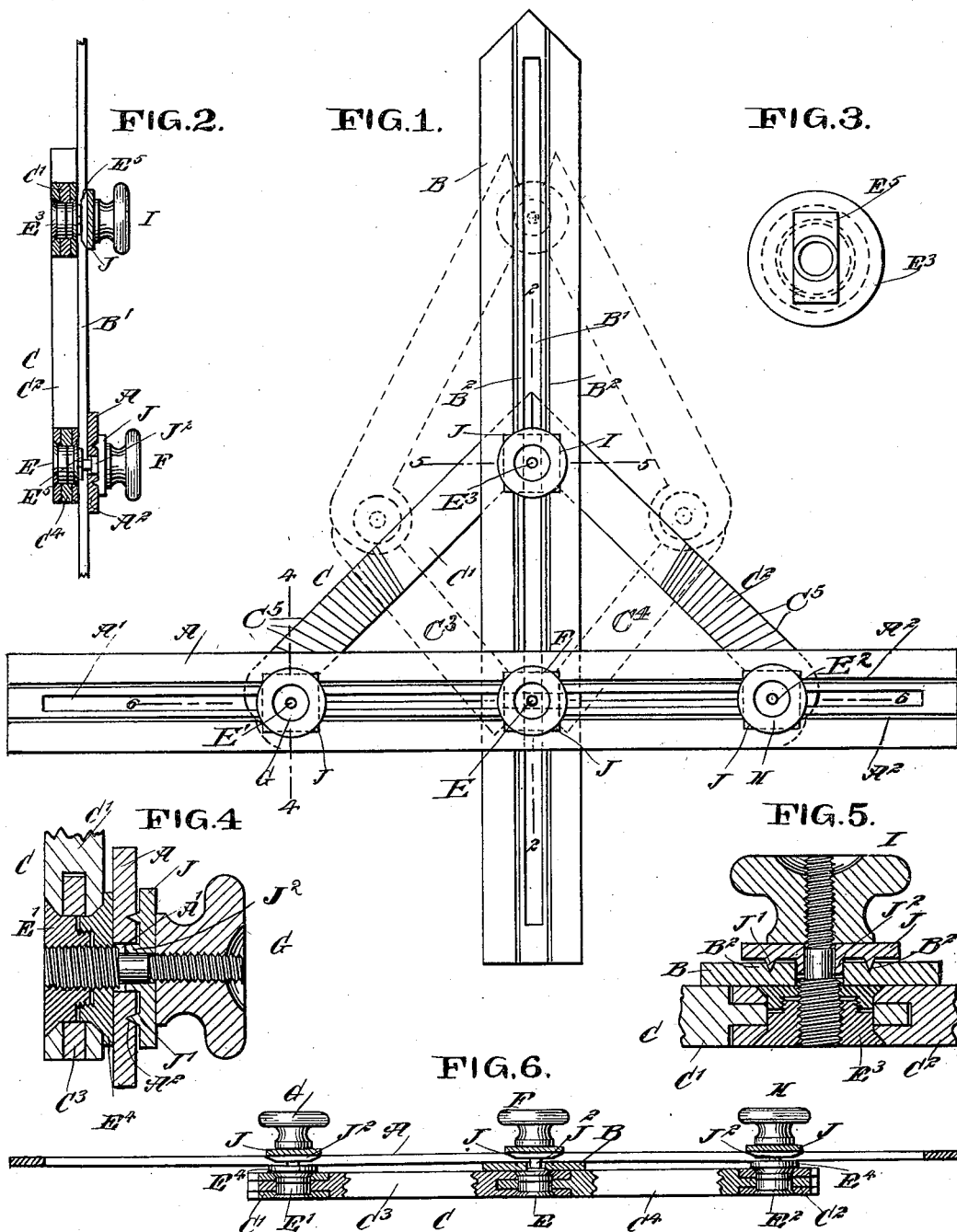


P. H. WALSH.
COMBINATION TOOL.

(Application filed Sept. 2, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

Donn Twitchell
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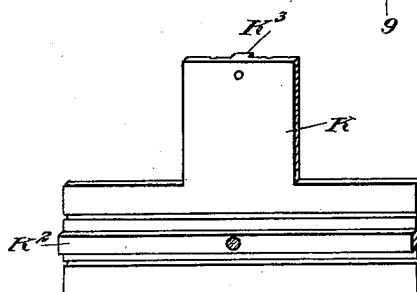
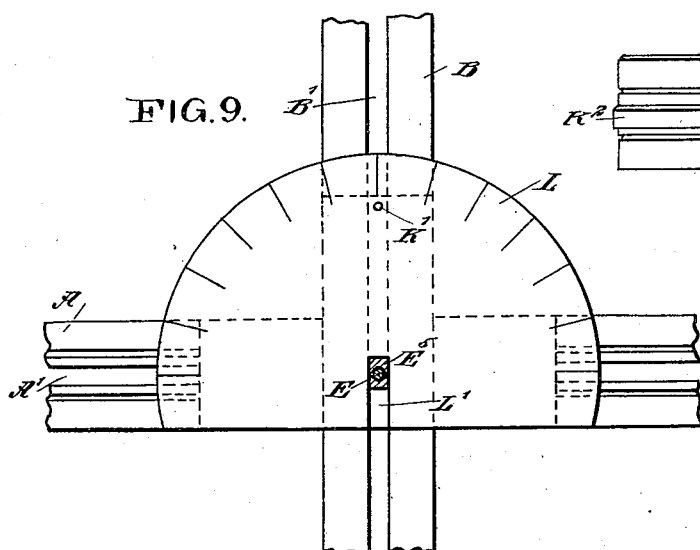
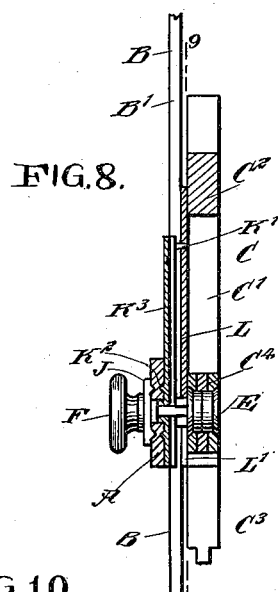
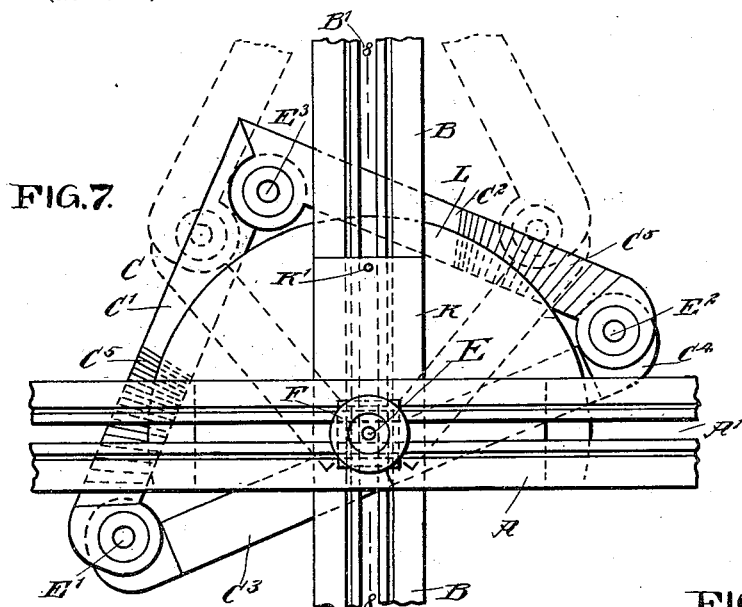
ATTORNEYS

P. H. WALSH.
COMBINATION TOOL.

(Application filed Sept. 2, 1899.)

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2 Sheets—Sheet 2.



WITNESSES :

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UNITED STATES PATENT OFFICE.

PATRICK HENRY WALSH, OF SCRANTON, PENNSYLVANIA, ASSIGNOR OF
ONE-HALF TO FRANK W. FILER, OF SAME PLACE.

COMBINATION-TOOL.

SPECIFICATION forming part of Letters Patent No. 646,243, dated March 27, 1900.

Application filed September 2, 1899, Serial No. 729,329. (No model.)

To all whom it may concern:

Be it known that I, PATRICK HENRY WALSH, of Scranton, in the county of Lackawanna and State of Pennsylvania, have invented a new and Improved Combination-Tool, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved combination-tool more especially designed for the use of carpenters and other mechanics and arranged to enable the user to readily obtain various angles of timber and the length of rafters and other desirable measurements when framing a house or the like.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of my invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front face view of the improvement. Fig. 2 is a transverse section of the same on the line 2 2 in Fig. 1. Fig. 3 is an enlarged face view of one of the triangle-pivots. Fig. 4 is an enlarged transverse section of the improvement on the line 4 4 in Fig. 1. Fig. 5 is an enlarged sectional plan view of same on the line 5 5 in Fig. 1. Fig. 6 is a sectional plan view of the same on the line 6 6 in Fig. 1. Fig. 7 is a face view of the improvement with the parts adjusted for measuring angles. Fig. 8 is a transverse section of the same on the line 8 8 in Fig. 7. Fig. 9 is a sectional rear face view of the same on the line 9 9 in Fig. 8, and Fig. 10 is a perspective view of the stock.

The improved combination-tool consists, essentially, of two blades A and B and a triangle C, having its sides $C' C^2$ pivotally connected with each other at one end and at the other end to the outer ends of the sections $C^3 C^4$ of the hypotenuse of said triangle. The sections $C^3 C^4$ are pivotally connected with each other at their middle by a pivot E, a similar pivot E' being at the junction between the section C^3 and the side C' , a pivot E^2 being at the junction of the section C^4 and the side C^2 , and a pivot E^3 connecting the sides

$C' C^2$ with each other. The pivots mentioned are adapted to carry removable clamping-nuts F, G, H, and I, respectively, of which the clamping-nuts G, H, and I serve to clamp the triangle to the blades A and B, and the clamping-nut F serves to clamp the middle portion of the hypotenuse of the triangle to the blade B and also the blades A and B together, so that the same are held against movement one upon the other after the parts have been given the desired adjustment. Each of the clamping-nuts has its bolt screwing in the corresponding pivot, and the nut of each clamping-screw abuts on a washer J, formed on its under side with V-shaped guide-ribs J' and a rectangular offset J^2 , of which the latter fits into longitudinally-extending slots $A' B'$ in the blades A and B, and the guide-ribs J' fit into longitudinal grooves or guideways $A^2 B^2$, as plainly shown in Fig. 1. Thus by loosening the nuts of the clamping-screws the blades A and B may be readily adjusted relatively to one another, the blades, however, always standing at right angles to each other, as indicated in Fig. 1.

The pivots $E' E^2$ are provided on their upper ends with offsets E^4 (see Figs. 4 and 6) to engage the under side of the blade A to compensate for the thickness of the blade B and to hold the triangle approximately parallel to the blades A and B. By removing the clamping-nuts G and H from the pivots E' and E^2 and loosening the clamping-nuts F and I the triangle may be swung into an angular position, as shown in dotted lines in Fig. 1, to enable the user to obtain any desired angle with either of the blades A or B and the corresponding sides of the triangle. The pivots E and E^3 are provided at their top faces with rectangular offsets E^5 , fitting into the slot B' of the blade B, so that when the corresponding clamping-nuts F and I are loosened the pivots are readily guided in the blade B.

The blades A and B are preferably graduated with linear measurements, (not shown,) and the sides $C' C^2$ of the triangle C are provided with graduations $C^5 C^6$ to permit of reading angular positions between the blade B and the corresponding side of the triangle.

For accurately setting the triangle C to a certain angle I make use of a stock K and a protractor L, as shown in Figs. 7 and 8, and remove the clamping-nuts G, H, and I to permit of turning the triangle on the middle pivot E of the hypotenuse of the triangle. The protractor L is provided at its center with a slot L', extending to the base edge, as plainly shown in Fig. 9, and in this slot L' fits the projection E² of the pivot E, and the upper end of the protractor is secured by a pin K' to the stock K to hold the protractor in a fixed position relatively to the blades A and B and the stock K, which latter is also provided at its upper side with rib K², fitting the slot A' in the blade A, and on the under side of the said stock is arranged rib K³, fitting the slot B' in the blade B, so that the blades can slide at right angles relative one to the other and to the said stock, which is interposed between the said blades. The stock is preferably in the form of an inverted T, the vertical member fitting the top of the blade B and the horizontal member fitting the under side of the member A, as is plainly shown in Figs. 7 and 8.

From the foregoing it will be readily seen that the device can be used for obtaining the various angles for the timber when framing houses and also for obtaining the length of rafters and other desirable measurements.

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

1. A combination-tool, comprising blades standing at right angles and slidable one relative to the other, and a triangle having its sides pivotally connected with each other, the hypotenuse being made in sections pivotally connected with each other and with the said blades.

2. A combination-tool, comprising blades slidable at right angles one relative to the other, a triangle having its sides pivotally connected with each other and having a pivot in the middle of its hypotenuse, and clamping-screws for connecting the triangle at its pivots to the said blades, substantially as shown and described.

3. A combination-tool, comprising blades slidable at right angles one relative to the other, a triangle having its sides pivotally connected with each other and its hypotenuse made in sections pivoted together, and clamping-screws on the pivots of the triangle and engaging said blades, substantially as shown and described.

4. A combination-tool, comprising blades slidable at right angles one relative to the other, a triangle having its sides pivotally

connected with each other and its hypotenuse made in sections pivoted together, and clamping-screws on the pivots of the triangle and engaging said blades, the clamping-screw at the pivot of the hypotenuse-sections engaging the blades at their junction, substantially as shown and described.

5. A combination-tool comprising blades at right angles, a triangle having a pivotal connection with the blades at the junction thereof, the pivot being at the middle of the hypotenuse of the triangle and the sides of the latter being graduated to indicate angles at the blades, substantially as shown and described.

6. A combination-tool comprising a stock, blades slidable at right angles one relative to the other and to the stock, and a triangle having its sides pivotally connected with each other, and having a pivot in the middle of the hypotenuse, and having this hypotenuse-pivot connected to the center of said stock, substantially as shown and described.

7. A combination-tool comprising a stock, a protractor held immovable relative to the said stock, blades at right angles to each other and slidable one relative to the other and to the said stock, and a right-angle triangle having its sides pivotally connected with each other, the hypotenuse being made in sections pivotally connected with each other and with the center of said stock, substantially as shown and described.

8. A combination-tool comprising a stock, a protractor held immovable relative to the said stock, blades at right angles to each other and slidable one relative to the other and to the said stock, a right-angle triangle having its sides pivotally connected with each other, its hypotenuse being made in sections pivotally connected with each other and with the center of said stock, and means, substantially as described, for slidably connecting the pivots of the sections of the triangle with guideways in said blades, substantially as shown and described.

9. A combination-tool comprising a stock, blades at right angles to each other and slidable one relative to the other and to the stock, and a triangle having its sides pivotally connected with each other, the middle of the hypotenuse being connected to the center of said stock, the sides of the triangle being provided with graduations, substantially as shown and described.

PATRICK HENRY WALSH.

Witnesses:

THEO. G. HOSTER,
JNO. M. RITTER.