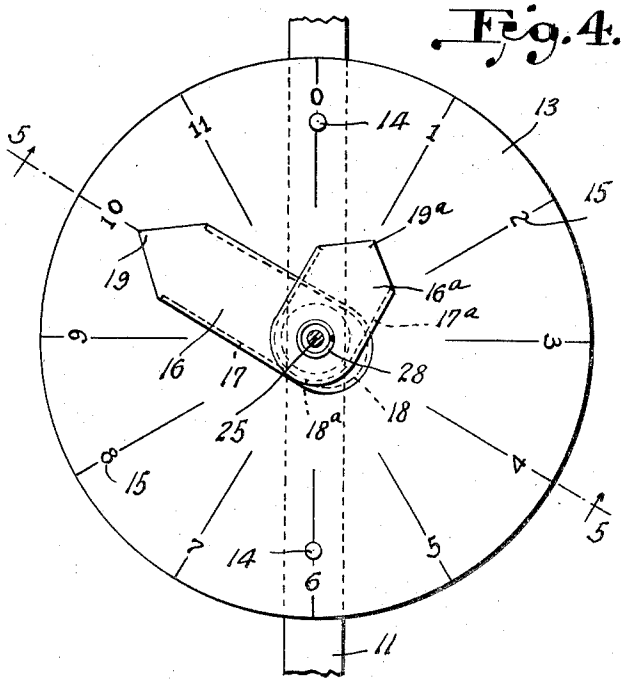
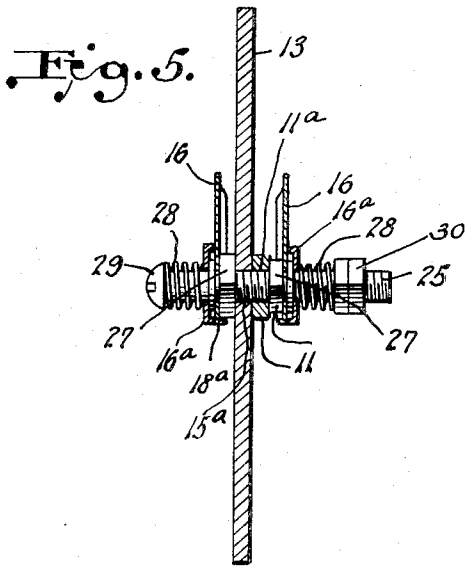


Fig. 5.



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United States Patent Office 2,863,417 Patented Dec. 9, 1958

2,863,417

GRADING INDICATOR

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Application June 4, 1957, Serial No. 663,389

1 Claim. (Cl. 116—133)

This invention relates to a grading indicator, and more particularly to such an indicator for use by engineers in indicating the depth of fill or levelling required in grading, as for example in road building.

A primary object of the invention is the provision of such an indicator provided with a dial suitably calibrated to indicate depth or height in feet and inches, having movable hands, the assembly being of a size and contrasting color so that the indicia thereon will be readily visible at a distance.

An additional object of the invention is the provision of a device which may be read from either side, each side being provided with hands, whereby the settings of an uneven stretch of terrain may differ on different sides of the indicator and be so indicated.

A further object of the invention is the provision of means whereby the hands on one side of the dial of the indicator may be set without affecting the setting of the dial on the other side.

Still another object of the invention is the provision of a device of this character which is particularly useful for heavy machine operators, in facilitating the adjustment of their machines to a given grade or fill, and which will eliminate the necessity of the operator leaving his machine to read engineers stakes positioned at intervals along the fill or grade, and computing the setting of the apparatus from these stakes.

A further object of the invention is the provision of such an indicator which may be readily positioned at intervals as desired along a grade or fill, and upon which the requisite setting of the heavy apparatus, such as graders, dozers, drag lines, or dredges may be readily indicated.

A further object of the invention is the provision of such a device which may be equally advantageously employed in any operation such as ditching, filling, grading, excavating, or the like.

Still other objects will in part be obvious, and in part be pointed out hereinafter and shown in the accompanying drawings wherein there is disclosed one preferred embodiment of this inventive concept.

In the drawings:

Figure 1 is a front plan view of one form of device embodying features of the instant inventive concept, shown as embedded in the ground.

Figure 2 is a view of the opposite side of the device as shown in Figure 1.

Figure 3 is an end elevational view of the construction of Figures 1 and 2.

Figure 4 is an enlarged sectional view taken substantially along the line 4—4 of Figure 3 as viewed in the direction indicated by the arrows.

Figure 5 is a sectional view taken substantially along the line 5—5 of Figure 4 as viewed in the direction indicated by the arrows.

Figure 6 is an enlarged bottom plan view of the longer of the hands disclosed in Figures 1 and 2, and

Figure 7 is a similar view of the other of the hands.

Similar reference characters refer to similar parts throughout the several views of the drawings.

As conducive to a clearer understanding of this invention, it may here be pointed out that in grading, road building, filling or the like it is necessary that the terrain first be surveyed by engineers, and appropriate stakes be positioned as desired indicating the depth of fill or leveling required. Heretofore the operators of heavy machinery such as graders, dozers, drag lines, or the like have been required to stop their machines, as they reach the appropriate stakes, leave the machines and read the markings on the engineers stakes. Alternatively it has been necessary to have an engineer accompany the apparatus, for the purpose of transmitting this information to the grader operator or to require the summoning of an engineer from some other point for such information.

An important object of this invention is the provision of an indicator which may be readily set by an engineer or other trained individual in advance, to indicate the exact depth or height of the fill or grade, in such manner that it is readily visible to the operator, in order that he need not leave the machine in order to effect the desired adjustment, thus saving many man hours spent in otherwise unproductive time.

Another important object of the invention resides in the fact that a trained operator may operate many miles in advance of the grading or filling equipment, setting the indicators in predetermined intervals, so that no additional computation on the part of the operator is necessary.

Having reference now to the drawings in detail, there is generally indicated at **10** one form of device embodying the instant invention, which comprises a post or stake **11** adapted to be driven into the ground G, in vertical position, and provided with a sharp point **12** to facilitate such driving operation. The post **11** has mounted thereon adjacent its top a dial **13**, preferably circular, which is secured in position by means of bolts or rivets **14**, extending through appropriate apertures in the post **11**.

Each face of the dial is marked by suitable indicia **15**, arranged similarily to the face of a clock, the numerals or indicia being of different color from the face, in sharp contrast, so as to render the indicia clearly visible from a distance.

Each face of the clock or indicator is provided with a long hand **16**, and a short hand **16***a*, the opposite faces of the clock, and the hands on such faces being substantially identical. As best shown in Figure 6 each long hand **16** is provided along its under side with a raised marginal flange **17**, which, at the non-indicating end of the hand is arcuate or rounded as at **18**, in conformity with the configuration of the hand. Each long hand **16** is also provided with an indicating point **19**, and a bolt hole **20** adjacent the rounded end thereof. Each short hand **16***a* is of similar configuration, and includes marginal flanges **17***a* and an arcuate end flange **18***a* as well as an indicating point **19***a*. Each short hand is also provided with an opening **20***a* corresponding to the opening **20**.

As best shown in Figure 5 each of hands **16** and **16***a* is adapted to be mounted on a single bolt **25** which extends through a suitable hole **11***a* in post or stake **11** and a registering hole **13***a* centrally located relative to the dial **13**. The bolt **25** is provided with a lock nut **27** on either side of dial **13**, and the hand **16** is mounted on each side of the dial immediately adjacent each lock nut **17**. The short hand **16***a* is then mounted on top of each long hand **16**, and a compression spring **28** is then positioned between one of hands **16***a* and the head **29** of bolt **25**. A corresponding spring **28** is positioned on the opposite end of the bolt, adjacent the hand **16***a* and is adapted to be secured in position by a clamping nut **30** suitably threaded on bolt **25**.

By means of this arrangement it will be seen that the bolt is fixedly clamped to the dial in such manner that rotation of hand **16** and **16***a* on either side of the dial will have no effect on the setting of the corresponding hands on the opposite side of the dial. The tension of the respective springs **28** is sufficient to hold the hands firmly in place after they have been set, but is sufficiently resilient to permit the ready setting thereof, manually, by a qualified operator, when desired.

It will be understood that the indicators are suitably spaced along a gradient or level, to indicate the operating conditions, and set by an engineer or other qualified person as above described, and that after the required leveling or fill has been accomplished they are reset to zero, and, upon the completion of work may be readily removed from the ground and applied in a subsequent location.

From the foregoing it will now be seen that there is herein provided an improved grade indicator or the like, which accomplishes all of the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment herein before shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative and not in a limiting sense.

What I claim is:

In an indicator for indicating the depth of fill or levelling required in grading, the combination of a flat post having a transverse point adapted for vertical insertion in the ground, a dial secured to the upper end of the post, identical indicia on opposite faces of said dial, said post and dial having aligned horizontal bores therethrough, a bolt having a head extended through said

bores, lock nuts on said bolt intermediate its length, one abutting said dial and the other abutting said post, clamping said bolt in fixed relation to said post, a dial adjacent the head of said bolt but spaced from the adjacent lock nut, a long hand and a superposed, overlying short hand between said head and the adjacent lock nut, said hands having apertures through which said bolt extends, a compression spring surrounding said bolt between said head and said short hand, said hands being rotatable to designate incline on one face of said dial, a second long hand and a second superposed short hand, each having an aperture therein mounted on the end of the bolt opposite said head, a second compression spring surrounding said bolt abutting said second short hand, and a clamping nut on said bolt biasing said second spring towards said second short hand, said second long and short hands designating indicia on the corresponding opposite faces of said dial, whereby all four of said hands may be individually set in selected positions without rotation of the hands adjacent one face of the dial disturbing the position of the hands adjacent the other face of said dial, each of said hands being provided with an elongated portion having parallel sides, a pointed indicating portion and a rounded end adjacent said post.

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