Jan. 4, 1938. H. L. PROUT 2,104,377

LINE SQUARING DEVICE

Filed April 17, 1937

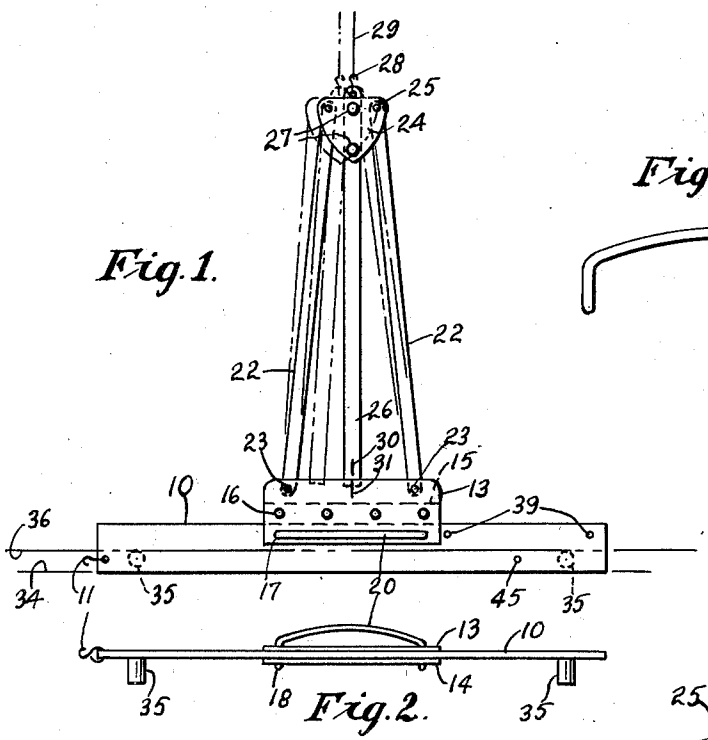


Fig. 1.

Fig. 2.

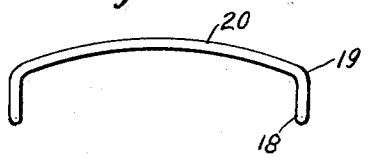


Fig. 5.

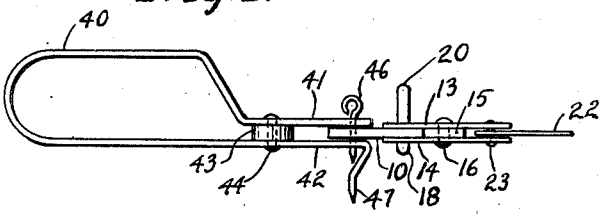


Fig. 4.

Fig. 3.

INVENTOR.
HERBERT L. PROUT

BY

L. A. Paley

ATTORNEY.

Patented Jan. 4, 1938 2,104,377

UNITED STATES PATENT OFFICE

2,104,377

LINE SQUARING DEVICE

Herbert L. Prout, Villa Park, Ill.

Application April 17, 1937, Serial No. 137,538

10 Claims. (Cl. 33—86)

This invention relates to line squaring devices for use of millwrights, builders, and other artisans.

In the past, a builder in laying out the foundation for a building found it necessary to repeatedly measure diagonals of the foundation to insure that the angles were right angles and that the building was square. This troublesome cut-and-try method was time consuming and costly. The millwright placing machinery in a plant, has to place his line along a carpenter's square, and by sighting endeavor to locate the desired points approximately right. An adequate line squaring device was not available for the use of artisans.

An object of this invention therefore, is to provide a line squaring device which will speedily and accurately establish right angles by the use of a line.

Another object of the invention is to provide a device of the class described which will accurately locate two lines at right angles, one to the other;—also to improve line squaring devices in other respects hereinafter specified and claimed.

Reference is to be had to the accompanying drawing forming a part of the specification, in which

Fig. 1 is a plan view of the improved line squaring device adjusted for squaring against fixed surfaces,

Fig. 2 is an edge view of the device,

Fig. 3 is a plan view of the modified device adjusted for squaring two lines,

Fig. 4 is an enlarged edge view of a portion of the device shown in Fig. 3, and

Fig. 5 is an enlarged elevation of a fastening wire clip.

Referring to the drawing by numerals, a base bar 10 of convenient length, such as one foot, is provided at one end with a pivoted hook 11 for attachment to a line 12. The inner edge of bar 10 is snugly received between a pair of spaced parallel carriage plates 13 and 14, said plates being secured together by a filler strip 15 and a plurality of rivets 16. A pair of holes 17 pass through the ends of plates 13 and register with corresponding holes in the inner edge of bar 10 so as to receive the ends 18 of a fastening wire clip 19, said clip ends 18 being joined by a bowed, integral wire section 20. The wire clip 20 is slightly resilient so that after assembly in the holes 17, it remains in position through friction, and the bowed section 20 can be readily grasped by the operator.

A pair of rock bars 22 is pivotally mounted at one end between plates 13 and 14 by means of pins 23. The opposite ends of said bars are pivotally secured between a pair of spaced, shield-shaped tie plates 24 by means of pivot pins 25 so that the bars 22 extend at an acute angle, one to the other. An indicator bar 26 extends centrally between the bars 22, and has one end rigidly secured between the plates 24 by means of a plurality of rivets 27. The extreme outer end of indicator bar 26 beyond the plates 24, is provided with a pivoted hook 28 for attachment to a line 29, the line 29 being thus secured to the tie means 24 by the end of bar 26 and hook 28. The opposite end of indicator bar 26 slides freely between the plates 13 and 14, and is provided with a central indicator mark 30 which registers precisely with a central indicator mark 31 on plate 13 when the taut line 29 extends exactly at a right angle to the bar 10. When the line 29 extends at other than a right angle, the indicator bar 26 extends to the right or left, as the case may be, to the dot and dash position shown in Figure 1. With the linkage arranged as shown, in the form of a trapezoid, any movement of the hook 28 to the right or left, causes a similar movement, but about three times as great, of the free end of indicator bar 26. By spacing the pins 23 farther apart, or the pins 25 closer together, the sensitivity of the instrument may be increased to any desired degree. By arranging the linkage in the form of a parallelogram, the movement of the indicator is equal to that of hook 28. The outer edge of the bar 10 may be held firmly against a surface 34, such as a wall, in establishing a true right angle with the line 29. A pair of spaced downwardly extending pins 35 is secured near the ends of bar 10 so that these pins may be hooked over the edge of a body 36 when establishing a true right angle with the line 29.

For establishing a true right angle between two intersecting lines, it is preferable to locate the indicator device near one end of the bar 10, and for this purpose, an additional pair of holes 39 is provided in the bar 10 to receive the clip ends 18, (Fig. 3). In order to support the instrument at a desired point about which lines 12 and 29 are to be squared, I provide a loop-shaped handle 40 having outstanding legs 41 and 42 which are fixed together in spaced, parallel relation by washer 43 and rivet 44, so as to loosely engage the edge of bar 10. A hole 45 passes through the bar 10 and legs 41 and 42 so as to receive a pivot pin 46. The leg 42 is formed into a

downstanding point 47 which is coaxial with the pin 46. In operating the instrument, the point 47 is thrust into the floor, the top of a stake, or other desired point, and lines 12 and 29 drawn taut and moved until indicator line 30 coincides with line 31, thus establishing a true right angle for the lines 12 and 29.

When the instrument is not in use, the clip 20 may be removed, thus permitting the instrument to be packed in a small and narrow box.

I would state in conclusion that while the examples illustrated constitute practical embodiments of my invention, I do not wish to limit myself precisely to these details, since manifestly the same may be considerably varied without departing from the spirit of the invention as defined in the appended claims.

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

1. In a line squaring device, a base bar, an indicator carriage removably mounted on said bar, a pair of rock bars pivotally mounted at one end on said carriage, and an indicator bar pivotally associated with the opposite ends of said rock bars, said indicator bar being adapted to be secured to a taut line and indicate a true right angle position of said line relative to said base bar.

2. In a line squaring device, a base member, a pair of rock bars pivotally associated at one end with said base member, and an indicator bar pivotally associated with the opposite ends of said rock bars, said indicator bar being adapted to be secured to a taut line and indicate a true right angle position of said line relative to said base member.

3. In a line squaring device, a base bar, an indicator carriage removably mounted on said bar, and an indicator bar movably associated with said carriage, said indicator bar being secured to rock bars and adapted to be secured to a taut line and indicate a true right angle position of said line relative to said base bar.

4. In a line squaring device, a pair of rock bars pivotally mounted at one end on fixed spaced pivot points on a connecting member, a connecting member pivotally connecting the opposite ends of said bars to form an acute angle between said bars, and an indicator bar rigidly secured to said connecting member and adapted to swing between said rock bars past a fixed indicator point, said indicator bar being arranged to indicate a true right angle position of a line secured to said indicator bar.

5. In a line squaring device, a base bar, an indicator carriage removably secured to said bar, and an indicator bar movably associated with said carriage by rock bars and adapted to indicte a true right angle between a line secured to said indicator bar and a line secured to said base bar.

6. In a line squaring device, a base bar, an indicator carriage removably mounted on said bar, a pair of rock bars pivotally mounted at one end on said carriage, a tie member pivotally mounted on the other end of said rock bars, means for attaching a line to said tie member, and an indicator bar rigidly attached to said tie member so as to indicate a true right angle position of said line with said base bar.

7. In a line squaring device, a base member, a pair of rock bars pivotally mounted on said base member, a tie member pivotally attached to other ends of said rock bars, so as to form substantially a trapezoid, means for attaching a taut line to said tie member, and an indicator bar rigidly attached to said tie member and adapted to swing between said rock bars and adjacent to a fixed point on said base member, so as to indicate a true right angle between said taut line and said base member.

8. In a line squaring device, a base bar, a pair of downwardly extending lugs near the ends of said bar and adapted for hooking over a body, a removable carriage attached to said base bar, rock bars pivotally mounted on said carriage, a tie member pivotally mounted on said rock bars, means for securing a taut line to said tie member, and an indicator bar rigidly attached to said tie member and adapted to indicate a true right angle position of said taut line relative to said base bar.

9. In a line squaring device, a base bar, means for attaching a taut line to one end of said bar, a handle pivotally secured to the other end of said bar and having a downwardly extending point coaxial with said pivot, a carriage mounted on said bar adjacent said pivot, rock bars pivotally mounted on said carriage, a tie member pivotally mounted on said rock bars, means for securing a taut line to said tie member, and an indicator bar rigidly attached to said tie member and adapted to indicate a true right angle position of said taut lines.

10. In a line squaring device, a base bar, a removable carriage mounted on said base bar, a detachable spring clip for securing said carriage to said base bar, trapezoidally arranged rock bars pivotally attached to said carriage, an indicator bar pivotally attached to said rock bars and adapted to swing between said rock bars, and means for attaching a taut line to said indicator bar.

HERBERT L. PROUT.