No. 687,432. Patented Nov. 26, 1901

H. E. LEE.

MEASURING RULE.

(Application filed Apr. 5, 1901.)

(No Model.)

Fig. 1.

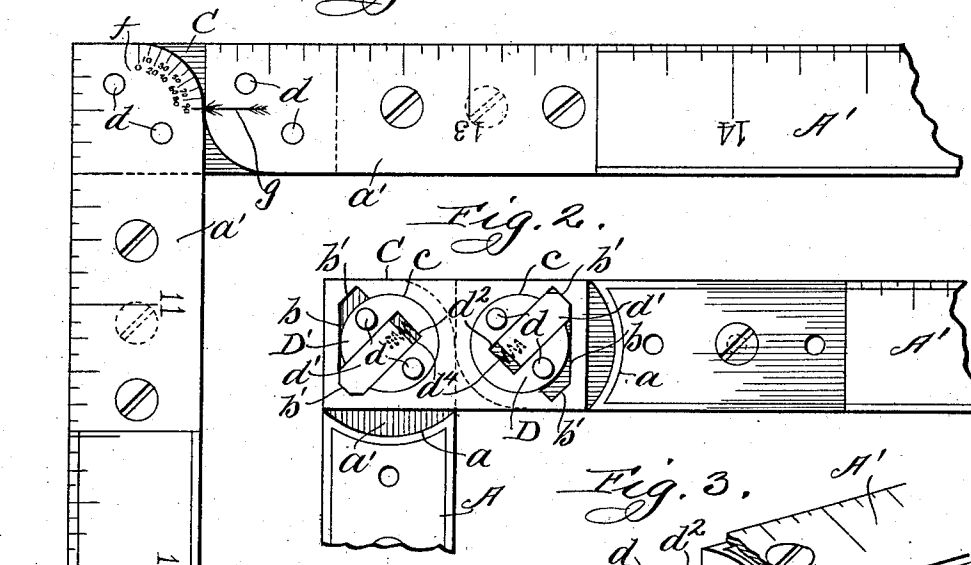


Fig. 2.

Fig. 3.

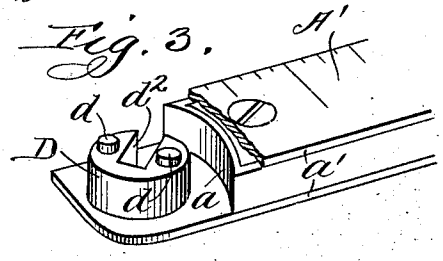


Fig. 4.

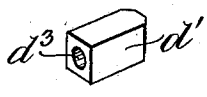


Fig. 5.

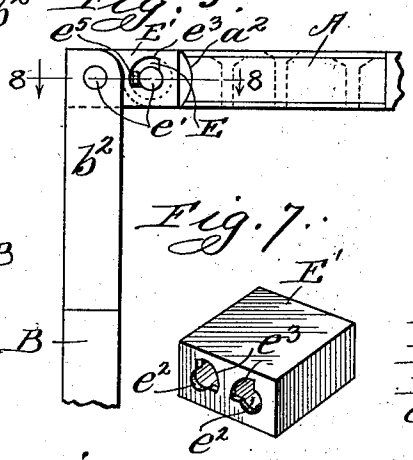


Fig. 6.

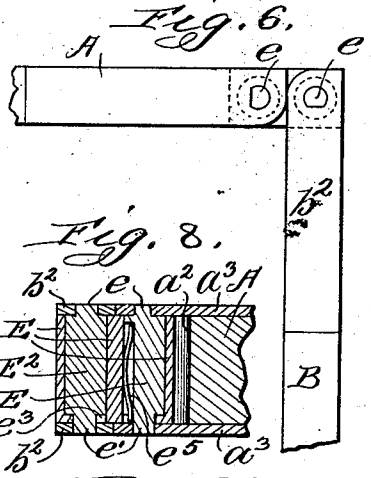
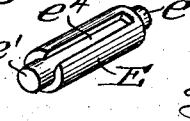


Fig. 7.

Fig. 8.

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Fig. 9.



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UNITED STATES PATENT OFFICE.

HARRY E. LEE, OF CHICAGO, ILLINOIS.

MEASURING-RULE.

SPECIFICATION forming part of Letters Patent No. 687,432, dated November 26, 1901.

Application filed April 5, 1901. Serial No. 54,415. (No model.)

To all whom it may concern:

Be it known that I, HARRY E. LEE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Measuring-Rules, of which the following is a specification.

This invention relates to improvements in measuring-rules of the type or class commonly called "carpenters' rules" or "pocket-rules;" and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

The principal object of my invention is to provide a folding rule the members or pieces of which shall be connected together by means of hinges which will lie flush with the face and edge surfaces of the members when they are extended or in alinement, thus presenting straight and, in effect, unbroken edges or surfaces.

Another object is to join the members or pieces of the rule together in such a manner that they will be firmly and almost rigidly held in the desired positions, yet may be readily folded together into a compact form.

A further object is to furnish a rule with hinges for its members or pieces which shall be of such construction that when the members are placed at right angles to one another or in parallelism the surfaces of the members and hinge-blocks will form rectangular figures.

Still another object is to provide a locking-hinge for the members of the rule which are connected thereby so as to be brought together at their edges.

Other objects and advantages will be disclosed in the subjoined statement.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is an enlarged view in elevation of a portion of a rule embodying my invention, showing the front or face surface thereof. Fig. 2 is a similar view of a portion of the inner members of the rule, showing the construction of the hinge therefor. Fig. 3 is a perspective view of a portion of one of the inner members and a part of the hinge therefor. Fig. 4 is a detached perspective view of one of the bolts used in the hinge of the inner members. Fig. 5 is a side view showing a portion of one of the inner members and an outer member hinged thereto. Fig. 6 is a view of the opposite side of said parts. Fig. 7 is a perspective view of the hinge-block used in connecting the outer member to one of the inner members. Fig. 8 is an enlarged sectional view taken on line 8 8 of Fig. 5 looking in the direction indicated by the arrows, and Fig. 9 is a perspective view of one of the pintles of the hinge used for connecting one of the outer members to one of the inner ones.

Similar letters refer to like parts throughout the different views of the drawings.

The rule comprises two inner members or pieces A and A′, which fold together at their edges, and outer pieces B, one only of which is shown and which fold together or toward the inner members at their face or rear surfaces. These pieces may be made of wood or other suitable material and are usually graduated to show inches and fractions of inches, but may be provided with a scale of other standards of measure. The inner ends of the pieces A and A′ are curved, as at *a*, (see Fig. 2 of the drawings,) to permit of the movement of the hinge-block C, which is rectangular in outlines and is provided with two circular openings *c* for the reception and operation of the disks D and D′, each of which is provided with pins *d*, projecting on each side of said disks, and which pins are located in suitable openings in the plates *a*′, secured to the sides of the inner portions of the members A and A′, as is clearly shown in Figs. 1, 2, and 3 of the drawings. The adjacent ends of the plates *a*′ are rounded at one of their corners in order to permit of their pivotal movement. The hinge-block C, which I will term the "edge" hinge-block, for the reason the pieces A and A′ are hinged edgewise thereby, is provided near each of its ends with an elongated recess *b*, which communicate with

openings c, and have angular terminals b', in which the ends of the bolts d' will rest. Each of the disks D and D′ is provided with a radial slot d^2, in which the bolts d' are located. The outer end of each of said bolts is slightly beveled to cause it to move out of or from the angular recesses b' in the block C, and the opposite end of each bolt is preferably provided with an opening d^3, in which is located a spiral spring d^4, one end of which rests against the end of the slot d^2 in each of the disks.

The outer ends of the pieces A and A′ are slightly curved, as at a^2, and are provided on their edges with plates a^3, which extend somewhat beyond said portions and have near their free ends openings to receive the ends e and e' of one of the pintles E of the hinge-block E′, which I will term the "surface" hinge-block, for the reason the pieces B which are connected thereby to the outer ends of the inner pieces of the rule fold surfacewise. The edges of the inner ends of the pieces B have secured thereon plates b^2, which project beyond the inner ends of said pieces and are provided with openings to receive the ends e and e' of the pintles for said pieces. The surface hinge-block E′ is provided with two openings e^2, extending therethrough, which openings are cylindrical throughout most of their length, but at one end of the block are enlarged to form quadrantal recesses e^3, as is clearly shown in Figs. 5 and 7 of the drawings. The pintles E and E^2 are each provided with a longitudinal slot e^4 for the reception of a bow-spring e^5, which rests against the inner surfaces of the cylindrical openings e^2 in the block E′ and retards the movement of the pintles by reason of their tension and frictional contact. The ends of the spring e^5 project into recesses e^3 of the block E′, thus restricting the movements of the pieces A and B to a quarter of a circle each. The ends e of each of the pintles are flattened to correspond with similarly-shaped openings in the plates with which they engage, so that said pintles will turn therewith.

From the foregoing and by reference to the drawings it will be seen and clearly understood that by forcing the piece A′ from the position shown in Figs. 1 and 2 of the drawings toward the piece A the disk D will be caused to turn, thus withdrawing the bolt d' thereof from its recess b', in which operation the bolt will be retracted by impingement with the wall of the slot or recess b until it reaches the other angular recess b', when said bolt will be projected thereinto, thus locking the pieces together. If it is desired to change the position of the pieces A and A′ from that of a right angle to a straight line, the piece A′ may be moved from the piece A, when the disk D′ will be caused to turn and the operation above described repeated. To fold the pieces B to the pieces A and A′, it is only necessary to force said pieces so that their surfaces will meet, in which operation the pintles will turn in their respective openings in the surface hinge-block until the springs e^5 strike the ends of the quadrantal recesses, when the movement of one or both of said pieces will be checked.

It is apparent that by employing the construction shown in Figs. 2 and 3 of the drawings a locking-hinge is afforded and that the pieces A and A′ will be held in the desired position with firmness and in such a manner that they will not accidentally fold together. The construction of the surface hinge, or that shown in Figs. 5 to 9, inclusive, also affords an almost rigid connection for the pieces B and the inner pieces of the rule and one that will prevent accidental folding together of the pieces.

It is further apparent that a rule constructed according to my invention will present smooth surfaces and rectangular joints. One of the plates a' on the inner ends of the pieces A and A′ may be provided with a scale f and the other one may be furnished with an indicator g, to be used for obtaining the desired angle when it is desired to use the rule for mitering purposes or for attaining angles other than right angles.

It will be observed that the two kinds of hinges above described and illustrated in the drawings involve the same principle and that the pintles are simply elongations of the disks, the recesses b and e^3 differ only in shape, and that springs only are used in the pintles, while spring-pressed bolts are employed in the disks.

It is further apparent that by constructing the rule as above set forth it can be used as a square, by means of which angles of any desired degree may be attained.

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

1. A measuring-rule, comprising the inner members or pieces, the edge hinge-block having circular openings provided with recesses and located between the adjacent ends of said members, the recessed disks located in the circular openings of the block, the spring-actuated bolts in said recesses, means rigidly connecting the said members to the disks and a member or piece hinged surfacewise to the outer end of each of the inner members, substantially as described.

2. In a measuring-rule, the combination of two members or pieces, with a hinge-block located between their adjacent ends and having circular openings provided with recesses, recessed pieces rotatably located in the openings of the said blocks and rigidly connected to the ends of the said members, and means located in the recesses of the rotatable pieces to extend into the recesses of the circular openings of the block, substantially as described.

3. In a measuring-rule, the combination of two members or pieces, with a hinge-block located between their adjacent ends and having circular openings provided with recesses having angular terminals, the recessed disks located in the circular openings of the block, the spring-actuated bolts in said recesses of the disks, and means rigidly connecting the said members and disks, substantially as described.

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