

A. ROGERS.
SURVEYOR'S COMBINATION GRIP AND LEVEL.
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1,004,084.

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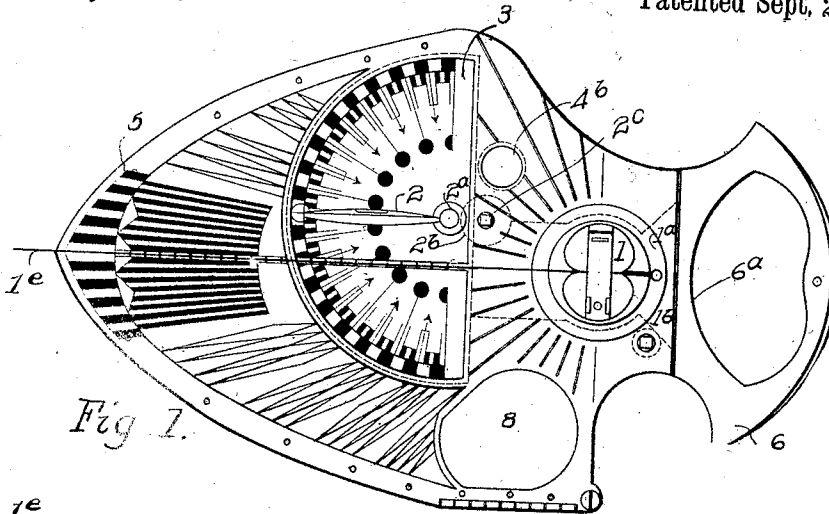


Fig. 1.

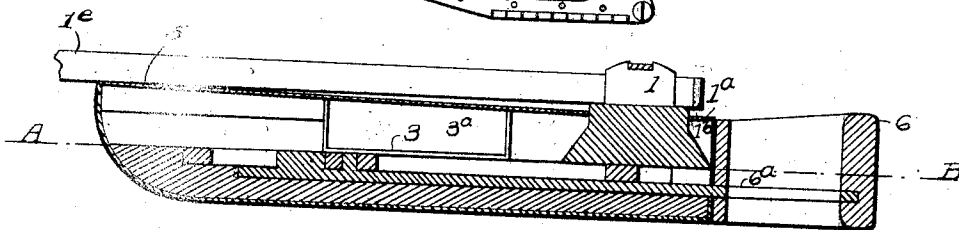


Fig. 2.

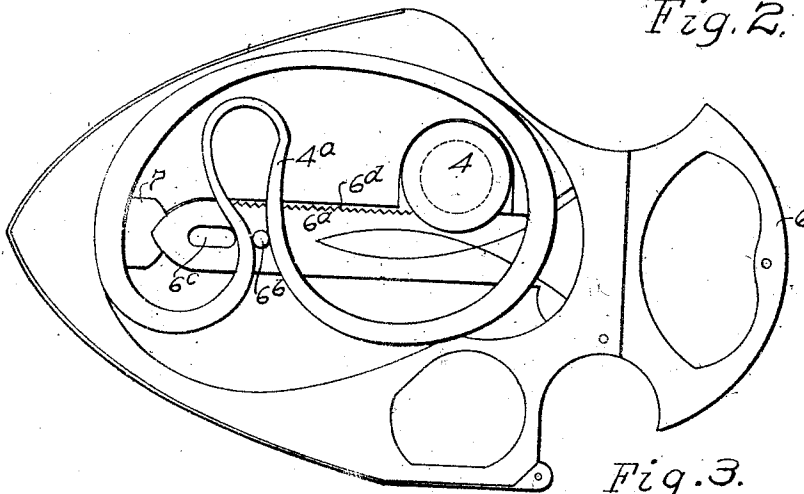


Fig. 3.

WITNESSES
Henry M. Coffey
George S. Butler

INVENTOR
Albert Rogers
BY
A. B. Boroman
ATTORNEY

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UNITED STATES PATENT OFFICE.

ALBERT ROGERS, OF CORONADO, CALIFORNIA.

SURVEYOR'S COMBINATION GRIP AND LEVEL.

1,004,084.

Specification of Letters Patent.

Patented Sept. 26, 1911.

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To all whom it may concern:

Be it known that I, ALBERT ROGERS, a citizen of the United States, and a resident of Coronado, in the county of San Diego and State of California, have invented a new and useful Improved Surveyor's Combination Grip and Level, and the following is a clear and exact description thereof, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to a surveyor's combination grip and level for use in chaining in surveying and more particularly advantageous on rough and hilly ground and the objects are to provide a means for subjecting the chain to an equal tension in every case and to indicate the number of degrees the chain is from the horizontal each time, to dispense with the hand level, to economize time, labor and expense in chaining.

With these and other objects which will appear in the detail description my invention consists of the construction and arrangement of parts hereinafter described and more particularly set forth in the accompanying drawings in which:

Figure 1 is a side elevational view of my grip and level. Fig. 2 is a central longitudinal sectional view thereof and Fig. 3 is an elevational view of the portion with all the removable parts removed above the line A—B in Fig. 2.

Similar characters of reference refer to similar parts throughout the several views.

The chain attachment 1, the bubble tube 2, the protractor 3, tension scale 4, degree scale on the body top 5, and handle 6, constitute the principal parts of my grip and level. The body portion is shaped as shown best in Figs. 1 and 3 and is provided with a handle 6 which is provided with finger hole into which may be inserted two or more fingers as in an ordinary surveyor's chain grip. To this handle is securely attached slide 6^a which extends into the body portion and is provided with two extending lugs 6^b and 6^c adapted to manipulate a special spring 4^a which is a portion of the tension scale and which rests against said slide 6^a, the body portion being shaped at this plane as shown best in Fig. 3 to provide for said spring. The upper edge of said slide 6^a is provided with teeth 6^d adapted to engage with similar teeth on the periphery of scale index 4. When the handle 6 is subjected to strain, slide 6^a is pulled outward against the spring 4^a

and the teeth 6^d in said slide being in engagement with scale index 4 revolves it and it is provided with numerals 1, 2, 3, and so forth, which said numerals will appear in the hole 4^b provided in the face of the body for that purpose. Scale index 4 rests on said slide 6^a and in a recess in the body. This scale index is for the purpose of indicating the number of pounds tension on the chain. 7 represents a small projection in the body against which spring 4^a rests and which is for the purpose of a support for said spring. On the lower side of the body is provided a hole 8 adapted for one or more of the fingers of one of the hands of the chainman. This is for the purpose of adjusting the grip to its desired position and is practically the same as in the ordinary chain grip. Adjacent to said handle 6 and centrally located is chain attachment 1, which is annular in shape and fitted into a plate 1^a, said plate being on the plane of the top surface of the body. Chain attachment 1 is provided with a slot adapted to receive and securely hold chain 1^c. Below said body and around said attachment 1 is a piece 1^b adapted to hold said attachment 1 in the position shown in the drawings, but to allow it to revolve in said piece 1^b, it being supported on its bottom by the surface of the spring and body portion. On the upper side of said grip body is provided a recess 3^a on the inner surface of which is provided a protractor 3 which in turn is provided with a level bubble tube 2 which is pivoted concentrically with said protractor. Said pivot is provided with a pinion 2^a engaging with a gear 2^b which is provided with an axle, said axle being provided with a square end 2^c adapted to be turned by a key so that the bubble tube 2 may be turned to any position desired with said key. This bubble tube 2 is for the purpose of indicating the number of degrees the chain is from the horizontal when subjected to a certain number of pounds tension. The bubble tube 2 being brought to a horizontal position will show accurately on the protractor the number of degrees from the horizontal. The face of said grip and level is also provided with a degree scale 5 divided into sections, the chain attachment 1 being concentric with said scale 5. The body portion of my grip and level is covered with thin sheet metal which holds the several parts intact.

It will be readily seen that with this con-

struction, I have a combined grip and level by the use of which chaining may be done on inclined surfaces and the chain be easily kept in a horizontal position, that it may at all times be subjected to the same tension. This is acquired by pulling the grip until the chain registers the same number of pounds on the scale and while in that position the bubble tube 2 being raised to a horizontal position will give the actual number of degrees the chain is from the horizontal.

The manner of using my grip and level is as follows:—The operator places two or more fingers in the handle 6 and the chain is attached to chain attachment 1 as shown in Fig. 1. He then proceeds to chain, drawing the handle to a certain tension as indicated by the tension scale at hole 4^b. The grip is held in position by the operator's other hand, the fingers being inserted in hole 8; the chain is drawn across the face of the grip horizontally, then the bubble tube is manipulated to the horizontal plane by means of a key on square piece 2^c, which will give the number of degrees the chain is from the horizontal.

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

1. A surveyor's combination grip and level comprising a body piece provided with a graduated degree scale and having a recess therein and a protractor in said recess, a revoluble chain attachment, a movable handle, a tension scale in connection therewith, and a level bubble tube pivoted concentrically with said protractor, all substantially as set forth.

2. A surveyor's combination grip and level comprising a body piece provided with a graduated degree scale on its face and having a recess therein, a protractor in said recess, a revoluble chain attachment located concentrically with said degree scale, a tension scale, a movable handle in connection therewith, a level bubble tube pivoted concentrically with said protractor and gear and pinion means for rotatably adjusting said bubble tube, all substantially as set forth.

3. A surveyor's combination grip and level, comprising a body portion composed of several parts and provided with a graduated degree scale on its face and having a recess therein, a protractor in said recess, a handle provided with a slide adapted to slide in said body, a spring in connection with said slide for regulating the number of pounds of tension applied, means for indicating said tension, a revoluble chain attachment mounted in said body portion concentrically located with respect to said degree scale, a level bubble tube in said above named recess adapted to operate concentrically with said protractor, and gear and pinion means in connection with said level bubble tube for rotatably adjusting the same upon the face of said grip and level, all substantially as set forth.

In testimony whereof I hereunto subscribe my name in the presence of two subscribing witnesses.

ALBERT ROGERS.

Witnesses:

HERBERT N. NEALE,
GEORGE T. ROGERS.