No. 678,005. Patented July 9, 1901.

W. M. MYERS.

FOLDING RULE.

(Application filed Dec. 17, 1900.)

(No Model.)

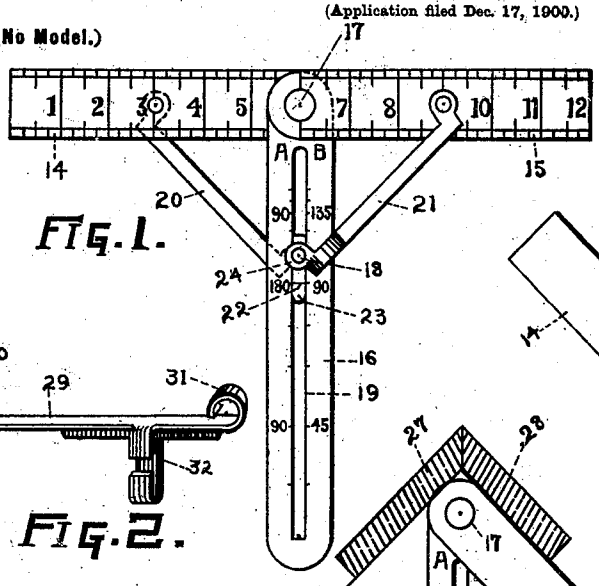


FIG. 1.

FIG. 2.

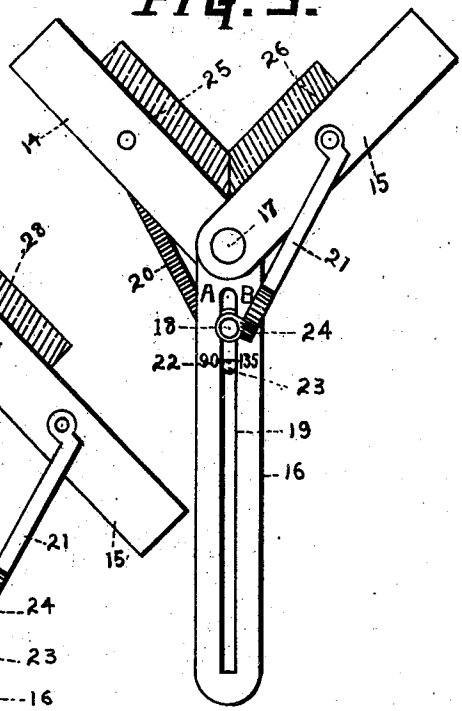


FIG. 3.

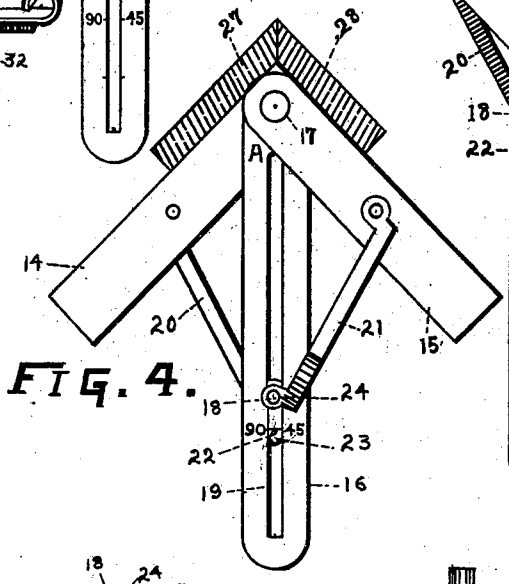


FIG. 4.

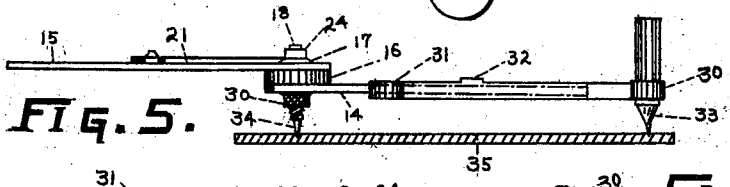


FIG. 5.

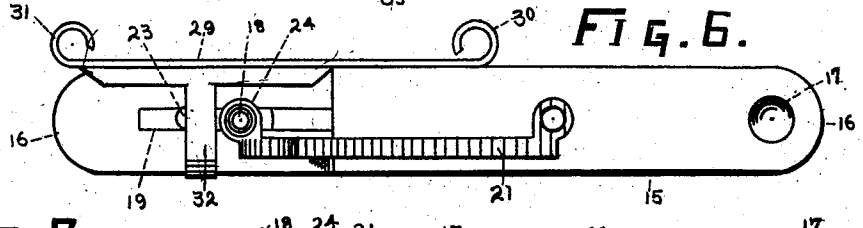


FIG. 6.

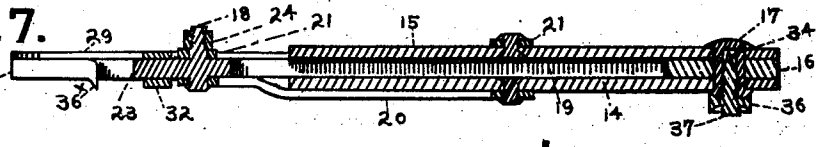


FIG. 7.

WITNESSES.

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FOLDING RULE.

SPECIFICATION forming part of Letters Patent No. 678,005, dated July 9, 1901.

Application filed December 17, 1900. Serial No. 40,225. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. MYERS, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented certain new and useful Improvements in Folding Rules; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in folding rules which are used for measuring and for locating lines for various kinds of work; and the objects of my improvements are, first, to provide a folding rule by the use of which lines may be drawn at any desired angle with the utmost ease and facility; second, to so construct a folding rule that its parts may readily be adjusted and secured at any desired angle and to so arrange its parts that said rule when so secured may be used as an ordinary square; third, to so construct a folding rule that by applying its parts to lines or surfaces the degrees of the angle of their inclination to each other will be clearly delineated upon said rule; fourth, to so construct and arrange the parts of a folding rule that they may be used as a compass for drawing complete circles of any desired diameter or to draw arcs or parts of circles through any given number of degrees with ease and accuracy and to provide means by which all the foregoing operations may be performed without any mathematical calculation; fifth, to so construct a folding rule that it shall be substantial in construction, cheap in cost of manufacture, and neat in appearance, and to so arrange its parts that they may be folded into compact form, so as to occupy a minimum amount of space.

I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a top plan of my invention, showing its parts adjusted to an angle of ninety degrees. Fig. 2 is a perspective view of extension-arm and pencil-holders. Fig. 3 is a top plan in outline of my invention applied to two outer surfaces. Fig. 4 is a top plan in outline applied to two inner surfaces. Fig. 5 is an end view of my invention in use as a compass. Fig. 6 is a top plan of my invention, showing parts folded together. Fig. 7 is a longitudinal section cut vertically through the center of all the parts as they appear when folded together.

In my invention, as seen in Fig. 1, the two rules 14 and 15, carrying any suitably-arranged scale or scales 1 to 12, inclusive, are pivotally attached to body 16 by sleeve 17, passing through perforations in rule 14, body 16, and rule 15, and said rules 14 and 15 are arranged to be synchronously rotated on sleeve 17 by means of sliding pivot 18 and pivotally-attached connecting-rods 20 and 21, respectively. Rules 14 and 15 may be rotated to any desired angle of inclination to each other by moving pivot 18 along slot 19 in body 16 until line 22 on sliding block 23, formed integral with pivot 18, comes in register with the desired degree marked on scale A, as seen in Fig. 1, upon which rules 14 and 15 may be secured at said angles by means of threaded thumb-nut 24 being rotated on threaded pivot 18. Should the angle of inclination to the body 16 of either the rule 14 or the rule 15 be desired, the foregoing operation will be repeated, except that line 22 will register with scale B when the desired angle is attained, which desired angle of one hundred and eighty degrees on scale A is shown in Fig. 1 as having been thus attained, rules 1 and 2 being in alinement.

It is evident from the foregoing description of my invention and such operations as already described that if thumb-nut 24 be loosened on pivot 18 and said pivot be moved along slot 19 until rule 14 rests against outer surface 25 (seen in Fig. 3) and rule 15 at the same time rests against outer surface 26 line 22 will show on scale A the exact angle of inclination of surface 25 to surface 26, and it is further evident that by securing rules 14 and 15 by thumb-nut 24, as already described, rules 14 and 15 may be removed from surfaces 25 and 26 and be used as ordinary straight-edges by which to mark material (not shown) designed to fit neatly against surfaces 25 and 26, and it is further evident that either the rule 14 or the rule 15 may be used in like manner in conjunction with body 16 as two ordinary straight-edges

by which to mark a correct miter on material (not shown,) designed to fit against surfaces 25 and 26. The angle of inclination and correct miter of surfaces 27 and 28 (seen in Fig. 4) are obtained in the same manner as of surfaces 25 and 26, (seen in Fig. 3 and already described,) and it is further evident from the foregoing that though surfaces 25 and 26 and surfaces 27 and 28 are shown at an angle of ninety degrees any other angles of inclination of said surfaces and correspondingly-correct miters thereto could be ascertained and marked upon material (not shown) by the above-described operation and use of my invention. Upon securing the parts of my invention in position (seen in Fig. 1) it is evident that body 16, in conjunction with either the rule 14 or the rule 15, may be used as a common T-square and that the outer edges of rules 14 and 15 could together be used as one continuous straight-edge or measuring-rule, while the rules 14 and 15 when secured in position, as seen in Fig. 3, will serve as a common square, and also that rules 14 and 15, in conjunction with body 16, may be released, adjusted, and secured at an angle of any desired degree to body 16, and thus be used as either a bevel or as a protractor. Extension-arm 29, (seen in Fig. 2,) with terminals 30 and 31, each suitably arranged for the reception of an ordinary lead-pencil 33 and provided with a slide 32, is arranged to engage on either one of rules 14 and 15, as seen in Fig. 5, when my invention is in use as a compass and on the end of body 16, as seen in Figs. 6 and 7, when folded. When extension-arm 29 is engaged on rule 14, as seen in Fig. 5, pencil 33 may be caused to travel in and mark a complete circle around threaded reversible center point 34 and upon material 35, thus performing the work of an ordinary compass. By pressing body 16 firmly toward material 35 and causing center point 34 and prick-point $36^{\times}$, (see Fig. 7,) formed integral with body 16, to puncture material 35 (see Fig. 5) the body 16 will be held securely in one position, and while body 16 is thus being held in place, thumb-nut 24 having been loosened and line 22 having been adjusted to degree-mark "90" on scale B, (see Fig. 1,) pencil 33 will, when drawn downward through an arc of forty-five degrees, cause sliding block 23 to travel along slot 19 in body 16, carrying line 22 to register with degree-mark "45" on scale B. (See Fig. 4.) The rods 20 and 21 are offset at their ends, as shown, to better facilitate their action and the folding of the device into a compact form.

It is obvious from the foregoing operation that any number of degrees of an arc through which pencil 33 (see Fig. 5) may be caused to travel will (to the operator of my invention) be self-reading upon scale B, in register with line 22, and that by moving slide 32 along rule 14 pencil 33 may be placed at any desired distance from threaded center point 34, thus varying the diameters of circles to be drawn. Center point 34 is formed integral with thumb-nut 36 and threaded stud 37, (see Fig. 7,) arranged to have threaded center point 34 screwed into and protected by sleeve 17 when my invention is not in use as a compass and to have threaded stud 37 screwed into sleeve 17 when in use as a compass.

All the parts of my invention folded together with extension-arm 29 on body 16, as seen in Figs. 6 and 7, show my invention in a folded compact form, occupying a minimum amount of space.

It is deemed important that the rods 20 and 21 be disposed upon opposite sides of the rules 14 and 15, to which they are pivotally connected at about the mid-length of the rules, and that the other ends be pivotally connected with the sliding block 23 upon opposite sides of the body portion 16, whereby when the device is folded the rules will fold in beneath the arms 20 and 21 and between the same and the body portion, so that in its closed condition it is most compact and the parts are not liable to be damaged.

While I have shown and described my invention as being provided with suitable scales 1 to 12 and A and B, it is evident that I wish to reserve the right to omit any or all of said scales or to substitute any different scales suitably arranged for various uses or to change the size and proportion of parts or to substitute equivalents therefor without departing from the spirit of my invention.

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

1. In a folding rule, the combination with a slotted body, of two rules pivotally attached thereto, arranged to be synchronously rotated upon said pivotal attachment by two pivotally-attached connecting-rods located upon opposite sides of said rules and the other ends of said connecting-rods being pivotally attached to the block upon opposite sides of the body portion and arranged to be driven by a pivotally-attached block carrying a line or pointer along the slot in said slotted body, said line or pointer arranged to be secured in register with any desired line of two suitably-arranged scales upon said slotted body, said rods being offset at their ends and pivots in said offsets, as shown and described.

2. In a folding rule, the combination with a slotted body, of a block arranged to travel in the slot of said body and to be secured to said body at any desired point along said slot and to drive two pivotally-attached connecting-rods located upon opposite sides of said rules and arranged to rotate two pivotally-attached rules upon a pivot in said slotted body and pivotally connected to the sliding block upon opposite sides of the body portion, said rules being provided with suitably-ar-

ranged scales and said rods being offset at their ends, and pivots in said offsets, as shown and described.

3. In a folding rule, the combination with two rules, of an extension-arm and with pencil-holding means at the two terminals of said arm said arm being adapted to slide upon said rules the said rules being arranged to be synchronously rotated upon a pivot in a slotted body having suitably-arranged scales and to be driven in said rotation by two pivotally-attached connecting-rods located upon opposite sides of said rules and offset at their ends a block to which the opposite ends of said rods are pivotally connected upon opposite sides of the body portion, said block being provided with a line or pointer arranged to be carried by said block along the slot in said slotted body and a threaded center point carried by said block, as set forth.

4. In a folding rule an extension-arm having integrally-bent terminals to receive pencils or the like, and between said terminals formed with an integral slide portion extending at right angles to the body of the arm, substantially as and for the purpose specified.

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

WILLIAM M. MYERS.

Witnesses:
GEORGE W. HINTON,
LOUIS W. PEDDICORD.