A. YOUNG.

Tripod-Head for Surveying Instruments.

No. 202,916. Patented April 23, 1878.

Fig. 1.

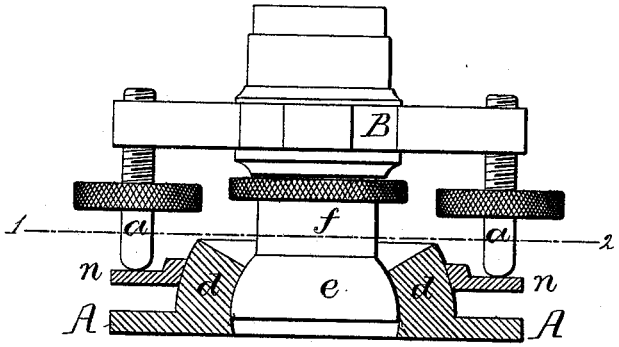


Fig. 4.

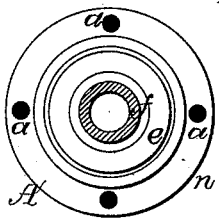


Fig. 6.

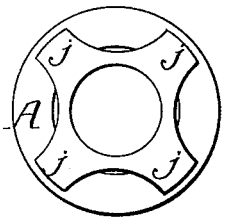


Fig 2.

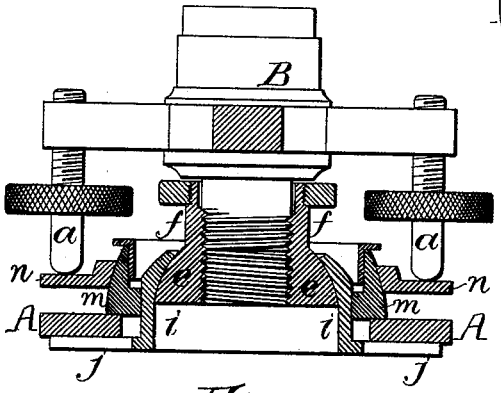
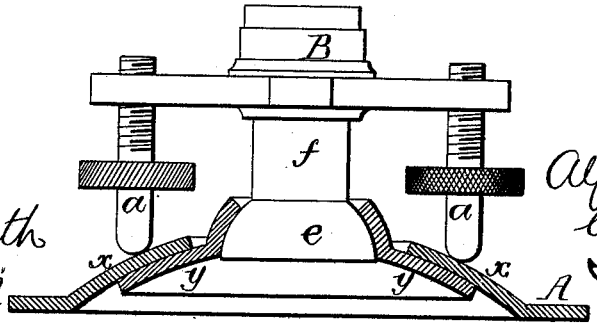


Fig 3.



Witnesses.

Harry Smith

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UNITED STATES PATENT OFFICE.

ALFRED YOUNG, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN TRIPOD-HEADS FOR SURVEYING-INSTRUMENTS.

Specification forming part of Letters Patent No. **202,916**, dated April 23, 1878; application filed April 6, 1878.

To all whom it may concern:

Be it known that I, ALFRED YOUNG, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Surveying and similar Instruments, of which the following is a specification:

The object of my invention is to so construct the tripod-head of a surveying, leveling, or other analogous instrument that the latter can be readily and accurately adjusted. This object I attain in the following manner, reference being had to the accompanying drawing, in which—

Figure 1 represents my improved tripod-head adapted to an ordinary leveling-instrument; Fig. 2, the same adapted to a transit-instrument; Fig. 3, a sectional plan on the line 1 2, Fig. 1, drawn to a reduced scale; Fig. 4, an inverted plan of Fig. 2, also drawn to a reduced scale; and Fig. 5, a modification of my invention.

Referring to Fig. 1, A is the plate connected to the top of the tripod, and B the block, or, as it is technically termed, the "center," to which the instrument is connected, the said block having the usual leveling-screws *a*.

The plate A has a central annular projection, *d*, having a convex outer surface concentric with a concave inner surface or socket, to which is adapted the ball or section of a sphere, *e*, formed upon the lower end of a sleeve, *f*, which is secured to or forms part of the block or center B, and to the convex exterior surface of the projection is adapted an annular plate, *n*, upon which bear the lower ends of the leveling-screws *a*.

After slightly loosening these screws, so that the annular plate *n* ceases to bear tightly on the convex outer surface of the projection *d*, the block B and the instrument carried thereby may be readily moved to a position approximating to that desired, the screws being afterward manipulated so as to effect the final and accurate adjustment and securing of the block.

By this means the adjustment of the instrument can be effected much more rapidly than when the leveling-screws bear directly upon a horizontal plate, as usual, for in that case the entire movement of the block or center B has to be effected by the manipulation of said screws.

In applying my invention to a transit-instrument, the ball *e* of the stem *f* is adapted to a socket formed in a ring, *i*, the latter extending upward through a central opening formed in the plate A, and being provided with arms *j*, which bear against the under side of said plate. The annular plate *n* is adapted to the convex surface of a ring, *m*, surrounding the upper end of the ring *i* and resting upon the plate A. By this means the ring *i* is permitted to have that lateral movement which is essential to a transit-instrument. This feature of lateral adjustment, however, is common in ordinary transit-instruments, and forms no part of my invention.

In Fig. 3 is shown a modification of my invention, in which the plate A has a concavo-convex projection, *x*, to which is adapted a rounded plate, *y*, the latter having a socket for the ball *e*, and the leveling-screws bearing directly on the convex surface of the said projection. In this case the rapid approximate adjustment is effected by the movement of the plate *y*, and the final and accurate adjustment by means of the leveling-screws.

One of the most important advantages of my invention is its applicability to an ordinary leveling or other like instrument without necessitating any change of the parts common to such instruments.

I claim as my invention—

The combination, in a surveying, leveling, or similar instrument, of the usual block or center B, its ball *e*, and leveling-screws *a* with the plate A, upon which, or upon a plate or plates connected to or resting upon which, are formed a socket for the ball *e* and a convex surface for the binding action of the screws *a*, all substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALFRED YOUNG.

Witnesses:
HARRY A. CRAWFORD,
HARRY SMITH.