E. W. ARMS.

SURVEYING INSTRUMENT.

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1,191,936.

Patented July 25, 1916.

Fig. 1.

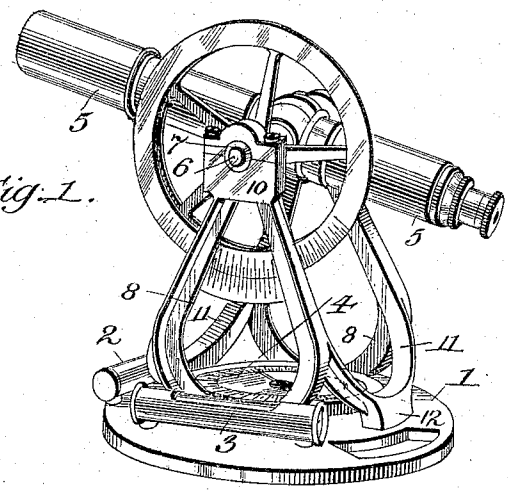
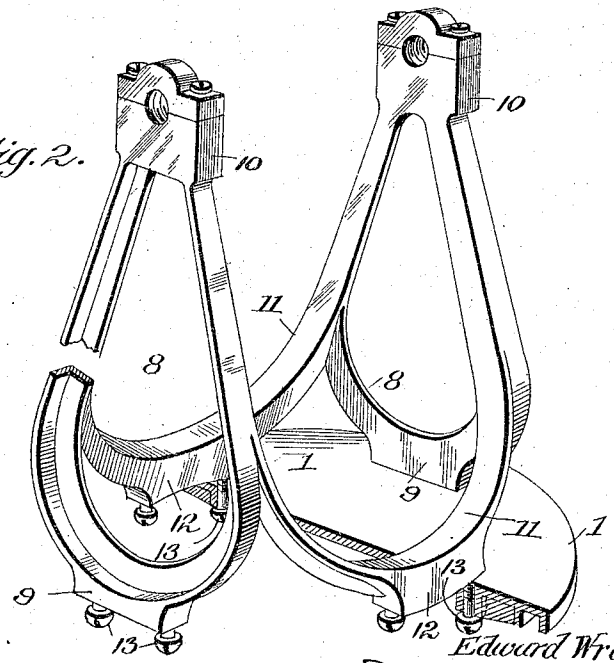


Fig. 2.



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UNITED STATES PATENT OFFICE.

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SURVEYING INSTRUMENT.

1,191,936. Specification of Letters Patent. Patented July 25, 1916.

Application filed December 3, 1915. Serial No. 64,857.

To all whom it may concern:

Be it known that I, EDWARD WRIGHT ARMS, a citizen of the United States, residing at Troy, in the county of Rensselaer and State of New York, have invented a certain new and useful Improvement in Surveying Instruments, of which the following is a specification.

The present invention pertains to surveying instruments, and relates more particularly to an improved standard or mounting for the telescopes of transits and altazimuths, the construction and advantages of which will be hereinafter set forth, reference being had to the annexed drawings, wherein:

Figure 1 is a perspective view of so much of a transit as is necessary to a full understanding of the invention; and Fig. 2 a like view, on an enlarged scale, of the trussed standard and a portion of the base plate to which the standard is secured.

The main object of the present invention is to produce a rigid trussed standard or support for the telescope, and this without the presence of objectionable cross bracing or elements made separate and distinct from the usual side standards or elements in which the trunnions for the telescope find their bearing; in other words, the invention may be said to comprise a one-piece braced standard, which may be readily and firmly secured to the underlying plate, and presenting a structure which is at once rigid and free from objectionable projections and bracing, and at the same time artistic and pleasing in appearance.

Referring to the drawings, in which certain of the usual elements of the instrument are shown more or less diagrammatically, and others entirely omitted, as they have no direct bearing on the invention, 1 denotes the "plate" or base having mounted thereon the usual levels 2 and 3 and carrying at its center a compass designated by 4. The telescope 5 is provided with suitable trunnions 6, the bearings or bushings 7 for which are mounted in the upper ends of the opposite vertical members of the standard. The standard is of the form best shown in Fig. 2 and may be said to comprise two vertically-disposed side elements or members which are connected together by two oppositely-disposed truss or bow shaped elements, all of said elements being provided with flat bearing faces adapted to contact with and be secured to the base plate 1. More specifically, the side, trunnion or supporting members, may each be said to comprise an open oval-shaped member 8, having a foot 9 (at the larger end of the oval) and a head 10, in which the bushings or bearings 7 are mounted. These supporting members are connected to each other by brace members 11, which are bowed in outline and extend outwardly and downwardly from their points of connection or mergence with the side elements toward the base. Said members 11 are each provided with a foot 12 and said feet and the feet 9 are all planed or turned off so as to find an even bearing upon the plate 1. Filister screws 13, passing through the plate 1 and into the feet serve to rigidly secure the standard to said plate.

By making the component elements of the standard angle or L-shaped in cross-section, see Fig. 2, lightness, combined with strength, is at once obtained, and by employing the construction above set forth the standard is firmly braced.

Not only is a strong and neat standard produced but the structure affords all the points of support necessary for the attachment of the requisite scales, adjusting and clamping screws, and other parts, while at the same time presenting an open formation which facilitates mounting the elements of the instrument and affords an unobstructed vision of the parts.

Having thus described the invention, what is claimed is:

1. In a surveying instrument, the combination of a base plate; a standard surmounting the plate, said standard comprising side members, and a pair of upwardly-extending brace members connecting said side members, all of said members having a bearing upon and secured to the plate; and a telescope mounted between and supported by said side members.

2. A standard for transits and the like, comprising a single casting having vertically-disposed side members and a pair of oppositely-arranged brace members connecting said side members, said brace members having the form of an inverted bow and merging into said side members.

3. A standard for transits and the like, comprising a single casting having vertically-disposed telescope-supporting members, and a pair of oppositely-arranged bow-shaped brace members connecting said side

members, all of said members being provided with feet lying in a common plane.

4. A standard for transits and the like, comprising a single casting having two vertically-disposed telescope-supporting members, and a pair of oppositely-arranged brace members connecting said supporting members at a point above the lower portion thereof, all of said members being L-shaped in cross-section and each having a foot at its lower portion, the bottoms or soles of said feet lying in a common plane.

5. A standard for transits and the like, comprising a single casting having two vertically-disposed telescope-supporting members, said members being oval in outline with the larger end of the oval at the base; and a pair of oppositely-disposed bow-shaped brace members connecting said supporting members in pairs, said bow-shaped members extending outwardly and downwardly from their point of connection with said supporting members.

In testimony whereof I have signed my name to this specification.

EDWARD WRIGHT ARMS.

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