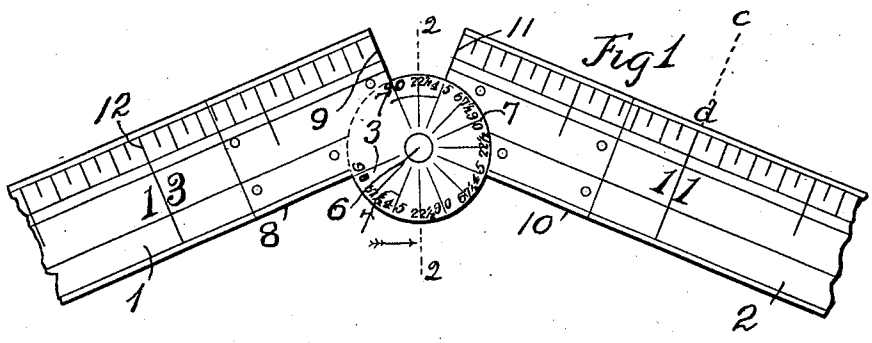
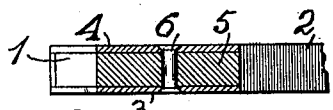
W. S. ADAMS.

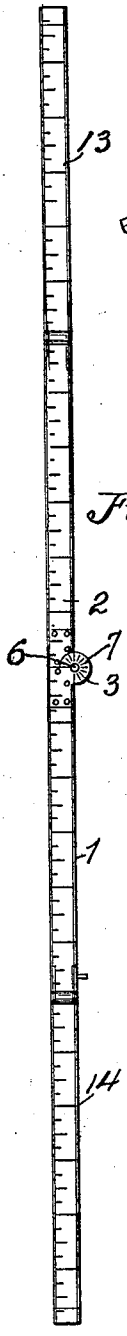
COMBINED PROTRACTOR AND RULE.

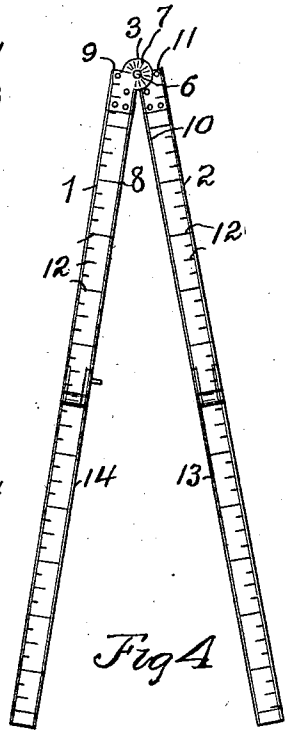
APPLICATION FILED SEPT. 12, 1904.

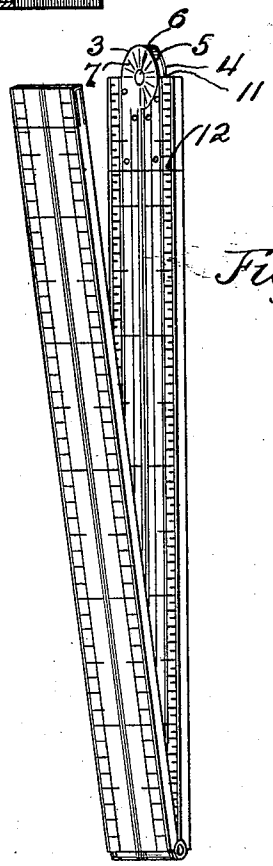
999,725. Patented Aug. 8, 1911.











Witnesses:
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UNITED STATES PATENT OFFICE.

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COMBINED PROTRACTOR AND RULE.

999,725. Specification of Letters Patent. **Patented Aug. 8, 1911.**

Application filed September 12, 1904. Serial No. 224,060.

To all whom it may concern:

Be it known that I, WILSON S. ADAMS, a citizen of the United States, residing in Lansing, in the county of Leavenworth and State of Kansas, have invented a new and useful Improvement in Combined Protractors and Rules, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in combined folding rules and protractors.

The object of my invention is to provide in one instrument a folding pocket rule and a protractor.

With the use of my invention ordinary running measurements may be taken, as, for instance, the length of a rafter, and with the same instrument different angles may be located, as for instance, the plumb cut of a rafter.

In the accompanying drawings illustrating my invention Figure 1 is an enlarged plan view of the inner pivoted ends of the inner members, showing the radial graduations on one member. Fig. 2 is a cross section taken on the dotted line 2—2 of Fig. 1. Fig. 3 is a perspective view of the device partly folded. Fig. 4 is a plan view of the instrument partly folded. Fig. 5 is a plan view of the instrument fully extended.

Similar characters of reference denote similar parts.

In the drawings I have illustrated an ordinary carpenter's rule provided with the protractor feature. The rule comprises two inner members 1 and 2, the inner end of the member 1 having two arcuate extensions 3 and 4, the center of the arcuate extensions being also the pivotal center of the two inner members. The two arcuate extensions 3 and 4 are parallel with each other and have mounted between them the arcuate extension 5 of the member 2. A pivot pin 6 extends through the extensions 3, 4 and 5 in the pivotal center corresponding to the centers of said arcuate extensions. One side of the extension 3 is provided with a series of graduations 7 located radially relative to the pivotal center or axis of the pin 6. These graduations 7 may be provided with characters denoting different degrees. The inner edge 8 and a portion of the end edge 9 of the member 1 are disposed at right angles to each other and also radially relative to the axis of the pin 6. In a like manner are located the inner edge 10 and a portion of the end edge 11 of the member 2. Thus by swinging the members 1 and 2 upon the pivot pin 6, the edges 10 and 11 may be employed as indicators for the radial graduations 7 on the extension 3, and as both edges always indicate at one time graduations of the same value, either edge may be used as the indicator.

When the edges 8 and 10 form an obtuse angle, the graduations indicated denote the angle between the edges 9 and 11. When the edges 8 and 10 form an acute angle the graduations indicated denote the angle between the edge 10 and the plane of the edge 9, and also the angle between the edge 11 and the plane of the edge 8.

12 denotes the ordinary transverse graduations on the sides of the different members and denoting units of measurement and divisions thereof.

To the outer ends of the inner members 1 and 2 are pivoted respectively the inner ends of the outer members 13 and 14, the axes of the said pivotal connections being disposed at right angles to the pin 6, whereby the rule may be folded first to the position shown in Fig. 4 and then in the position shown in Fig. 3.

In operating my invention, the instrument is used, in measuring off distances, in the ordinary manner, the rule being extended for this purpose, as shown in Fig. 5. To lay off a plumb cut with the edge 11, place the side edge 8 of member 1 parallel with one side edge of a rafter and swing the member 2 to a position in which the edge 10 will be at an obtuse angle to the edge 8 and in which the edge 10 indicates the proper graduation denoting the pitch of the roof, as for example, the middle one of the graduations 45, as shown in Fig. 1. Both edges 10 and 11 will now indicate graduations of like value, and a line struck on the rafter along the edge 11 will denote the plumb cut for a roof of 45° pitch. Or by swinging the

member 2 so that the edges 8 and 10 form an acute angle and the edges 10 and 11 indicate graduations 45, the plumb cut may be denoted by striking a line on the rafter along the edge 10.

Very often it is desired to lay off a line at a certain given angle and then measure a certain distance along the said line, as for instance where it is desired to notch, at a certain angle and for a given depth, a piece of timber. To do this, the member 1 is placed on the piece of timber with the outer or graduated edge of member 1 disposed parallel with the side of the piece in which it is desired to make the notch. The member 2 is then swung until the edge 10 indicates the angle desired, as for instance 45°, after which a line is drawn along the outer or graduated edge of the member 2 from the edge 11 to the graduation denoting the length required for the notch, as for instance the graduation represented by the numeral "11" in Fig. 1. A line $c-d$ may then be laid off at right angles to the outer edge of member 2. By sawing out the piece so laid out, a notch having the proper angle and depth may be obtained.

The examples just given represent but two of many different uses to which the instrument may be applied.

My invention may be variously modified without departing from its spirit.

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

A combined protractor and rule comprising two transversely graduated members one having two arcuate extensions between which is pivotally mounted an arcuate extension provided on the other member, the pivotal connection between the members being intersected by the adjacent end and side edges of both members, one of the outer extensions being radially graduated three fourths of its circumference in three segments of ninety degrees each, the graduations of all the segments being numbered alike and in a like direction whereby the end and side edges of the arm having the single arcuate extension will, at any angle to which the arms may be swung, be in alinement with graduations of adjacent segments having like numbers.

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

WILSON S. ADAMS.

Witnesses:
WARREN D. HOUSE,
HENRY F. ROSE.