

W. C. FOX.
 COMBINED RULE, TRY SQUARE, AND THE LIKE.
 APPLICATION FILED MAY 13, 1912.

1,064,311.

Patented June 10, 1913.

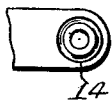
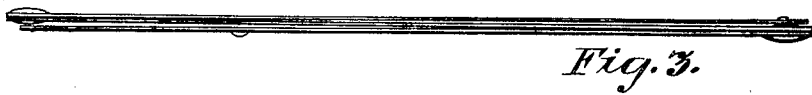
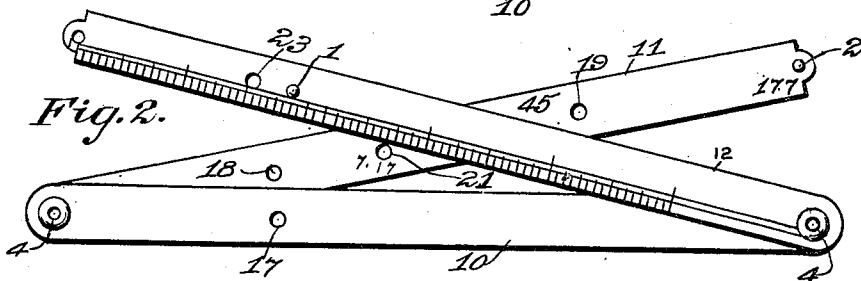
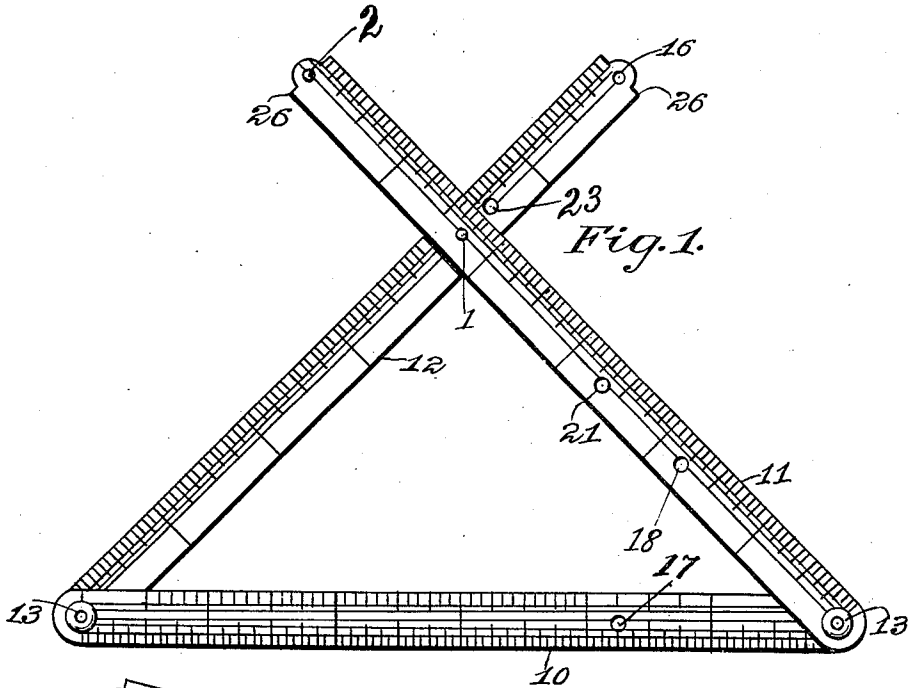


Fig. 4.



Fig. 5.

WITNESSES

J. M. Wright,
 A. B. Keating

INVENTOR

William C. Fox

UNITED STATES PATENT OFFICE.

WILLIAM C. FOX, OF SAN FRANCISCO, CALIFORNIA.

COMBINED RULE, TRY-SQUARE, AND THE LIKE.

1,064,311.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed May 13, 1912. Serial No. 696,851.

To all whom it may concern:

Be it known that I, WILLIAM C. FOX, a Canadian subject of the King of Great Britain, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Combined Rules, Try-Squares, and the Like, of which the following is a specification.

The object of the present invention is to provide a scale rule so constructed that, in addition to forming a measuring rule, it can also be quickly and easily used for a great number and variety of different operations, such as the measurement and gaging of different angles. These operations will be hereinafter more particularly explained after the device has been fully described.

In the accompanying drawing, Figure 1 is a plan view of my improved scale rule opened and set for use as a try-square; Fig. 2 is a view of the same on the opposite side but in a different position; Fig. 3 is an edge view of the same; Fig. 4 is a detail view of an end of a rule section; Fig. 5 is a detail view of a spring.

On referring to the drawing, it will be seen that my improved scale rule comprises three sections of equal lengths, such lengths being of any desired magnitude. The mediate section 10 is pivoted at its ends to the terminal sections 11, 12, by pivots 13, which are of peculiar construction. The adjoining ends of the respective sections are formed with circular holes for the pivots which holes register with each other, and in the adjacent surfaces of the two sections are formed circular grooves 14 around the respective holes and at a short distance therefrom. When the sections are fitted together with the holes in register with one another said grooves form an annular receptacle. In this receptacle before the sections are closed upon one another is inserted a spring 15 in the form of a cut circular ring, the two parts of the ring on opposite sides of the point of severance being permanently bent outward in different planes, so that said spring, when compressed in said receptacle exerts a pressure outwardly on said adjoining surfaces. Through the holes when thus placed together are passed tubular pivots 4, which are swaged down to firmly rivet pivotally the two sections together and compress the same against the pressure of said intervening spring. The

pivot 4 is made tubular for the purpose of permitting the passage therein of a spur 2 at the free end of the terminal section 11. A spur 1 also projects from the opposite side of the other terminal section 12 at a point about one-fourth of the distance from its free end. The free end of the latter section is formed with an aperture 16 corresponding in position with the spur 2 at the end of the other terminal section, and into which said spur is adapted to be inserted. In addition, the central section 10 and also the other terminal section are formed with apertures 17, 18 respectively, adapted to receive the spur 1, when the sections are closed together. The terminal section 11 is formed, about one-third of its length from its free end, with an aperture 19 adapted to receive the spur 1 upon the other terminal section, and is marked on its under side adjacent to said aperture 19 with the numeral "45," the distances of said aperture 19 and spur 1 from the pivots being such that, when the spur engages the aperture, the two terminal sections are at right angles to one another, and thus make with the central section 45° angles. When the scale is used in this position it can be applied to any desired surface to mark or estimate thereon an angle of 45° as well as an angle of 90°. In this position it can therefore be used as a try-square, or for forming octagons, or by draftsmen as a butt-square. The section 11 is also formed at rather more than one-half its length from its free end with an aperture 21 to receive the spur 1, and, adjacent to said aperture 21 on the under side of the scale, are marked the numerals "7.17." These numerals are familiar to carpenters as designating the measurements to be made along two sides of a steel square from the right angle thereof for obtaining angles of 67½°, and 22½°.

The angle 67½° is that nearly always required for cutting off the ends of a sill in an octagon bay-window, this being one-half of the obtuse angle of the octagon. At present it is the practice to place the steel square on the window sill and adjust it so that from the right angle of the square to the outer edge of the sill there is a distance of 17 inches along one side and 7 inches along the other, when the short side will make with said edge an angle of 67½°. With my present device this operation is greatly facilitated, as no such gage measurement is necessary, but instead thereof the

carpenter merely turns the terminal sections until the spur 1 enters the aperture 21, and the angle of $67\frac{1}{2}^\circ$ is obtained, being the exterior angle lying between the outer portion of one terminal section and the inner portion of the other terminal section. The angle of $22\frac{1}{2}^\circ$ is also often used by carpenters. When the terminal spur is inserted in an aperture 23 in the section 12 the device is then so arranged that one terminal section makes with the other an angle of $67\frac{1}{2}^\circ$. When the spur 1 is inserted in an aperture 21 of the section 11, an angle of $22\frac{1}{2}^\circ$ is obtained between the section 12 and the central section. When the spur 2 is inserted in the aperture 16 at the end of the other terminal section, an angle of 60° is obtained.

The device can also be used for describing circles of any radius up to the length of the rule. This is done by pressing the terminal spur 2 down upon the surface upon which the circle is to be described, and inserting the point of a pencil through the aperture 16, and then swinging the rule about the spur 2 as a center. The radius of the circle thus described may be very readily varied by turning the sections relatively to one another, the springs in the joints of the sections firmly retaining them in the relative positions to which they have been so turned. The device may also be used for scribing, by placing the edge of the central section against the edge of the surface serving as a gage and the point of a pencil in the aperture 16, and then moving the device along said edge. It can also be used as a gage in a somewhat similar manner.

It may be used for outside calipers by completely separating the two terminal sections so that they do not cross one another and the inner points 26 of their free ends are touching the surface to be measured by the calipers, and as inside calipers by arranging said sections so that they cross one another and placing the inner points 26 against the inner surface of the surface to be measured by the calipers.

The sections can be placed at any angle whatever and used as a means for transferring from one surface to another the angle so measured, although I have provided spurs and apertures by which five of such angles can be immediately determined, namely, the angles of 90° , $67\frac{1}{2}^\circ$, 60° , 45° , and $22\frac{1}{2}^\circ$.

I claim:—

1. In an instrument of the class described, the combination of three rule sections pivoted together in series, the terminal sections being formed at their free ends, one with a spur, and the other with an aperture to receive said spur, said spur and aperture being spaced from the pivot of the corresponding terminal section a distance equal to the

length of the mediate section between said pivots, one of said terminal sections having a second spur, and the other an aperture to receive said second spur, said latter spur and aperture being at such distance, less than the aforesaid distance, from the pivots of their respective sections that, when they engage with one another, the terminal sections are at right angles.

2. In an instrument of the class described, the combination of three rule sections pivoted together in series, the terminal sections being formed at their free ends, one with a spur, and the other with an aperture to receive said spur, said spur and aperture being spaced from the pivot of the corresponding terminal section a distance equal to the length of the mediate section between said pivots, one of said terminal sections having a second spur, and the other an aperture to receive said spur, said latter spur and aperture being at less distances than the aforesaid distance from the pivots of their respective sections.

3. In an instrument of the class described, the combination of three rule sections pivoted together in series, the terminal sections being formed at their free ends, one with a spur, and the other with an aperture to receive said spur, said spur and aperture being spaced from the pivot of the corresponding terminal section a distance equal to the length of the mediate section between said pivots, one of said terminal sections having a second spur, and the other an aperture to receive said second spur, said latter spur and aperture being at such distances, less than the aforesaid distance, from the pivots of their respective sections that, when they engage with one another, the terminal sections are at right angles, all of said spurs and apertures being located in the central longitudinal line of the corresponding section.

4. In an instrument of the class described, the combination of three rule sections pivoted together in series, the terminal sections being formed at their free ends, one with a spur, and the other with an aperture to receive said spur, the pivot joining the latter-named section to the mediate section being tubular to receive the spur of the first-named section when the sections are folded together, and the other pivot being equally distant from the spur and the first-named pivot.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM C. FOX.

Witnesses:

FRANCIS M. WRIGHT,
D. B. RICHARDS.