

No. 828,510.

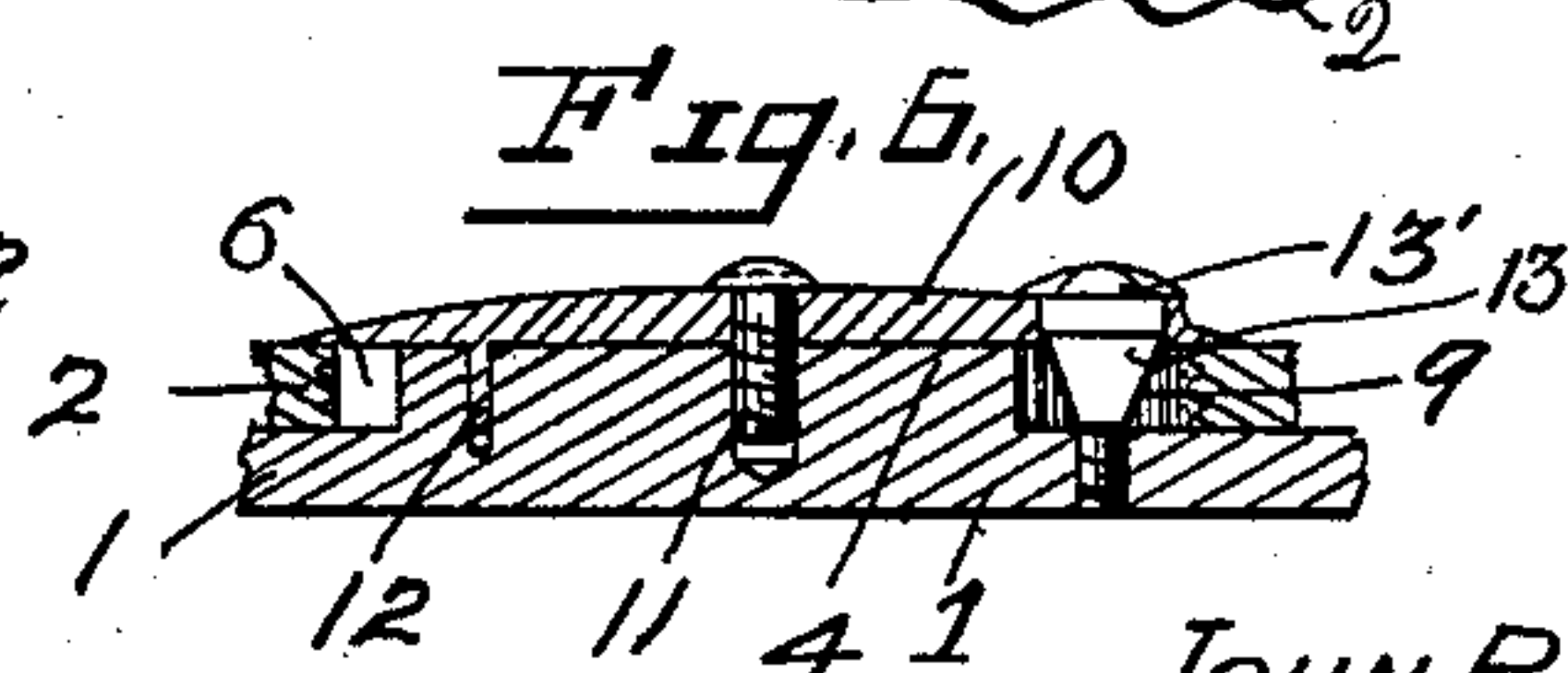
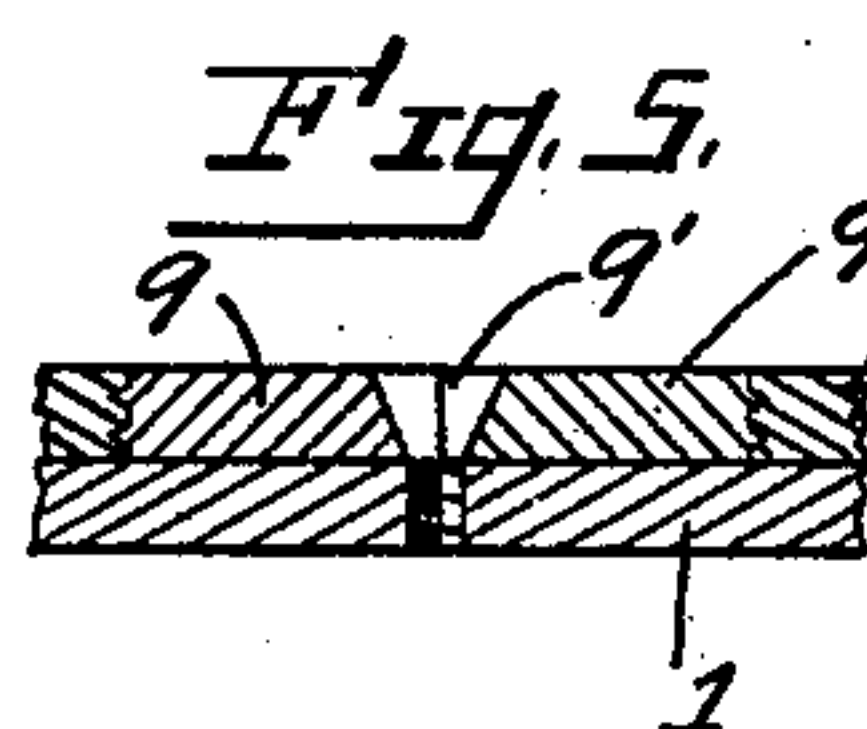
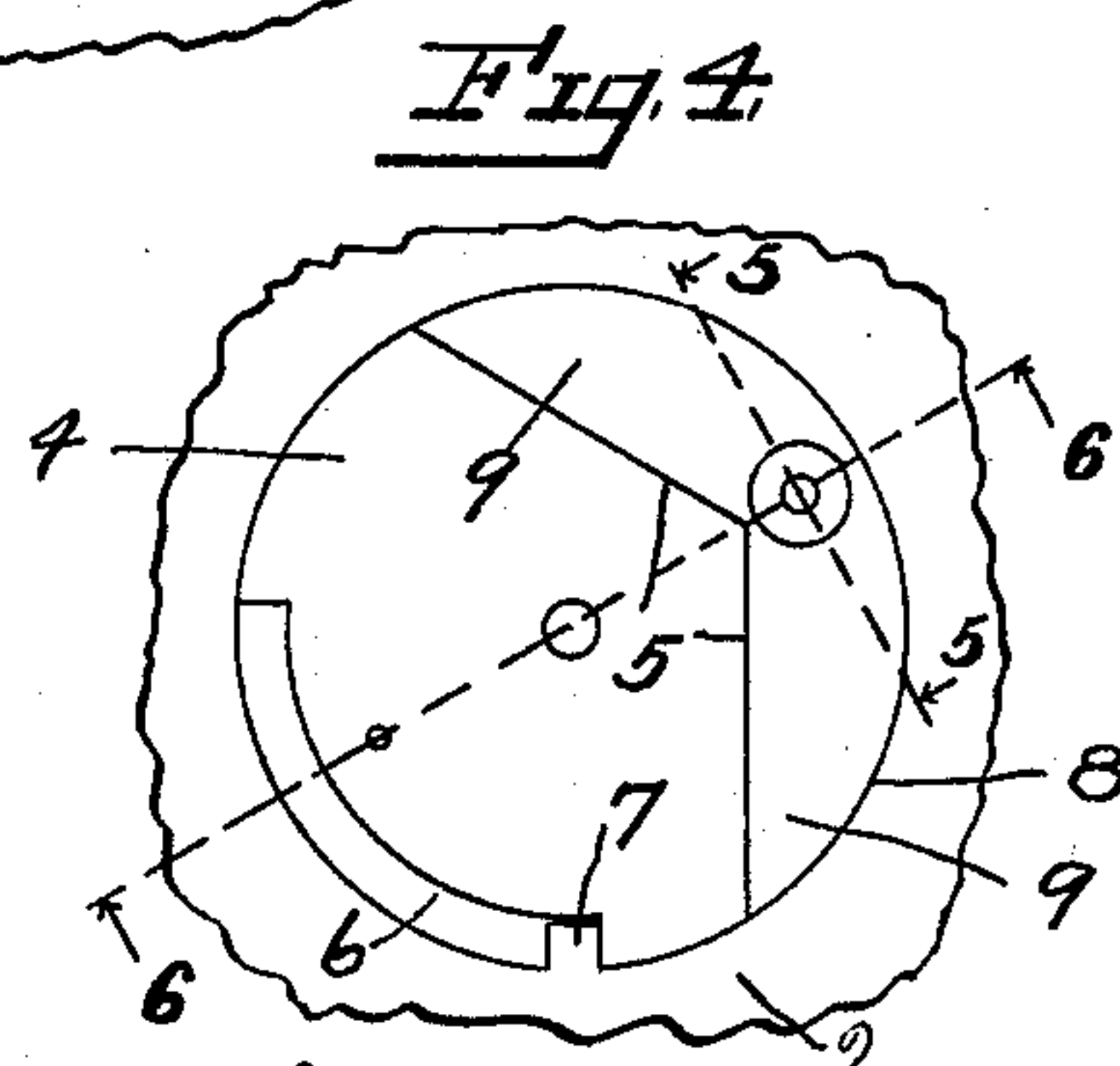
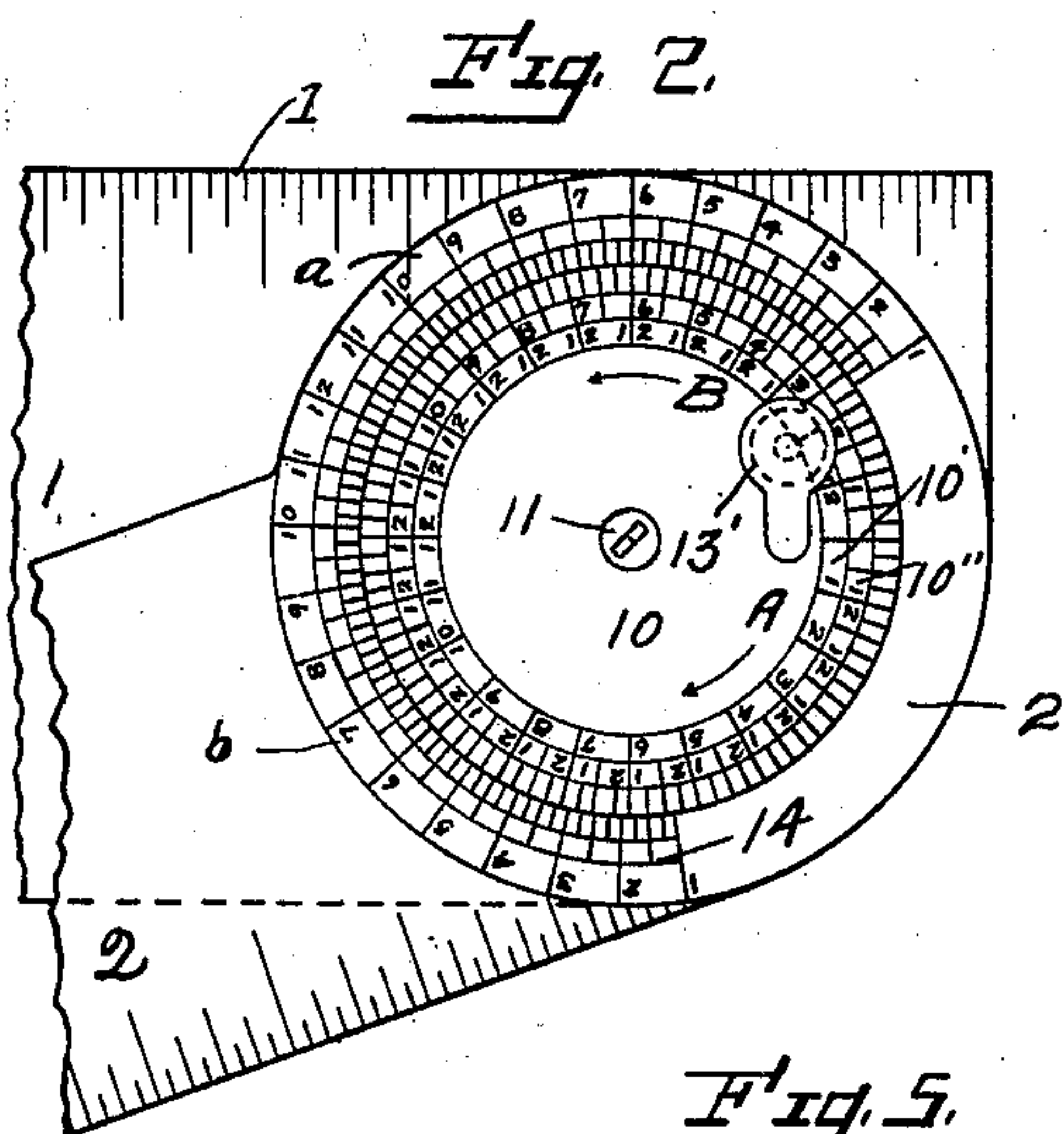
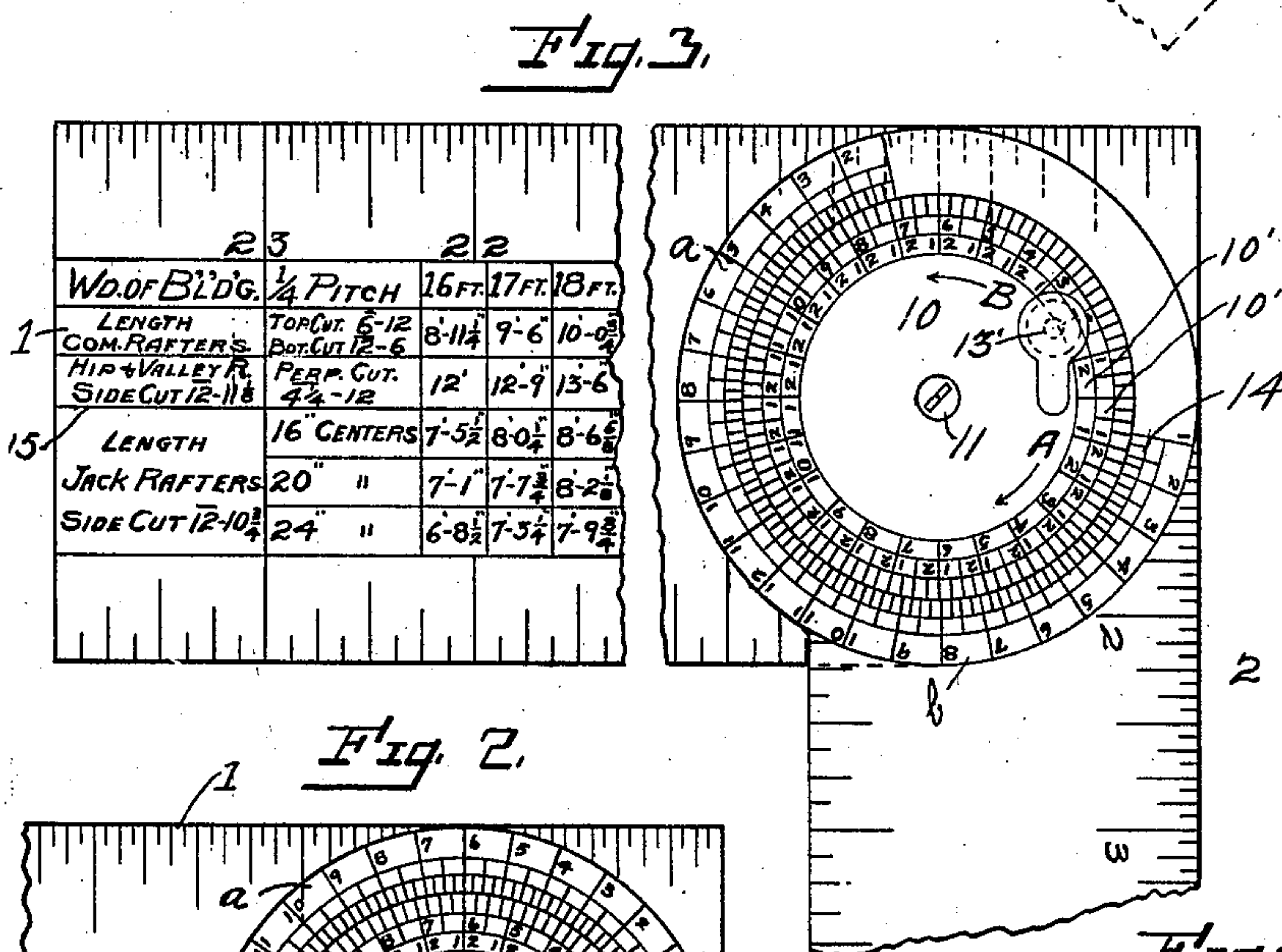
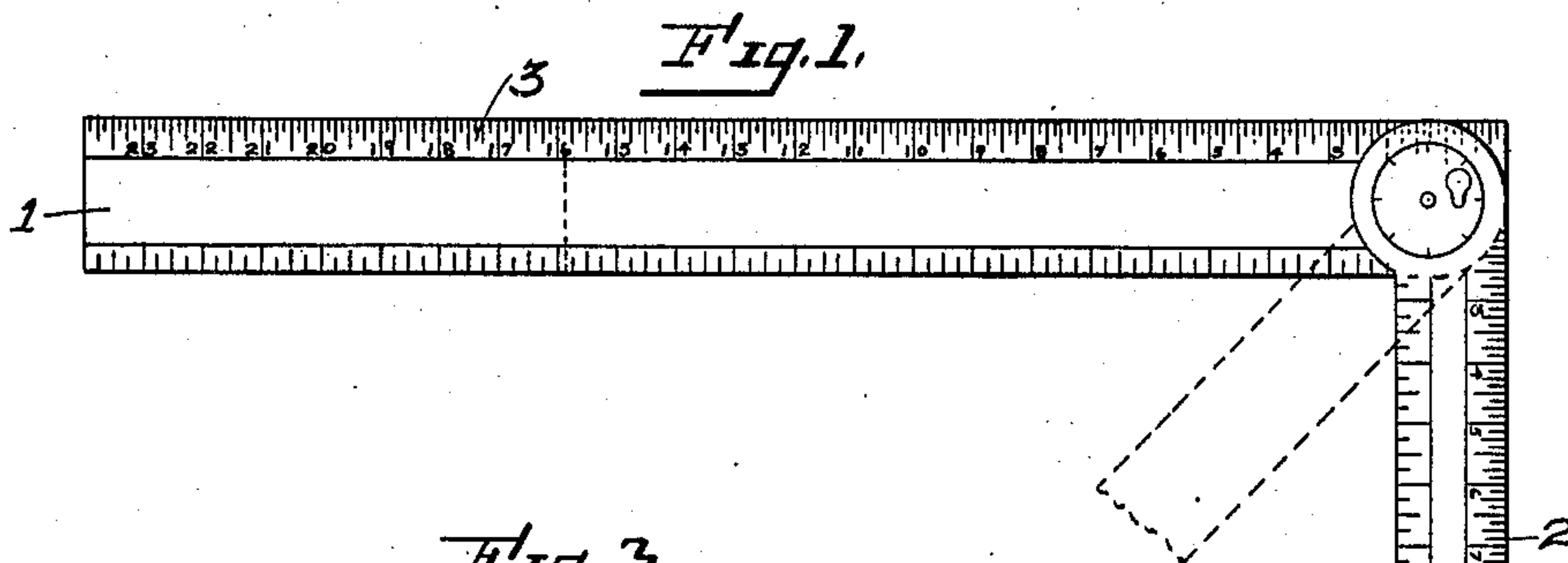
PATENTED AUG. 14, 1906.

J. P. RYDEN.

SQUARE.

APPLICATION FILED OCT. 23, 1905.

2 SHEETS—SHEET 1.



Witnesses  
*Dudley Mass.*  
*Arleta Adams*

By

*Adam & Brooks*

Attorneys

Inventor  
 JOHN P. RYDEN.

No. 828,510.

PATENTED AUG. 14, 1906.

J. P. RYDEN.  
SQUARE.

APPLICATION FILED OCT. 23, 1905.

2 SHEETS—SHEET 2.

Fig. 7.

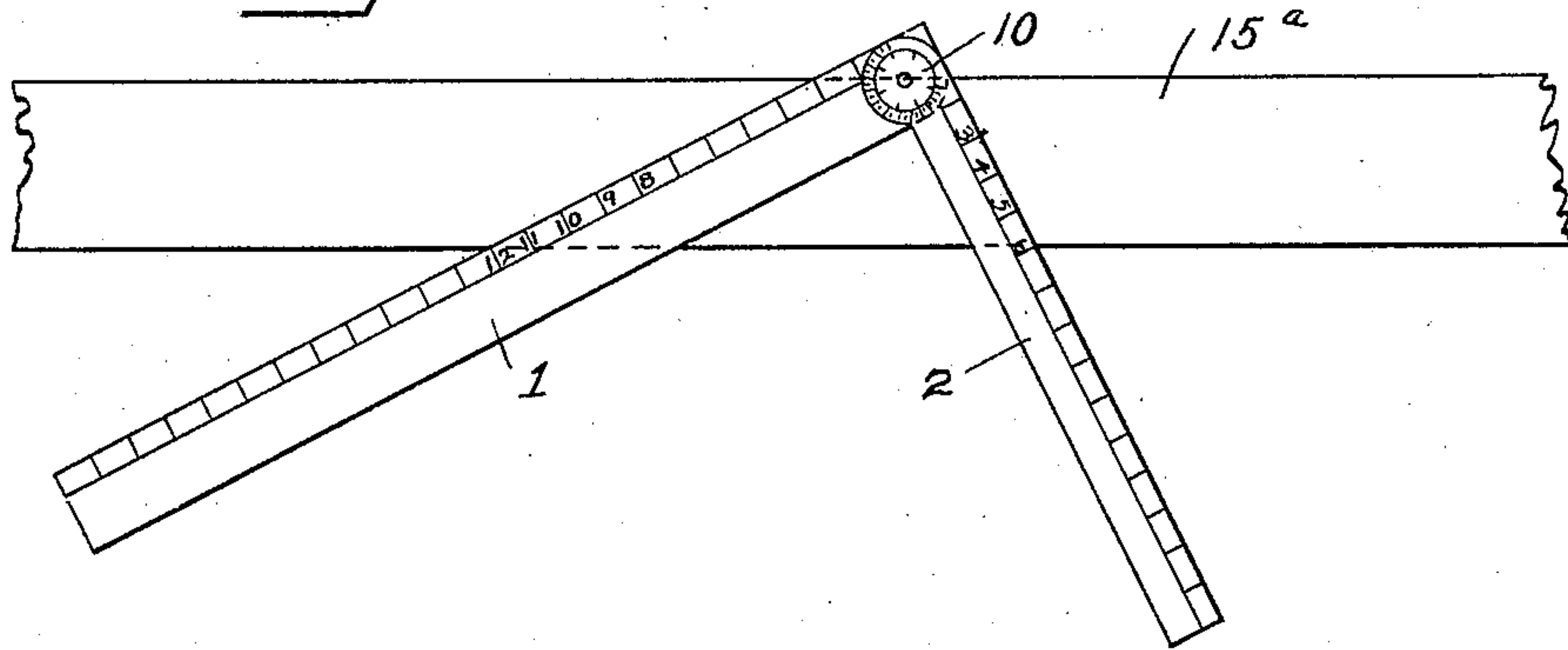


Fig. 8.

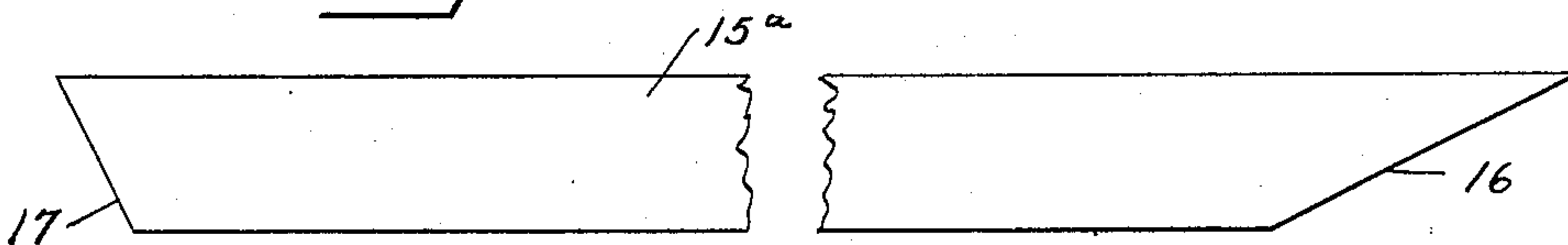


Fig. 9.

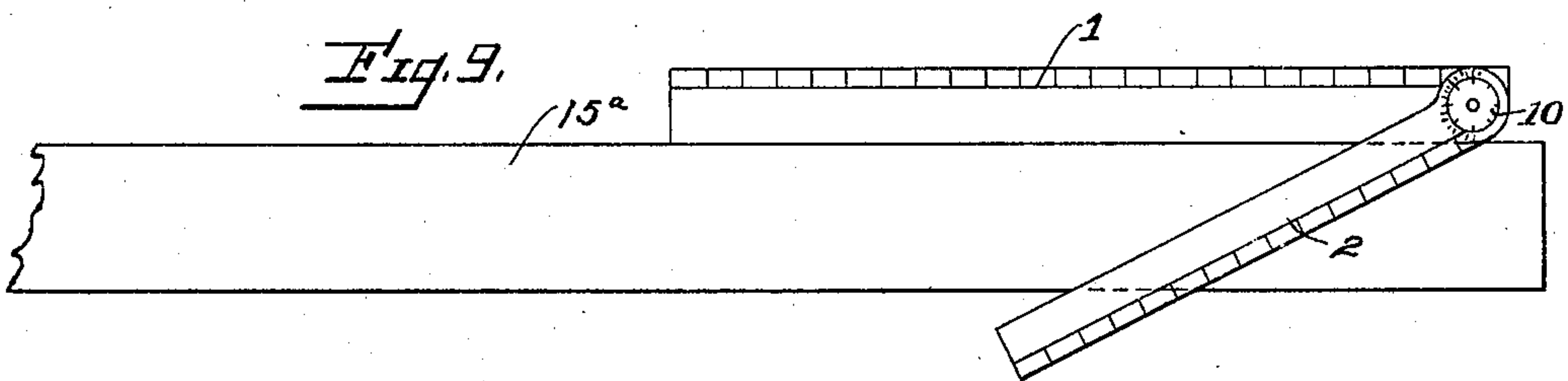
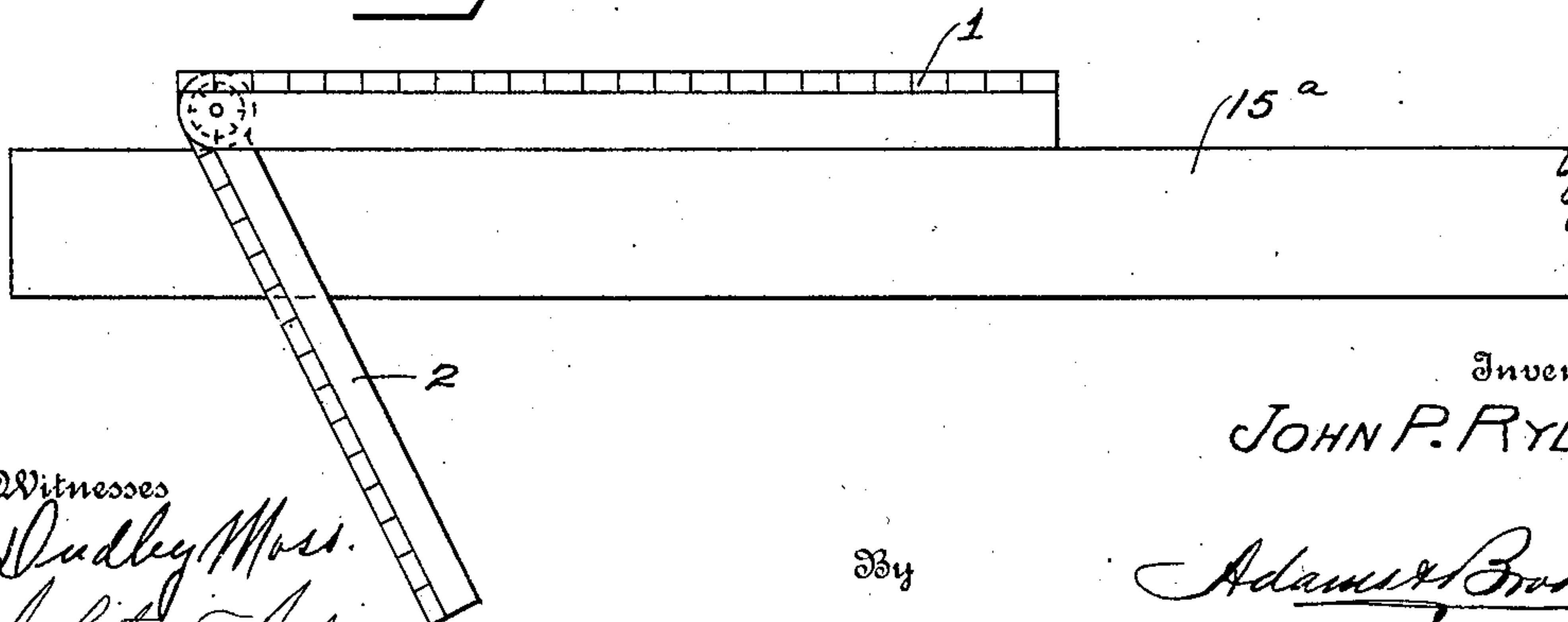


Fig. 10.



Witnesses  
Dudley Moss.  
Arleta Adams

By

Adams & Brooks

Attorneys



# UNITED STATES PATENT OFFICE.

JOHN P. RYDEN, OF SEATTLE, WASHINGTON.

## SQUARE.

No. 828,510.

Specification of Letters Patent.

Patented Aug. 14, 1906.

Application filed October 23, 1905. Serial No. 284,049.

*To all whom it may concern:*

Be it known that I, JOHN P. RYDEN, a citizen of the United States of America, and a resident of the city of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Squares, of which the following is a specification.

My invention relates to improvements in squares; and the primary object is to provide an improvement of this type whose legs are pivoted so that other angles than a right angle may be scribed or measured.

A further object is to provide improved means for locking the arms of the square as adjusted.

A further object is to provide suitable scale means whereby small angles can be accurately laid off.

With the above and other objects in view, to be referred to in the following description, the invention consists of the construction, arrangement, and combinations of parts hereinafter described, and pointed out in the appended claims.

In the accompanying drawings, in which like numerals of reference indicate like parts throughout the several views, Figure 1 is a top plan view of my improved square, showing by broken lines one of the legs adjusted to different positions. Fig. 2 is an enlarged fragmentary view thereof. Fig. 3 is an enlarged fragmentary view of my invention, showing a slightly-modified construction. Fig. 4 is a detail view showing more clearly the hinge-joint between the respective legs of the square and the expansible locking means therefor, the graduated top plate thereof being removed. Fig. 5 is a section taken on line 5 5 of Fig. 4. Fig. 6 is a section taken on line 6 6 of Fig. 4; and Figs. 7, 8, 9, and 10 are detail views more clearly setting forth the manner of using my invention.

My improved square comprises the two legs 1 and 2, which are pivoted together, as will be hereinafter specifically set forth, the latter leg being the shorter and of less width, so that when it is folded or swung upon leg 1 so as to lie within the bounds thereof (see Fig. 1) the marks of graduation 3 of leg 1 will not be covered thereby. The square can when leg 2 is thus folded be readily used as a ruler, as is obvious.

Leg 1 is provided with a fixed block 4, which has opposite inclined faces 5 and a segmental groove or way 6, in which a stop 7,

carried by leg 2, rides. Stop 7 is preferably formed integral with leg 2 and projects into the circular opening 8 thereof, which receives said block 4 and is adapted to turn freely thereon.

The means for locking leg 2 when adjusted is expansible, the same consisting of opposite members 9, which have snug engagement with the inclined faces 5 and the wall of opening 8. (See Fig. 4.) At their contiguous edges members 9 are cut out to provide tapered grooves, the groove of one member registering with the groove of the other member, so as to form an opening 9', which decreases in diameter from its upper end.

Reference-numeral 10 indicates a cover-plate which extends entirely over the opening 8 and is secured, as by a screw 11 and pin 12, to the block 4, and a rotatable means 13, having a tapered body, projects through this plate and has screw-threaded engagement in an aperture in leg 1. (See Fig. 6.) The tapered body of the means 13 engages the tapered grooves of members 9, and therefore when said means 13 is bodily lowered by the operator, who grips the handle 13' thereof and oscillates the same, the members 9 will spread and be wedged between the said inclined faces 5 and the wall of opening 8. The curved edge portions of members 9 and the adjacent portions of the wall of opening 8 are preferably grooved, so that the locking engagement therebetween will be more effective. The cover-plate 10 is conveniently termed a "dial," which is provided with inner and outer circles of graduation-marks 10' and 10'' and with which an index 14 on arm coacts, whereby leg can be accurately set for laying off small angles.

The inner and outer circles of graduation-marks 10' and 10'' are provided with a series of consecutive numbers from "1" to "12," inclusive. The remaining graduation-marks are all numbered "12," and the series of twelve of one circle are arranged opposite the series of consecutive numbers of the other circle of graduation-marks. Thus reading in the direction of arrow A (see Fig. 2) the opposite numbers of the circles of graduation-marks 10' and 10'', with the number of the inner circle first, the combinations of numbers will be "1-12," "2-12," &c. Then reading in a similar manner in the direction of arrow B we will have "12-1," "12-2." The object of this form of dial is to enable the operator to readily set the leg 2 for laying off



angles for certain cuts to be made—as, for example, the bottom and top cuts, respectively—of rafters, to be referred to, used in building constructions.

5 The index 14 is preferably in the form of marks of graduation arranged in circular relation and which are numbered by two series of consecutive numbers *a b*, which progress in opposite directions, and a common number, as “12,” forms an end for both series.

10 My improved square is particularly adapted for use in connection with the construction of buildings, and the index and dial, as shown on the drawings, are related to a table 15 which facilitates study and computation.

The table (designated by reference-numeral 15) is shown in Fig. 3 as being on one leg of the square and aside from indicating the length of the various rafters for the roof of a 20 predetermined pitch and width is provided with suitable marks of indication which are readable in connection with the scale and index for indicating the proper set of leg 2 for properly cutting the ends of said rafters.

25 Thus, for example, assuming that building to be constructed is to be sixteen feet wide and have a quarter ( $\frac{1}{4}$ ) pitch roof, the length of the common rafters will be eight feet eleven and a quarter inches, the hip and valley rafters twelve feet, and the jack-rafters will vary in length according to centers, as indicated on the table 15. Now to lay off the angles for the top and bottom cuts, respectively, of the common rafters for the roof of this building the carpenter by using my invention as 35 an ordinary square, which has fixed legs arranged at right angles, would lay the same on a rafter, as 15<sup>a</sup>, (see Fig. 7,) so that the sixth-inch mark of one leg and the twelfth-inch mark of the other leg would be at the same longitudinal edge of the rafter, and when the square is thus positioned the outer longitudinal edges of the legs will indicate the angular lines of cut for the upper and lower ends, 45 respectively, of said common rafters, the longitudinal outer edge of that leg which has its twelfth-inch mark at the edge of the rafter indicating the angular cut for the bottom of a rafter, (indicated by numeral 16, see Fig. 8,) 50 and the outer edge of the other leg indicating the angle of the top cut, (designated by numeral 17.) My improvement, however, permits of the laying off of the lines on which the cuts are to be made in a more satisfactory manner than has been just explained, as one 55 leg of the square can be firmly held against one of the longitudinal edges of the rafter or the like, while the other, having been set at the desired angle, indicates the line of cut. 60 (See Figs. 9 and 10.)

As carpenters are familiar with the use of an ordinary right-angle square for determining the various cuts to be made, I have constructed my dial so that the carpenter can use 65 the same system of numbers to attain the

proper adjustment of leg 2 to the various predetermined angles. Thus by reference to the drawings it will be observed that the circles of graduation-marks 10' and 10'' each contain a consecutive series of numbers “1” to 70 “12,” inclusive, one series indicating the corresponding numerals marking off the inches on one leg of the square and the other series indicating the corresponding numerals on the other leg of the square. The numbers of the 75 inner series of graduation-marks, however, preferably indicate the inch-marks of that longitudinal edge of a right-angle square which when arranged as shown in Fig. 7 would indicate the line of cut. Therefore to 80 properly set the leg 2 for indicating the angle of the bottom cut of the common rafters leg 2 is swung until the numeral “6” of its series *a* of numerals is arranged opposite the numerals “12-6” of the series of graduation- 85 marks 10' and 10'' of the dial, (see Fig. 2,) the numeral “12” of graduation-marks 10' indicating the twelfth-inch indicating numeral of the leg 1 of the square when it is employed in the other manner, as indicated in 90 Fig. 7. The square is then placed on the rafter, as shown in Fig. 9. To obtain the angle for the top cut 17 (see Figs. 8 and 10) of these common rafters, leg 2 is swung until its numeral “6” of series *b* is opposite numerals 95 “6-12” of the marks of graduation 10' and 10''. Thus it will be perceived that by my improved dial and index the same angles can be obtained through the medium of a square in which one leg is adjusted in the laying off 100 of an angle as where both legs of the square are maintained at right angles, and the principles of laying off the various angles being the same in both constructions my improved indicating means can be readily used in a 105 manner which will facilitate the work.

The table 15 contains the combinations of numbers for setting the square for obtaining the proper cuts for the other rafters, and in each instance that numeral which refers to the 110 inner circle of graduation-marks 10' is overscored (see Fig. 3) to prevent any error in the setting of the square.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States of America, is— 115

1. A square comprising a pair of legs pivoted together at one end, a scale on one leg, said scale having a plurality of combinations 120 of numbers, said combinations of numbers each embracing members which indicate distances measured off on the respective legs, and an index on the other leg, said index having numbers any one of which when 125 moved opposite any particular one of the combinations of numbers of said scale indicate a predetermined set of the legs relatively to each other.

2. A square comprising a pair of legs piv- 130



oted together at one end, a dial on one of said legs, said dial having inner and outer circles of graduation-marks bearing marks of indication, the marks of indication of one circle of graduation-marks being associated each with a respective mark of indication of the other circle of graduation-marks to form combinations of marks of indication, and an index movable with the other leg about the dial and comprising marks of indication related to the combinations of marks of indication of the dial for determining the setting of the legs for scribing various angles.

3. A square comprising a pair of legs pivoted together, and means for locking said legs against movement including friction members mounted in one of said legs and arranged so as when moved in one direction to hold said legs against independent movement, and means common to said members for operating the same, for the purpose set forth.

4. A square comprising a pair of legs, a block secured to one leg, the other leg having an opening receiving said block, and expansible means for locking said legs against movement including members arranged for sliding movement on said block, and means common to said members for operating the same.

5. A square comprising a pair of legs, one

of said legs having a block formed with a groove or way, the other leg being swingingly connected to the block of said first leg for adjustment, and a stop carried by said last leg and projecting into said groove or way for the purpose specified.

6. A square comprising a pair of legs, a block secured to one of said legs and having a plurality of inclined faces, the other leg having an opening receiving said block, locking members slidable on the inclined faces of said block, and means for forcing said members apart for locking said last leg against movement.

7. A square comprising a pair of legs, a block secured to one of said legs and having a plurality of inclined faces, the other leg having an opening receiving said block, a cover-plate secured to said block and extending over the opening of said last leg, locking members slidably engaging the inclined faces of said block, and means projecting through said cover-plate for forcing said locking members apart.

Signed at Seattle, Washington, this 16th day of October, 1905.

JOHN P. RYDEN.

Witnesses:

STEPHEN A. BROOKS,  
ARLITA ADAMS.