J. T. BLAIR.

SQUARE OR GAGING DEVICE.

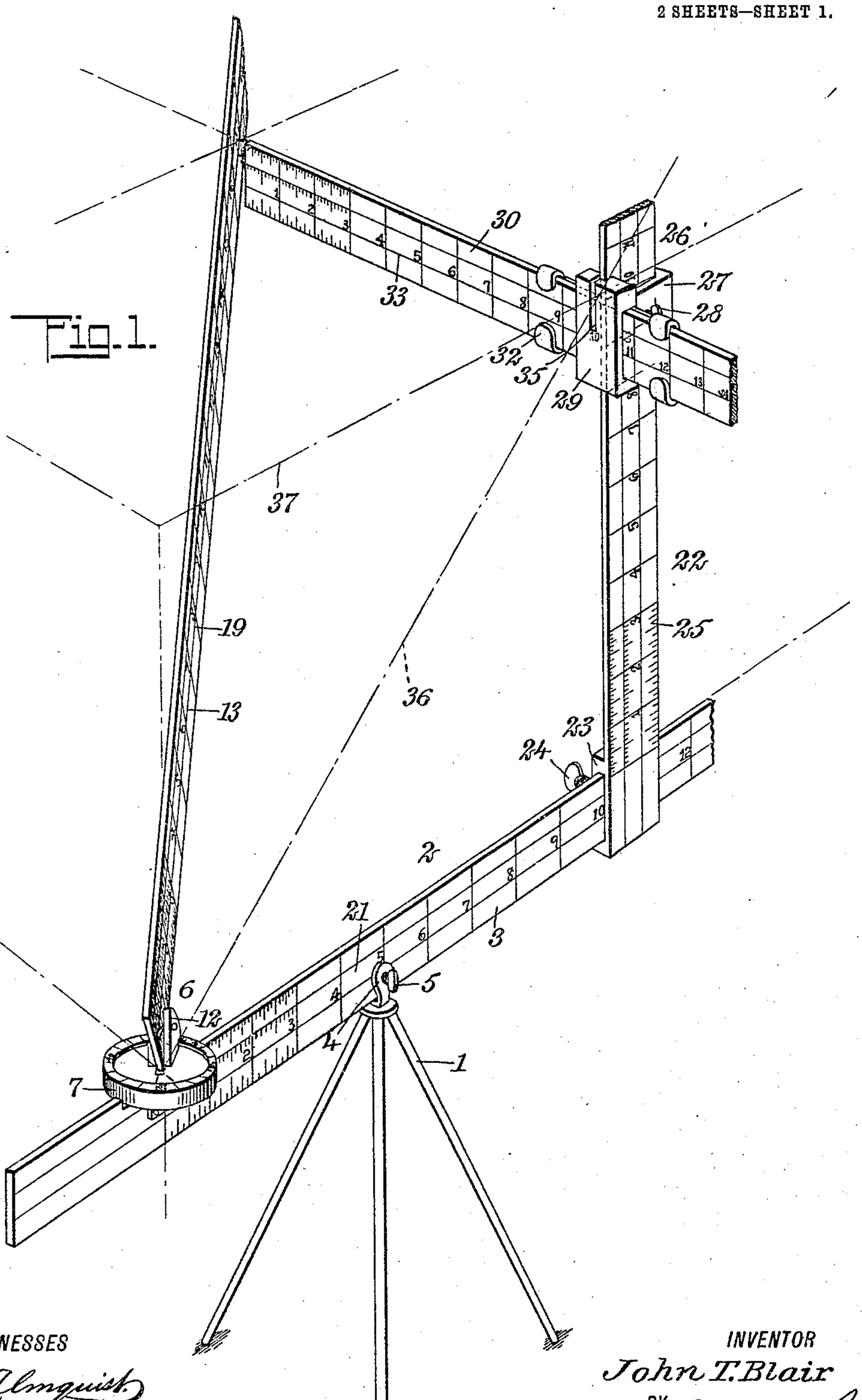
APPLICATION FILED JAN. 20, 1909.

945,684.

Patented Jan. 4, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 3.

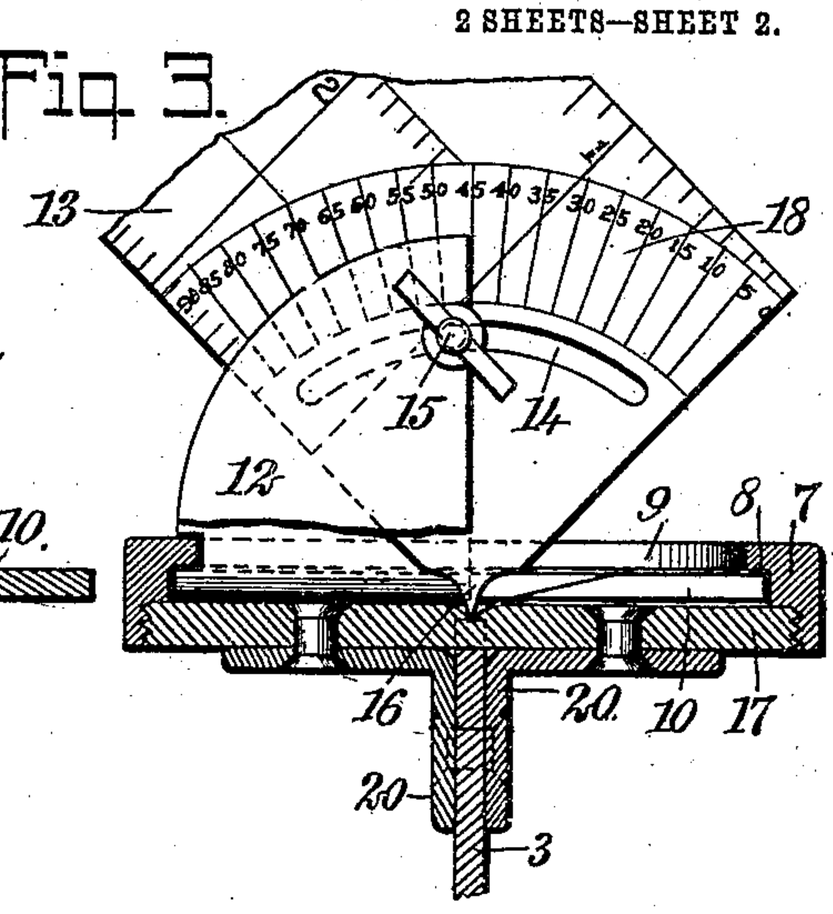


Fig. 5.

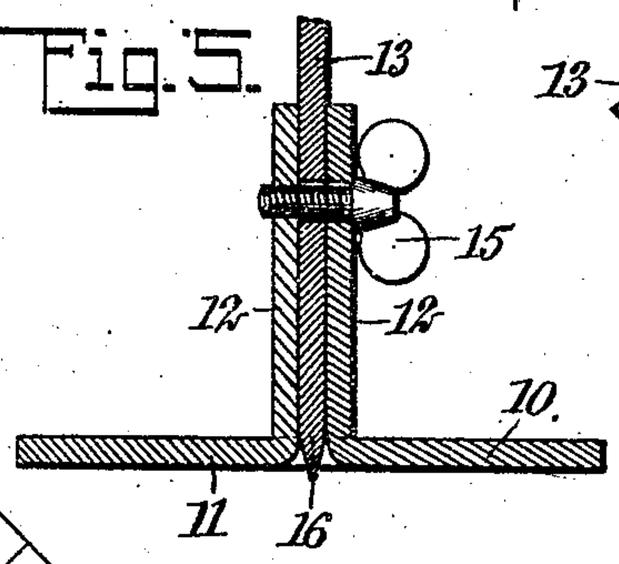


Fig. 4.

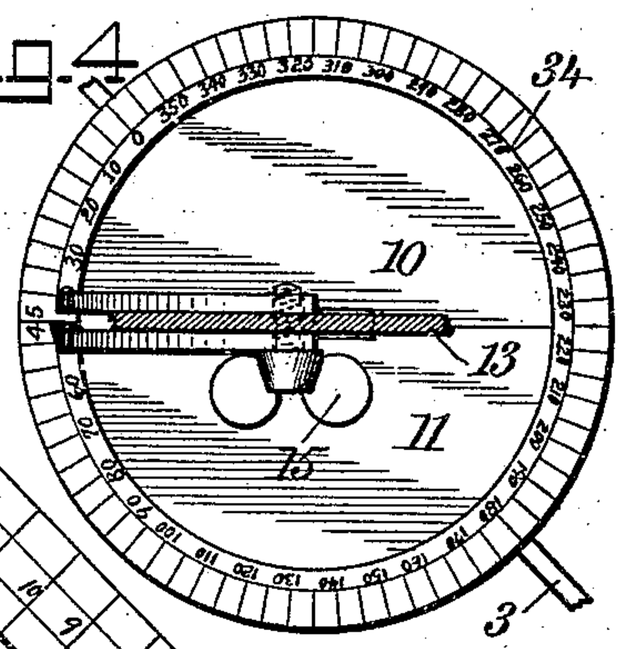
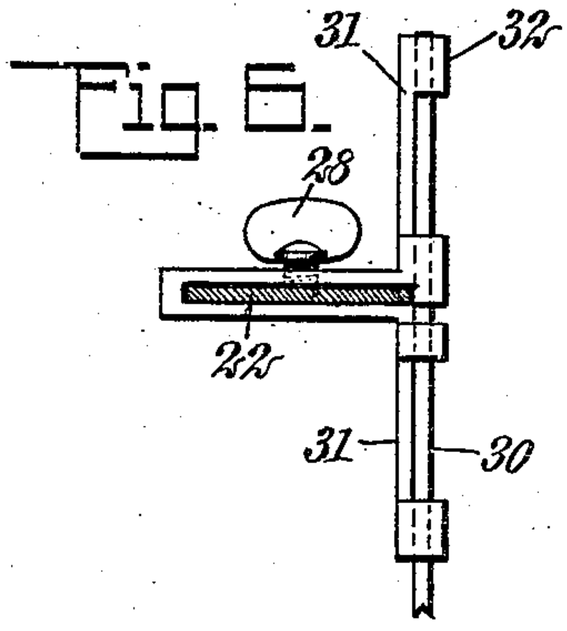


Fig. 2.

Fig. 6.



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SQUARE OR GAGING DEVICE.

945,684. Specification of Letters Patent. Patented Jan. 4, 1910.

Application filed January 20, 1909. Serial No. 473,216.

To all whom it may concern:

Be it known that I, JOHN T. BLAIR, a citizen of the United States, and a resident of Tulsa, in the county of Tulsa and State of Oklahoma, have invented a new and Improved Square or Gaging Device, of which the following is a full, clear, and exact description.

This invention relates to a square or gaging device, the purpose of which is to facilitate the laying out of carpenters' work or similar work, and the object of the invention is to provide a device by means of which the length and angle of the rafters, hips and valleys of roofs may be readily ascertained.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective of the device partially broken away; Fig. 2 is a side elevation of the upper portion of the device, certain parts being broken away; Fig. 3 is a vertical section through the dial of the device at the point where the angles are measured; Fig. 4 is a plan of the dial shown in Fig. 3, but upon a reduced scale, certain parts being broken away and shown in cross section; Fig. 5 is a vertical section near the dial and showing details of the construction at this point; and Fig. 6 is a plan showing a portion of the device and showing part of the device in cross section.

Referring more particularly to the parts, 1 represents a stand such as a tripod, upon which the square or gage 2 is mounted. The square or gage comprises a horizontal main rail 3 which is held in a vertical plane, the lower edge of the said rail being seated in a socket 4 on the head of the tripod, said socket being provided with a clamping screw 5 by means of which the rail may be rigidly secured. Near one end the rail 3 is provided with a dial 6. The details of the construction of this dial are clearly shown in Figs. 3 to 5 inclusive. It comprises a fixed ring 7 which is under-cut by means of a rabbet groove 8 so as to form a projecting annular shoulder 9, as indicated. In this groove 8 there is received the edge of a disk which is formed in two sections 10 and 11. These sections are of semi-circular form, as shown, and at their adjacent edges on one side of the center they are provided with upwardly projecting integral wings 12. These wings are disposed a slight distance apart, and in the space between them there is mounted the end of a hip rail 13. This hip rail is provided with a circumferential or arcuate slot 14, and the wings 12 are provided with a clamping bolt 15 which passes through the slot and enables the hip rail to be secured in any angular position, as will be readily understood. This hip rail is normally disposed in an inclined position, as shown in Figs. 2 and 3, and its lower corner is formed into a spur 16, which spur is seated in the center of a circular backing plate 17 which screws into the ring 7 from the under side thereof, as shown. This backing plate 17 therefore operates not only as a center for the hip rail 13, but it also holds the disk sections 10 and 11 in position. From the point of the spur 16 as a center the arcuate slot 14 is struck, and also from this point as a center a graduated quadrant or scale 18 is formed on the face of the hip rail.

A linear scale 19 is formed on the sides of the hip rail 13, as shown, the numbering of this scale having its origin or zero at the point of the spur 16. On the under side of the backing plate 17, angle plates 20 are provided which rigidly secure the backing plate to the main rail 3. The main rail 3 is provided with a linear scale 21, the numbers having their origin or zero at the point of the spur 16. The rail 3 is supported on the tripod at an intermediate point in its length, and at a point beyond the tripod, it is provided with a stud rail or stud 22. This stud rail is substantially the same as the rail 3, except that it is disposed in a vertical position, the lower end of this rail being formed into a rectangular sleeve 23 which slides loosely on the rail 3. It may be secured to the rail 3 by means of a clamping screw 24, as shown. This stud rail 22 is provided with a linear scale 25, the origin or zero line of which is substantially on a level with the point of the spur 16. Mounted on the upper part of the stud rail 22, there is provided a saddle clamp or saddle 26. This saddle comprises a sleeve 27, having a clamping screw 28 which engages the side of the stud rail to hold the clamp rigidly thereon. In addition to the sleeve 27, the saddle comprises a second sleeve 29 which is

disposed in a transverse position and forms a guide for a ridge rail 30. This rail is disposed in a horizontal position, and in order to support it securely, the sleeve 29 is provided with laterally disposed extensions or arms 31, as indicated in Fig. 6, and these arms are provided with fingers 32, which bend over the edges of the ridge rail, as shown. This ridge rail 30 is provided with a linear scale 33, the origin or zero of which is at the end of the rail as indicated.

Referring again to the ring 7, and especially to Fig. 4, the upper face of the ring is provided with angular graduations 34, giving the angular degrees from "0" to "350", the zero mark being located in alinement with the rail 3. From this arrangement if the disk formed of the sections 10 and 11 is rotated from its normal position, the scale 34 will indicate through how many degrees the plane of the rail has been displaced.

A square or gage constructed as described can be used in various ways for measuring angles of the faces of embankments, and in other connections. The principal use of the device, however, is for determining the length and angle of hips and valleys in laying out roofs. In using the device for this purpose, suppose that the length and angle of a hip or valley is to be determined which extends downwardly from the ridge pole, the foot of the valley or hip to be depressed ten feet below the ridge, and suppose further, that the roof has a form in which the projection of the hip or valley from the ridge is the same as the amount of depression of the foot of the hip, in other words, ten feet. In order to determine the length of a hip under these conditions, the stud rail 22 is set at "10", and the rail 30 is also set to read at "10" at the clamp 26, the hip rail 13 is then adjusted so as to bring its upper portion against the end of the ridge rail 30. The reading on the scale 19 of the hip rail will then give the length of the hip or valley for a roof having these measurements, and, furthermore, the angle of the hip rail 13 with respect to a horizontal rail plane can be read on the quadrant or scale 18.

As indicated most clearly in Fig. 1, the sleeve 29 is provided with a slot 35 which is disposed in a plane at the side of the stud rail 22. If it is desired to use the hip rail 13 so as to give the length of the rafters which will run from the ridge, the rail 13 can be rotated and its upper portion allowed to rest in the slot so that the rail will occupy substantially the position indicated by the dotted lines 36. The length of the rafter may then be read on the scale 19, as will be readily understood, and the angle of the rafter may be taken from the scale 18.

In Fig. 1 the outline of the cube is indicated by the dotted lines 37, said cube being constructed with the rails 3, 22, and 30 as edges. With a square constructed as described it will be evident that the hips and rafters may be laid out for a roof having dimensions of any proportion within the limits of the device.

Having thus described my invention, I claim as new and desire to secure by Letters Patent,—

1. In a device of the class described, in combination, a horizontal main rail, a vertical stud rail mounted thereupon and disposed perpendicularly thereto, a horizontal ridge rail adjustably mounted on said stud rail and extending at right angles thereto and also at right angles to said main rail, and a hip rail pivotally mounted on said main rail adapted to extend to the end of said ridge rail and having a graduated inclined scale disposed in a vertical plane adapted to measure the angle formed between said hip rail and the horizontal plane passing through said main rail.

2. In a device of the class described, in combination, a main rail, a stud rail adjustably mounted thereupon and extending vertically thereabove, a ridge rail adjustably attached to said stud rail, a dial mounted on said main rail in a horizontal plane at a point removed from said stud rail, and a hip rail pivotally seated at said dial and extending up to the end of said ridge rail.

3. In a device of the class described, in combination, a main rail, a ring rigidly attached thereto, a disk rotatably mounted in said ring, a hip rail pivotally supported on said disk, a stud rail adjustably mounted on said main rail and extending vertically therefrom, and a ridge rail adjustably attached to said stud rail and extending horizontally.

4. In a device of the class described, in combination, a main rail, a ring rigidly attached thereto and having an angular scale, a disk rotatably mounted in said ring, a hip rail having a spur seating in the center of said disk, said hip rail having an angular scale formed about said spur as a center and adapted to indicate the angular position of said hip rail with respect to the plane of said main rail, a stud rail attached to said main rail and extending vertically therefrom, and a ridge rail attached to said stud rail.

5. In a device of the class described, in combination, a main rail, a ring rigidly secured thereto, a disk rotatably mounted in said ring, said disk having upwardly projecting wings, a hip rail held between said wings and seated pivotally on said disk, means for clamping said hip rail to said wings, a stud rail attached to said main rail and extending vertically therefrom, and a ridge rail attached to said stud rail and extending horizontally.

6. In a device of the class described, in

combination, a main rail, a dial mounted on said rail and having a rotatable disk, a rail attached pivotally on said disk and having graduations with their origin at the pivot point, a stud rail adjustably mounted on said main rail, a ridge rail and a clamp adjustably mounted on said stud rail and adapted to support said ridge rail.

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

JOHN THOMAS BLAIR.

Witnesses:
PATRICK W. MALLOY,
BENJAMIN C. CONNER.