

S. J. HEINRICH.
TRANSIT.
APPLICATION FILED MAY 9, 1912.

1,047,220.

Patented Dec. 17, 1912.

Fig. 1.

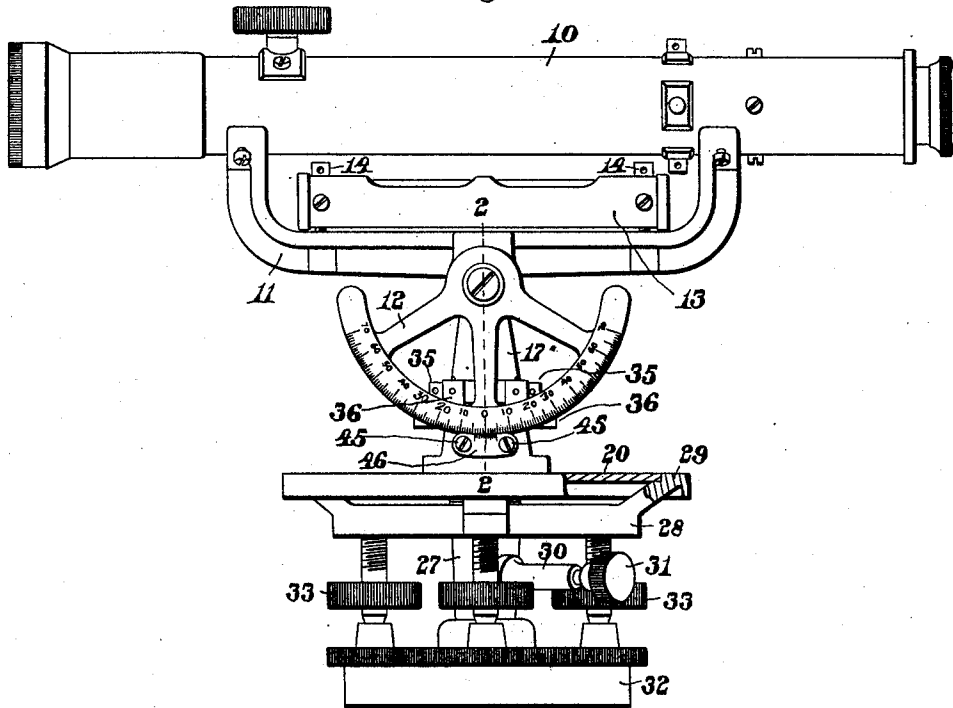


Fig. 2.

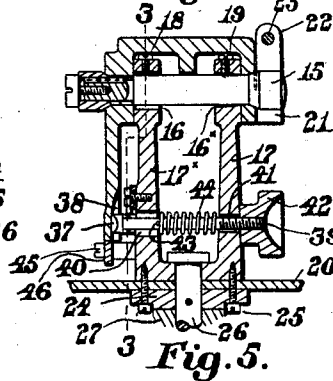


Fig. 3.

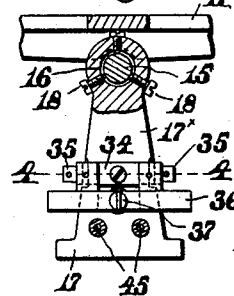


Fig. 4.

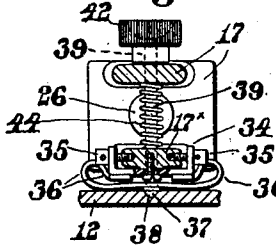
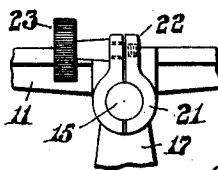


Fig. 5.



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TRANSIT.

1,047,220.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed May 9, 1912. Serial No. 696,283.

To all whom it may concern:

Be it known that I, STEPHEN J. HEINRICH, a citizen of the United States of America, and a resident of Newton Highlands, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Transits, of which the following is a specification.

This invention relates to transits, and particularly to instruments of that class which are of simple construction and adapted for use by architects, builders and contractors.

The object of the present invention is to provide an instrument which may be manipulated quickly in laying off horizontal or vertical angles where absolute precision is unnecessary.

The invention consists in certain novel features of construction and arrangement of parts which will be fully understood by reference to the description of the drawings and to the claims hereinafter given.

Of the drawings: Figure 1 represents an elevation of an instrument embodying the features of the present invention. Fig. 2 is a transverse section of the standard and pivoted telescope support, the cutting plane being on line 2—2 on Fig. 1. Fig. 3 is a vertical section of the same, the cutting plane being on line 3—3 on Fig. 2. Fig. 4 is a horizontal section of the same, the cutting plane being on line 4—4 on Fig. 3, and Fig. 5 is an elevation of the clamping device for locking the telescope supporting yoke to the pivot member of the standard.

Similar characters designate like parts throughout the several figures of the drawings.

In the drawings, 10 is the usual telescope supported on a yoke 11 having formed integral therewith the graduated sector 12. Between the vertical end arms of the yoke 11 is secured to the body portion of said yoke 11 the level 13 which may be adjusted relative to the yoke 11 by means of the adjusting screws 14 to bring the axis of the level and the telescope in parallelism. By constructing the yoke 11 in the manner shown in the drawings and described herein the level is located beneath the telescope in a position where it is out of the way and cannot be readily injured or put out of adjustment. This yoke 11 has extending therethrough a pivot member 15 extending through openings 16 and 16* in the upper end of a U-

shaped standard 17 secured to the base plate or table 20. The opening 16 has a greater diameter than the opening 16* and the vertical arm 17*, which is provided with this larger opening 16, has mounted therein the radial adjusting screws 18 the ends of which bear against the periphery of the pivot member 15. The other arm of the standard 17 is provided with a set screw 19 engaging with said pivot member 15 to prevent end movement or oscillation thereof. It is self-evident that by adjusting the screws 18 the axis of the pivot member 15 may be brought into exact parallelism with the surface of the supporting plate or table 20 to which the standard 17 is secured.

One side of the yoke 11 is provided with a split extension 21 having upwardly extending ears 22 through which extends a clamping member 23, this device serving as a means for clamping the yoke to the pivot 15 when it is desired to lock the telescope at any vertical angle.

The plate 20 is interposed between the standard 17 and a member 24 and these three members are secured together by means of screws 25 all as shown in Fig. 2 of the drawing. A shaft 26 extends through the standard 17, plate 20, and member 24, and is secured thereto, said shaft revolving in a hub 27 forming a part of the frame 28, the upper portion of which is provided with a ring 29 surrounding the plate 20. This ring 29 is graduated into degrees and the revoluble plate 20 is provided with a vernier coacting with the graduations on the ring 29. This vernier and the graduations, however, are not shown in the drawings, as they form no part of the present invention. The hub 27 is provided with a projection 30 in which is threaded a clamping screw 31 adapted to impinge upon the shaft 26 and prevent its rotation when desired. This frame 28 is mounted upon a base plate 32 upon which it is leveled by means of the leveling screws 33 in any well-known manner. On the vertical arm 17* of the standard 17 is mounted a U-shaped member 34 which is adapted to be adjusted horizontally by means of adjusting screws 35. Secured to said member 34 is a spring 36 having secured thereto midway its ends a beveled projection 37 adapted to enter a detent 38 centrally positioned in the rear face of the segment 12 when the telescope is level. Se-

cured to the spring 36 is a rod 39 extending through openings 40 and 41 in the vertical arms of the standard 17, the opening 40 in the arm 17* being of greater diameter than that of the opening 41 to permit movement of the rod 39 when the member 34 is horizontally adjusted. The outer end of this rod 39 has threaded thereto the adjusting nut 42 and this rod 39 is also provided with a pin 43 against which acts a helical spring 44 surrounding said rod and interposed between said pin and one of the vertical arms of the standard 17. This spring 44 cooperates with the spring 36 to cause the coaction between the projection 37 and the detent 38 and the tension of both of the springs may be adjusted by the member 42 in an obvious manner. It is self-evident that by means of this construction when it is desired to move the telescope into any vertical angle the springs 36 and 44 will yield and permit the yoke 11 to be moved freely about the pivot member 15, and when the telescope has been moved to the desired angle it may be clamped in such adjusted position by means of the clamping screw 23. When the telescope has been returned to its normal horizontal position, the projection 37 will again enter the detent 38 in the rear face of the segment 12 which will become automatically locked thereby.

On studs 45 secured to the standard 17 is mounted a vernier 46 cooperating with the graduated segment 12.

By means of the construction shown and described herein the telescope may be set instantly for leveling, slope sights, or running vertical angles. By means of the adjusting screws 35 the projection 37 may be accurately positioned so as to engage the detent 38 when the bubble in the level 13 is centered. The device is so constructed that in case any operator not used to handling delicate instruments takes hold of the telescope to move it into some vertical angle, the yielding projection 37 will disengage from the detent 38 to permit the movement of the telescope without any injury to the various elements of the supporting members.

The instrument is particularly adapted for use for architects, carpenters, and contractors, in laying out building sites, determining levels, and is also particularly well adapted for use in the construction of foundations, building of dams, and for many other similar purposes. Owing to its simple construction, dispensing with many of the more expensive features of an engineer's transit, the cost is materially reduced, making it particularly well adapted for contractors who cannot afford to purchase a more expensive instrument.

It is believed that the operation and many advantages of the invention will be fully understood from the foregoing.

Having thus described my invention, I claim:

1. In an instrument of the class described, the combination of a telescope; a pivoted member having upwardly extending arms to which the telescope is secured; a level secured to said member between said arms; a graduated sector formed integral with said member having a centrally disposed detent therein; a fixed index coacting with said graduated sector; and a yielding member coacting with said detent when said telescope is leveled.

2. In an instrument of the class described, the combination of a telescope; a pivoted member having upwardly extending arms to which the telescope is secured; a level secured to said member between said arms; a graduated sector formed integral with said member having a centrally disposed detent therein; a fixed index coacting with said graduated sector; a yielding member coacting with said detent when said telescope is leveled; and means for longitudinally adjusting the position of said yielding member.

3. In an instrument of the class described, the combination of a base plate; a standard thereon; a member pivoted thereto provided with a graduated sector having a detent therein; a telescope secured thereto; and a yielding member on said standard adapted to coact with said detent and position it.

4. In an instrument of the class described, the combination of a base plate; a standard thereon; a member pivoted thereto provided with a graduated sector having a detent therein; a telescope secured thereto; a member adjustable longitudinally of said standard; and a yielding device secured to said adjustable member and adapted to coact with said detent.

5. In an instrument of the class described, a telescope; a pivoted support therefor; a level thereon; a standard to which said support is pivoted; and a yielding locking device for normally retaining said telescope in level position.

6. In an instrument of the class described, a telescope; a pivoted support therefor; a level thereon; a standard to which said support is pivoted; a yielding locking device for normally retaining said telescope in level position; and means for regulating the tension of said locking device.

7. In an instrument of the class described, a telescope; a pivoted support therefor; a level thereon; a standard to which said support is pivoted; a yielding locking device for normally retaining said telescope in level position; a threaded member secured to said locking device and extending through said standard; a spring surrounding said threaded member; and an adjusting nut on the outer end of said threaded member.

8. In an instrument of the class described, the combination of a base plate; a standard thereon having upwardly extending arms, said arms having alined openings there-
5 through, one larger than the other; a support pivotally mounted in the ends of said arms and having a graduated sector provided with a detent; a telescope on said support; a bracket adjustable longitudinally on
10 the standard arm having the large opening therein; a spring secured thereto and carried thereby having a projecting member adapted for engagement with said detent; a
15 rod secured to said spring extending through said alined openings; an adjusting member threaded to the outer end of said rod; and a fixed index coacting with said graduated sector.

9. In an instrument of the class described,
20 the combination of a base plate; a standard thereon having upwardly extending arms, said arms having hubs at their upper ends provided with alined openings one larger
25 than the other; a pivot member extending through said openings; radial adjusting screws extending through the hub having the larger opening adapted to center and
30 lock said pivot member; a forked support on said pivot member; and a telescope secured thereto.

10. In an instrument of the class de-

scribed, the combination of a base plate; a standard thereon having upwardly extending arms, said arms having hubs at their upper ends provided with alined openings, 35 one larger than the other; a pivot member extending through said openings; radial adjusting screws extending through one of said hubs for centering and locking said pivot member; a forked support on said pivot 40 member; a telescope secured thereto; and means for clamping said support to said pivot member.

11. In an instrument of the class de-
45 scribed, the combination of a base plate; a standard thereon having upwardly extending arms, said arms having hubs at their upper ends provided with alined openings, one larger than the other; a pivot member
50 extending through said openings; radial adjusting screws extending through one of said hubs for centering and locking said pivot member; a forked support on said pivot member; a telescope secured thereto; and
55 yielding means for locking said support when said telescope is level.

Signed by me at 4 Post Office Sq., Boston, Mass., this 2nd day of May, 1912.

STEPHEN J. HEINRICH.

Witnesses:

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