(No Model.)

F. DANFORTH.

ALIGNING POLE.

No. 355,303. Patented Jan. 4, 1887.

Fig. 2.

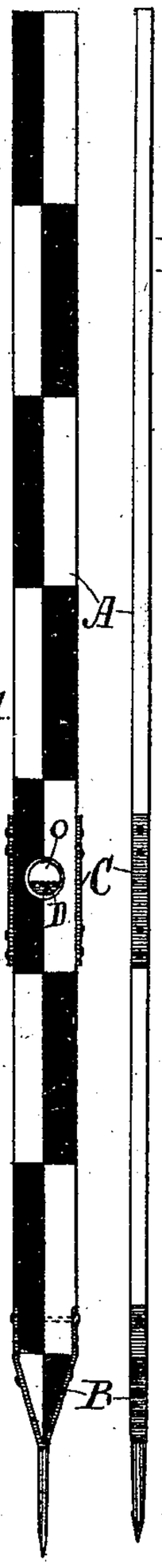
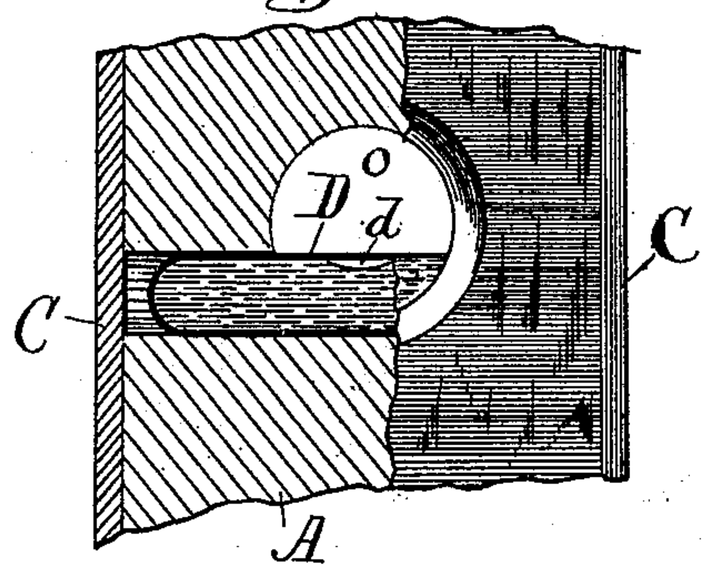


Fig 1.

Fig 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

FREDERIC DANFORTH, OF GARDINER, MAINE.

ALIGNING-POLE.

SPECIFICATION forming part of Letters Patent No. 355,303, dated January 4, 1887.

Application filed September 6, 1886. Serial No. 212,815. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC DANFORTH, a citizen of the United States, residing at Gardiner, in the county of Kennebec and State of Maine, have invented certain new and useful Improvements in Aligning-Poles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to appliances for surveying; and it consists of an alignment or transit pole having a central longitudinal line marked or painted so as to be plainly visible, a pointed iron shoe whose point is in line with the center of the pole, and a level-bulb fixed in the body of the pole, with an opening through the pole whereby said bulb is rendered visible, and metal strengthening-plates secured to the pole opposite to said opening, the whole forming a combined alignment-pole and plumb-rule, and being adapted to running lines and measuring distances.

Hitherto painted poles of various kinds, shod with iron, have been used, and it has been the common practice among engineers and land-surveyors to use such painted poles for alignment, and where measurements over uneven ground were required to use a plumb-bob. The use of an aligning-pole without some means of plumbing the same has always been the cause of errors, for when the top of the pole only was visible from the instrument the point or shoe might not be vertically under the line of sight. In making measurements over rough or uneven ground, where a considerable degree of accuracy was required, it has been the general custom to use a plumb-bob, which was suspended from the end of the tape. To use a plumb-bob for this purpose requires considerable skill and practice, and in windy weather and on very rough ground there is considerable difficulty in doing good work.

By the use of my device I am enabled to dispense with the use of the plumb-bob, using the same instrument both for running lines and making measurements.

My invention is fully illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation. Fig. 2 is a side elevation. Fig. 3 is an enlarged part sectional view of the level-bulb, showing its manner of attachment to the pole.

A is a flat pole, which is here shown as painted in one-foot sections in such a manner that the center line is plainly visible.

B is a pointed metal shoe, preferably with a steel point.

D is a level-bulb inserted in a hole bored laterally in the pole, and so adjusted that when the bubble *d* is in the center of the opening O the center of the face of the pole will be vertical.

C C are metal fish-plates attached to the edges of the pole opposite the opening O, to suitably strengthen the pole at this point.

The level-bulb D may be secured in place by putty or plaster-of-paris, or in any suitable manner; or it may be arranged with adjusting-screws. When placed in the body of the pole as described, with the strengthening-pieces attached firmly to the edges of the pole, the bulb is comparatively free from danger of breakage, even when the pole is roughly used, the plates C C rendering the pole perfectly rigid at that point.

In constructing my pole I usually bore the hole containing the bulb a trifle large, to allow for the proper adjustment of the level.

The use of my device is evident from its construction. In running lines, the flat face is held toward the instrument, the point of the shoe being always vertically under every point in the center of the face of the pole. When a measurement is to be made, the pole is simply turned ninety degrees, its flat face extending along the line. The pole can be plumbed with great rapidity and accuracy. The pole may be so constructed as to use the edge instead of the center, in which case a center line would not be needed, and the device could be used without the metal shoe.

I claim—

1. An aligning-pole having on one or more of its faces a longitudinal line marked or painted to be visible at a distance, a metal shoe or point, a level-bulb inserted within the body of the pole, an opening in said pole through which said bubble may be seen, and

strengthening-plates attached to said pole opposite the said opening, substantially as and for the purpose set forth.

2. An aligning-pole having a level-bulb inserted in the body of the pole, an opening in the pole through which the bulb can be seen, and strengthening-plates secured to the pole opposite said opening, substantially as and for the purpose set forth.

3. An aligning-pole having a level-bulb inserted into the body of the pole, an opening in the pole through which said bulb can be seen, and a pointed metal shoe secured to the bottom of said pole, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERIC DANFORTH.

Witnesses:

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