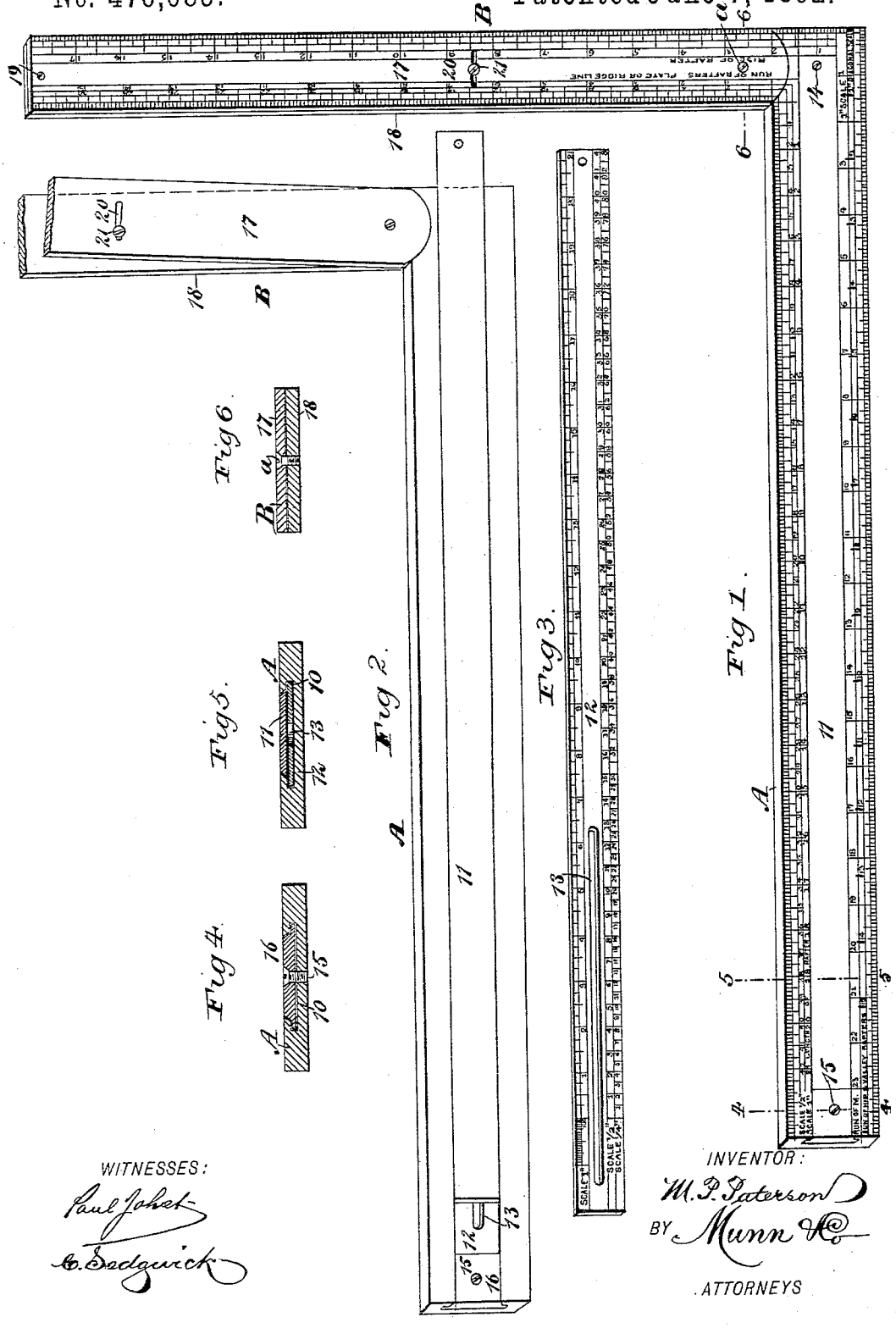
(No Model.) 2 Sheets—Sheet 1.

M. P. PATERSON.

CARPENTER'S SQUARE.

No. 476,683. Patented June 7, 1892.



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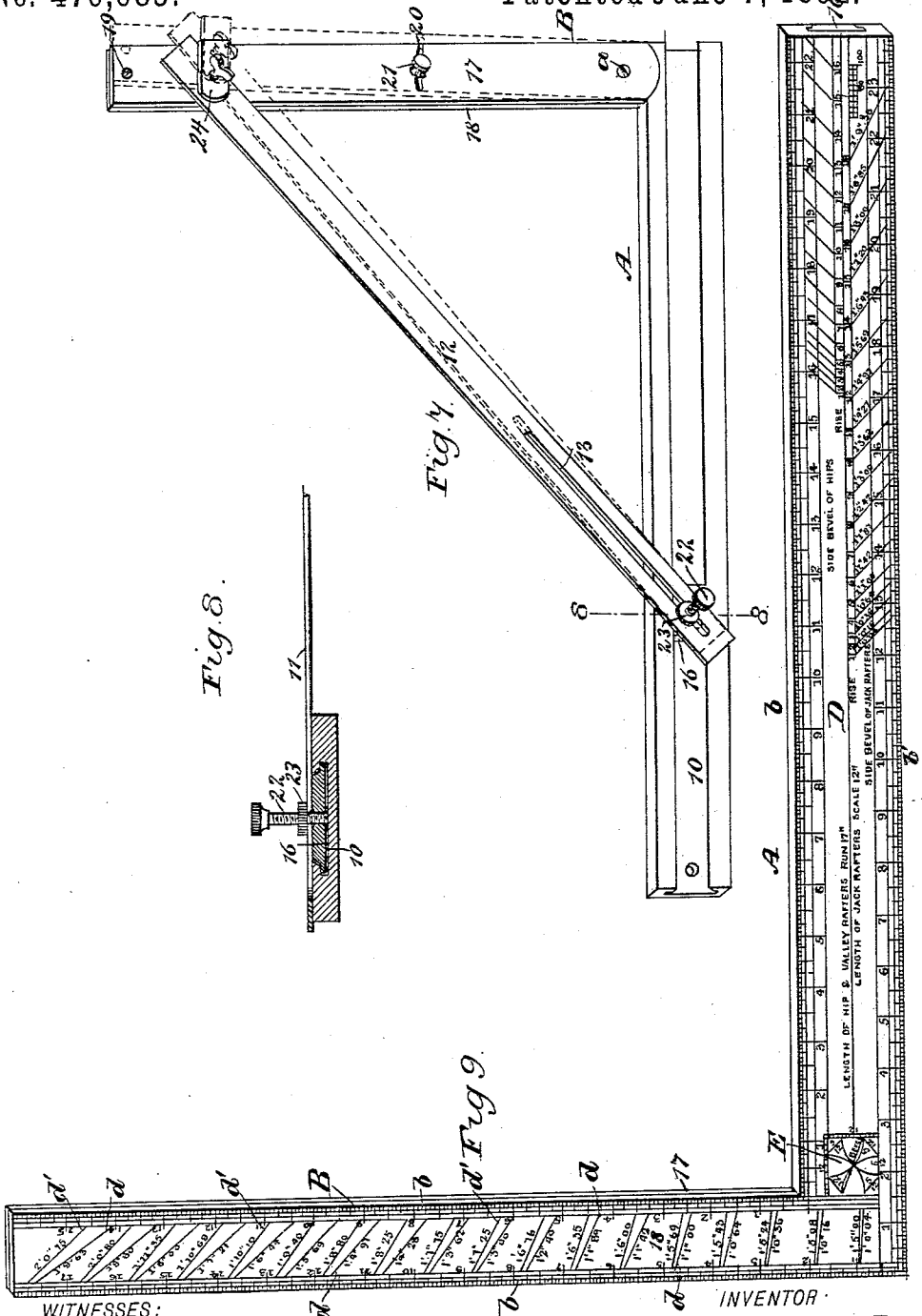

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UNITED STATES PATENT OFFICE.

MARK P. PATERSON, OF NEW ROCHELLE, NEW YORK.

CARPENTER'S SQUARE.

SPECIFICATION forming part of Letters Patent No. 476,683, dated June 7, 1892.

Application filed May 8, 1891. Serial No. 392,064. (No model.)

To all whom it may concern:

Be it known that I, MARK P. PATERSON, of New Rochelle, in the county of Westchester and State of New York, have invented a new and useful Improvement in Carpenters' Squares, of which the following is a full, clear, and exact description.

My invention relates to an improvement in carpenters' squares; and it has for its object to so construct a square that one arm may be manipulated in a manner to enable an operator to strike a right angle or an angle more or less obtuse, as may be desired, and also to provide a means whereby, if desired, several slides containing scales may be located in an arm of the square for use whenever occasion may demand.

A further object of the invention is to so construct one of the slides that it may be removed from the arm of the square and used in conjunction with and adjustable upon both arms to form triangles, as required. The square has scales facilitating the calculation of the length, pitch, or angle of rafters, and also to determine various other data in the way of measurements useful to carpenters in house-building.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the improved square, illustrating the obverse side thereof. Fig. 2 is a partial perspective view of the square, illustrating the side shown in Fig. 1, the scales, however, being omitted and the adjustment of the several parts being illustrated. Fig. 3 is a perspective view of one of the slides removed from the arm of the square. Fig. 4 is a transverse section on the line 4 4 of Fig. 1. Fig. 5 is a similar section taken on the line 5 5 of Fig. 1. Fig. 6 is a like section taken on the line 6 6 of Fig. 1. Fig. 7 is a view of the square, illustrating it as used in conjunction with the slide shown in Fig. 3 to calculate or draw triangular forms. Fig. 8 is a transverse section taken on the line 8 8 of Fig. 7; and Fig. 9 is a perspective view of the square, illustrating the scale upon the reverse side thereof.

The main arm A of the square—that is, the longer arm—is provided with an undercut longitudinal recess 10, having beveled upper walls, in which recess an upper slide 11, having beveled sides, and an inner slide 12 are located. The upper slide is preferably of the same length as the inner slide, and the inner slide is provided at one end with a longitudinal slot 13. When the slides are in position within the arm, they are secured therein, preferably through the medium of a screw 14, located at the angle of the square, and a screw 15, located at the outer end of the main arm A, the said screw 15 being made to pass through a block 16, held to slide in the recess 10. The block 16 is of a thickness equal to the combined thickness of the two slides and is normally located at the outer end of the arm A in engagement with the ends of said slides. Both screws 14 and 15 are flush with the side faces of the square. The short arm B of the square is preferably made in two sections 17 and 18, one section being parallel with and supported by the other section. What may be called the "upper section" 17 is pivoted at its inner end to the lower section by a screw *a* or its equivalent, and when the square is to be used as a right angle only a screw 19 or similar device is employed to secure the two sections together at the upper end of the arm. The upper section is provided at or near its center with a segmental slot 20, through which a set-screw 21 passes into the lower section. Thus if an angle is to be drawn other than a right angle the screw 19 is removed and the upper section of the arm B is carried inward or outward the requisite distance, as the character of the work may demand. The screw 21 serves to clamp the sections 17 and 18 together when one is adjusted at an angle to the other, as shown by dotted lines, Fig. 1, and the slot 20 permits such lateral adjustment within the required limits.

When the square is to be used as a triangle, as shown in Figs. 7 and 8, a binding-screw 22 is employed, provided with a lock-nut 23. The outer and inner slides 11 and 12 are removed and the block 16 is slid to any desired point

in the length of the recess 10 in the long arm. The inner slide 12 is placed in engagement with both arms of the square, and the binding-screw is screwed into the block to a bearing against the bottom wall of the recess 10, as shown in Fig. 8, whereby the block may be held stationary. The slide 12 may, however, be adjusted independently of the block as the binding-screw passes through its slot 13, the slide being held in a fixed position by the manipulation of the lock-nut or washer 23. The opposite end of the slide is preferably held in adjustable engagement with the short arm of the square by a clamp 24, of any appropriate construction. One form of such clamp controlled by a set-screw is shown in Fig. 7.

With reference to the scales, the side of the square shown in Fig. 9 has produced thereon the ordinary scale *b*, divided into quarters, twelfths, and sixteenths of an inch. In addition, this reverse side of the square contains upon its main arm a main-rafter table D and upon its shorter arm a diagram *d*, giving the lengths, pitches, or angles, and also top and bottom bevels of straight diagonal lines or rafters whose runs or base-lines are twelve inches and whose rise is one inch to eighteen inches, inclusive. In connection with and forming a part of the main-rafter table is a hip and valley table and a diagram (designated as *d'*) giving the length, pitches, or angles of straight diagonal lines whose run or base is sixteen inches and ninety-seven hundredths of an inch, or the diagonal of a square whose sides are twelve inches and whose rise is one inch to eighteen inches, inclusive.

Another table and diagram appears on the reverse side of the main arm, as shown in Fig. 9, which indicates the gain of main rafters. The scale is accompanied by a diagram, and it illustrates the gain of a straight diagonal line or lines whose run or base is twelve inches and whose rise is one inch to eighteen inches, inclusive. In connection with and forming a portion of the above-mentioned scale and diagram is a scale and diagram showing the gain of hip or valley rafters. This latter scale shows the gain of a straight diagonal line or lines whose run or base is sixteen inches and ninety-seven hundredths of an inch and whose rise is one inch to eighteen inches, inclusive. Next is a scale for the side bevel of jack-rafters. This diagram shows the angles or side bevels (at intersection) of straight lines or rafters whose base is twelve inches and whose rise is one inch to eighteen inches, inclusive, together with hip or valley rafters whose run or base is sixteen inches and ninety-seven hundredths of an inch and whose rise is one inch to eighteen inches, inclusive. This diagram also shows the side bevels of hip or valley rafters at their intersection whose run is sixteen inches and ninety-seven hundredths of an inch and whose rise is one inch to eighteen inches, inclusive.

At or near the junction of the arms, upon the side of the square illustrated in Fig. 9, an octagon scale E is produced. The scale is accompanied by a diagram showing the proportions of the sides of an octagon to its diameter. This diagram also indicates the miter or bevel and also the seat or run of hip-rafters for octagon roofs. The obverse side of the square (shown in Fig. 1) is divided into inches and twelfths of an inch and scales of one inch, one-half inch, and one-quarter inch to a foot. It is also provided with a diagonal scale having its unit sixteen inches and ninety-seven hundredths of an inch, or the diagonal of a square whose sides are one foot, respectively. The upper face of the upper slide 11 is plain and its opposite side is divided into one-inch, one-half-inch, and one-quarter-inch scales to the foot. The slide 12 (shown in Fig. 3) is divided into scales of one inch, one-half inch, and one-quarter inch to the foot. It is also provided with a scale of one inch divided into hundredths of an inch. The slide 12 is used as a diagonal rule when placed in the position shown in Fig. 7, and in this position the square is used to obtain the length of lines of rafters of any run or rise. Thus as a summary it may be mentioned that among the main scales produced upon the square is a main-rafter table and diagram, a hip and valley rafter table and diagram, a table and diagram showing the gain of main rafters, a table and diagram showing the gain of hip and valley rafters, a diagram showing the side bevel of jack-rafters, a diagram showing the side bevel of hip and valley rafters, and an octagon scale and a diagonal scale.

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

1. A carpenter's square having a removable slide mounted in one arm and connecting devices for securing the ends of the slide to the respective arms of the square when removed, substantially as set forth.

2. In a carpenter's square, the combination, with one arm thereof provided with a longitudinal recess, of removable slides adapted to be normally located in said recess, one of the slides being provided with a slot at one end, and a block capable of sliding in said recess, the said block being provided with a set-screw, whereby it may be fixed at the end of the square, forming a barrier for the slides, or fixed at any point in the length of the recess when the slides are removed, as and for the purpose set forth.

3. In a carpenter's square, the combination, with the arms of the square, the longer arm of which is provided with a longitudinal recess, of a block held to slide in the said recess, a rule provided with a slot at one end, the slotted end of the rule engaging with the block and the opposite end with the short arm of the square, an adjusting-screw connecting the rule with the block, and a clamp, substantially

as shown and described, for adjustably connecting the rule with the short arm of the square, as and for the purpose specified.

4. The combination, with a carpenter's square, of an auxiliary section 17, lying upon the short arm of the square and having its edges flush with the edges thereof, a pivot extending through the inner end of said section at its longitudinal center into the said short arm, as shown at *a*, to permit the said section to be swung in either direction past the longitudinal edges of the said short arm, the said auxiliary section having a transverse slot through it between its ends, and a set-screw passed therethrough into said short arm to clamp the said section in any desired position, substantially as set forth.

5. A carpenter's square having a removable slide mounted in its long arm and connecting devices for securing the ends of the slide to the respective arms when removed, the short arm of the square being provided with a parallel section pivoted at its inner end, substantially as set forth.

MARK P. PATERSON.

Witnesses:
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CATHARINE E. PATERSON.